

Post_Haystack_06-09-21_12Hour

Prepared by VT Agency of Natural Resources

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Project Notes

Rainfall events imported from "Atlas-14-Rain.txt" for 1670 VT Washington

Rainfall events imported from "Atlas-14-Rain.txt" for 1662 VT Chittenden

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.915	74	>75% Grass cover, Good, HSG C (DA_1C, DA_4, DA_5, DA_8)
27.087	80	>75% Grass cover, Good, HSG D (DA_1A, DA_1B, DA_1C, DA_1D, DA_1E, DA_1F, DA_1G, DA_1H, DA_4, DA_5, DA_7, DA_9)
2.419	98	Paved Parking, HSG C (DA_1C, DA_4, DA_5, DA_8)
17.719	98	Paved Parking, HSG D (DA_1A, DA_1B, DA_1C, DA_1D, DA_1E, DA_1F, DA_1G, DA_4, DA_5, DA_7, DA_9)
0.001	70	Woods, Good, HSG C (DA_8)
49.178	87	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
4.335	HSG C	DA_1C, DA_4, DA_5, DA_8
44.843	HSG D	DA_1A, DA_1B, DA_1C, DA_1D, DA_1E, DA_1F, DA_1G, DA_1H, DA_4, DA_5, DA_7, DA_9
0.000	Other	
49.178		TOTAL AREA

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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	1.915	27.087	0.000	29.002	>75% Grass cover, Good	DA_1A, DA_1B, DA_1C, DA_1D, DA_1E, DA_1F, DA_1G, DA_1H, DA_4, DA_5, DA_7, DA_8, DA_9
0.000	0.000	2.419	17.719	0.000	20.138	Paved Parking	DA_1A, DA_1B, DA_1C, DA_1D, DA_1E, DA_1F, DA_1G, DA_4, DA_5, DA_7, DA_8, DA_9
0.000	0.000	0.000	0.037	0.000	0.037	Water	DA_1B
0.000	0.000	0.001	0.000	0.000	0.001	Woods, Good	DA_8
0.000	0.000	4.335	44.843	0.000	49.178	TOTAL AREA	

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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	3P	328.50	328.50	15.0	0.0000	0.013	18.0	0.0	0.0
2	4P	330.80	330.40	17.0	0.0235	0.013	18.0	0.0	0.0
3	5P	327.50	327.50	33.0	0.0000	0.013	18.0	0.0	0.0
4	6P	326.80	326.00	28.0	0.0286	0.013	18.0	0.0	0.0
5	10P	345.50	340.50	244.0	0.0205	0.013	24.0	0.0	0.0
6	11P	339.90	329.80	696.0	0.0145	0.013	36.0	0.0	0.0
7	12P	333.00	332.50	47.0	0.0106	0.013	15.0	0.0	0.0
8	13P	331.13	329.54	312.0	0.0051	0.013	24.0	0.0	0.0
9	14P	329.52	325.50	729.0	0.0055	0.013	42.0	0.0	0.0
10	15P	328.10	326.80	50.0	0.0260	0.013	24.0	0.0	0.0
11	16P	324.50	324.10	80.0	0.0050	0.013	24.0	0.0	0.0
12	17P	331.55	331.15	38.0	0.0105	0.013	24.0	0.0	0.0
13	21P	326.98	326.02	193.0	0.0050	0.013	42.0	0.0	0.0
14	33P	328.90	327.00	179.0	0.0106	0.013	30.0	0.0	0.0
15	CB1	326.00	325.50	76.0	0.0066	0.013	42.0	0.0	0.0

Time span=0.00-150.00 hrs, dt=0.02 hrs, 7501 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment DA_1A: NE Residential Area Runoff Area=4.563 ac 43.22% Impervious Runoff Depth=1.07"
 Flow Length=718' Slope=0.0589 '/' Tc=7.6 min CN=WQ Runoff=7.44 cfs 0.407 af

Subcatchment DA_1B: DA_1B Runoff Area=8.742 ac 54.53% Impervious Runoff Depth=1.20"
 Flow Length=1,286' Slope=0.0477 '/' Tc=13.0 min CN=WQ Runoff=13.28 cfs 0.878 af

Subcatchment DA_1C: DA_1C Runoff Area=3.404 ac 69.93% Impervious Runoff Depth=1.39"
 Flow Length=637' Slope=0.0304 '/' Tc=8.2 min CN=WQ Runoff=6.93 cfs 0.393 af

Subcatchment DA_1D: Subcat DA_1D Runoff Area=4.419 ac 15.87% Impervious Runoff Depth=0.74"
 Flow Length=1,239' Slope=0.0219 '/' Tc=23.1 min CN=WQ Runoff=3.05 cfs 0.273 af

Subcatchment DA_1E: DA_1E Runoff Area=5.212 ac 38.38% Impervious Runoff Depth=1.01"
 Flow Length=810' Slope=0.0238 '/' Tc=13.7 min CN=WQ Runoff=6.52 cfs 0.440 af

Subcatchment DA_1F: DA_1F Runoff Area=2.293 ac 51.81% Impervious Runoff Depth=1.17"
 Flow Length=623' Slope=0.0230 '/' Tc=10.5 min CN=WQ Runoff=3.69 cfs 0.224 af

Subcatchment DA_1G: DA_1G (Rec Field) Runoff Area=5.640 ac 21.46% Impervious Runoff Depth=0.81"
 Flow Length=786' Slope=0.0219 '/' Tc=15.5 min CN=WQ Runoff=5.34 cfs 0.380 af

Subcatchment DA_1H: DA_1H (Recreation) Runoff Area=3.739 ac 0.00% Impervious Runoff Depth=0.55"
 Flow Length=421' Slope=0.0092 '/' Tc=16.6 min CN=80 Runoff=2.35 cfs 0.171 af

Subcatchment DA_4: SE Residential Area Runoff Area=2.865 ac 52.60% Impervious Runoff Depth=1.10"
 Flow Length=373' Slope=0.0136 '/' Tc=9.8 min CN=WQ Runoff=4.29 cfs 0.261 af

Subcatchment DA_5: Building H Runoff Area=1.237 ac 49.45% Impervious Runoff Depth=1.07"
 Flow Length=315' Slope=0.0098 '/' Tc=10.1 min CN=WQ Runoff=1.80 cfs 0.110 af

Subcatchment DA_7: 60% Impervious Runoff Area=5.712 ac 60.00% Impervious Runoff Depth=1.27"
 Flow Length=1,025' Slope=0.0545 '/' Tc=9.3 min CN=WQ Runoff=10.34 cfs 0.606 af

Subcatchment DA_8: Southern Half of Runoff Area=0.251 ac 36.31% Impervious Runoff Depth=0.85"
 Flow Length=169' Slope=0.0086 '/' Tc=7.5 min CN=WQ Runoff=0.31 cfs 0.018 af

Subcatchment DA_9: SW Residential Area Runoff Area=1.101 ac 25.57% Impervious Runoff Depth=0.86"
 Flow Length=218' Slope=0.0171 '/' Tc=6.1 min CN=WQ Runoff=1.55 cfs 0.079 af

Reach 5R: Overflow Path Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
 n=0.030 L=128.0' S=0.0352 '/' Capacity=33.06 cfs Outflow=0.00 cfs 0.000 af

Reach 6R: Plunge pool to stream Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
 n=0.040 L=53.0' S=0.0132 '/' Capacity=114.17 cfs Outflow=0.00 cfs 0.000 af

Reach 16R: reach within Patrick Brook Avg. Flow Depth=0.99' Max Vel=1.67 fps Inflow=9.96 cfs 4.193 af
 n=0.035 L=400.0' S=0.0025 '/' Capacity=91.51 cfs Outflow=9.86 cfs 4.193 af

Reach 22R: reach within Patrick Brook Avg. Flow Depth=0.13' Max Vel=0.64 fps Inflow=0.37 cfs 0.425 af
n=0.035 L=280.0' S=0.0036 '/ Capacity=109.38 cfs Outflow=0.37 cfs 0.425 af

Reach 25R: reach within Patrick Brook Avg. Flow Depth=0.11' Max Vel=0.76 fps Inflow=0.34 cfs 0.347 af
n=0.035 L=220.0' S=0.0068 '/ Capacity=151.13 cfs Outflow=0.34 cfs 0.347 af

Reach 26R: reach within Patrick Brook Avg. Flow Depth=0.14' Max Vel=0.50 fps Inflow=0.30 cfs 0.261 af
n=0.035 L=455.0' S=0.0022 '/ Capacity=85.80 cfs Outflow=0.29 cfs 0.261 af

Reach 28R: emergency spillway Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.078 L=16.0' S=0.1687 '/ Capacity=146.89 cfs Outflow=0.00 cfs 0.000 af

Reach 35R: Channel from Level Avg. Flow Depth=0.01' Max Vel=0.05 fps Inflow=0.03 cfs 0.078 af
n=0.150 L=127.0' S=0.0079 '/ Capacity=47.21 cfs Outflow=0.03 cfs 0.078 af

Reach 41R: Channel from Level Avg. Flow Depth=0.01' Max Vel=0.05 fps Inflow=0.03 cfs 0.068 af
n=0.150 L=52.0' S=0.0096 '/ Capacity=76.45 cfs Outflow=0.03 cfs 0.068 af

Reach 43R: Channel from Level Avg. Flow Depth=0.02' Max Vel=0.07 fps Inflow=0.02 cfs 0.018 af
n=0.150 L=45.0' S=0.0111 '/ Capacity=14.41 cfs Outflow=0.02 cfs 0.018 af

Reach 45R: Channel from Level Avg. Flow Depth=0.02' Max Vel=0.08 fps Inflow=0.33 cfs 0.261 af
n=0.150 L=92.0' S=0.0141 '/ Capacity=256.34 cfs Outflow=0.30 cfs 0.261 af

Reach 50R: reach within Riggs Brook to Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.035 L=820.0' S=0.0037 '/ Capacity=110.71 cfs Outflow=0.00 cfs 0.000 af

Pond 3P: GW3 Peak Elev=329.01' Storage=2,272 cf Inflow=0.31 cfs 0.018 af
Primary=0.02 cfs 0.018 af Secondary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.018 af

Pond 4P: GW 4 Peak Elev=332.07' Storage=9,941 cf Inflow=4.29 cfs 0.261 af
Primary=0.33 cfs 0.261 af Secondary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.261 af

Pond 5P: GW 2 Peak Elev=328.88' Storage=5,564 cf Inflow=1.80 cfs 0.110 af
Primary=0.03 cfs 0.068 af Secondary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.068 af

Pond 6P: GW 1 Peak Elev=327.43' Storage=8,746 cf Inflow=1.55 cfs 0.079 af
Primary=0.03 cfs 0.078 af Secondary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.078 af

Pond 10P: (Rim @ 351.5) (CB #46 to CB #43) Peak Elev=346.71' Inflow=7.44 cfs 0.407 af
24.0" Round Culvert n=0.013 L=244.0' S=0.0205 '/ Outflow=7.44 cfs 0.407 af

Pond 11P: (Rim @ 345.05) (CB #43 to CB #8) Peak Elev=341.68' Inflow=19.85 cfs 1.285 af
36.0" Round Culvert n=0.013 L=696.0' S=0.0145 '/ Outflow=19.85 cfs 1.285 af

Pond 12P: Detention Pond Peak Elev=333.96' Storage=10,544 cf Inflow=10.34 cfs 0.606 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0106 '/ Outflow=3.22 cfs 0.604 af

Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8) Peak Elev=332.88' Inflow=8.71 cfs 0.998 af
24.0" Round Culvert n=0.013 L=312.0' S=0.0051 '/ Outflow=8.71 cfs 0.998 af

Pond 14P: (Rim @ 337.1) (CB #8 to Main GW) Peak Elev=331.76' Inflow=32.16 cfs 2.507 af
42.0" Round Culvert n=0.013 L=729.0' S=0.0055 '/ Outflow=32.16 cfs 2.507 af

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Pond 15P: (Invert @ 328.1) (Yard Drain to CB Peak Elev=328.81' Storage=825 cf Inflow=3.05 cfs 0.273 af
Primary=2.87 cfs 0.272 af Secondary=0.00 cfs 0.000 af Outflow=2.87 cfs 0.272 af

Pond 16P: Main Gravel Wetland Peak Elev=327.57' Storage=106,179 cf Inflow=46.22 cfs 3.770 af
Primary=9.87 cfs 3.767 af Secondary=0.00 cfs 0.000 af Outflow=9.87 cfs 3.767 af

Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2) Peak Elev=333.31' Inflow=8.71 cfs 0.998 af
24.0" Round Culvert n=0.013 L=38.0' S=0.0105 '/' Outflow=8.71 cfs 0.998 af

Pond 21P: (Rim @ 333.5) (CB#4 to CB#1) Peak Elev=328.08' Inflow=6.52 cfs 0.440 af
42.0" Round Culvert n=0.013 L=193.0' S=0.0050 '/' Outflow=6.52 cfs 0.440 af

Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4) Peak Elev=329.92' Inflow=6.52 cfs 0.440 af
30.0" Round Culvert n=0.013 L=179.0' S=0.0106 '/' Outflow=6.52 cfs 0.440 af

Pond CB1: (Rim @ 331.15) (CB#1 to GW) Peak Elev=327.59' Inflow=8.25 cfs 0.712 af
42.0" Round Culvert n=0.013 L=76.0' S=0.0066 '/' Outflow=8.25 cfs 0.712 af

Total Runoff Area = 49.178 ac Runoff Volume = 4.241 af Average Runoff Depth = 1.03"
59.05% Pervious = 29.040 ac 40.95% Impervious = 20.138 ac

Summary for Subcatchment DA_1A: NE Residential Area

Runoff = 7.44 cfs @ 11.99 hrs, Volume= 0.407 af, Depth= 1.07"

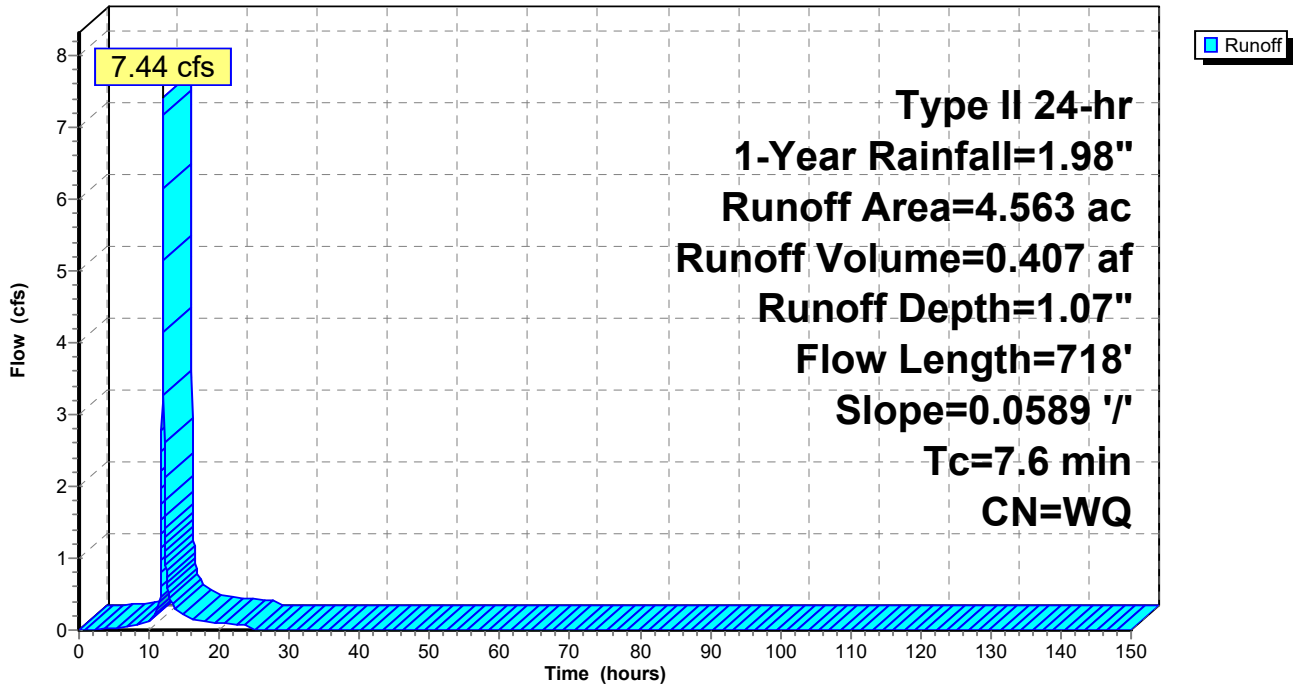
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
2.591	80	>75% Grass cover, Good, HSG D
1.972	98	Paved Parking, HSG D
4.563		Weighted Average
2.591		56.78% Pervious Area
1.972		43.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	718	0.0589	1.57		Lag/CN Method, Contour Length= 11,715' Interval= 1'

Subcatchment DA_1A: NE Residential Area

Hydrograph



Summary for Subcatchment DA_1B: DA_1B

Runoff = 13.28 cfs @ 12.05 hrs, Volume= 0.878 af, Depth= 1.20"

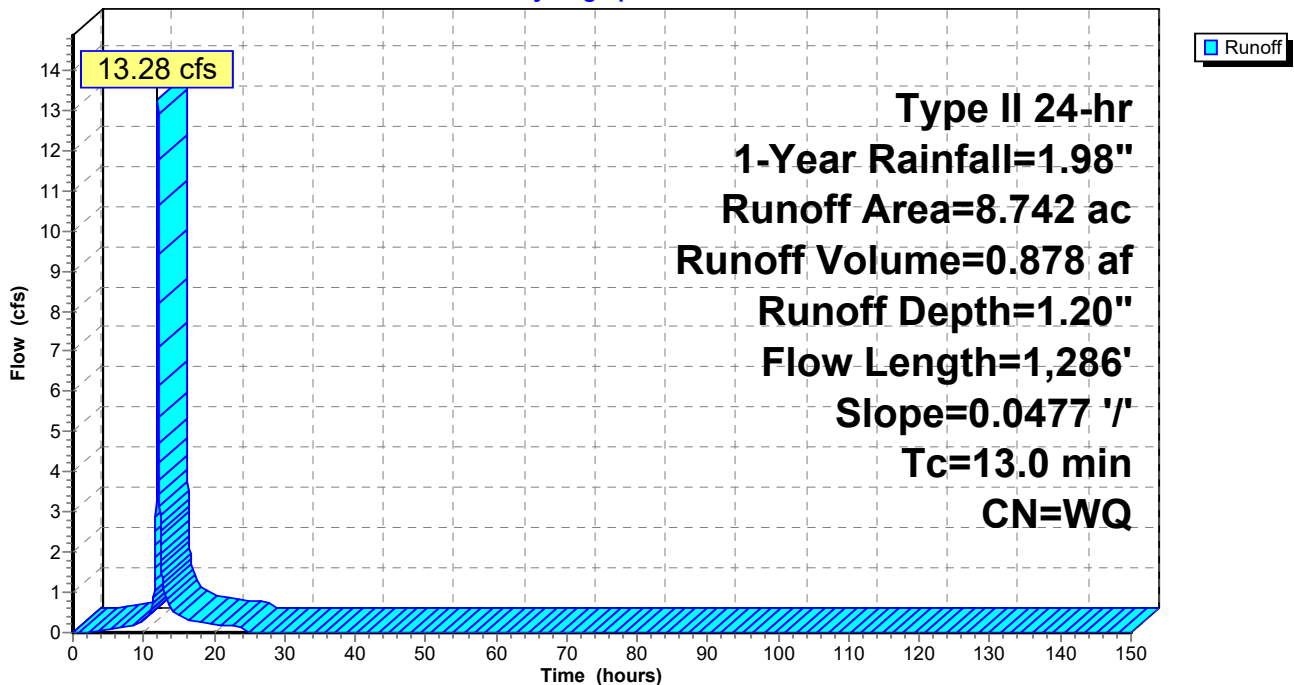
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
3.938	80	>75% Grass cover, Good, HSG D
4.767	98	Paved Parking, HSG D
* 0.037	0	Water, HSG D
8.742		Weighted Average
3.975		45.47% Pervious Area
4.767		54.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	1,286	0.0477	1.65		Lag/CN Method, Contour Length= 18,167' Interval= 1'

Subcatchment DA_1B: DA_1B

Hydrograph



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Type II 24-hr 1-Year Rainfall=1.98"

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Summary for Subcatchment DA_1C: DA_1C

Runoff = 6.93 cfs @ 11.99 hrs, Volume= 0.393 af, Depth= 1.39"

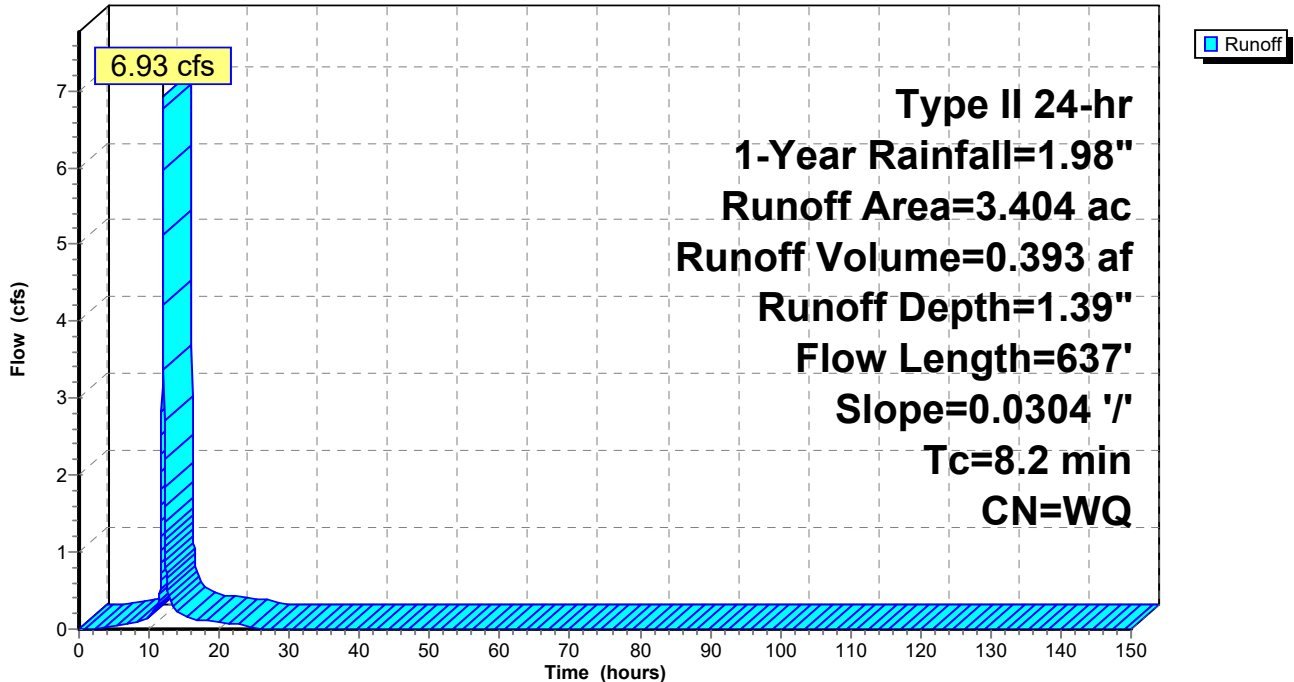
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
0.095	74	>75% Grass cover, Good, HSG C
0.928	80	>75% Grass cover, Good, HSG D
0.466	98	Paved Parking, HSG C
1.914	98	Paved Parking, HSG D
3.404		Weighted Average
1.023		30.07% Pervious Area
2.380		69.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	637	0.0304	1.30		Lag/CN Method, Contour Length= 4,511' Interval= 1'

Subcatchment DA_1C: DA_1C

Hydrograph



Summary for Subcatchment DA_1D: Subcat DA_1D

Runoff = 3.05 cfs @ 12.17 hrs, Volume= 0.273 af, Depth= 0.74"

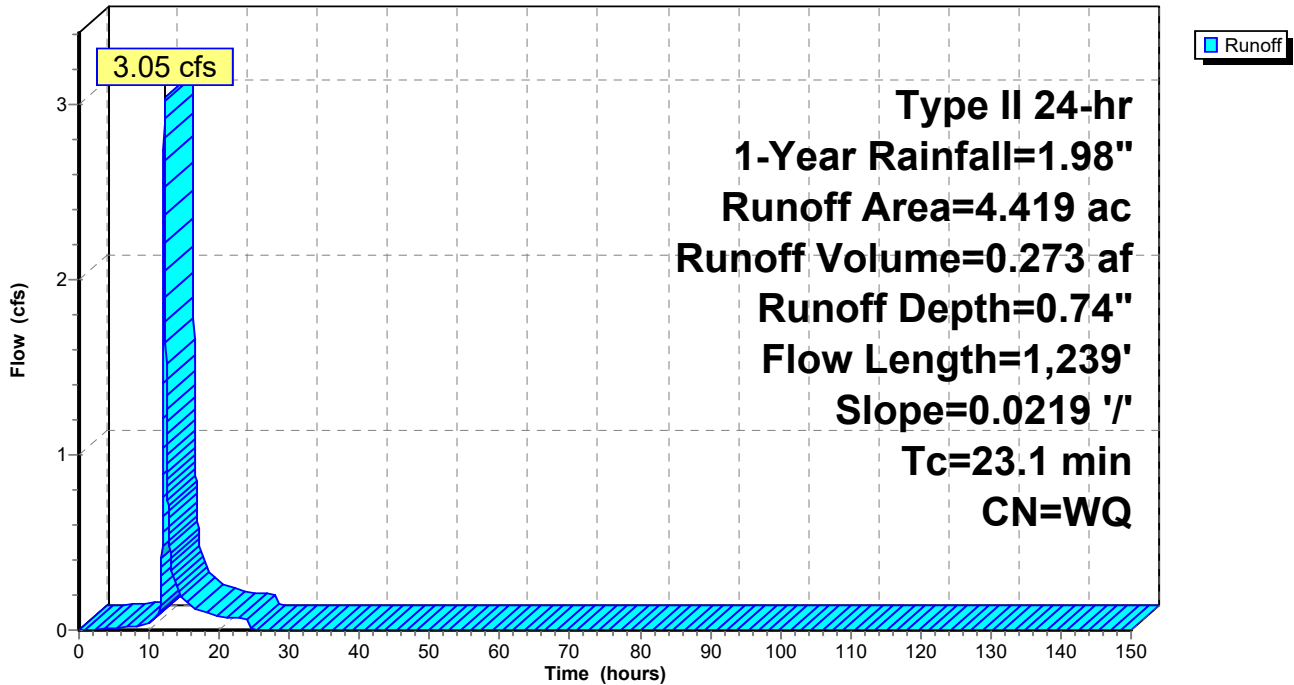
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
3.718	80	>75% Grass cover, Good, HSG D
0.701	98	Paved Parking, HSG D
4.419		Weighted Average
3.718		84.13% Pervious Area
0.701		15.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.1	1,239	0.0219	0.89		Lag/CN Method, Contour Length= 4,218' Interval= 1'

Subcatchment DA_1D: Subcat DA_1D

Hydrograph



Summary for Subcatchment DA_1E: DA_1E

Runoff = 6.52 cfs @ 12.06 hrs, Volume= 0.440 af, Depth= 1.01"

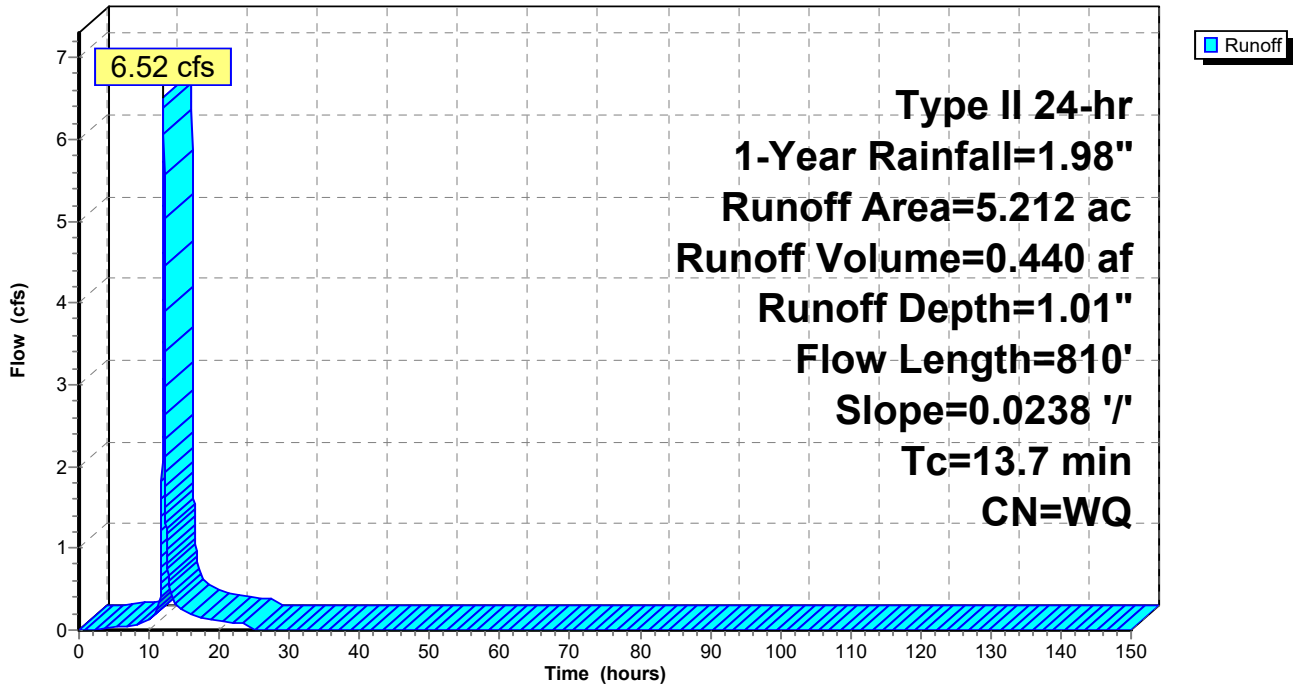
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
3.211	80	>75% Grass cover, Good, HSG D
2.000	98	Paved Parking, HSG D
5.212		Weighted Average
3.211		61.62% Pervious Area
2.000		38.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	810	0.0238	0.98		Lag/CN Method, Contour Length= 5,395' Interval= 1'

Subcatchment DA_1E: DA_1E

Hydrograph



Summary for Subcatchment DA_1F: DA_1F

Runoff = 3.69 cfs @ 12.02 hrs, Volume= 0.224 af, Depth= 1.17"

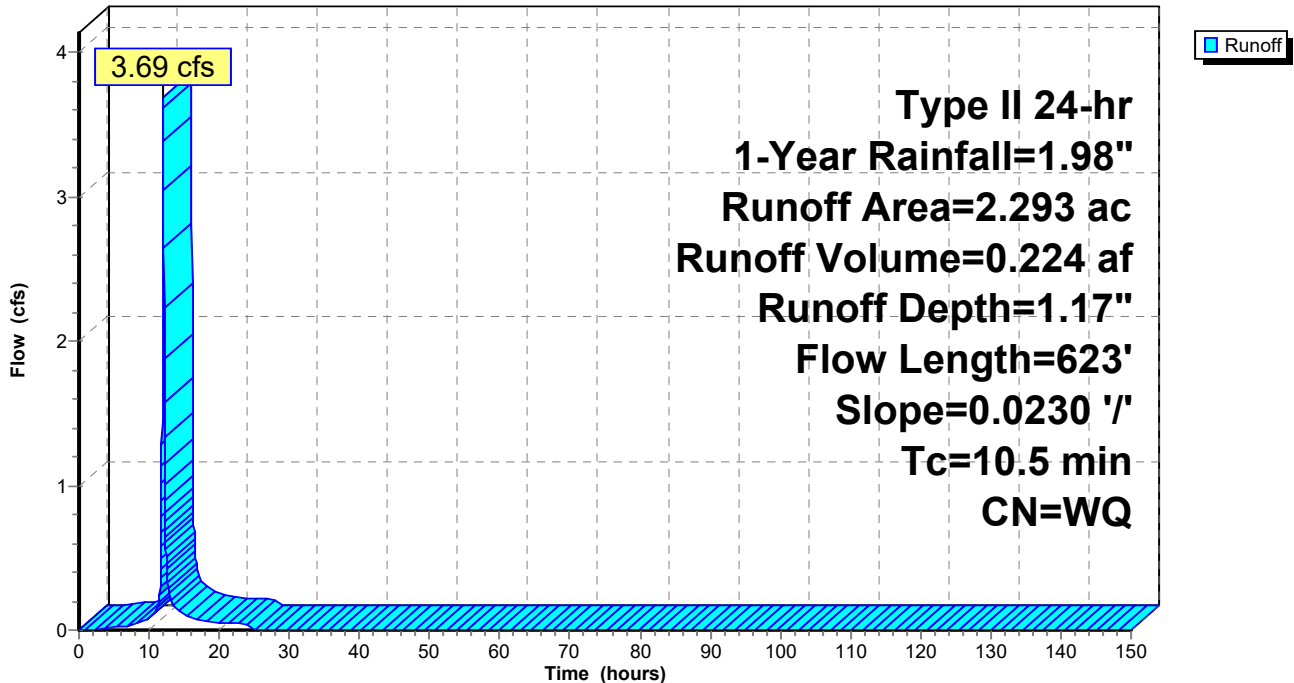
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
1.105	80	>75% Grass cover, Good, HSG D
1.188	98	Paved Parking, HSG D
2.293		Weighted Average
1.105		48.19% Pervious Area
1.188		51.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	623	0.0230	0.99		Lag/CN Method, Contour Length= 2,296' Interval= 1'

Subcatchment DA_1F: DA_1F

Hydrograph



Summary for Subcatchment DA_1G: DA_1G (Rec Field Parking Lot)

Runoff = 5.34 cfs @ 12.08 hrs, Volume= 0.380 af, Depth= 0.81"

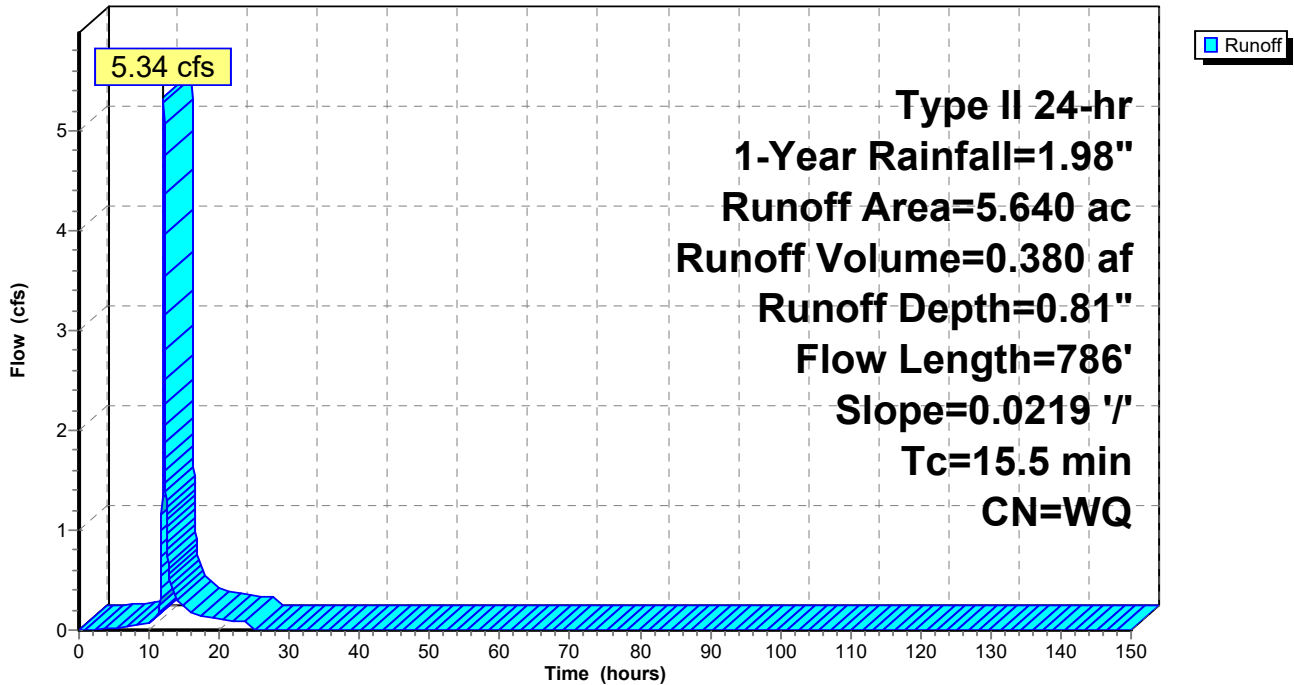
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
4.430	80	>75% Grass cover, Good, HSG D
1.210	98	Paved Parking, HSG D
5.640		Weighted Average
4.430		78.54% Pervious Area
1.210		21.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	786	0.0219	0.84		Lag/CN Method, Contour Length= 5,380' Interval= 1'

Subcatchment DA_1G: DA_1G (Rec Field Parking Lot)

Hydrograph



Summary for Subcatchment DA_1H: DA_1H (Recreation Field)

Runoff = 2.35 cfs @ 12.10 hrs, Volume= 0.171 af, Depth= 0.55"

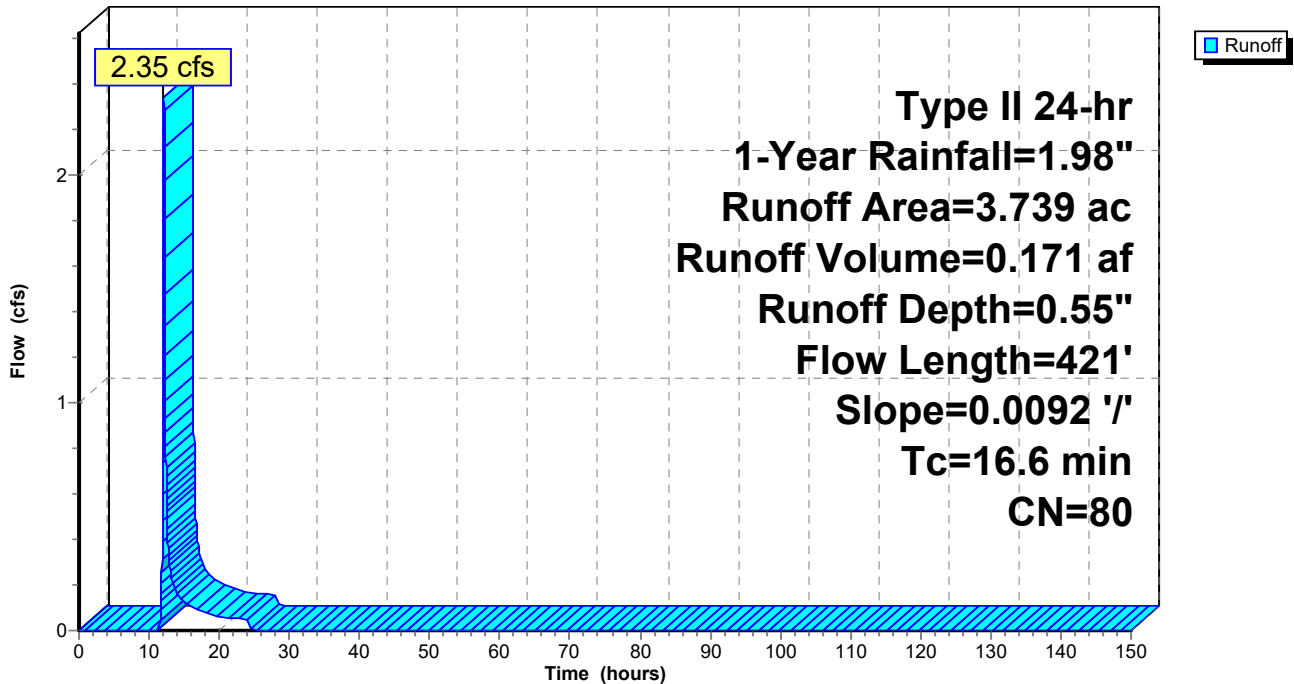
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
3.739	80	>75% Grass cover, Good, HSG D
3.739		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	421	0.0092	0.42		Lag/CN Method, Contour Length= 1,500' Interval= 1'

Subcatchment DA_1H: DA_1H (Recreation Field)

Hydrograph



Summary for Subcatchment DA_4: SE Residential Area

Runoff = 4.29 cfs @ 12.01 hrs, Volume= 0.261 af, Depth= 1.10"

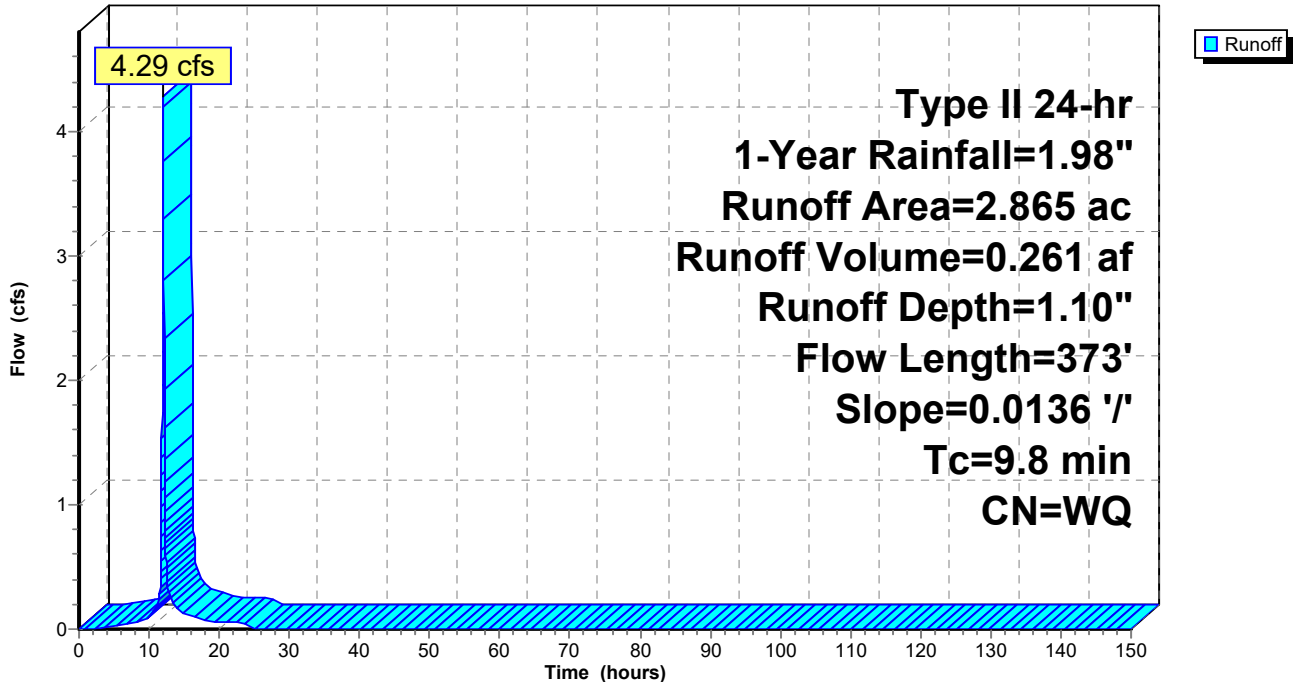
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
1.211	74	>75% Grass cover, Good, HSG C
0.147	80	>75% Grass cover, Good, HSG D
1.394	98	Paved Parking, HSG C
0.113	98	Paved Parking, HSG D
<hr/>		
2.865		Weighted Average
1.358		47.40% Pervious Area
1.507		52.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	373	0.0136	0.64		Lag/CN Method, Contour Length= 1,698' Interval= 1'

Subcatchment DA_4: SE Residential Area

Hydrograph



Summary for Subcatchment DA_5: Building H

Runoff = 1.80 cfs @ 12.02 hrs, Volume= 0.110 af, Depth= 1.07"

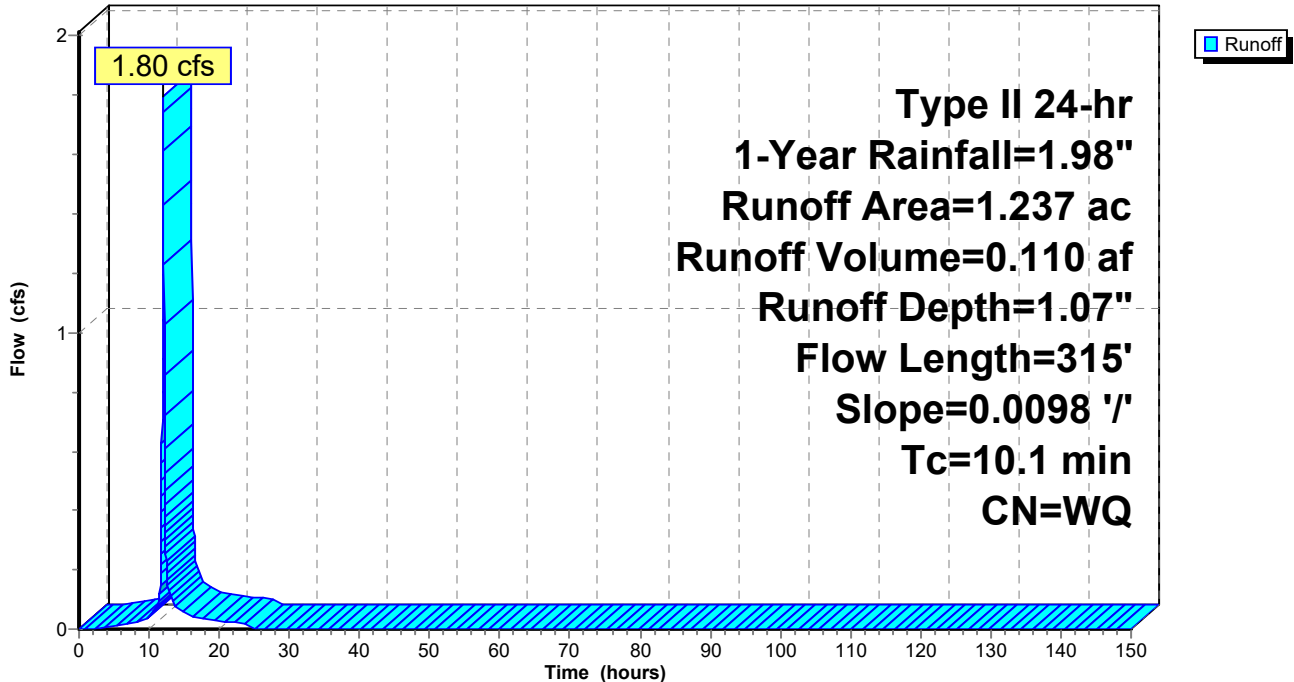
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
0.450	74	>75% Grass cover, Good, HSG C
0.175	80	>75% Grass cover, Good, HSG D
0.468	98	Paved Parking, HSG C
0.144	98	Paved Parking, HSG D
1.237		Weighted Average
0.625		50.55% Pervious Area
0.612		49.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	315	0.0098	0.52		Lag/CN Method, Contour Length= 527' Interval= 1'

Subcatchment DA_5: Building H

Hydrograph



Summary for Subcatchment DA_7: 60% Impervious

Runoff = 10.34 cfs @ 12.01 hrs, Volume= 0.606 af, Depth= 1.27"

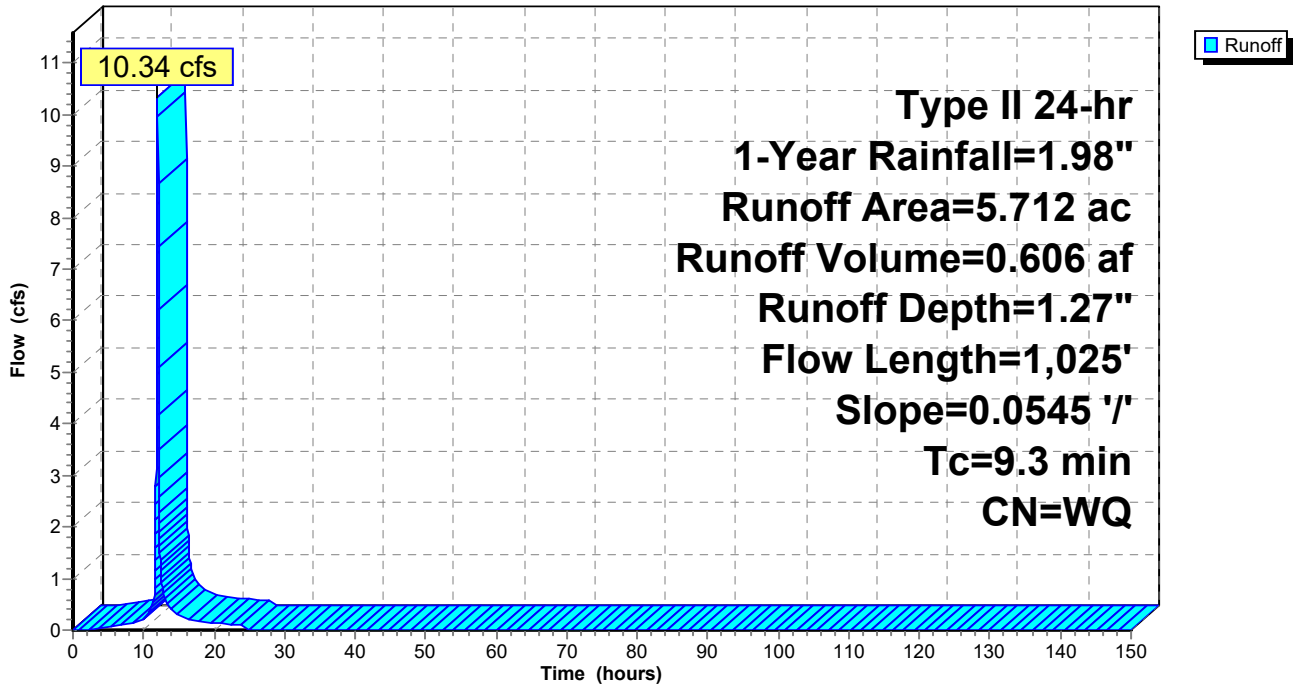
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
2.285	80	>75% Grass cover, Good, HSG D
3.427	98	Paved Parking, HSG D
5.712		Weighted Average
2.285		40.00% Pervious Area
3.427		60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	1,025	0.0545	1.83		Lag/CN Method, Contour Length= 13,556' Interval= 1'

Subcatchment DA_7: 60% Impervious

Hydrograph



Summary for Subcatchment DA_8: Southern Half of Center Road

Runoff = 0.31 cfs @ 11.99 hrs, Volume= 0.018 af, Depth= 0.85"

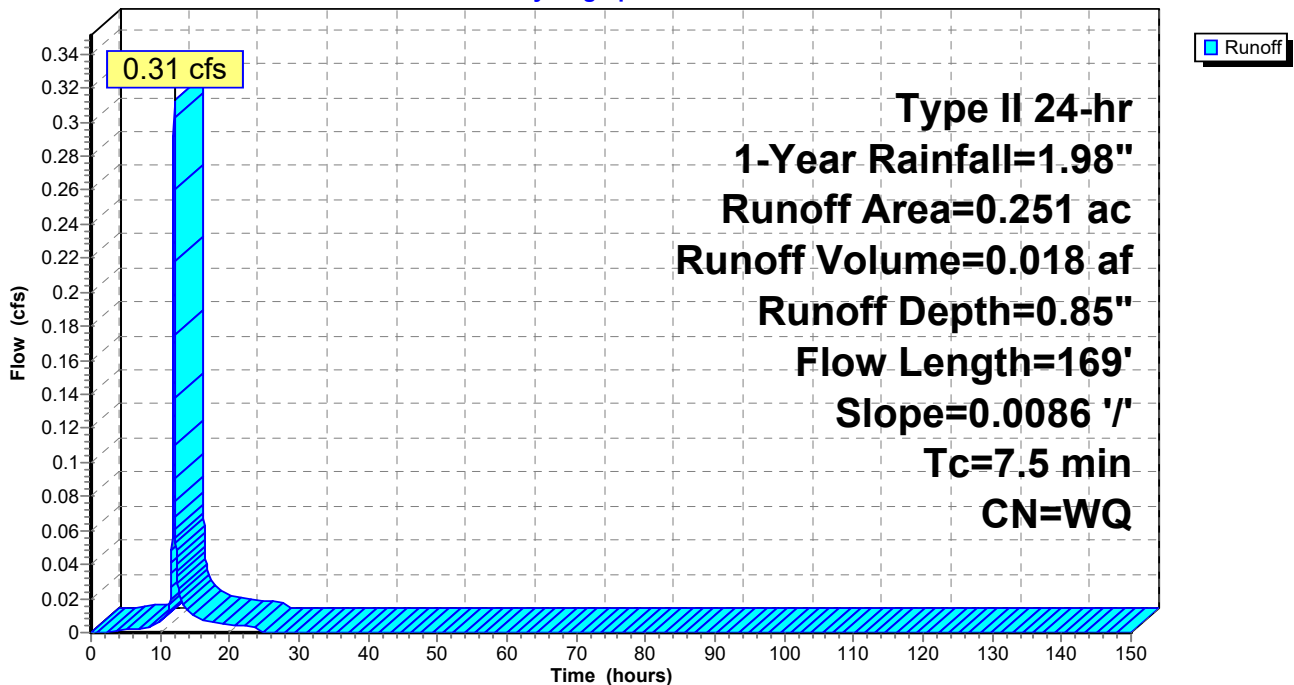
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
0.158	74	>75% Grass cover, Good, HSG C
0.091	98	Paved Parking, HSG C
0.001	70	Woods, Good, HSG C
<hr/>		
0.251		Weighted Average
0.160		63.69% Pervious Area
0.091		36.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	169	0.0086	0.38		Lag/CN Method, Contour Length= 94' Interval= 1'

Subcatchment DA_8: Southern Half of Center Road

Hydrograph



Summary for Subcatchment DA_9: SW Residential Area

Runoff = 1.55 cfs @ 11.98 hrs, Volume= 0.079 af, Depth= 0.86"

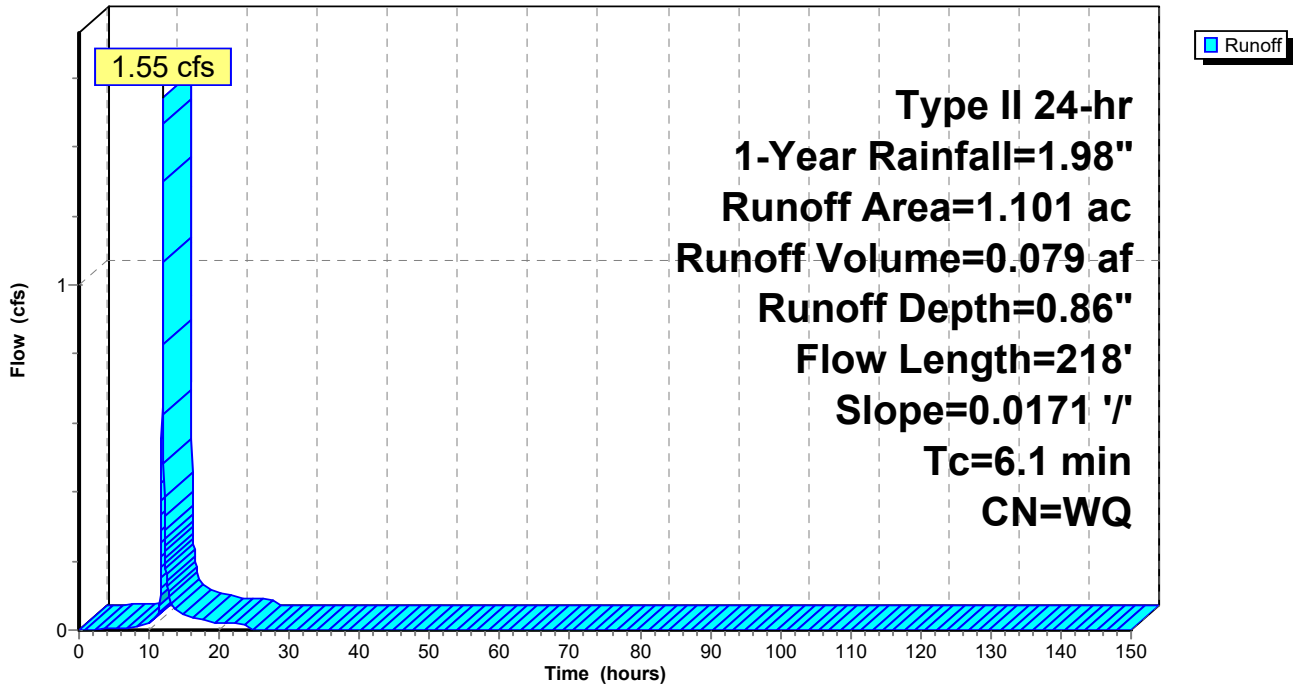
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 1-Year Rainfall=1.98"

Area (ac)	CN	Description
0.820	80	>75% Grass cover, Good, HSG D
0.282	98	Paved Parking, HSG D
1.101		Weighted Average
0.820		74.43% Pervious Area
0.282		25.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	218	0.0171	0.60		Lag/CN Method, Contour Length= 822' Interval= 1'

Subcatchment DA_9: SW Residential Area

Hydrograph



Summary for Reach 5R: Overflow Path

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

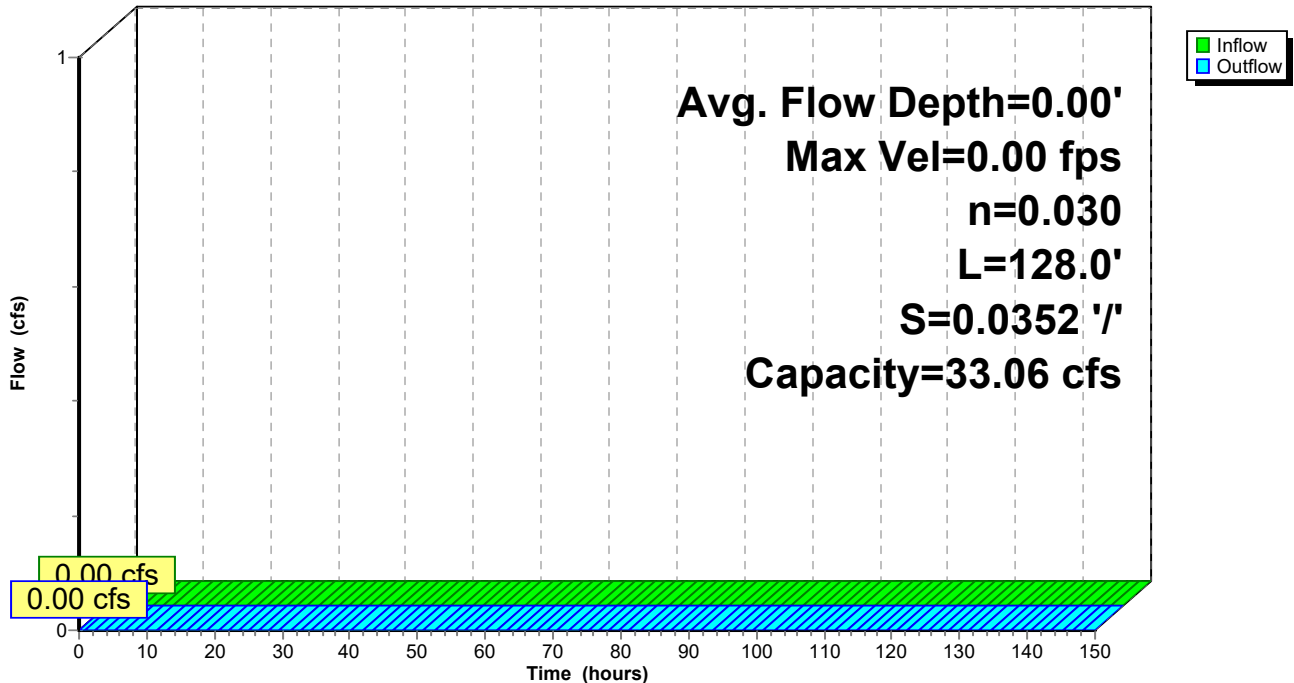
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 33.06 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'
 Length= 128.0' Slope= 0.0352 '/'
 Inlet Invert= 330.00', Outlet Invert= 325.50'



Reach 5R: Overflow Path

Hydrograph



Summary for Reach 6R: Plunge pool to stream

[62] Hint: Exceeded Reach 28R OUTLET depth by 0.70' @ 0.00 hrs

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

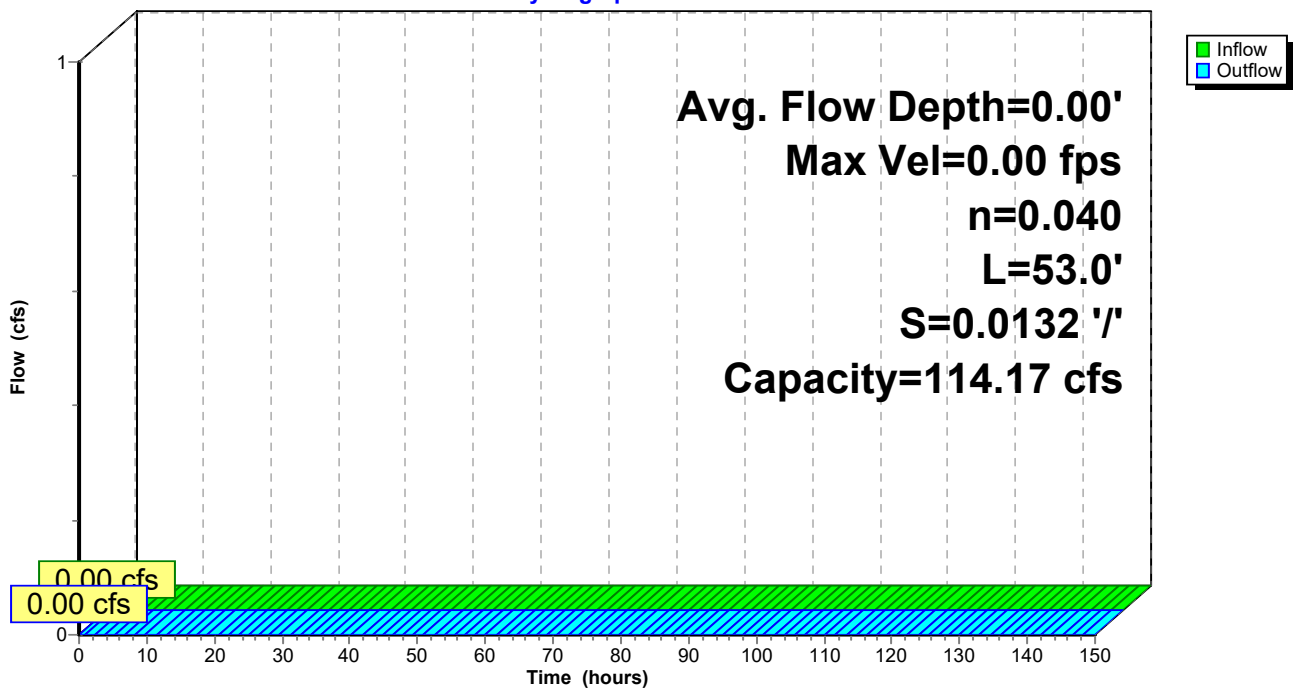
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 28.0 sf, Capacity= 114.17 cfs

28.00' x 1.00' deep channel, n= 0.040
 Length= 53.0' Slope= 0.0132 '/'
 Inlet Invert= 326.70', Outlet Invert= 326.00'



Reach 6R: Plunge pool to stream

Hydrograph



Summary for Reach 16R: reach within Patrick Brook to outlet

[62] Hint: Exceeded Reach 22R OUTLET depth by 0.92' @ 12.56 hrs

Inflow Area =	49.178 ac, 40.95% Impervious, Inflow Depth = 1.02"	for 1-Year event
Inflow =	9.96 cfs @ 12.52 hrs, Volume=	4.193 af
Outflow =	9.86 cfs @ 12.58 hrs, Volume=	4.193 af, Atten= 1%, Lag= 3.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 1.67 fps, Min. Travel Time= 4.0 min
 Avg. Velocity = 0.40 fps, Avg. Travel Time= 16.7 min

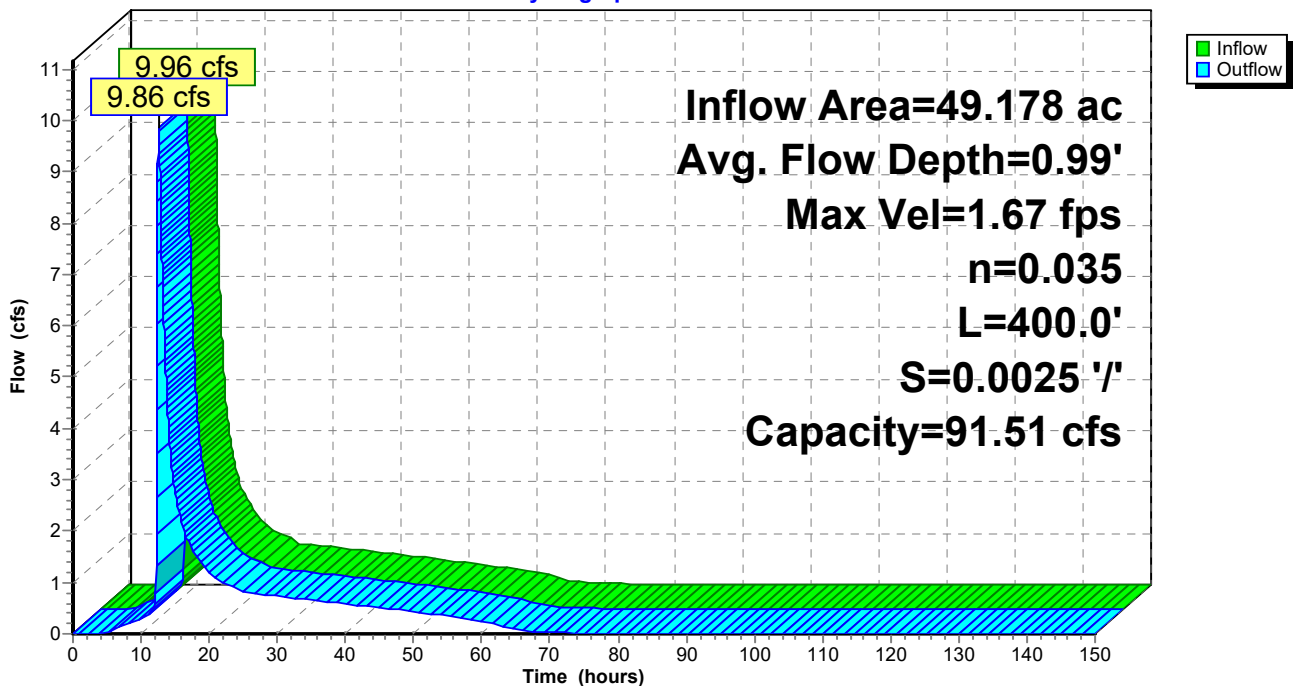
Peak Storage= 2,355 cf @ 12.58 hrs
 Average Depth at Peak Storage= 0.99'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 91.51 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 400.0' Slope= 0.0025 '/'
 Inlet Invert= 324.00', Outlet Invert= 323.00'



Reach 16R: reach within Patrick Brook to outlet

Hydrograph



Summary for Reach 22R: reach within Patrick Brook

[62] Hint: Exceeded Reach 35R OUTLET depth by 0.12' @ 13.46 hrs

Inflow Area = 5.454 ac, 45.68% Impervious, Inflow Depth > 0.94" for 1-Year event
 Inflow = 0.37 cfs @ 13.38 hrs, Volume= 0.425 af
 Outflow = 0.37 cfs @ 13.47 hrs, Volume= 0.425 af, Atten= 0%, Lag= 5.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.64 fps, Min. Travel Time= 7.3 min
 Avg. Velocity = 0.29 fps, Avg. Travel Time= 16.2 min

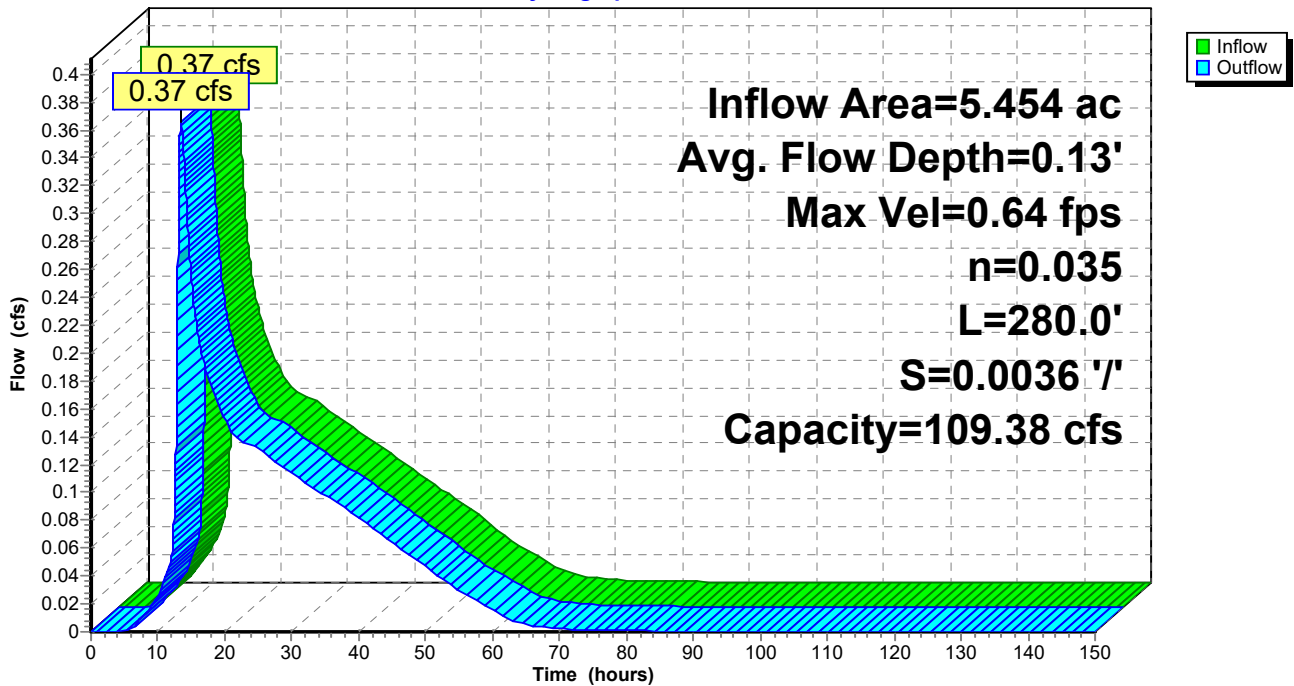
Peak Storage= 161 cf @ 13.47 hrs
 Average Depth at Peak Storage= 0.13'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 109.38 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 280.0' Slope= 0.0036 '/'
 Inlet Invert= 325.00', Outlet Invert= 324.00'



Reach 22R: reach within Patrick Brook

Hydrograph



Summary for Reach 25R: reach within Patrick Brook

- [61] Hint: Exceeded Reach 26R outlet invert by 0.11' @ 13.36 hrs
- [62] Hint: Exceeded Reach 41R OUTLET depth by 0.10' @ 13.36 hrs
- [62] Hint: Exceeded Reach 43R OUTLET depth by 0.09' @ 13.38 hrs

Inflow Area = 4.353 ac, 50.77% Impervious, Inflow Depth > 0.96" for 1-Year event
 Inflow = 0.34 cfs @ 13.31 hrs, Volume= 0.347 af
 Outflow = 0.34 cfs @ 13.37 hrs, Volume= 0.347 af, Atten= 0%, Lag= 3.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.76 fps, Min. Travel Time= 4.8 min
 Avg. Velocity = 0.37 fps, Avg. Travel Time= 9.9 min

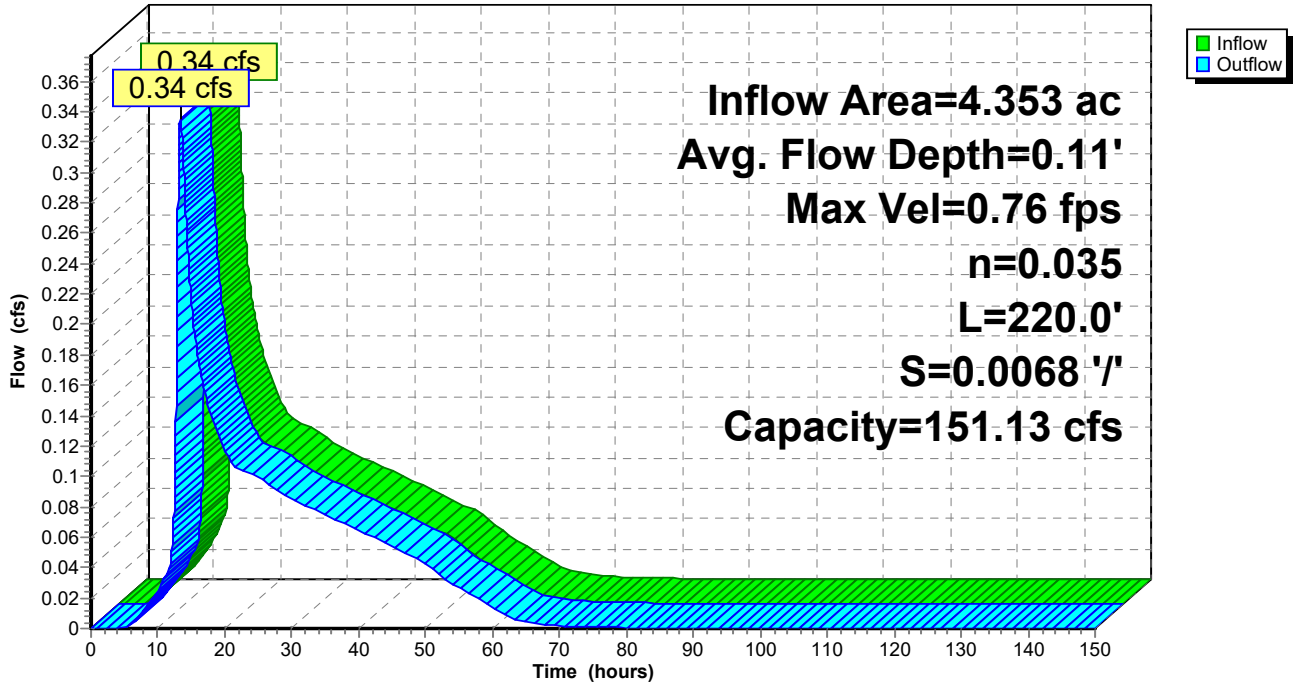
Peak Storage= 97 cf @ 13.37 hrs
 Average Depth at Peak Storage= 0.11'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 151.13 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 220.0' Slope= 0.0068 '/'
 Inlet Invert= 328.00', Outlet Invert= 326.50'



Reach 25R: reach within Patrick Brook

Hydrograph



Summary for Reach 26R: reach within Patrick Brook

[62] Hint: Exceeded Reach 45R OUTLET depth by 0.12' @ 13.32 hrs

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth > 1.09" for 1-Year event
 Inflow = 0.30 cfs @ 13.08 hrs, Volume= 0.261 af
 Outflow = 0.29 cfs @ 13.30 hrs, Volume= 0.261 af, Atten= 3%, Lag= 13.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.50 fps, Min. Travel Time= 15.1 min
 Avg. Velocity = 0.22 fps, Avg. Travel Time= 34.8 min

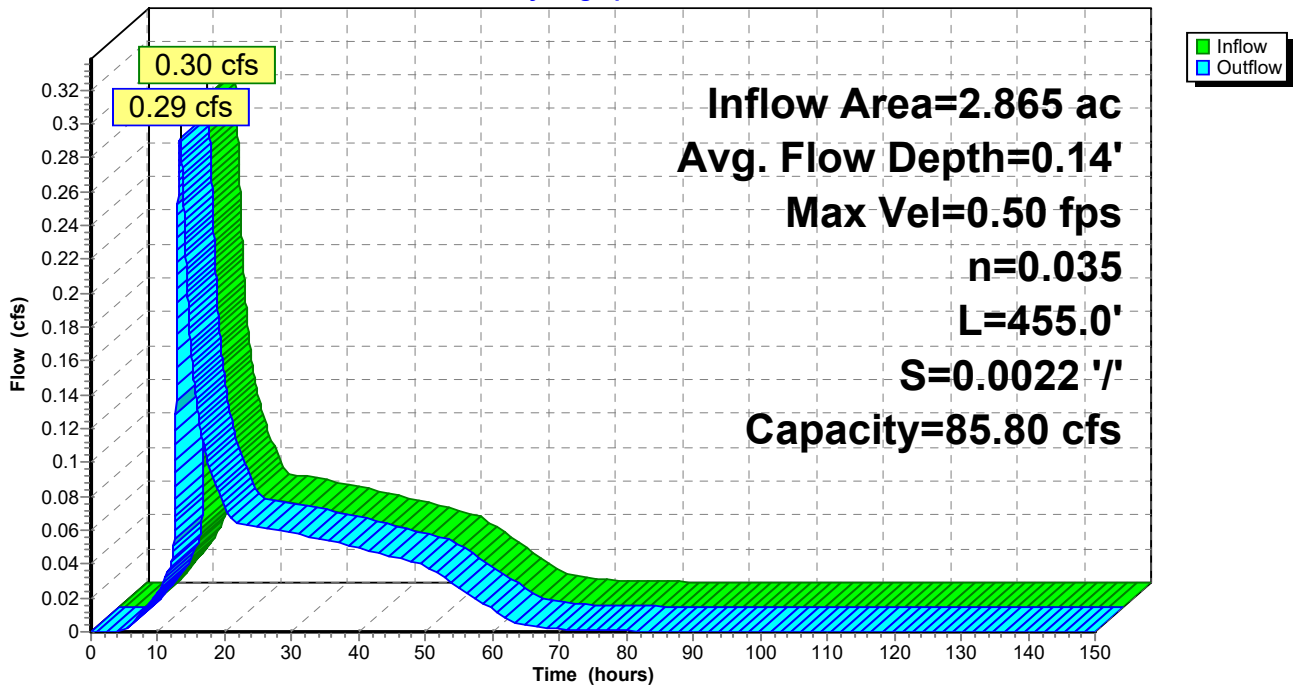
Peak Storage= 264 cf @ 13.30 hrs
 Average Depth at Peak Storage= 0.14'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 85.80 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 455.0' Slope= 0.0022 '/'
 Inlet Invert= 329.00', Outlet Invert= 328.00'



Reach 26R: reach within Patrick Brook

Hydrograph



Summary for Reach 28R: emergency spillway

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

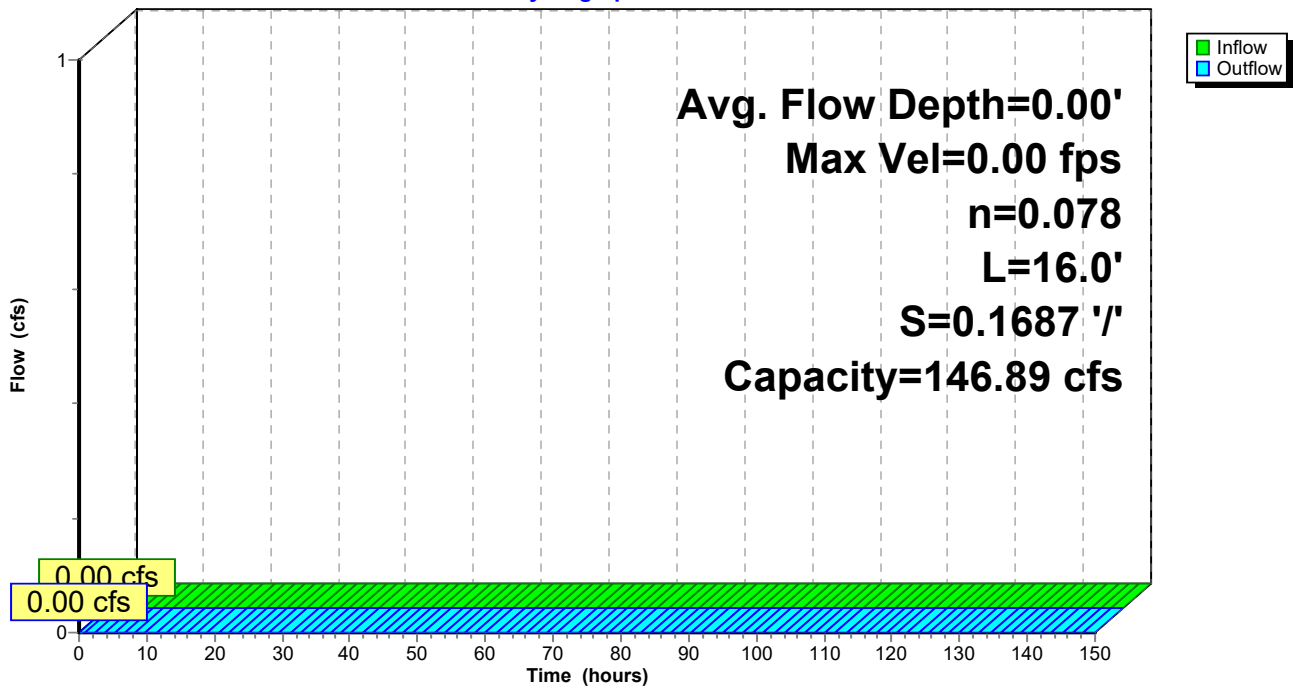
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 146.89 cfs

20.00' x 1.00' deep channel, n= 0.078 Riprap, 12-inch
Length= 16.0' Slope= 0.1687 '/'
Inlet Invert= 328.70', Outlet Invert= 326.00'



Reach 28R: emergency spillway

Hydrograph



Summary for Reach 35R: Channel from Level Spreader to Brook

Inflow Area = 1.101 ac, 25.57% Impervious, Inflow Depth > 0.86" for 1-Year event
 Inflow = 0.03 cfs @ 16.11 hrs, Volume= 0.078 af
 Outflow = 0.03 cfs @ 16.69 hrs, Volume= 0.078 af, Atten= 0%, Lag= 34.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.05 fps, Min. Travel Time= 42.6 min
 Avg. Velocity = 0.04 fps, Avg. Travel Time= 50.6 min

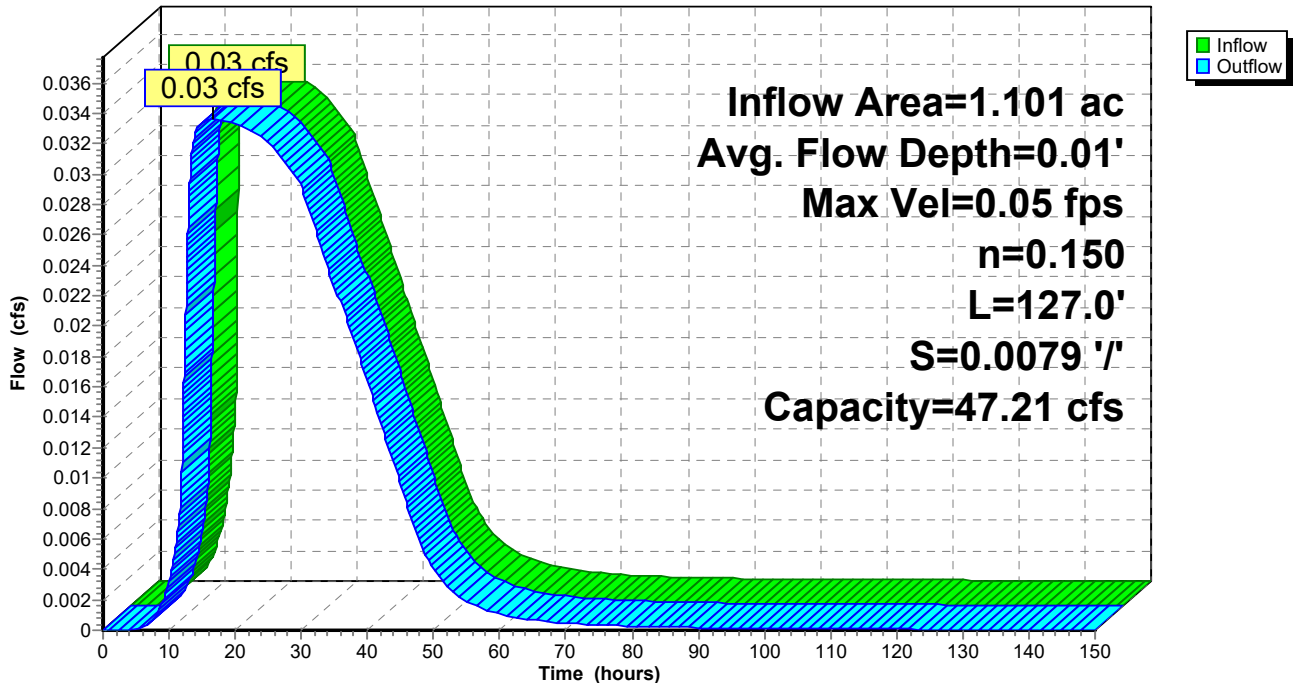
Peak Storage= 86 cf @ 16.69 hrs
 Average Depth at Peak Storage= 0.01'
 Bank-Full Depth= 1.00' Flow Area= 55.0 sf, Capacity= 47.21 cfs

55.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 127.0' Slope= 0.0079 '/'
 Inlet Invert= 326.00', Outlet Invert= 325.00'



Reach 35R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 41R: Channel from Level Spreader to Brook

[80] Warning: Exceeded Pond 5P by 1.00' @ 0.00 hrs (0.05 cfs 0.044 af)

Inflow Area = 1.237 ac, 49.45% Impervious, Inflow Depth = 0.66" for 1-Year event
 Inflow = 0.03 cfs @ 18.37 hrs, Volume= 0.068 af
 Outflow = 0.03 cfs @ 18.69 hrs, Volume= 0.068 af, Atten= 0%, Lag= 19.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.05 fps, Min. Travel Time= 19.2 min
 Avg. Velocity = 0.05 fps, Avg. Travel Time= 19.2 min

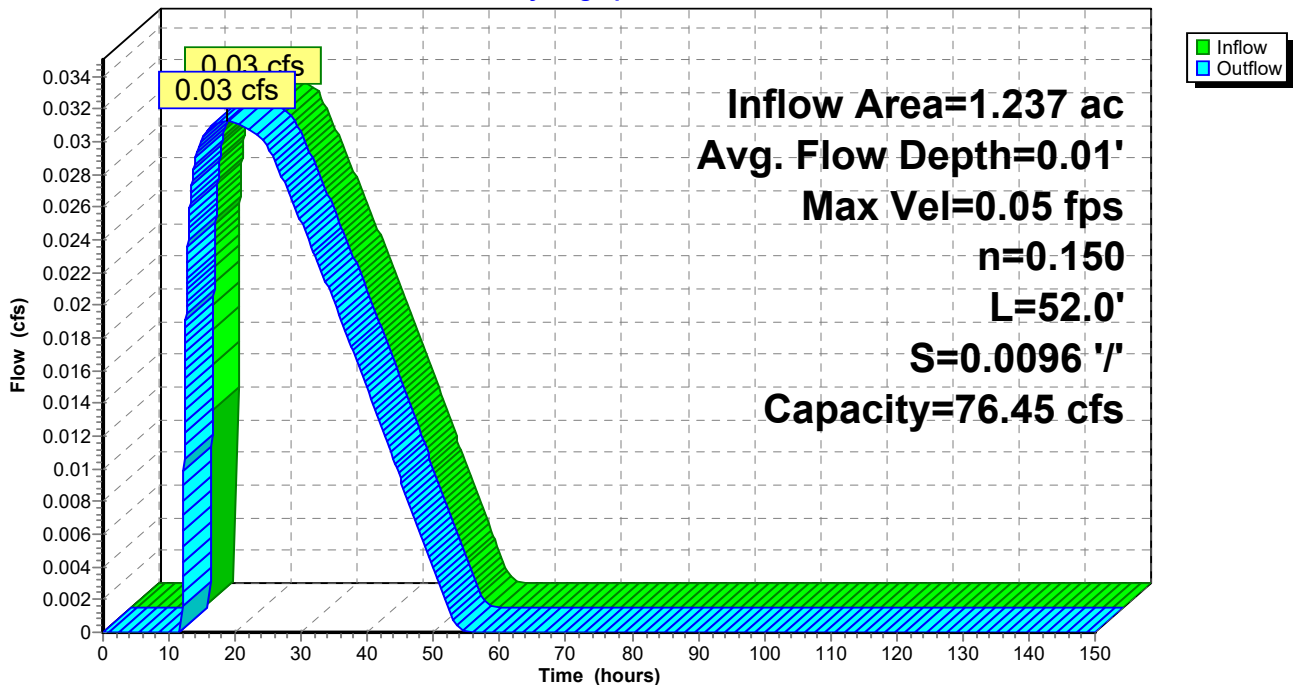
Peak Storage= 36 cf @ 18.69 hrs
 Average Depth at Peak Storage= 0.01'
 Bank-Full Depth= 1.00' Flow Area= 80.0 sf, Capacity= 76.45 cfs

80.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 52.0' Slope= 0.0096 '/
 Inlet Invert= 328.50', Outlet Invert= 328.00'



Reach 41R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 43R: Channel from Level Spreader to Brook

Inflow Area = 0.251 ac, 36.31% Impervious, Inflow Depth > 0.85" for 1-Year event
 Inflow = 0.02 cfs @ 13.10 hrs, Volume= 0.018 af
 Outflow = 0.02 cfs @ 13.24 hrs, Volume= 0.018 af, Atten= 0%, Lag= 8.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.07 fps, Min. Travel Time= 10.5 min
 Avg. Velocity = 0.05 fps, Avg. Travel Time= 15.0 min

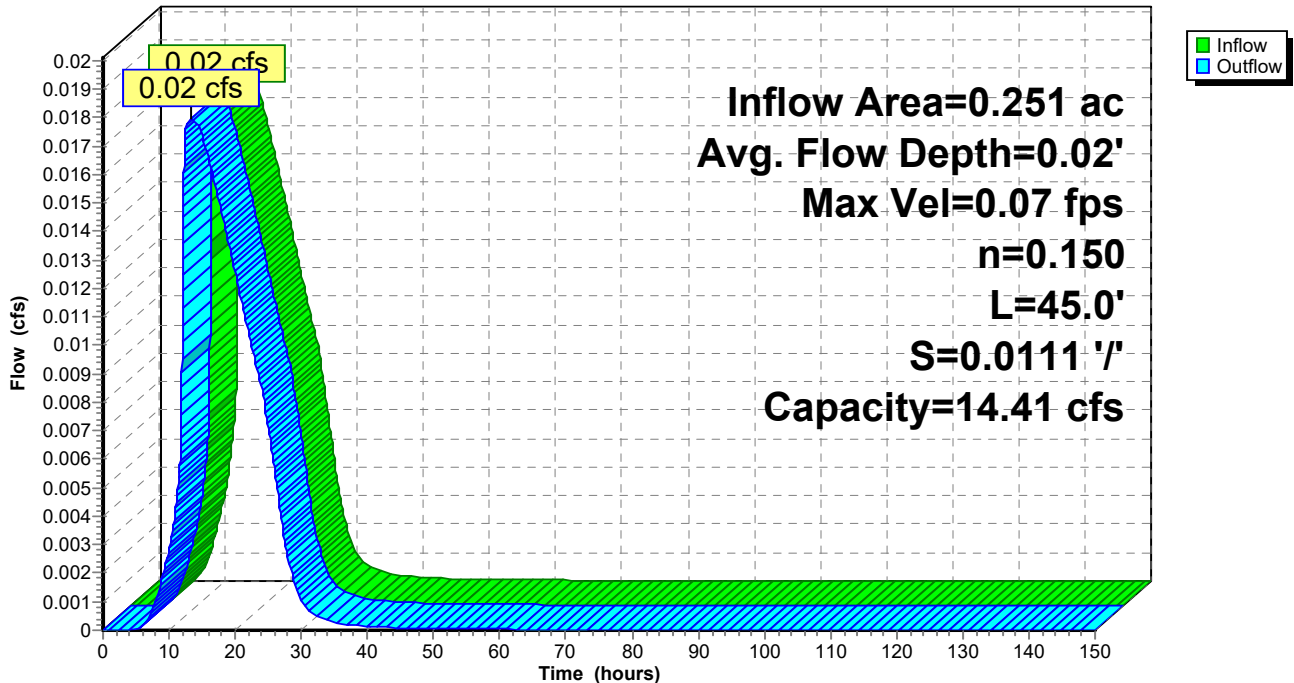
Peak Storage= 11 cf @ 13.24 hrs
 Average Depth at Peak Storage= 0.02'
 Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 14.41 cfs

15.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 45.0' Slope= 0.0111 '/
 Inlet Invert= 328.50', Outlet Invert= 328.00'



Reach 43R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 45R: Channel from Level Spreader to Brook

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth = 1.09" for 1-Year event
 Inflow = 0.33 cfs @ 12.73 hrs, Volume= 0.261 af
 Outflow = 0.30 cfs @ 13.08 hrs, Volume= 0.261 af, Atten= 8%, Lag= 21.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.08 fps, Min. Travel Time= 18.9 min
 Avg. Velocity = 0.05 fps, Avg. Travel Time= 27.9 min

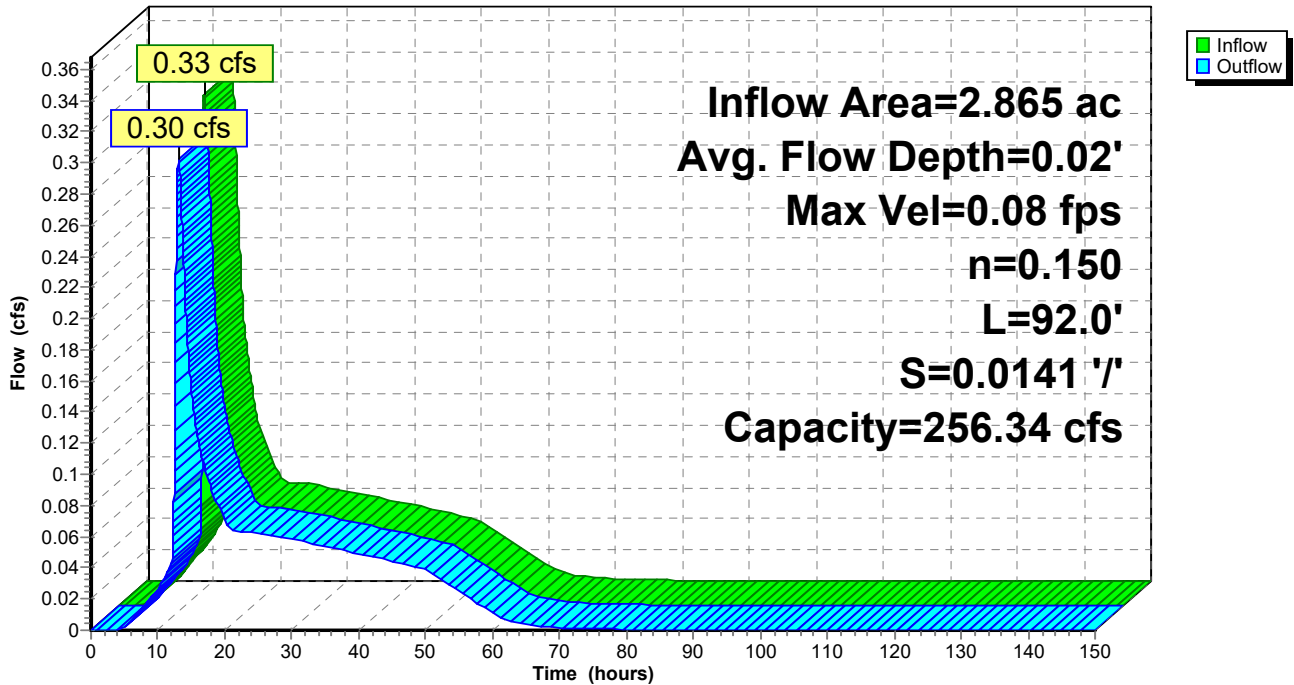
Peak Storage= 343 cf @ 13.08 hrs
 Average Depth at Peak Storage= 0.02'
 Bank-Full Depth= 1.00' Flow Area= 219.0 sf, Capacity= 256.34 cfs

219.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 92.0' Slope= 0.0141 '/'
 Inlet Invert= 330.30', Outlet Invert= 329.00'



Reach 45R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 50R: reach within Riggs Brook to outlet

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

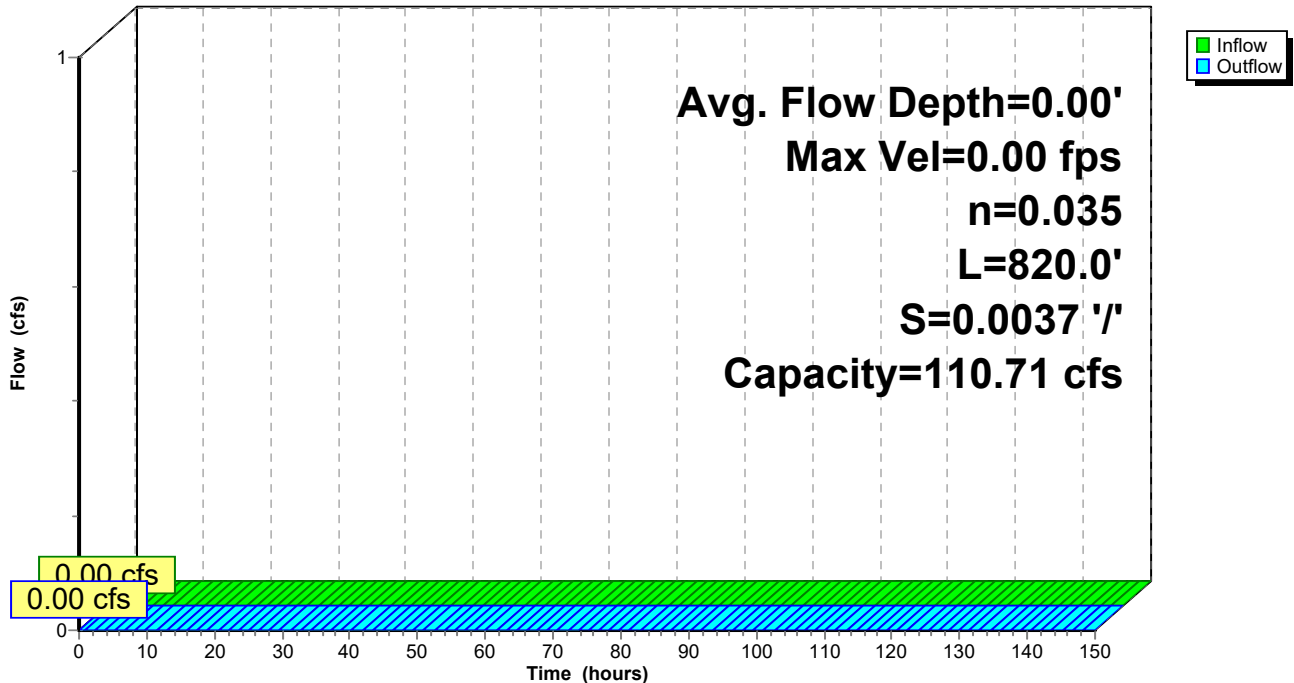
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 110.71 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 16.00'
Length= 820.0' Slope= 0.0037 '/'
Inlet Invert= 326.00', Outlet Invert= 323.00'



Reach 50R: reach within Riggs Brook to outlet

Hydrograph



Summary for Pond 3P: GW3

Inflow Area = 0.251 ac, 36.31% Impervious, Inflow Depth = 0.85" for 1-Year event
 Inflow = 0.31 cfs @ 11.99 hrs, Volume= 0.018 af
 Outflow = 0.02 cfs @ 13.10 hrs, Volume= 0.018 af, Atten= 94%, Lag= 66.4 min
 Primary = 0.02 cfs @ 13.10 hrs, Volume= 0.018 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 328.50' Surf.Area= 1,878 sf Storage= 1,878 cf
 Peak Elev= 329.01' @ 13.10 hrs Surf.Area= 1,886 sf Storage= 2,272 cf (394 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= 308.7 min (1,108.3 - 799.6)

Volume	Invert	Avail.Storage	Storage Description	
#1	326.00'	4,522 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
326.00	1,878	0.0	0	0
329.00	1,878	40.0	2,254	2,254
330.00	2,658	100.0	2,268	4,522

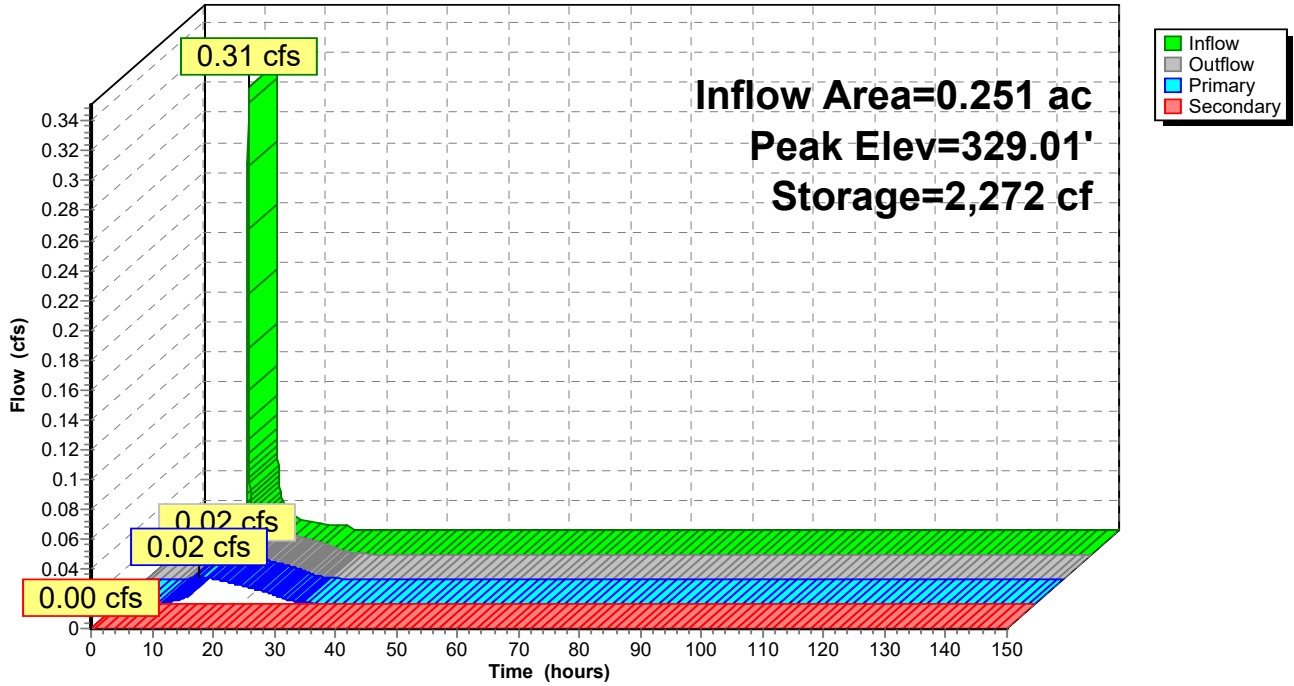
Device	Routing	Invert	Outlet Devices
#1	Primary	328.50'	18.0" Round Culvert L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.50' / 328.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	328.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	329.50'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	329.50'	10.0' long x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.02 cfs @ 13.10 hrs HW=329.01' TW=328.52' (Dynamic Tailwater)
 ↑1=Culvert (Passes 0.02 cfs of 0.71 cfs potential flow)
 ↑2=Orifice/Grate (Orifice Controls 0.02 cfs @ 3.29 fps)
 ↑3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=328.50' TW=328.50' (Dynamic Tailwater)
 ↑4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: GW3

Hydrograph



Summary for Pond 4P: GW 4

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth = 1.10" for 1-Year event
 Inflow = 4.29 cfs @ 12.01 hrs, Volume= 0.261 af
 Outflow = 0.33 cfs @ 12.73 hrs, Volume= 0.261 af, Atten= 92%, Lag= 43.0 min
 Primary = 0.33 cfs @ 12.73 hrs, Volume= 0.261 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 330.80' Surf.Area= 5,719 sf Storage= 3,431 cf
 Peak Elev= 332.07' @ 12.73 hrs Surf.Area= 8,176 sf Storage= 9,941 cf (6,509 cf above start)

Plug-Flow detention time= 1,385.4 min calculated for 0.182 af (70% of inflow)
 Center-of-Mass det. time= 894.1 min (1,682.1 - 787.9)

Volume	Invert	Avail.Storage	Storage Description	
#1	329.30'	18,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
329.30	5,719	0.0	0	0
331.30	5,719	40.0	4,575	4,575
332.00	8,071	100.0	4,826	9,402
333.00	9,652	100.0	8,862	18,263

Device	Routing	Invert	Outlet Devices
#1	Primary	330.80'	18.0" Round Culvert L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 330.80' / 330.40' S= 0.0235 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	330.80'	1.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	332.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	332.50'	194.0' 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=0.33 cfs @ 12.73 hrs HW=332.07' TW=330.31' (Dynamic Tailwater)

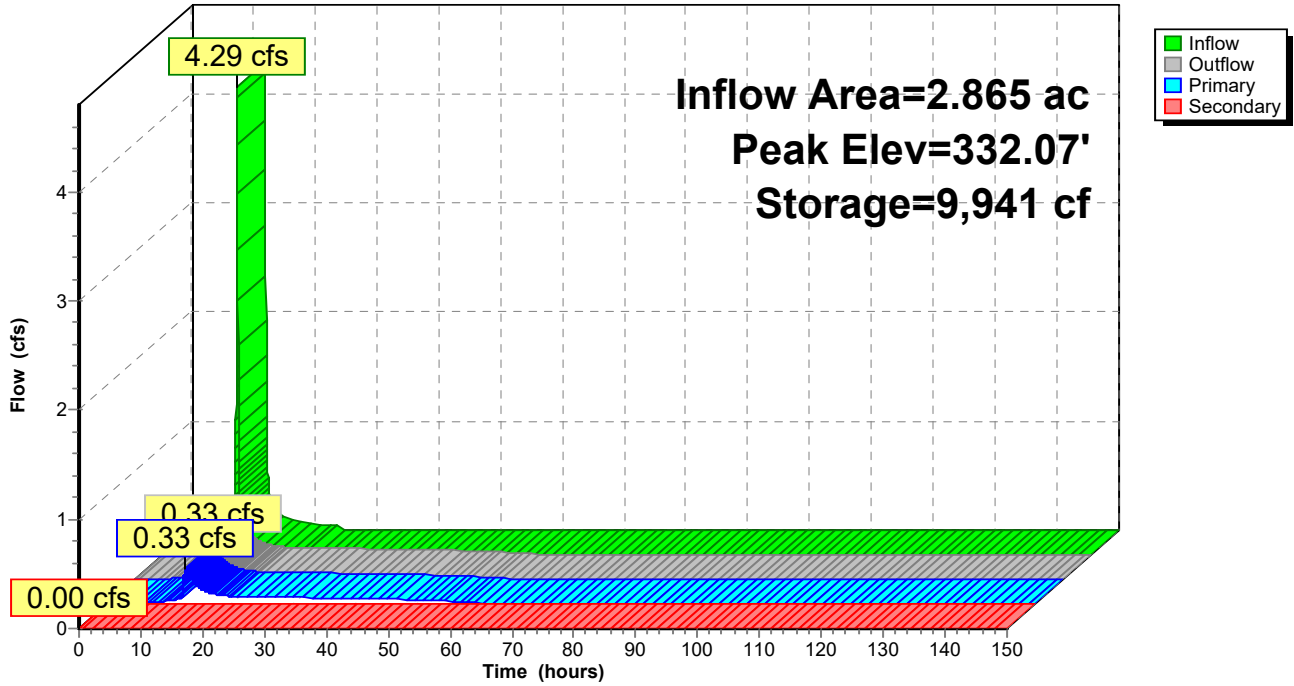
- ↑ **1=Culvert** (Passes 0.33 cfs of 4.81 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.06 cfs @ 5.28 fps)
- ↑ **3=Orifice/Grate** (Weir Controls 0.26 cfs @ 0.84 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=330.80' TW=330.30' (Dynamic Tailwater)

- ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: GW 4

Hydrograph



Summary for Pond 5P: GW 2

Inflow Area = 1.237 ac, 49.45% Impervious, Inflow Depth = 1.07" for 1-Year event
 Inflow = 1.80 cfs @ 12.02 hrs, Volume= 0.110 af
 Outflow = 0.03 cfs @ 18.37 hrs, Volume= 0.068 af, Atten= 98%, Lag= 381.2 min
 Primary = 0.03 cfs @ 18.37 hrs, Volume= 0.068 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 327.50' Surf.Area= 1,930 sf Storage= 1,930 cf
 Peak Elev= 328.88' @ 18.37 hrs Surf.Area= 5,469 sf Storage= 5,564 cf (3,634 cf above start)

Plug-Flow detention time= 1,696.3 min calculated for 0.023 af (21% of inflow)
 Center-of-Mass det. time= 823.6 min (1,614.6 - 791.0)

Volume	Invert	Avail.Storage	Storage Description	
#1	325.00'	14,236 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.00	1,930	0.0	0	0
328.00	1,930	40.0	2,316	2,316
330.00	9,990	100.0	11,920	14,236

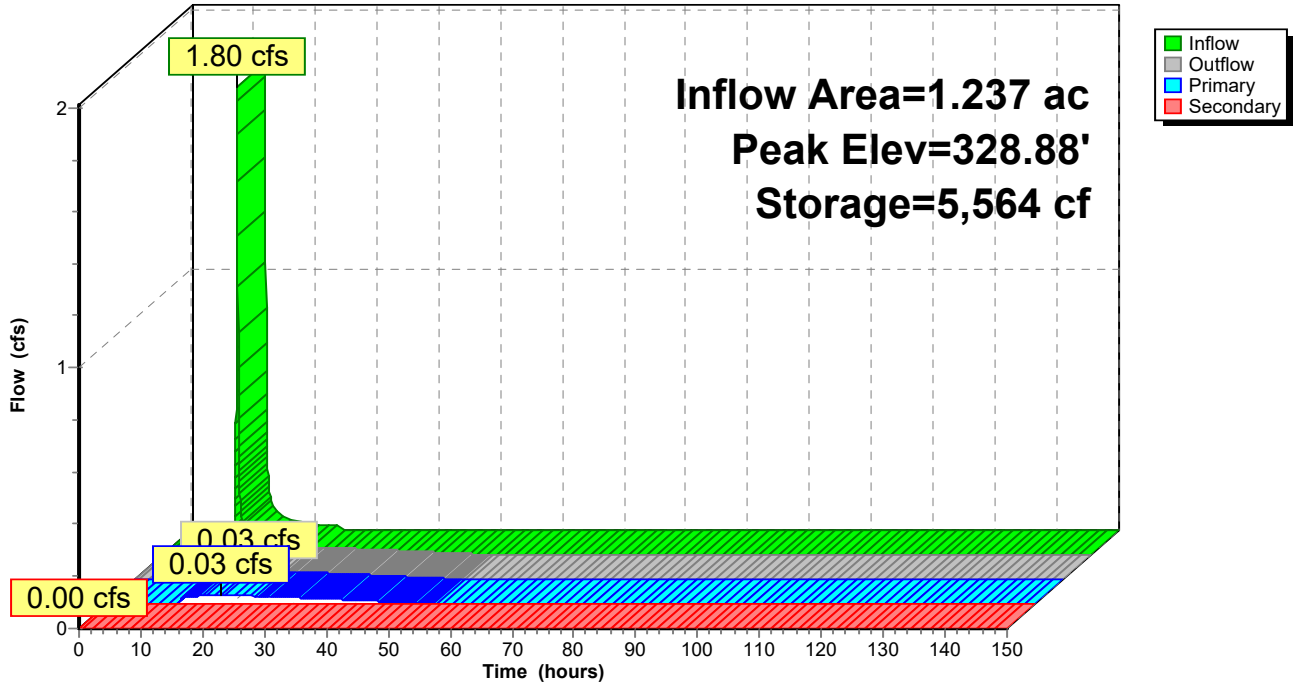
Device	Routing	Invert	Outlet Devices
#1	Primary	327.50'	18.0" Round Culvert L= 33.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 327.50' / 327.50' S= 0.0000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	327.50'	1.4" Vert. Orifice/Grate C= 0.600
#3	Device 1	329.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	329.50'	82.0' 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=0.03 cfs @ 18.37 hrs HW=328.88' TW=328.51' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 0.03 cfs of 4.34 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 2.93 fps)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=327.50' TW=328.50' (Dynamic Tailwater)
 ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 5P: GW 2

Hydrograph



Summary for Pond 6P: GW 1

Inflow Area = 1.101 ac, 25.57% Impervious, Inflow Depth = 0.86" for 1-Year event
 Inflow = 1.55 cfs @ 11.98 hrs, Volume= 0.079 af
 Outflow = 0.03 cfs @ 16.11 hrs, Volume= 0.078 af, Atten= 98%, Lag= 248.2 min
 Primary = 0.03 cfs @ 16.11 hrs, Volume= 0.078 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 326.80' Surf.Area= 6,549 sf Storage= 6,549 cf
 Peak Elev= 327.43' @ 16.11 hrs Surf.Area= 7,250 sf Storage= 8,746 cf (2,197 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= 834.0 min (1,647.8 - 813.9)

Volume	Invert	Avail.Storage	Storage Description	
#1	324.30'	26,868 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
324.30	6,549	0.0	0	0
327.30	6,549	40.0	7,859	7,859
329.00	15,815	100.0	19,009	26,868

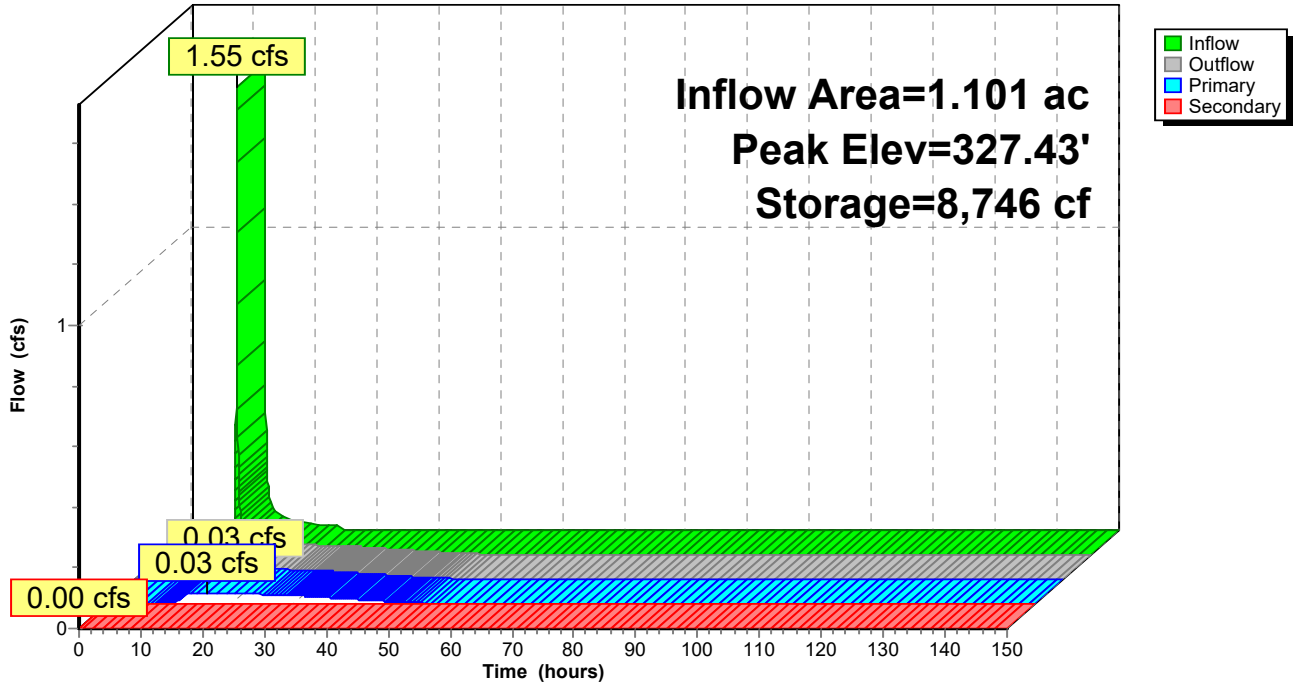
Device	Routing	Invert	Outlet Devices
#1	Primary	326.80'	18.0" Round Culvert L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.80' / 326.00' S= 0.0286 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	326.80'	1.3" Vert. Orifice/Grate C= 0.600
#3	Device 1	327.50'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	327.50'	61.0' 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=0.03 cfs @ 16.11 hrs HW=327.43' TW=326.01' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 0.03 cfs of 1.90 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 3.65 fps)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.80' TW=326.00' (Dynamic Tailwater)
 ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: GW 1

Hydrograph



Summary for Pond 10P: (Rim @ 351.5) (CB #46 to CB #43)

Inflow Area = 4.563 ac, 43.22% Impervious, Inflow Depth = 1.07" for 1-Year event
 Inflow = 7.44 cfs @ 11.99 hrs, Volume= 0.407 af
 Outflow = 7.44 cfs @ 11.99 hrs, Volume= 0.407 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.44 cfs @ 11.99 hrs, Volume= 0.407 af

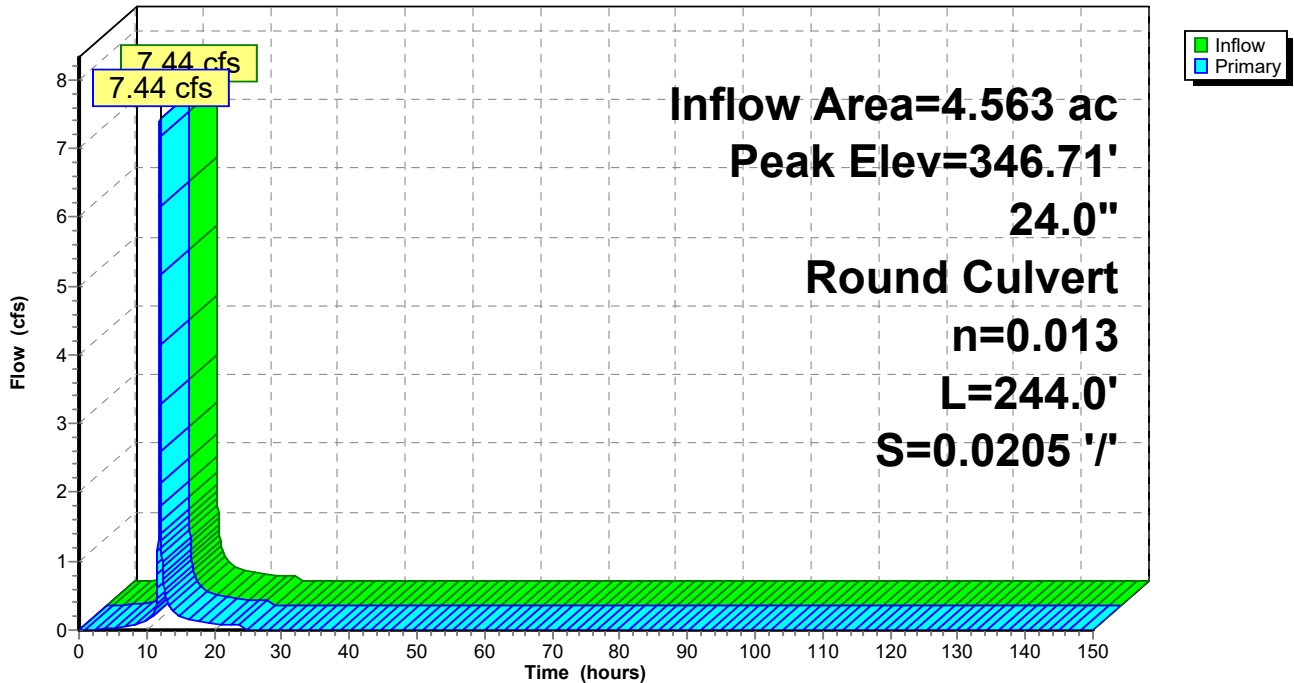
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 346.71' @ 11.99 hrs
 Flood Elev= 351.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.50'	24.0" Round Culvert L= 244.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 345.50' / 340.50' S= 0.0205 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.38 cfs @ 11.99 hrs HW=346.70' TW=341.64' (Dynamic Tailwater)
 ↳ **1=Culvert** (Inlet Controls 7.38 cfs @ 3.74 fps)

Pond 10P: (Rim @ 351.5) (CB #46 to CB #43)

Hydrograph



Summary for Pond 11P: (Rim @ 345.05) (CB #43 to CB #8)

Inflow Area = 13.305 ac, 50.65% Impervious, Inflow Depth = 1.16" for 1-Year event
 Inflow = 19.85 cfs @ 12.02 hrs, Volume= 1.285 af
 Outflow = 19.85 cfs @ 12.02 hrs, Volume= 1.285 af, Atten= 0%, Lag= 0.0 min
 Primary = 19.85 cfs @ 12.02 hrs, Volume= 1.285 af

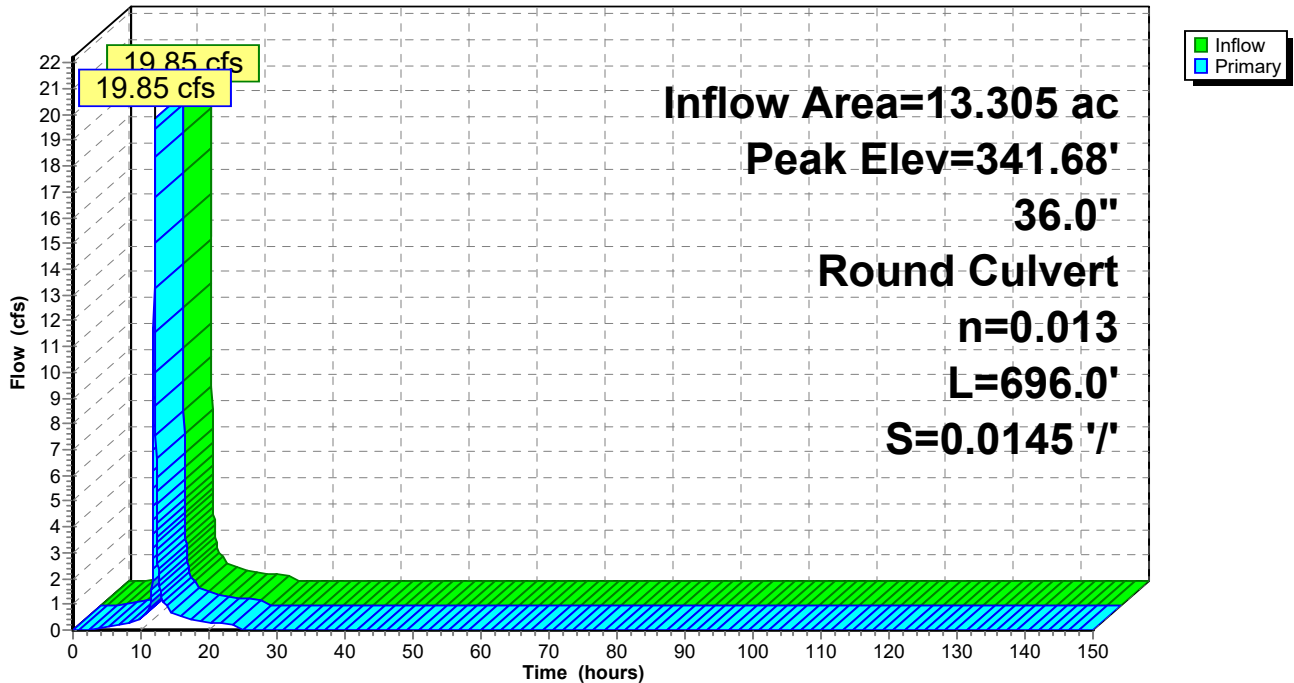
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 341.68' @ 12.02 hrs
 Flood Elev= 345.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	339.90'	36.0" Round Culvert L= 696.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 339.90' / 329.80' S= 0.0145 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=19.82 cfs @ 12.02 hrs HW=341.68' TW=331.76' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 19.82 cfs @ 4.54 fps)

Pond 11P: (Rim @ 345.05) (CB #43 to CB #8)

Hydrograph



Summary for Pond 12P: Detention Pond

Inflow Area = 5.712 ac, 60.00% Impervious, Inflow Depth = 1.27" for 1-Year event
 Inflow = 10.34 cfs @ 12.01 hrs, Volume= 0.606 af
 Outflow = 3.22 cfs @ 12.17 hrs, Volume= 0.604 af, Atten= 69%, Lag= 9.8 min
 Primary = 3.22 cfs @ 12.17 hrs, Volume= 0.604 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 333.96' @ 12.17 hrs Surf.Area= 11,628 sf Storage= 10,544 cf

Plug-Flow detention time= 144.5 min calculated for 0.604 af (100% of inflow)
 Center-of-Mass det. time= 143.9 min (929.0 - 785.1)

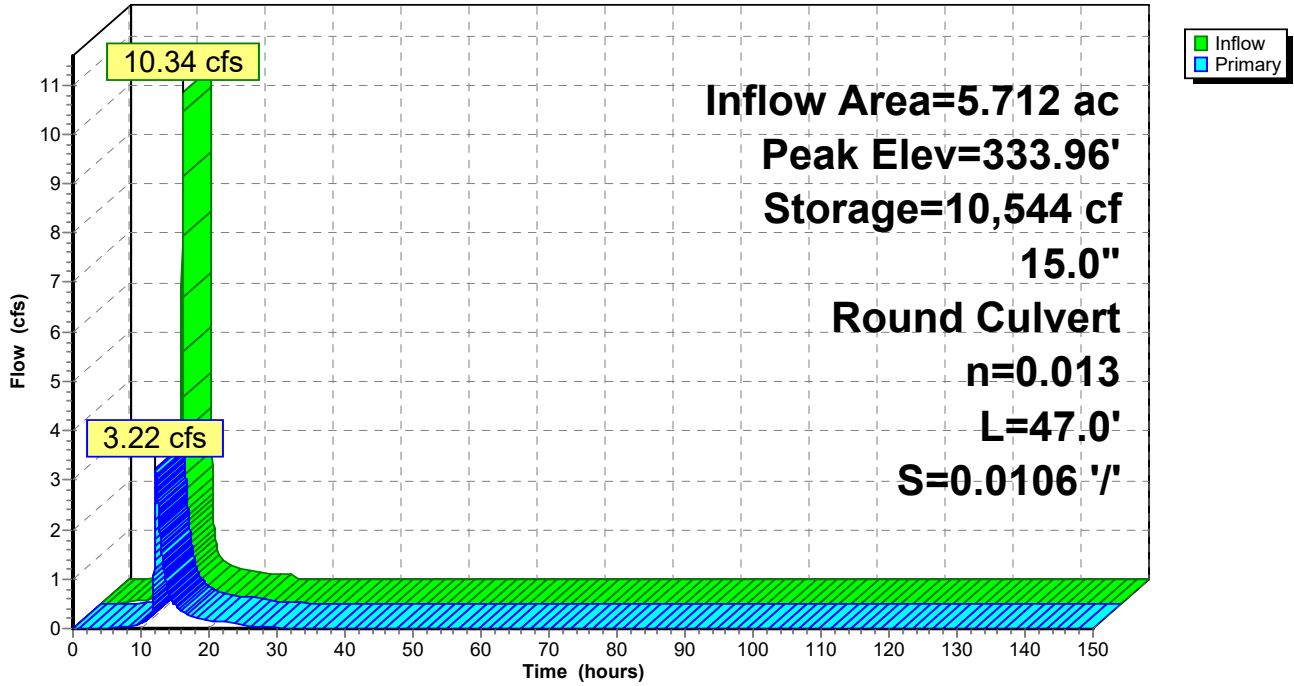
Volume	Invert	Avail.Storage	Storage Description
#1	333.00'	69,744 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
333.00	10,280	0	0
334.00	11,680	10,980	10,980
335.00	13,136	12,408	23,388
336.00	14,649	13,893	37,281
337.00	16,218	15,434	52,714
338.00	17,842	17,030	69,744

Device	Routing	Invert	Outlet Devices
#1	Primary	333.00'	15.0" Round Culvert L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 333.00' / 332.50' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.22 cfs @ 12.17 hrs HW=333.96' TW=332.77' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 3.22 cfs @ 4.39 fps)

Pond 12P: Detention Pond

Hydrograph



Summary for Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8)

Inflow Area = 9.116 ac, 63.70% Impervious, Inflow Depth = 1.31" for 1-Year event
 Inflow = 8.71 cfs @ 12.00 hrs, Volume= 0.998 af
 Outflow = 8.71 cfs @ 12.00 hrs, Volume= 0.998 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.71 cfs @ 12.00 hrs, Volume= 0.998 af

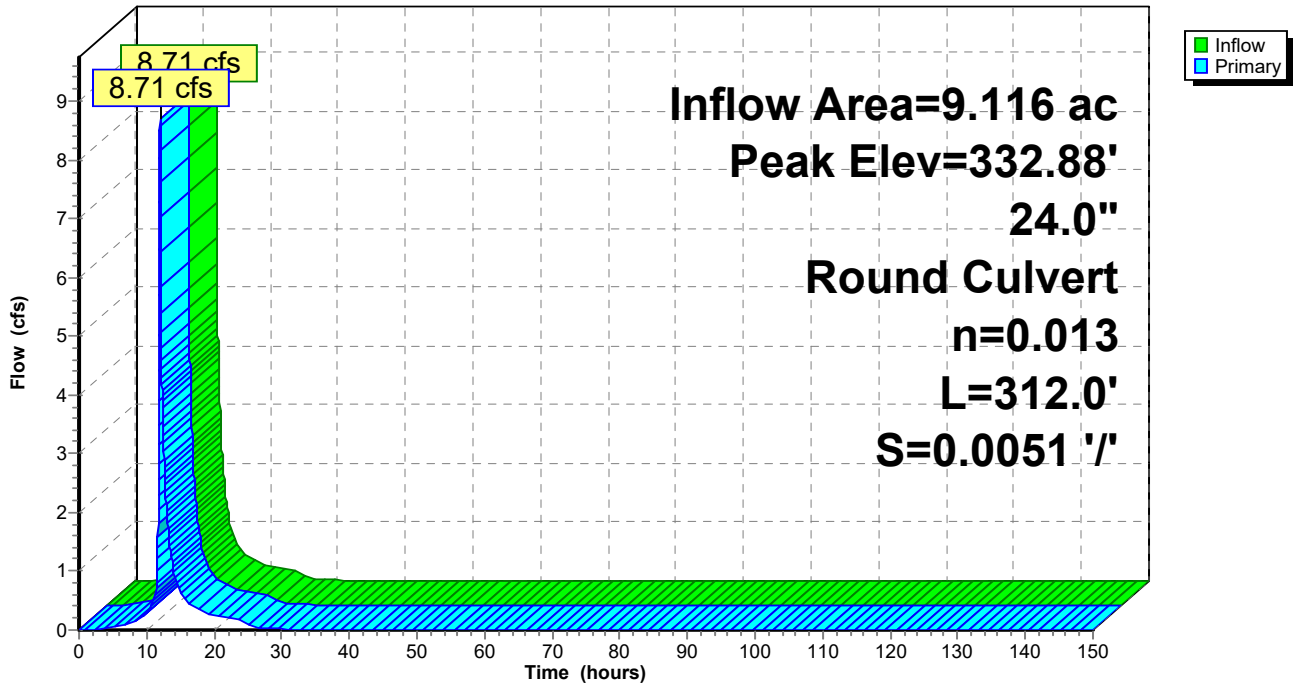
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 332.88' @ 12.01 hrs
 Flood Elev= 338.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	331.13'	24.0" Round Culvert L= 312.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.13' / 329.54' S= 0.0051 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.48 cfs @ 12.00 hrs HW=332.87' TW=331.75' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 8.48 cfs @ 3.91 fps)

Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8)

Hydrograph



Summary for Pond 14P: (Rim @ 337.1) (CB #8 to Main GW)

Inflow Area = 24.714 ac, 55.57% Impervious, Inflow Depth = 1.22" for 1-Year event
 Inflow = 32.16 cfs @ 12.01 hrs, Volume= 2.507 af
 Outflow = 32.16 cfs @ 12.01 hrs, Volume= 2.507 af, Atten= 0%, Lag= 0.0 min
 Primary = 32.16 cfs @ 12.01 hrs, Volume= 2.507 af

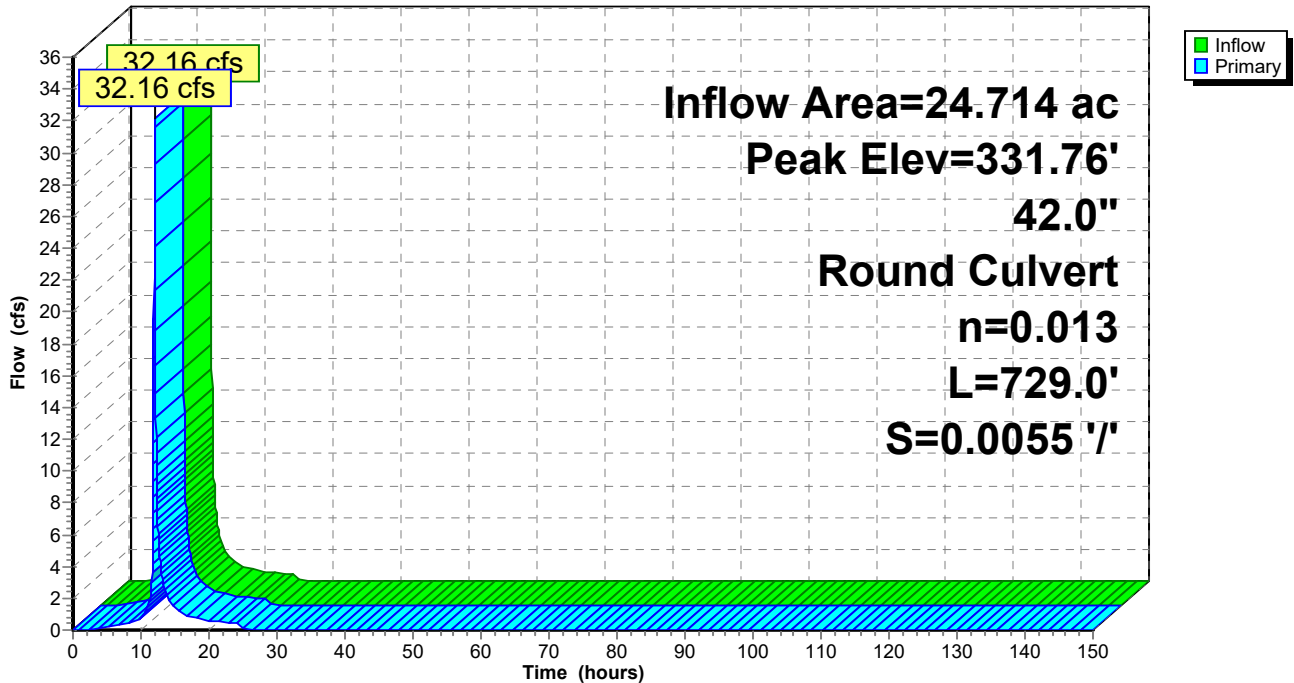
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 331.76' @ 12.01 hrs
 Flood Elev= 337.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	329.52'	42.0" Round Culvert L= 729.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 329.52' / 325.50' S= 0.0055 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=32.04 cfs @ 12.01 hrs HW=331.76' TW=326.50' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 32.04 cfs @ 7.03 fps)

Pond 14P: (Rim @ 337.1) (CB #8 to Main GW)

Hydrograph



Summary for Pond 15P: (Invert @ 328.1) (Yard Drain to CB #1)

Inflow Area = 4.419 ac, 15.87% Impervious, Inflow Depth = 0.74" for 1-Year event
 Inflow = 3.05 cfs @ 12.17 hrs, Volume= 0.273 af
 Outflow = 2.87 cfs @ 12.23 hrs, Volume= 0.272 af, Atten= 6%, Lag= 3.5 min
 Primary = 2.87 cfs @ 12.23 hrs, Volume= 0.272 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 328.81' @ 12.23 hrs Surf.Area= 1,585 sf Storage= 825 cf

Plug-Flow detention time= 15.1 min calculated for 0.272 af (100% of inflow)
 Center-of-Mass det. time= 12.6 min (857.5 - 844.9)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	5,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
328.00	450	0	0
330.50	3,950	5,500	5,500

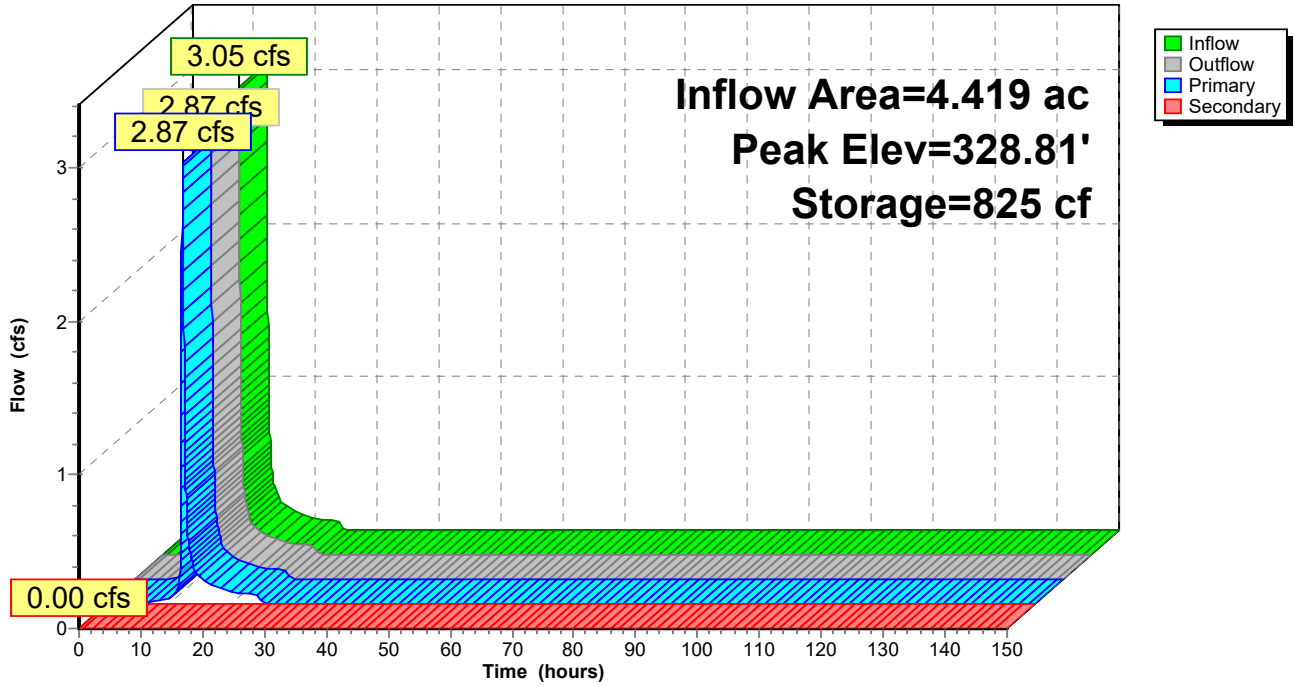
Device	Routing	Invert	Outlet Devices
#1	Primary	328.10'	24.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.10' / 326.80' S= 0.0260 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	330.00'	10.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=2.87 cfs @ 12.23 hrs HW=328.81' TW=327.49' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 2.87 cfs @ 2.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=328.00' TW=330.00' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 15P: (Invert @ 328.1) (Yard Drain to CB #1)

Hydrograph



Summary for Pond 16P: Main Gravel Wetland

[62] Hint: Exceeded Reach 5R OUTLET depth by 2.07' @ 12.52 hrs

[80] Warning: Exceeded Pond CB1 by 1.04' @ 26.82 hrs (7.03 cfs 1.838 af)

Inflow Area = 43.724 ac, 40.36% Impervious, Inflow Depth = 1.03" for 1-Year event
 Inflow = 46.22 cfs @ 12.03 hrs, Volume= 3.770 af
 Outflow = 9.87 cfs @ 12.52 hrs, Volume= 3.767 af, Atten= 79%, Lag= 29.3 min
 Primary = 9.87 cfs @ 12.52 hrs, Volume= 3.767 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 324.50' Surf.Area= 22,146 sf Storage= 31,004 cf
 Peak Elev= 327.57' @ 12.52 hrs Surf.Area= 35,489 sf Storage= 106,179 cf (75,174 cf above start)

Plug-Flow detention time= 985.8 min calculated for 3.056 af (81% of inflow)
 Center-of-Mass det. time= 704.5 min (1,531.4 - 826.9)

Volume	Invert	Avail.Storage	Storage Description	
#1	321.00'	240,062 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
321.00	22,146	0.0	0	0
325.00	22,146	40.0	35,434	35,434
326.00	26,028	100.0	24,087	59,521
327.00	30,037	100.0	28,033	87,553
328.00	39,628	100.0	34,833	122,386
329.00	42,706	100.0	41,167	163,553
330.00	45,964	100.0	44,335	207,888
330.70	45,964	100.0	32,175	240,062

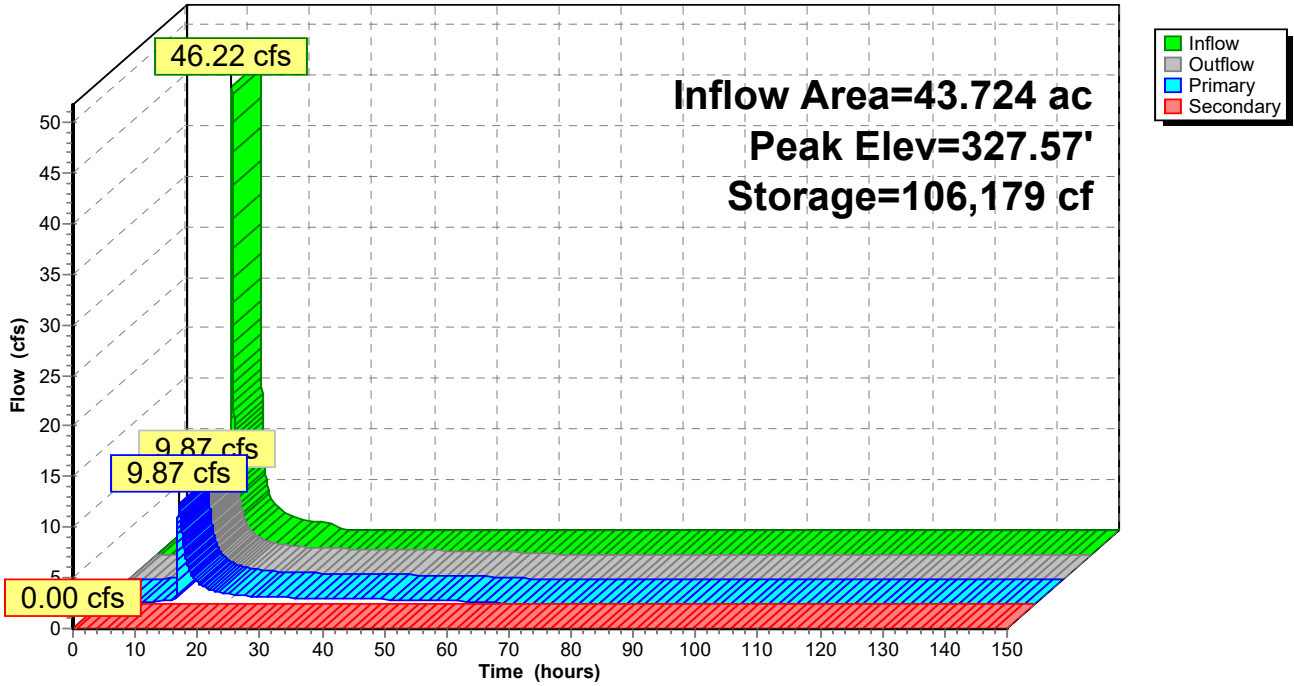
Device	Routing	Invert	Outlet Devices
#1	Primary	324.50'	24.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.50' / 324.10' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	324.50'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	327.20'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	328.70'	20.0' long (Profile 1) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=9.87 cfs @ 12.52 hrs HW=327.57' TW=324.98' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 9.87 cfs of 19.33 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.68 cfs @ 7.75 fps)
 ↑ **3=Orifice/Grate** (Weir Controls 9.19 cfs @ 1.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=324.50' TW=328.70' (Dynamic Tailwater)
 ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 16P: Main Gravel Wetland

Hydrograph



Summary for Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2)

Inflow Area = 9.116 ac, 63.70% Impervious, Inflow Depth = 1.31" for 1-Year event
 Inflow = 8.71 cfs @ 12.00 hrs, Volume= 0.998 af
 Outflow = 8.71 cfs @ 12.00 hrs, Volume= 0.998 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.71 cfs @ 12.00 hrs, Volume= 0.998 af

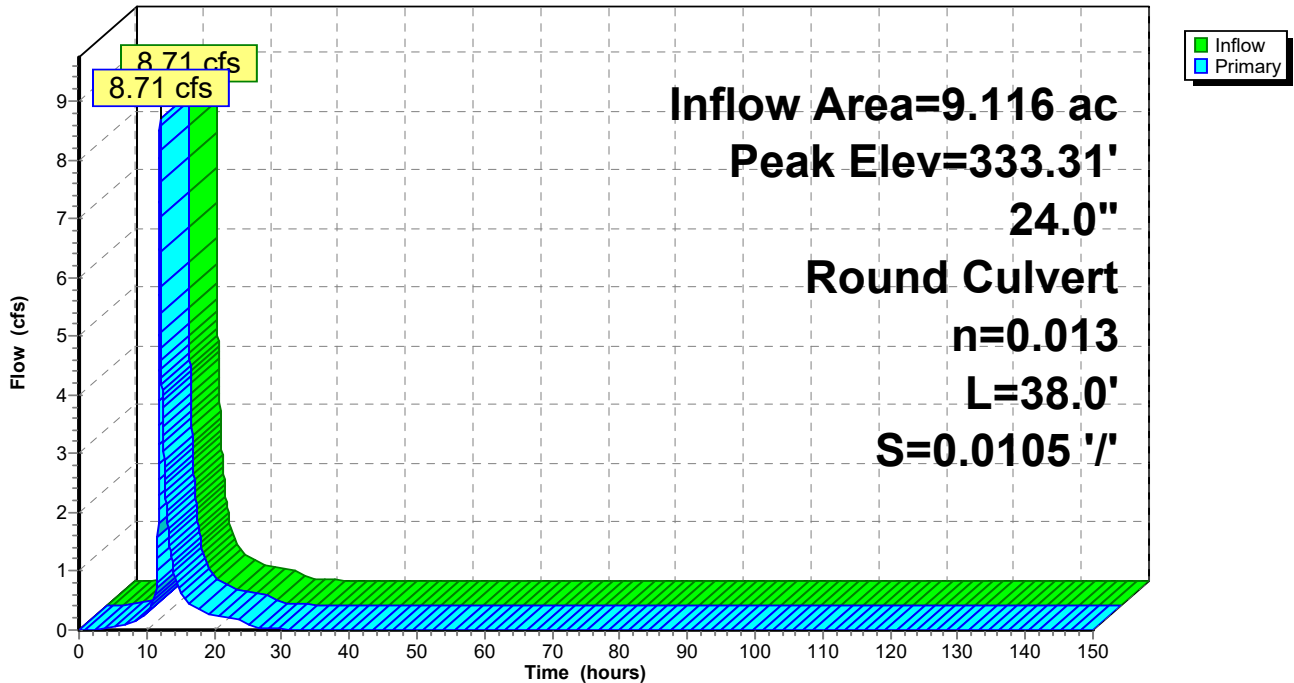
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 333.31' @ 12.02 hrs
 Flood Elev= 338.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	331.55'	24.0" Round Culvert L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.55' / 331.15' S= 0.0105 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.23 cfs @ 12.00 hrs HW=333.29' TW=332.87' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 8.23 cfs @ 3.79 fps)

Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2)

Hydrograph



Summary for Pond 21P: (Rim @ 333.5) (CB#4 to CB#1)

Inflow Area = 5.212 ac, 38.38% Impervious, Inflow Depth = 1.01" for 1-Year event
 Inflow = 6.52 cfs @ 12.06 hrs, Volume= 0.440 af
 Outflow = 6.52 cfs @ 12.06 hrs, Volume= 0.440 af, Atten= 0%, Lag= 0.0 min
 Primary = 6.52 cfs @ 12.06 hrs, Volume= 0.440 af

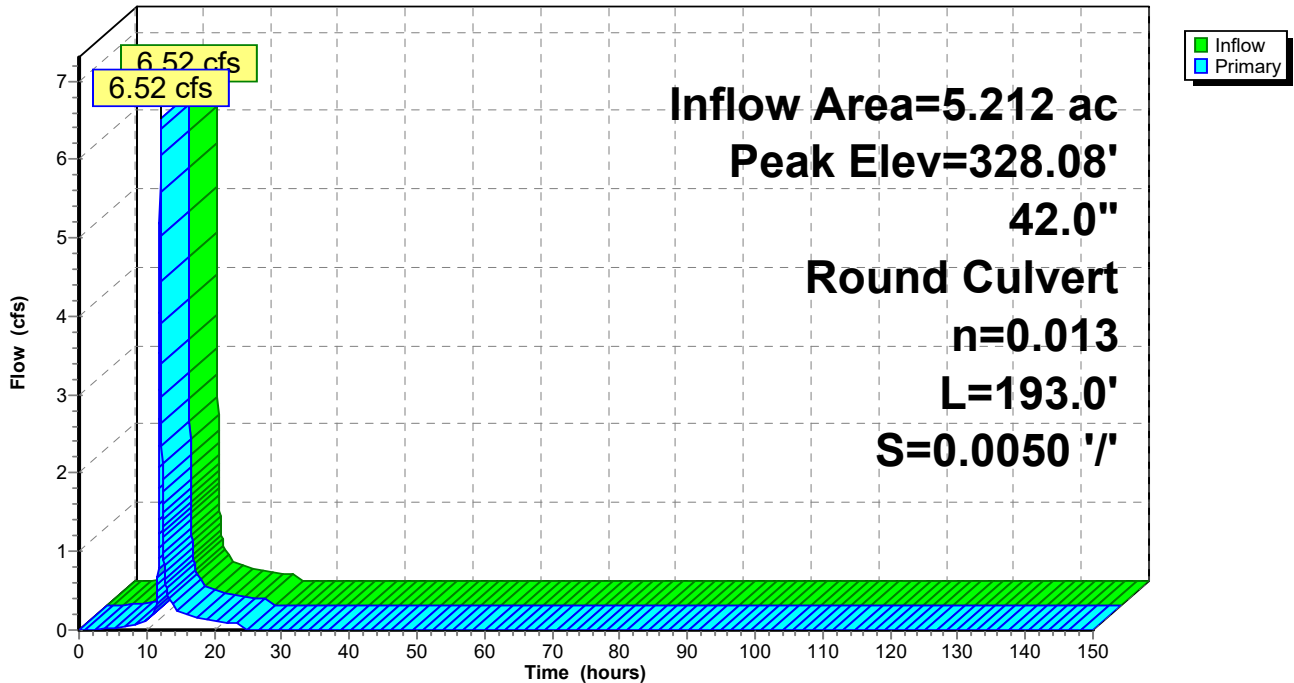
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 328.08' @ 12.08 hrs
 Flood Elev= 333.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	326.98'	42.0" Round Culvert L= 193.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.98' / 326.02' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=6.29 cfs @ 12.06 hrs HW=328.07' TW=327.22' (Dynamic Tailwater)
 ↳ **1=Culvert** (Outlet Controls 6.29 cfs @ 3.68 fps)

Pond 21P: (Rim @ 333.5) (CB#4 to CB#1)

Hydrograph



Summary for Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4)

Inflow Area = 5.212 ac, 38.38% Impervious, Inflow Depth = 1.01" for 1-Year event
 Inflow = 6.52 cfs @ 12.06 hrs, Volume= 0.440 af
 Outflow = 6.52 cfs @ 12.06 hrs, Volume= 0.440 af, Atten= 0%, Lag= 0.0 min
 Primary = 6.52 cfs @ 12.06 hrs, Volume= 0.440 af

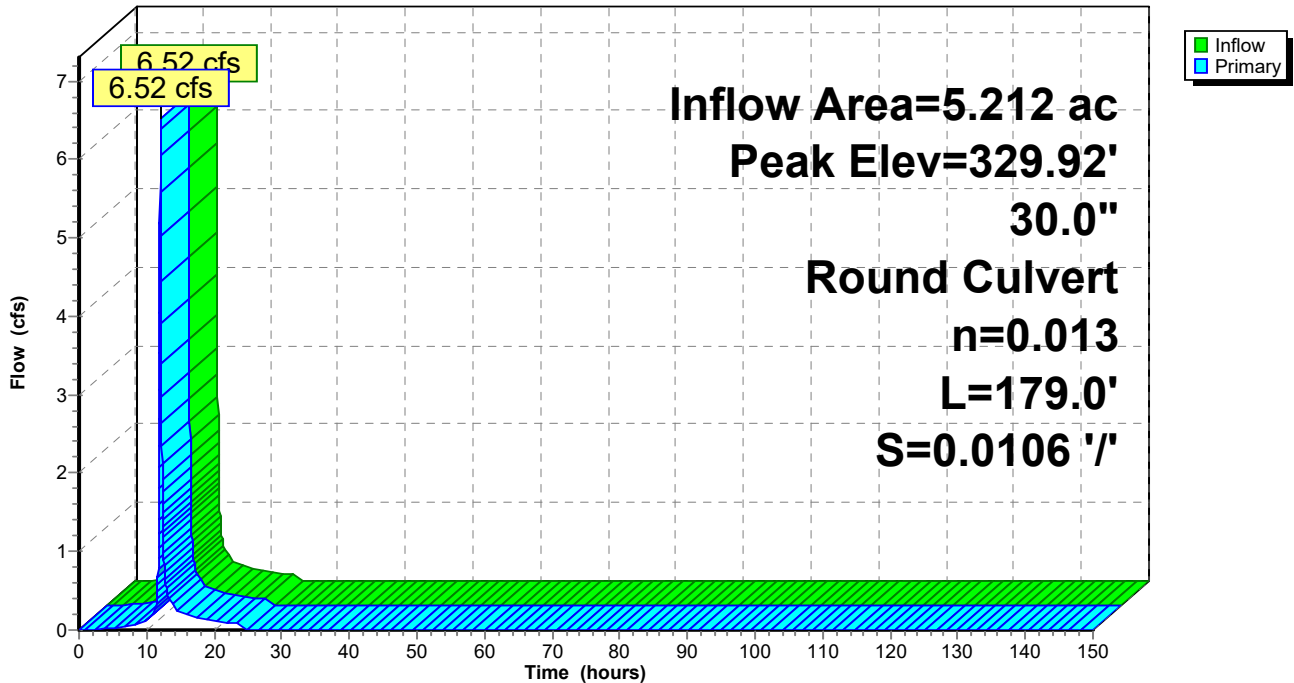
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 329.92' @ 12.06 hrs
 Flood Elev= 333.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	328.90'	30.0" Round Culvert L= 179.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.90' / 327.00' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=6.51 cfs @ 12.06 hrs HW=329.92' TW=328.07' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 6.51 cfs @ 3.44 fps)

Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4)

Hydrograph



Summary for Pond CB1: (Rim @ 331.15) (CB#1 to GW)

[80] Warning: Exceeded Pond 21P by 0.19' @ 24.78 hrs (0.10 cfs 0.003 af)

Inflow Area = 9.631 ac, 28.05% Impervious, Inflow Depth = 0.89" for 1-Year event
 Inflow = 8.25 cfs @ 12.08 hrs, Volume= 0.712 af
 Outflow = 8.25 cfs @ 12.08 hrs, Volume= 0.712 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.25 cfs @ 12.08 hrs, Volume= 0.712 af

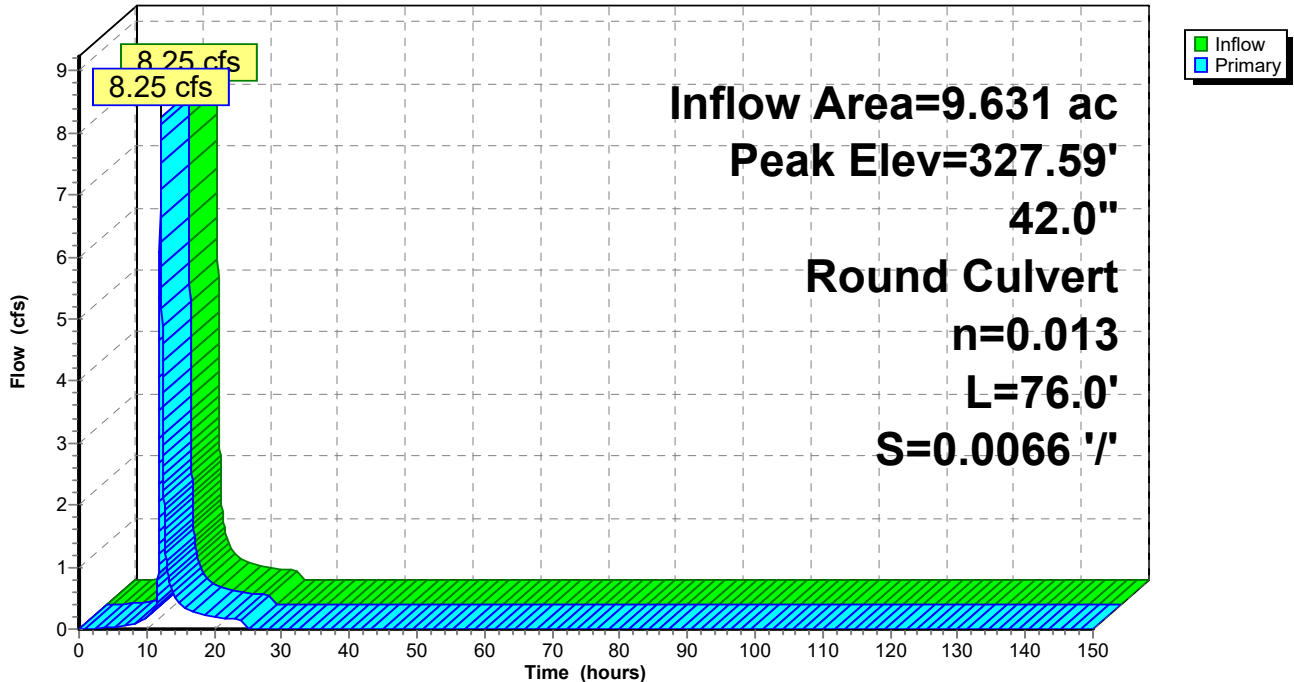
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 327.59' @ 12.48 hrs
 Flood Elev= 331.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	326.00'	42.0" Round Culvert L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.00' / 325.50' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=7.38 cfs @ 12.08 hrs HW=327.28' TW=326.85' (Dynamic Tailwater)
 ↳ **1=Culvert** (Outlet Controls 7.38 cfs @ 3.44 fps)

Pond CB1: (Rim @ 331.15) (CB#1 to GW)

Hydrograph



Time span=0.00-150.00 hrs, dt=0.02 hrs, 7501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment DA_1A: NE Residential Area Runoff Area=4.563 ac 43.22% Impervious Runoff Depth=2.05"
Flow Length=718' Slope=0.0589 '/ Tc=7.6 min CN=WQ Runoff=14.36 cfs 0.781 af

Subcatchment DA_1B: DA_1B Runoff Area=8.742 ac 54.53% Impervious Runoff Depth=2.22"
Flow Length=1,286' Slope=0.0477 '/ Tc=13.0 min CN=WQ Runoff=24.57 cfs 1.619 af

Subcatchment DA_1C: DA_1C Runoff Area=3.404 ac 69.93% Impervious Runoff Depth=2.46"
Flow Length=637' Slope=0.0304 '/ Tc=8.2 min CN=WQ Runoff=12.17 cfs 0.697 af

Subcatchment DA_1D: Subcat DA_1D Runoff Area=4.419 ac 15.87% Impervious Runoff Depth=1.63"
Flow Length=1,239' Slope=0.0219 '/ Tc=23.1 min CN=WQ Runoff=7.05 cfs 0.599 af

Subcatchment DA_1E: DA_1E Runoff Area=5.212 ac 38.38% Impervious Runoff Depth=1.98"
Flow Length=810' Slope=0.0238 '/ Tc=13.7 min CN=WQ Runoff=12.97 cfs 0.859 af

Subcatchment DA_1F: DA_1F Runoff Area=2.293 ac 51.81% Impervious Runoff Depth=2.19"
Flow Length=623' Slope=0.0230 '/ Tc=10.5 min CN=WQ Runoff=6.90 cfs 0.418 af

Subcatchment DA_1G: DA_1G (Rec Field) Runoff Area=5.640 ac 21.46% Impervious Runoff Depth=1.71"
Flow Length=786' Slope=0.0219 '/ Tc=15.5 min CN=WQ Runoff=11.75 cfs 0.805 af

Subcatchment DA_1H: DA_1H (Recreation) Runoff Area=3.739 ac 0.00% Impervious Runoff Depth=1.38"
Flow Length=421' Slope=0.0092 '/ Tc=16.6 min CN=80 Runoff=6.29 cfs 0.430 af

Subcatchment DA_4: SE Residential Area Runoff Area=2.865 ac 52.60% Impervious Runoff Depth=2.05"
Flow Length=373' Slope=0.0136 '/ Tc=9.8 min CN=WQ Runoff=8.13 cfs 0.489 af

Subcatchment DA_5: Building H Runoff Area=1.237 ac 49.45% Impervious Runoff Depth=2.02"
Flow Length=315' Slope=0.0098 '/ Tc=10.1 min CN=WQ Runoff=3.45 cfs 0.208 af

Subcatchment DA_7: 60% Impervious Runoff Area=5.712 ac 60.00% Impervious Runoff Depth=2.31"
Flow Length=1,025' Slope=0.0545 '/ Tc=9.3 min CN=WQ Runoff=18.75 cfs 1.101 af

Subcatchment DA_8: Southern Half of Runoff Area=0.251 ac 36.31% Impervious Runoff Depth=1.71"
Flow Length=169' Slope=0.0086 '/ Tc=7.5 min CN=WQ Runoff=0.66 cfs 0.036 af

Subcatchment DA_9: SW Residential Area Runoff Area=1.101 ac 25.57% Impervious Runoff Depth=1.78"
Flow Length=218' Slope=0.0171 '/ Tc=6.1 min CN=WQ Runoff=3.26 cfs 0.163 af

Reach 5R: Overflow Path Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=128.0' S=0.0352 '/ Capacity=33.06 cfs Outflow=0.00 cfs 0.000 af

Reach 6R: Plunge pool to stream Avg. Flow Depth=0.07' Max Vel=0.74 fps Inflow=1.51 cfs 0.027 af
n=0.040 L=53.0' S=0.0132 '/ Capacity=114.17 cfs Outflow=1.50 cfs 0.027 af

Reach 16R: reach within Patrick Brook Avg. Flow Depth=1.75' Max Vel=2.28 fps Inflow=30.04 cfs 8.129 af
n=0.035 L=400.0' S=0.0025 '/ Capacity=91.51 cfs Outflow=29.96 cfs 8.129 af

Reach 22R: reach within Patrick Brook	Avg. Flow Depth=0.53'	Max Vel=1.43 fps	Inflow=3.91 cfs	0.852 af
	n=0.035 L=280.0'	S=0.0036 '/'	Capacity=109.38 cfs	Outflow=3.84 cfs 0.852 af
Reach 25R: reach within Patrick Brook	Avg. Flow Depth=0.41'	Max Vel=1.70 fps	Inflow=3.39 cfs	0.689 af
	n=0.035 L=220.0'	S=0.0068 '/'	Capacity=151.13 cfs	Outflow=3.37 cfs 0.689 af
Reach 26R: reach within Patrick Brook	Avg. Flow Depth=0.51'	Max Vel=1.09 fps	Inflow=3.14 cfs	0.488 af
	n=0.035 L=455.0'	S=0.0022 '/'	Capacity=85.80 cfs	Outflow=2.76 cfs 0.488 af
Reach 28R: emergency spillway	Avg. Flow Depth=0.06'	Max Vel=1.22 fps	Inflow=1.51 cfs	0.027 af
	n=0.078 L=16.0'	S=0.1687 '/'	Capacity=146.89 cfs	Outflow=1.51 cfs 0.027 af
Reach 35R: Channel from Level	Avg. Flow Depth=0.08'	Max Vel=0.16 fps	Inflow=1.61 cfs	0.163 af
	n=0.150 L=127.0'	S=0.0079 '/'	Capacity=47.21 cfs	Outflow=0.73 cfs 0.163 af
Reach 41R: Channel from Level	Avg. Flow Depth=0.05'	Max Vel=0.14 fps	Inflow=0.65 cfs	0.165 af
	n=0.150 L=52.0'	S=0.0096 '/'	Capacity=76.45 cfs	Outflow=0.61 cfs 0.165 af
Reach 43R: Channel from Level	Avg. Flow Depth=0.02'	Max Vel=0.08 fps	Inflow=0.02 cfs	0.036 af
	n=0.150 L=45.0'	S=0.0111 '/'	Capacity=14.41 cfs	Outflow=0.02 cfs 0.036 af
Reach 45R: Channel from Level	Avg. Flow Depth=0.07'	Max Vel=0.20 fps	Inflow=3.80 cfs	0.488 af
	n=0.150 L=92.0'	S=0.0141 '/'	Capacity=256.34 cfs	Outflow=3.14 cfs 0.488 af
Reach 50R: reach within Riggs Brook to	Avg. Flow Depth=0.20'	Max Vel=0.82 fps	Inflow=1.50 cfs	0.027 af
	n=0.035 L=820.0'	S=0.0037 '/'	Capacity=110.71 cfs	Outflow=0.72 cfs 0.027 af
Pond 3P: GW3	Peak Elev=329.26'	Storage=2,763 cf	Inflow=0.66 cfs	0.036 af
	Primary=0.02 cfs 0.036 af	Secondary=0.00 cfs 0.000 af	Outflow=0.02 cfs	0.036 af
Pond 4P: GW 4	Peak Elev=332.39'	Storage=12,653 cf	Inflow=8.13 cfs	0.489 af
	Primary=3.80 cfs 0.488 af	Secondary=0.00 cfs 0.000 af	Outflow=3.80 cfs	0.488 af
Pond 5P: GW 2	Peak Elev=329.12'	Storage=6,983 cf	Inflow=3.45 cfs	0.208 af
	Primary=0.65 cfs 0.165 af	Secondary=0.00 cfs 0.000 af	Outflow=0.65 cfs	0.165 af
Pond 6P: GW 1	Peak Elev=327.55'	Storage=9,637 cf	Inflow=3.26 cfs	0.163 af
	Primary=0.19 cfs 0.108 af	Secondary=1.42 cfs 0.054 af	Outflow=1.61 cfs	0.163 af
Pond 10P: (Rim @ 351.5) (CB #46 to CB #43)	Peak Elev=347.39'	Inflow=14.36 cfs	0.781 af	
	24.0" Round Culvert n=0.013 L=244.0'	S=0.0205 '/'	Outflow=14.36 cfs	0.781 af
Pond 11P: (Rim @ 345.05) (CB #43 to CB #8)	Peak Elev=342.59'	Inflow=37.32 cfs	2.400 af	
	36.0" Round Culvert n=0.013 L=696.0'	S=0.0145 '/'	Outflow=37.32 cfs	2.400 af
Pond 12P: Detention Pond	Peak Elev=334.73'	Storage=19,834 cf	Inflow=18.75 cfs	1.101 af
	15.0" Round Culvert n=0.013 L=47.0'	S=0.0106 '/'	Outflow=6.04 cfs	1.100 af
Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8)	Peak Elev=334.17'	Inflow=13.10 cfs	1.797 af	
	24.0" Round Culvert n=0.013 L=312.0'	S=0.0051 '/'	Outflow=13.10 cfs	1.797 af
Pond 14P: (Rim @ 337.1) (CB #8 to Main GW)	Peak Elev=332.79'	Inflow=57.31 cfs	4.615 af	
	42.0" Round Culvert n=0.013 L=729.0'	S=0.0055 '/'	Outflow=57.31 cfs	4.615 af

Post_Haystack_06-09-21_12Hour

Type II 24-hr 10-Year Rainfall=3.17"

Prepared by VT Agency of Natural Resources

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Pond 15P: (Invert @ 328.1) (Yard Drain to CB Peak Elev=329.37' Storage=1,938 cf Inflow=7.05 cfs 0.599 af
Primary=6.21 cfs 0.598 af Secondary=0.00 cfs 0.000 af Outflow=6.21 cfs 0.598 af

Pond 16P: Main Gravel Wetland Peak Elev=328.80' Storage=155,178 cf Inflow=88.80 cfs 7.307 af
Primary=26.23 cfs 7.277 af Secondary=1.51 cfs 0.027 af Outflow=27.74 cfs 7.304 af

Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2) Peak Elev=334.71' Inflow=13.10 cfs 1.797 af
24.0" Round Culvert n=0.013 L=38.0' S=0.0105 ' Outflow=13.10 cfs 1.797 af

Pond 21P: (Rim @ 333.5) (CB#4 to CB#1) Peak Elev=328.91' Inflow=12.97 cfs 0.859 af
42.0" Round Culvert n=0.013 L=193.0' S=0.0050 ' Outflow=12.97 cfs 0.859 af

Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4) Peak Elev=330.46' Inflow=12.97 cfs 0.859 af
30.0" Round Culvert n=0.013 L=179.0' S=0.0106 ' Outflow=12.97 cfs 0.859 af

Pond CB1: (Rim @ 331.15) (CB#1 to GW) Peak Elev=328.85' Inflow=17.05 cfs 1.456 af
42.0" Round Culvert n=0.013 L=76.0' S=0.0066 ' Outflow=17.05 cfs 1.456 af

Total Runoff Area = 49.178 ac Runoff Volume = 8.205 af Average Runoff Depth = 2.00"
59.05% Pervious = 29.040 ac 40.95% Impervious = 20.138 ac

Summary for Subcatchment DA_1A: NE Residential Area

Runoff = 14.36 cfs @ 11.99 hrs, Volume= 0.781 af, Depth= 2.05"

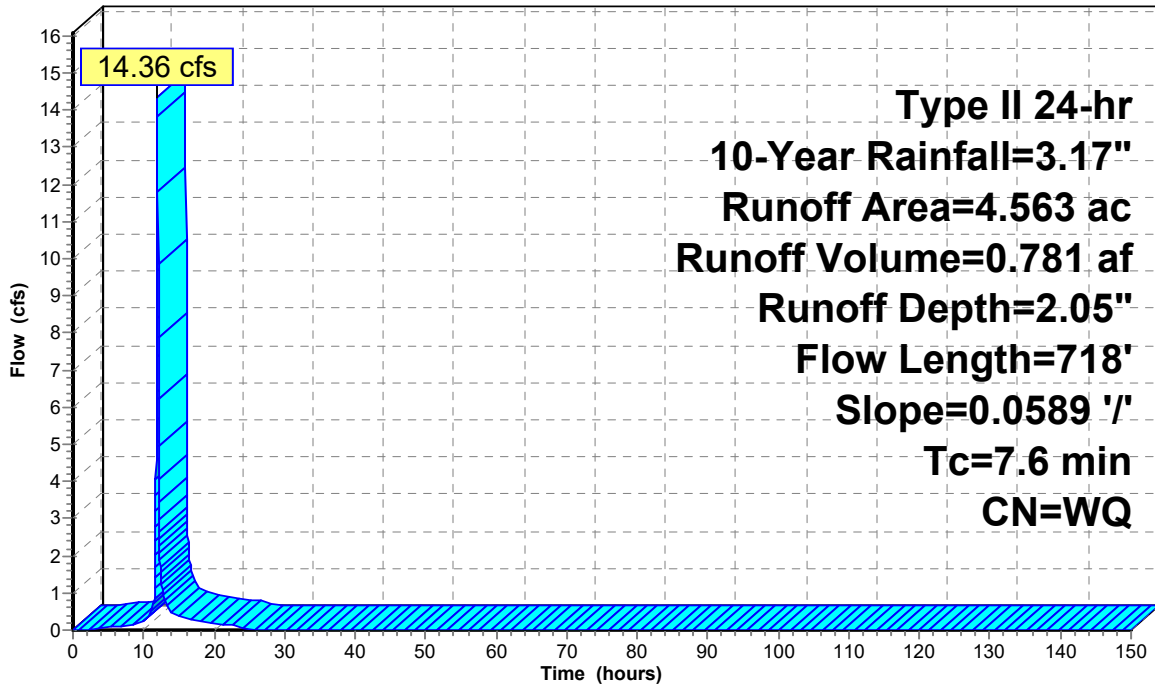
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
2.591	80	>75% Grass cover, Good, HSG D
1.972	98	Paved Parking, HSG D
4.563		Weighted Average
2.591		56.78% Pervious Area
1.972		43.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	718	0.0589	1.57		Lag/CN Method, Contour Length= 11,715' Interval= 1'

Subcatchment DA_1A: NE Residential Area

Hydrograph



Post_Haystack_06-09-21_12Hour

Type II 24-hr 10-Year Rainfall=3.17"

Prepared by VT Agency of Natural Resources

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Summary for Subcatchment DA_1B: DA_1B

Runoff = 24.57 cfs @ 12.04 hrs, Volume= 1.619 af, Depth= 2.22"

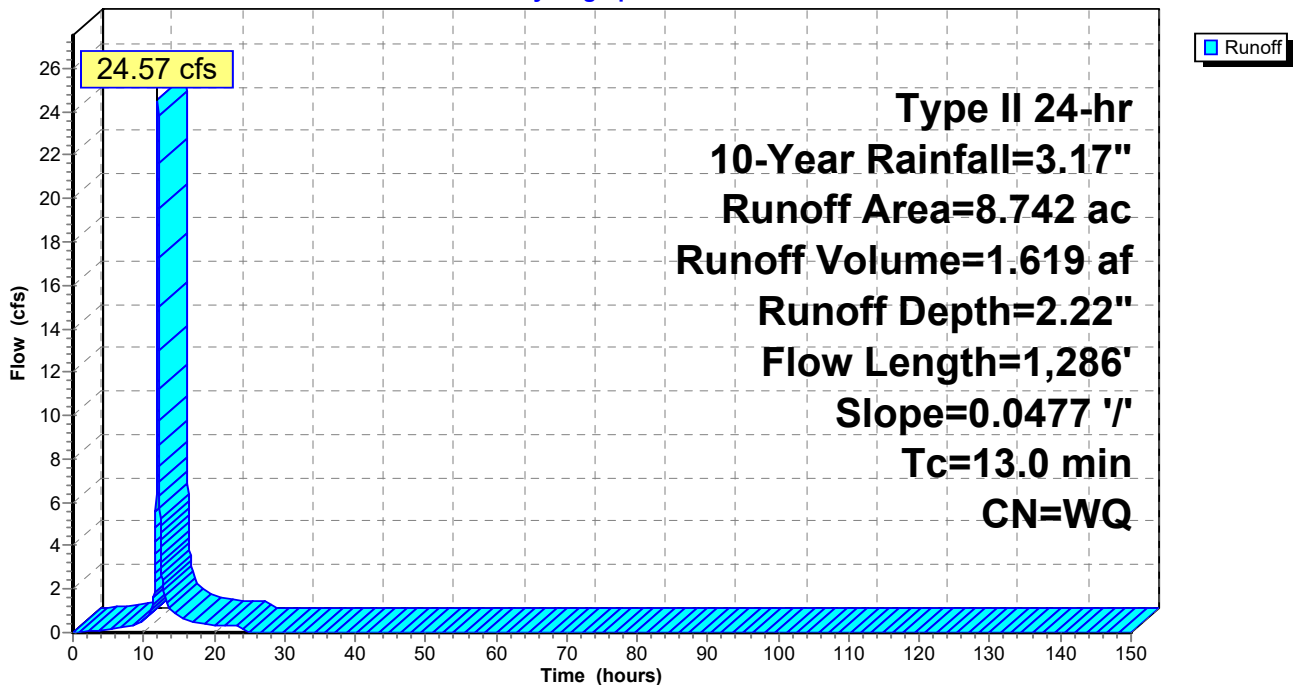
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
3.938	80	>75% Grass cover, Good, HSG D
4.767	98	Paved Parking, HSG D
* 0.037	0	Water, HSG D
8.742		Weighted Average
3.975		45.47% Pervious Area
4.767		54.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	1,286	0.0477	1.65		Lag/CN Method, Contour Length= 18,167' Interval= 1'

Subcatchment DA_1B: DA_1B

Hydrograph



Summary for Subcatchment DA_1C: DA_1C

Runoff = 12.17 cfs @ 11.99 hrs, Volume= 0.697 af, Depth= 2.46"

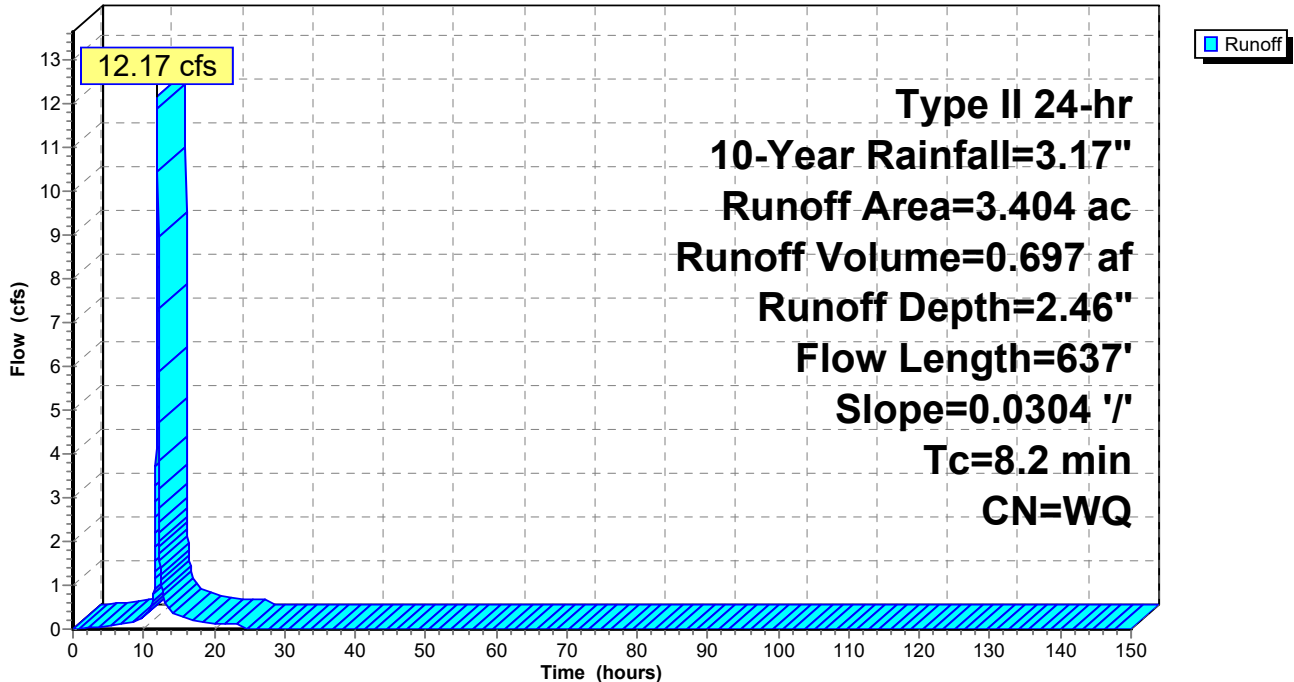
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
0.095	74	>75% Grass cover, Good, HSG C
0.928	80	>75% Grass cover, Good, HSG D
0.466	98	Paved Parking, HSG C
1.914	98	Paved Parking, HSG D
3.404		Weighted Average
1.023		30.07% Pervious Area
2.380		69.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	637	0.0304	1.30		Lag/CN Method, Contour Length= 4,511' Interval= 1'

Subcatchment DA_1C: DA_1C

Hydrograph



Summary for Subcatchment DA_1D: Subcat DA_1D

Runoff = 7.05 cfs @ 12.16 hrs, Volume= 0.599 af, Depth= 1.63"

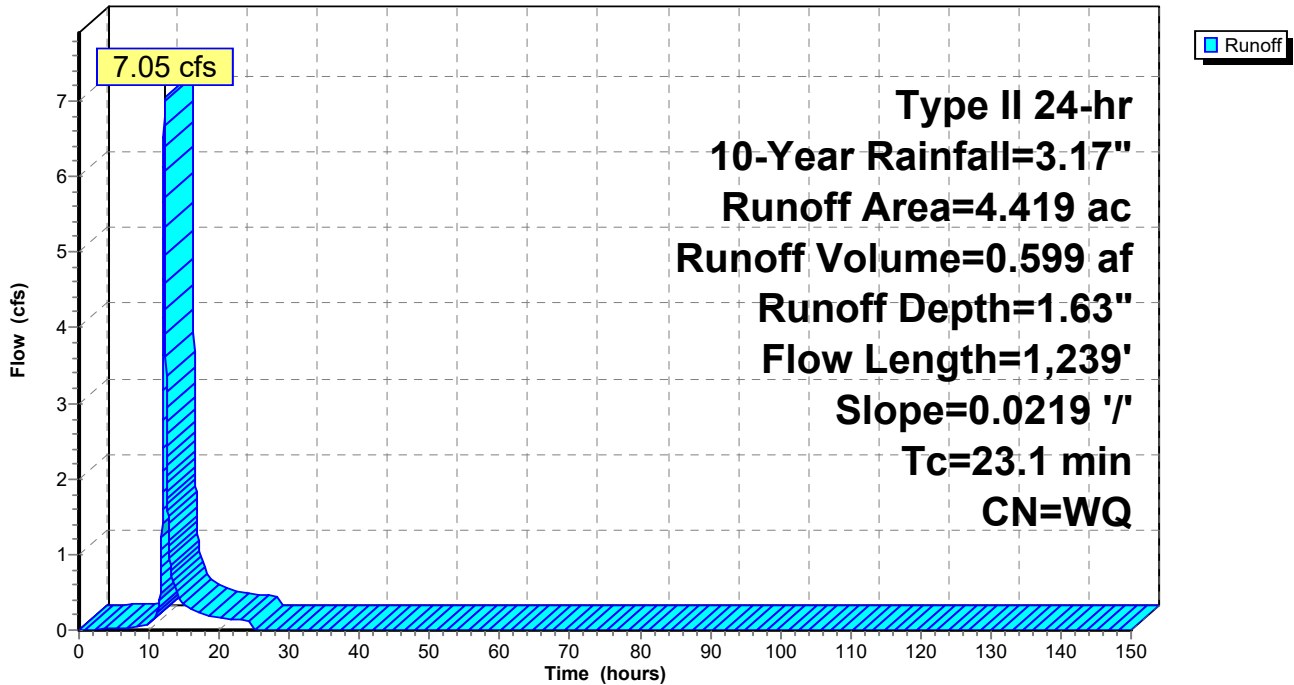
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
3.718	80	>75% Grass cover, Good, HSG D
0.701	98	Paved Parking, HSG D
4.419		Weighted Average
3.718		84.13% Pervious Area
0.701		15.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.1	1,239	0.0219	0.89		Lag/CN Method, Contour Length= 4,218' Interval= 1'

Subcatchment DA_1D: Subcat DA_1D

Hydrograph



Summary for Subcatchment DA_1E: DA_1E

Runoff = 12.97 cfs @ 12.05 hrs, Volume= 0.859 af, Depth= 1.98"

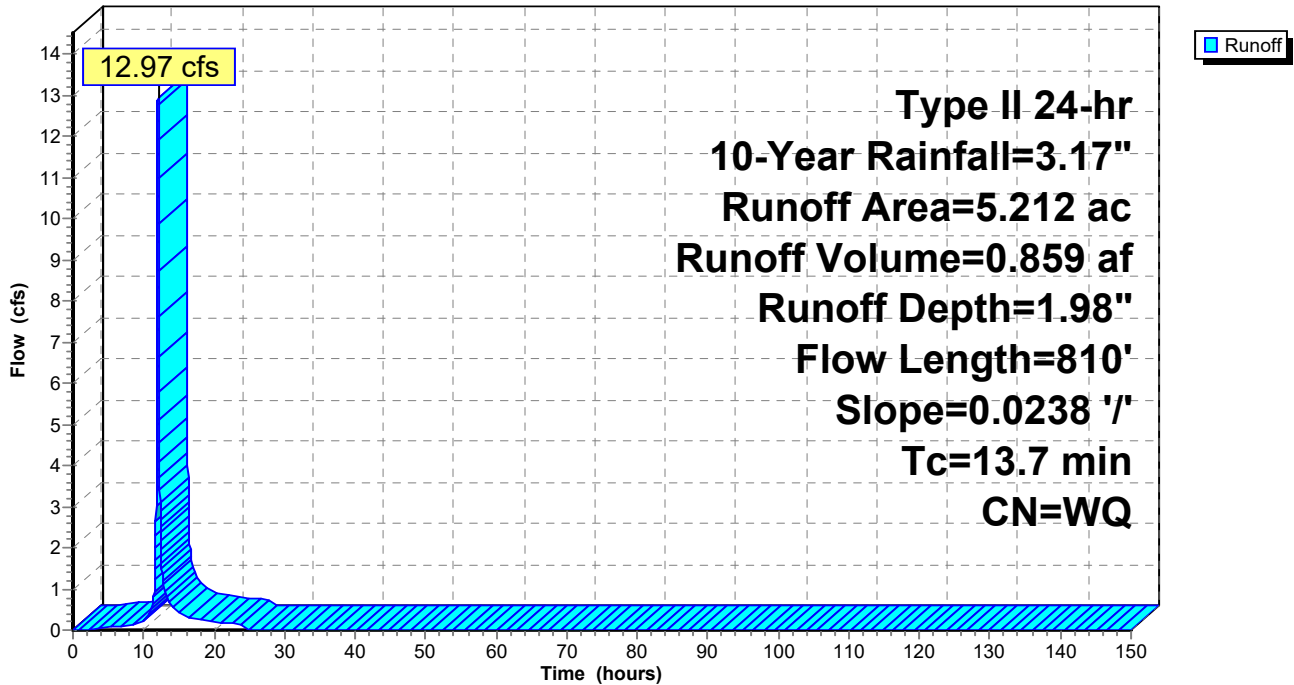
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
3.211	80	>75% Grass cover, Good, HSG D
2.000	98	Paved Parking, HSG D
5.212		Weighted Average
3.211		61.62% Pervious Area
2.000		38.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	810	0.0238	0.98		Lag/CN Method, Contour Length= 5,395' Interval= 1'

Subcatchment DA_1E: DA_1E

Hydrograph



Summary for Subcatchment DA_1F: DA_1F

Runoff = 6.90 cfs @ 12.02 hrs, Volume= 0.418 af, Depth= 2.19"

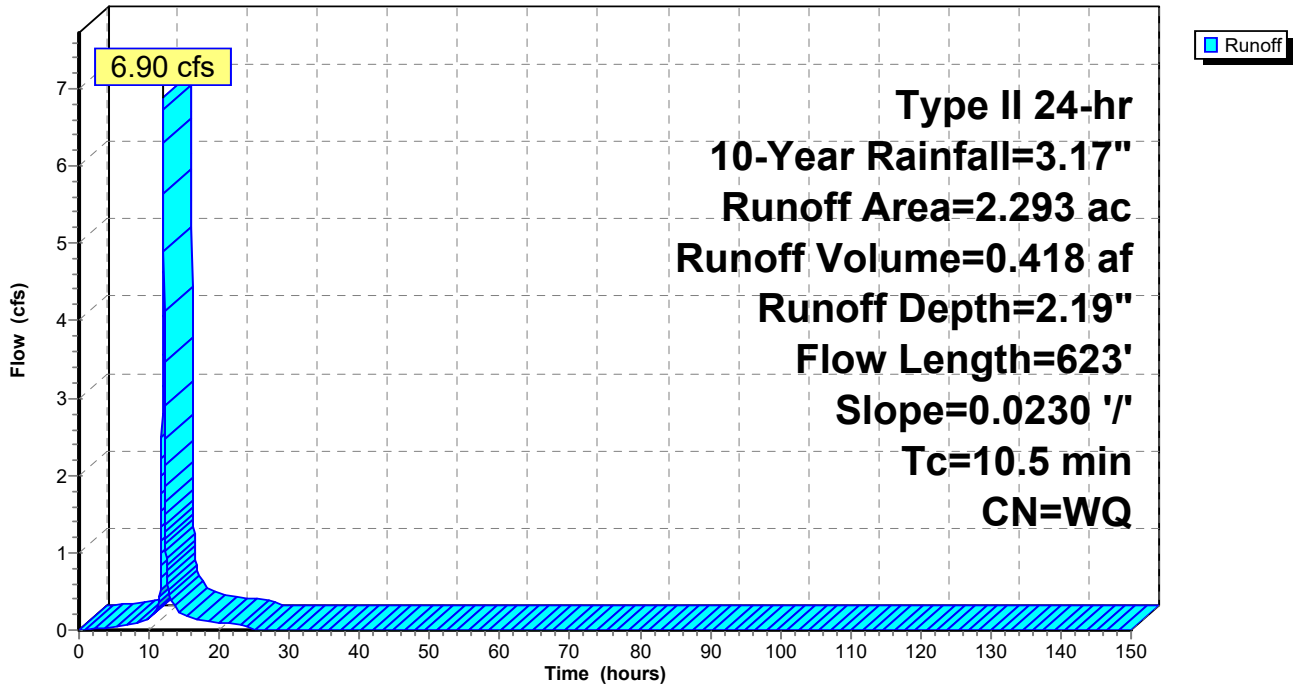
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
1.105	80	>75% Grass cover, Good, HSG D
1.188	98	Paved Parking, HSG D
2.293		Weighted Average
1.105		48.19% Pervious Area
1.188		51.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	623	0.0230	0.99		Lag/CN Method, Contour Length= 2,296' Interval= 1'

Subcatchment DA_1F: DA_1F

Hydrograph



Summary for Subcatchment DA_1G: DA_1G (Rec Field Parking Lot)

Runoff = 11.75 cfs @ 12.08 hrs, Volume= 0.805 af, Depth= 1.71"

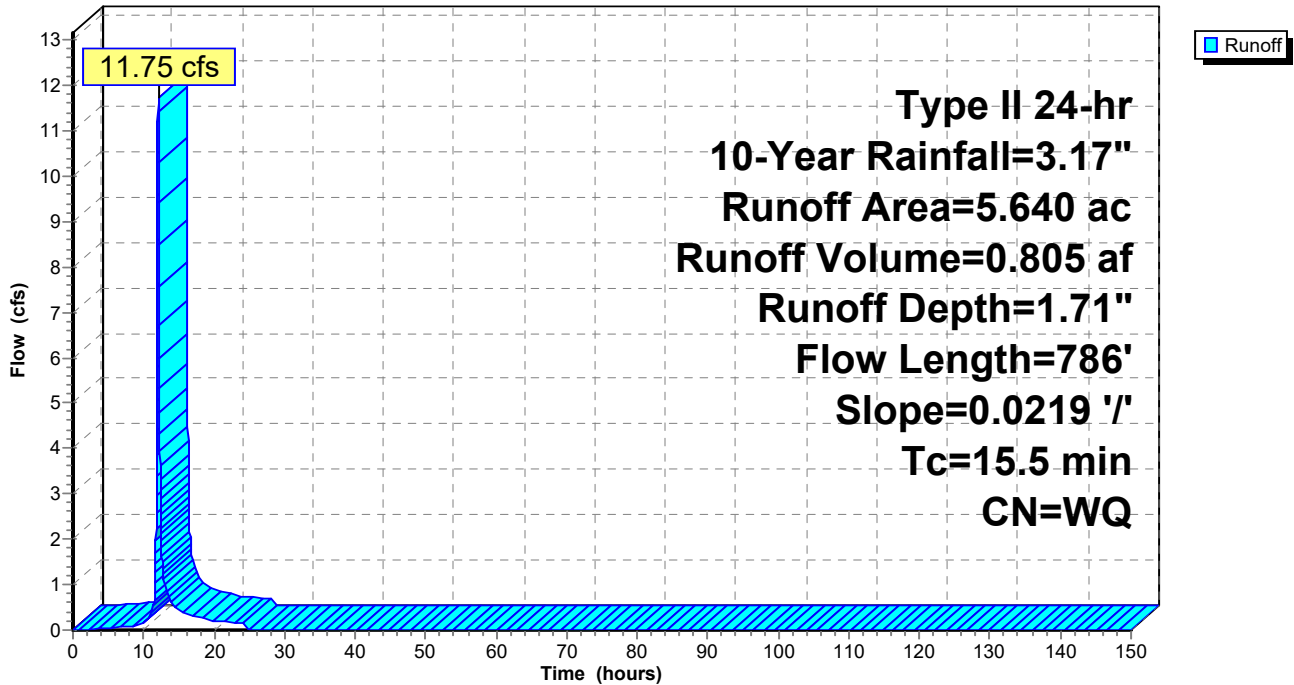
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
4.430	80	>75% Grass cover, Good, HSG D
1.210	98	Paved Parking, HSG D
5.640		Weighted Average
4.430		78.54% Pervious Area
1.210		21.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	786	0.0219	0.84		Lag/CN Method, Contour Length= 5,380' Interval= 1'

Subcatchment DA_1G: DA_1G (Rec Field Parking Lot)

Hydrograph



Summary for Subcatchment DA_1H: DA_1H (Recreation Field)

Runoff = 6.29 cfs @ 12.09 hrs, Volume= 0.430 af, Depth= 1.38"

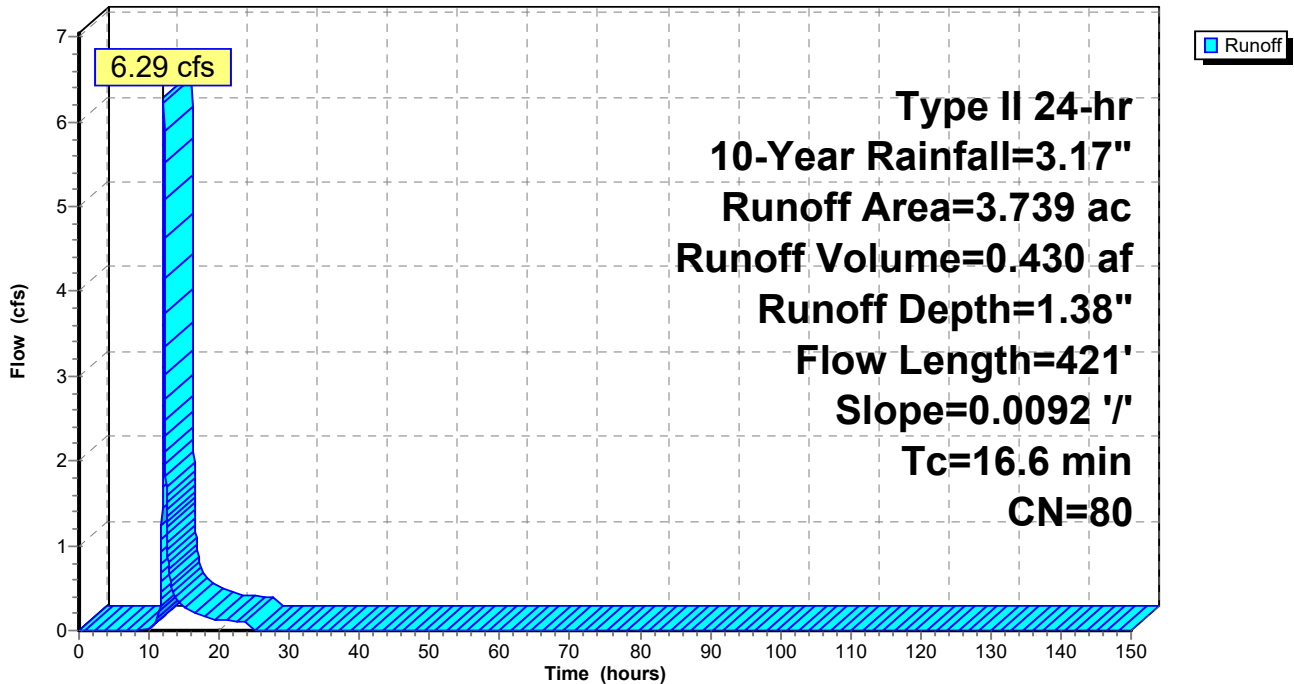
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
3.739	80	>75% Grass cover, Good, HSG D
3.739		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	421	0.0092	0.42		Lag/CN Method, Contour Length= 1,500' Interval= 1'

Subcatchment DA_1H: DA_1H (Recreation Field)

Hydrograph



Summary for Subcatchment DA_4: SE Residential Area

Runoff = 8.13 cfs @ 12.01 hrs, Volume= 0.489 af, Depth= 2.05"

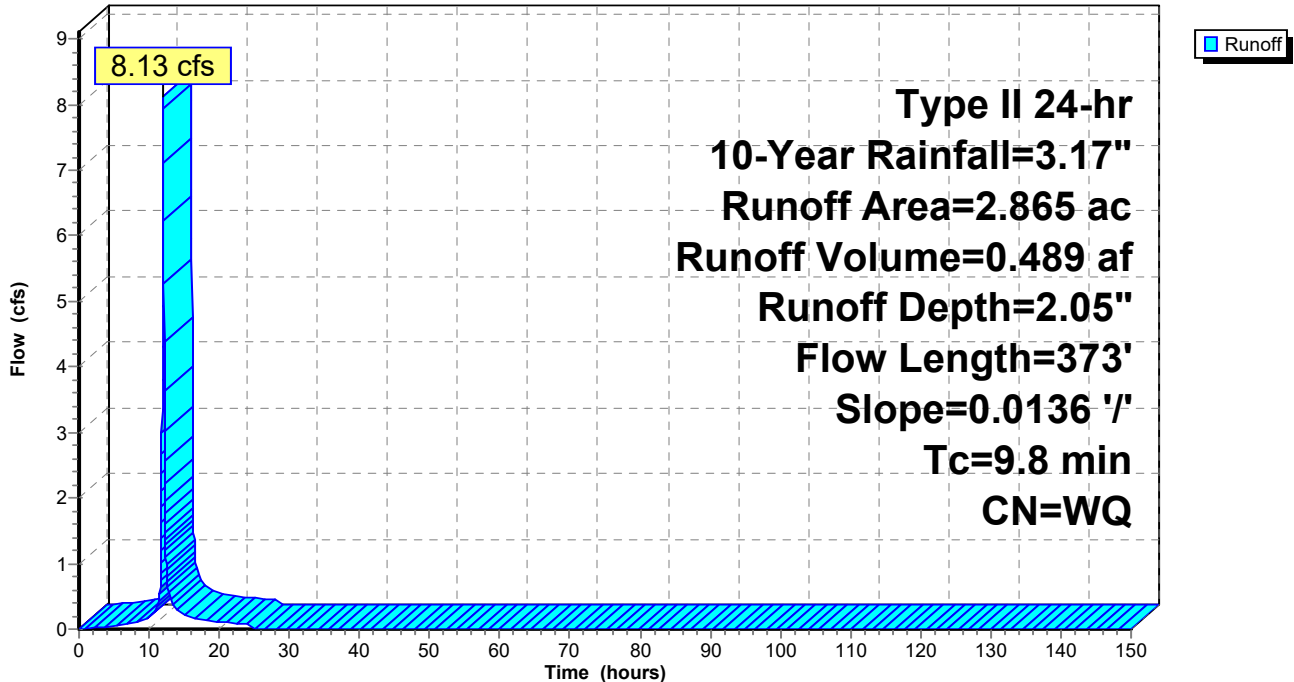
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
1.211	74	>75% Grass cover, Good, HSG C
0.147	80	>75% Grass cover, Good, HSG D
1.394	98	Paved Parking, HSG C
0.113	98	Paved Parking, HSG D
2.865		Weighted Average
1.358		47.40% Pervious Area
1.507		52.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	373	0.0136	0.64		Lag/CN Method, Contour Length= 1,698' Interval= 1'

Subcatchment DA_4: SE Residential Area

Hydrograph



Post_Haystack_06-09-21_12Hour

Type II 24-hr 10-Year Rainfall=3.17"

Prepared by VT Agency of Natural Resources

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Summary for Subcatchment DA_5: Building H

Runoff = 3.45 cfs @ 12.02 hrs, Volume= 0.208 af, Depth= 2.02"

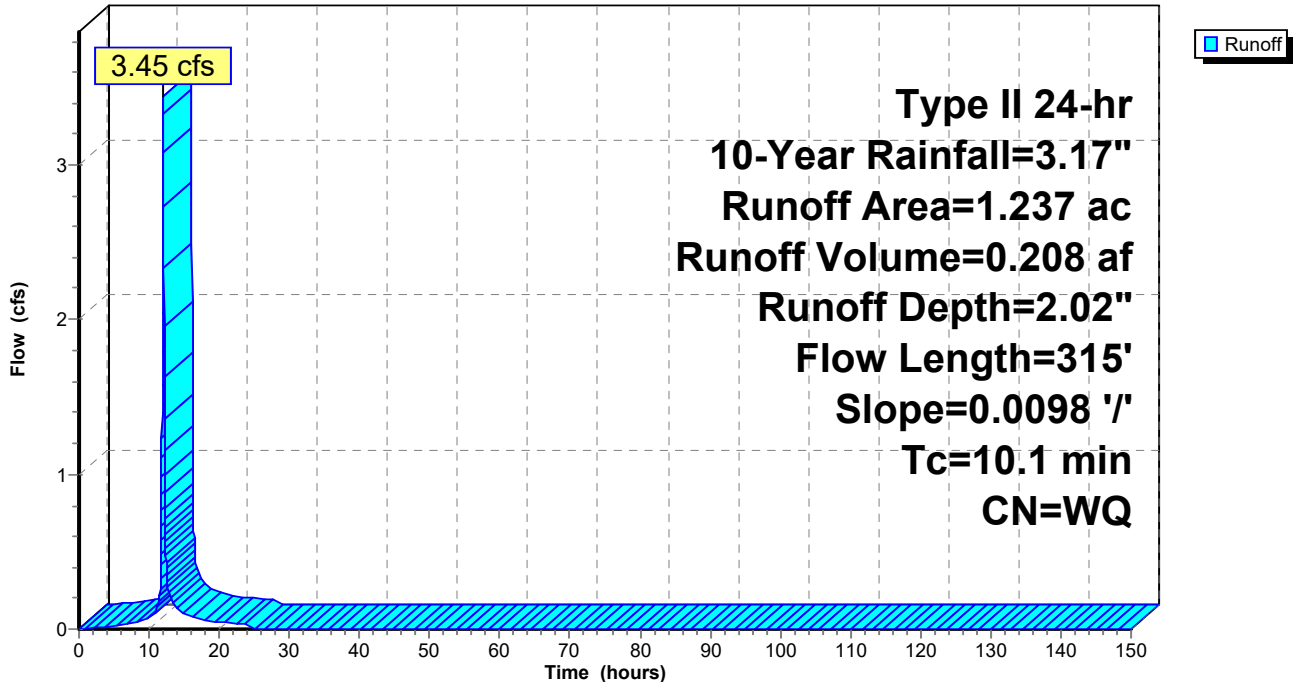
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
0.450	74	>75% Grass cover, Good, HSG C
0.175	80	>75% Grass cover, Good, HSG D
0.468	98	Paved Parking, HSG C
0.144	98	Paved Parking, HSG D
1.237		Weighted Average
0.625		50.55% Pervious Area
0.612		49.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	315	0.0098	0.52		Lag/CN Method, Contour Length= 527' Interval= 1'

Subcatchment DA_5: Building H

Hydrograph



Summary for Subcatchment DA_7: 60% Impervious

Runoff = 18.75 cfs @ 12.01 hrs, Volume= 1.101 af, Depth= 2.31"

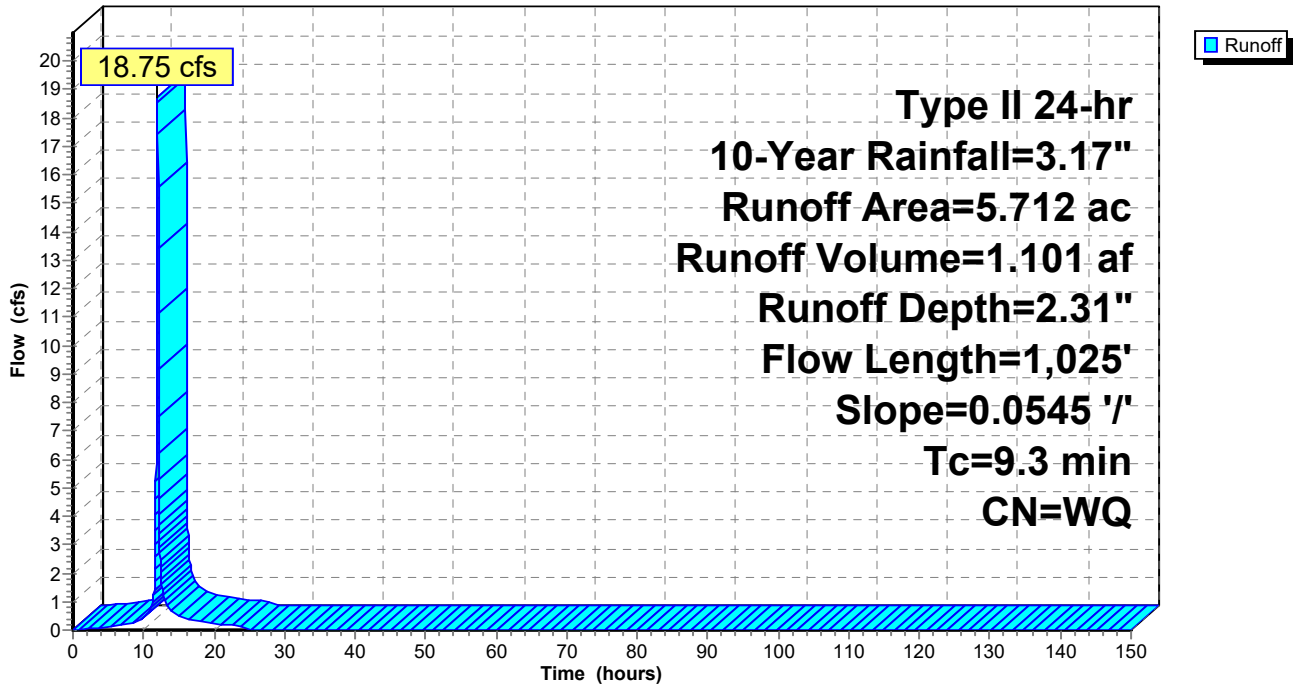
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
2.285	80	>75% Grass cover, Good, HSG D
3.427	98	Paved Parking, HSG D
5.712		Weighted Average
2.285		40.00% Pervious Area
3.427		60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	1,025	0.0545	1.83		Lag/CN Method, Contour Length= 13,556' Interval= 1'

Subcatchment DA_7: 60% Impervious

Hydrograph



Summary for Subcatchment DA_8: Southern Half of Center Road

Runoff = 0.66 cfs @ 11.99 hrs, Volume= 0.036 af, Depth= 1.71"

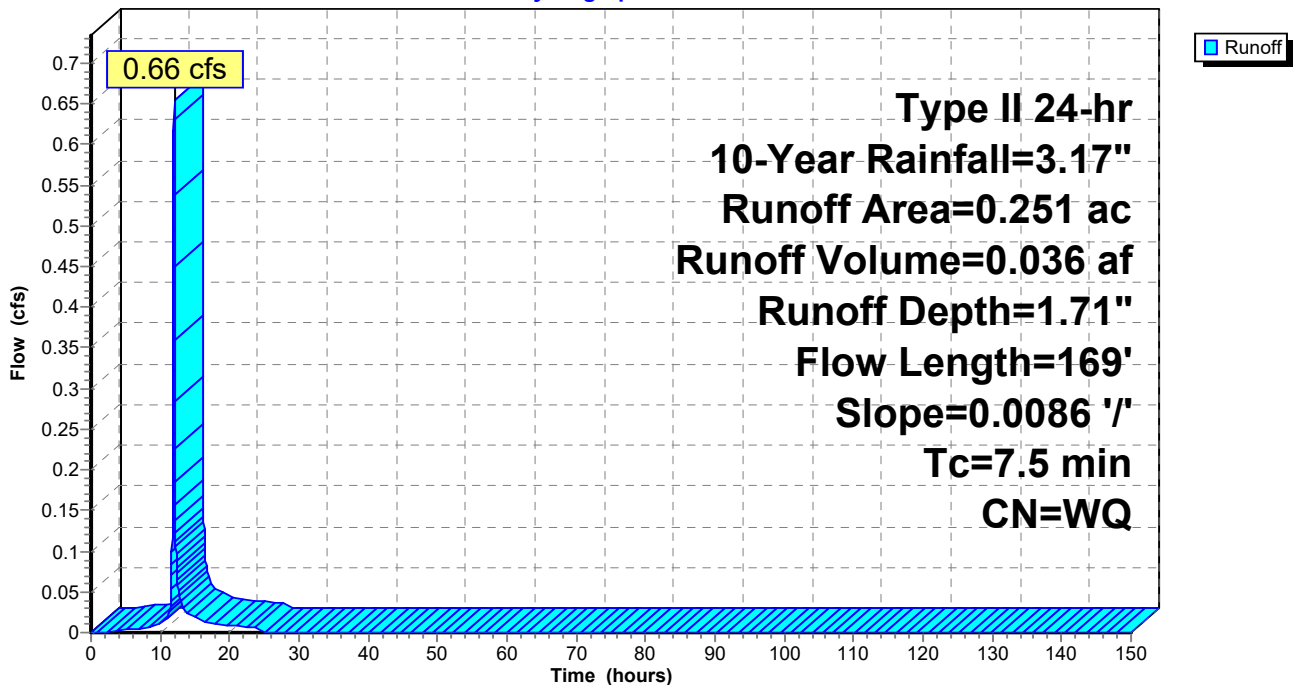
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
0.158	74	>75% Grass cover, Good, HSG C
0.091	98	Paved Parking, HSG C
0.001	70	Woods, Good, HSG C
<hr/>		
0.251		Weighted Average
0.160		63.69% Pervious Area
0.091		36.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	169	0.0086	0.38		Lag/CN Method, Contour Length= 94' Interval= 1'

Subcatchment DA_8: Southern Half of Center Road

Hydrograph



Summary for Subcatchment DA_9: SW Residential Area

Runoff = 3.26 cfs @ 11.97 hrs, Volume= 0.163 af, Depth= 1.78"

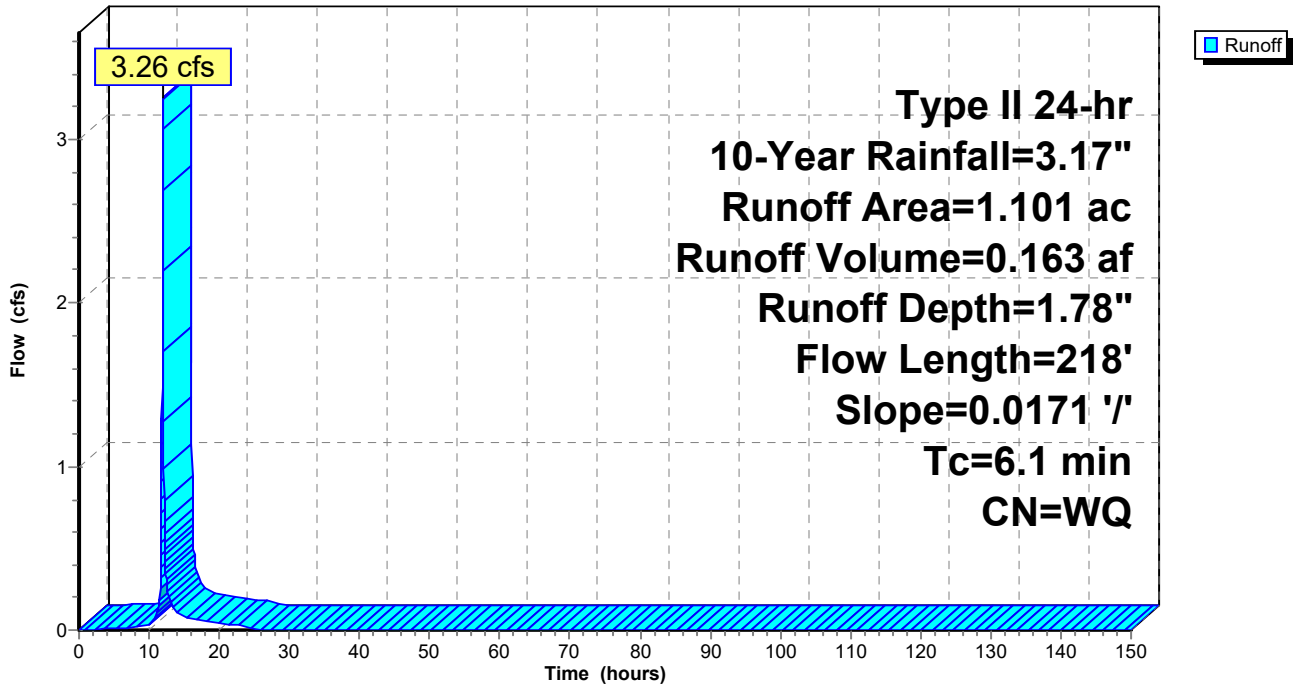
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 10-Year Rainfall=3.17"

Area (ac)	CN	Description
0.820	80	>75% Grass cover, Good, HSG D
0.282	98	Paved Parking, HSG D
1.101		Weighted Average
0.820		74.43% Pervious Area
0.282		25.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	218	0.0171	0.60		Lag/CN Method, Contour Length= 822' Interval= 1'

Subcatchment DA_9: SW Residential Area

Hydrograph



Summary for Reach 5R: Overflow Path

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

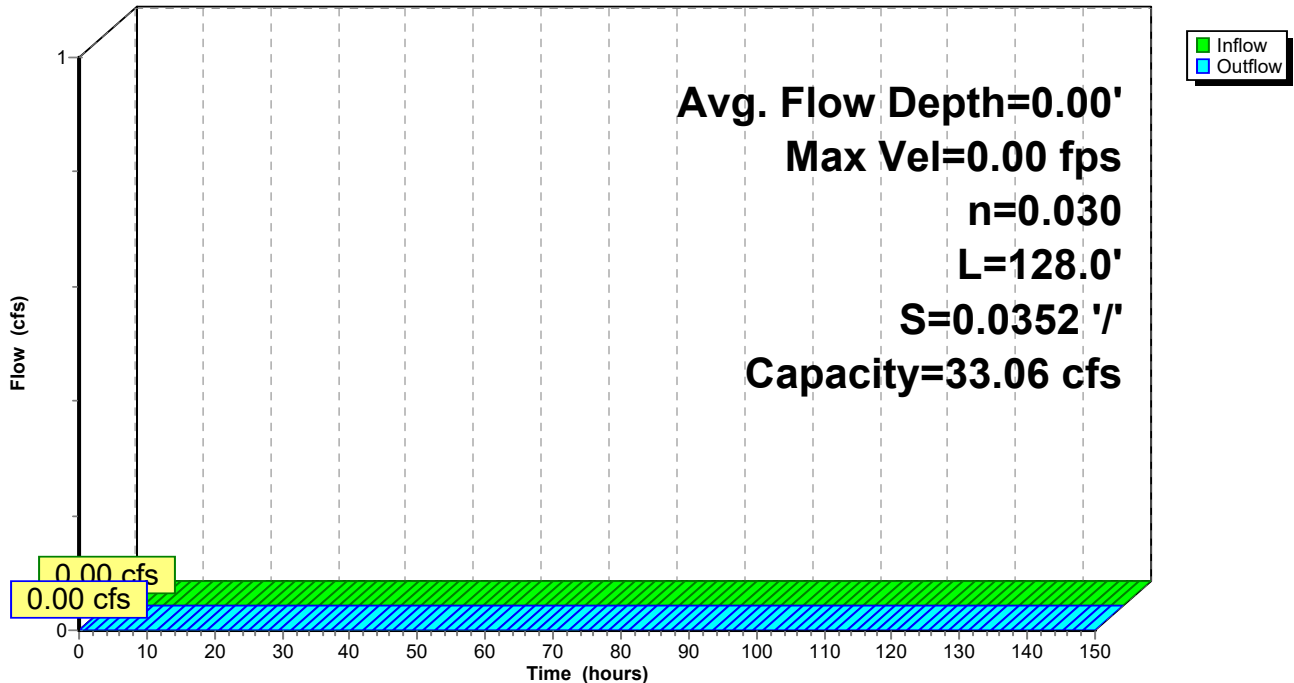
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 33.06 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'
 Length= 128.0' Slope= 0.0352 '/'
 Inlet Invert= 330.00', Outlet Invert= 325.50'



Reach 5R: Overflow Path

Hydrograph



Summary for Reach 6R: Plunge pool to stream

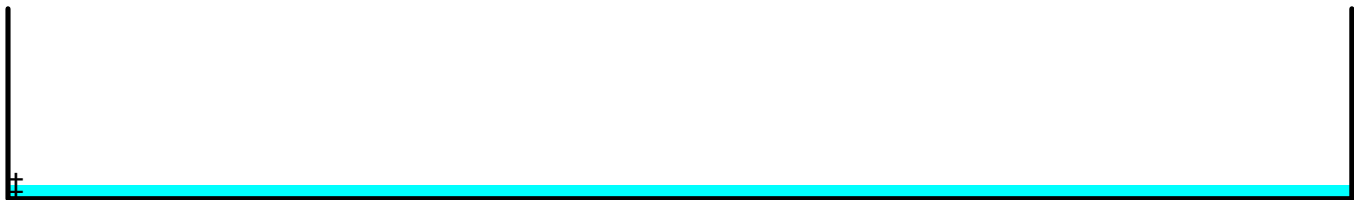
[62] Hint: Exceeded Reach 28R OUTLET depth by 0.71' @ 12.58 hrs

Inflow	=	1.51 cfs @ 12.36 hrs,	Volume=	0.027 af
Outflow	=	1.50 cfs @ 12.38 hrs,	Volume=	0.027 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.74 fps, Min. Travel Time= 1.2 min
 Avg. Velocity = 0.33 fps, Avg. Travel Time= 2.6 min

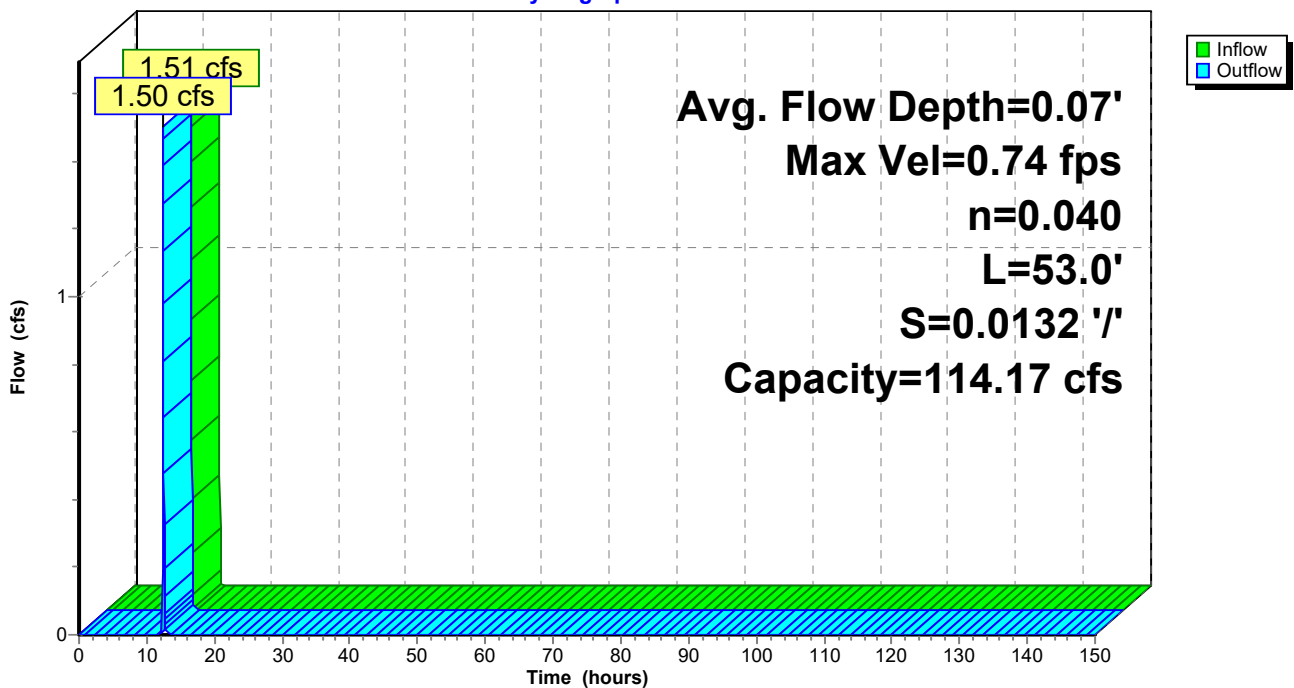
Peak Storage= 107 cf @ 12.38 hrs
 Average Depth at Peak Storage= 0.07'
 Bank-Full Depth= 1.00' Flow Area= 28.0 sf, Capacity= 114.17 cfs

28.00' x 1.00' deep channel, n= 0.040
 Length= 53.0' Slope= 0.0132 '/'
 Inlet Invert= 326.70', Outlet Invert= 326.00'



Reach 6R: Plunge pool to stream

Hydrograph



Summary for Reach 16R: reach within Patrick Brook to outlet

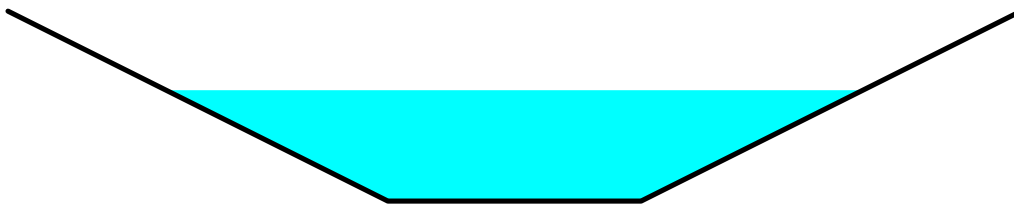
[63] Warning: Exceeded Reach 22R INLET depth by 0.40' @ 12.14 hrs

Inflow Area =	49.178 ac, 40.95% Impervious, Inflow Depth = 1.98"	for 10-Year event
Inflow =	30.04 cfs @ 12.41 hrs, Volume=	8.129 af
Outflow =	29.96 cfs @ 12.45 hrs, Volume=	8.129 af, Atten= 0%, Lag= 2.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 2.28 fps, Min. Travel Time= 2.9 min
 Avg. Velocity = 0.43 fps, Avg. Travel Time= 15.5 min

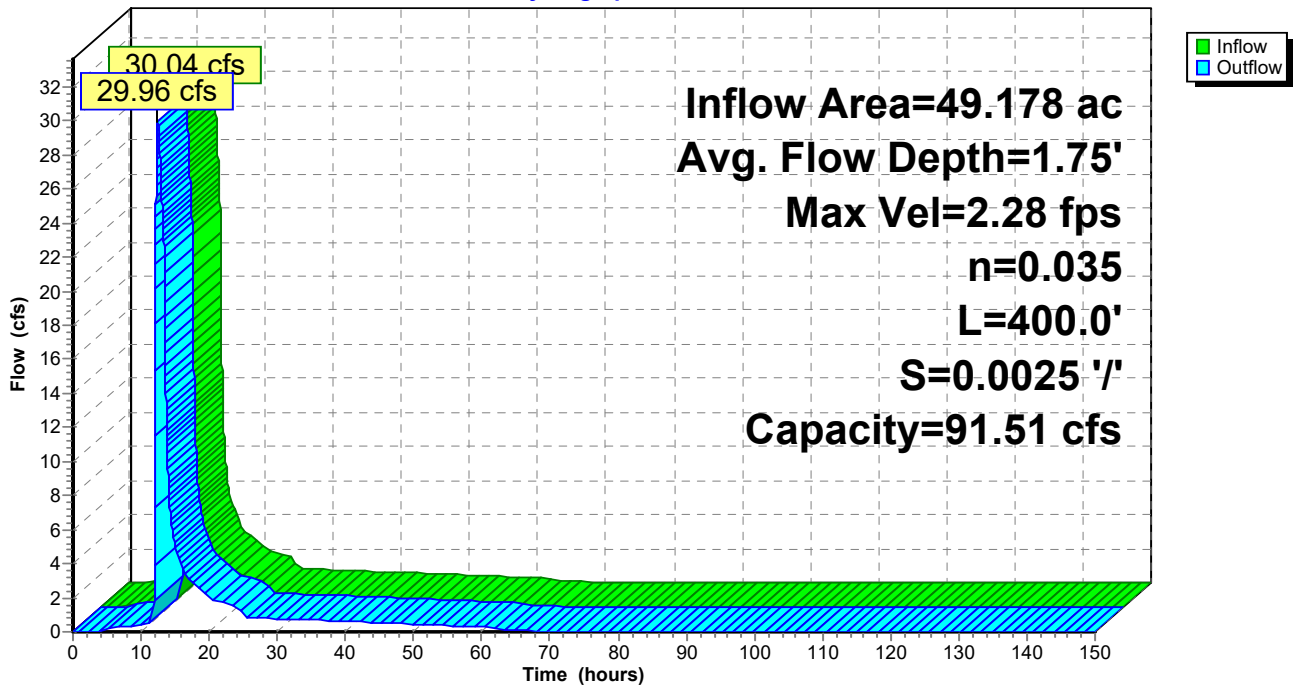
Peak Storage= 5,261 cf @ 12.45 hrs
 Average Depth at Peak Storage= 1.75'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 91.51 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 400.0' Slope= 0.0025 '/'
 Inlet Invert= 324.00', Outlet Invert= 323.00'



Reach 16R: reach within Patrick Brook to outlet

Hydrograph



Summary for Reach 22R: reach within Patrick Brook

[62] Hint: Exceeded Reach 35R OUTLET depth by 0.47' @ 12.44 hrs

Inflow Area =	5.454 ac, 45.68% Impervious,	Inflow Depth =	1.88"	for 10-Year event
Inflow =	3.91 cfs @ 12.38 hrs,	Volume=	0.852 af	
Outflow =	3.84 cfs @ 12.42 hrs,	Volume=	0.852 af,	Atten= 2%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs

Max. Velocity= 1.43 fps, Min. Travel Time= 3.3 min

Avg. Velocity = 0.31 fps, Avg. Travel Time= 15.0 min

Peak Storage= 753 cf @ 12.42 hrs

Average Depth at Peak Storage= 0.53'

Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 109.38 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds

Side Slope Z-value= 2.0 '/' Top Width= 16.00'

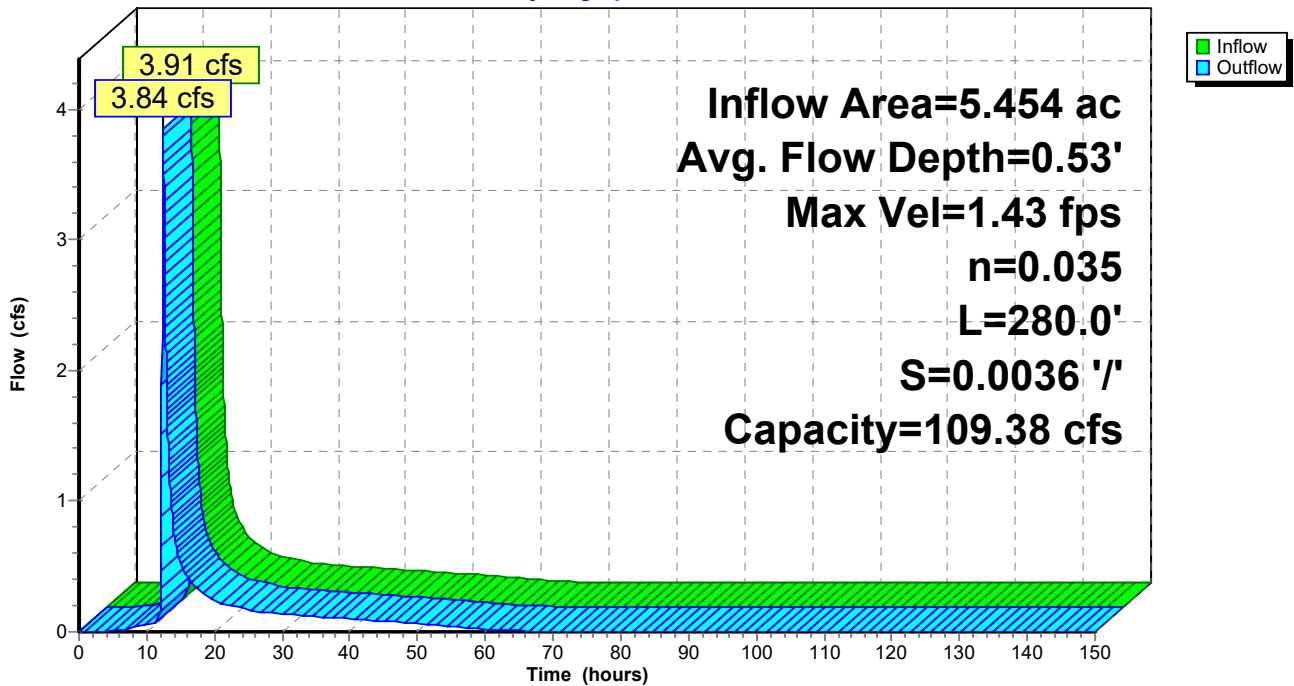
Length= 280.0' Slope= 0.0036 '/'

Inlet Invert= 325.00', Outlet Invert= 324.00'



Reach 22R: reach within Patrick Brook

Hydrograph



Summary for Reach 25R: reach within Patrick Brook

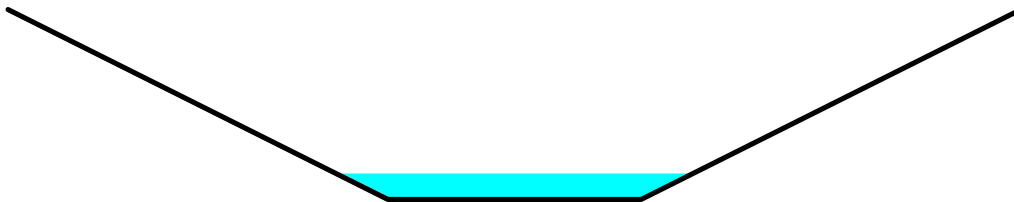
- [61] Hint: Exceeded Reach 26R outlet invert by 0.41' @ 12.38 hrs
- [62] Hint: Exceeded Reach 41R OUTLET depth by 0.36' @ 12.38 hrs
- [62] Hint: Exceeded Reach 43R OUTLET depth by 0.39' @ 12.38 hrs

Inflow Area = 4.353 ac, 50.77% Impervious, Inflow Depth = 1.90" for 10-Year event
 Inflow = 3.39 cfs @ 12.36 hrs, Volume= 0.689 af
 Outflow = 3.37 cfs @ 12.39 hrs, Volume= 0.689 af, Atten= 1%, Lag= 1.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 1.70 fps, Min. Travel Time= 2.2 min
 Avg. Velocity = 0.39 fps, Avg. Travel Time= 9.4 min

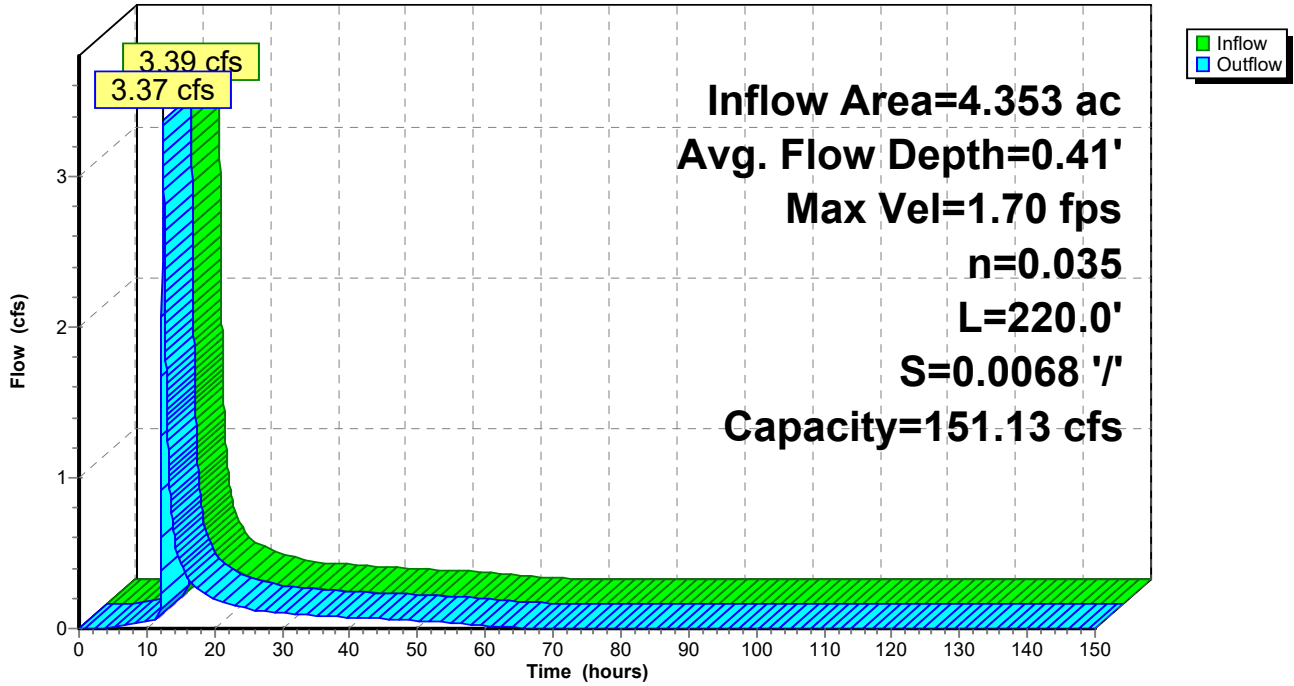
Peak Storage= 434 cf @ 12.39 hrs
 Average Depth at Peak Storage= 0.41'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 151.13 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 220.0' Slope= 0.0068 '/'
 Inlet Invert= 328.00', Outlet Invert= 326.50'



Reach 25R: reach within Patrick Brook

Hydrograph



Summary for Reach 26R: reach within Patrick Brook

[62] Hint: Exceeded Reach 45R OUTLET depth by 0.44' @ 12.36 hrs

Inflow Area =	2.865 ac, 52.60% Impervious, Inflow Depth = 2.05"	for 10-Year event
Inflow =	3.14 cfs @ 12.25 hrs, Volume=	0.488 af
Outflow =	2.76 cfs @ 12.36 hrs, Volume=	0.488 af, Atten= 12%, Lag= 6.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 1.09 fps, Min. Travel Time= 7.0 min
 Avg. Velocity = 0.23 fps, Avg. Travel Time= 33.1 min

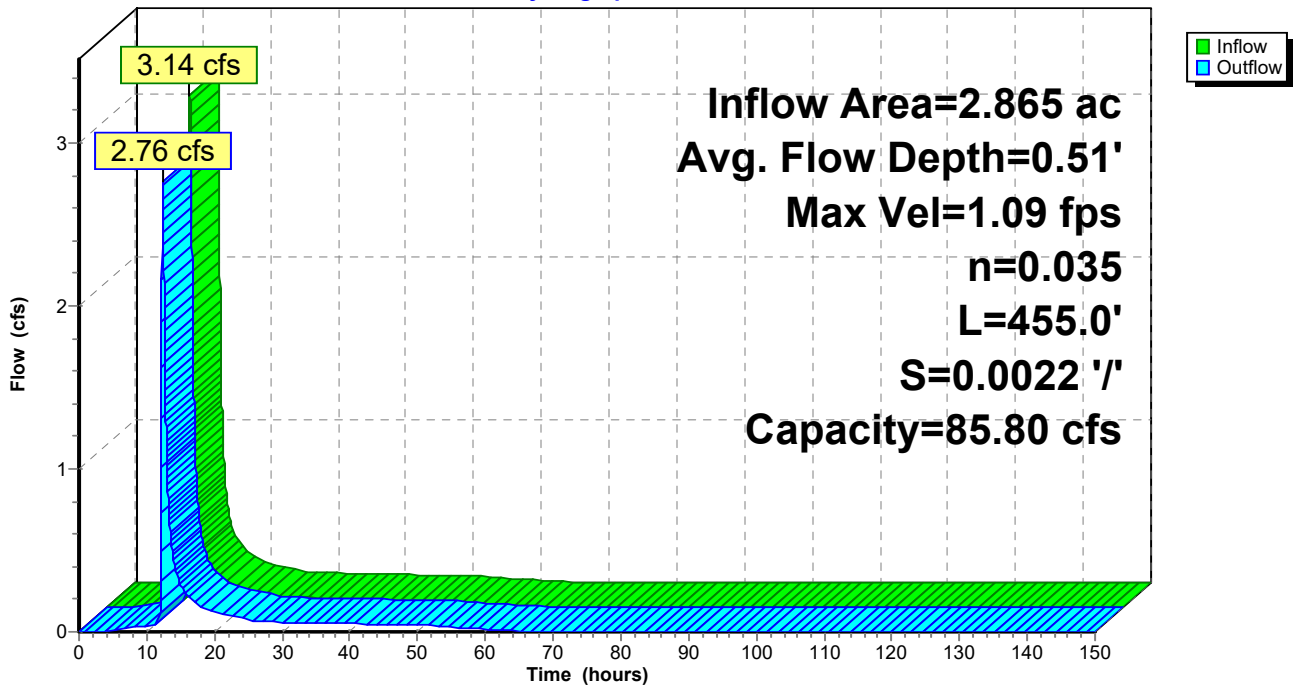
Peak Storage= 1,154 cf @ 12.36 hrs
 Average Depth at Peak Storage= 0.51'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 85.80 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 455.0' Slope= 0.0022 '/'
 Inlet Invert= 329.00', Outlet Invert= 328.00'



Reach 26R: reach within Patrick Brook

Hydrograph



Summary for Reach 28R: emergency spillway

[80] Warning: Exceeded Pond 16P by 0.18' @ 12.80 hrs (0.00 cfs 0.000 af)

Inflow	=	1.51 cfs @ 12.36 hrs,	Volume=	0.027 af
Outflow	=	1.51 cfs @ 12.36 hrs,	Volume=	0.027 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 1.22 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 0.84 fps, Avg. Travel Time= 0.3 min

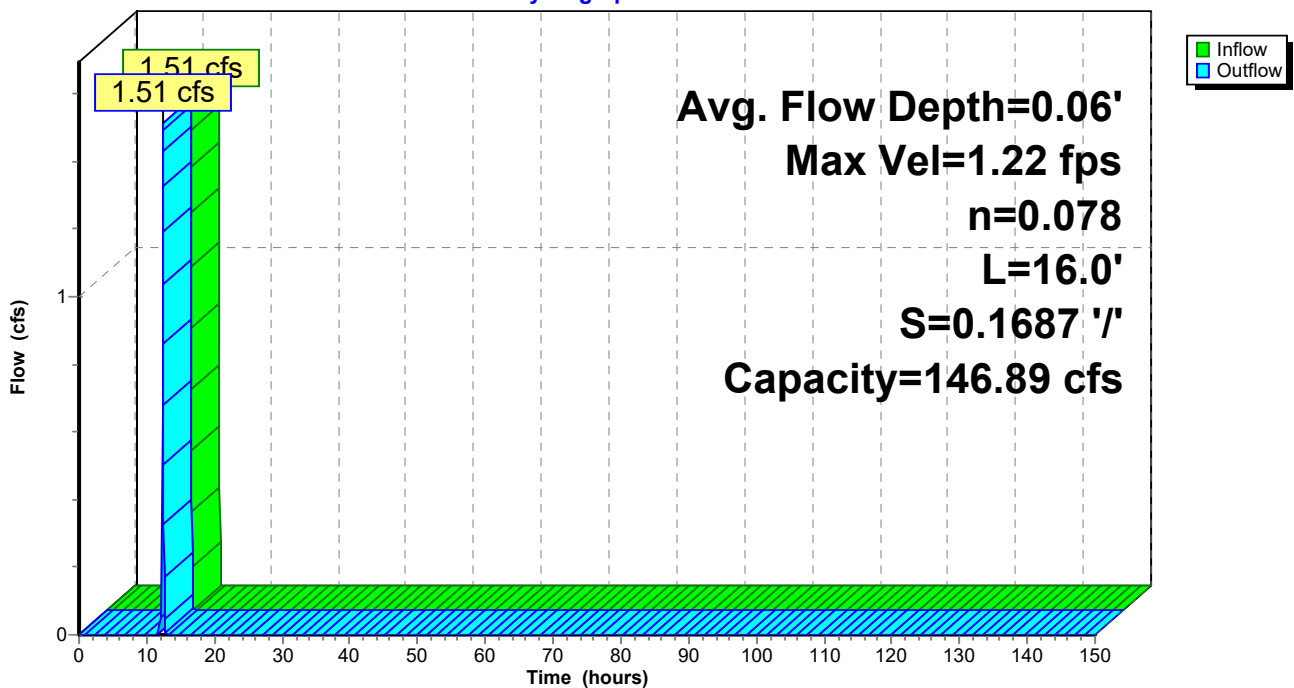
Peak Storage= 20 cf @ 12.36 hrs
 Average Depth at Peak Storage= 0.06'
 Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 146.89 cfs

20.00' x 1.00' deep channel, n= 0.078 Riprap, 12-inch
 Length= 16.0' Slope= 0.1687 '/'
 Inlet Invert= 328.70', Outlet Invert= 326.00'



Reach 28R: emergency spillway

Hydrograph



Summary for Reach 35R: Channel from Level Spreader to Brook

Inflow Area = 1.101 ac, 25.57% Impervious, Inflow Depth = 1.77" for 10-Year event
 Inflow = 1.61 cfs @ 12.07 hrs, Volume= 0.163 af
 Outflow = 0.73 cfs @ 12.20 hrs, Volume= 0.163 af, Atten= 55%, Lag= 7.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.16 fps, Min. Travel Time= 12.9 min
 Avg. Velocity = 0.04 fps, Avg. Travel Time= 48.3 min

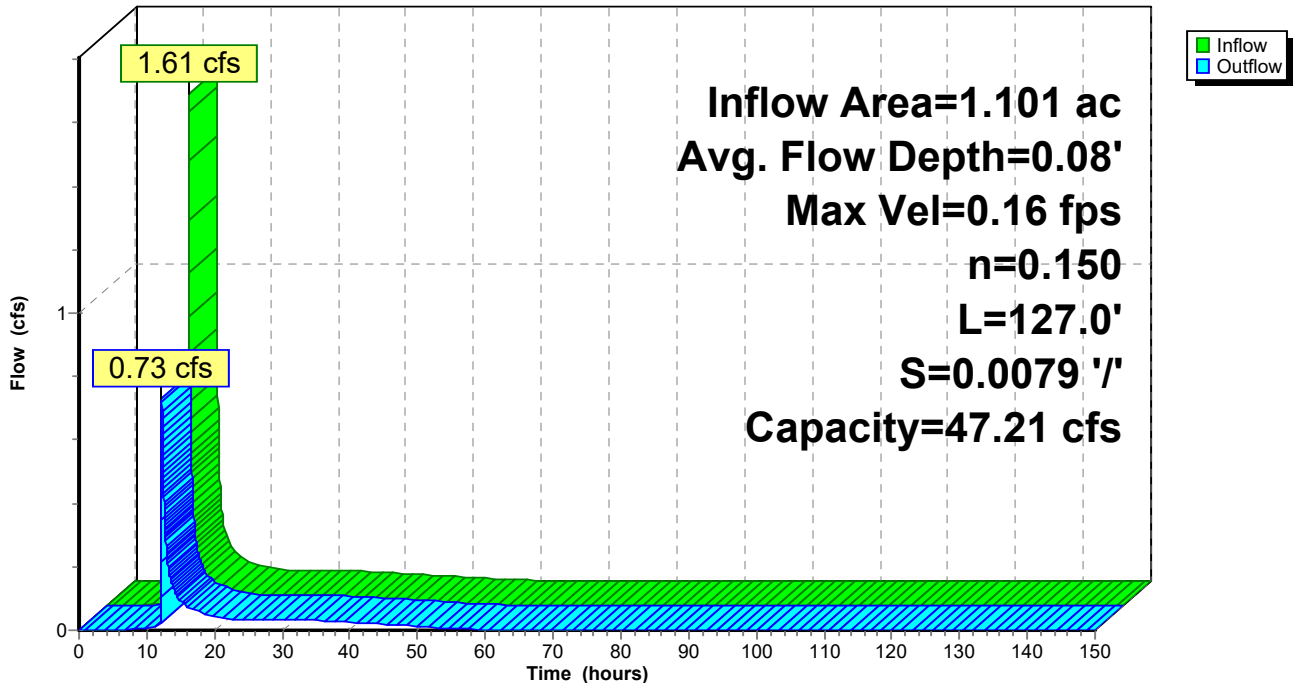
Peak Storage= 565 cf @ 12.20 hrs
 Average Depth at Peak Storage= 0.08'
 Bank-Full Depth= 1.00' Flow Area= 55.0 sf, Capacity= 47.21 cfs

55.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 127.0' Slope= 0.0079 '/'
 Inlet Invert= 326.00', Outlet Invert= 325.00'



Reach 35R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 41R: Channel from Level Spreader to Brook

[80] Warning: Exceeded Pond 5P by 1.00' @ 0.00 hrs (0.05 cfs 0.039 af)

Inflow Area = 1.237 ac, 49.45% Impervious, Inflow Depth = 1.60" for 10-Year event
 Inflow = 0.65 cfs @ 12.28 hrs, Volume= 0.165 af
 Outflow = 0.61 cfs @ 12.39 hrs, Volume= 0.165 af, Atten= 6%, Lag= 6.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.14 fps, Min. Travel Time= 6.2 min
 Avg. Velocity = 0.05 fps, Avg. Travel Time= 17.4 min

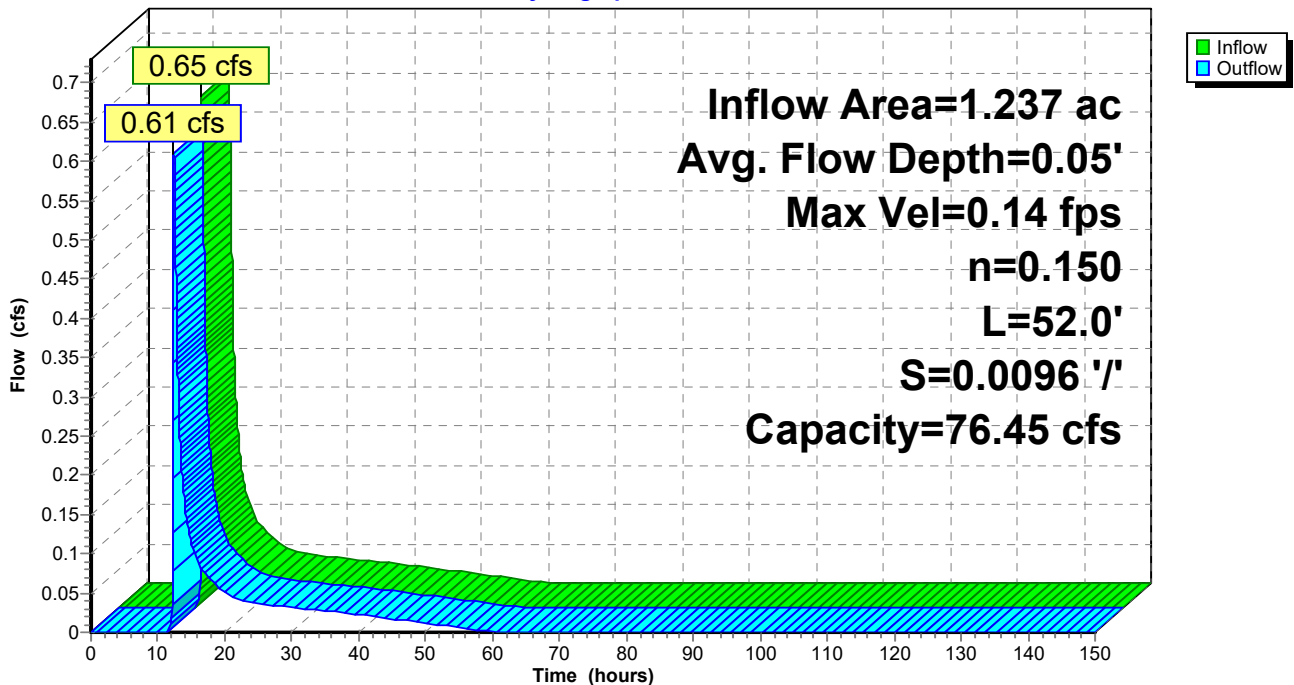
Peak Storage= 227 cf @ 12.39 hrs
 Average Depth at Peak Storage= 0.05'
 Bank-Full Depth= 1.00' Flow Area= 80.0 sf, Capacity= 76.45 cfs

80.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 52.0' Slope= 0.0096 '/'
 Inlet Invert= 328.50', Outlet Invert= 328.00'



Reach 41R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 43R: Channel from Level Spreader to Brook

Inflow Area = 0.251 ac, 36.31% Impervious, Inflow Depth > 1.71" for 10-Year event
 Inflow = 0.02 cfs @ 14.07 hrs, Volume= 0.036 af
 Outflow = 0.02 cfs @ 14.21 hrs, Volume= 0.036 af, Atten= 0%, Lag= 8.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.08 fps, Min. Travel Time= 9.9 min
 Avg. Velocity = 0.05 fps, Avg. Travel Time= 14.5 min

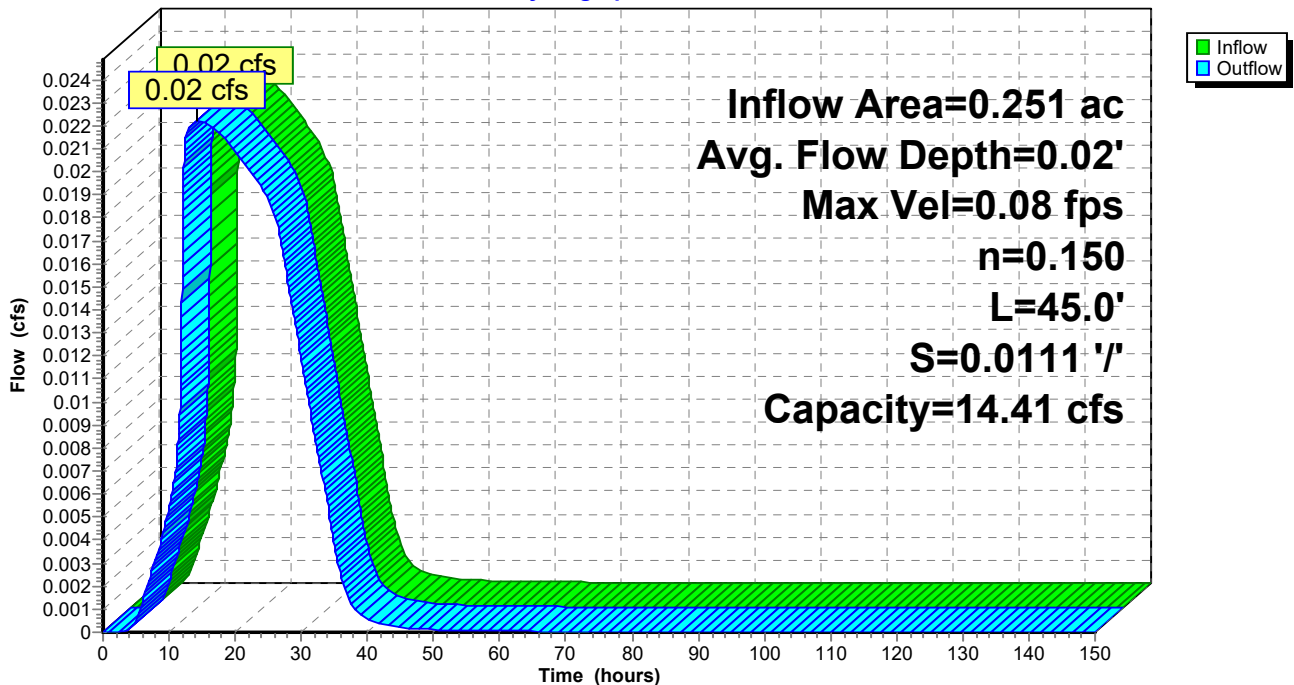
Peak Storage= 13 cf @ 14.21 hrs
 Average Depth at Peak Storage= 0.02'
 Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 14.41 cfs

15.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 45.0' Slope= 0.0111 '/
 Inlet Invert= 328.50', Outlet Invert= 328.00'



Reach 43R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 45R: Channel from Level Spreader to Brook

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth = 2.05" for 10-Year event
 Inflow = 3.80 cfs @ 12.14 hrs, Volume= 0.488 af
 Outflow = 3.14 cfs @ 12.25 hrs, Volume= 0.488 af, Atten= 17%, Lag= 6.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.20 fps, Min. Travel Time= 7.6 min
 Avg. Velocity = 0.06 fps, Avg. Travel Time= 27.3 min

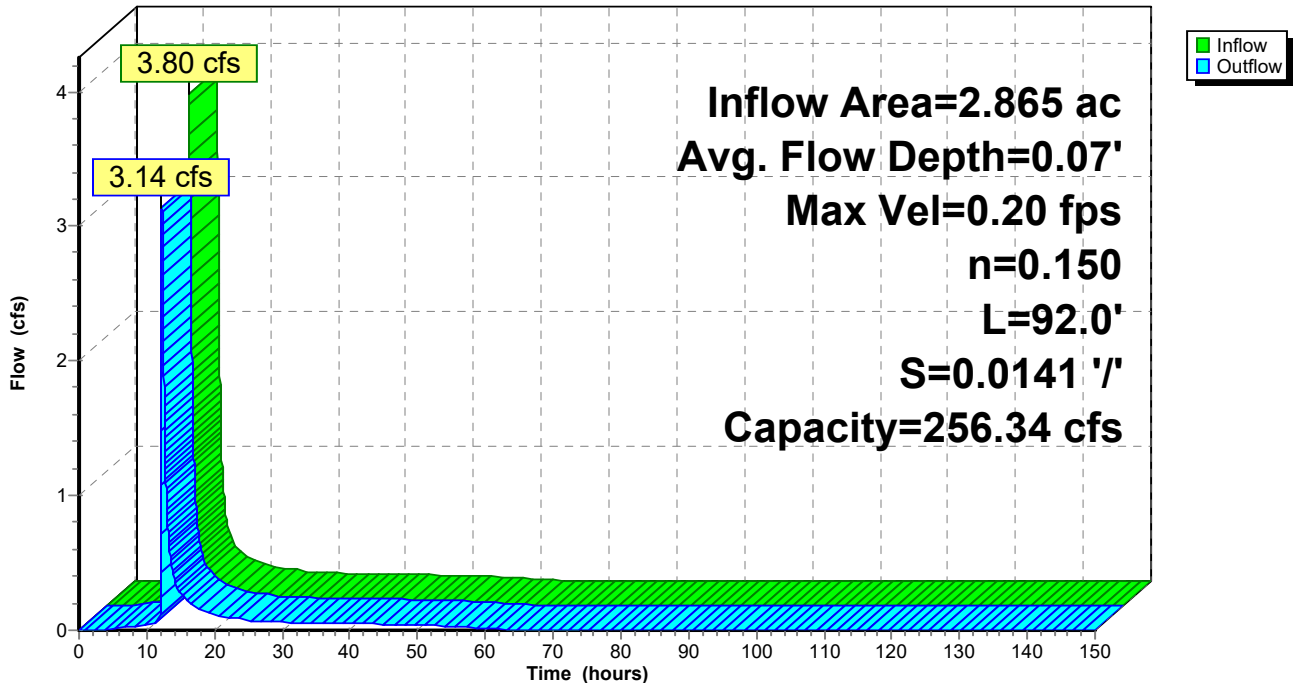
Peak Storage= 1,430 cf @ 12.25 hrs
 Average Depth at Peak Storage= 0.07'
 Bank-Full Depth= 1.00' Flow Area= 219.0 sf, Capacity= 256.34 cfs

219.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 92.0' Slope= 0.0141 '/
 Inlet Invert= 330.30', Outlet Invert= 329.00'



Reach 45R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 50R: reach within Riggs Brook to outlet

[62] Hint: Exceeded Reach 6R OUTLET depth by 0.16' @ 12.58 hrs

Inflow	=	1.50 cfs @ 12.38 hrs,	Volume=	0.027 af
Outflow	=	0.72 cfs @ 12.51 hrs,	Volume=	0.027 af, Atten= 52%, Lag= 8.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.82 fps, Min. Travel Time= 16.7 min
 Avg. Velocity = 0.28 fps, Avg. Travel Time= 48.1 min

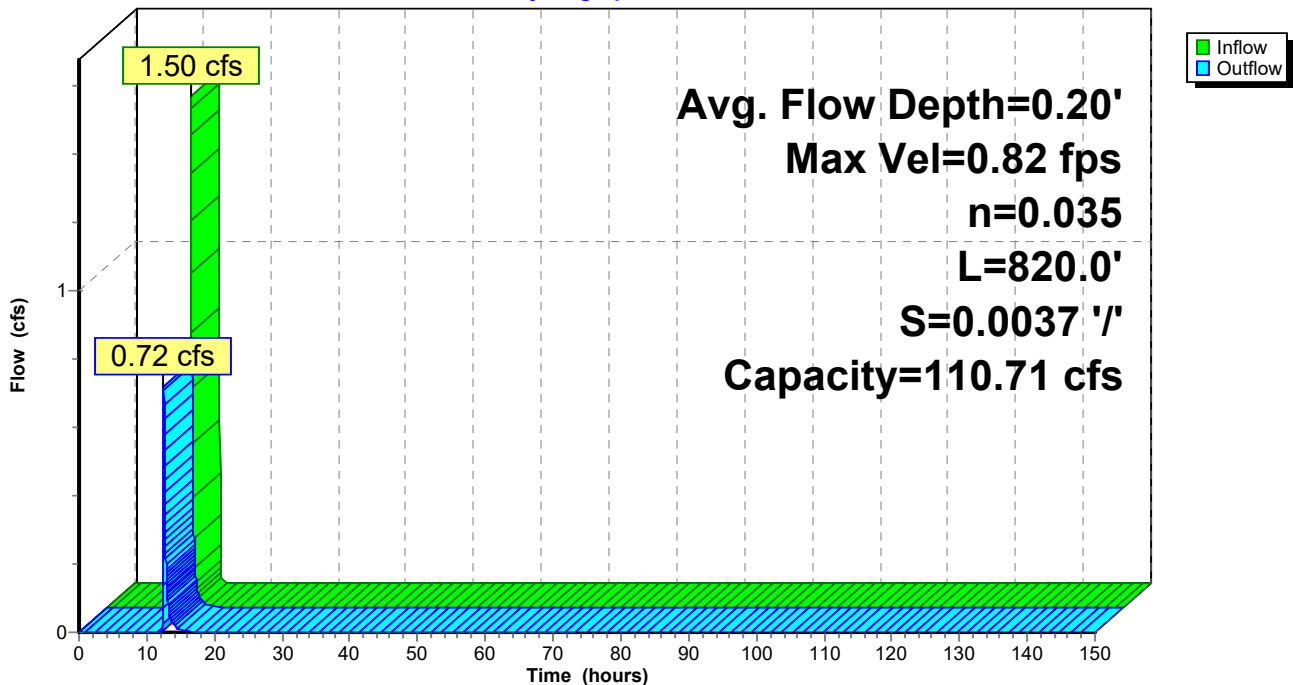
Peak Storage= 719 cf @ 12.51 hrs
 Average Depth at Peak Storage= 0.20'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 110.71 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 820.0' Slope= 0.0037 '/'
 Inlet Invert= 326.00', Outlet Invert= 323.00'



Reach 50R: reach within Riggs Brook to outlet

Hydrograph



Summary for Pond 3P: GW3

Inflow Area = 0.251 ac, 36.31% Impervious, Inflow Depth = 1.71" for 10-Year event
 Inflow = 0.66 cfs @ 11.99 hrs, Volume= 0.036 af
 Outflow = 0.02 cfs @ 14.07 hrs, Volume= 0.036 af, Atten= 97%, Lag= 124.6 min
 Primary = 0.02 cfs @ 14.07 hrs, Volume= 0.036 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 328.50' Surf.Area= 1,878 sf Storage= 1,878 cf
 Peak Elev= 329.26' @ 14.07 hrs Surf.Area= 2,079 sf Storage= 2,763 cf (885 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= 477.1 min (1,271.5 - 794.4)

Volume	Invert	Avail.Storage	Storage Description	
#1	326.00'	4,522 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
326.00	1,878	0.0	0	0
329.00	1,878	40.0	2,254	2,254
330.00	2,658	100.0	2,268	4,522

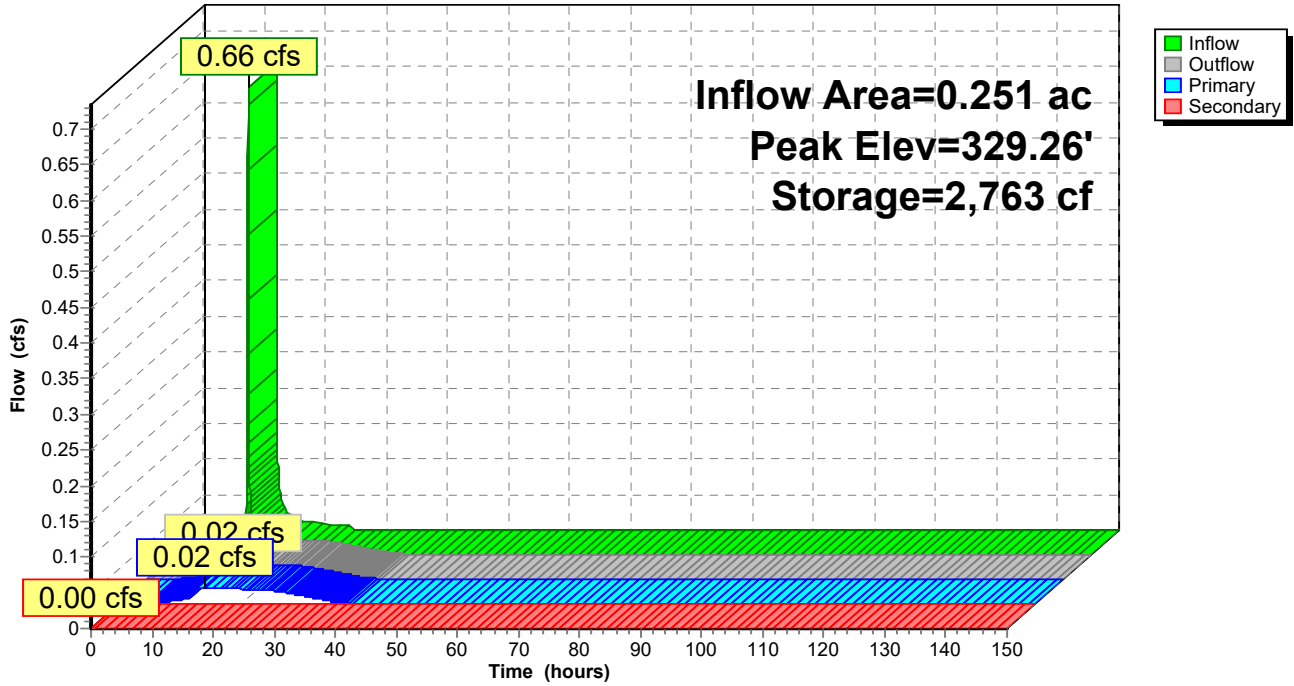
Device	Routing	Invert	Outlet Devices
#1	Primary	328.50'	18.0" Round Culvert L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.50' / 328.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	328.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	329.50'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	329.50'	10.0' long x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.02 cfs @ 14.07 hrs HW=329.26' TW=328.52' (Dynamic Tailwater)
 ↑1=Culvert (Passes 0.02 cfs of 1.57 cfs potential flow)
 ↑2=Orifice/Grate (Orifice Controls 0.02 cfs @ 4.07 fps)
 ↑3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=328.50' TW=328.50' (Dynamic Tailwater)
 ↑4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: GW3

Hydrograph



Summary for Pond 4P: GW 4

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth = 2.05" for 10-Year event
 Inflow = 8.13 cfs @ 12.01 hrs, Volume= 0.489 af
 Outflow = 3.80 cfs @ 12.14 hrs, Volume= 0.488 af, Atten= 53%, Lag= 7.5 min
 Primary = 3.80 cfs @ 12.14 hrs, Volume= 0.488 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 330.80' Surf.Area= 5,719 sf Storage= 3,431 cf
 Peak Elev= 332.39' @ 12.14 hrs Surf.Area= 8,685 sf Storage= 12,653 cf (9,222 cf above start)

Plug-Flow detention time= 714.9 min calculated for 0.409 af (84% of inflow)
 Center-of-Mass det. time= 520.3 min (1,302.0 - 781.7)

Volume	Invert	Avail.Storage	Storage Description	
#1	329.30'	18,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
329.30	5,719	0.0	0	0
331.30	5,719	40.0	4,575	4,575
332.00	8,071	100.0	4,826	9,402
333.00	9,652	100.0	8,862	18,263

Device	Routing	Invert	Outlet Devices
#1	Primary	330.80'	18.0" Round Culvert L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 330.80' / 330.40' S= 0.0235 ' S= 0.0235 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	330.80'	1.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	332.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	332.50'	194.0' 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=3.79 cfs @ 12.14 hrs HW=332.39' TW=330.36' (Dynamic Tailwater)

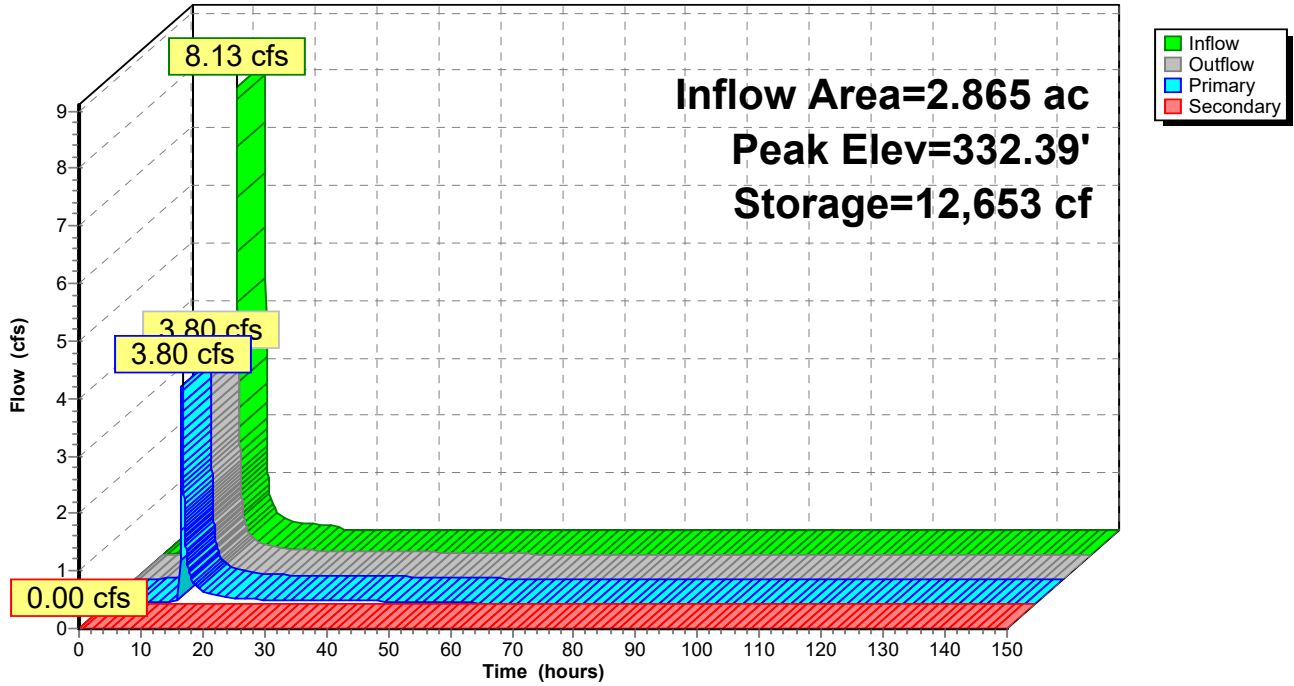
- ↑ **1=Culvert** (Passes 3.79 cfs of 6.15 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 5.95 fps)
- ↑ **3=Orifice/Grate** (Weir Controls 3.72 cfs @ 2.04 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=330.80' TW=330.30' (Dynamic Tailwater)

- ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: GW 4

Hydrograph



Summary for Pond 5P: GW 2

Inflow Area = 1.237 ac, 49.45% Impervious, Inflow Depth = 2.02" for 10-Year event
 Inflow = 3.45 cfs @ 12.02 hrs, Volume= 0.208 af
 Outflow = 0.65 cfs @ 12.28 hrs, Volume= 0.165 af, Atten= 81%, Lag= 16.0 min
 Primary = 0.65 cfs @ 12.28 hrs, Volume= 0.165 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 327.50' Surf.Area= 1,930 sf Storage= 1,930 cf
 Peak Elev= 329.12' @ 12.28 hrs Surf.Area= 6,429 sf Storage= 6,983 cf (5,053 cf above start)

Plug-Flow detention time= 917.5 min calculated for 0.121 af (58% of inflow)
 Center-of-Mass det. time= 577.6 min (1,362.1 - 784.5)

Volume	Invert	Avail.Storage	Storage Description	
#1	325.00'	14,236 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.00	1,930	0.0	0	0
328.00	1,930	40.0	2,316	2,316
330.00	9,990	100.0	11,920	14,236

Device	Routing	Invert	Outlet Devices
#1	Primary	327.50'	18.0" Round Culvert L= 33.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 327.50' / 327.50' S= 0.0000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	327.50'	1.4" Vert. Orifice/Grate C= 0.600
#3	Device 1	329.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	329.50'	82.0' 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=0.65 cfs @ 12.28 hrs HW=329.12' TW=328.55' (Dynamic Tailwater)

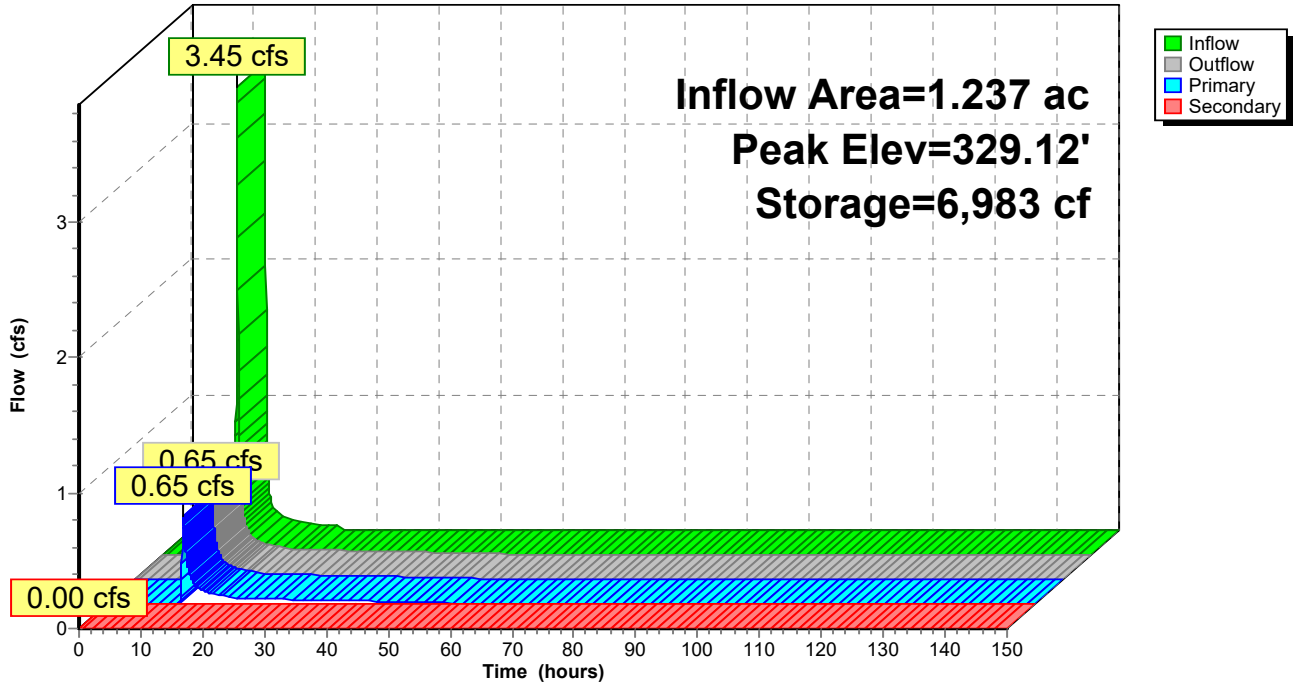
- ↑ 1=Culvert (Passes 0.65 cfs of 5.57 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.04 cfs @ 3.63 fps)
- ↑ 3=Orifice/Grate (Weir Controls 0.61 cfs @ 1.12 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=327.50' TW=328.50' (Dynamic Tailwater)

- ↑ 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 5P: GW 2

Hydrograph



Summary for Pond 6P: GW 1

Inflow Area = 1.101 ac, 25.57% Impervious, Inflow Depth = 1.78" for 10-Year event
 Inflow = 3.26 cfs @ 11.97 hrs, Volume= 0.163 af
 Outflow = 1.61 cfs @ 12.07 hrs, Volume= 0.163 af, Atten= 51%, Lag= 5.6 min
 Primary = 0.19 cfs @ 12.07 hrs, Volume= 0.108 af
 Secondary = 1.42 cfs @ 12.07 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 326.80' Surf.Area= 6,549 sf Storage= 6,549 cf
 Peak Elev= 327.55' @ 12.07 hrs Surf.Area= 7,892 sf Storage= 9,637 cf (3,088 cf above start)

Plug-Flow detention time= 2,788.5 min calculated for 0.012 af (8% of inflow)
 Center-of-Mass det. time= 609.7 min (1,412.9 - 803.2)

Volume	Invert	Avail.Storage	Storage Description	
#1	324.30'	26,868 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
324.30	6,549	0.0	0	0
327.30	6,549	40.0	7,859	7,859
329.00	15,815	100.0	19,009	26,868

Device	Routing	Invert	Outlet Devices
#1	Primary	326.80'	18.0" Round Culvert L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.80' / 326.00' S= 0.0286 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	326.80'	1.3" Vert. Orifice/Grate C= 0.600
#3	Device 1	327.50'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	327.50'	61.0' 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=0.19 cfs @ 12.07 hrs HW=327.55' TW=326.04' (Dynamic Tailwater)

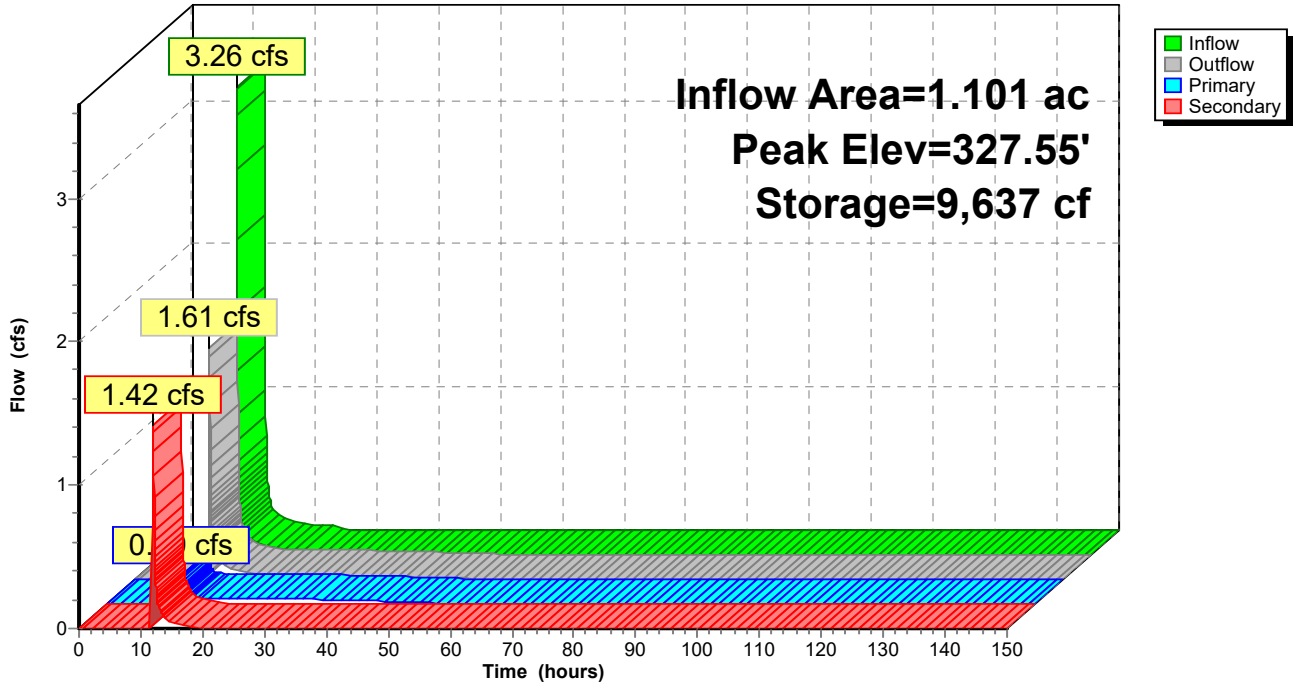
- ↑ 1=Culvert (Passes 0.19 cfs of 2.58 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.04 cfs @ 4.00 fps)
- ↑ 3=Orifice/Grate (Weir Controls 0.15 cfs @ 0.70 fps)

Secondary OutFlow Max=1.40 cfs @ 12.07 hrs HW=327.55' TW=326.04' (Dynamic Tailwater)

- ↑ 4=Broad-Crested Rectangular Weir (Weir Controls 1.40 cfs @ 0.50 fps)

Pond 6P: GW 1

Hydrograph



Summary for Pond 10P: (Rim @ 351.5) (CB #46 to CB #43)

Inflow Area = 4.563 ac, 43.22% Impervious, Inflow Depth = 2.05" for 10-Year event
 Inflow = 14.36 cfs @ 11.99 hrs, Volume= 0.781 af
 Outflow = 14.36 cfs @ 11.99 hrs, Volume= 0.781 af, Atten= 0%, Lag= 0.0 min
 Primary = 14.36 cfs @ 11.99 hrs, Volume= 0.781 af

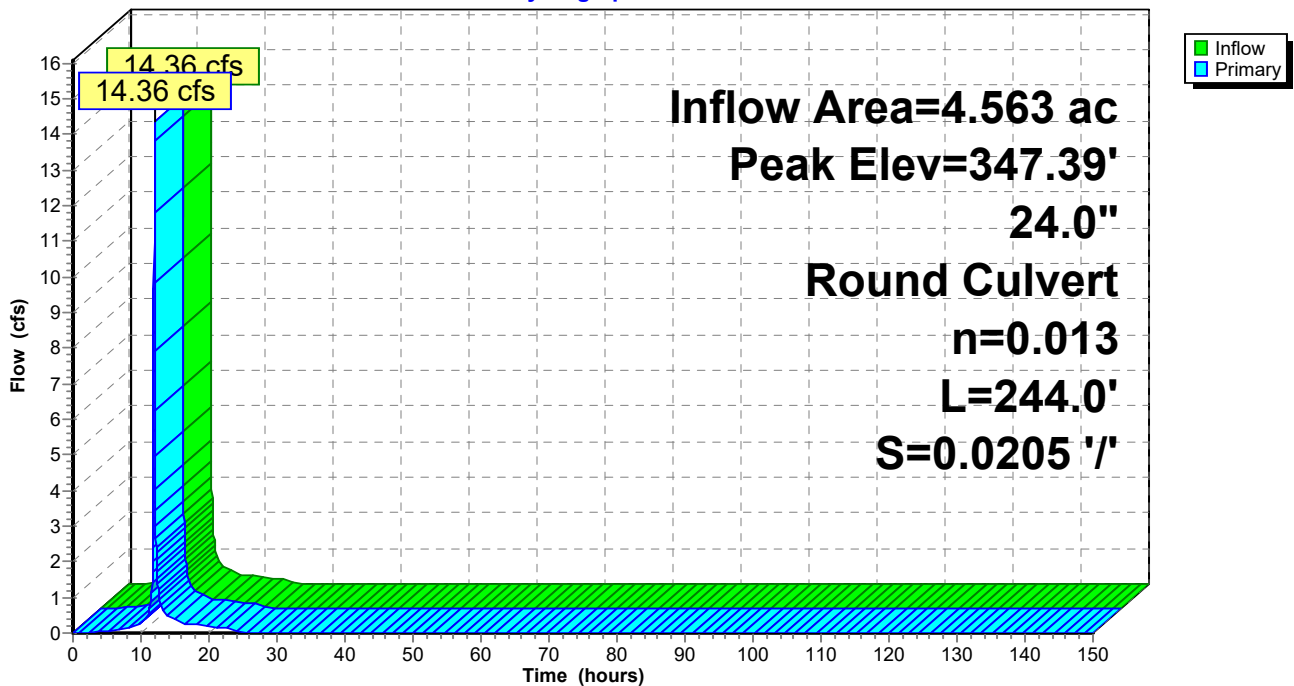
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 347.39' @ 11.99 hrs
 Flood Elev= 351.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.50'	24.0" Round Culvert L= 244.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 345.50' / 340.50' S= 0.0205 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=14.27 cfs @ 11.99 hrs HW=347.38' TW=342.51' (Dynamic Tailwater)
 ↳ **1=Culvert** (Inlet Controls 14.27 cfs @ 4.66 fps)

Pond 10P: (Rim @ 351.5) (CB #46 to CB #43)

Hydrograph



Summary for Pond 11P: (Rim @ 345.05) (CB #43 to CB #8)

Inflow Area = 13.305 ac, 50.65% Impervious, Inflow Depth = 2.16" for 10-Year event
 Inflow = 37.32 cfs @ 12.02 hrs, Volume= 2.400 af
 Outflow = 37.32 cfs @ 12.02 hrs, Volume= 2.400 af, Atten= 0%, Lag= 0.0 min
 Primary = 37.32 cfs @ 12.02 hrs, Volume= 2.400 af

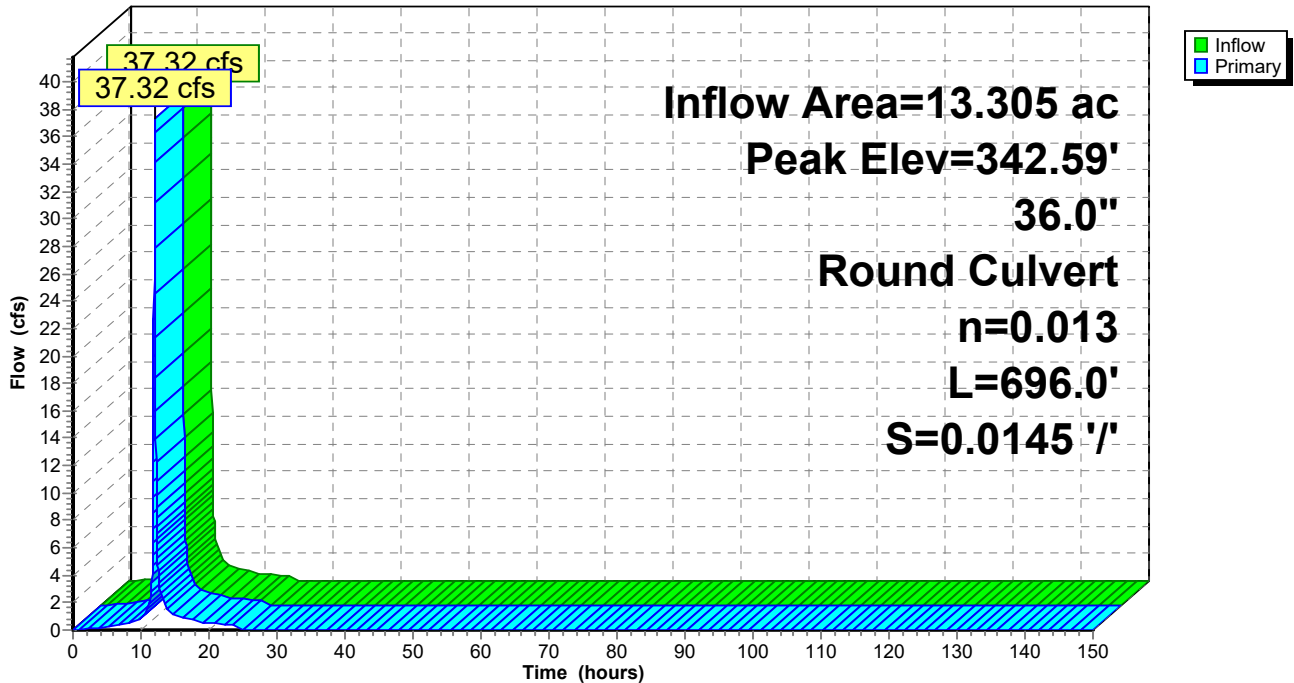
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 342.59' @ 12.02 hrs
 Flood Elev= 345.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	339.90'	36.0" Round Culvert L= 696.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 339.90' / 329.80' S= 0.0145 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=37.22 cfs @ 12.02 hrs HW=342.58' TW=332.78' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 37.22 cfs @ 5.58 fps)

Pond 11P: (Rim @ 345.05) (CB #43 to CB #8)

Hydrograph



Summary for Pond 12P: Detention Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 5.712 ac, 60.00% Impervious, Inflow Depth = 2.31" for 10-Year event
 Inflow = 18.75 cfs @ 12.01 hrs, Volume= 1.101 af
 Outflow = 6.04 cfs @ 12.16 hrs, Volume= 1.100 af, Atten= 68%, Lag= 9.3 min
 Primary = 6.04 cfs @ 12.16 hrs, Volume= 1.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 334.73' @ 12.17 hrs Surf.Area= 12,736 sf Storage= 19,834 cf

Plug-Flow detention time= 111.7 min calculated for 1.100 af (100% of inflow)
 Center-of-Mass det. time= 110.8 min (887.4 - 776.6)

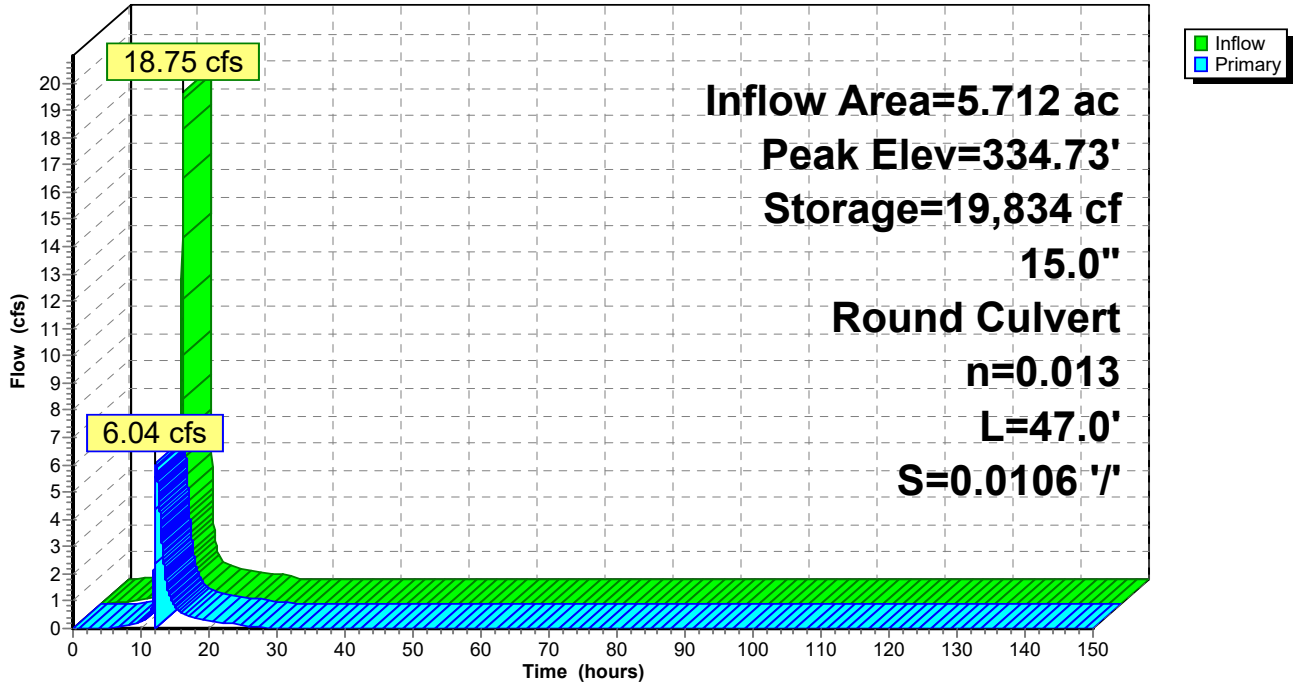
Volume	Invert	Avail.Storage	Storage Description
#1	333.00'	69,744 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
333.00	10,280	0	0
334.00	11,680	10,980	10,980
335.00	13,136	12,408	23,388
336.00	14,649	13,893	37,281
337.00	16,218	15,434	52,714
338.00	17,842	17,030	69,744

Device	Routing	Invert	Outlet Devices
#1	Primary	333.00'	15.0" Round Culvert L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 333.00' / 332.50' S= 0.0106 1/1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.04 cfs @ 12.16 hrs HW=334.72' TW=333.52' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 6.04 cfs @ 4.92 fps)

Pond 12P: Detention Pond

Hydrograph



Summary for Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8)

Inflow Area = 9.116 ac, 63.70% Impervious, Inflow Depth = 2.37" for 10-Year event
 Inflow = 13.10 cfs @ 12.02 hrs, Volume= 1.797 af
 Outflow = 13.10 cfs @ 12.02 hrs, Volume= 1.797 af, Atten= 0%, Lag= 0.0 min
 Primary = 13.10 cfs @ 12.02 hrs, Volume= 1.797 af

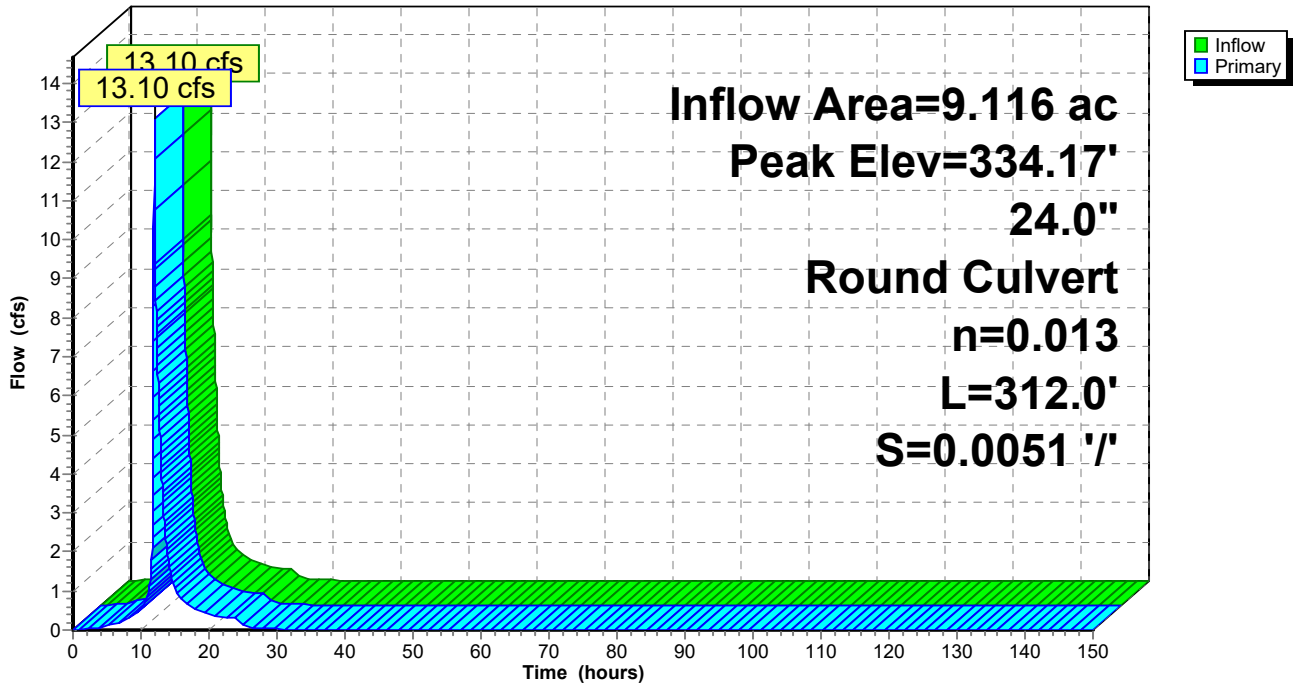
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 334.17' @ 12.02 hrs
 Flood Elev= 338.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	331.13'	24.0" Round Culvert L= 312.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.13' / 329.54' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.47 cfs @ 12.02 hrs HW=334.09' TW=332.77' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 12.47 cfs @ 3.97 fps)

Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8)

Hydrograph



Summary for Pond 14P: (Rim @ 337.1) (CB #8 to Main GW)

Inflow Area = 24.714 ac, 55.57% Impervious, Inflow Depth = 2.24" for 10-Year event
 Inflow = 57.31 cfs @ 12.02 hrs, Volume= 4.615 af
 Outflow = 57.31 cfs @ 12.02 hrs, Volume= 4.615 af, Atten= 0%, Lag= 0.0 min
 Primary = 57.31 cfs @ 12.02 hrs, Volume= 4.615 af

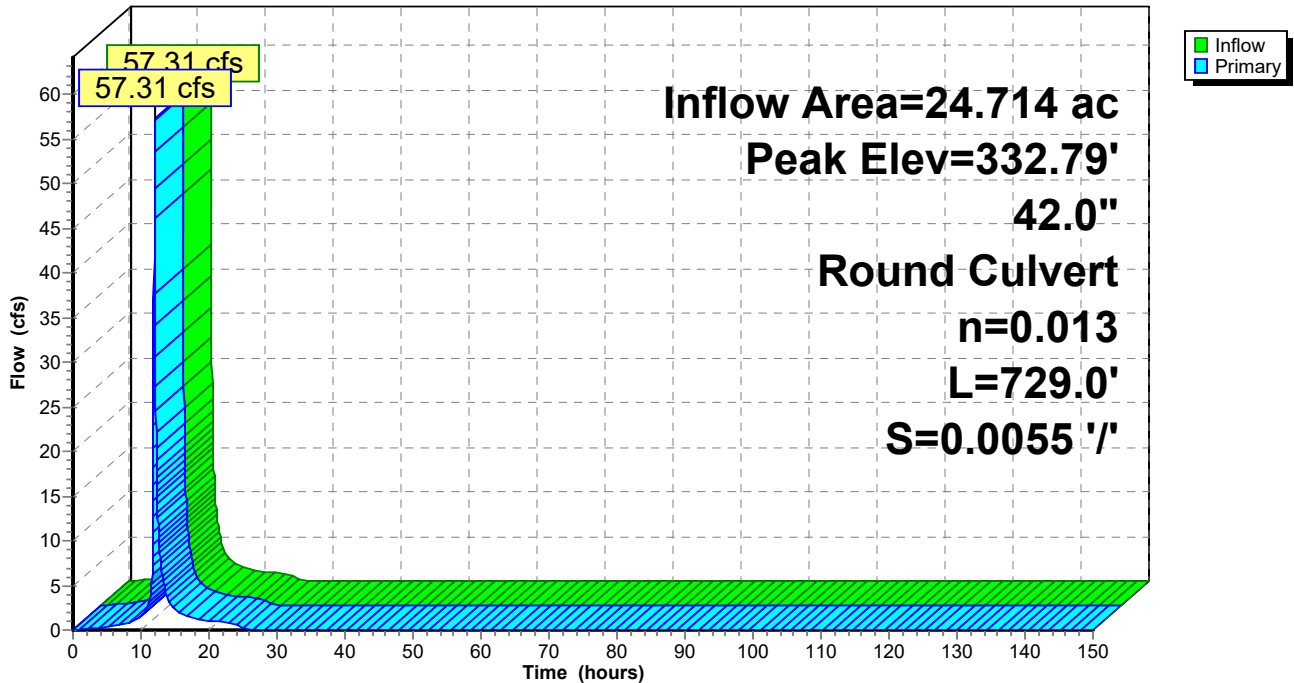
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 332.79' @ 12.02 hrs
 Flood Elev= 337.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	329.52'	42.0" Round Culvert L= 729.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 329.52' / 325.50' S= 0.0055 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=56.88 cfs @ 12.02 hrs HW=332.78' TW=327.86' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 56.88 cfs @ 7.94 fps)

Pond 14P: (Rim @ 337.1) (CB #8 to Main GW)

Hydrograph



Summary for Pond 15P: (Invert @ 328.1) (Yard Drain to CB #1)

Inflow Area = 4.419 ac, 15.87% Impervious, Inflow Depth = 1.63" for 10-Year event
 Inflow = 7.05 cfs @ 12.16 hrs, Volume= 0.599 af
 Outflow = 6.21 cfs @ 12.23 hrs, Volume= 0.598 af, Atten= 12%, Lag= 3.8 min
 Primary = 6.21 cfs @ 12.23 hrs, Volume= 0.598 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 329.37' @ 12.26 hrs Surf.Area= 2,373 sf Storage= 1,938 cf

Plug-Flow detention time= 11.2 min calculated for 0.598 af (100% of inflow)
 Center-of-Mass det. time= 9.5 min (840.3 - 830.8)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	5,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
328.00	450	0	0
330.50	3,950	5,500	5,500

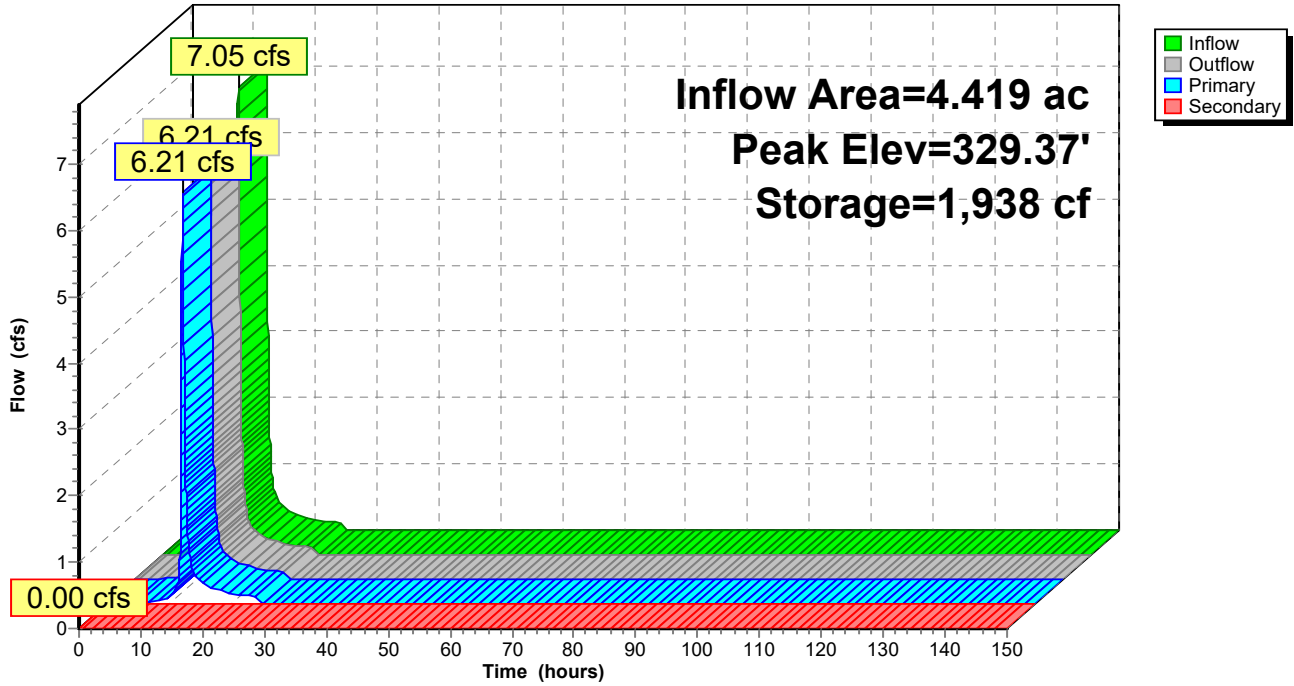
Device	Routing	Invert	Outlet Devices
#1	Primary	328.10'	24.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.10' / 326.80' S= 0.0260 ' S= 0.0260 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	330.00'	10.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=6.07 cfs @ 12.23 hrs HW=329.36' TW=328.79' (Dynamic Tailwater)
 ↑1=Culvert (Outlet Controls 6.07 cfs @ 4.14 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=328.00' TW=330.00' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 15P: (Invert @ 328.1) (Yard Drain to CB #1)

Hydrograph



Summary for Pond 16P: Main Gravel Wetland

[62] Hint: Exceeded Reach 5R OUTLET depth by 3.30' @ 12.36 hrs

[80] Warning: Exceeded Pond CB1 by 1.00' @ 28.02 hrs (6.47 cfs 1.757 af)

Inflow Area = 43.724 ac, 40.36% Impervious, Inflow Depth = 2.01" for 10-Year event
 Inflow = 88.80 cfs @ 12.02 hrs, Volume= 7.307 af
 Outflow = 27.74 cfs @ 12.36 hrs, Volume= 7.304 af, Atten= 69%, Lag= 20.3 min
 Primary = 26.23 cfs @ 12.37 hrs, Volume= 7.277 af
 Secondary = 1.51 cfs @ 12.36 hrs, Volume= 0.027 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs

Starting Elev= 324.50' Surf.Area= 22,146 sf Storage= 31,004 cf

Peak Elev= 328.80' @ 12.37 hrs Surf.Area= 42,098 sf Storage= 155,178 cf (124,174 cf above start)

Plug-Flow detention time= 509.6 min calculated for 6.592 af (90% of inflow)

Center-of-Mass det. time= 395.2 min (1,207.3 - 812.1)

Volume	Invert	Avail.Storage	Storage Description	
#1	321.00'	240,062 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
321.00	22,146	0.0	0	0
325.00	22,146	40.0	35,434	35,434
326.00	26,028	100.0	24,087	59,521
327.00	30,037	100.0	28,033	87,553
328.00	39,628	100.0	34,833	122,386
329.00	42,706	100.0	41,167	163,553
330.00	45,964	100.0	44,335	207,888
330.70	45,964	100.0	32,175	240,062

Device	Routing	Invert	Outlet Devices
#1	Primary	324.50'	24.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.50' / 324.10' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	324.50'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	327.20'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	328.70'	20.0' long (Profile 1) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=26.23 cfs @ 12.37 hrs HW=328.80' TW=325.74' (Dynamic Tailwater)

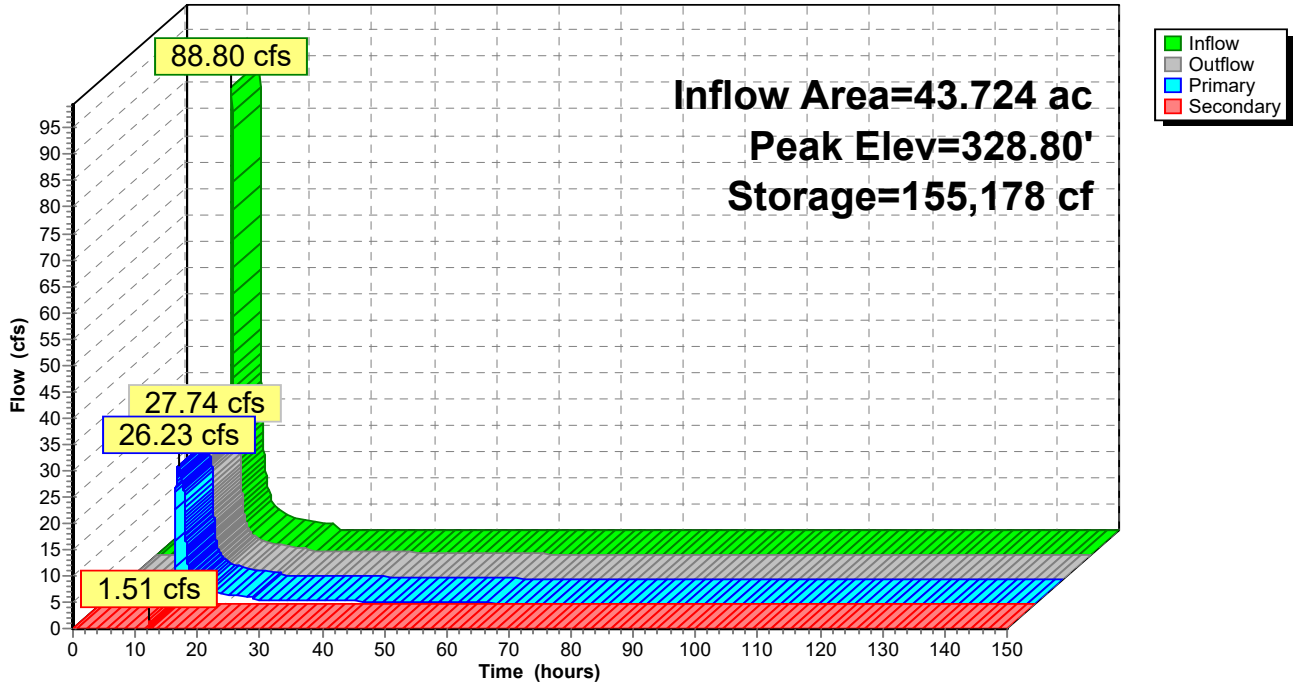
- ↑ 1=Culvert (Barrel Controls 26.23 cfs @ 8.35 fps)
- ↑ 2=Orifice/Grate (Passes < 0.74 cfs potential flow)
- ↑ 3=Orifice/Grate (Passes < 76.59 cfs potential flow)

Secondary OutFlow Max=1.50 cfs @ 12.36 hrs HW=328.80' TW=328.76' (Dynamic Tailwater)

- ↑ 4=Broad-Crested Rectangular Weir (Weir Controls 1.50 cfs @ 0.73 fps)

Pond 16P: Main Gravel Wetland

Hydrograph



Summary for Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2)

[80] Warning: Exceeded Pond 12P by 0.26' @ 12.02 hrs (3.02 cfs 0.017 af)

Inflow Area = 9.116 ac, 63.70% Impervious, Inflow Depth = 2.37" for 10-Year event
 Inflow = 13.10 cfs @ 12.02 hrs, Volume= 1.797 af
 Outflow = 13.10 cfs @ 12.02 hrs, Volume= 1.797 af, Atten= 0%, Lag= 0.0 min
 Primary = 13.10 cfs @ 12.02 hrs, Volume= 1.797 af

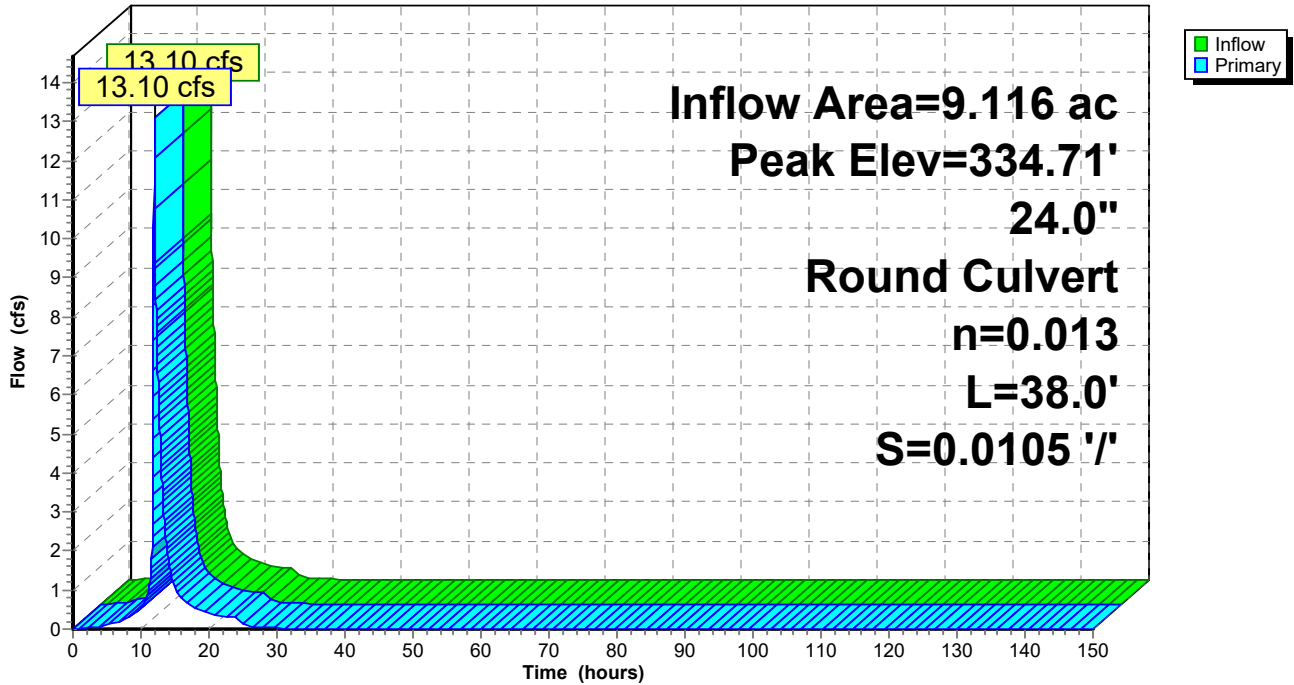
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 334.71' @ 12.03 hrs
 Flood Elev= 338.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	331.55'	24.0" Round Culvert L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.55' / 331.15' S= 0.0105 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.13 cfs @ 12.02 hrs HW=334.54' TW=334.09' (Dynamic Tailwater)
 ↳ **1=Culvert** (Inlet Controls 10.13 cfs @ 3.23 fps)

Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2)

Hydrograph



Summary for Pond 21P: (Rim @ 333.5) (CB#4 to CB#1)

Inflow Area = 5.212 ac, 38.38% Impervious, Inflow Depth = 1.98" for 10-Year event
 Inflow = 12.97 cfs @ 12.05 hrs, Volume= 0.859 af
 Outflow = 12.97 cfs @ 12.05 hrs, Volume= 0.859 af, Atten= 0%, Lag= 0.0 min
 Primary = 12.97 cfs @ 12.05 hrs, Volume= 0.859 af

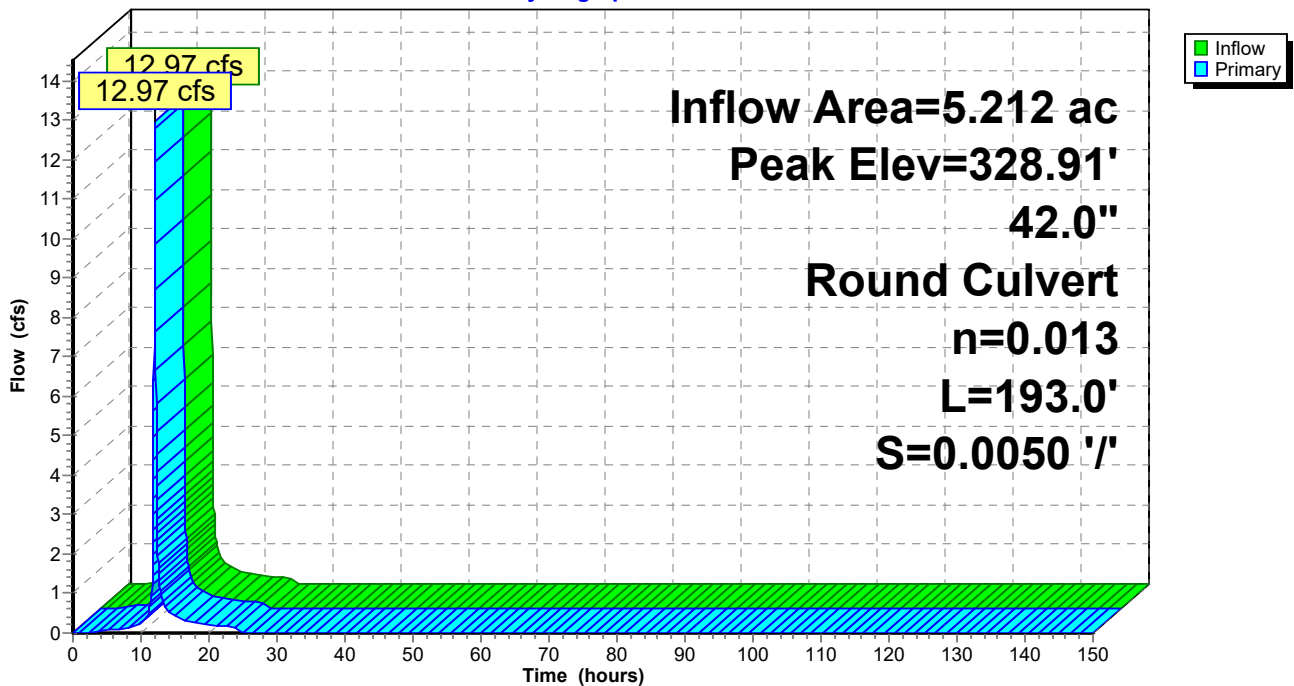
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 328.91' @ 12.11 hrs
 Flood Elev= 333.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	326.98'	42.0" Round Culvert L= 193.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.98' / 326.02' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=11.78 cfs @ 12.05 hrs HW=328.83' TW=328.34' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 11.78 cfs @ 3.31 fps)

Pond 21P: (Rim @ 333.5) (CB#4 to CB#1)

Hydrograph



Summary for Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4)

Inflow Area = 5.212 ac, 38.38% Impervious, Inflow Depth = 1.98" for 10-Year event
 Inflow = 12.97 cfs @ 12.05 hrs, Volume= 0.859 af
 Outflow = 12.97 cfs @ 12.05 hrs, Volume= 0.859 af, Atten= 0%, Lag= 0.0 min
 Primary = 12.97 cfs @ 12.05 hrs, Volume= 0.859 af

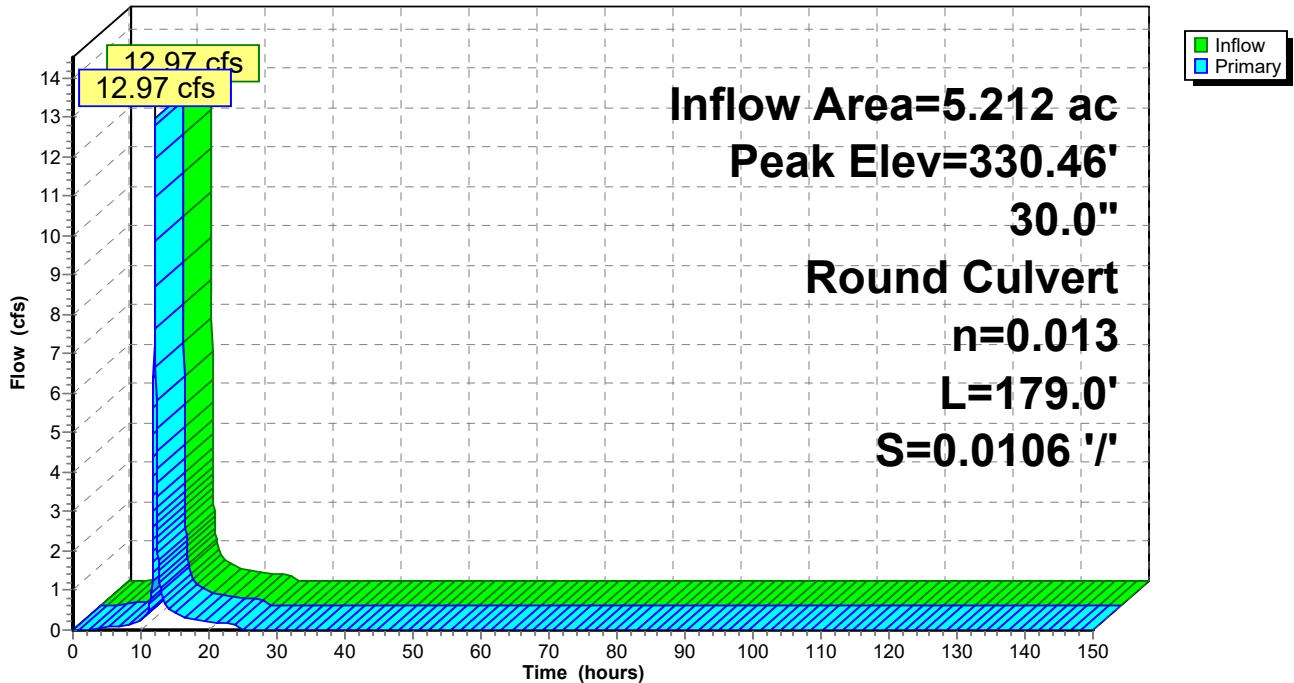
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 330.46' @ 12.07 hrs
 Flood Elev= 333.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	328.90'	30.0" Round Culvert L= 179.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.90' / 327.00' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=12.67 cfs @ 12.05 hrs HW=330.45' TW=328.83' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 12.67 cfs @ 5.65 fps)

Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4)

Hydrograph



Summary for Pond CB1: (Rim @ 331.15) (CB#1 to GW)

[80] Warning: Exceeded Pond 21P by 0.24' @ 24.64 hrs (0.17 cfs 0.006 af)

Inflow Area = 9.631 ac, 28.05% Impervious, Inflow Depth = 1.81" for 10-Year event
 Inflow = 17.05 cfs @ 12.07 hrs, Volume= 1.456 af
 Outflow = 17.05 cfs @ 12.07 hrs, Volume= 1.456 af, Atten= 0%, Lag= 0.0 min
 Primary = 17.05 cfs @ 12.07 hrs, Volume= 1.456 af

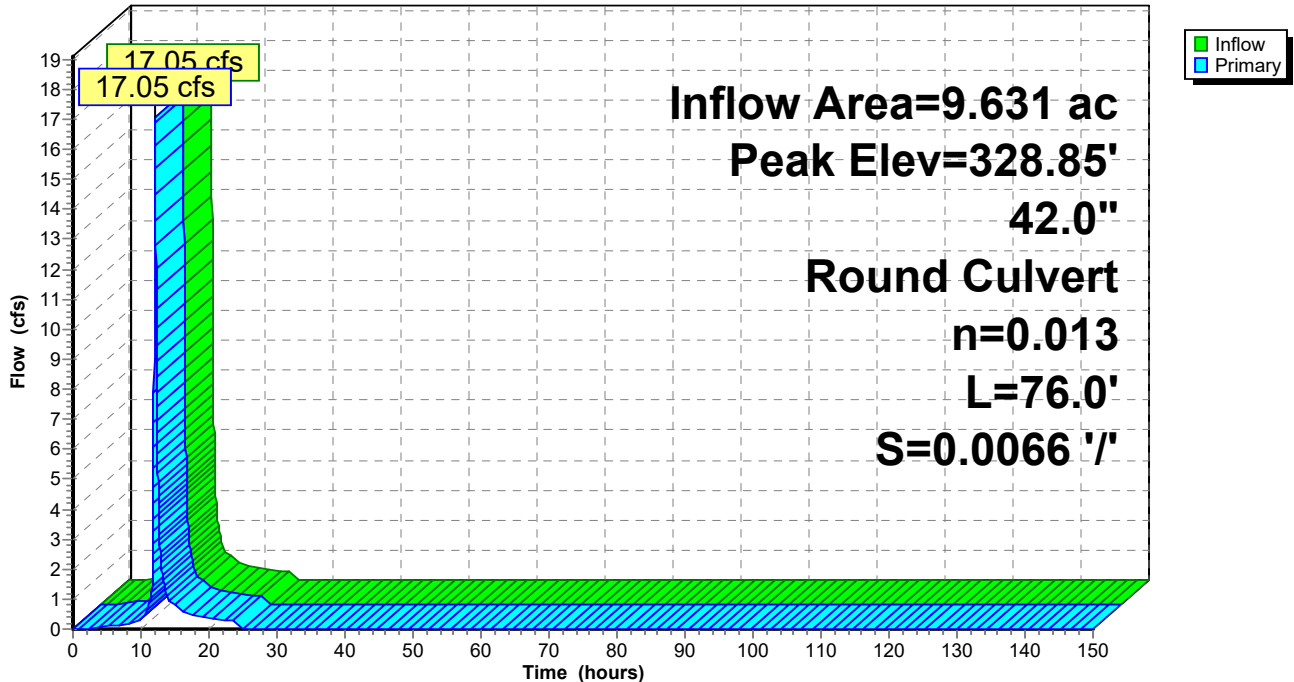
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 328.85' @ 12.34 hrs
 Flood Elev= 331.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	326.00'	42.0" Round Culvert L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.00' / 325.50' S= 0.0066 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=14.00 cfs @ 12.07 hrs HW=328.42' TW=328.19' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 14.00 cfs @ 2.78 fps)

Pond CB1: (Rim @ 331.15) (CB#1 to GW)

Hydrograph



Time span=0.00-150.00 hrs, dt=0.02 hrs, 7501 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment DA_1A: NE Residential Area Runoff Area=4.563 ac 43.22% Impervious Runoff Depth=3.90"
 Flow Length=718' Slope=0.0589 '/ Tc=7.6 min CN=WQ Runoff=27.10 cfs 1.482 af

Subcatchment DA_1B: DA_1B Runoff Area=8.742 ac 54.53% Impervious Runoff Depth=4.10"
 Flow Length=1,286' Slope=0.0477 '/ Tc=13.0 min CN=WQ Runoff=45.05 cfs 2.985 af

Subcatchment DA_1C: DA_1C Runoff Area=3.404 ac 69.93% Impervious Runoff Depth=4.39"
 Flow Length=637' Slope=0.0304 '/ Tc=8.2 min CN=WQ Runoff=21.47 cfs 1.244 af

Subcatchment DA_1D: Subcat DA_1D Runoff Area=4.419 ac 15.87% Impervious Runoff Depth=3.38"
 Flow Length=1,239' Slope=0.0219 '/ Tc=23.1 min CN=WQ Runoff=14.84 cfs 1.244 af

Subcatchment DA_1E: DA_1E Runoff Area=5.212 ac 38.38% Impervious Runoff Depth=3.80"
 Flow Length=810' Slope=0.0238 '/ Tc=13.7 min CN=WQ Runoff=24.95 cfs 1.652 af

Subcatchment DA_1F: DA_1F Runoff Area=2.293 ac 51.81% Impervious Runoff Depth=4.06"
 Flow Length=623' Slope=0.0230 '/ Tc=10.5 min CN=WQ Runoff=12.73 cfs 0.776 af

Subcatchment DA_1G: DA_1G (Rec Field) Runoff Area=5.640 ac 21.46% Impervious Runoff Depth=3.48"
 Flow Length=786' Slope=0.0219 '/ Tc=15.5 min CN=WQ Runoff=24.01 cfs 1.637 af

Subcatchment DA_1H: DA_1H (Recreation) Runoff Area=3.739 ac 0.00% Impervious Runoff Depth=3.08"
 Flow Length=421' Slope=0.0092 '/ Tc=16.6 min CN=80 Runoff=14.14 cfs 0.959 af

Subcatchment DA_4: SE Residential Area Runoff Area=2.865 ac 52.60% Impervious Runoff Depth=3.84"
 Flow Length=373' Slope=0.0136 '/ Tc=9.8 min CN=WQ Runoff=15.34 cfs 0.918 af

Subcatchment DA_5: Building H Runoff Area=1.237 ac 49.45% Impervious Runoff Depth=3.82"
 Flow Length=315' Slope=0.0098 '/ Tc=10.1 min CN=WQ Runoff=6.54 cfs 0.393 af

Subcatchment DA_7: 60% Impervious Runoff Area=5.712 ac 60.00% Impervious Runoff Depth=4.21"
 Flow Length=1,025' Slope=0.0545 '/ Tc=9.3 min CN=WQ Runoff=33.85 cfs 2.006 af

Subcatchment DA_8: Southern Half of Runoff Area=0.251 ac 36.31% Impervious Runoff Depth=3.42"
 Flow Length=169' Slope=0.0086 '/ Tc=7.5 min CN=WQ Runoff=1.32 cfs 0.071 af

Subcatchment DA_9: SW Residential Area Runoff Area=1.101 ac 25.57% Impervious Runoff Depth=3.56"
 Flow Length=218' Slope=0.0171 '/ Tc=6.1 min CN=WQ Runoff=6.49 cfs 0.327 af

Reach 5R: Overflow Path Avg. Flow Depth=0.43' Max Vel=4.14 fps Inflow=5.91 cfs 0.098 af
 n=0.030 L=128.0' S=0.0352 '/ Capacity=33.06 cfs Outflow=5.82 cfs 0.098 af

Reach 6R: Plunge pool to stream Avg. Flow Depth=0.80' Max Vel=3.54 fps Inflow=78.88 cfs 2.902 af
 n=0.040 L=53.0' S=0.0132 '/ Capacity=114.17 cfs Outflow=78.98 cfs 2.902 af

Reach 16R: reach within Patrick Avg. Flow Depth=2.19' Max Vel=2.57 fps Inflow=47.75 cfs 12.744 af
 n=0.035 L=400.0' S=0.0025 '/ Capacity=91.51 cfs Outflow=47.05 cfs 12.744 af

Reach 22R: reach within Patrick Brook Avg. Flow Depth=1.24' Max Vel=2.27 fps Inflow=18.72 cfs 1.666 af
n=0.035 L=280.0' S=0.0036 '/ Capacity=109.38 cfs Outflow=18.28 cfs 1.666 af

Reach 25R: reach within Patrick Brook Avg. Flow Depth=0.95' Max Vel=2.71 fps Inflow=15.46 cfs 1.340 af
n=0.035 L=220.0' S=0.0068 '/ Capacity=151.13 cfs Outflow=15.29 cfs 1.340 af

Reach 26R: reach within Patrick Brook Avg. Flow Depth=1.10' Max Vel=1.66 fps Inflow=13.30 cfs 0.918 af
n=0.035 L=455.0' S=0.0022 '/ Capacity=85.80 cfs Outflow=11.37 cfs 0.918 af

Reach 28R: emergency spillway Avg. Flow Depth=0.68' Max Vel=5.80 fps Inflow=78.93 cfs 2.902 af
n=0.078 L=16.0' S=0.1687 '/ Capacity=146.89 cfs Outflow=78.88 cfs 2.902 af

Reach 35R: Channel from Level Avg. Flow Depth=0.26' Max Vel=0.35 fps Inflow=6.15 cfs 0.327 af
n=0.150 L=127.0' S=0.0079 '/ Capacity=47.21 cfs Outflow=4.97 cfs 0.327 af

Reach 41R: Channel from Level Avg. Flow Depth=0.17' Max Vel=0.30 fps Inflow=4.13 cfs 0.351 af
n=0.150 L=52.0' S=0.0096 '/ Capacity=76.45 cfs Outflow=4.00 cfs 0.351 af

Reach 43R: Channel from Level Avg. Flow Depth=0.09' Max Vel=0.20 fps Inflow=0.30 cfs 0.071 af
n=0.150 L=45.0' S=0.0111 '/ Capacity=14.41 cfs Outflow=0.27 cfs 0.071 af

Reach 45R: Channel from Level Avg. Flow Depth=0.17' Max Vel=0.36 fps Inflow=15.18 cfs 0.918 af
n=0.150 L=92.0' S=0.0141 '/ Capacity=256.34 cfs Outflow=13.30 cfs 0.918 af

Reach 50R: reach within Riggs Brook Avg. Flow Depth=2.47' Max Vel=3.32 fps Inflow=78.98 cfs 2.902 af
n=0.035 L=820.0' S=0.0037 '/ Capacity=110.71 cfs Outflow=73.53 cfs 2.902 af

Pond 3P: GW3 Peak Elev=329.54' Storage=3,373 cf Inflow=1.32 cfs 0.071 af
Primary=0.13 cfs 0.063 af Secondary=0.17 cfs 0.009 af Outflow=0.30 cfs 0.071 af

Pond 4P: GW 4 Peak Elev=332.57' Storage=14,272 cf Inflow=15.34 cfs 0.918 af
Primary=6.51 cfs 0.816 af Secondary=8.67 cfs 0.102 af Outflow=15.18 cfs 0.918 af

Pond 5P: GW 2 Peak Elev=329.41' Storage=9,063 cf Inflow=6.54 cfs 0.393 af
Primary=4.13 cfs 0.351 af Secondary=0.00 cfs 0.000 af Outflow=4.13 cfs 0.351 af

Pond 6P: GW 1 Peak Elev=327.61' Storage=10,187 cf Inflow=6.49 cfs 0.327 af
Primary=0.63 cfs 0.130 af Secondary=5.52 cfs 0.197 af Outflow=6.15 cfs 0.327 af

Pond 10P: (Rim @ 351.5) (CB #46 to CB #43) Peak Elev=352.70' Inflow=27.10 cfs 1.482 af
24.0" Round Culvert n=0.013 L=244.0' S=0.0205 '/ Outflow=27.10 cfs 1.482 af

Pond 11P: (Rim @ 345.05) (CB #43 to CB #8) Peak Elev=349.03' Inflow=69.18 cfs 4.467 af
36.0" Round Culvert n=0.013 L=696.0' S=0.0145 '/ Outflow=69.18 cfs 4.467 af

Pond 12P: Detention Pond Peak Elev=336.17' Storage=39,731 cf Inflow=33.85 cfs 2.006 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0106 '/ Outflow=8.90 cfs 2.005 af

Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8) Peak Elev=342.81' Inflow=21.47 cfs 3.249 af
24.0" Round Culvert n=0.013 L=312.0' S=0.0051 '/ Outflow=21.47 cfs 3.249 af

Pond 14P: (Rim @ 337.1) (CB #8 to Main GW) Peak Elev=339.46' Inflow=102.84 cfs 8.492 af
42.0" Round Culvert n=0.013 L=729.0' S=0.0055 '/ Outflow=102.84 cfs 8.492 af

Post_Haystack_06-09-21_12Hour

Type II 24-hr 100-Year Rainfall=5.21"

Prepared by VT Agency of Natural Resources

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Pond 15P: (Invert @ 328.1) (Yard Drain to Peak Elev=330.49' Storage=5,454 cf Inflow=14.84 cfs 1.244 af
Primary=9.90 cfs 1.145 af Secondary=5.91 cfs 0.098 af Outflow=14.54 cfs 1.243 af

Pond 16P: Main Gravel Wetland Peak Elev=329.94' Storage=205,192 cf Inflow=164.83 cfs 13.983 af
Primary=29.78 cfs 11.078 af Secondary=78.93 cfs 2.902 af Outflow=108.41 cfs 13.980 af

Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2) Peak Elev=344.36' Inflow=21.47 cfs 3.249 af
24.0" Round Culvert n=0.013 L=38.0' S=0.0105 '/' Outflow=21.47 cfs 3.249 af

Pond 21P: (Rim @ 333.5) (CB#4 to CB#1) Peak Elev=330.45' Inflow=24.95 cfs 1.652 af
42.0" Round Culvert n=0.013 L=193.0' S=0.0050 '/' Outflow=24.95 cfs 1.652 af

Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4) Peak Elev=331.63' Inflow=24.95 cfs 1.652 af
30.0" Round Culvert n=0.013 L=179.0' S=0.0106 '/' Outflow=24.95 cfs 1.652 af

Pond CB1: (Rim @ 331.15) (CB#1 to GW) Peak Elev=330.21' Inflow=29.45 cfs 2.798 af
42.0" Round Culvert n=0.013 L=76.0' S=0.0066 '/' Outflow=29.45 cfs 2.798 af

Total Runoff Area = 49.178 ac Runoff Volume = 15.695 af Average Runoff Depth = 3.83"
59.05% Pervious = 29.040 ac 40.95% Impervious = 20.138 ac

Summary for Subcatchment DA_1A: NE Residential Area

Runoff = 27.10 cfs @ 11.99 hrs, Volume= 1.482 af, Depth= 3.90"

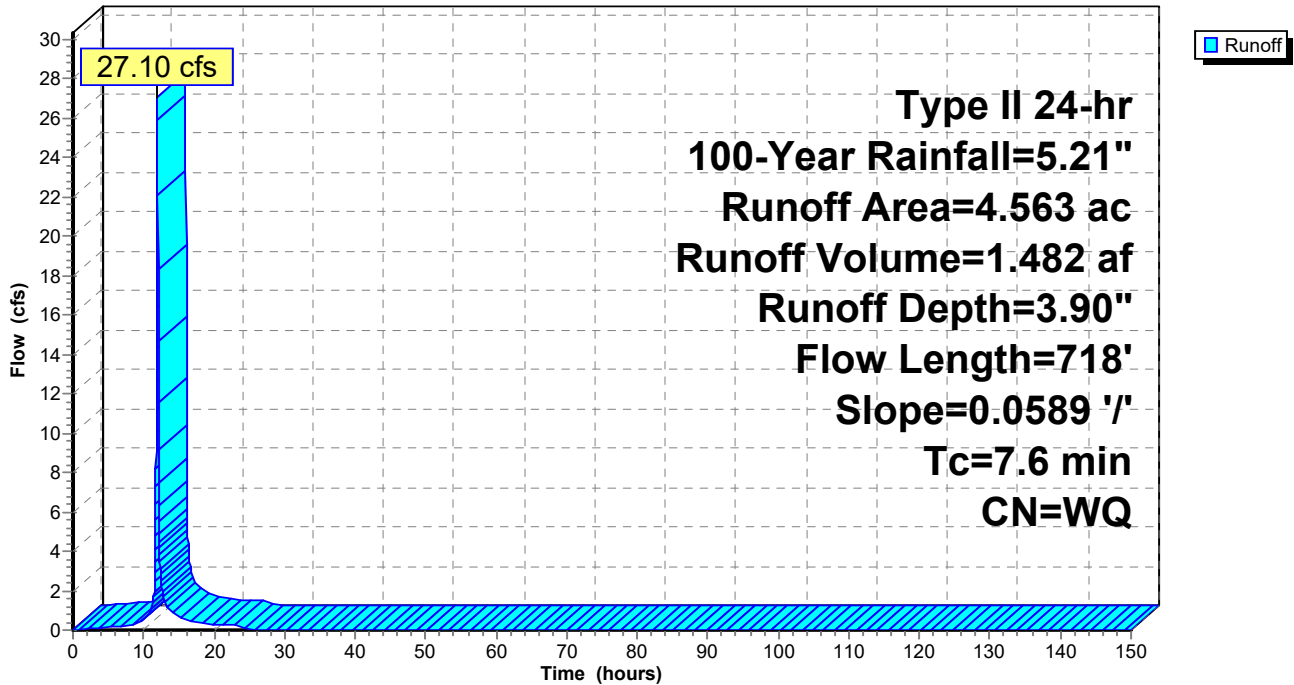
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
2.591	80	>75% Grass cover, Good, HSG D
1.972	98	Paved Parking, HSG D
4.563		Weighted Average
2.591		56.78% Pervious Area
1.972		43.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	718	0.0589	1.57		Lag/CN Method, Contour Length= 11,715' Interval= 1'

Subcatchment DA_1A: NE Residential Area

Hydrograph



Summary for Subcatchment DA_1B: DA_1B

Runoff = 45.05 cfs @ 12.04 hrs, Volume= 2.985 af, Depth= 4.10"

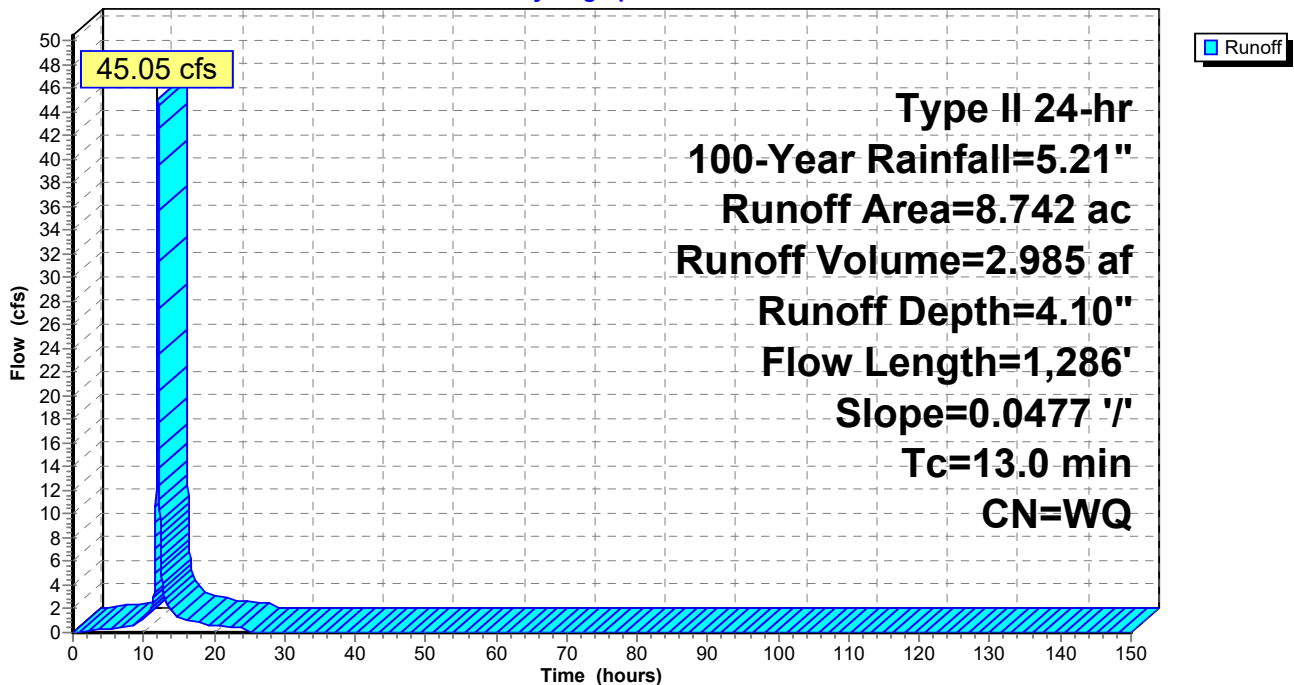
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
3.938	80	>75% Grass cover, Good, HSG D
4.767	98	Paved Parking, HSG D
* 0.037	0	Water, HSG D
8.742		Weighted Average
3.975		45.47% Pervious Area
4.767		54.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	1,286	0.0477	1.65		Lag/CN Method, Contour Length= 18,167' Interval= 1'

Subcatchment DA_1B: DA_1B

Hydrograph



Summary for Subcatchment DA_1C: DA_1C

Runoff = 21.47 cfs @ 11.99 hrs, Volume= 1.244 af, Depth= 4.39"

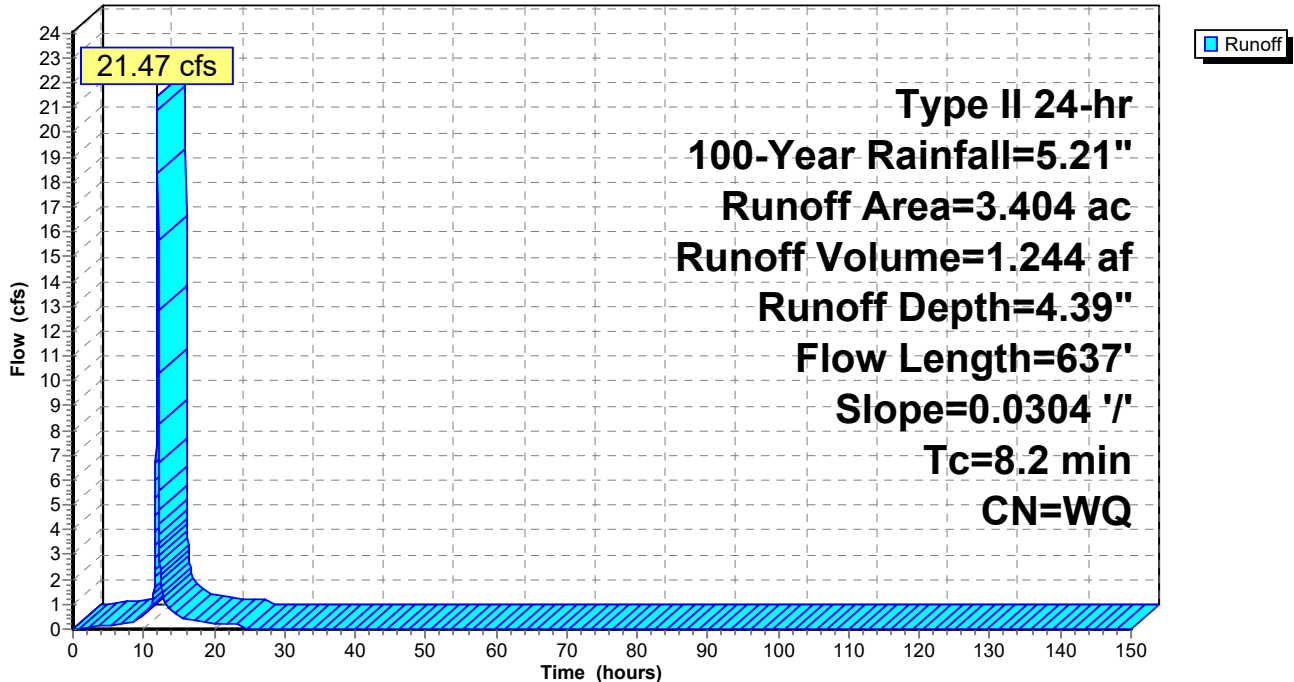
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
0.095	74	>75% Grass cover, Good, HSG C
0.928	80	>75% Grass cover, Good, HSG D
0.466	98	Paved Parking, HSG C
1.914	98	Paved Parking, HSG D
3.404		Weighted Average
1.023		30.07% Pervious Area
2.380		69.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	637	0.0304	1.30		Lag/CN Method, Contour Length= 4,511' Interval= 1'

Subcatchment DA_1C: DA_1C

Hydrograph



Summary for Subcatchment DA_1D: Subcat DA_1D

Runoff = 14.84 cfs @ 12.16 hrs, Volume= 1.244 af, Depth= 3.38"

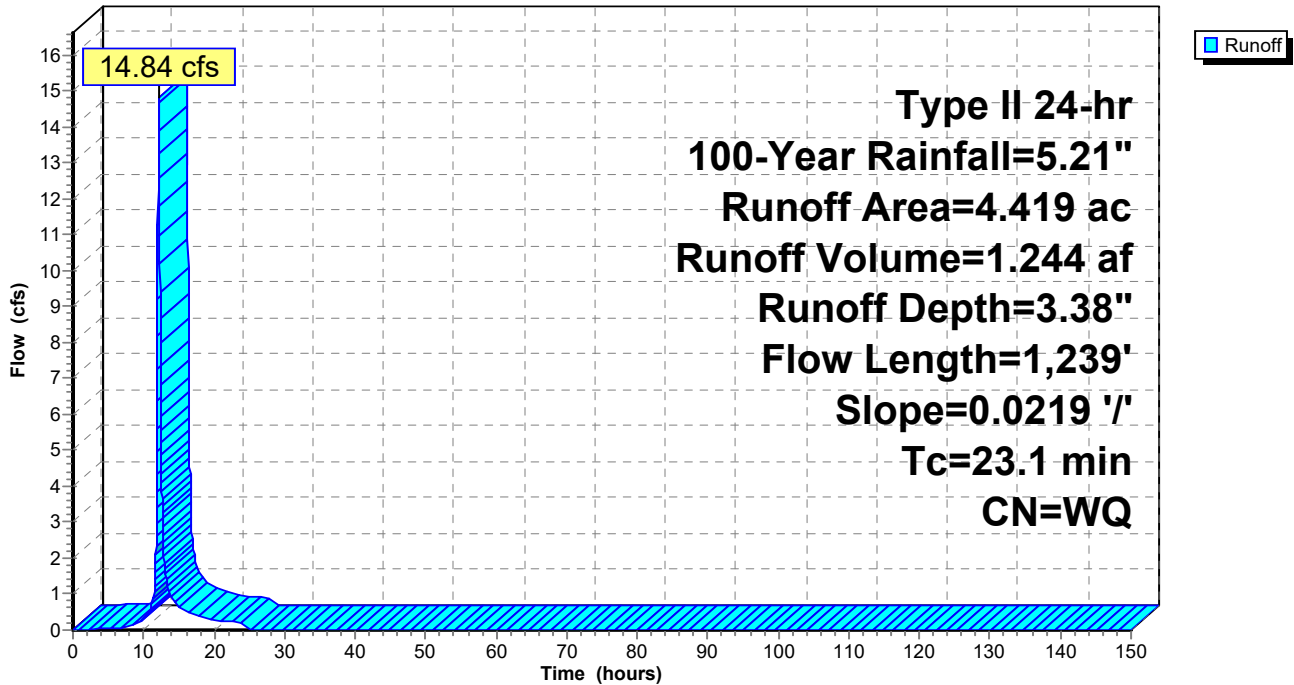
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
3.718	80	>75% Grass cover, Good, HSG D
0.701	98	Paved Parking, HSG D
4.419		Weighted Average
3.718		84.13% Pervious Area
0.701		15.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.1	1,239	0.0219	0.89		Lag/CN Method, Contour Length= 4,218' Interval= 1'

Subcatchment DA_1D: Subcat DA_1D

Hydrograph



Summary for Subcatchment DA_1E: DA_1E

Runoff = 24.95 cfs @ 12.05 hrs, Volume= 1.652 af, Depth= 3.80"

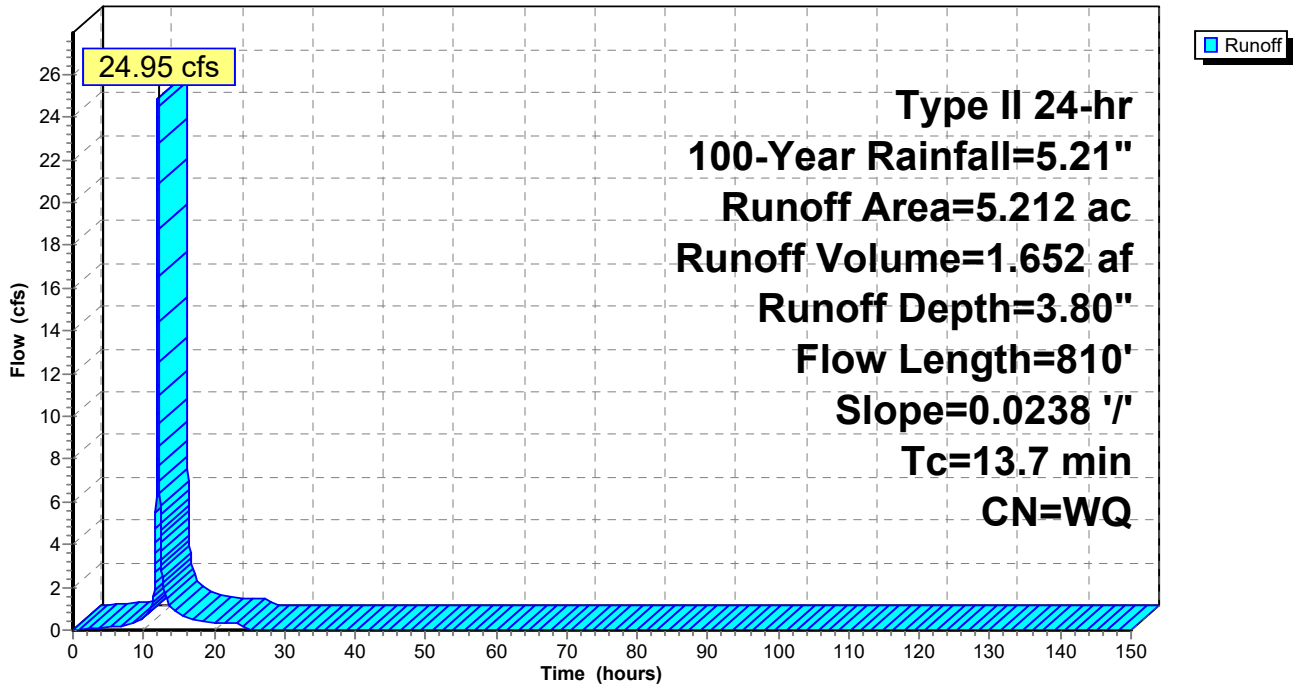
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
3.211	80	>75% Grass cover, Good, HSG D
2.000	98	Paved Parking, HSG D
5.212		Weighted Average
3.211		61.62% Pervious Area
2.000		38.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	810	0.0238	0.98		Lag/CN Method, Contour Length= 5,395' Interval= 1'

Subcatchment DA_1E: DA_1E

Hydrograph



Summary for Subcatchment DA_1F: DA_1F

Runoff = 12.73 cfs @ 12.02 hrs, Volume= 0.776 af, Depth= 4.06"

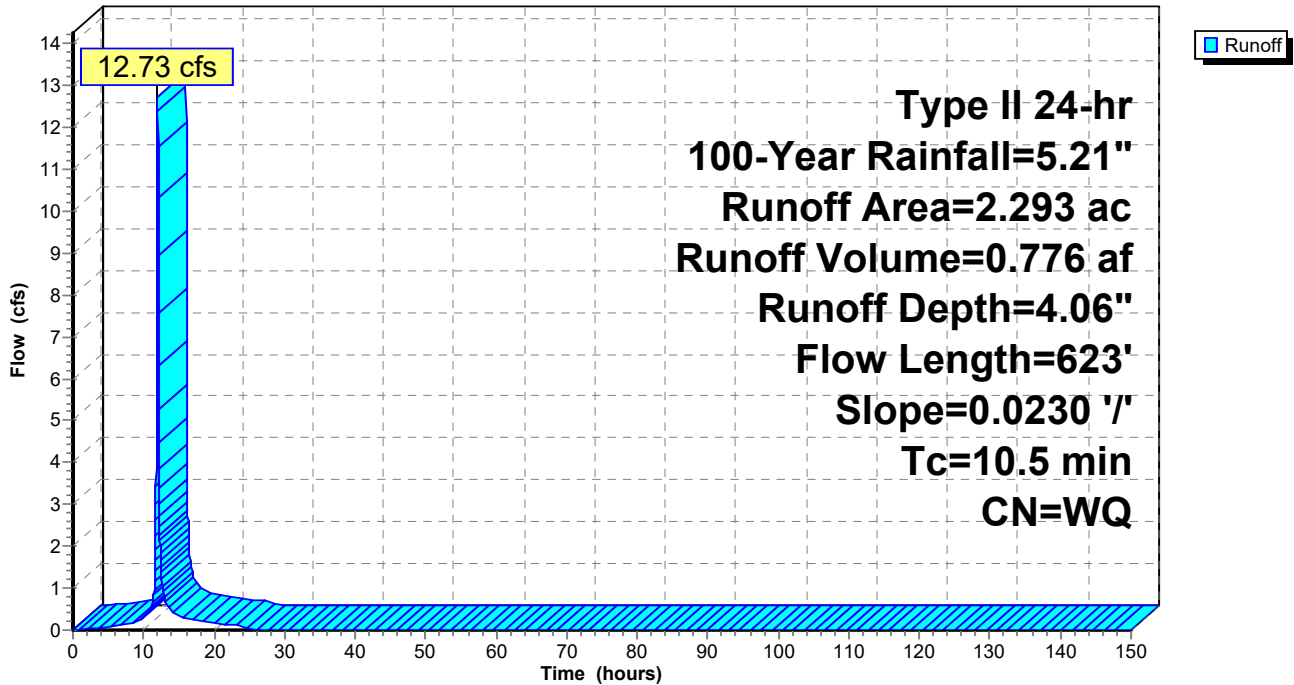
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
1.105	80	>75% Grass cover, Good, HSG D
1.188	98	Paved Parking, HSG D
2.293		Weighted Average
1.105		48.19% Pervious Area
1.188		51.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	623	0.0230	0.99		Lag/CN Method, Contour Length= 2,296' Interval= 1'

Subcatchment DA_1F: DA_1F

Hydrograph



Summary for Subcatchment DA_1G: DA_1G (Rec Field Parking Lot)

Runoff = 24.01 cfs @ 12.07 hrs, Volume= 1.637 af, Depth= 3.48"

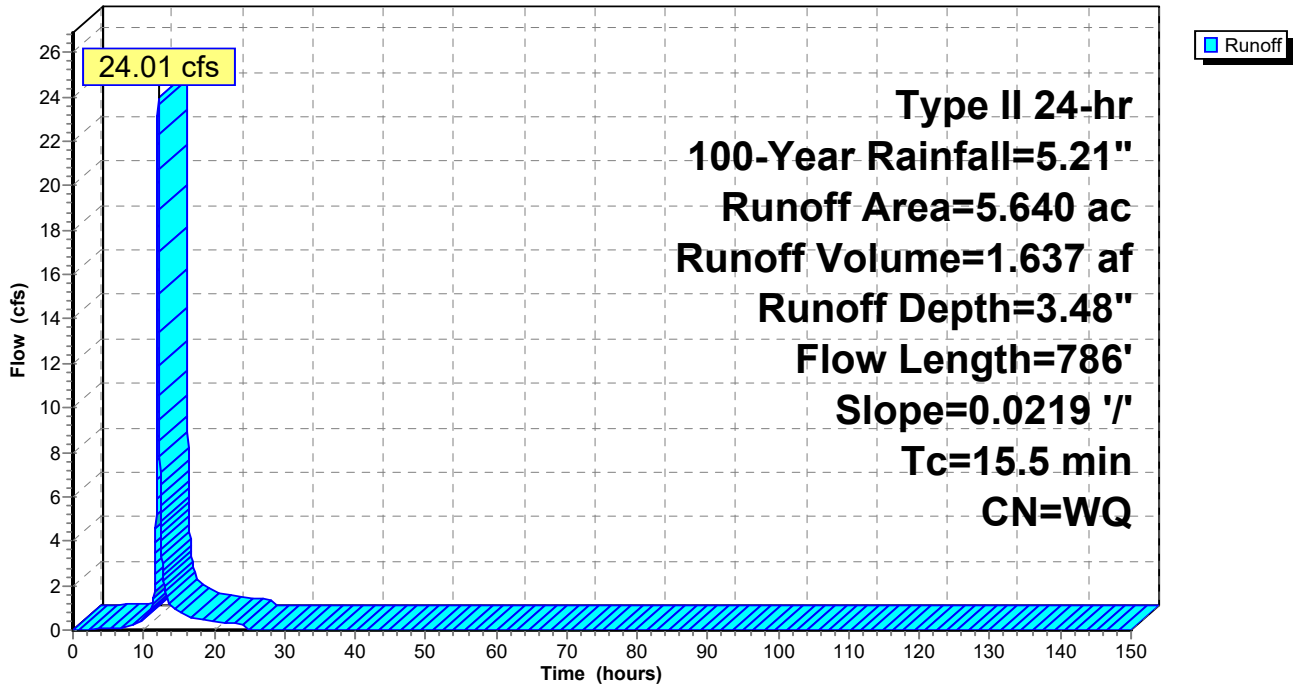
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
4.430	80	>75% Grass cover, Good, HSG D
1.210	98	Paved Parking, HSG D
5.640		Weighted Average
4.430		78.54% Pervious Area
1.210		21.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	786	0.0219	0.84		Lag/CN Method, Contour Length= 5,380' Interval= 1'

Subcatchment DA_1G: DA_1G (Rec Field Parking Lot)

Hydrograph



Summary for Subcatchment DA_1H: DA_1H (Recreation Field)

Runoff = 14.14 cfs @ 12.09 hrs, Volume= 0.959 af, Depth= 3.08"

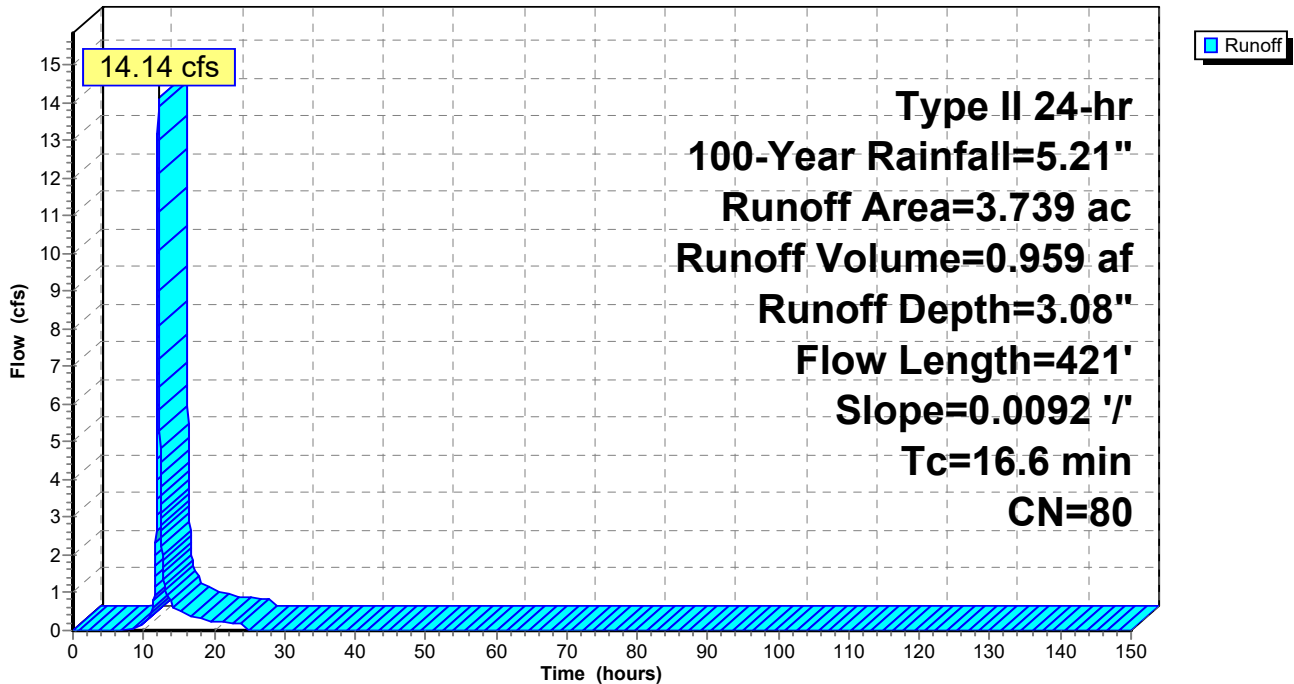
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
3.739	80	>75% Grass cover, Good, HSG D
3.739		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	421	0.0092	0.42		Lag/CN Method, Contour Length= 1,500' Interval= 1'

Subcatchment DA_1H: DA_1H (Recreation Field)

Hydrograph



Summary for Subcatchment DA_4: SE Residential Area

Runoff = 15.34 cfs @ 12.01 hrs, Volume= 0.918 af, Depth= 3.84"

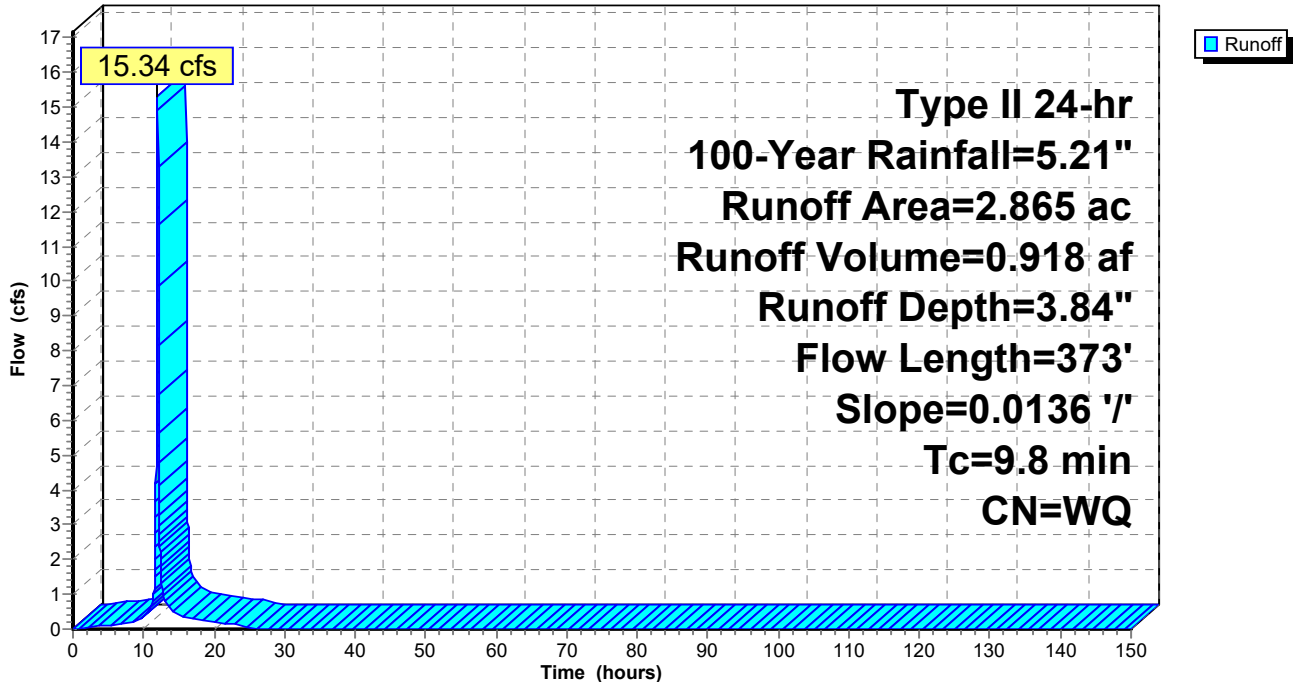
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
1.211	74	>75% Grass cover, Good, HSG C
0.147	80	>75% Grass cover, Good, HSG D
1.394	98	Paved Parking, HSG C
0.113	98	Paved Parking, HSG D
2.865		Weighted Average
1.358		47.40% Pervious Area
1.507		52.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	373	0.0136	0.64		Lag/CN Method, Contour Length= 1,698' Interval= 1'

Subcatchment DA_4: SE Residential Area

Hydrograph



Post_Haystack_06-09-21_12Hour

Type II 24-hr 100-Year Rainfall=5.21"

Prepared by VT Agency of Natural Resources

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Summary for Subcatchment DA_5: Building H

Runoff = 6.54 cfs @ 12.01 hrs, Volume= 0.393 af, Depth= 3.82"

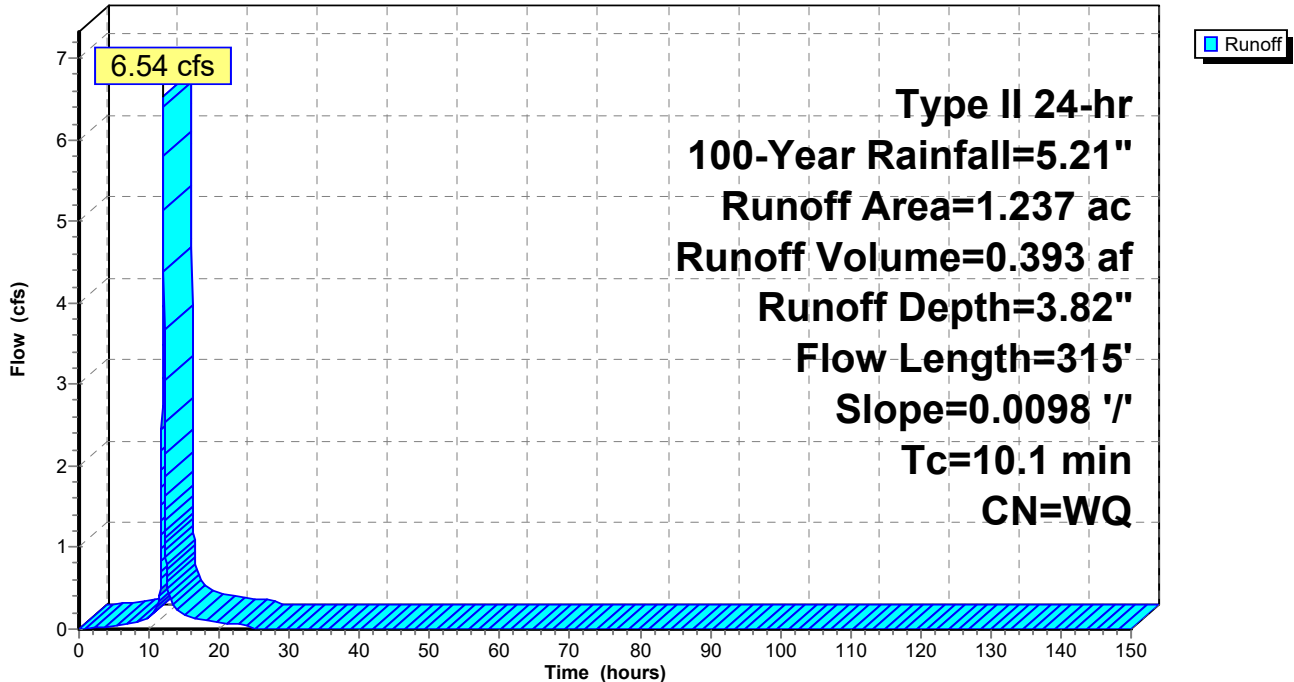
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
0.450	74	>75% Grass cover, Good, HSG C
0.175	80	>75% Grass cover, Good, HSG D
0.468	98	Paved Parking, HSG C
0.144	98	Paved Parking, HSG D
1.237		Weighted Average
0.625		50.55% Pervious Area
0.612		49.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	315	0.0098	0.52		Lag/CN Method, Contour Length= 527' Interval= 1'

Subcatchment DA_5: Building H

Hydrograph



Summary for Subcatchment DA_7: 60% Impervious

Runoff = 33.85 cfs @ 12.00 hrs, Volume= 2.006 af, Depth= 4.21"

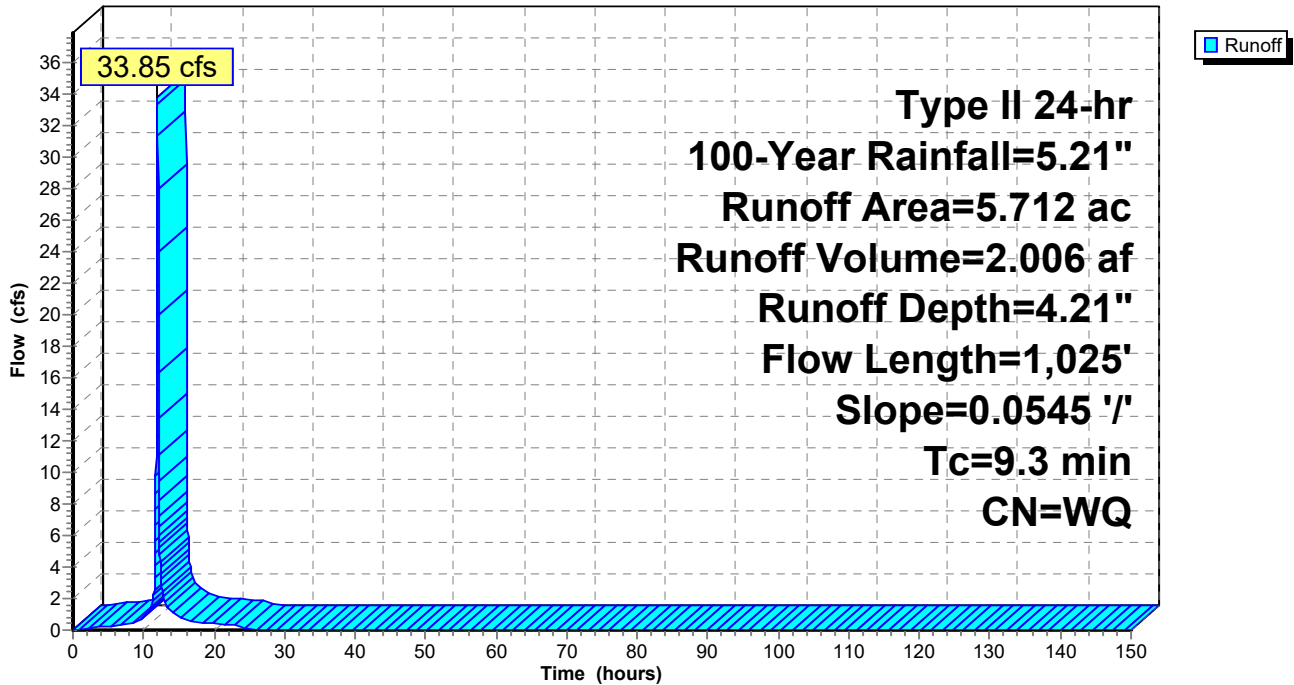
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
2.285	80	>75% Grass cover, Good, HSG D
3.427	98	Paved Parking, HSG D
5.712		Weighted Average
2.285		40.00% Pervious Area
3.427		60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	1,025	0.0545	1.83		Lag/CN Method, Contour Length= 13,556' Interval= 1'

Subcatchment DA_7: 60% Impervious

Hydrograph



Summary for Subcatchment DA_8: Southern Half of Center Road

Runoff = 1.32 cfs @ 11.99 hrs, Volume= 0.071 af, Depth= 3.42"

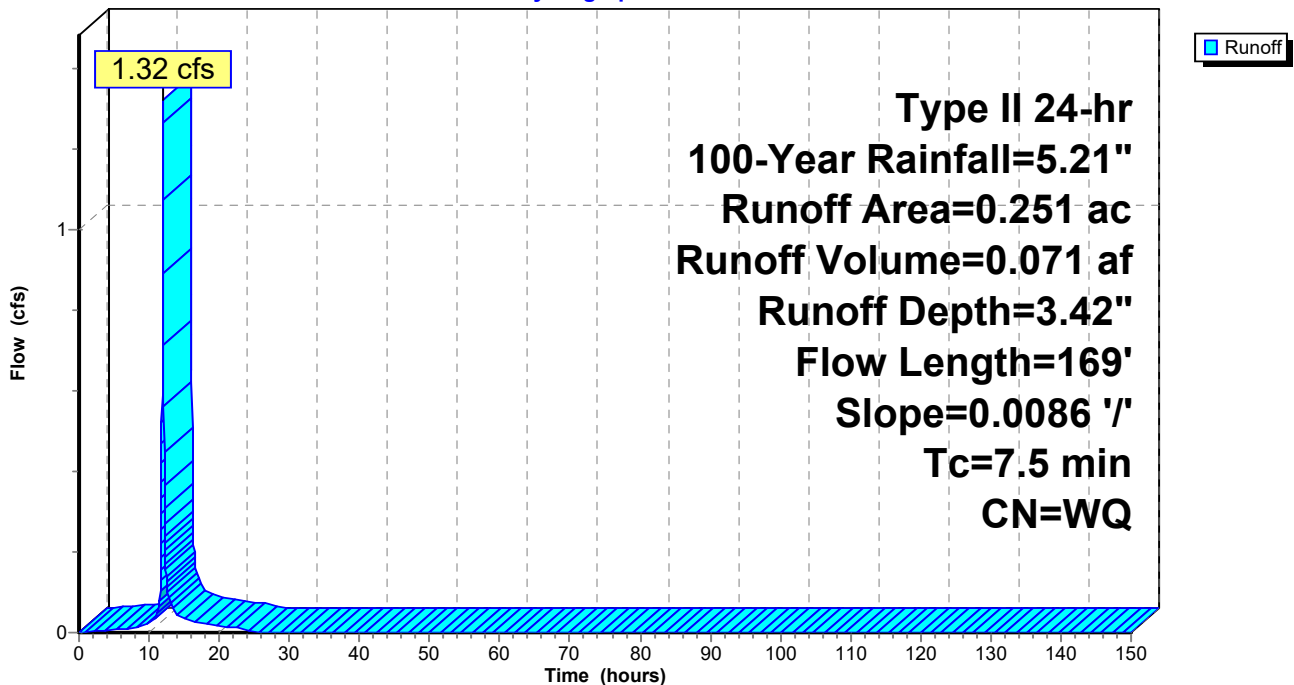
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
0.158	74	>75% Grass cover, Good, HSG C
0.091	98	Paved Parking, HSG C
0.001	70	Woods, Good, HSG C
<hr/>		
0.251		Weighted Average
0.160		63.69% Pervious Area
0.091		36.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	169	0.0086	0.38		Lag/CN Method, Contour Length= 94' Interval= 1'

Subcatchment DA_8: Southern Half of Center Road

Hydrograph



Summary for Subcatchment DA_9: SW Residential Area

Runoff = 6.49 cfs @ 11.97 hrs, Volume= 0.327 af, Depth= 3.56"

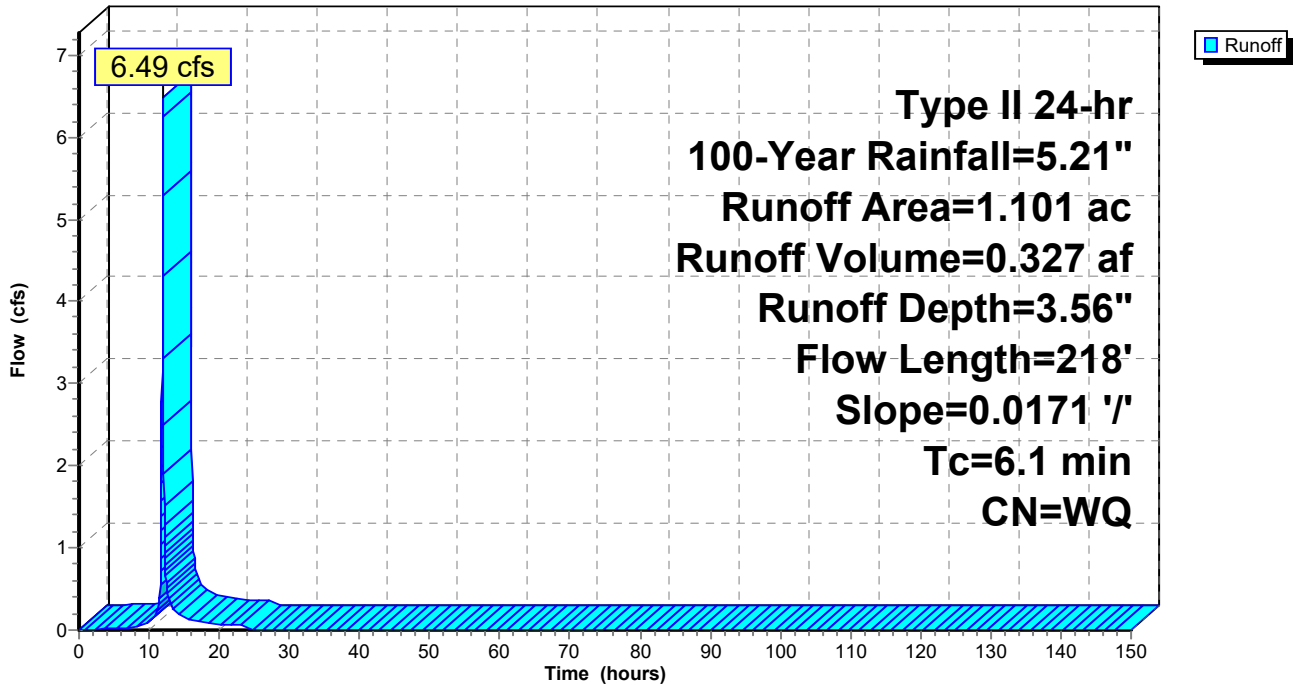
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr 100-Year Rainfall=5.21"

Area (ac)	CN	Description
0.820	80	>75% Grass cover, Good, HSG D
0.282	98	Paved Parking, HSG D
1.101		Weighted Average
0.820		74.43% Pervious Area
0.282		25.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	218	0.0171	0.60		Lag/CN Method, Contour Length= 822' Interval= 1'

Subcatchment DA_9: SW Residential Area

Hydrograph



Summary for Reach 5R: Overflow Path

[80] Warning: Exceeded Pond 15P by 1.56' @ 14.72 hrs (0.00 cfs 0.008 af)

Inflow	=	5.91 cfs @ 12.17 hrs,	Volume=	0.098 af
Outflow	=	5.82 cfs @ 12.18 hrs,	Volume=	0.098 af, Atten= 2%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 4.14 fps, Min. Travel Time= 0.5 min
 Avg. Velocity = 1.60 fps, Avg. Travel Time= 1.3 min

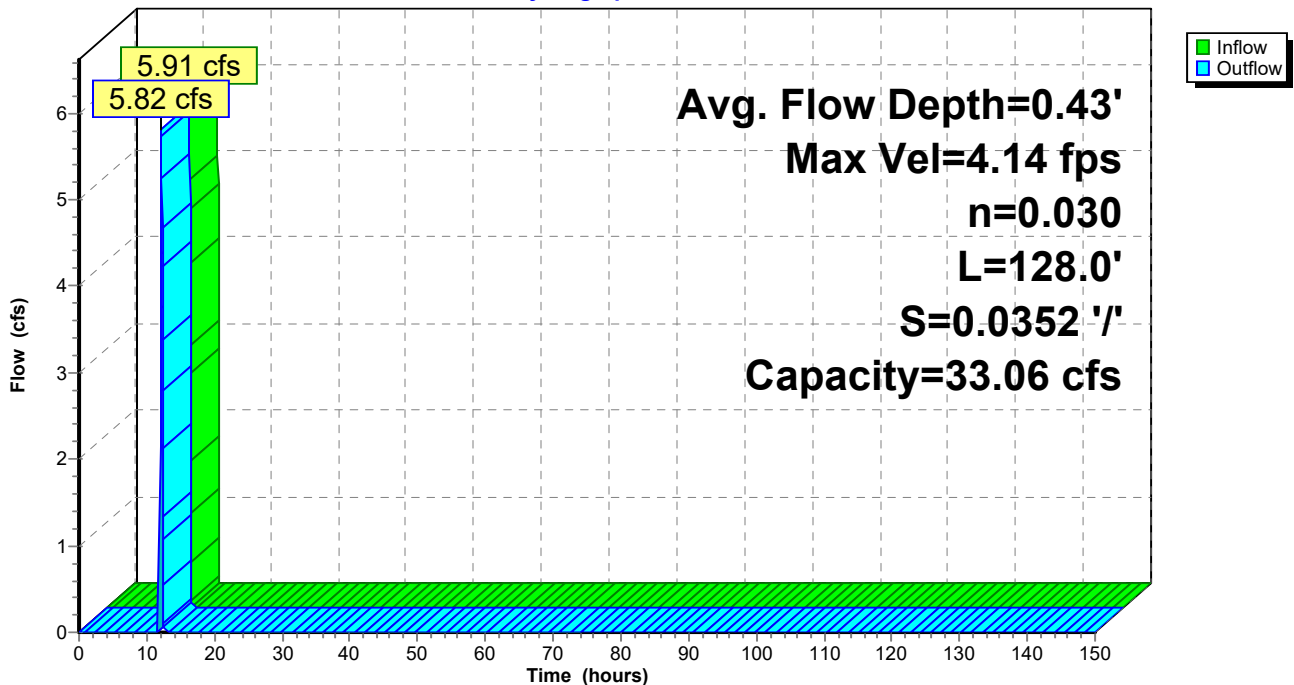
Peak Storage= 180 cf @ 12.18 hrs
 Average Depth at Peak Storage= 0.43'
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 33.06 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'
 Length= 128.0' Slope= 0.0352 '/'
 Inlet Invert= 330.00', Outlet Invert= 325.50'



Reach 5R: Overflow Path

Hydrograph



Summary for Reach 6R: Plunge pool to stream

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

[62] Hint: Exceeded Reach 28R OUTLET depth by 0.82' @ 12.16 hrs

Inflow	=	78.88 cfs @ 12.16 hrs,	Volume=	2.902 af
Outflow	=	78.98 cfs @ 12.16 hrs,	Volume=	2.902 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs

Max. Velocity= 3.54 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.43 fps, Avg. Travel Time= 0.6 min

Peak Storage= 1,183 cf @ 12.16 hrs

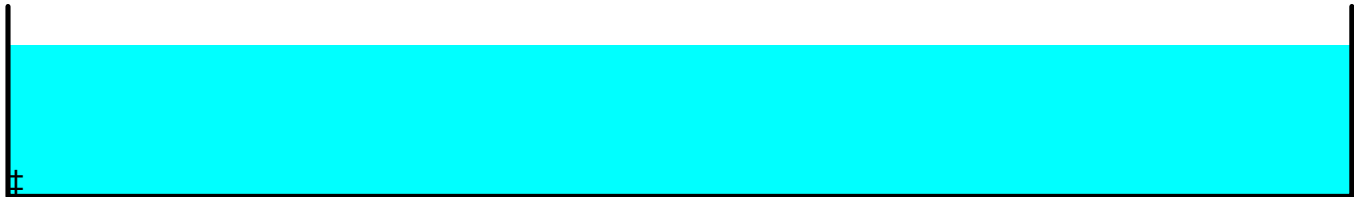
Average Depth at Peak Storage= 0.80'

Bank-Full Depth= 1.00' Flow Area= 28.0 sf, Capacity= 114.17 cfs

28.00' x 1.00' deep channel, n= 0.040

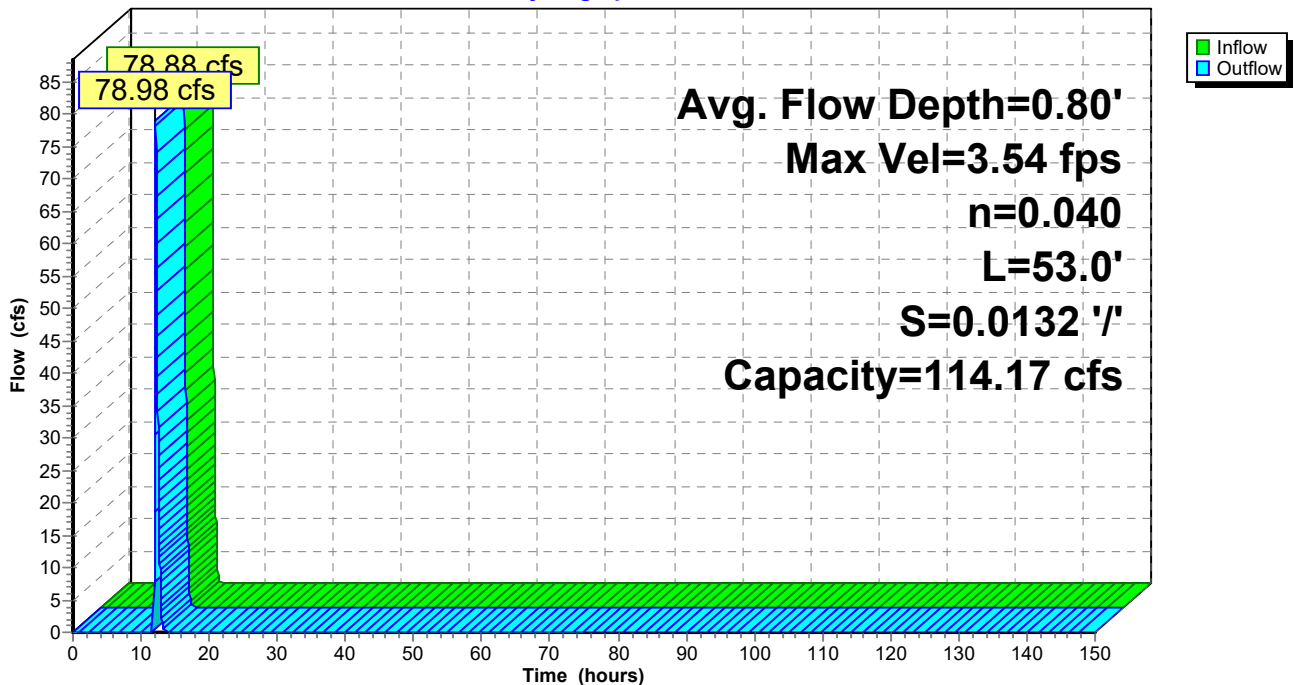
Length= 53.0' Slope= 0.0132 '/'

Inlet Invert= 326.70', Outlet Invert= 326.00'



Reach 6R: Plunge pool to stream

Hydrograph



Summary for Reach 16R: reach within Patrick Brook to outlet

[63] Warning: Exceeded Reach 22R INLET depth by 0.40' @ 11.88 hrs

Inflow Area = 49.178 ac, 40.95% Impervious, Inflow Depth = 3.11" for 100-Year event
 Inflow = 47.75 cfs @ 12.16 hrs, Volume= 12.744 af
 Outflow = 47.05 cfs @ 12.19 hrs, Volume= 12.744 af, Atten= 1%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 2.57 fps, Min. Travel Time= 2.6 min
 Avg. Velocity = 0.46 fps, Avg. Travel Time= 14.4 min

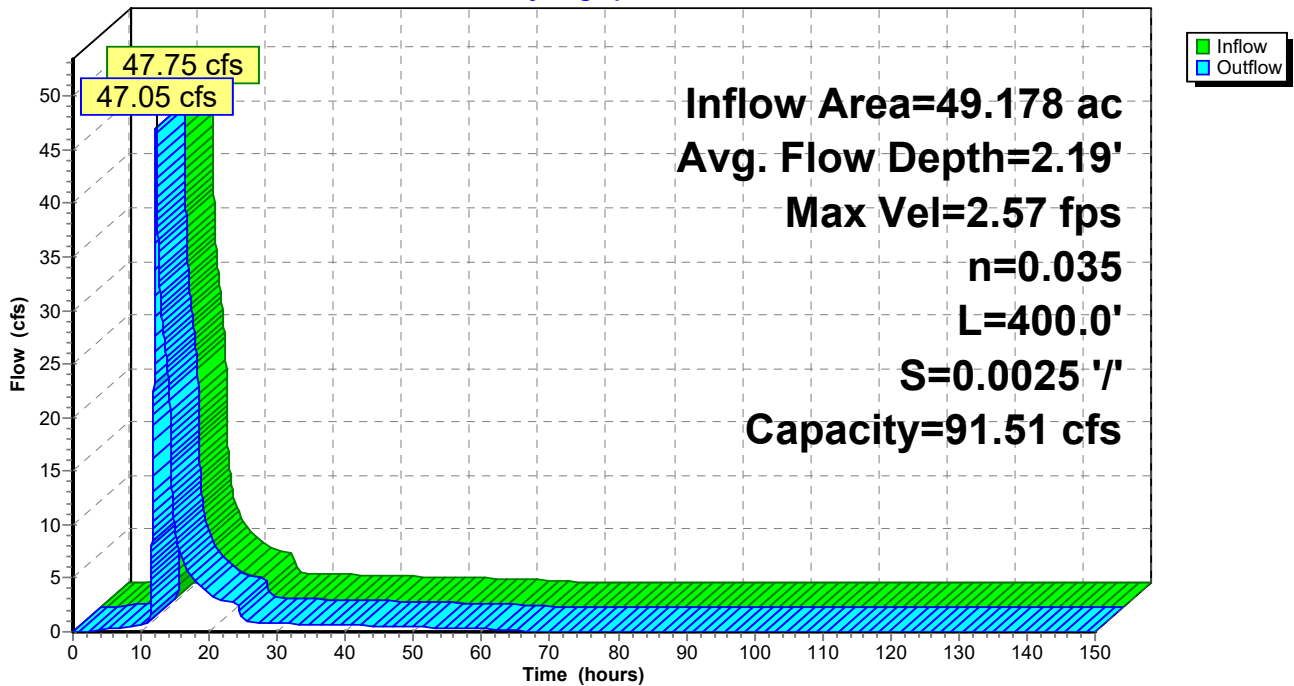
Peak Storage= 7,333 cf @ 12.19 hrs
 Average Depth at Peak Storage= 2.19'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 91.51 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 400.0' Slope= 0.0025 '/'
 Inlet Invert= 324.00', Outlet Invert= 323.00'



Reach 16R: reach within Patrick Brook to outlet

Hydrograph



Summary for Reach 22R: reach within Patrick Brook

[63] Warning: Exceeded Reach 35R INLET depth by 0.06' @ 12.18 hrs

Inflow Area = 5.454 ac, 45.68% Impervious, Inflow Depth = 3.67" for 100-Year event
 Inflow = 18.72 cfs @ 12.14 hrs, Volume= 1.666 af
 Outflow = 18.28 cfs @ 12.16 hrs, Volume= 1.666 af, Atten= 2%, Lag= 1.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 2.27 fps, Min. Travel Time= 2.1 min
 Avg. Velocity = 0.33 fps, Avg. Travel Time= 14.2 min

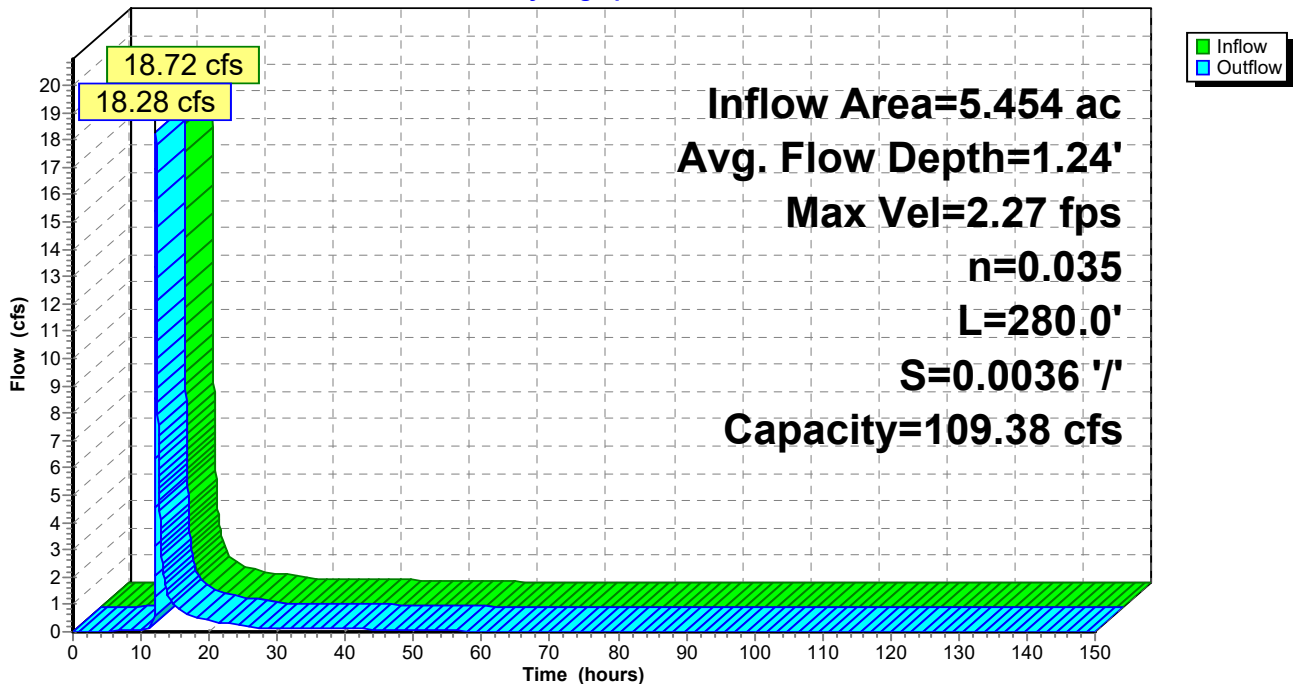
Peak Storage= 2,259 cf @ 12.16 hrs
 Average Depth at Peak Storage= 1.24'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 109.38 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 280.0' Slope= 0.0036 '/'
 Inlet Invert= 325.00', Outlet Invert= 324.00'



Reach 22R: reach within Patrick Brook

Hydrograph



Summary for Reach 25R: reach within Patrick Brook

[61] Hint: Exceeded Reach 26R outlet invert by 0.95' @ 12.16 hrs
[63] Warning: Exceeded Reach 41R INLET depth by 0.28' @ 12.16 hrs
[63] Warning: Exceeded Reach 43R INLET depth by 0.39' @ 12.14 hrs

Inflow Area = 4.353 ac, 50.77% Impervious, Inflow Depth = 3.69" for 100-Year event
Inflow = 15.46 cfs @ 12.14 hrs, Volume= 1.340 af
Outflow = 15.29 cfs @ 12.15 hrs, Volume= 1.340 af, Atten= 1%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.71 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 8.9 min

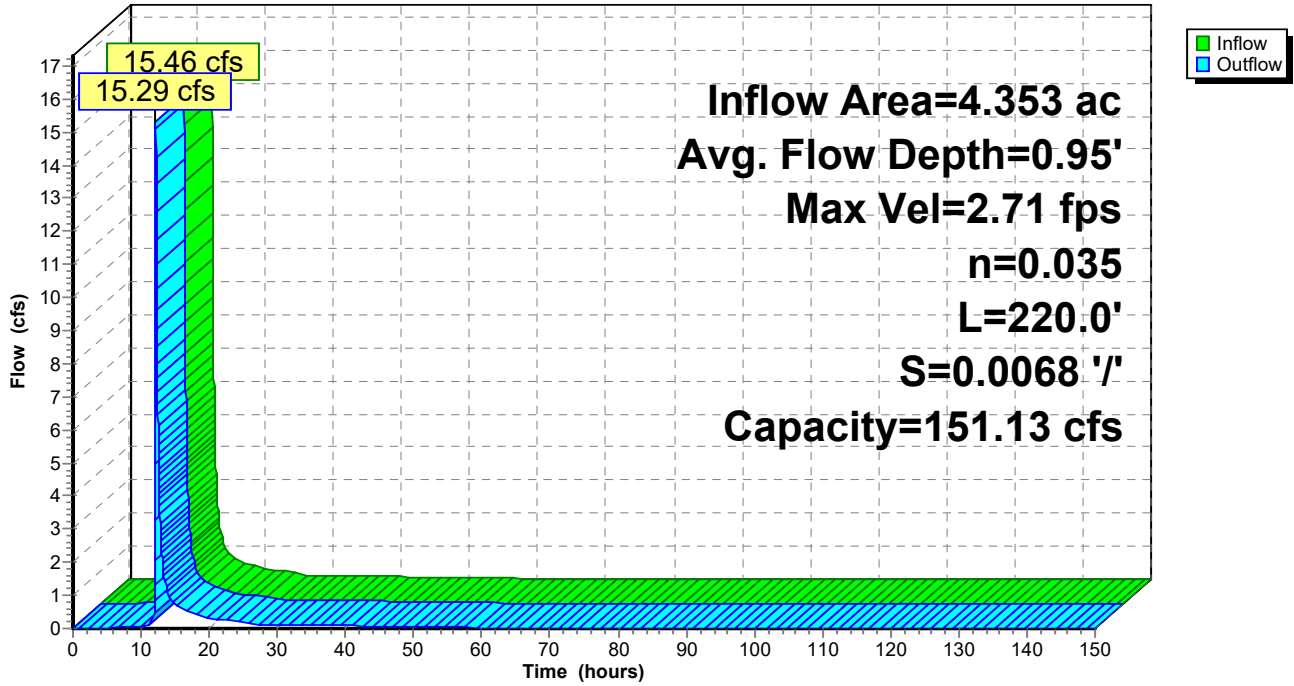
Peak Storage= 1,239 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.95'
Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 151.13 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 16.00'
Length= 220.0' Slope= 0.0068 '/'
Inlet Invert= 328.00', Outlet Invert= 326.50'



Reach 25R: reach within Patrick Brook

Hydrograph



Summary for Reach 26R: reach within Patrick Brook

[62] Hint: Exceeded Reach 45R OUTLET depth by 0.95' @ 12.14 hrs

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth = 3.84" for 100-Year event
 Inflow = 13.30 cfs @ 12.07 hrs, Volume= 0.918 af
 Outflow = 11.37 cfs @ 12.13 hrs, Volume= 0.918 af, Atten= 15%, Lag= 3.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 1.66 fps, Min. Travel Time= 4.6 min
 Avg. Velocity = 0.24 fps, Avg. Travel Time= 31.5 min

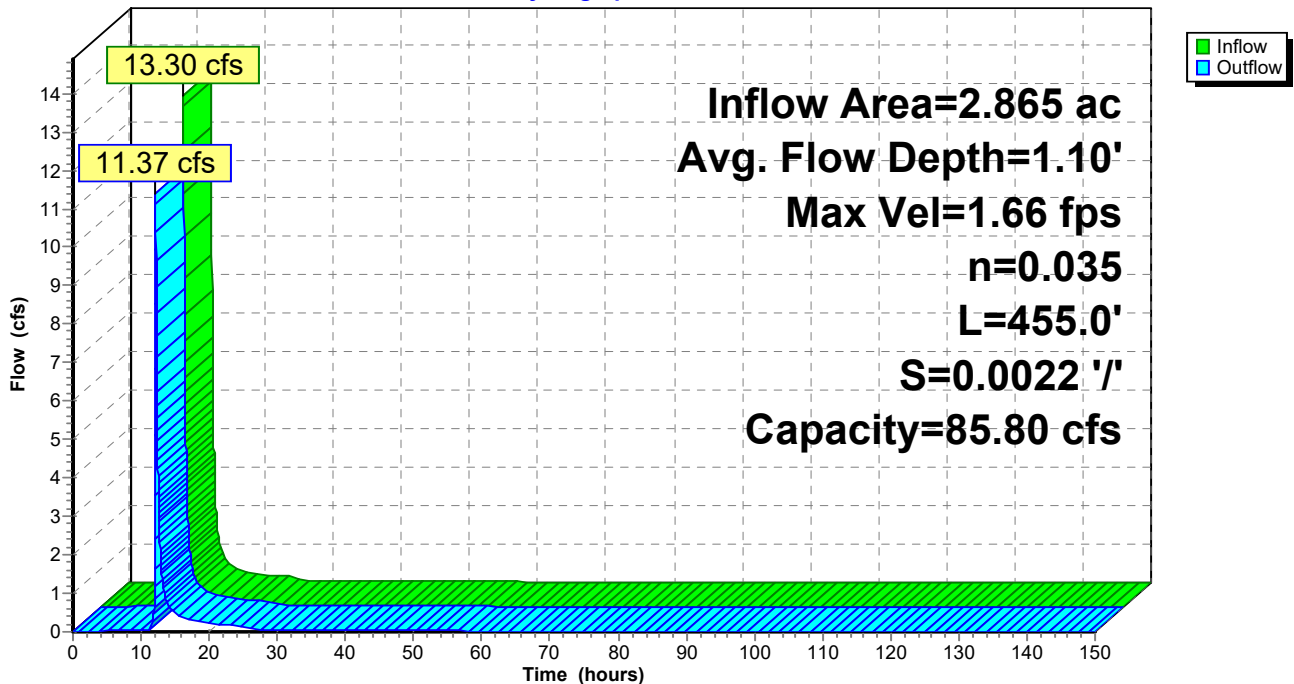
Peak Storage= 3,106 cf @ 12.13 hrs
 Average Depth at Peak Storage= 1.10'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 85.80 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 455.0' Slope= 0.0022 '/'
 Inlet Invert= 329.00', Outlet Invert= 328.00'



Reach 26R: reach within Patrick Brook

Hydrograph



Summary for Reach 28R: emergency spillway

[80] Warning: Exceeded Pond 16P by 0.15' @ 13.42 hrs (0.00 cfs 0.000 af)

Inflow	=	78.93 cfs @ 12.16 hrs,	Volume=	2.902 af
Outflow	=	78.88 cfs @ 12.16 hrs,	Volume=	2.902 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 5.80 fps, Min. Travel Time= 0.0 min
 Avg. Velocity= 3.19 fps, Avg. Travel Time= 0.1 min

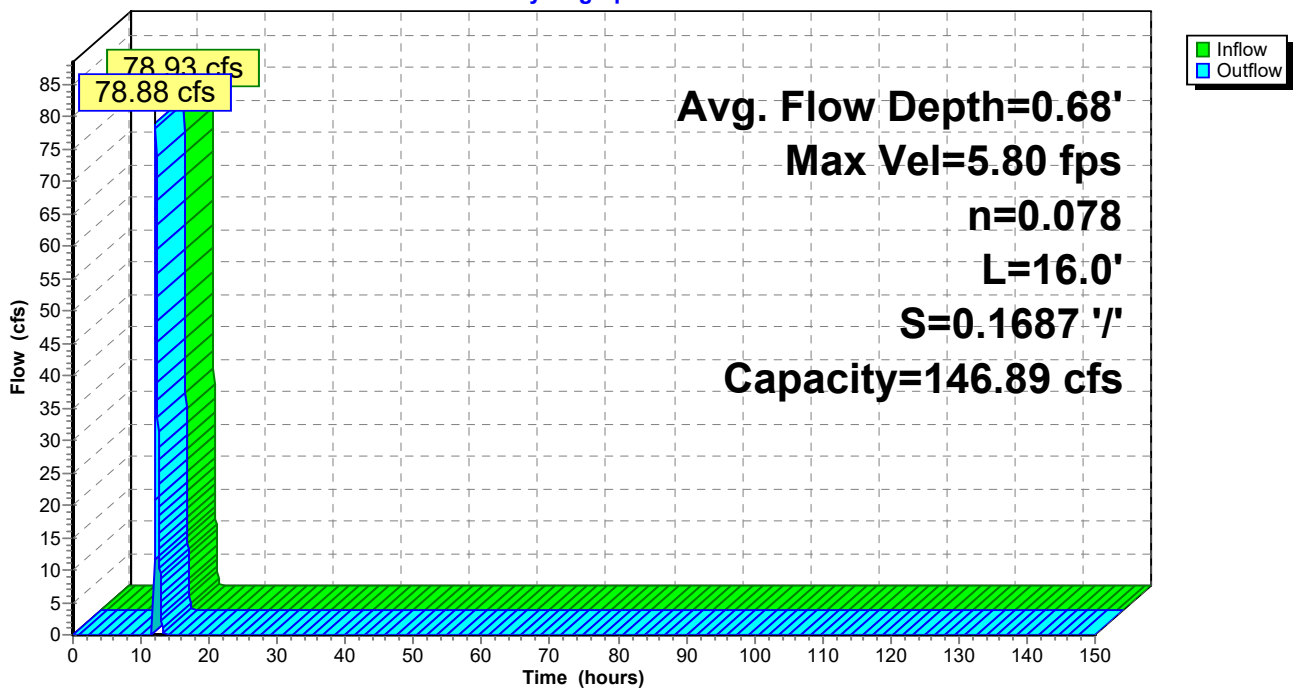
Peak Storage= 218 cf @ 12.16 hrs
 Average Depth at Peak Storage= 0.68'
 Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 146.89 cfs

20.00' x 1.00' deep channel, n= 0.078 Riprap, 12-inch
 Length= 16.0' Slope= 0.1687 '/'
 Inlet Invert= 328.70', Outlet Invert= 326.00'



Reach 28R: emergency spillway

Hydrograph



Summary for Reach 35R: Channel from Level Spreader to Brook

Inflow Area = 1.101 ac, 25.57% Impervious, Inflow Depth = 3.56" for 100-Year event
Inflow = 6.15 cfs @ 12.00 hrs, Volume= 0.327 af
Outflow = 4.97 cfs @ 12.05 hrs, Volume= 0.327 af, Atten= 19%, Lag= 3.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.35 fps, Min. Travel Time= 6.0 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 46.4 min

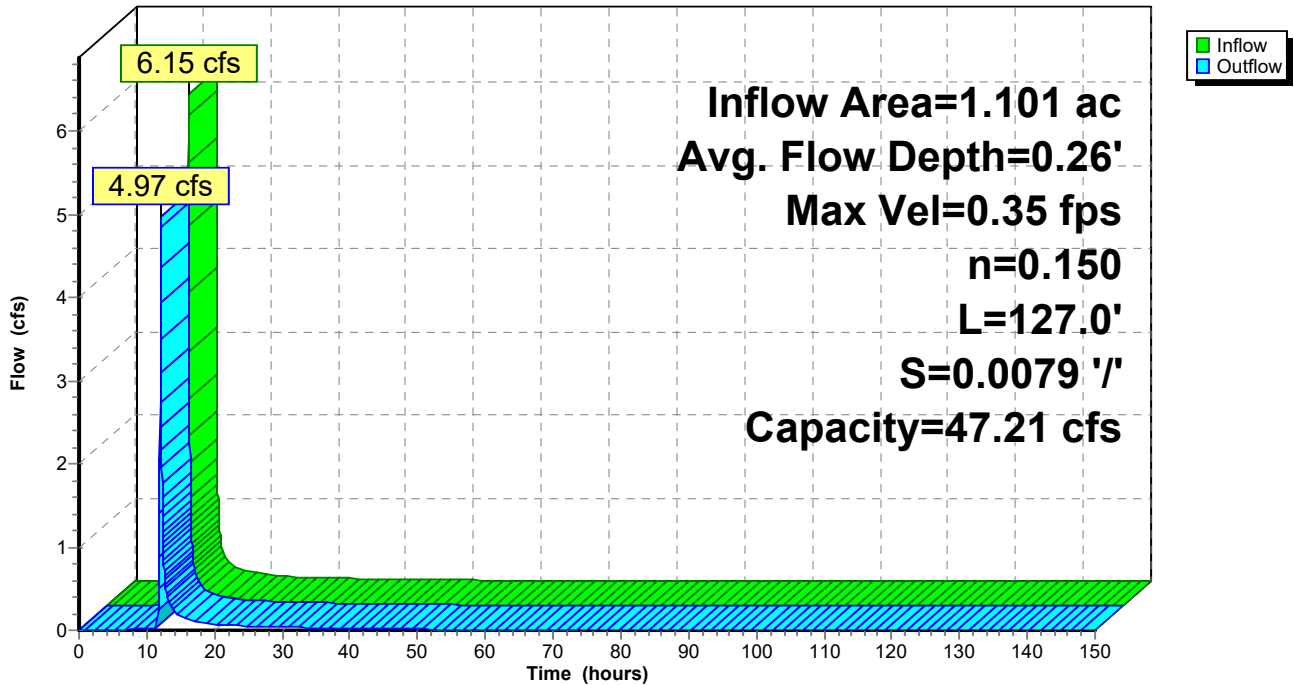
Peak Storage= 1,791 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00' Flow Area= 55.0 sf, Capacity= 47.21 cfs

55.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Length= 127.0' Slope= 0.0079 '/'
Inlet Invert= 326.00', Outlet Invert= 325.00'



Reach 35R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 41R: Channel from Level Spreader to Brook

[80] Warning: Exceeded Pond 5P by 1.00' @ 0.00 hrs (0.05 cfs 0.031 af)

Inflow Area = 1.237 ac, 49.45% Impervious, Inflow Depth = 3.40" for 100-Year event
 Inflow = 4.13 cfs @ 12.11 hrs, Volume= 0.351 af
 Outflow = 4.00 cfs @ 12.14 hrs, Volume= 0.351 af, Atten= 3%, Lag= 2.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.30 fps, Min. Travel Time= 2.9 min
 Avg. Velocity = 0.05 fps, Avg. Travel Time= 15.8 min

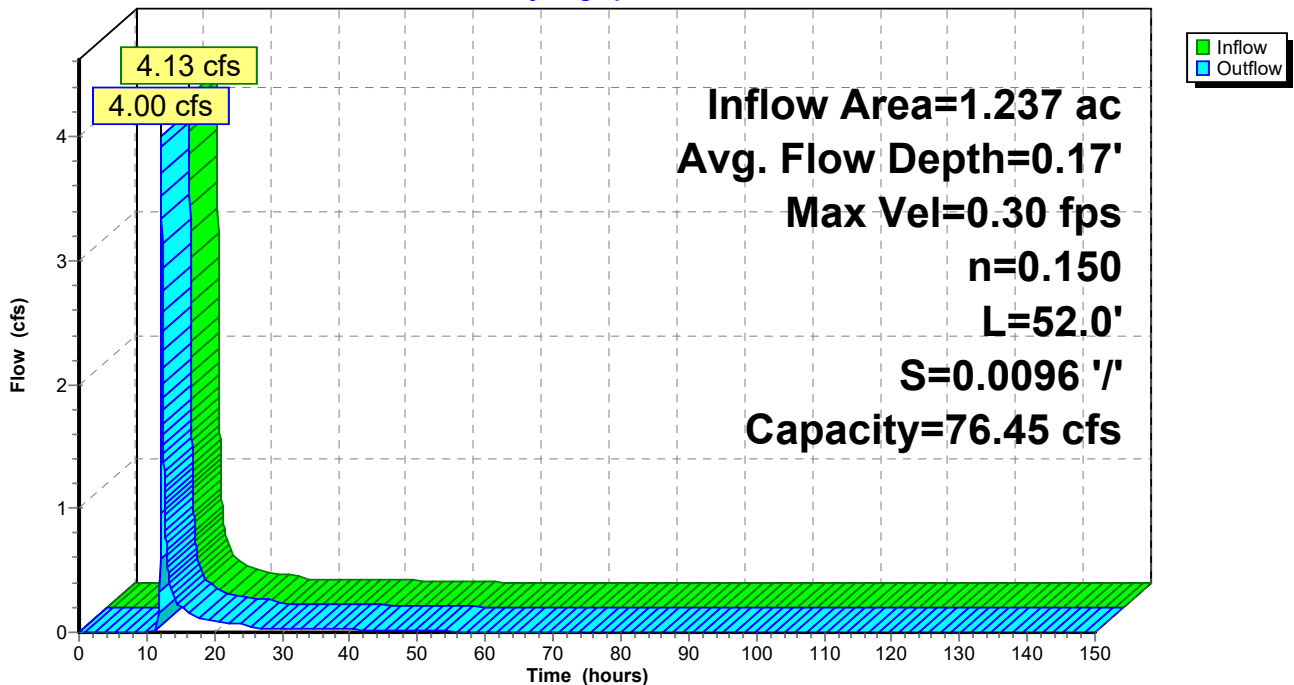
Peak Storage= 703 cf @ 12.14 hrs
 Average Depth at Peak Storage= 0.17'
 Bank-Full Depth= 1.00' Flow Area= 80.0 sf, Capacity= 76.45 cfs

80.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 52.0' Slope= 0.0096 '/'
 Inlet Invert= 328.50', Outlet Invert= 328.00'



Reach 41R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 43R: Channel from Level Spreader to Brook

Inflow Area = 0.251 ac, 36.31% Impervious, Inflow Depth = 3.41" for 100-Year event
 Inflow = 0.30 cfs @ 12.17 hrs, Volume= 0.071 af
 Outflow = 0.27 cfs @ 12.22 hrs, Volume= 0.071 af, Atten= 12%, Lag= 3.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.20 fps, Min. Travel Time= 3.7 min
 Avg. Velocity = 0.05 fps, Avg. Travel Time= 13.7 min

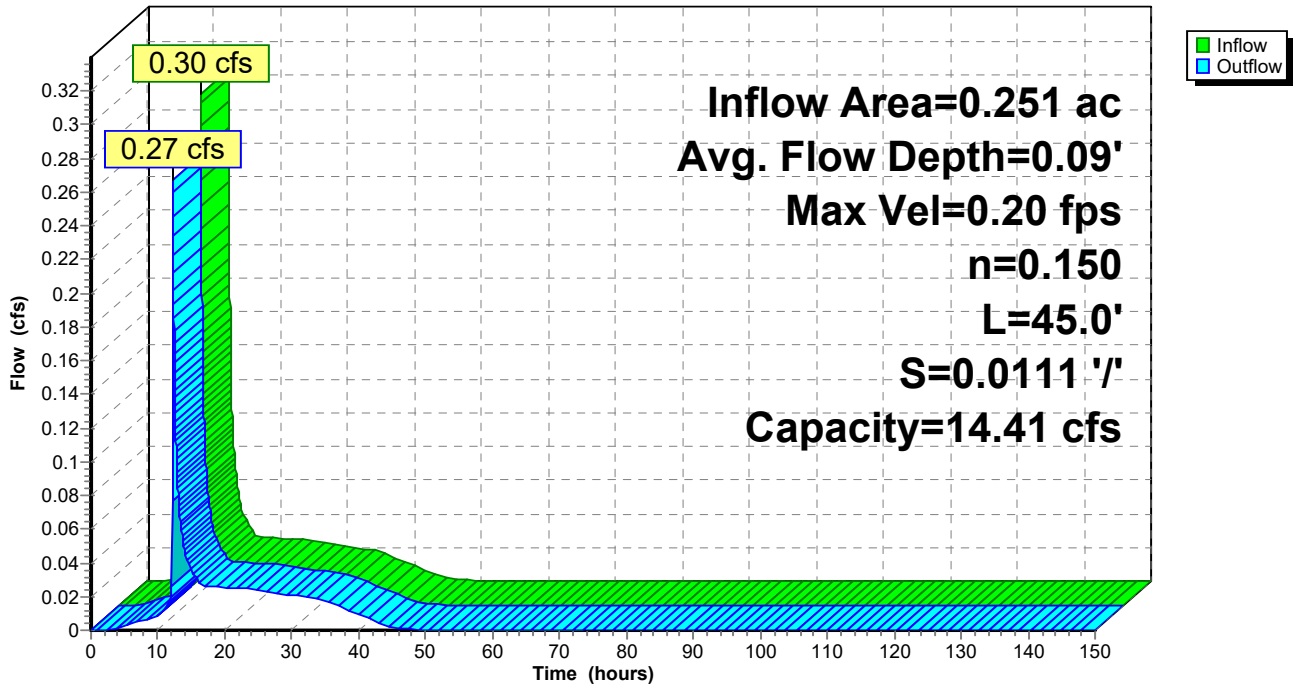
Peak Storage= 59 cf @ 12.22 hrs
 Average Depth at Peak Storage= 0.09'
 Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 14.41 cfs

15.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 45.0' Slope= 0.0111 '/'
 Inlet Invert= 328.50', Outlet Invert= 328.00'



Reach 43R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 45R: Channel from Level Spreader to Brook

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth = 3.84" for 100-Year event
 Inflow = 15.18 cfs @ 12.02 hrs, Volume= 0.918 af
 Outflow = 13.30 cfs @ 12.07 hrs, Volume= 0.918 af, Atten= 12%, Lag= 2.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.36 fps, Min. Travel Time= 4.3 min
 Avg. Velocity = 0.06 fps, Avg. Travel Time= 26.5 min

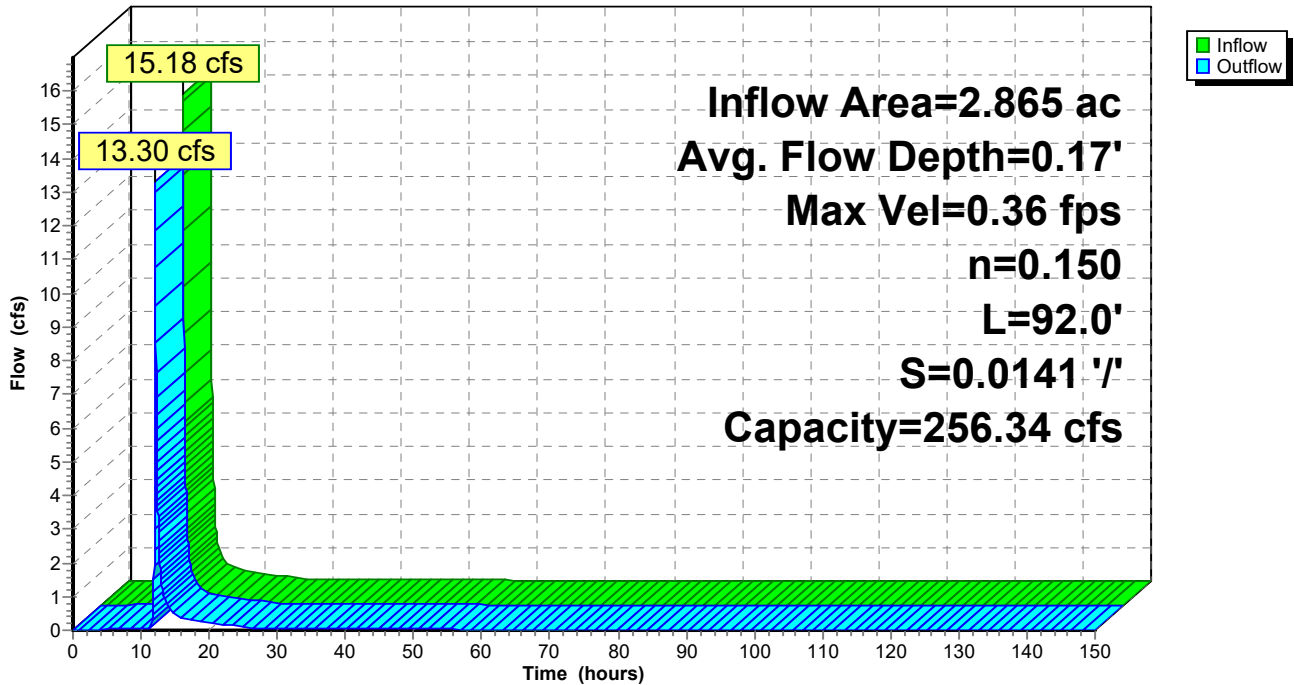
Peak Storage= 3,403 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.17'
 Bank-Full Depth= 1.00' Flow Area= 219.0 sf, Capacity= 256.34 cfs

219.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 92.0' Slope= 0.0141 '/'
 Inlet Invert= 330.30', Outlet Invert= 329.00'



Reach 45R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 50R: reach within Riggs Brook to outlet

[63] Warning: Exceeded Reach 6R INLET depth by 1.02' @ 12.26 hrs

Inflow = 78.98 cfs @ 12.16 hrs, Volume= 2.902 af
Outflow = 73.53 cfs @ 12.23 hrs, Volume= 2.902 af, Atten= 7%, Lag= 3.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.32 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 24.4 min

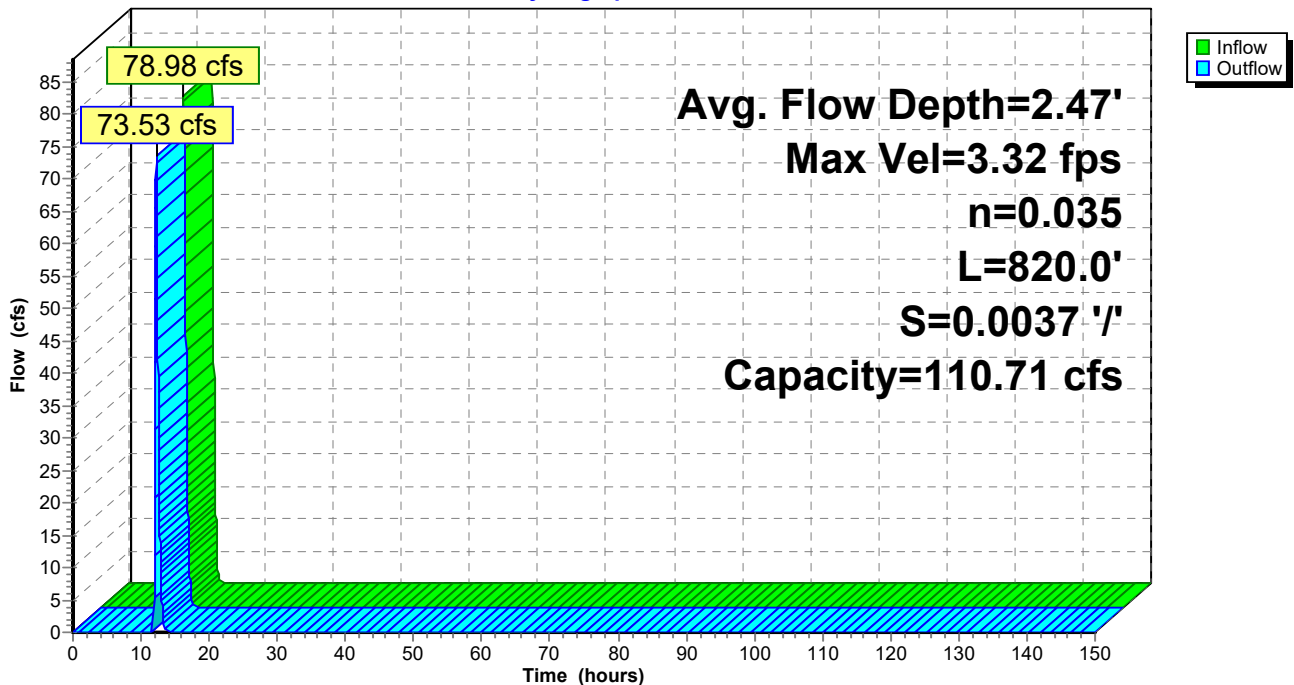
Peak Storage= 18,160 cf @ 12.23 hrs
Average Depth at Peak Storage= 2.47'
Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 110.71 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/' Top Width= 16.00'
Length= 820.0' Slope= 0.0037 '/'
Inlet Invert= 326.00', Outlet Invert= 323.00'



Reach 50R: reach within Riggs Brook to outlet

Hydrograph



Summary for Pond 3P: GW3

Inflow Area = 0.251 ac, 36.31% Impervious, Inflow Depth = 3.42" for 100-Year event
 Inflow = 1.32 cfs @ 11.99 hrs, Volume= 0.071 af
 Outflow = 0.30 cfs @ 12.17 hrs, Volume= 0.071 af, Atten= 77%, Lag= 10.7 min
 Primary = 0.13 cfs @ 12.17 hrs, Volume= 0.063 af
 Secondary = 0.17 cfs @ 12.17 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 328.50' Surf.Area= 1,878 sf Storage= 1,878 cf
 Peak Elev= 329.54' @ 12.17 hrs Surf.Area= 2,296 sf Storage= 3,373 cf (1,495 cf above start)

Plug-Flow detention time= 1,283.0 min calculated for 0.028 af (40% of inflow)
 Center-of-Mass det. time= 526.5 min (1,313.1 - 786.6)

Volume	Invert	Avail.Storage	Storage Description	
#1	326.00'	4,522 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
326.00	1,878	0.0	0	0
329.00	1,878	40.0	2,254	2,254
330.00	2,658	100.0	2,268	4,522

Device	Routing	Invert	Outlet Devices
#1	Primary	328.50'	18.0" Round Culvert L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.50' / 328.50' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	328.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	329.50'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	329.50'	10.0' long x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.13 cfs @ 12.17 hrs HW=329.54' TW=328.57' (Dynamic Tailwater)

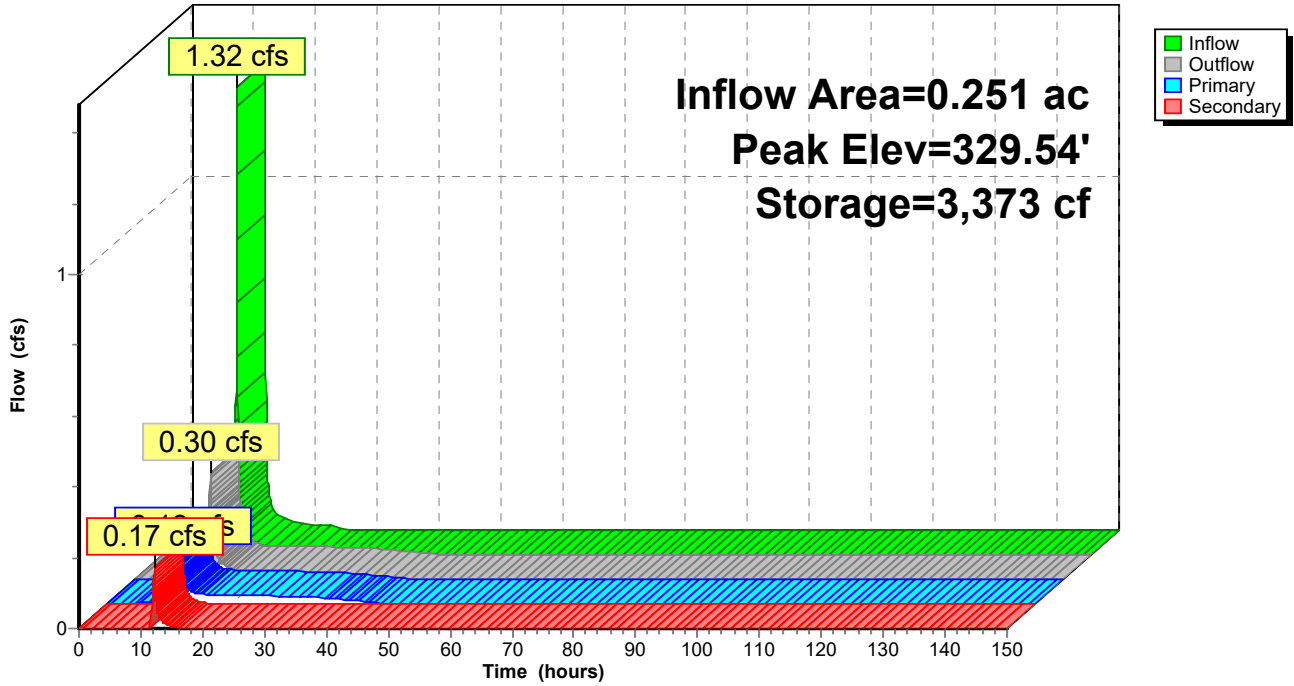
- ↑ 1=Culvert (Passes 0.13 cfs of 2.84 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.03 cfs @ 4.72 fps)
- ↑ 3=Orifice/Grate (Weir Controls 0.11 cfs @ 0.62 fps)

Secondary OutFlow Max=0.17 cfs @ 12.17 hrs HW=329.54' TW=328.57' (Dynamic Tailwater)

- ↑ 4=Broad-Crested Rectangular Weir (Weir Controls 0.17 cfs @ 0.47 fps)

Pond 3P: GW3

Hydrograph



Summary for Pond 4P: GW 4

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth = 3.84" for 100-Year event
 Inflow = 15.34 cfs @ 12.01 hrs, Volume= 0.918 af
 Outflow = 15.18 cfs @ 12.02 hrs, Volume= 0.918 af, Atten= 1%, Lag= 0.8 min
 Primary = 6.51 cfs @ 12.02 hrs, Volume= 0.816 af
 Secondary = 8.67 cfs @ 12.02 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 330.80' Surf.Area= 5,719 sf Storage= 3,431 cf
 Peak Elev= 332.57' @ 12.02 hrs Surf.Area= 8,974 sf Storage= 14,272 cf (10,840 cf above start)

Plug-Flow detention time= 388.7 min calculated for 0.839 af (91% of inflow)
 Center-of-Mass det. time= 300.3 min (1,074.9 - 774.6)

Volume	Invert	Avail.Storage	Storage Description	
#1	329.30'	18,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
329.30	5,719	0.0	0	0
331.30	5,719	40.0	4,575	4,575
332.00	8,071	100.0	4,826	9,402
333.00	9,652	100.0	8,862	18,263

Device	Routing	Invert	Outlet Devices
#1	Primary	330.80'	18.0" Round Culvert L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 330.80' / 330.40' S= 0.0235 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	330.80'	1.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	332.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	332.50'	194.0' 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=6.51 cfs @ 12.02 hrs HW=332.57' TW=330.45' (Dynamic Tailwater)

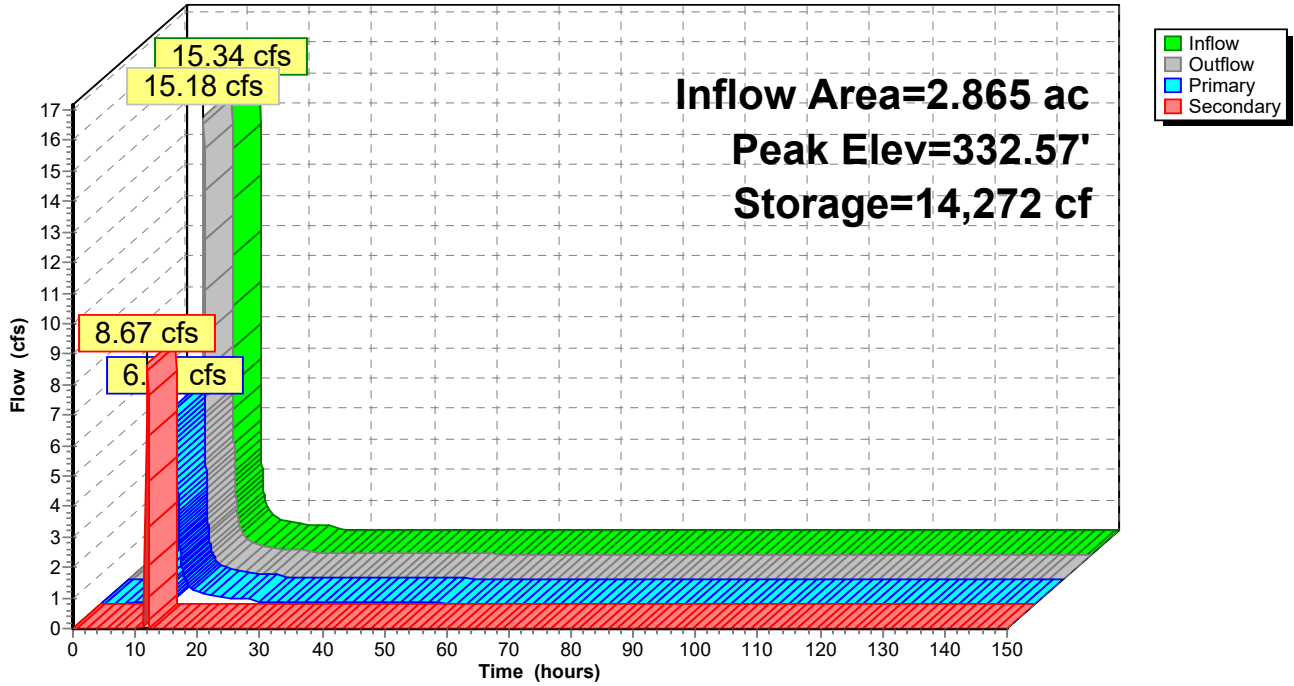
- ↑ 1=Culvert (Passes 6.51 cfs of 6.79 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.08 cfs @ 6.29 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 6.43 cfs @ 3.64 fps)

Secondary OutFlow Max=8.61 cfs @ 12.02 hrs HW=332.57' TW=330.45' (Dynamic Tailwater)

- ↑ 4=Broad-Crested Rectangular Weir (Weir Controls 8.61 cfs @ 0.62 fps)

Pond 4P: GW 4

Hydrograph



Summary for Pond 5P: GW 2

Inflow Area = 1.237 ac, 49.45% Impervious, Inflow Depth = 3.82" for 100-Year event
 Inflow = 6.54 cfs @ 12.01 hrs, Volume= 0.393 af
 Outflow = 4.13 cfs @ 12.11 hrs, Volume= 0.351 af, Atten= 37%, Lag= 5.6 min
 Primary = 4.13 cfs @ 12.11 hrs, Volume= 0.351 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 327.50' Surf.Area= 1,930 sf Storage= 1,930 cf
 Peak Elev= 329.41' @ 12.11 hrs Surf.Area= 7,623 sf Storage= 9,063 cf (7,133 cf above start)

Plug-Flow detention time= 444.8 min calculated for 0.306 af (78% of inflow)
 Center-of-Mass det. time= 304.0 min (1,080.9 - 776.9)

Volume	Invert	Avail.Storage	Storage Description	
#1	325.00'	14,236 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.00	1,930	0.0	0	0
328.00	1,930	40.0	2,316	2,316
330.00	9,990	100.0	11,920	14,236

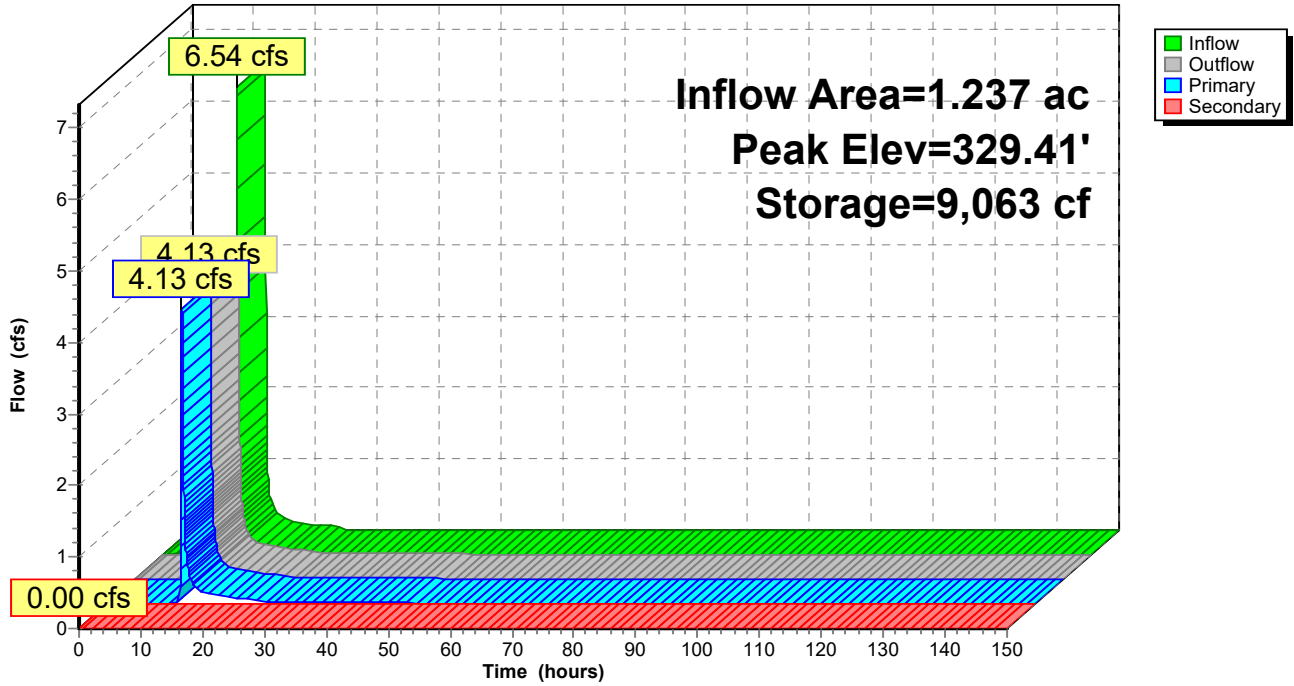
Device	Routing	Invert	Outlet Devices
#1	Primary	327.50'	18.0" Round Culvert L= 33.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 327.50' / 327.50' S= 0.0000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	327.50'	1.4" Vert. Orifice/Grate C= 0.600
#3	Device 1	329.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	329.50'	82.0' 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=4.12 cfs @ 12.11 hrs HW=329.41' TW=328.66' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 4.12 cfs of 6.81 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 4.16 fps)
 ↑ **3=Orifice/Grate** (Weir Controls 4.07 cfs @ 2.10 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=327.50' TW=328.50' (Dynamic Tailwater)
 ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 5P: GW 2

Hydrograph



Summary for Pond 6P: GW 1

Inflow Area = 1.101 ac, 25.57% Impervious, Inflow Depth = 3.56" for 100-Year event
 Inflow = 6.49 cfs @ 11.97 hrs, Volume= 0.327 af
 Outflow = 6.15 cfs @ 12.00 hrs, Volume= 0.327 af, Atten= 5%, Lag= 1.5 min
 Primary = 0.63 cfs @ 12.00 hrs, Volume= 0.130 af
 Secondary = 5.52 cfs @ 12.00 hrs, Volume= 0.197 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 326.80' Surf.Area= 6,549 sf Storage= 6,549 cf
 Peak Elev= 327.61' @ 12.00 hrs Surf.Area= 8,262 sf Storage= 10,187 cf (3,638 cf above start)

Plug-Flow detention time= 775.4 min calculated for 0.176 af (54% of inflow)
 Center-of-Mass det. time= 319.8 min (1,110.5 - 790.7)

Volume	Invert	Avail.Storage	Storage Description	
#1	324.30'	26,868 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
324.30	6,549	0.0	0	0
327.30	6,549	40.0	7,859	7,859
329.00	15,815	100.0	19,009	26,868

Device	Routing	Invert	Outlet Devices
#1	Primary	326.80'	18.0" Round Culvert L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.80' / 326.00' S= 0.0286 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	326.80'	1.3" Vert. Orifice/Grate C= 0.600
#3	Device 1	327.50'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	327.50'	61.0' 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=0.63 cfs @ 12.00 hrs HW=327.61' TW=326.23' (Dynamic Tailwater)

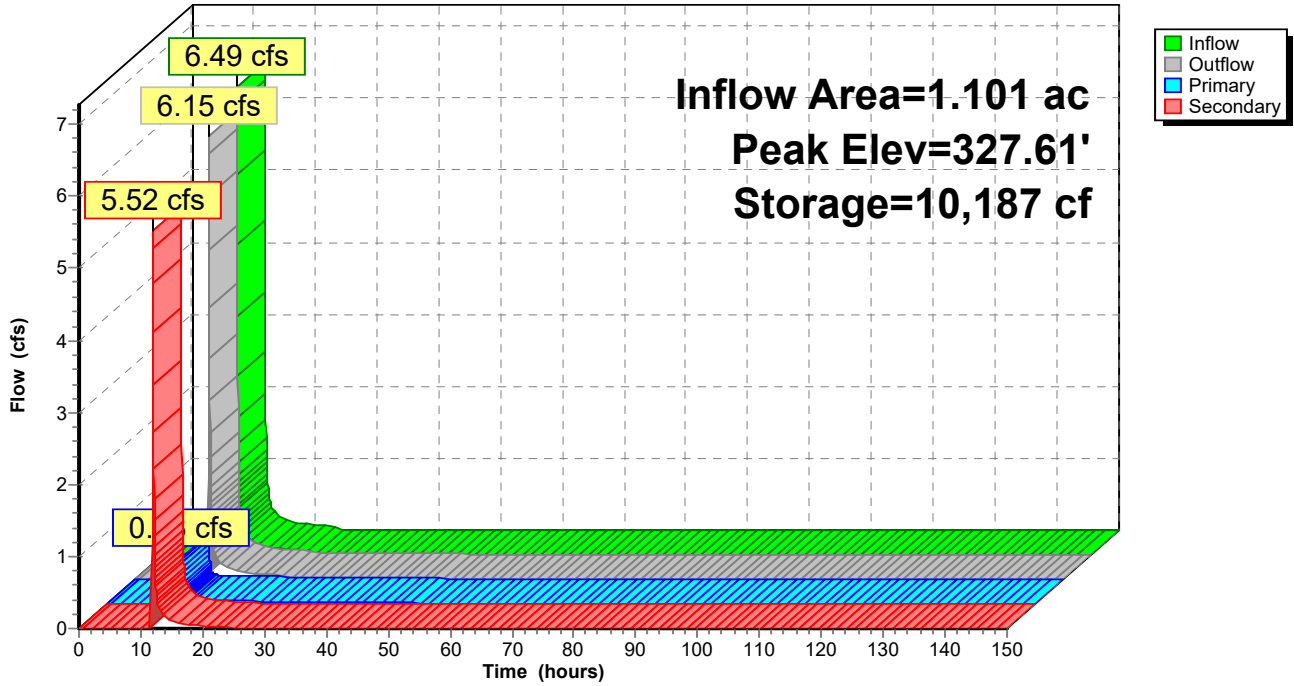
- ↑ 1=Culvert (Passes 0.63 cfs of 3.01 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.04 cfs @ 4.20 fps)
- ↑ 3=Orifice/Grate (Weir Controls 0.59 cfs @ 1.10 fps)

Secondary OutFlow Max=5.49 cfs @ 12.00 hrs HW=327.61' TW=326.23' (Dynamic Tailwater)

- ↑ 4=Broad-Crested Rectangular Weir (Weir Controls 5.49 cfs @ 0.79 fps)

Pond 6P: GW 1

Hydrograph



Summary for Pond 10P: (Rim @ 351.5) (CB #46 to CB #43)

[58] Hint: Peaked 1.20' above defined flood level

Inflow Area = 4.563 ac, 43.22% Impervious, Inflow Depth = 3.90" for 100-Year event
 Inflow = 27.10 cfs @ 11.99 hrs, Volume= 1.482 af
 Outflow = 27.10 cfs @ 11.99 hrs, Volume= 1.482 af, Atten= 0%, Lag= 0.0 min
 Primary = 27.10 cfs @ 11.99 hrs, Volume= 1.482 af

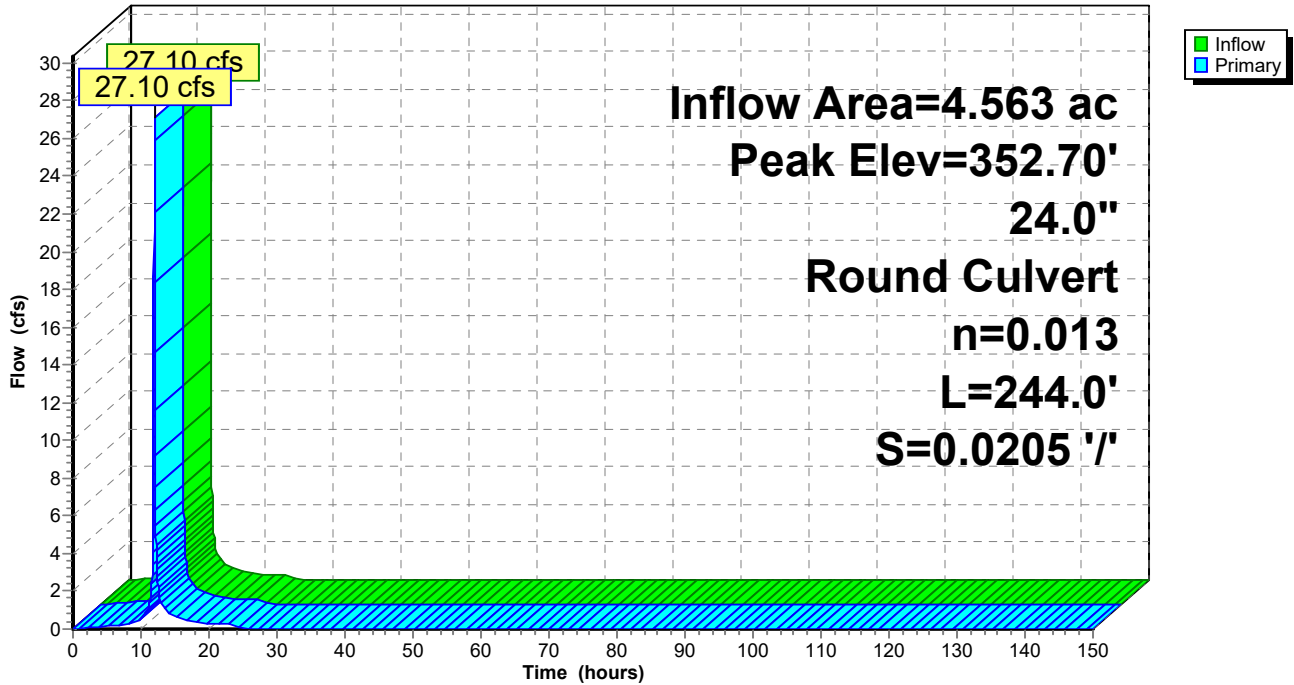
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 352.70' @ 12.03 hrs
 Flood Elev= 351.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.50'	24.0" Round Culvert L= 244.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 345.50' / 340.50' S= 0.0205 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=22.33 cfs @ 11.99 hrs HW=350.23' TW=346.67' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 22.33 cfs @ 7.11 fps)

Pond 10P: (Rim @ 351.5) (CB #46 to CB #43)

Hydrograph



Summary for Pond 11P: (Rim @ 345.05) (CB #43 to CB #8)

[58] Hint: Peaked 3.98' above defined flood level

Inflow Area = 13.305 ac, 50.65% Impervious, Inflow Depth = 4.03" for 100-Year event
 Inflow = 69.18 cfs @ 12.01 hrs, Volume= 4.467 af
 Outflow = 69.18 cfs @ 12.01 hrs, Volume= 4.467 af, Atten= 0%, Lag= 0.0 min
 Primary = 69.18 cfs @ 12.01 hrs, Volume= 4.467 af

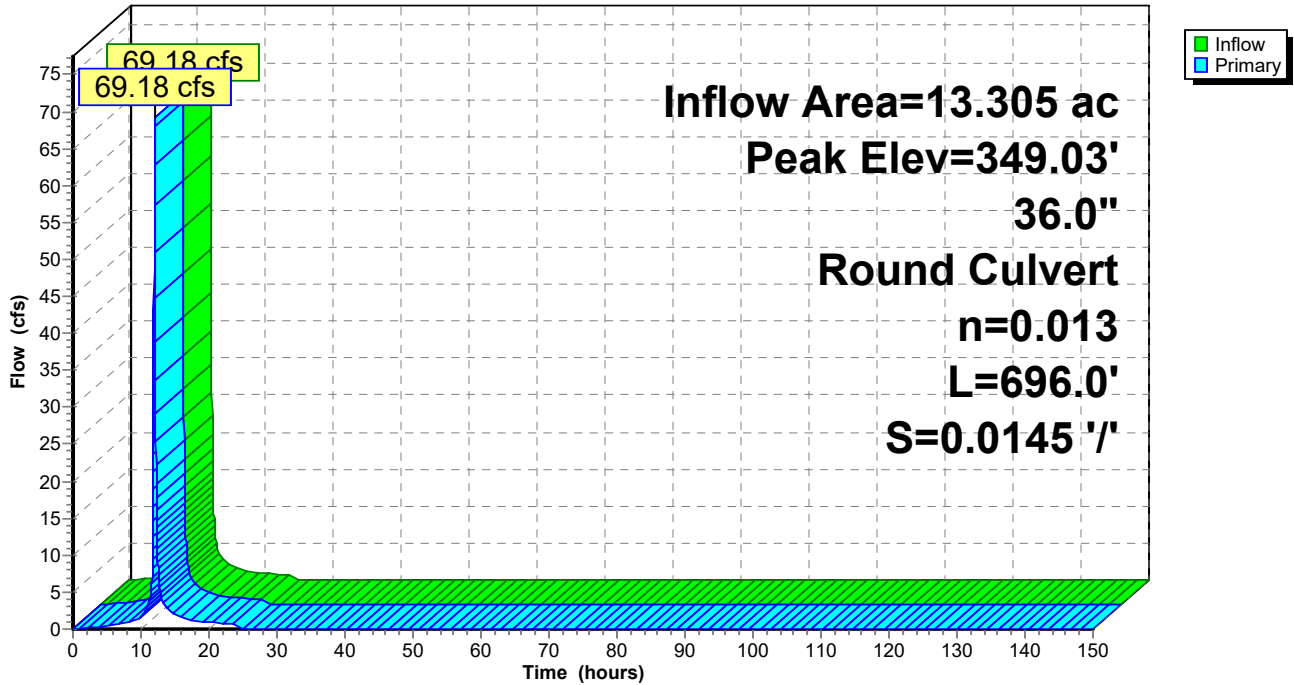
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 349.03' @ 12.02 hrs
 Flood Elev= 345.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	339.90'	36.0" Round Culvert L= 696.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 339.90' / 329.80' S= 0.0145 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=67.76 cfs @ 12.01 hrs HW=348.73' TW=339.38' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 67.76 cfs @ 9.59 fps)

Pond 11P: (Rim @ 345.05) (CB #43 to CB #8)

Hydrograph



Summary for Pond 12P: Detention Pond

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 5.712 ac, 60.00% Impervious, Inflow Depth = 4.21" for 100-Year event
 Inflow = 33.85 cfs @ 12.00 hrs, Volume= 2.006 af
 Outflow = 8.90 cfs @ 12.49 hrs, Volume= 2.005 af, Atten= 74%, Lag= 29.2 min
 Primary = 8.90 cfs @ 12.49 hrs, Volume= 2.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 336.17' @ 12.23 hrs Surf.Area= 14,909 sf Storage= 39,731 cf

Plug-Flow detention time= 95.8 min calculated for 2.004 af (100% of inflow)
 Center-of-Mass det. time= 96.2 min (864.0 - 767.8)

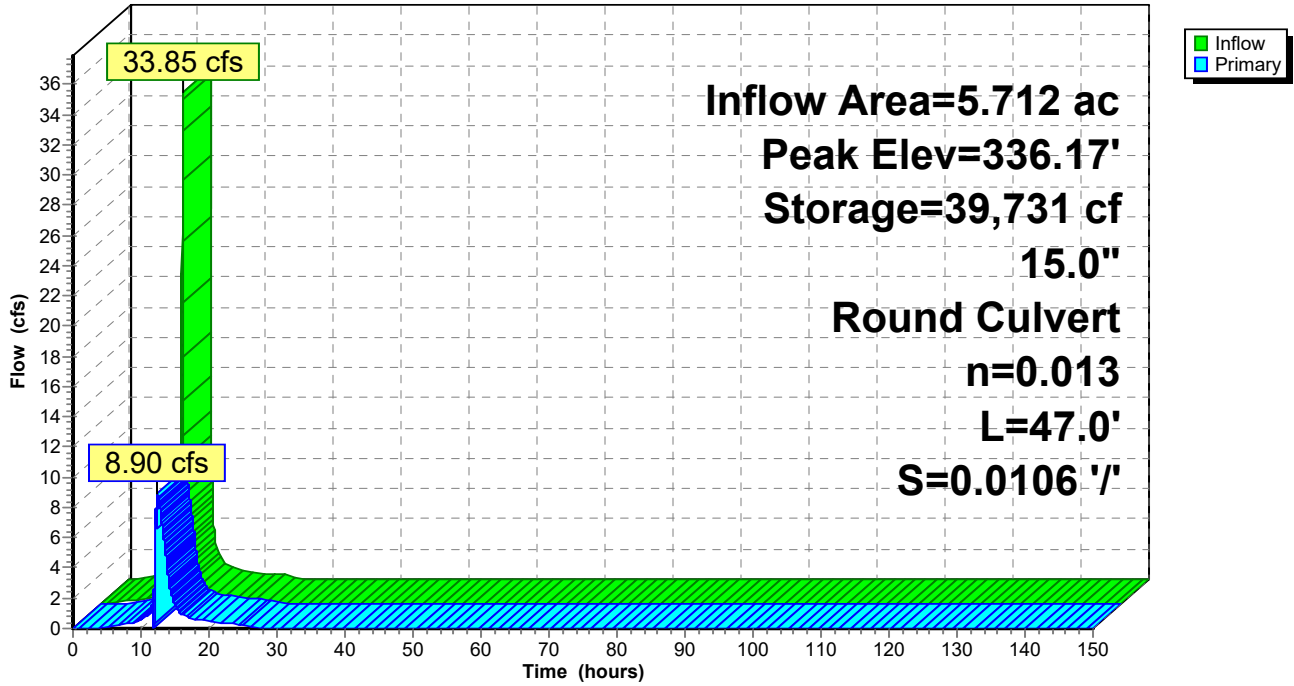
Volume	Invert	Avail.Storage	Storage Description
#1	333.00'	69,744 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
333.00	10,280	0	0
334.00	11,680	10,980	10,980
335.00	13,136	12,408	23,388
336.00	14,649	13,893	37,281
337.00	16,218	15,434	52,714
338.00	17,842	17,030	69,744

Device	Routing	Invert	Outlet Devices
#1	Primary	333.00'	15.0" Round Culvert L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 333.00' / 332.50' S= 0.0106 1/1" Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=8.93 cfs @ 12.49 hrs HW=335.91' TW=333.62' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 8.93 cfs @ 7.28 fps)

Pond 12P: Detention Pond

Hydrograph



Summary for Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8)

[58] Hint: Peaked 4.71' above defined flood level

[80] Warning: Exceeded Pond 17P by 0.68' @ 11.96 hrs (12.46 cfs 0.021 af)

Inflow Area = 9.116 ac, 63.70% Impervious, Inflow Depth = 4.28" for 100-Year event
 Inflow = 21.47 cfs @ 11.99 hrs, Volume= 3.249 af
 Outflow = 21.47 cfs @ 11.99 hrs, Volume= 3.249 af, Atten= 0%, Lag= 0.0 min
 Primary = 21.47 cfs @ 11.99 hrs, Volume= 3.249 af

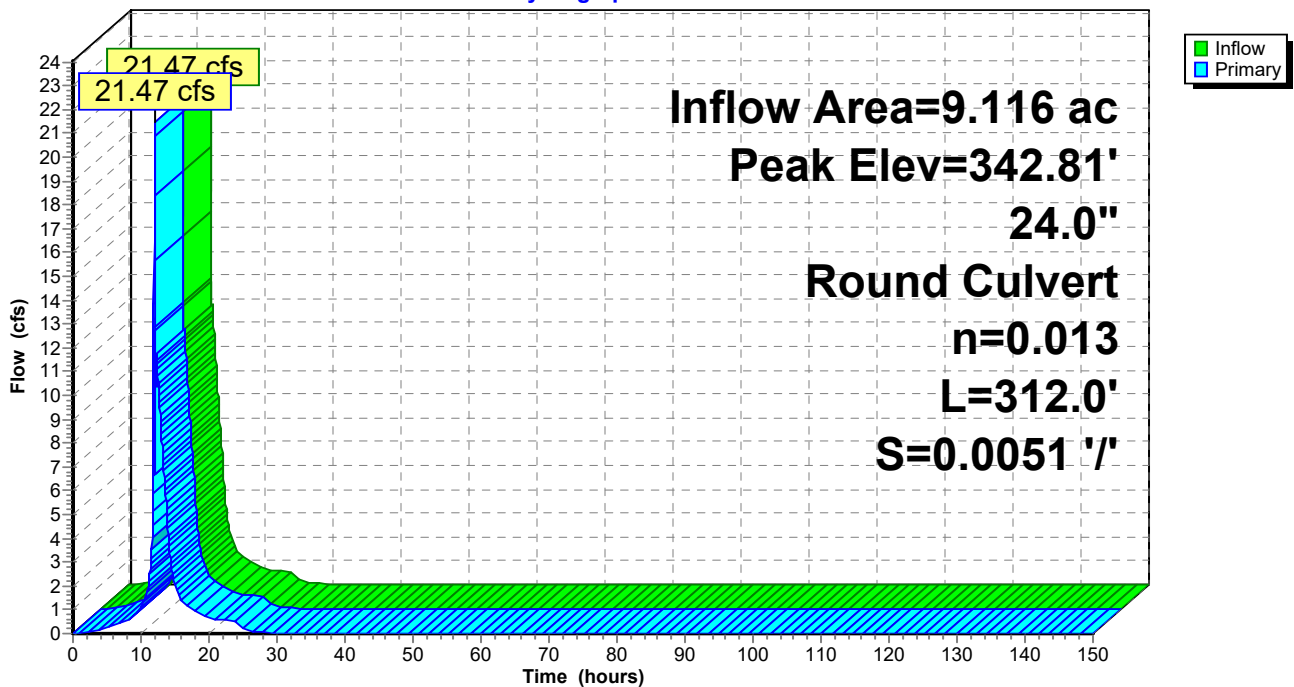
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 342.81' @ 12.02 hrs
 Flood Elev= 338.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	331.13'	24.0" Round Culvert L= 312.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.13' / 329.54' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=18.39 cfs @ 11.99 hrs HW=341.84' TW=338.97' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 18.39 cfs @ 5.85 fps)

Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8)

Hydrograph



Summary for Pond 14P: (Rim @ 337.1) (CB #8 to Main GW)

[58] Hint: Peaked 2.36' above defined flood level

Inflow Area = 24.714 ac, 55.57% Impervious, Inflow Depth = 4.12" for 100-Year event
 Inflow = 102.84 cfs @ 12.01 hrs, Volume= 8.492 af
 Outflow = 102.84 cfs @ 12.01 hrs, Volume= 8.492 af, Atten= 0%, Lag= 0.0 min
 Primary = 102.84 cfs @ 12.01 hrs, Volume= 8.492 af

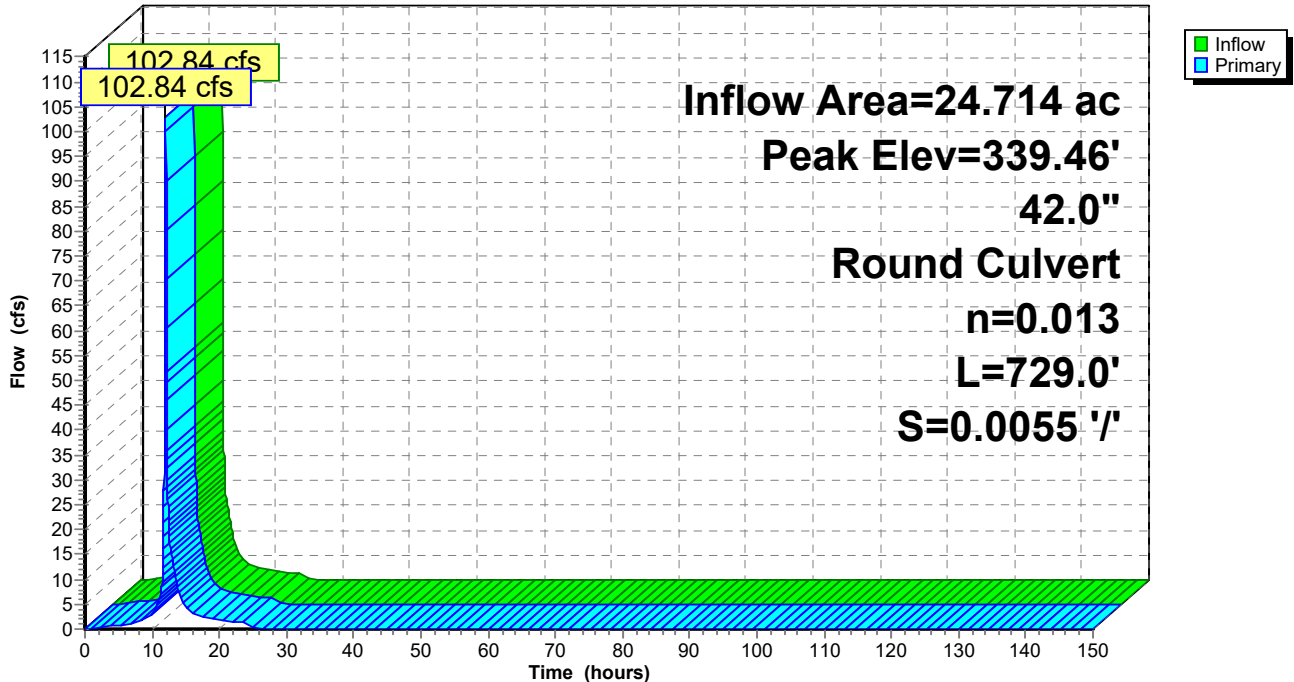
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 339.46' @ 12.01 hrs
 Flood Elev= 337.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	329.52'	42.0" Round Culvert L= 729.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 329.52' / 325.50' S= 0.0055 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=101.43 cfs @ 12.01 hrs HW=339.34' TW=329.32' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 101.43 cfs @ 10.54 fps)

Pond 14P: (Rim @ 337.1) (CB #8 to Main GW)

Hydrograph



Summary for Pond 15P: (Invert @ 328.1) (Yard Drain to CB #1)

Inflow Area = 4.419 ac, 15.87% Impervious, Inflow Depth = 3.38" for 100-Year event
 Inflow = 14.84 cfs @ 12.16 hrs, Volume= 1.244 af
 Outflow = 14.54 cfs @ 12.22 hrs, Volume= 1.243 af, Atten= 2%, Lag= 3.8 min
 Primary = 9.90 cfs @ 12.36 hrs, Volume= 1.145 af
 Secondary = 5.91 cfs @ 12.17 hrs, Volume= 0.098 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 330.49' @ 12.21 hrs Surf.Area= 3,934 sf Storage= 5,454 cf

Plug-Flow detention time= 9.2 min calculated for 1.243 af (100% of inflow)
 Center-of-Mass det. time= 8.6 min (824.2 - 815.6)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	5,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
328.00	450	0	0
330.50	3,950	5,500	5,500

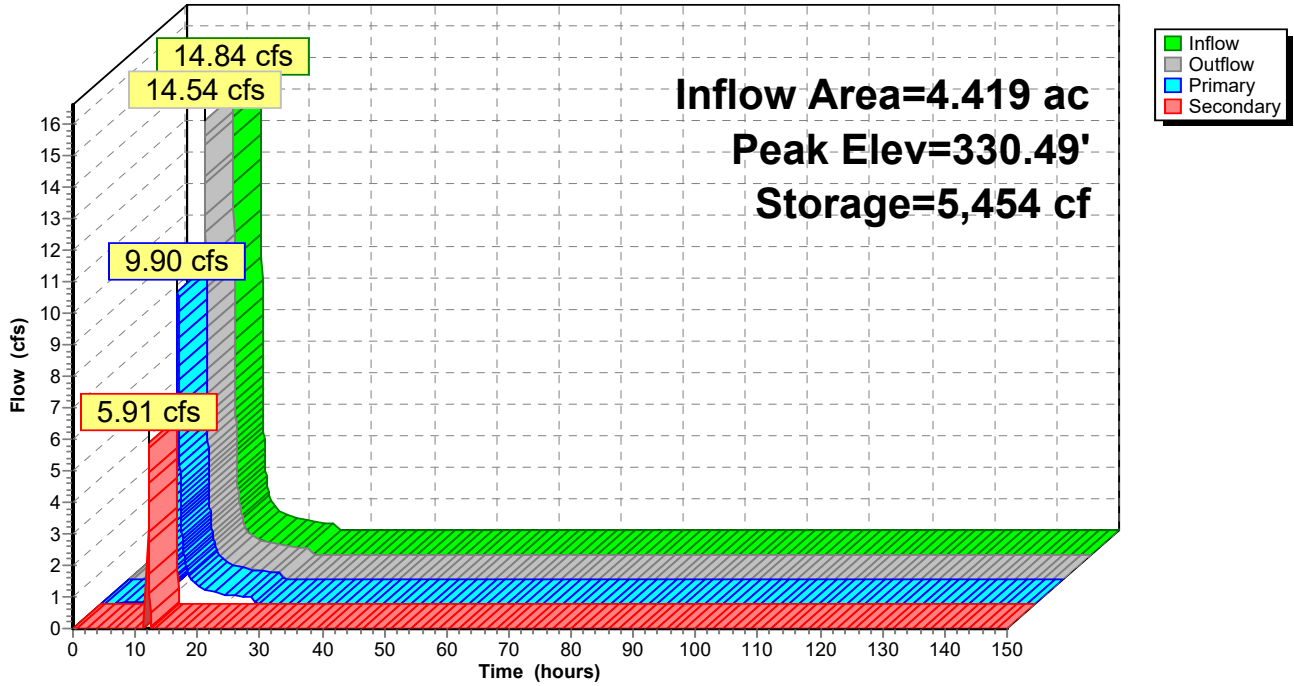
Device	Routing	Invert	Outlet Devices
#1	Primary	328.10'	24.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.10' / 326.80' S= 0.0260 ' S= 0.0260 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	330.00'	10.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=10.41 cfs @ 12.36 hrs HW=330.27' TW=329.79' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 10.41 cfs @ 3.32 fps)

Secondary OutFlow Max=4.65 cfs @ 12.17 hrs HW=330.46' TW=330.42' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 4.65 cfs @ 1.02 fps)

Pond 15P: (Invert @ 328.1) (Yard Drain to CB #1)

Hydrograph



Summary for Pond 16P: Main Gravel Wetland

[62] Hint: Exceeded Reach 5R OUTLET depth by 4.21' @ 12.08 hrs

[80] Warning: Exceeded Pond CB1 by 0.82' @ 30.90 hrs (4.48 cfs 1.341 af)

Inflow Area = 43.724 ac, 40.36% Impervious, Inflow Depth = 3.84" for 100-Year event
 Inflow = 164.83 cfs @ 12.03 hrs, Volume= 13.983 af
 Outflow = 108.41 cfs @ 12.16 hrs, Volume= 13.980 af, Atten= 34%, Lag= 7.9 min
 Primary = 29.78 cfs @ 12.09 hrs, Volume= 11.078 af
 Secondary = 78.93 cfs @ 12.16 hrs, Volume= 2.902 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 324.50' Surf.Area= 22,146 sf Storage= 31,004 cf
 Peak Elev= 329.94' @ 12.16 hrs Surf.Area= 45,773 sf Storage= 205,192 cf (174,188 cf above start)

Plug-Flow detention time= 285.8 min calculated for 13.268 af (95% of inflow)
 Center-of-Mass det. time= 230.8 min (1,030.2 - 799.3)

Volume	Invert	Avail.Storage	Storage Description	
#1	321.00'	240,062 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
321.00	22,146	0.0	0	0
325.00	22,146	40.0	35,434	35,434
326.00	26,028	100.0	24,087	59,521
327.00	30,037	100.0	28,033	87,553
328.00	39,628	100.0	34,833	122,386
329.00	42,706	100.0	41,167	163,553
330.00	45,964	100.0	44,335	207,888
330.70	45,964	100.0	32,175	240,062

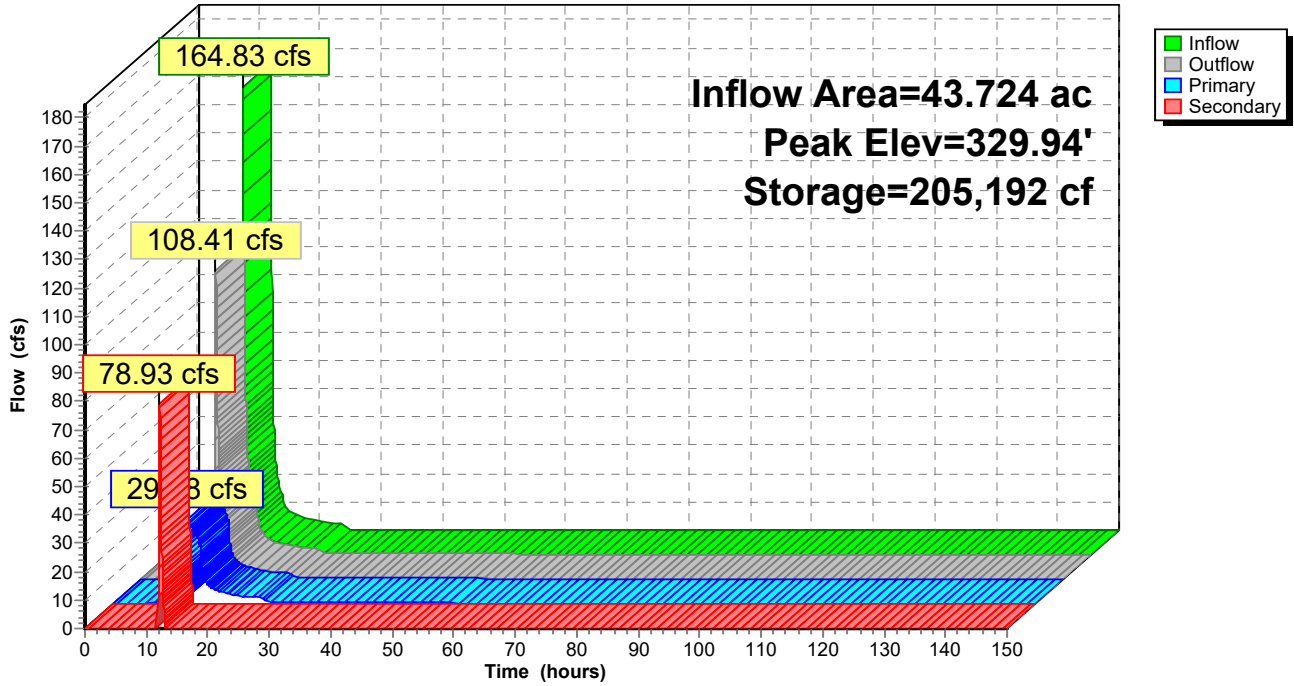
Device	Routing	Invert	Outlet Devices
#1	Primary	324.50'	24.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.50' / 324.10' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	324.50'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	327.20'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	328.70'	20.0' long (Profile 1) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=29.53 cfs @ 12.09 hrs HW=329.85' TW=326.04' (Dynamic Tailwater)
 ↑ **1=Culvert** (Inlet Controls 29.53 cfs @ 9.40 fps)
 ↑ **2=Orifice/Grate** (Passes < 0.82 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 98.44 cfs potential flow)

Secondary OutFlow Max=78.83 cfs @ 12.16 hrs HW=329.94' TW=329.38' (Dynamic Tailwater)
 ↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 78.83 cfs @ 3.18 fps)

Pond 16P: Main Gravel Wetland

Hydrograph



Summary for Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2)

[58] Hint: Peaked 6.06' above defined flood level

[80] Warning: Exceeded Pond 12P by 8.82' @ 12.02 hrs (17.55 cfs 0.251 af)

Inflow Area = 9.116 ac, 63.70% Impervious, Inflow Depth = 4.28" for 100-Year event
 Inflow = 21.47 cfs @ 11.99 hrs, Volume= 3.249 af
 Outflow = 21.47 cfs @ 11.99 hrs, Volume= 3.249 af, Atten= 0%, Lag= 0.0 min
 Primary = 21.47 cfs @ 11.99 hrs, Volume= 3.249 af

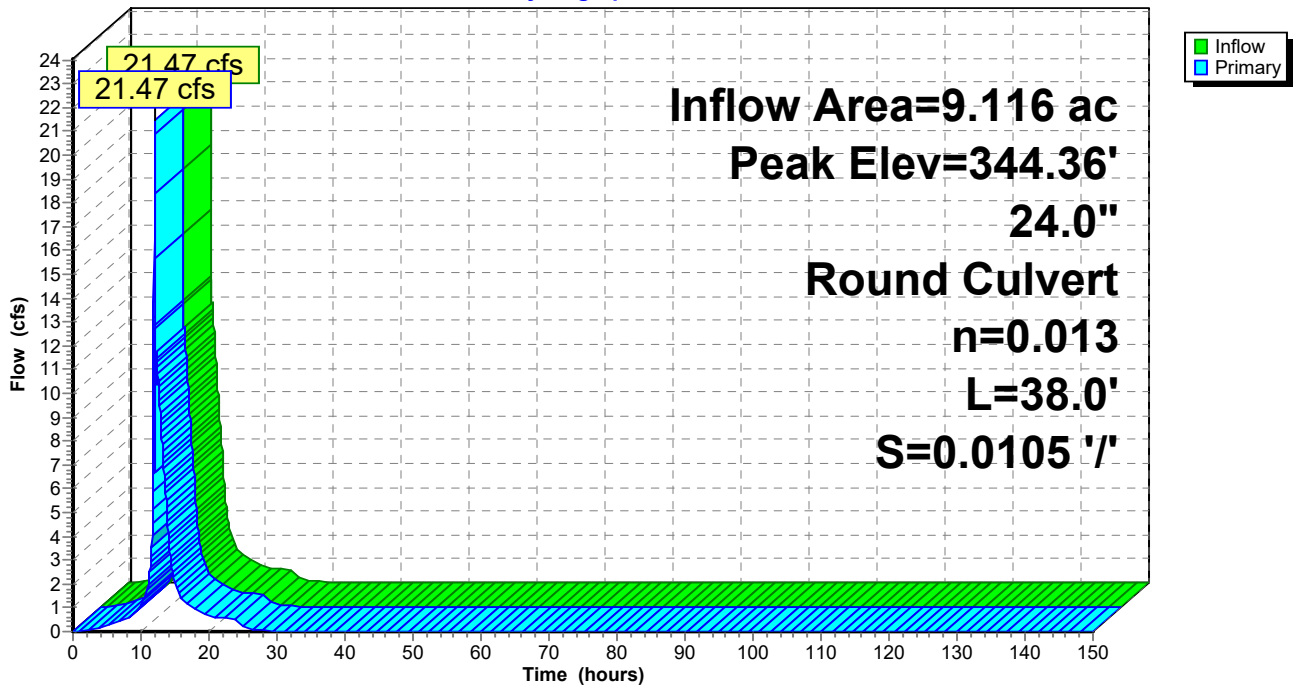
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 344.36' @ 12.03 hrs
 Flood Elev= 338.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	331.55'	24.0" Round Culvert L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.55' / 331.15' S= 0.0105 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.14 cfs @ 11.99 hrs HW=342.29' TW=341.84' (Dynamic Tailwater)
 ↳ **Culvert** (Inlet Controls 10.14 cfs @ 3.23 fps)

Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2)

Hydrograph



Summary for Pond 21P: (Rim @ 333.5) (CB#4 to CB#1)

Inflow Area = 5.212 ac, 38.38% Impervious, Inflow Depth = 3.80" for 100-Year event
 Inflow = 24.95 cfs @ 12.05 hrs, Volume= 1.652 af
 Outflow = 24.95 cfs @ 12.05 hrs, Volume= 1.652 af, Atten= 0%, Lag= 0.0 min
 Primary = 24.95 cfs @ 12.05 hrs, Volume= 1.652 af

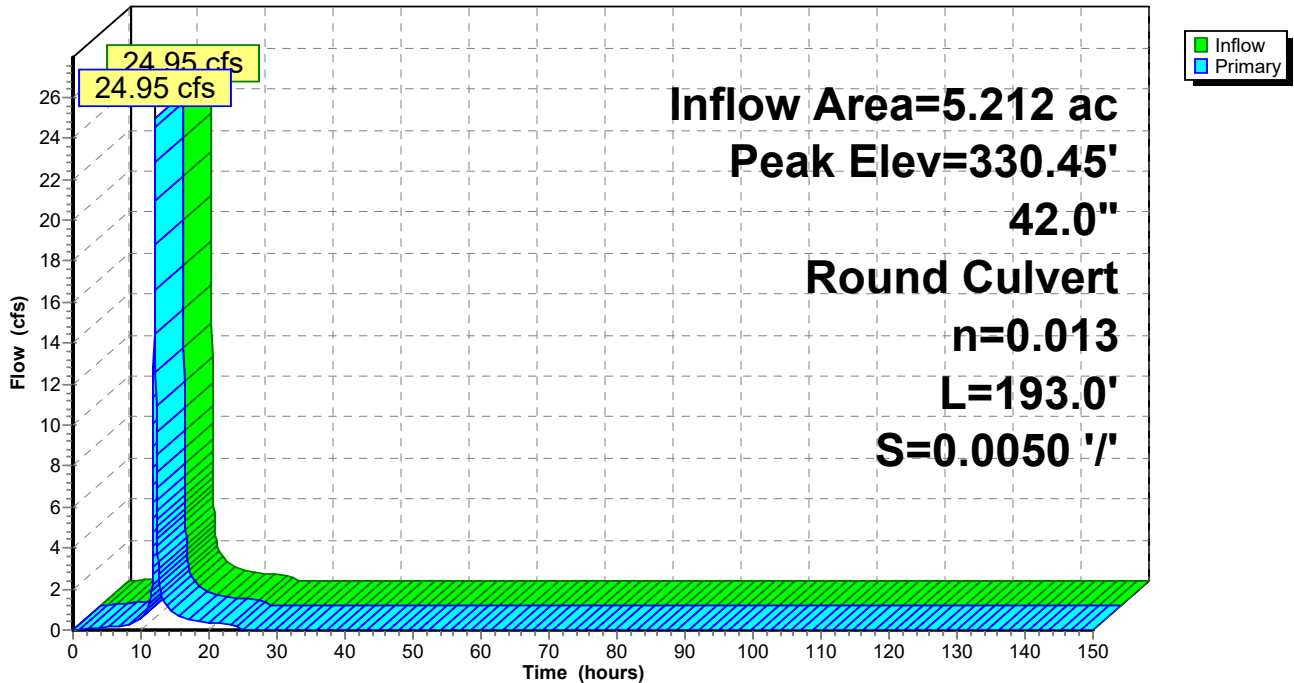
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 330.45' @ 12.12 hrs
 Flood Elev= 333.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	326.98'	42.0" Round Culvert L= 193.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.98' / 326.02' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=19.64 cfs @ 12.05 hrs HW=330.20' TW=329.91' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 19.64 cfs @ 2.77 fps)

Pond 21P: (Rim @ 333.5) (CB#4 to CB#1)

Hydrograph



Summary for Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4)

Inflow Area = 5.212 ac, 38.38% Impervious, Inflow Depth = 3.80" for 100-Year event
 Inflow = 24.95 cfs @ 12.05 hrs, Volume= 1.652 af
 Outflow = 24.95 cfs @ 12.05 hrs, Volume= 1.652 af, Atten= 0%, Lag= 0.0 min
 Primary = 24.95 cfs @ 12.05 hrs, Volume= 1.652 af

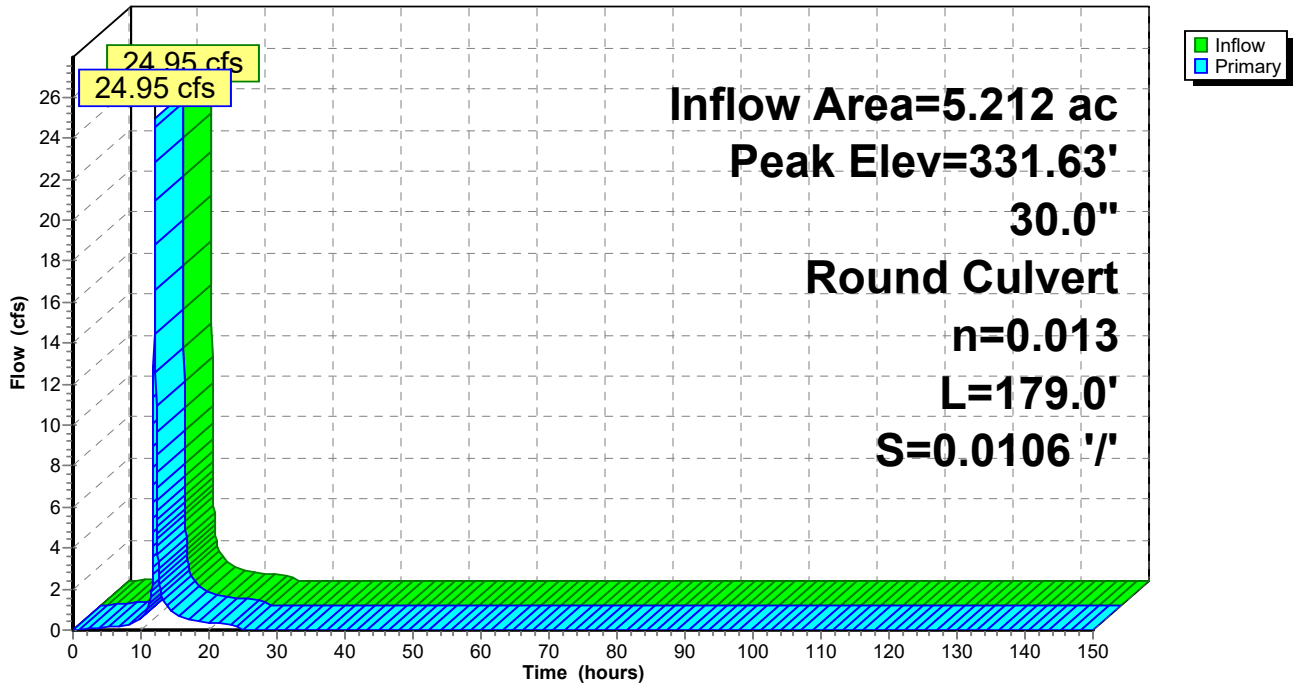
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 331.63' @ 12.08 hrs
 Flood Elev= 333.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	328.90'	30.0" Round Culvert L= 179.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.90' / 327.00' S= 0.0106 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=23.55 cfs @ 12.05 hrs HW=331.56' TW=330.20' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 23.55 cfs @ 5.61 fps)

Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4)

Hydrograph



Summary for Pond CB1: (Rim @ 331.15) (CB#1 to GW)

[80] Warning: Exceeded Pond 15P by 0.05' @ 12.04 hrs (2.71 cfs 0.011 af)

[80] Warning: Exceeded Pond 21P by 0.27' @ 24.78 hrs (0.22 cfs 0.007 af)

Inflow Area = 9.631 ac, 28.05% Impervious, Inflow Depth = 3.49" for 100-Year event
 Inflow = 29.45 cfs @ 12.06 hrs, Volume= 2.798 af
 Outflow = 29.45 cfs @ 12.06 hrs, Volume= 2.798 af, Atten= 0%, Lag= 0.0 min
 Primary = 29.45 cfs @ 12.06 hrs, Volume= 2.798 af

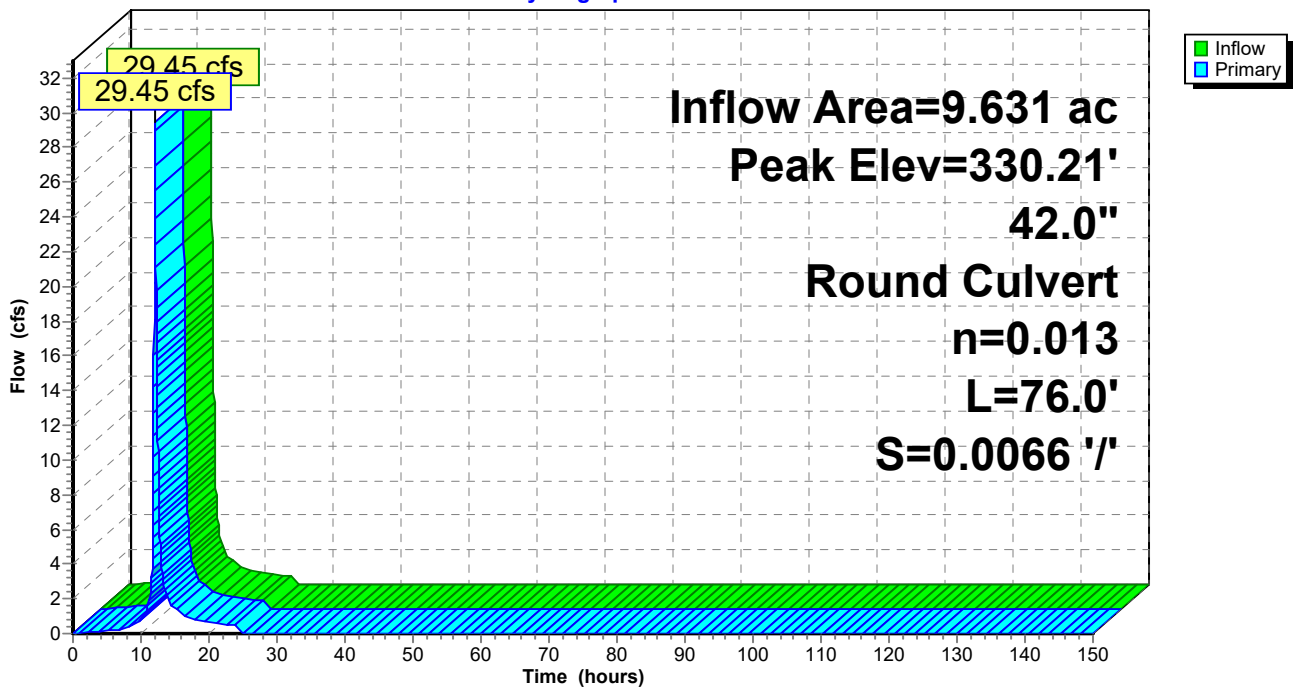
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 330.21' @ 12.14 hrs
 Flood Elev= 331.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	326.00'	42.0" Round Culvert L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.00' / 325.50' S= 0.0066 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=24.29 cfs @ 12.06 hrs HW=329.97' TW=329.69' (Dynamic Tailwater)
 ↳ **1=Culvert** (Inlet Controls 24.29 cfs @ 2.52 fps)

Pond CB1: (Rim @ 331.15) (CB#1 to GW)

Hydrograph



Time span=0.00-150.00 hrs, dt=0.02 hrs, 7501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment DA_1A: NE Residential Area Runoff Area=4.563 ac 43.22% Impervious Runoff Depth=0.39"
Flow Length=718' Slope=0.0589 '/' Tc=7.6 min CN=WQ Runoff=2.57 cfs 0.148 af

Subcatchment DA_1B: DA_1B Runoff Area=8.742 ac 54.53% Impervious Runoff Depth=0.47"
Flow Length=1,286' Slope=0.0477 '/' Tc=13.0 min CN=WQ Runoff=5.10 cfs 0.342 af

Subcatchment DA_1C: DA_1C Runoff Area=3.404 ac 69.93% Impervious Runoff Depth=0.58"
Flow Length=637' Slope=0.0304 '/' Tc=8.2 min CN=WQ Runoff=2.93 cfs 0.163 af

Subcatchment DA_1D: Subcat DA_1D Runoff Area=4.419 ac 15.87% Impervious Runoff Depth=0.20"
Flow Length=1,239' Slope=0.0219 '/' Tc=23.1 min CN=WQ Runoff=0.65 cfs 0.072 af

Subcatchment DA_1E: DA_1E Runoff Area=5.212 ac 38.38% Impervious Runoff Depth=0.35"
Flow Length=810' Slope=0.0238 '/' Tc=13.7 min CN=WQ Runoff=2.15 cfs 0.154 af

Subcatchment DA_1F: DA_1F Runoff Area=2.293 ac 51.81% Impervious Runoff Depth=0.45"
Flow Length=623' Slope=0.0230 '/' Tc=10.5 min CN=WQ Runoff=1.38 cfs 0.086 af

Subcatchment DA_1G: DA_1G (Rec Field) Runoff Area=5.640 ac 21.46% Impervious Runoff Depth=0.24"
Flow Length=786' Slope=0.0219 '/' Tc=15.5 min CN=WQ Runoff=1.32 cfs 0.111 af

Subcatchment DA_1H: DA_1H (Recreation) Runoff Area=3.739 ac 0.00% Impervious Runoff Depth=0.08"
Flow Length=421' Slope=0.0092 '/' Tc=16.6 min CN=80 Runoff=0.16 cfs 0.026 af

Subcatchment DA_4: SE Residential Area Runoff Area=2.865 ac 52.60% Impervious Runoff Depth=0.43"
Flow Length=373' Slope=0.0136 '/' Tc=9.8 min CN=WQ Runoff=1.74 cfs 0.103 af

Subcatchment DA_5: Building H Runoff Area=1.237 ac 49.45% Impervious Runoff Depth=0.41"
Flow Length=315' Slope=0.0098 '/' Tc=10.1 min CN=WQ Runoff=0.70 cfs 0.042 af

Subcatchment DA_7: 60% Impervious Runoff Area=5.712 ac 60.00% Impervious Runoff Depth=0.51"
Flow Length=1,025' Slope=0.0545 '/' Tc=9.3 min CN=WQ Runoff=4.11 cfs 0.242 af

Subcatchment DA_8: Southern Half of Runoff Area=0.251 ac 36.31% Impervious Runoff Depth=0.30"
Flow Length=169' Slope=0.0086 '/' Tc=7.5 min CN=WQ Runoff=0.11 cfs 0.006 af

Subcatchment DA_9: SW Residential Area Runoff Area=1.101 ac 25.57% Impervious Runoff Depth=0.26"
Flow Length=218' Slope=0.0171 '/' Tc=6.1 min CN=WQ Runoff=0.41 cfs 0.024 af

Reach 5R: Overflow Path Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=128.0' S=0.0352 '/' Capacity=33.06 cfs Outflow=0.00 cfs 0.000 af

Reach 6R: Plunge pool to stream Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.040 L=53.0' S=0.0132 '/' Capacity=114.17 cfs Outflow=0.00 cfs 0.000 af

Reach 16R: reach within Patrick Brook Avg. Flow Depth=0.20' Max Vel=0.68 fps Inflow=0.61 cfs 1.471 af
n=0.035 L=400.0' S=0.0025 '/' Capacity=91.51 cfs Outflow=0.61 cfs 1.471 af

Reach 22R: reach within Patrick Brook Avg. Flow Depth=0.05' Max Vel=0.36 fps Inflow=0.08 cfs 0.133 af
n=0.035 L=280.0' S=0.0036 '/' Capacity=109.38 cfs Outflow=0.08 cfs 0.133 af

Reach 25R: reach within Patrick Brook Avg. Flow Depth=0.04' Max Vel=0.40 fps Inflow=0.06 cfs 0.109 af
n=0.035 L=220.0' S=0.0068 '/' Capacity=151.13 cfs Outflow=0.06 cfs 0.109 af

Reach 26R: reach within Patrick Brook Avg. Flow Depth=0.05' Max Vel=0.26 fps Inflow=0.05 cfs 0.103 af
n=0.035 L=455.0' S=0.0022 '/' Capacity=85.80 cfs Outflow=0.05 cfs 0.103 af

Reach 28R: emergency spillway Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.078 L=16.0' S=0.1687 '/' Capacity=146.89 cfs Outflow=0.00 cfs 0.000 af

Reach 35R: Channel from Level Avg. Flow Depth=0.01' Max Vel=0.04 fps Inflow=0.02 cfs 0.024 af
n=0.150 L=127.0' S=0.0079 '/' Capacity=47.21 cfs Outflow=0.02 cfs 0.024 af

Reach 41R: Channel from Level Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.150 L=52.0' S=0.0096 '/' Capacity=76.45 cfs Outflow=0.00 cfs 0.000 af

Reach 43R: Channel from Level Avg. Flow Depth=0.01' Max Vel=0.06 fps Inflow=0.01 cfs 0.006 af
n=0.150 L=45.0' S=0.0111 '/' Capacity=14.41 cfs Outflow=0.01 cfs 0.006 af

Reach 45R: Channel from Level Avg. Flow Depth=0.00' Max Vel=0.05 fps Inflow=0.05 cfs 0.103 af
n=0.150 L=92.0' S=0.0141 '/' Capacity=256.34 cfs Outflow=0.05 cfs 0.103 af

Reach 50R: reach within Riggs Brook to Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.035 L=820.0' S=0.0037 '/' Capacity=110.71 cfs Outflow=0.00 cfs 0.000 af

Pond 3P: GW3 Peak Elev=328.69' Storage=2,020 cf Inflow=0.11 cfs 0.006 af
Primary=0.01 cfs 0.006 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.006 af

Pond 4P: GW 4 Peak Elev=331.58' Storage=6,276 cf Inflow=1.74 cfs 0.103 af
Primary=0.05 cfs 0.103 af Secondary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.103 af

Pond 5P: GW 2 Peak Elev=328.50' Storage=3,776 cf Inflow=0.70 cfs 0.042 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 6P: GW 1 Peak Elev=327.02' Storage=7,136 cf Inflow=0.41 cfs 0.024 af
Primary=0.02 cfs 0.024 af Secondary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.024 af

Pond 10P: (Rim @ 351.5) (CB #46 to CB #43) Peak Elev=346.17' Inflow=2.57 cfs 0.148 af
24.0" Round Culvert n=0.013 L=244.0' S=0.0205 '/' Outflow=2.57 cfs 0.148 af

Pond 11P: (Rim @ 345.05) (CB #43 to CB #8) Peak Elev=340.93' Inflow=7.37 cfs 0.490 af
36.0" Round Culvert n=0.013 L=696.0' S=0.0145 '/' Outflow=7.37 cfs 0.490 af

Pond 12P: Detention Pond Peak Elev=333.46' Storage=4,853 cf Inflow=4.11 cfs 0.242 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0106 '/' Outflow=0.92 cfs 0.240 af

Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8) Peak Elev=332.08' Inflow=3.45 cfs 0.404 af
24.0" Round Culvert n=0.013 L=312.0' S=0.0051 '/' Outflow=3.45 cfs 0.404 af

Pond 14P: (Rim @ 337.1) (CB #8 to Main GW) Peak Elev=330.83' Inflow=12.17 cfs 0.979 af
42.0" Round Culvert n=0.013 L=729.0' S=0.0055 '/' Outflow=12.17 cfs 0.979 af

Post_Haystack_06-09-21_12Hour

Type II 24-hr WQv Rainfall=1.00"

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Pond 15P: (Invert @ 328.1) (Yard Drain to CB Peak Elev=328.41' Storage=304 cf Inflow=0.65 cfs 0.072 af
Primary=0.60 cfs 0.071 af Secondary=0.00 cfs 0.000 af Outflow=0.60 cfs 0.071 af

Pond 16P: Main Gravel Wetland Peak Elev=326.30' Storage=67,404 cf Inflow=15.66 cfs 1.341 af
Primary=0.54 cfs 1.338 af Secondary=0.00 cfs 0.000 af Outflow=0.54 cfs 1.338 af

Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2) Peak Elev=332.48' Inflow=3.45 cfs 0.404 af
24.0" Round Culvert n=0.013 L=38.0' S=0.0105 '/ Outflow=3.45 cfs 0.404 af

Pond 21P: (Rim @ 333.5) (CB#4 to CB#1) Peak Elev=327.57' Inflow=2.15 cfs 0.154 af
42.0" Round Culvert n=0.013 L=193.0' S=0.0050 '/ Outflow=2.15 cfs 0.154 af

Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4) Peak Elev=329.47' Inflow=2.15 cfs 0.154 af
30.0" Round Culvert n=0.013 L=179.0' S=0.0106 '/ Outflow=2.15 cfs 0.154 af

Pond CB1: (Rim @ 331.15) (CB#1 to GW) Peak Elev=326.60' Inflow=2.48 cfs 0.225 af
42.0" Round Culvert n=0.013 L=76.0' S=0.0066 '/ Outflow=2.48 cfs 0.225 af

Total Runoff Area = 49.178 ac Runoff Volume = 1.519 af Average Runoff Depth = 0.37"
59.05% Pervious = 29.040 ac 40.95% Impervious = 20.138 ac

Post_Haystack_06-09-21_12Hour

Type II 24-hr WQv Rainfall=1.00"

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Summary for Subcatchment DA_1A: NE Residential Area

Runoff = 2.57 cfs @ 11.99 hrs, Volume= 0.148 af, Depth= 0.39"

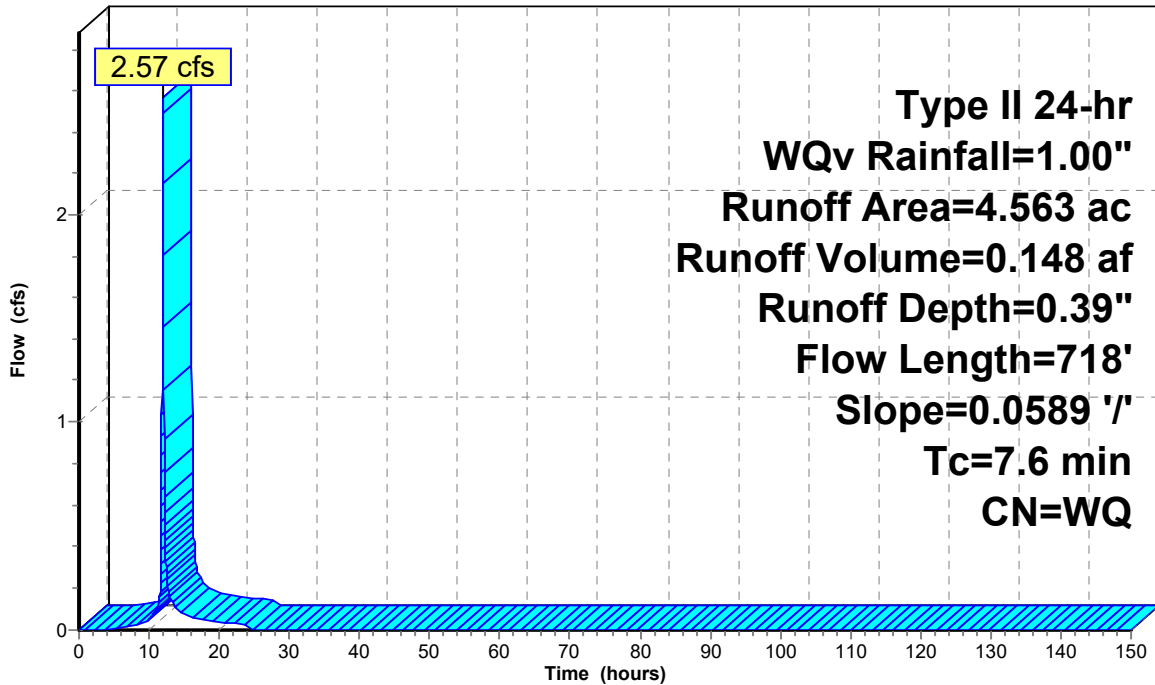
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
2.591	80	>75% Grass cover, Good, HSG D
1.972	98	Paved Parking, HSG D
4.563		Weighted Average
2.591		56.78% Pervious Area
1.972		43.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	718	0.0589	1.57		Lag/CN Method, Contour Length= 11,715' Interval= 1'

Subcatchment DA_1A: NE Residential Area

Hydrograph



Post_Haystack_06-09-21_12Hour

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Type II 24-hr WQv Rainfall=1.00"

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Summary for Subcatchment DA_1B: DA_1B

Runoff = 5.10 cfs @ 12.05 hrs, Volume= 0.342 af, Depth= 0.47"

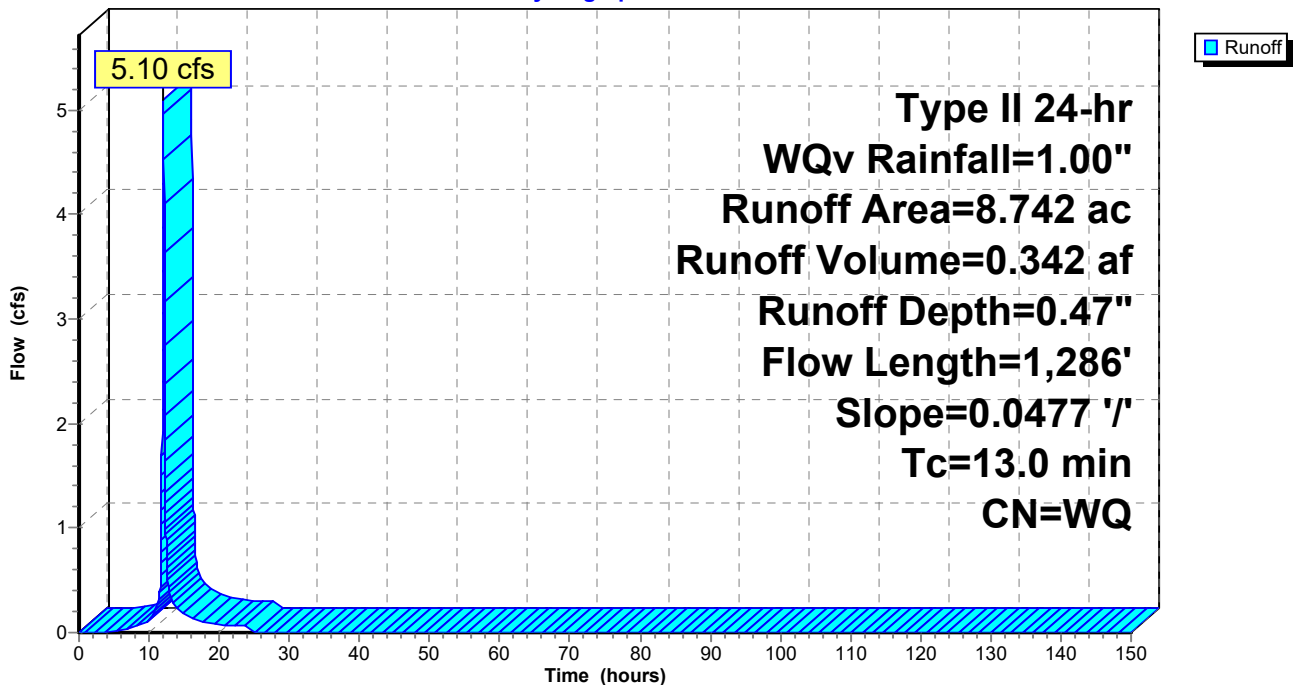
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
3.938	80	>75% Grass cover, Good, HSG D
4.767	98	Paved Parking, HSG D
* 0.037	0	Water, HSG D
8.742		Weighted Average
3.975		45.47% Pervious Area
4.767		54.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	1,286	0.0477	1.65		Lag/CN Method, Contour Length= 18,167' Interval= 1'

Subcatchment DA_1B: DA_1B

Hydrograph



Post_Haystack_06-09-21_12Hour

Type II 24-hr WQv Rainfall=1.00"

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Summary for Subcatchment DA_1C: DA_1C

Runoff = 2.93 cfs @ 11.99 hrs, Volume= 0.163 af, Depth= 0.58"

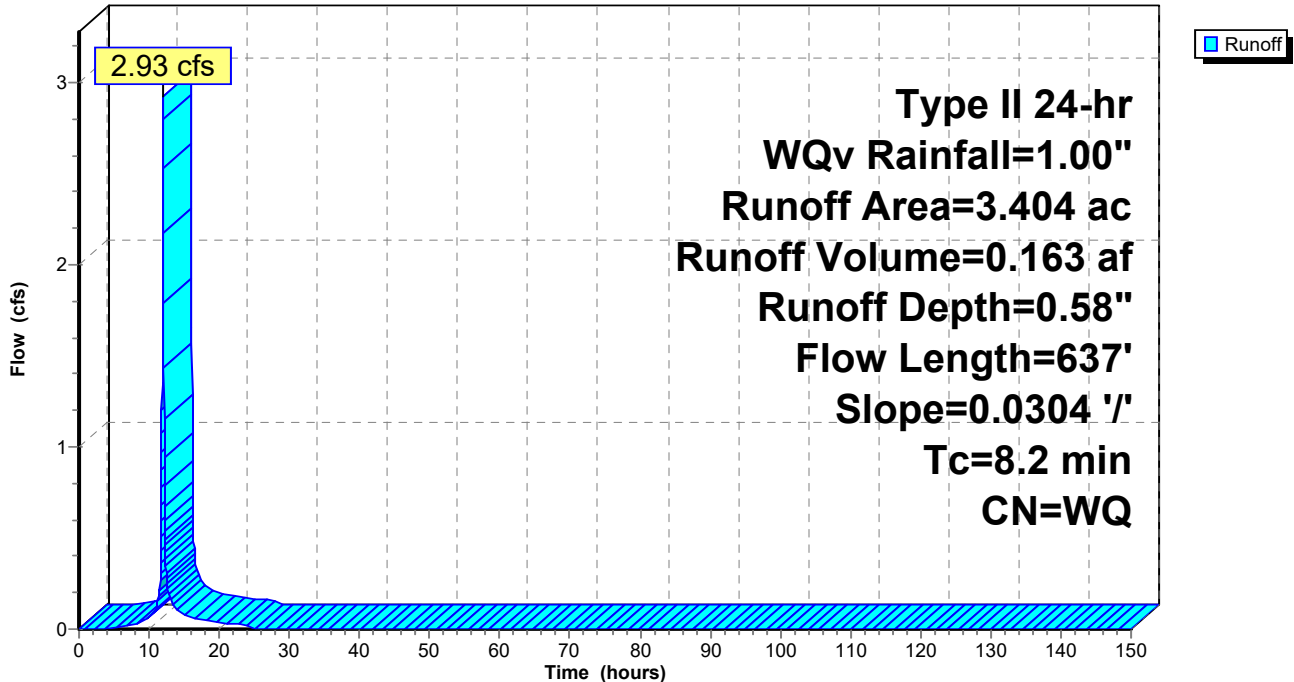
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
0.095	74	>75% Grass cover, Good, HSG C
0.928	80	>75% Grass cover, Good, HSG D
0.466	98	Paved Parking, HSG C
1.914	98	Paved Parking, HSG D
3.404		Weighted Average
1.023		30.07% Pervious Area
2.380		69.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	637	0.0304	1.30		Lag/CN Method, Contour Length= 4,511' Interval= 1'

Subcatchment DA_1C: DA_1C

Hydrograph



Post_Haystack_06-09-21_12Hour

Type II 24-hr WQv Rainfall=1.00"

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Summary for Subcatchment DA_1D: Subcat DA_1D

Runoff = 0.65 cfs @ 12.18 hrs, Volume= 0.072 af, Depth= 0.20"

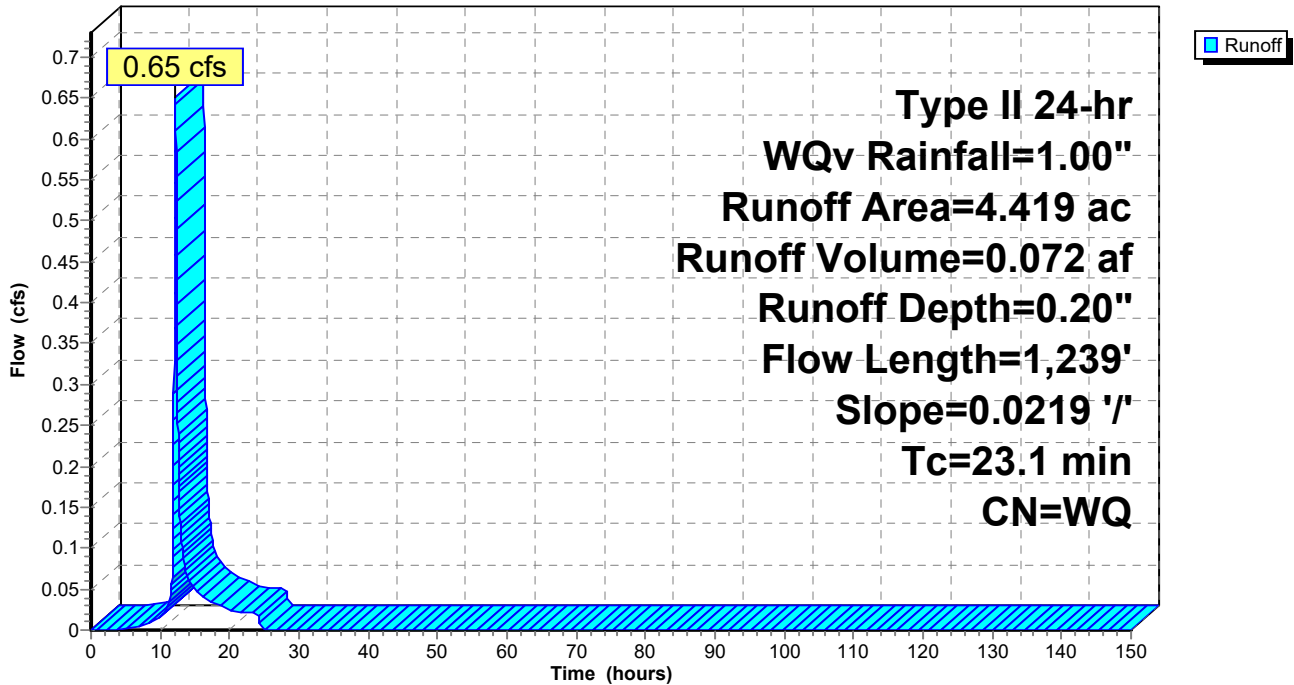
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
3.718	80	>75% Grass cover, Good, HSG D
0.701	98	Paved Parking, HSG D
4.419		Weighted Average
3.718		84.13% Pervious Area
0.701		15.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.1	1,239	0.0219	0.89		Lag/CN Method, Contour Length= 4,218' Interval= 1'

Subcatchment DA_1D: Subcat DA_1D

Hydrograph



Summary for Subcatchment DA_1E: DA_1E

Runoff = 2.15 cfs @ 12.06 hrs, Volume= 0.154 af, Depth= 0.35"

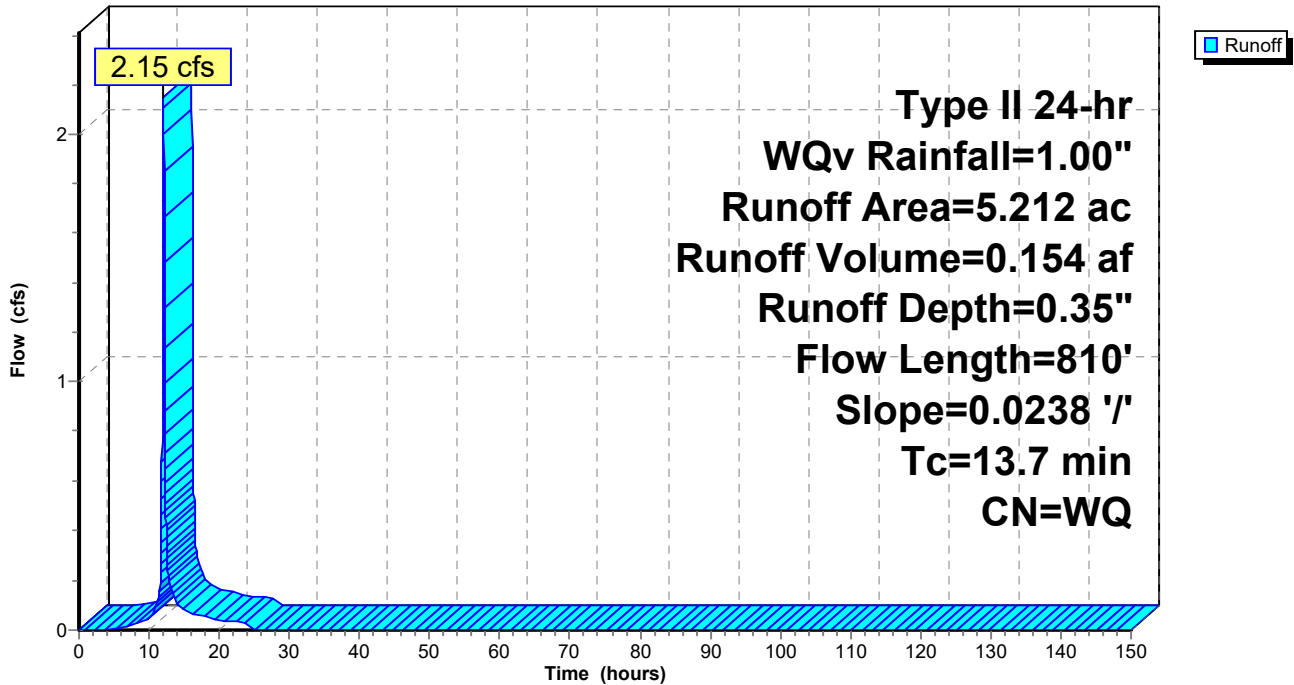
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
3.211	80	>75% Grass cover, Good, HSG D
2.000	98	Paved Parking, HSG D
5.212		Weighted Average
3.211		61.62% Pervious Area
2.000		38.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	810	0.0238	0.98		Lag/CN Method, Contour Length= 5,395' Interval= 1'

Subcatchment DA_1E: DA_1E

Hydrograph



Summary for Subcatchment DA_1F: DA_1F

Runoff = 1.38 cfs @ 12.02 hrs, Volume= 0.086 af, Depth= 0.45"

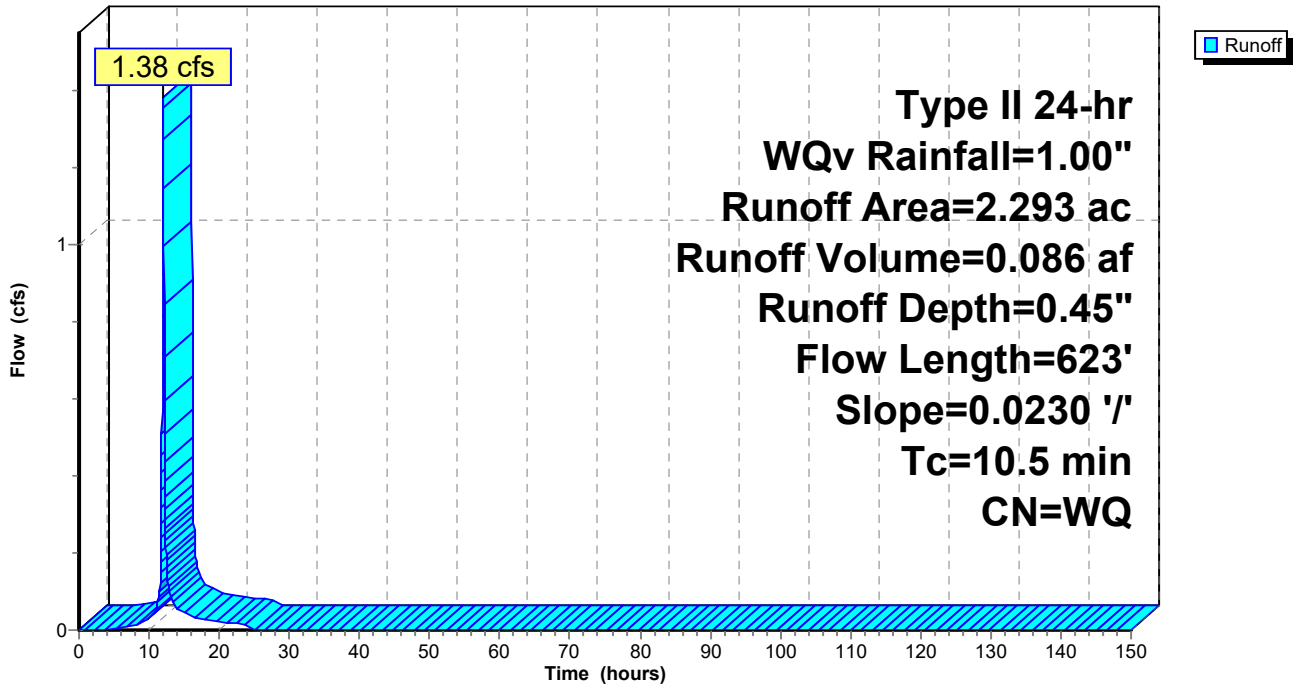
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
1.105	80	>75% Grass cover, Good, HSG D
1.188	98	Paved Parking, HSG D
2.293		Weighted Average
1.105		48.19% Pervious Area
1.188		51.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	623	0.0230	0.99		Lag/CN Method, Contour Length= 2,296' Interval= 1'

Subcatchment DA_1F: DA_1F

Hydrograph



Summary for Subcatchment DA_1G: DA_1G (Rec Field Parking Lot)

Runoff = 1.32 cfs @ 12.08 hrs, Volume= 0.111 af, Depth= 0.24"

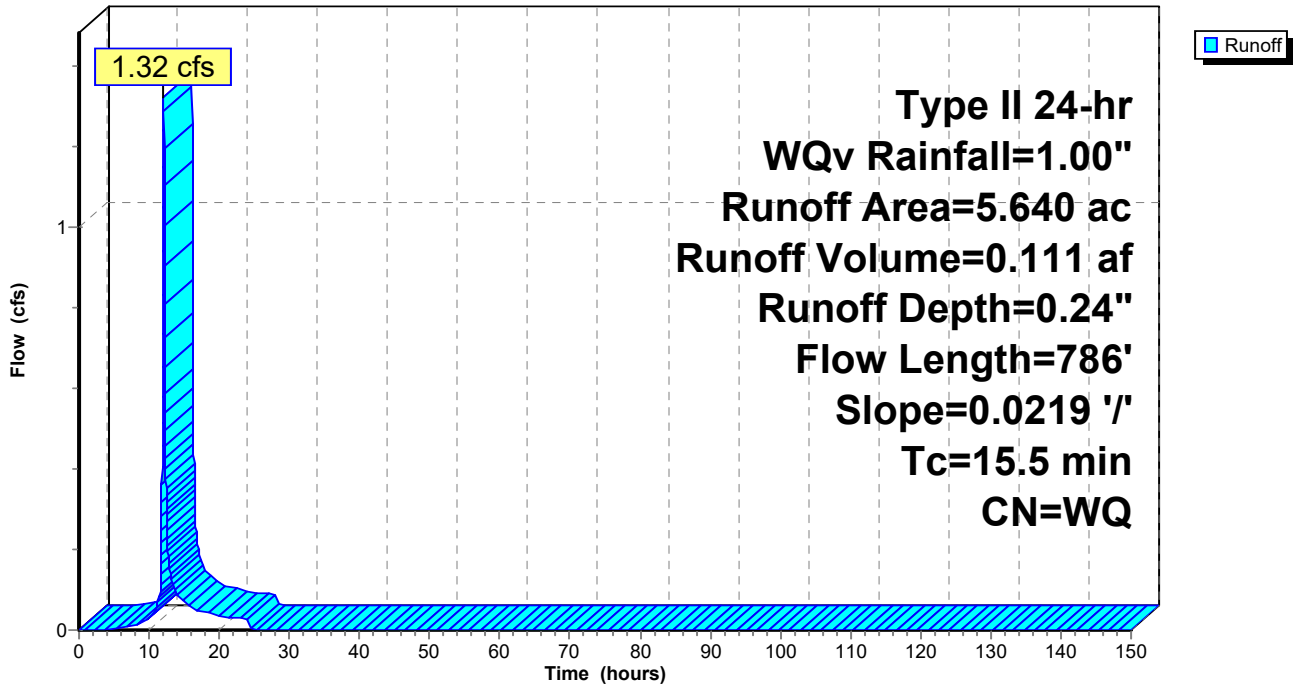
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
4.430	80	>75% Grass cover, Good, HSG D
1.210	98	Paved Parking, HSG D
5.640		Weighted Average
4.430		78.54% Pervious Area
1.210		21.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	786	0.0219	0.84		Lag/CN Method, Contour Length= 5,380' Interval= 1'

Subcatchment DA_1G: DA_1G (Rec Field Parking Lot)

Hydrograph



Summary for Subcatchment DA_1H: DA_1H (Recreation Field)

Runoff = 0.16 cfs @ 12.16 hrs, Volume= 0.026 af, Depth= 0.08"

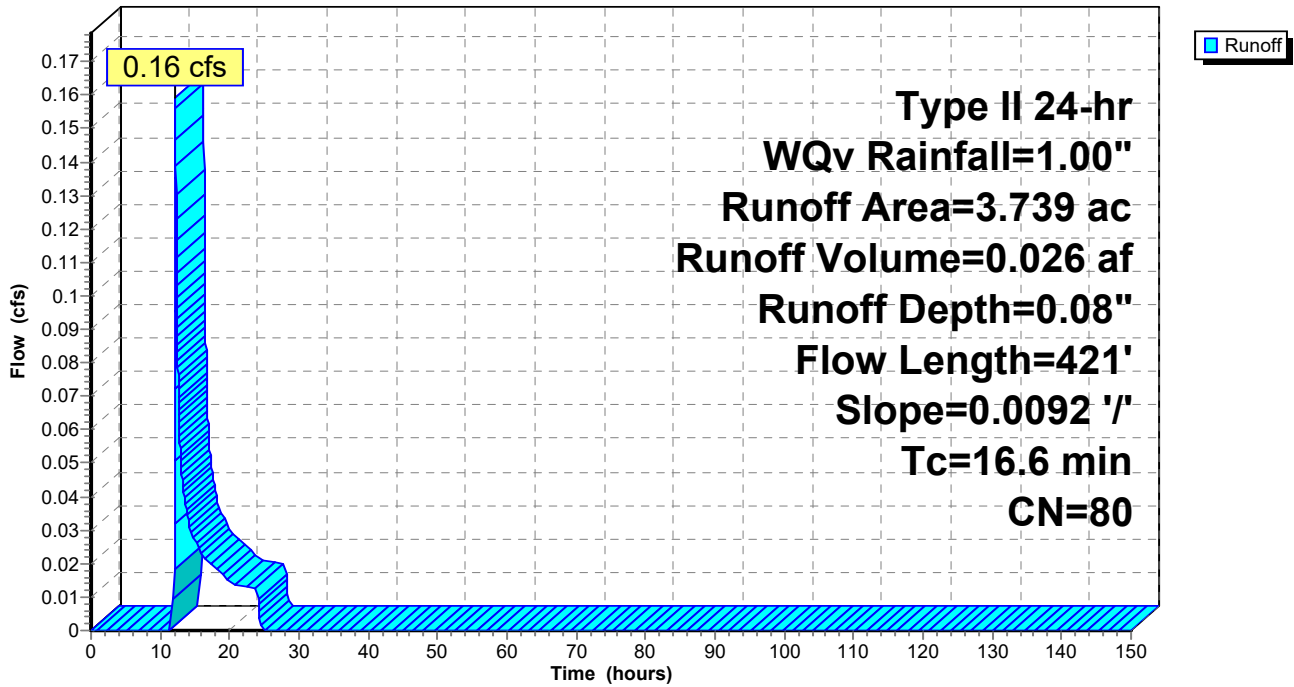
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
3.739	80	>75% Grass cover, Good, HSG D
3.739		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.6	421	0.0092	0.42		Lag/CN Method, Contour Length= 1,500' Interval= 1'

Subcatchment DA_1H: DA_1H (Recreation Field)

Hydrograph



Summary for Subcatchment DA_4: SE Residential Area

Runoff = 1.74 cfs @ 12.01 hrs, Volume= 0.103 af, Depth= 0.43"

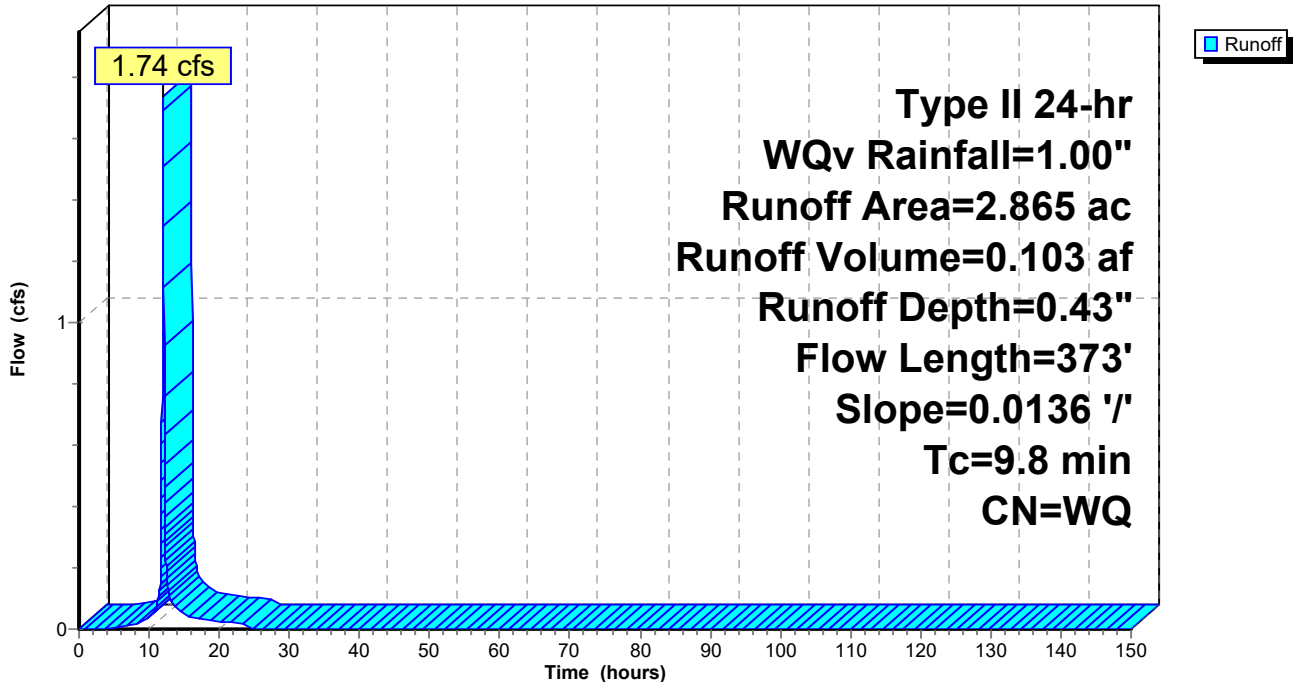
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
1.211	74	>75% Grass cover, Good, HSG C
0.147	80	>75% Grass cover, Good, HSG D
1.394	98	Paved Parking, HSG C
0.113	98	Paved Parking, HSG D
2.865		Weighted Average
1.358		47.40% Pervious Area
1.507		52.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	373	0.0136	0.64		Lag/CN Method, Contour Length= 1,698' Interval= 1'

Subcatchment DA_4: SE Residential Area

Hydrograph



Summary for Subcatchment DA_5: Building H

Runoff = 0.70 cfs @ 12.01 hrs, Volume= 0.042 af, Depth= 0.41"

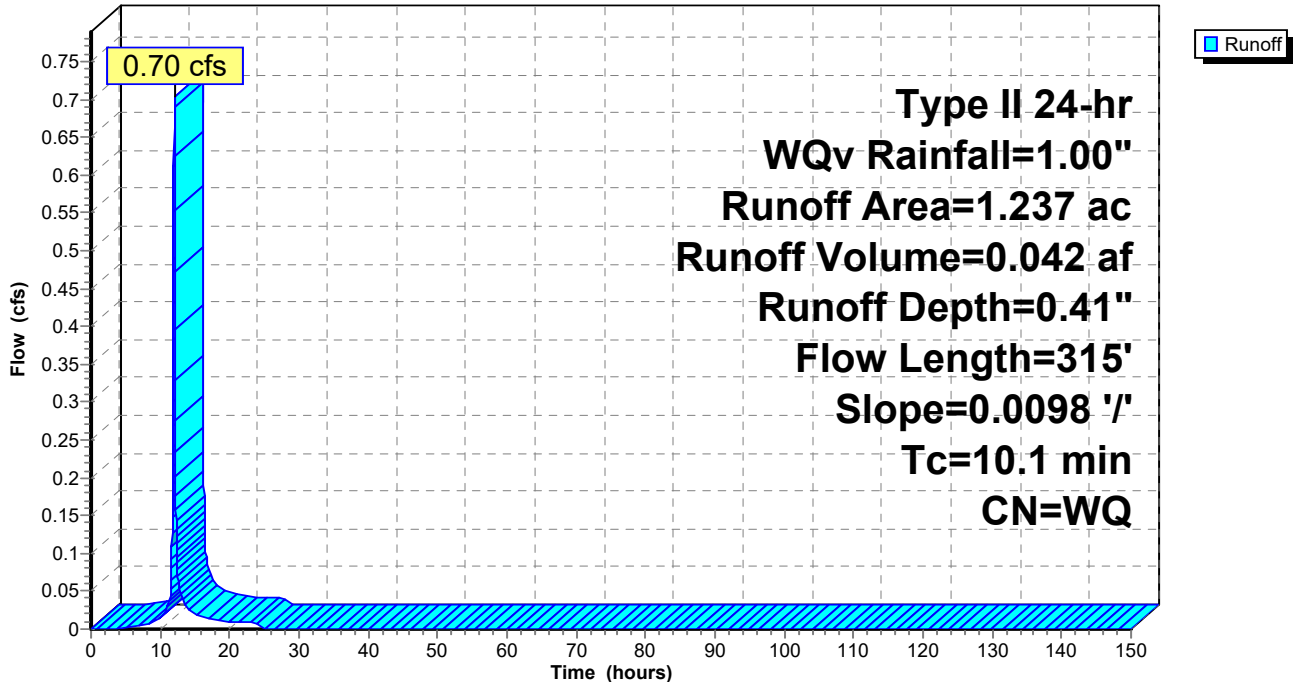
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
0.450	74	>75% Grass cover, Good, HSG C
0.175	80	>75% Grass cover, Good, HSG D
0.468	98	Paved Parking, HSG C
0.144	98	Paved Parking, HSG D
1.237		Weighted Average
0.625		50.55% Pervious Area
0.612		49.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	315	0.0098	0.52		Lag/CN Method, Contour Length= 527' Interval= 1'

Subcatchment DA_5: Building H

Hydrograph



Summary for Subcatchment DA_7: 60% Impervious

Runoff = 4.11 cfs @ 12.01 hrs, Volume= 0.242 af, Depth= 0.51"

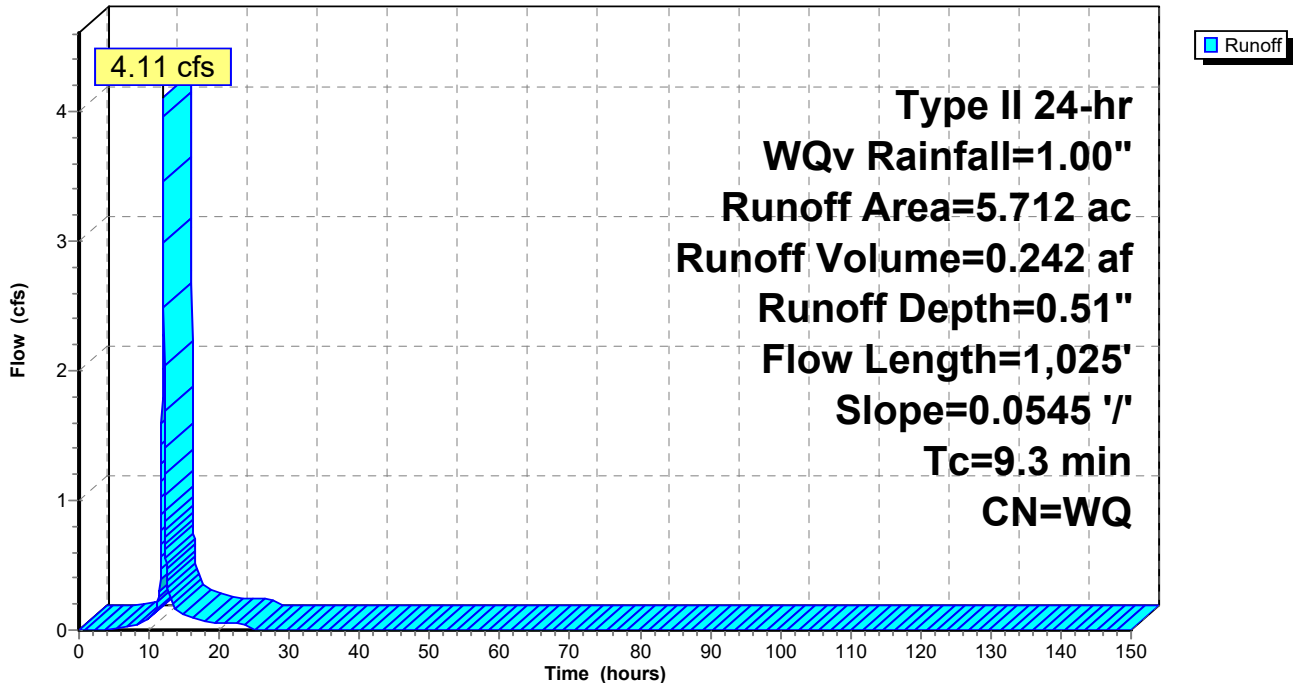
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
2.285	80	>75% Grass cover, Good, HSG D
3.427	98	Paved Parking, HSG D
5.712		Weighted Average
2.285		40.00% Pervious Area
3.427		60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	1,025	0.0545	1.83		Lag/CN Method, Contour Length= 13,556' Interval= 1'

Subcatchment DA_7: 60% Impervious

Hydrograph



Summary for Subcatchment DA_8: Southern Half of Center Road

Runoff = 0.11 cfs @ 11.98 hrs, Volume= 0.006 af, Depth= 0.30"

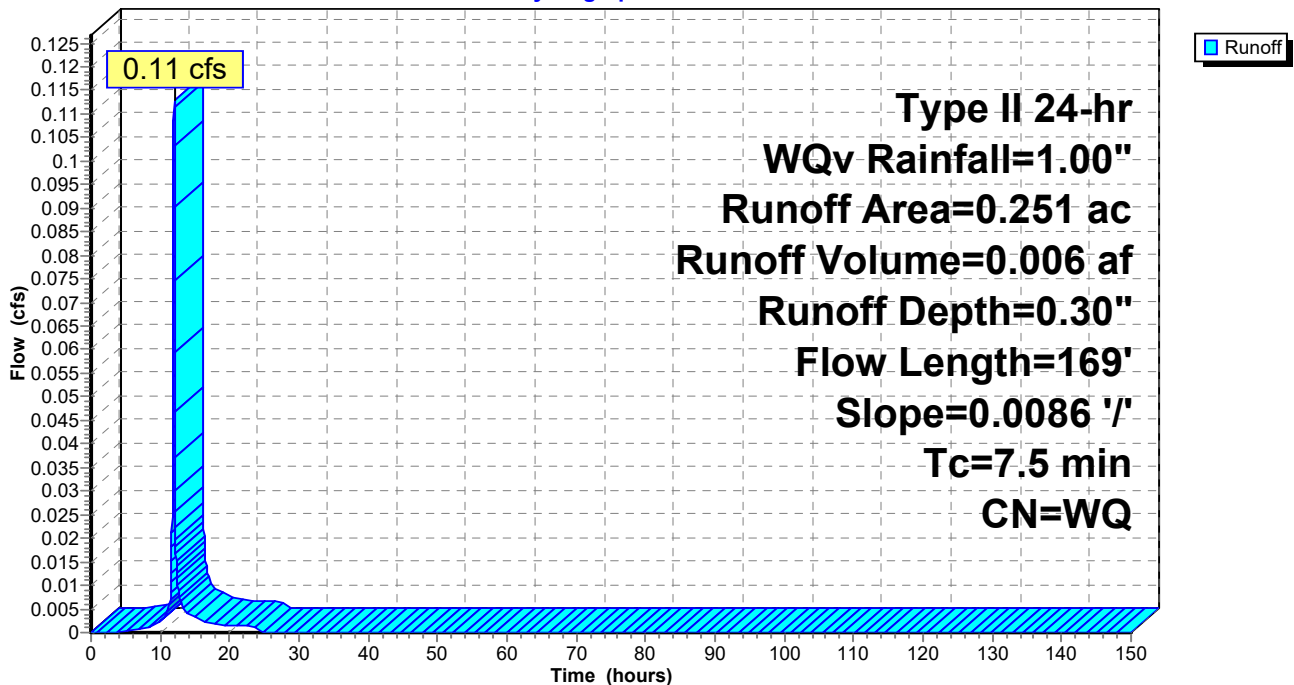
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
0.158	74	>75% Grass cover, Good, HSG C
0.091	98	Paved Parking, HSG C
0.001	70	Woods, Good, HSG C
0.251		Weighted Average
0.160		63.69% Pervious Area
0.091		36.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	169	0.0086	0.38		Lag/CN Method, Contour Length= 94' Interval= 1'

Subcatchment DA_8: Southern Half of Center Road

Hydrograph



Summary for Subcatchment DA_9: SW Residential Area

Runoff = 0.41 cfs @ 11.98 hrs, Volume= 0.024 af, Depth= 0.26"

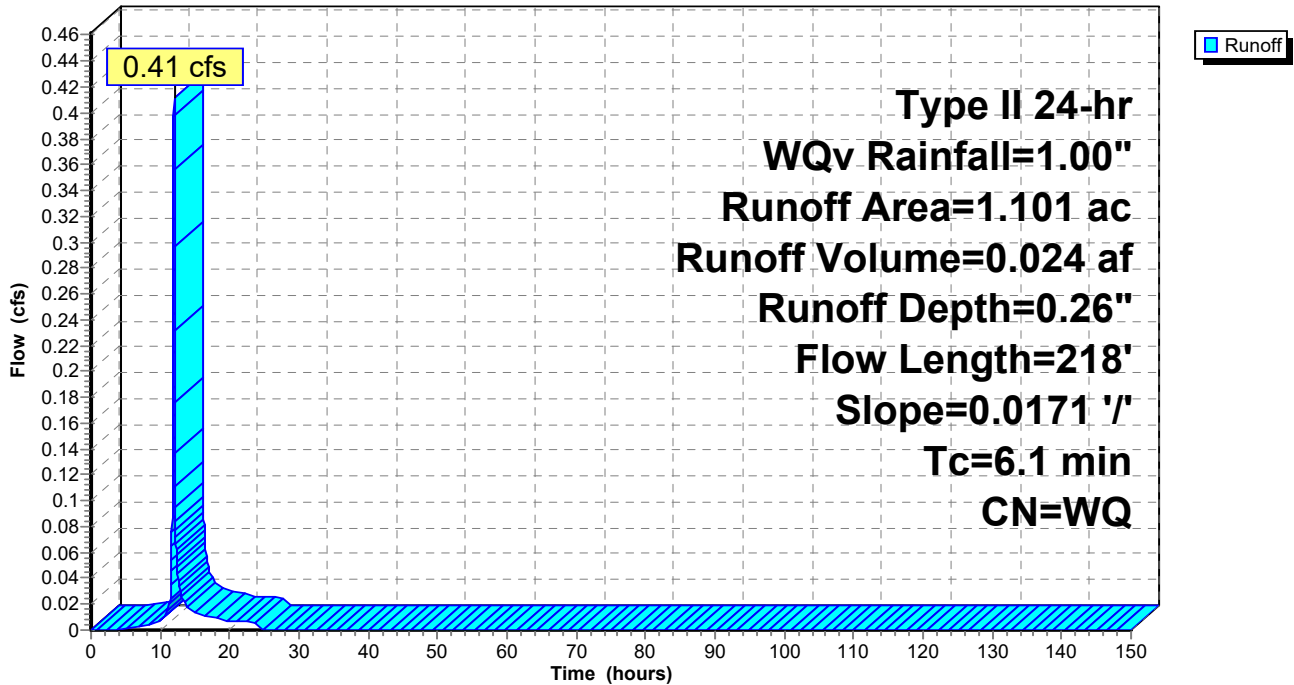
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Type II 24-hr WQv Rainfall=1.00"

Area (ac)	CN	Description
0.820	80	>75% Grass cover, Good, HSG D
0.282	98	Paved Parking, HSG D
1.101		Weighted Average
0.820		74.43% Pervious Area
0.282		25.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	218	0.0171	0.60		Lag/CN Method, Contour Length= 822' Interval= 1'

Subcatchment DA_9: SW Residential Area

Hydrograph



Summary for Reach 5R: Overflow Path

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

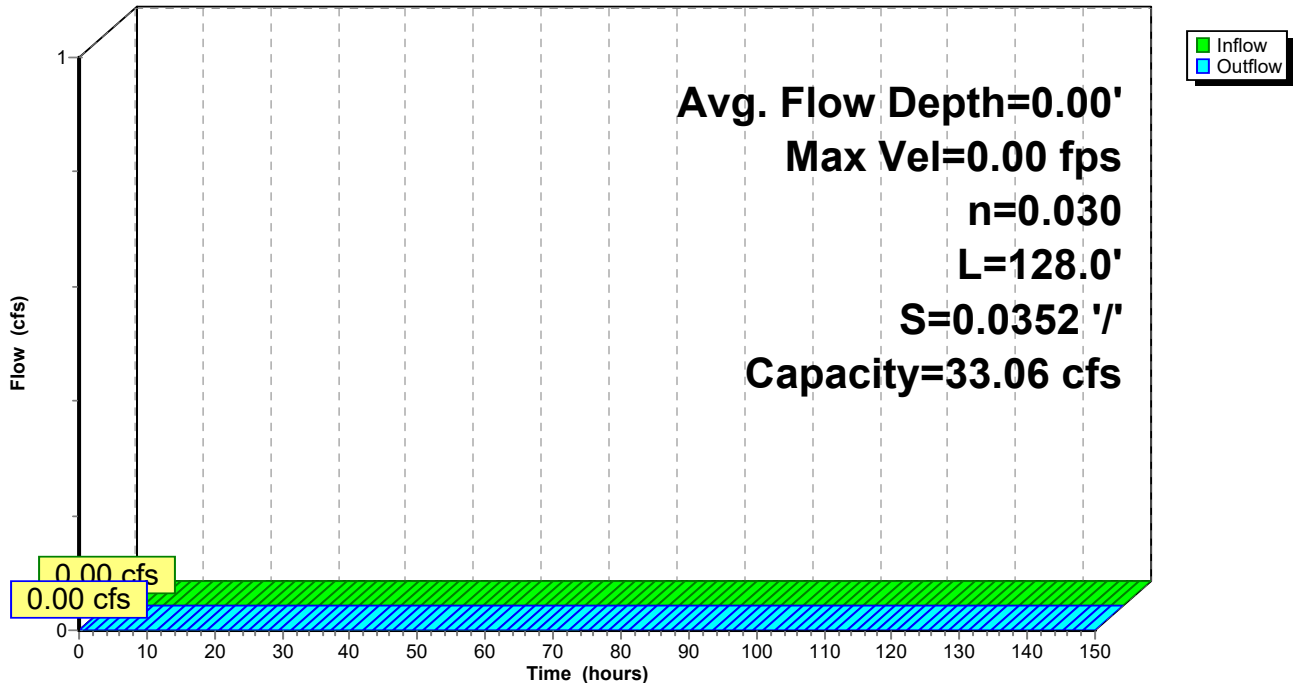
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 33.06 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 3.0 '/' Top Width= 8.00'
 Length= 128.0' Slope= 0.0352 '/'
 Inlet Invert= 330.00', Outlet Invert= 325.50'



Reach 5R: Overflow Path

Hydrograph



Summary for Reach 6R: Plunge pool to stream

[62] Hint: Exceeded Reach 28R OUTLET depth by 0.70' @ 0.00 hrs

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

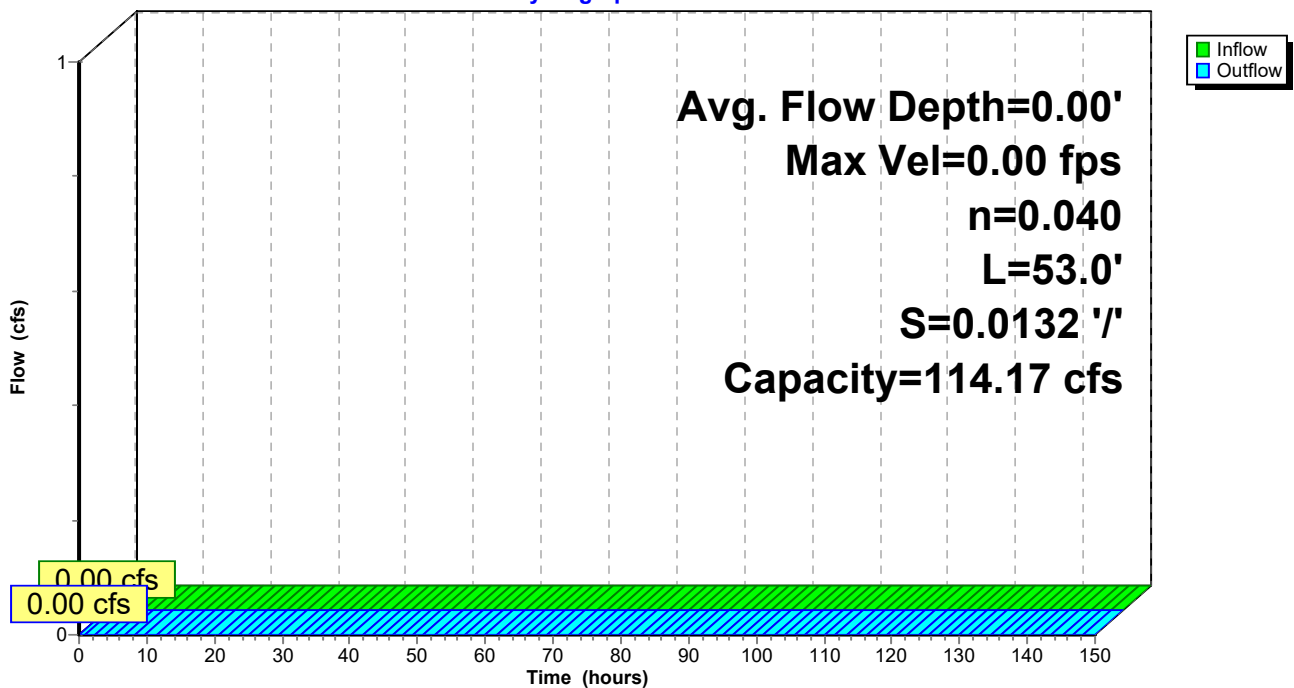
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 28.0 sf, Capacity= 114.17 cfs

28.00' x 1.00' deep channel, n= 0.040
 Length= 53.0' Slope= 0.0132 '/
 Inlet Invert= 326.70', Outlet Invert= 326.00'



Reach 6R: Plunge pool to stream

Hydrograph



Summary for Reach 16R: reach within Patrick Brook to outlet

[62] Hint: Exceeded Reach 22R OUTLET depth by 0.15' @ 19.22 hrs

Inflow Area =	49.178 ac, 40.95% Impervious, Inflow Depth > 0.36"	for WQv event
Inflow =	0.61 cfs @ 16.49 hrs, Volume=	1.471 af
Outflow =	0.61 cfs @ 16.60 hrs, Volume=	1.471 af, Atten= 0%, Lag= 6.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs

Max. Velocity= 0.68 fps, Min. Travel Time= 9.8 min

Avg. Velocity = 0.31 fps, Avg. Travel Time= 21.4 min

Peak Storage= 357 cf @ 16.60 hrs

Average Depth at Peak Storage= 0.20'

Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 91.51 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds

Side Slope Z-value= 2.0 '/' Top Width= 16.00'

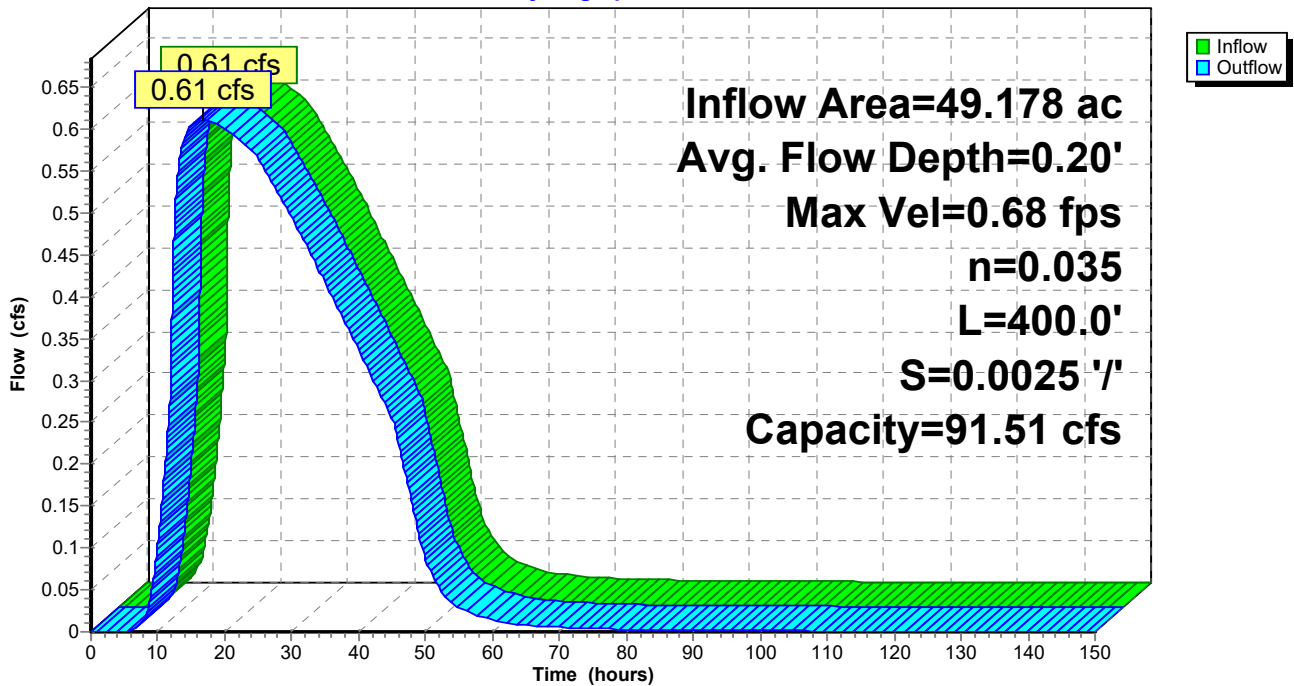
Length= 400.0' Slope= 0.0025 '/'

Inlet Invert= 324.00', Outlet Invert= 323.00'



Reach 16R: reach within Patrick Brook to outlet

Hydrograph



Summary for Reach 22R: reach within Patrick Brook

[62] Hint: Exceeded Reach 35R OUTLET depth by 0.04' @ 14.94 hrs

Inflow Area = 5.454 ac, 45.68% Impervious, Inflow Depth > 0.29" for WQv event
 Inflow = 0.08 cfs @ 15.00 hrs, Volume= 0.133 af
 Outflow = 0.08 cfs @ 15.16 hrs, Volume= 0.133 af, Atten= 0%, Lag= 10.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.36 fps, Min. Travel Time= 13.1 min
 Avg. Velocity = 0.25 fps, Avg. Travel Time= 18.3 min

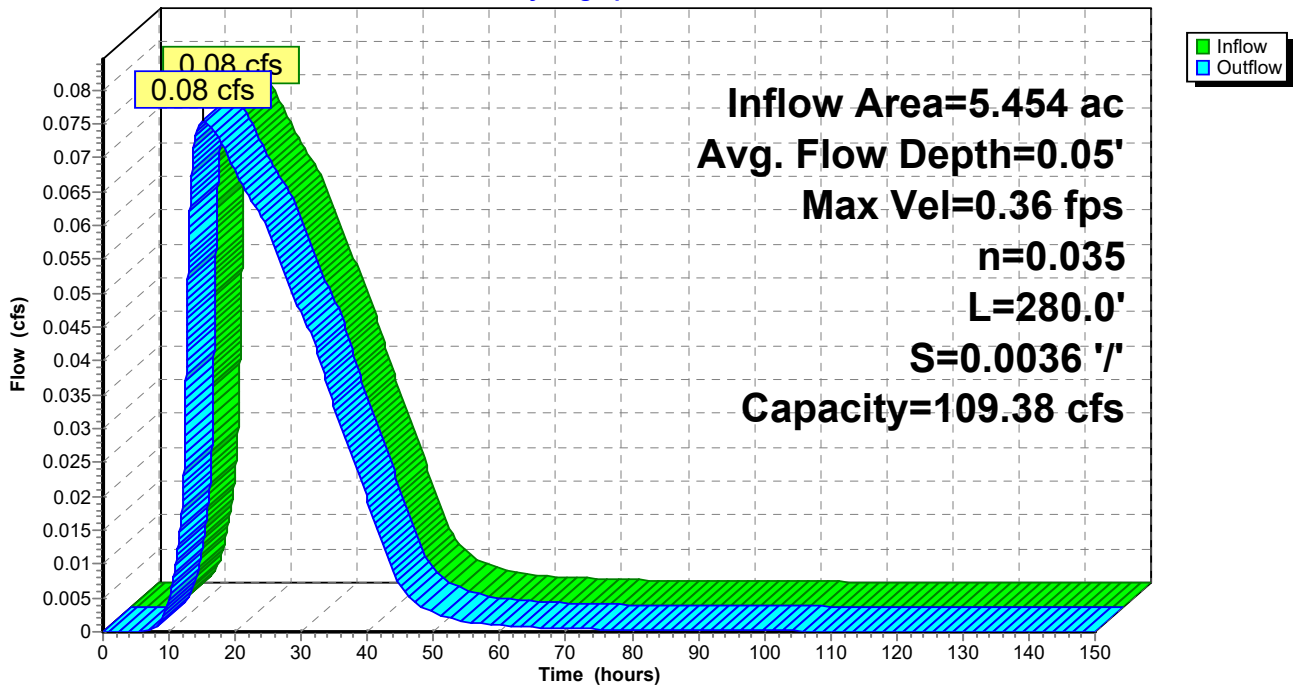
Peak Storage= 59 cf @ 15.16 hrs
 Average Depth at Peak Storage= 0.05'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 109.38 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 280.0' Slope= 0.0036 '/'
 Inlet Invert= 325.00', Outlet Invert= 324.00'



Reach 22R: reach within Patrick Brook

Hydrograph



Summary for Reach 25R: reach within Patrick Brook

- [61] Hint: Exceeded Reach 26R outlet invert by 0.04' @ 14.64 hrs
- [62] Hint: Exceeded Reach 41R OUTLET depth by 0.04' @ 14.64 hrs
- [62] Hint: Exceeded Reach 43R OUTLET depth by 0.03' @ 25.78 hrs

Inflow Area = 4.353 ac, 50.77% Impervious, Inflow Depth > 0.30" for WQv event
 Inflow = 0.06 cfs @ 14.55 hrs, Volume= 0.109 af
 Outflow = 0.06 cfs @ 14.65 hrs, Volume= 0.109 af, Atten= 0%, Lag= 5.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.40 fps, Min. Travel Time= 9.2 min
 Avg. Velocity = 0.34 fps, Avg. Travel Time= 10.8 min

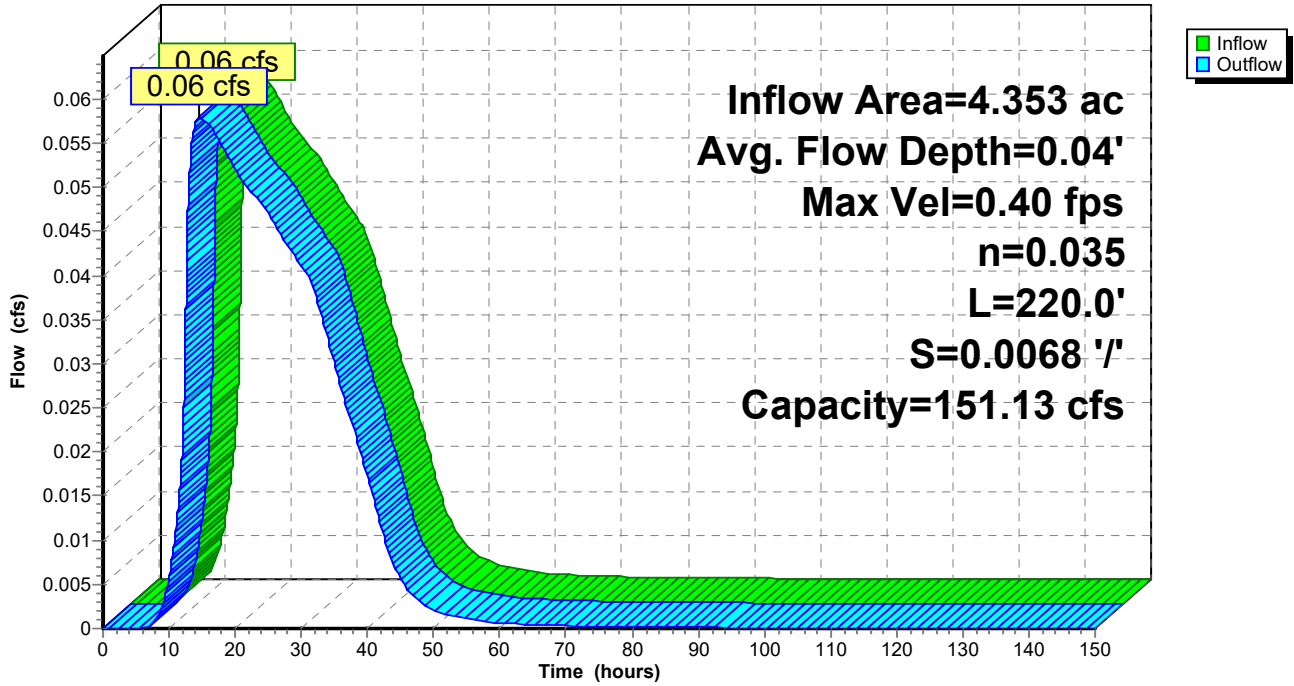
Peak Storage= 32 cf @ 14.65 hrs
 Average Depth at Peak Storage= 0.04'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 151.13 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 220.0' Slope= 0.0068 '/'
 Inlet Invert= 328.00', Outlet Invert= 326.50'



Reach 25R: reach within Patrick Brook

Hydrograph



Summary for Reach 26R: reach within Patrick Brook

[62] Hint: Exceeded Reach 45R OUTLET depth by 0.04' @ 16.00 hrs

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth > 0.43" for WQv event
 Inflow = 0.05 cfs @ 15.57 hrs, Volume= 0.103 af
 Outflow = 0.05 cfs @ 15.94 hrs, Volume= 0.103 af, Atten= 0%, Lag= 22.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.26 fps, Min. Travel Time= 28.6 min
 Avg. Velocity = 0.20 fps, Avg. Travel Time= 37.9 min

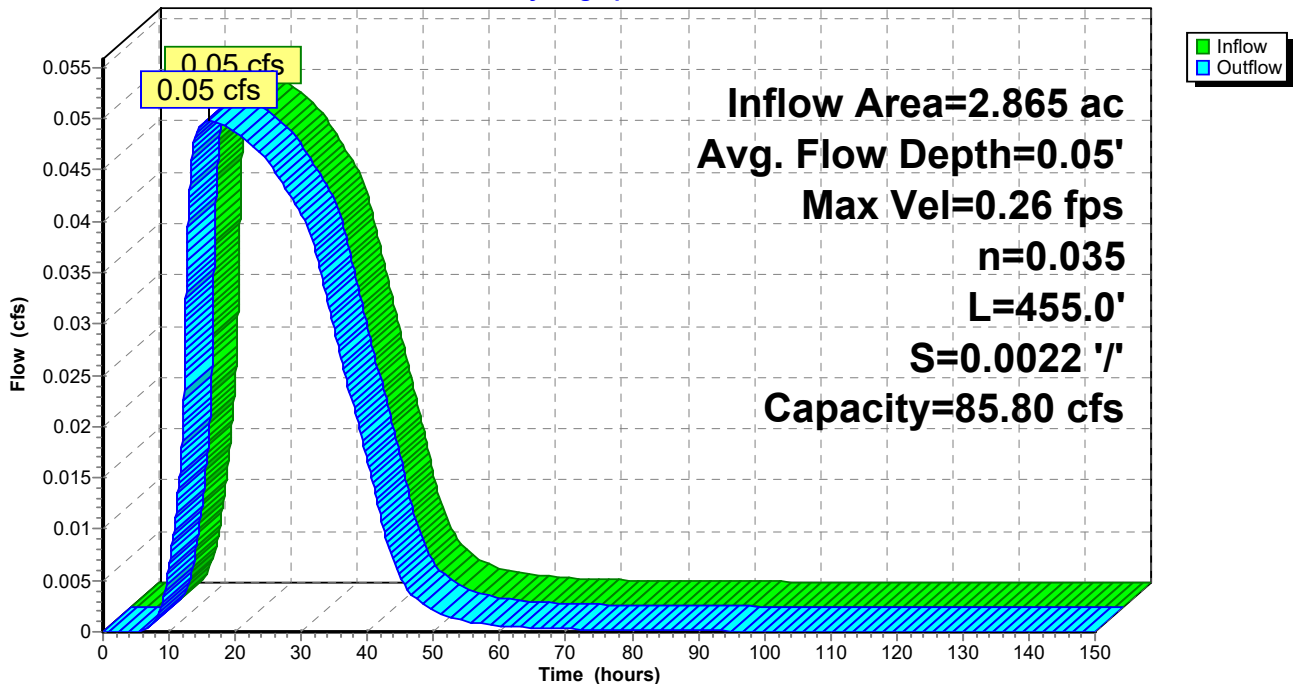
Peak Storage= 86 cf @ 15.94 hrs
 Average Depth at Peak Storage= 0.05'
 Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 85.80 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 2.0 '/' Top Width= 16.00'
 Length= 455.0' Slope= 0.0022 '/'
 Inlet Invert= 329.00', Outlet Invert= 328.00'



Reach 26R: reach within Patrick Brook

Hydrograph



Summary for Reach 28R: emergency spillway

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

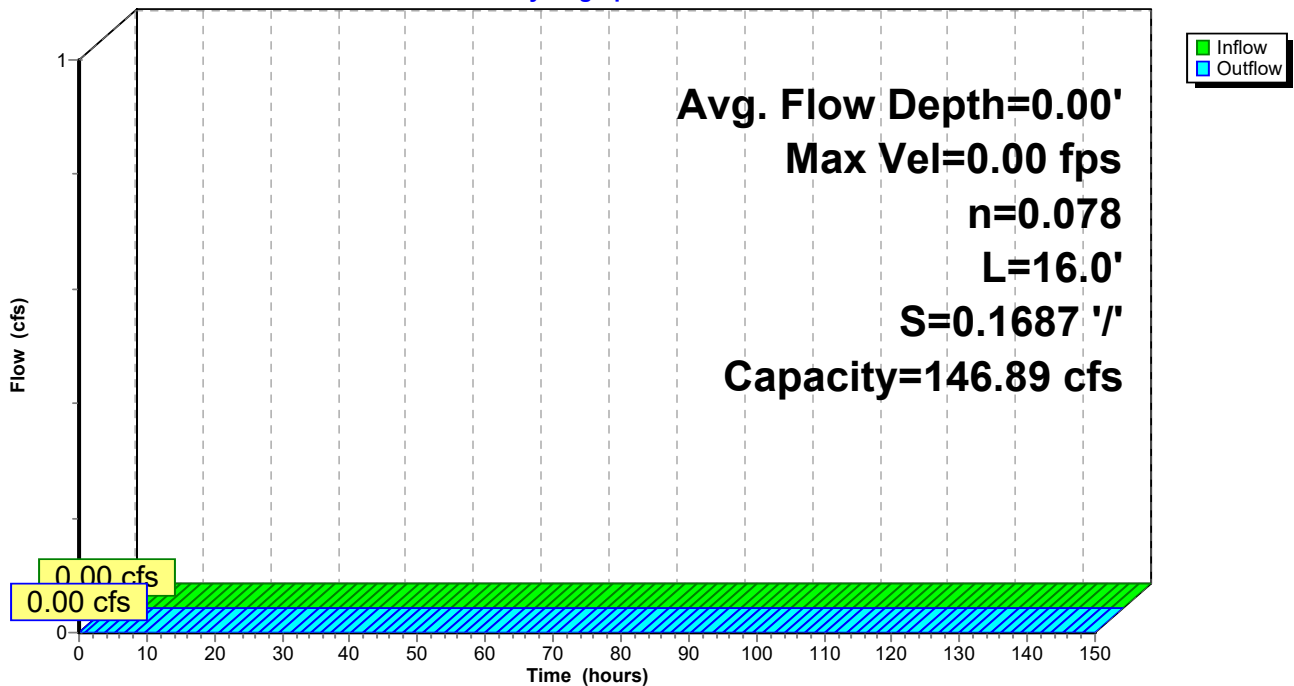
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 20.0 sf, Capacity= 146.89 cfs

20.00' x 1.00' deep channel, n= 0.078 Riprap, 12-inch
Length= 16.0' Slope= 0.1687 '/'
Inlet Invert= 328.70', Outlet Invert= 326.00'



Reach 28R: emergency spillway

Hydrograph



Summary for Reach 35R: Channel from Level Spreader to Brook

Inflow Area = 1.101 ac, 25.57% Impervious, Inflow Depth > 0.26" for WQv event
 Inflow = 0.02 cfs @ 13.89 hrs, Volume= 0.024 af
 Outflow = 0.02 cfs @ 15.68 hrs, Volume= 0.024 af, Atten= 3%, Lag= 107.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.04 fps, Min. Travel Time= 51.9 min
 Avg. Velocity = 0.04 fps, Avg. Travel Time= 51.9 min

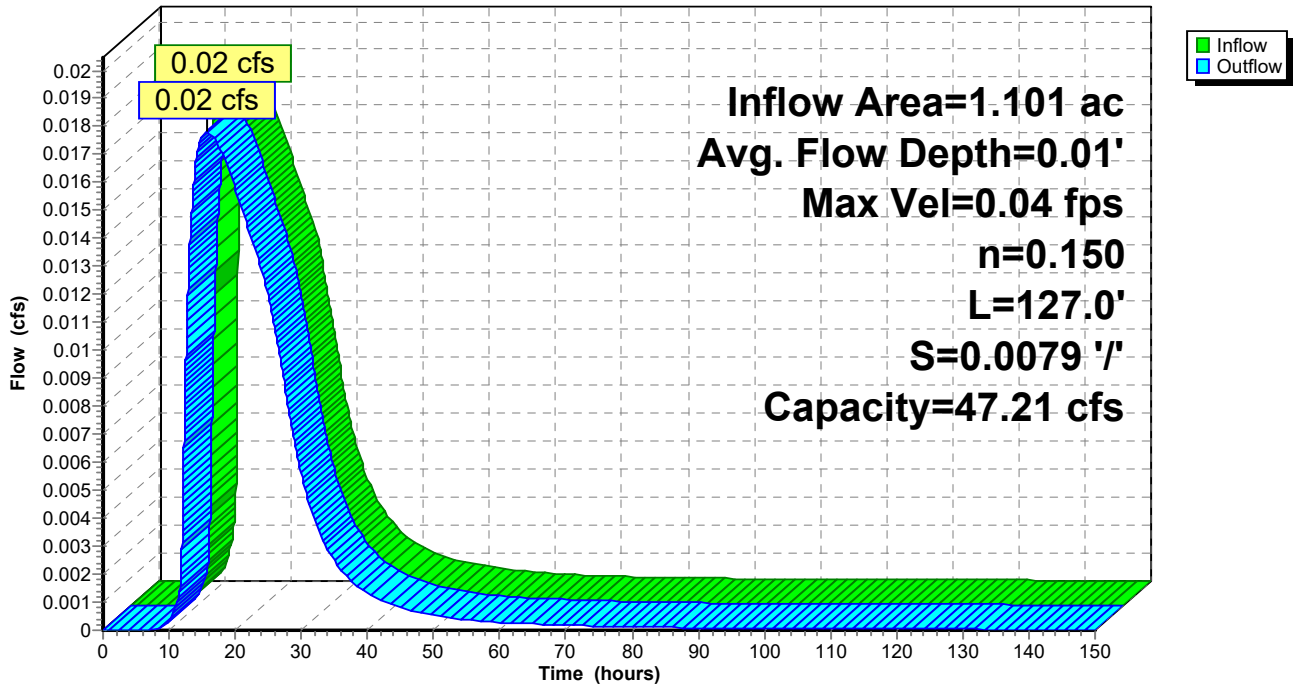
Peak Storage= 55 cf @ 15.68 hrs
 Average Depth at Peak Storage= 0.01'
 Bank-Full Depth= 1.00' Flow Area= 55.0 sf, Capacity= 47.21 cfs

55.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 127.0' Slope= 0.0079 '/'
 Inlet Invert= 326.00', Outlet Invert= 325.00'



Reach 35R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 41R: Channel from Level Spreader to Brook

[80] Warning: Exceeded Pond 5P by 1.00' @ 0.00 hrs (0.05 cfs 0.086 af)

Inflow Area = 1.237 ac, 49.45% Impervious, Inflow Depth = 0.00" for WQv event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

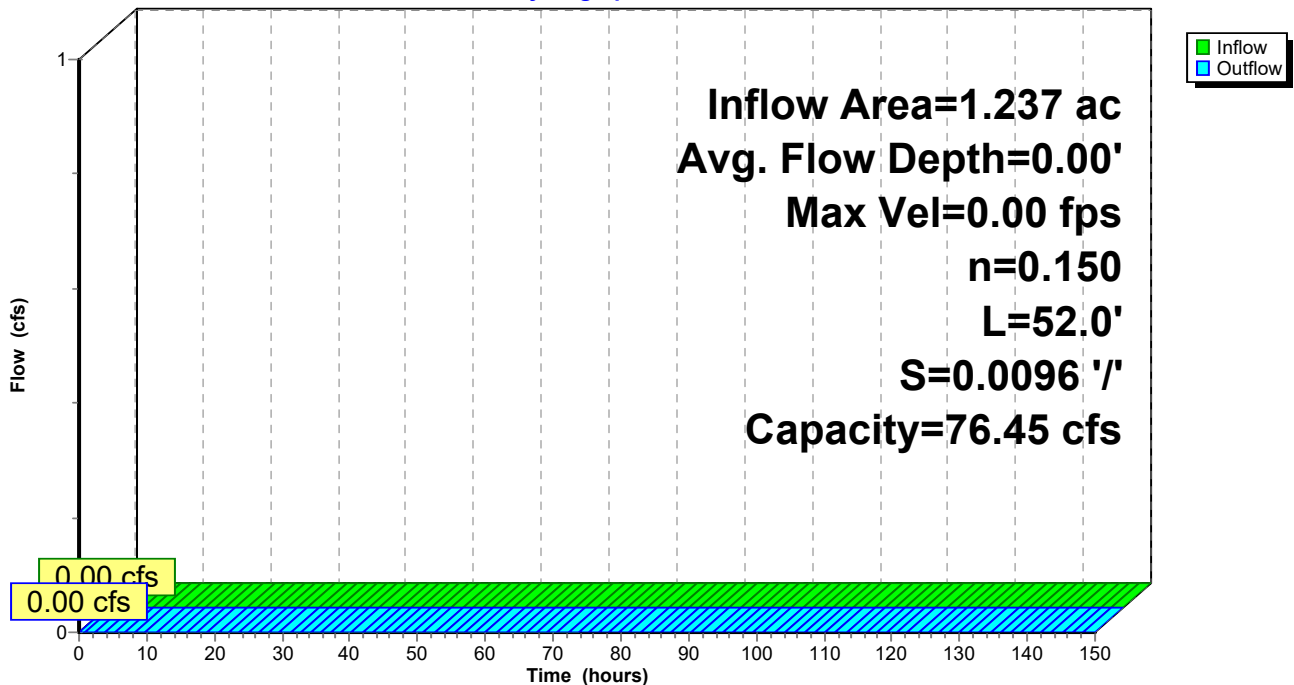
Peak Storage= 0 cf @ 0.00 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 80.0 sf, Capacity= 76.45 cfs

80.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 52.0' Slope= 0.0096 '/'
 Inlet Invert= 328.50', Outlet Invert= 328.00'



Reach 41R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 43R: Channel from Level Spreader to Brook

Inflow Area = 0.251 ac, 36.31% Impervious, Inflow Depth > 0.30" for WQv event
 Inflow = 0.01 cfs @ 12.50 hrs, Volume= 0.006 af
 Outflow = 0.01 cfs @ 12.73 hrs, Volume= 0.006 af, Atten= 1%, Lag= 14.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.06 fps, Min. Travel Time= 13.2 min
 Avg. Velocity = 0.05 fps, Avg. Travel Time= 15.4 min

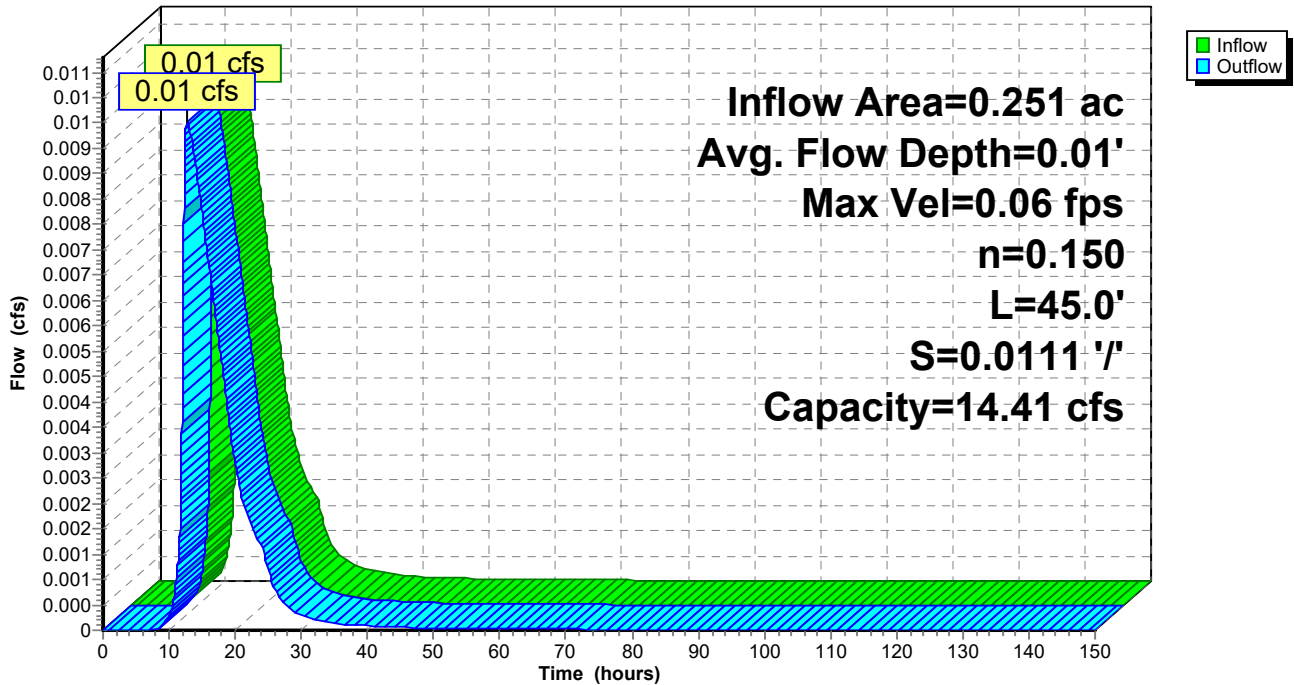
Peak Storage= 8 cf @ 12.73 hrs
 Average Depth at Peak Storage= 0.01'
 Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 14.41 cfs

15.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 45.0' Slope= 0.0111 '/
 Inlet Invert= 328.50', Outlet Invert= 328.00'



Reach 43R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 45R: Channel from Level Spreader to Brook

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth > 0.43" for WQv event
 Inflow = 0.05 cfs @ 14.94 hrs, Volume= 0.103 af
 Outflow = 0.05 cfs @ 15.57 hrs, Volume= 0.103 af, Atten= 0%, Lag= 37.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.05 fps, Min. Travel Time= 28.1 min
 Avg. Velocity = 0.05 fps, Avg. Travel Time= 28.1 min

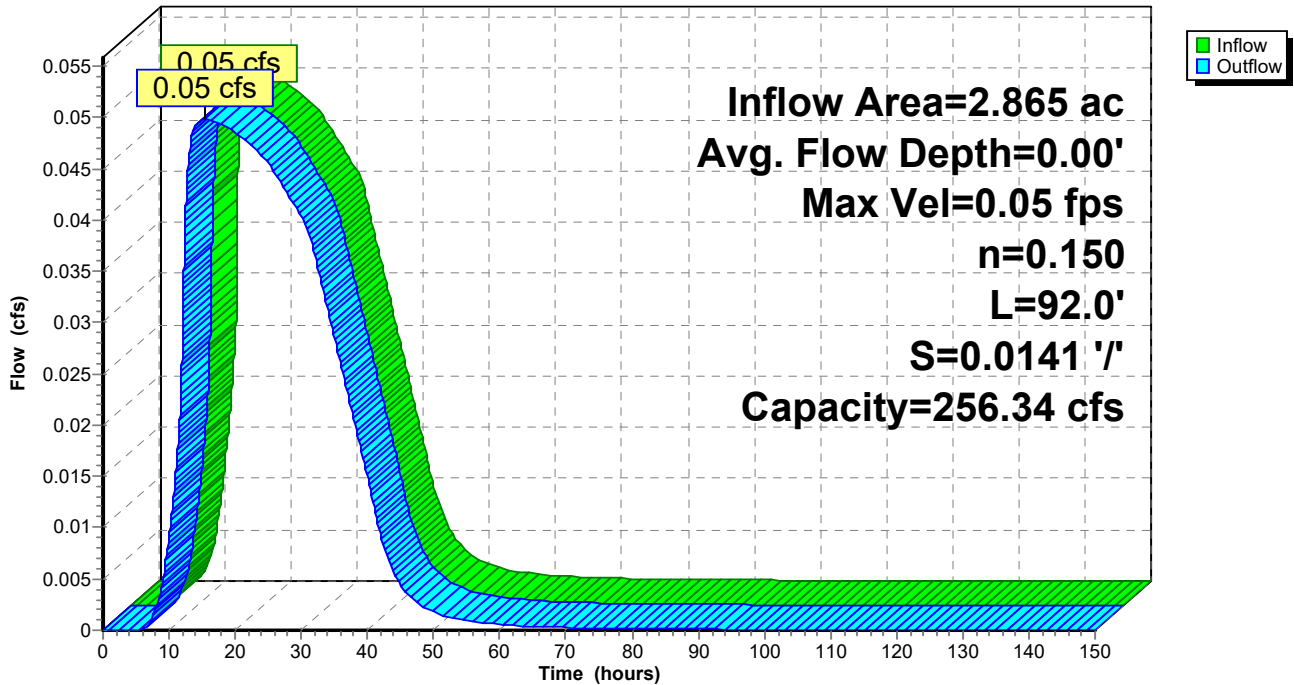
Peak Storage= 84 cf @ 15.57 hrs
 Average Depth at Peak Storage= 0.00'
 Bank-Full Depth= 1.00' Flow Area= 219.0 sf, Capacity= 256.34 cfs

219.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
 Length= 92.0' Slope= 0.0141 '/
 Inlet Invert= 330.30', Outlet Invert= 329.00'



Reach 45R: Channel from Level Spreader to Brook

Hydrograph



Summary for Reach 50R: reach within Riggs Brook to outlet

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

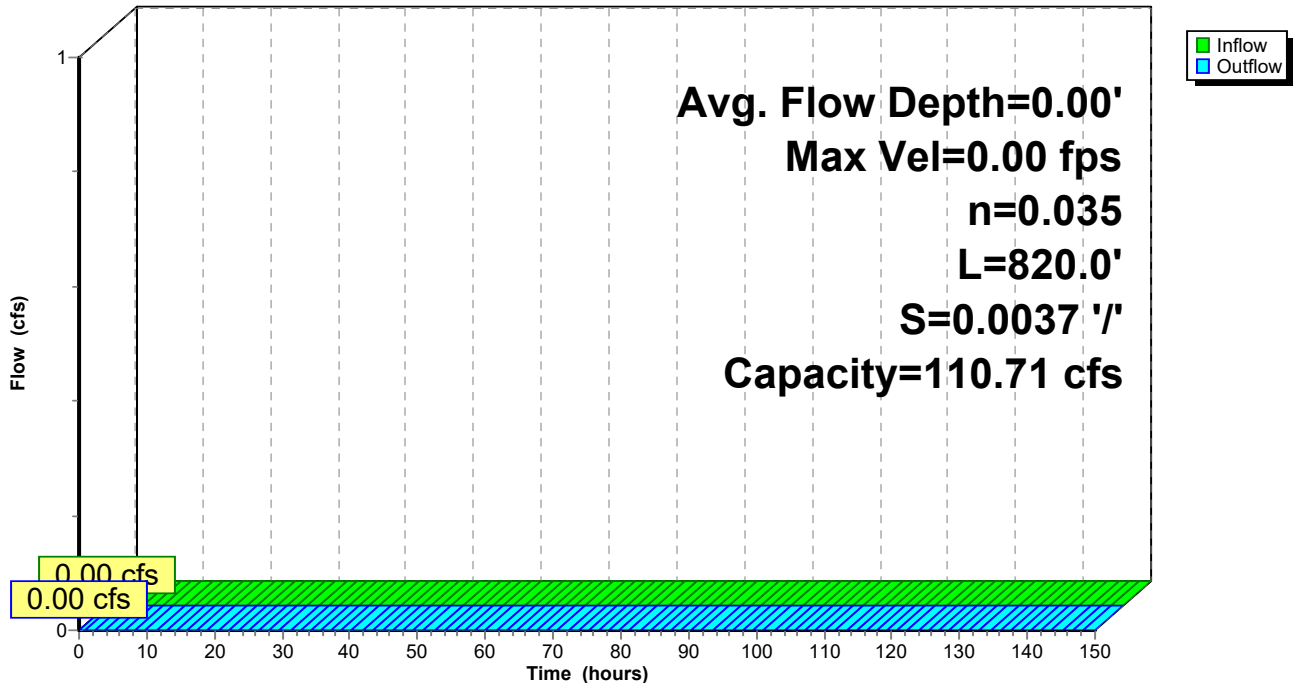
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 3.00' Flow Area= 30.0 sf, Capacity= 110.71 cfs

4.00' x 3.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 2.0 '/ Top Width= 16.00'
Length= 820.0' Slope= 0.0037 '/
Inlet Invert= 326.00', Outlet Invert= 323.00'



Reach 50R: reach within Riggs Brook to outlet

Hydrograph



Summary for Pond 3P: GW3

Inflow Area = 0.251 ac, 36.31% Impervious, Inflow Depth = 0.30" for WQv event
 Inflow = 0.11 cfs @ 11.98 hrs, Volume= 0.006 af
 Outflow = 0.01 cfs @ 12.50 hrs, Volume= 0.006 af, Atten= 91%, Lag= 30.9 min
 Primary = 0.01 cfs @ 12.50 hrs, Volume= 0.006 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 328.50' Surf.Area= 1,878 sf Storage= 1,878 cf
 Peak Elev= 328.69' @ 12.50 hrs Surf.Area= 1,878 sf Storage= 2,020 cf (142 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= 285.2 min (1,085.0 - 799.8)

Volume	Invert	Avail.Storage	Storage Description	
#1	326.00'	4,522 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
326.00	1,878	0.0	0	0
329.00	1,878	40.0	2,254	2,254
330.00	2,658	100.0	2,268	4,522

Device	Routing	Invert	Outlet Devices
#1	Primary	328.50'	18.0" Round Culvert L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.50' / 328.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	328.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	329.50'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	329.50'	10.0' long x 10.0' 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) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.01 cfs @ 12.50 hrs HW=328.69' TW=328.51' (Dynamic Tailwater)

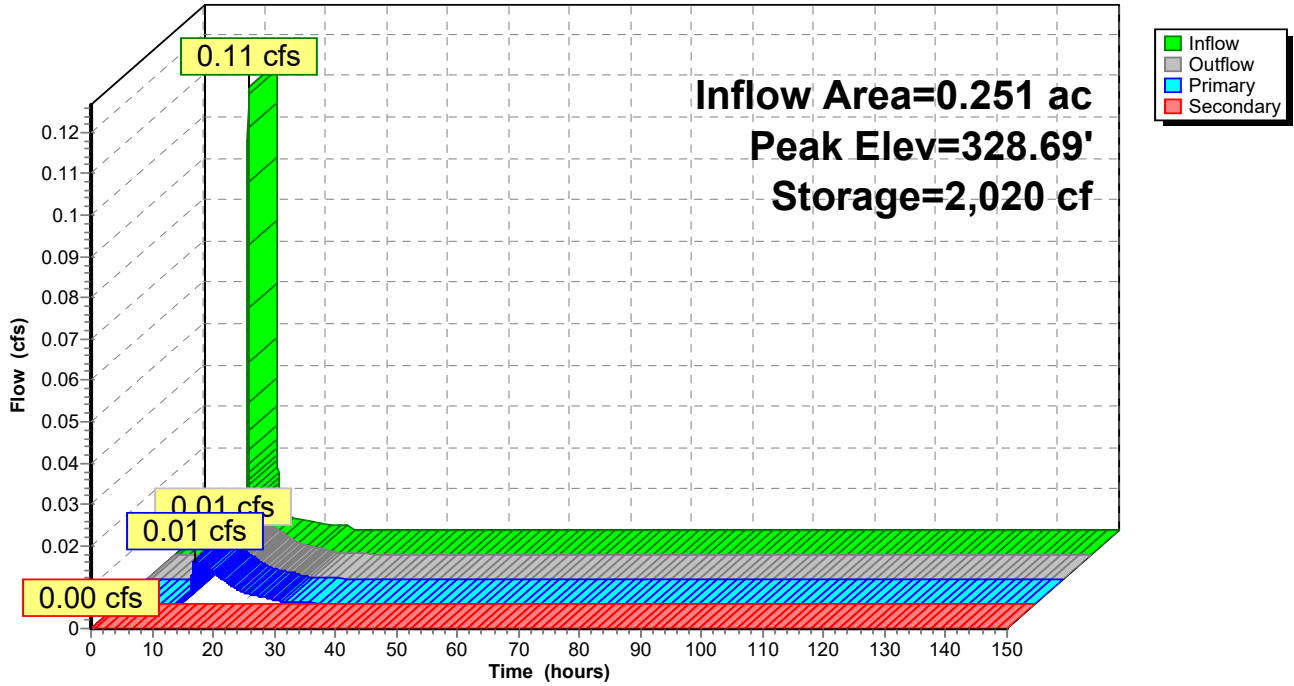
- ↑ 1=Culvert (Passes 0.01 cfs of 0.08 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.01 cfs @ 1.85 fps)
- ↑ 3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=328.50' TW=328.50' (Dynamic Tailwater)

- ↑ 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: GW3

Hydrograph



Summary for Pond 4P: GW 4

Inflow Area = 2.865 ac, 52.60% Impervious, Inflow Depth = 0.43" for WQv event
 Inflow = 1.74 cfs @ 12.01 hrs, Volume= 0.103 af
 Outflow = 0.05 cfs @ 14.94 hrs, Volume= 0.103 af, Atten= 97%, Lag= 176.1 min
 Primary = 0.05 cfs @ 14.94 hrs, Volume= 0.103 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 330.80' Surf.Area= 5,719 sf Storage= 3,431 cf
 Peak Elev= 331.58' @ 14.94 hrs Surf.Area= 6,644 sf Storage= 6,276 cf (2,845 cf above start)

Plug-Flow detention time= 1,699.4 min calculated for 0.024 af (23% of inflow)
 Center-of-Mass det. time= 696.1 min (1,492.4 - 796.3)

Volume	Invert	Avail.Storage	Storage Description	
#1	329.30'	18,263 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
329.30	5,719	0.0	0	0
331.30	5,719	40.0	4,575	4,575
332.00	8,071	100.0	4,826	9,402
333.00	9,652	100.0	8,862	18,263

Device	Routing	Invert	Outlet Devices
#1	Primary	330.80'	18.0" Round Culvert L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 330.80' / 330.40' S= 0.0235 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	330.80'	1.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	332.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	332.50'	194.0' 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=0.05 cfs @ 14.94 hrs HW=331.58' TW=330.30' (Dynamic Tailwater)

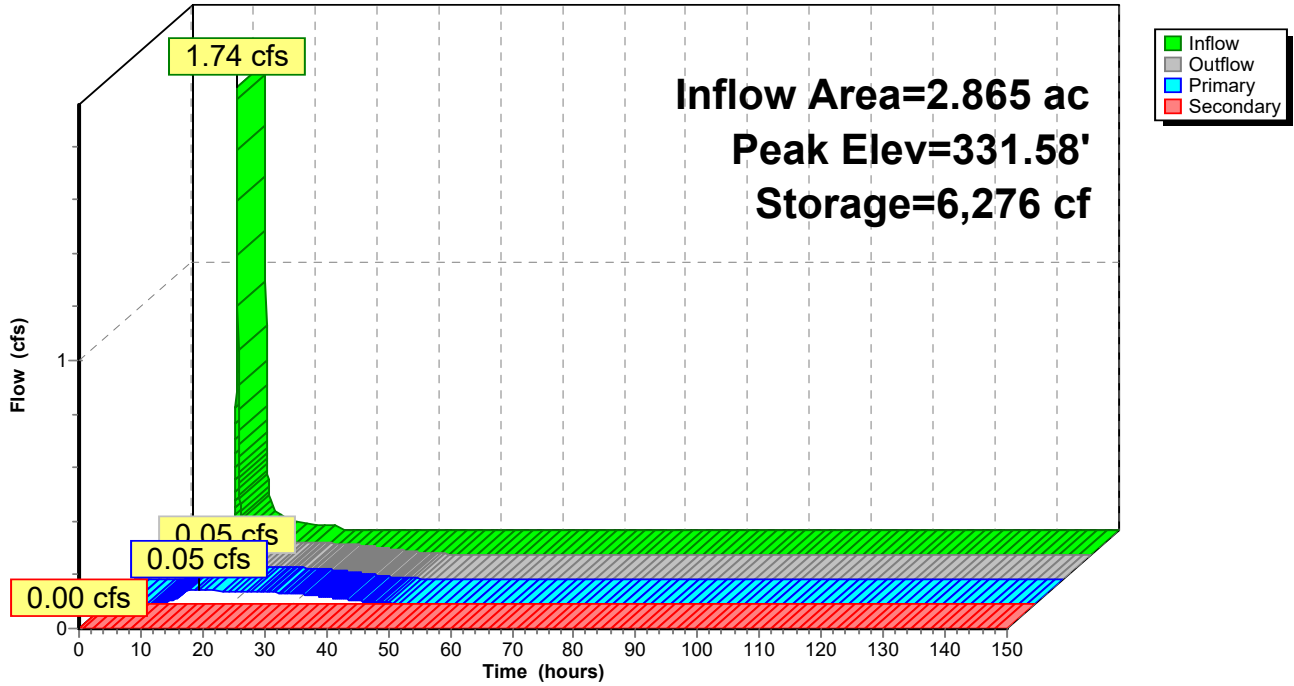
- ↑ 1=Culvert (Passes 0.05 cfs of 2.18 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.05 cfs @ 4.06 fps)
- ↑ 3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=330.80' TW=330.30' (Dynamic Tailwater)

- ↑ 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: GW 4

Hydrograph



Summary for Pond 5P: GW 2

Inflow Area = 1.237 ac, 49.45% Impervious, Inflow Depth = 0.41" for WQv event
 Inflow = 0.70 cfs @ 12.01 hrs, Volume= 0.042 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
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 327.50' Surf.Area= 1,930 sf Storage= 1,930 cf
 Peak Elev= 328.50' @ 24.60 hrs Surf.Area= 3,936 sf Storage= 3,776 cf (1,846 cf above start)

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	325.00'	14,236 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.00	1,930	0.0	0	0
328.00	1,930	40.0	2,316	2,316
330.00	9,990	100.0	11,920	14,236

Device	Routing	Invert	Outlet Devices
#1	Primary	327.50'	18.0" Round Culvert L= 33.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 327.50' / 327.50' S= 0.0000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	327.50'	1.4" Vert. Orifice/Grate C= 0.600
#3	Device 1	329.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	329.50'	82.0' 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=0.00 cfs @ 0.00 hrs HW=327.50' TW=328.50' (Dynamic Tailwater)

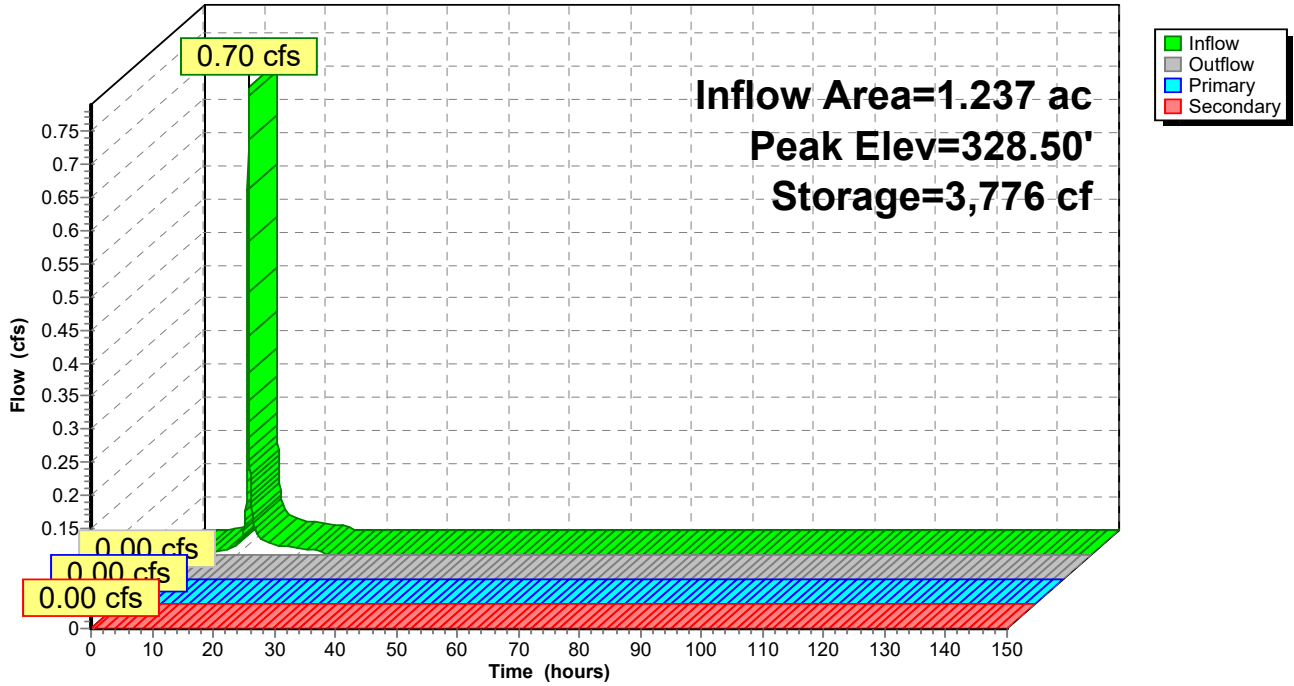
- ↑ 1=Culvert (Controls 0.00 cfs)
- ↑ 2=Orifice/Grate (Controls 0.00 cfs)
- ↑ 3=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=327.50' TW=328.50' (Dynamic Tailwater)

- ↑ 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 5P: GW 2

Hydrograph



Summary for Pond 6P: GW 1

Inflow Area = 1.101 ac, 25.57% Impervious, Inflow Depth = 0.26" for WQv event
 Inflow = 0.41 cfs @ 11.98 hrs, Volume= 0.024 af
 Outflow = 0.02 cfs @ 13.89 hrs, Volume= 0.024 af, Atten= 96%, Lag= 114.5 min
 Primary = 0.02 cfs @ 13.89 hrs, Volume= 0.024 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 326.80' Surf.Area= 6,549 sf Storage= 6,549 cf
 Peak Elev= 327.02' @ 13.89 hrs Surf.Area= 6,549 sf Storage= 7,136 cf (587 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= 573.2 min (1,397.1 - 823.9)

Volume	Invert	Avail.Storage	Storage Description	
#1	324.30'	26,868 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
324.30	6,549	0.0	0	0
327.30	6,549	40.0	7,859	7,859
329.00	15,815	100.0	19,009	26,868

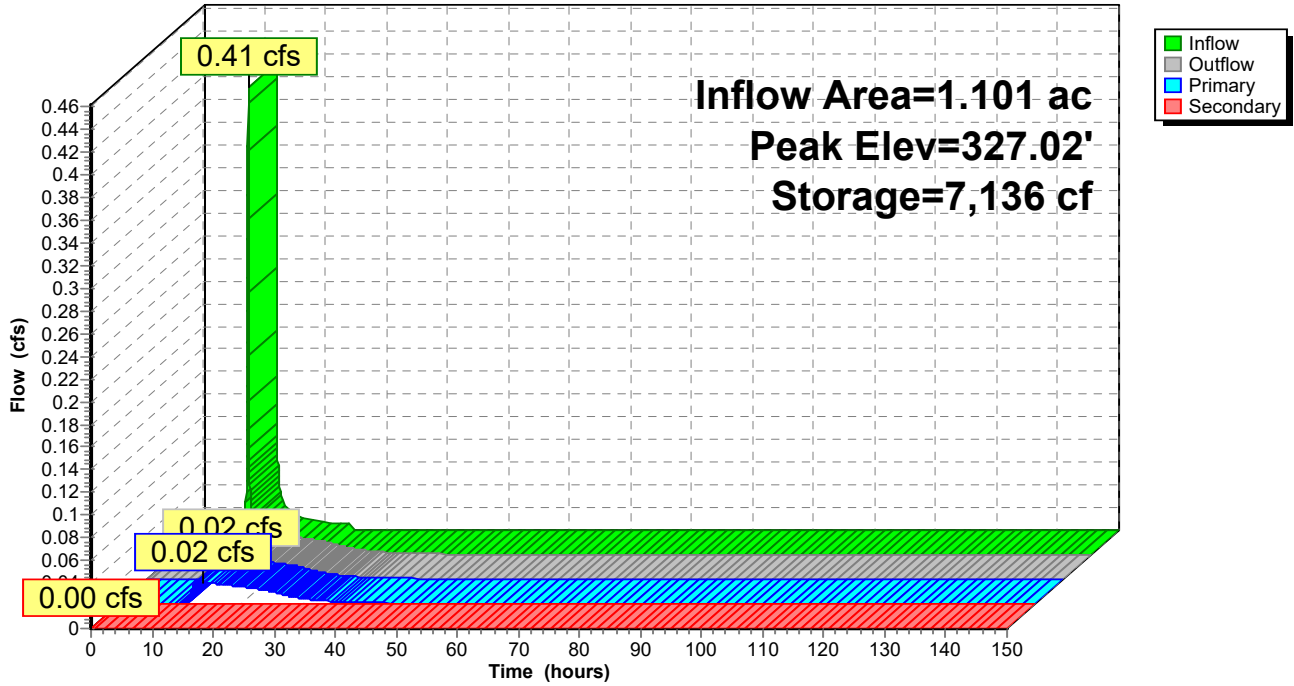
Device	Routing	Invert	Outlet Devices
#1	Primary	326.80'	18.0" Round Culvert L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.80' / 326.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	326.80'	1.3" Vert. Orifice/Grate C= 0.600
#3	Device 1	327.50'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	327.50'	61.0' 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=0.02 cfs @ 13.89 hrs HW=327.02' TW=326.01' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 0.02 cfs of 0.27 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.02 cfs @ 1.98 fps)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=326.80' TW=326.00' (Dynamic Tailwater)
 ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: GW 1

Hydrograph



Summary for Pond 10P: (Rim @ 351.5) (CB #46 to CB #43)

Inflow Area = 4.563 ac, 43.22% Impervious, Inflow Depth = 0.39" for WQv event
 Inflow = 2.57 cfs @ 11.99 hrs, Volume= 0.148 af
 Outflow = 2.57 cfs @ 11.99 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.57 cfs @ 11.99 hrs, Volume= 0.148 af

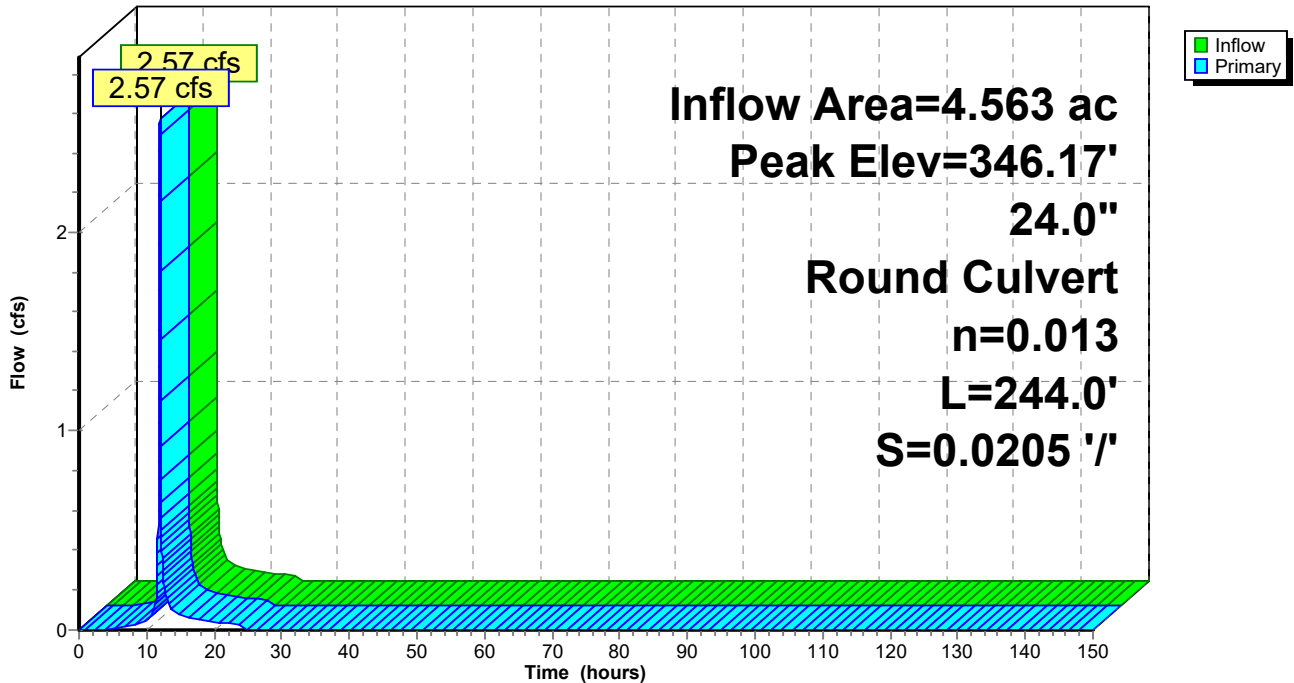
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 346.17' @ 11.99 hrs
 Flood Elev= 351.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.50'	24.0" Round Culvert L= 244.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 345.50' / 340.50' S= 0.0205 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.55 cfs @ 11.99 hrs HW=346.17' TW=340.90' (Dynamic Tailwater)
 ↳ **1=Culvert** (Inlet Controls 2.55 cfs @ 2.78 fps)

Pond 10P: (Rim @ 351.5) (CB #46 to CB #43)

Hydrograph



Summary for Pond 11P: (Rim @ 345.05) (CB #43 to CB #8)

Inflow Area = 13.305 ac, 50.65% Impervious, Inflow Depth = 0.44" for WQv event
 Inflow = 7.37 cfs @ 12.02 hrs, Volume= 0.490 af
 Outflow = 7.37 cfs @ 12.02 hrs, Volume= 0.490 af, Atten= 0%, Lag= 0.0 min
 Primary = 7.37 cfs @ 12.02 hrs, Volume= 0.490 af

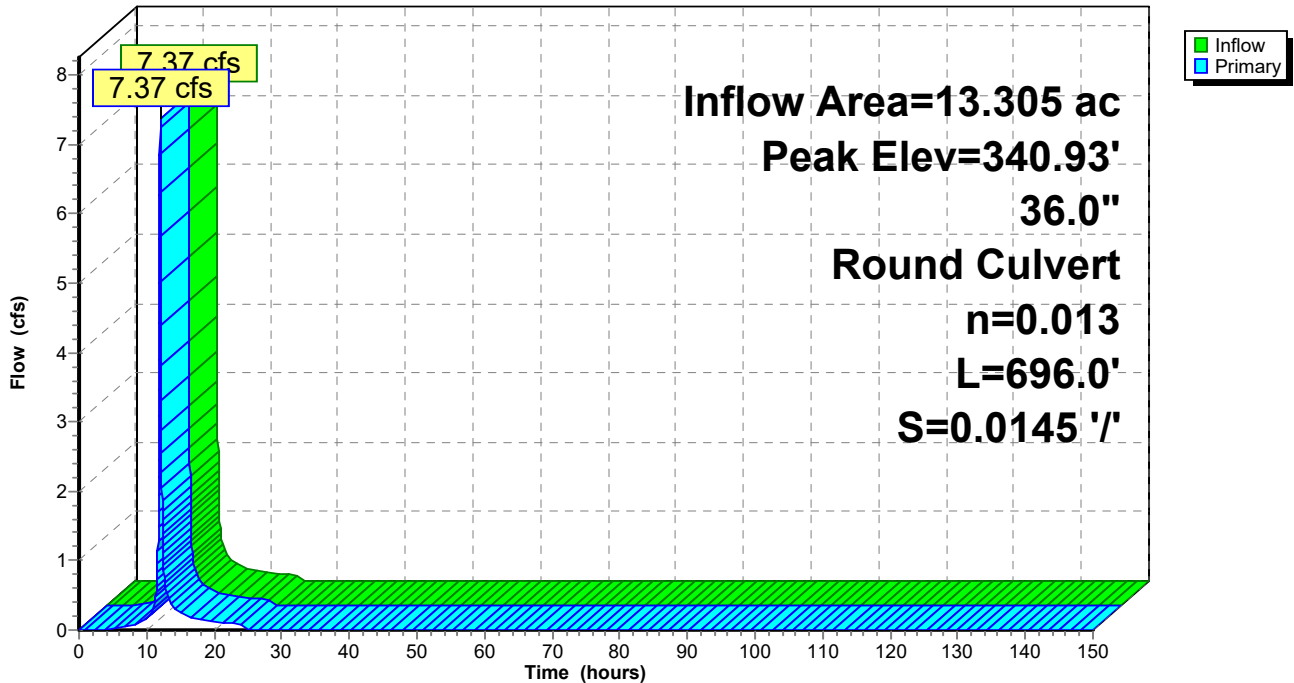
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 340.93' @ 12.02 hrs
 Flood Elev= 345.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	339.90'	36.0" Round Culvert L= 696.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 339.90' / 329.80' S= 0.0145 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=7.37 cfs @ 12.02 hrs HW=340.93' TW=330.83' (Dynamic Tailwater)
 ↳ **1=Culvert** (Inlet Controls 7.37 cfs @ 3.45 fps)

Pond 11P: (Rim @ 345.05) (CB #43 to CB #8)

Hydrograph



Post_Haystack_06-09-21_12Hour

Type II 24-hr WQv Rainfall=1.00"

Prepared by VT Agency of Natural Resources

Printed 1/20/2022

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Summary for Pond 12P: Detention Pond

Inflow Area = 5.712 ac, 60.00% Impervious, Inflow Depth = 0.51" for WQv event
 Inflow = 4.11 cfs @ 12.01 hrs, Volume= 0.242 af
 Outflow = 0.92 cfs @ 12.22 hrs, Volume= 0.240 af, Atten= 78%, Lag= 12.9 min
 Primary = 0.92 cfs @ 12.22 hrs, Volume= 0.240 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 333.46' @ 12.22 hrs Surf.Area= 10,921 sf Storage= 4,853 cf

Plug-Flow detention time= 239.3 min calculated for 0.240 af (99% of inflow)
 Center-of-Mass det. time= 235.4 min (1,034.0 - 798.6)

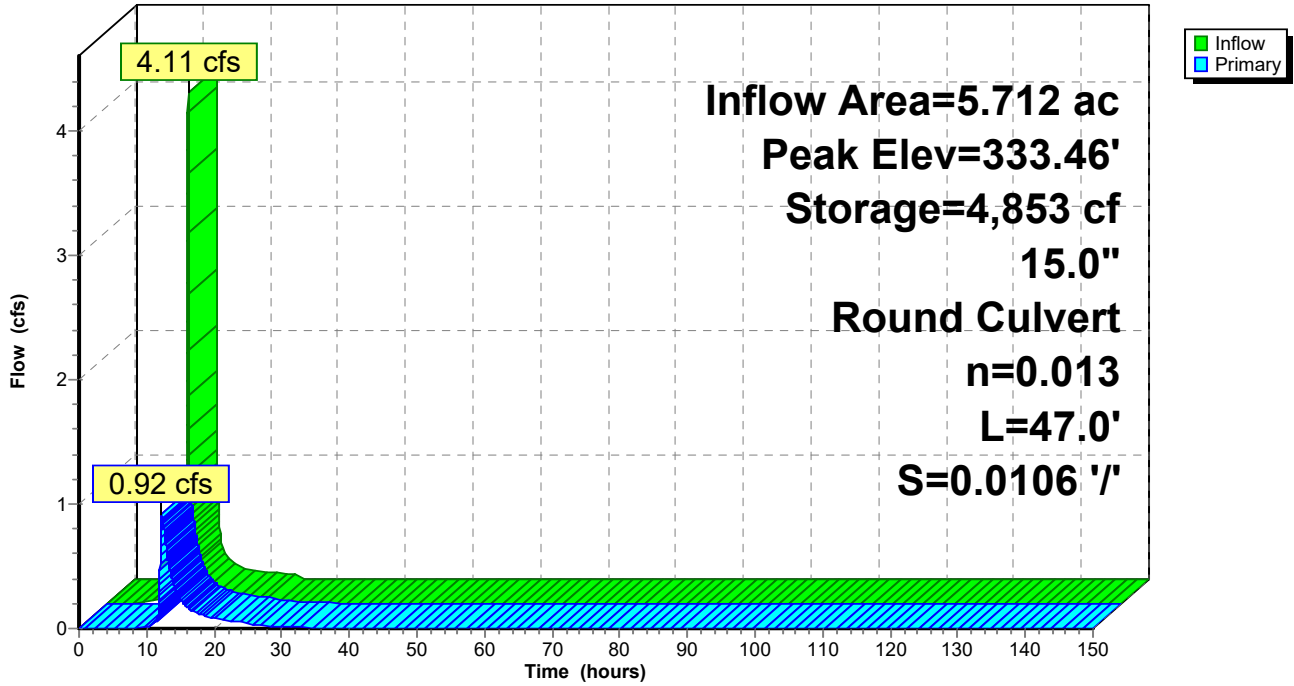
Volume	Invert	Avail.Storage	Storage Description
#1	333.00'	69,744 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
333.00	10,280	0	0
334.00	11,680	10,980	10,980
335.00	13,136	12,408	23,388
336.00	14,649	13,893	37,281
337.00	16,218	15,434	52,714
338.00	17,842	17,030	69,744

Device	Routing	Invert	Outlet Devices
#1	Primary	333.00'	15.0" Round Culvert L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 333.00' / 332.50' S= 0.0106 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.92 cfs @ 12.22 hrs HW=333.46' TW=332.11' (Dynamic Tailwater)
 ↑1=Culvert (Barrel Controls 0.92 cfs @ 3.36 fps)

Pond 12P: Detention Pond

Hydrograph



Summary for Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8)

Inflow Area = 9.116 ac, 63.70% Impervious, Inflow Depth = 0.53" for WQv event
 Inflow = 3.45 cfs @ 12.00 hrs, Volume= 0.404 af
 Outflow = 3.45 cfs @ 12.00 hrs, Volume= 0.404 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.45 cfs @ 12.00 hrs, Volume= 0.404 af

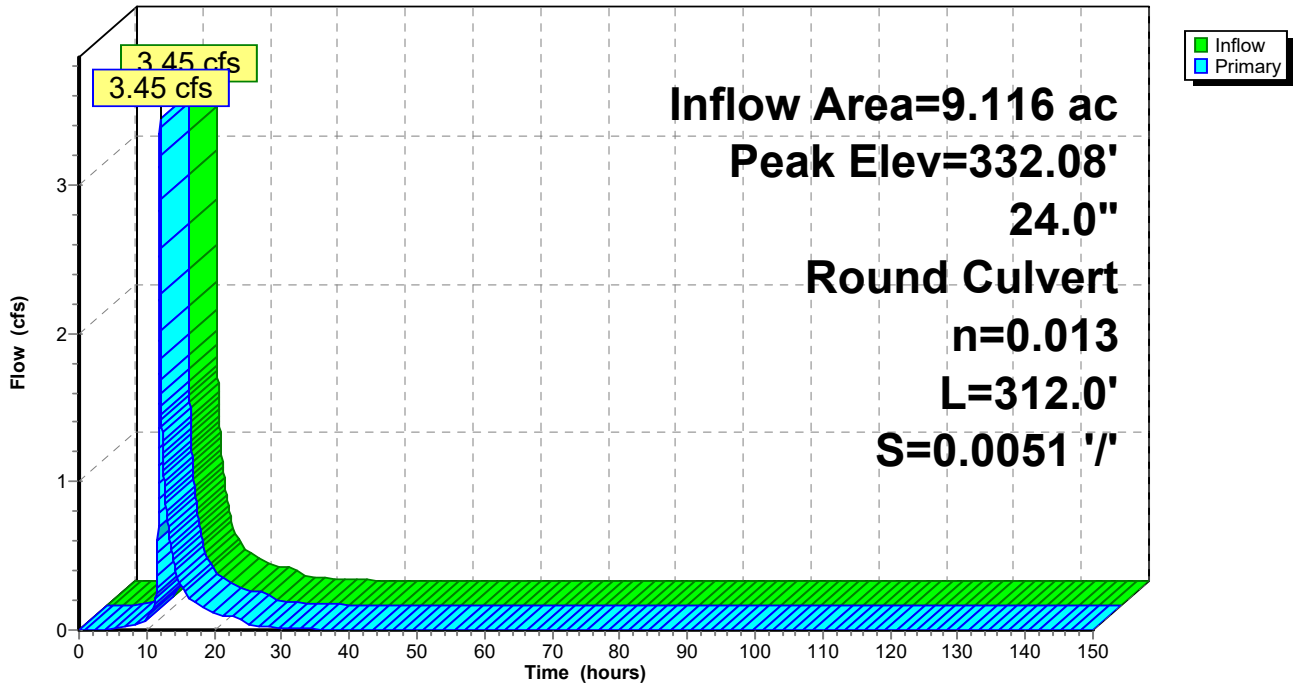
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 332.08' @ 12.01 hrs
 Flood Elev= 338.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	331.13'	24.0" Round Culvert L= 312.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.13' / 329.54' S= 0.0051 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.41 cfs @ 12.00 hrs HW=332.07' TW=330.82' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 3.41 cfs @ 3.42 fps)

Pond 13P: (Rim @ 338.1) (DMH #2 to CB #8)

Hydrograph



Summary for Pond 14P: (Rim @ 337.1) (CB #8 to Main GW)

Inflow Area = 24.714 ac, 55.57% Impervious, Inflow Depth = 0.48" for WQv event
 Inflow = 12.17 cfs @ 12.02 hrs, Volume= 0.979 af
 Outflow = 12.17 cfs @ 12.02 hrs, Volume= 0.979 af, Atten= 0%, Lag= 0.0 min
 Primary = 12.17 cfs @ 12.02 hrs, Volume= 0.979 af

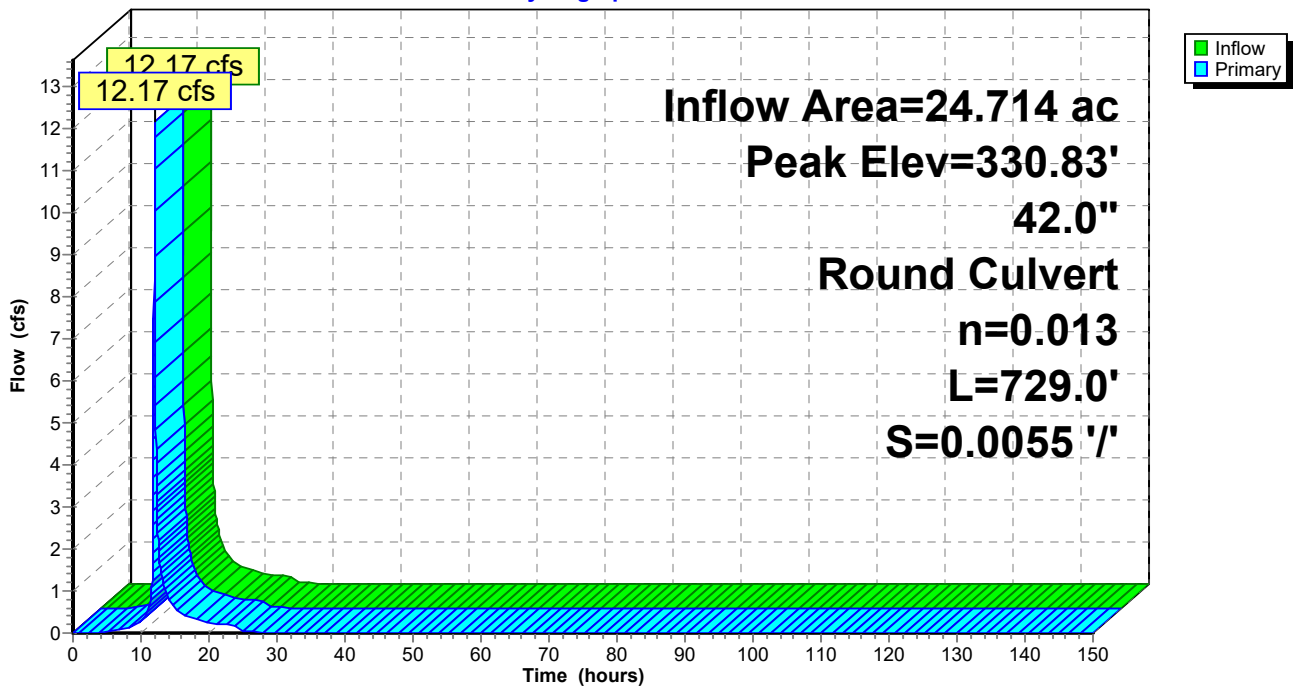
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 330.83' @ 12.02 hrs
 Flood Elev= 337.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	329.52'	42.0" Round Culvert L= 729.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 329.52' / 325.50' S= 0.0055 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=12.13 cfs @ 12.02 hrs HW=330.83' TW=325.44' (Dynamic Tailwater)
 ↳ **1=Culvert** (Barrel Controls 12.13 cfs @ 5.51 fps)

Pond 14P: (Rim @ 337.1) (CB #8 to Main GW)

Hydrograph



Summary for Pond 15P: (Invert @ 328.1) (Yard Drain to CB #1)

Inflow Area = 4.419 ac, 15.87% Impervious, Inflow Depth = 0.20" for WQv event
 Inflow = 0.65 cfs @ 12.18 hrs, Volume= 0.072 af
 Outflow = 0.60 cfs @ 12.25 hrs, Volume= 0.071 af, Atten= 9%, Lag= 4.5 min
 Primary = 0.60 cfs @ 12.25 hrs, Volume= 0.071 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 328.41' @ 12.25 hrs Surf.Area= 1,027 sf Storage= 304 cf

Plug-Flow detention time= 35.4 min calculated for 0.071 af (98% of inflow)
 Center-of-Mass det. time= 25.5 min (885.8 - 860.3)

Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	5,500 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
328.00	450	0	0
330.50	3,950	5,500	5,500

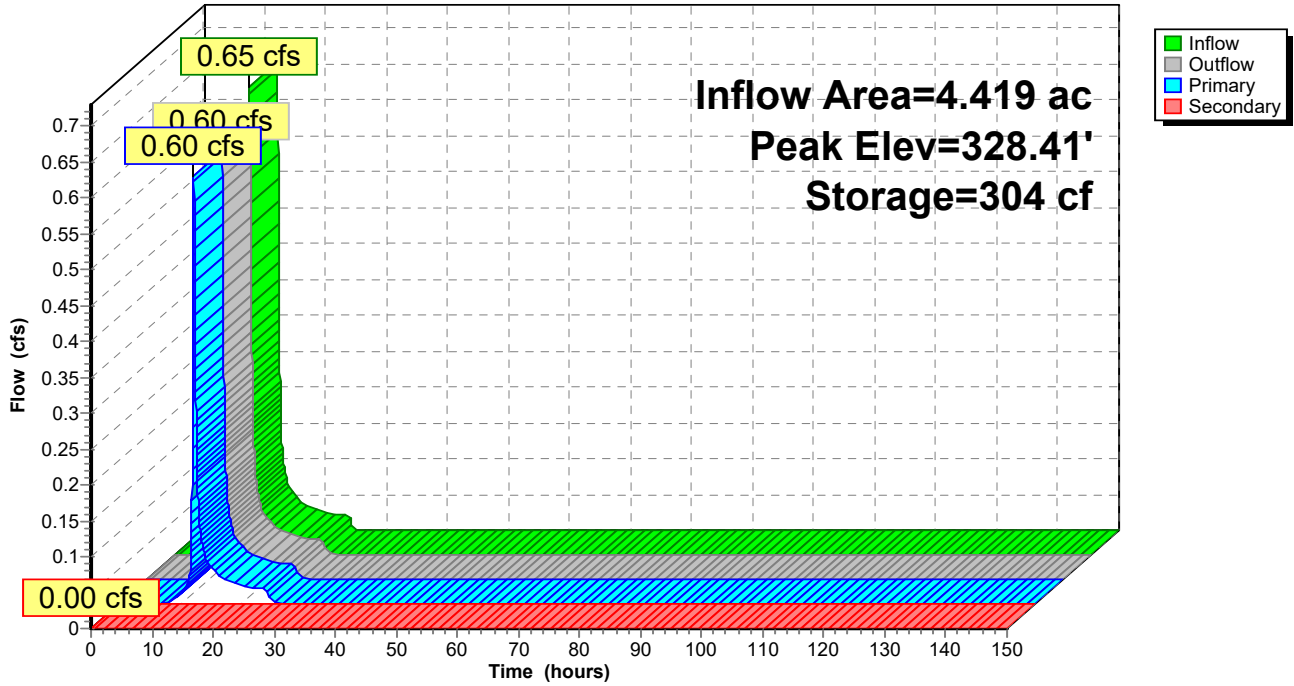
Device	Routing	Invert	Outlet Devices
#1	Primary	328.10'	24.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.10' / 326.80' S= 0.0260 ' S= 0.0260 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	330.00'	10.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=0.59 cfs @ 12.25 hrs HW=328.41' TW=326.45' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 0.59 cfs @ 1.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=328.00' TW=330.00' (Dynamic Tailwater)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 15P: (Invert @ 328.1) (Yard Drain to CB #1)

Hydrograph



Summary for Pond 16P: Main Gravel Wetland

[62] Hint: Exceeded Reach 5R OUTLET depth by 0.80' @ 17.24 hrs

Inflow Area = 43.724 ac, 40.36% Impervious, Inflow Depth = 0.37" for WQv event
 Inflow = 15.66 cfs @ 12.03 hrs, Volume= 1.341 af
 Outflow = 0.54 cfs @ 17.23 hrs, Volume= 1.338 af, Atten= 97%, Lag= 312.3 min
 Primary = 0.54 cfs @ 17.23 hrs, Volume= 1.338 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Starting Elev= 324.50' Surf.Area= 22,146 sf Storage= 31,004 cf
 Peak Elev= 326.30' @ 17.23 hrs Surf.Area= 27,215 sf Storage= 67,404 cf (36,399 cf above start)

Plug-Flow detention time= 1,617.3 min calculated for 0.627 af (47% of inflow)
 Center-of-Mass det. time= 836.7 min (1,692.7 - 856.0)

Volume	Invert	Avail.Storage	Storage Description	
#1	321.00'	240,062 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
321.00	22,146	0.0	0	0
325.00	22,146	40.0	35,434	35,434
326.00	26,028	100.0	24,087	59,521
327.00	30,037	100.0	28,033	87,553
328.00	39,628	100.0	34,833	122,386
329.00	42,706	100.0	41,167	163,553
330.00	45,964	100.0	44,335	207,888
330.70	45,964	100.0	32,175	240,062

Device	Routing	Invert	Outlet Devices
#1	Primary	324.50'	24.0" Round Culvert L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 324.50' / 324.10' S= 0.0050 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	324.50'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	327.20'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Secondary	328.70'	20.0' long (Profile 1) Broad-Crested Rectangular Weir Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=0.54 cfs @ 17.23 hrs HW=326.30' TW=324.20' (Dynamic Tailwater)

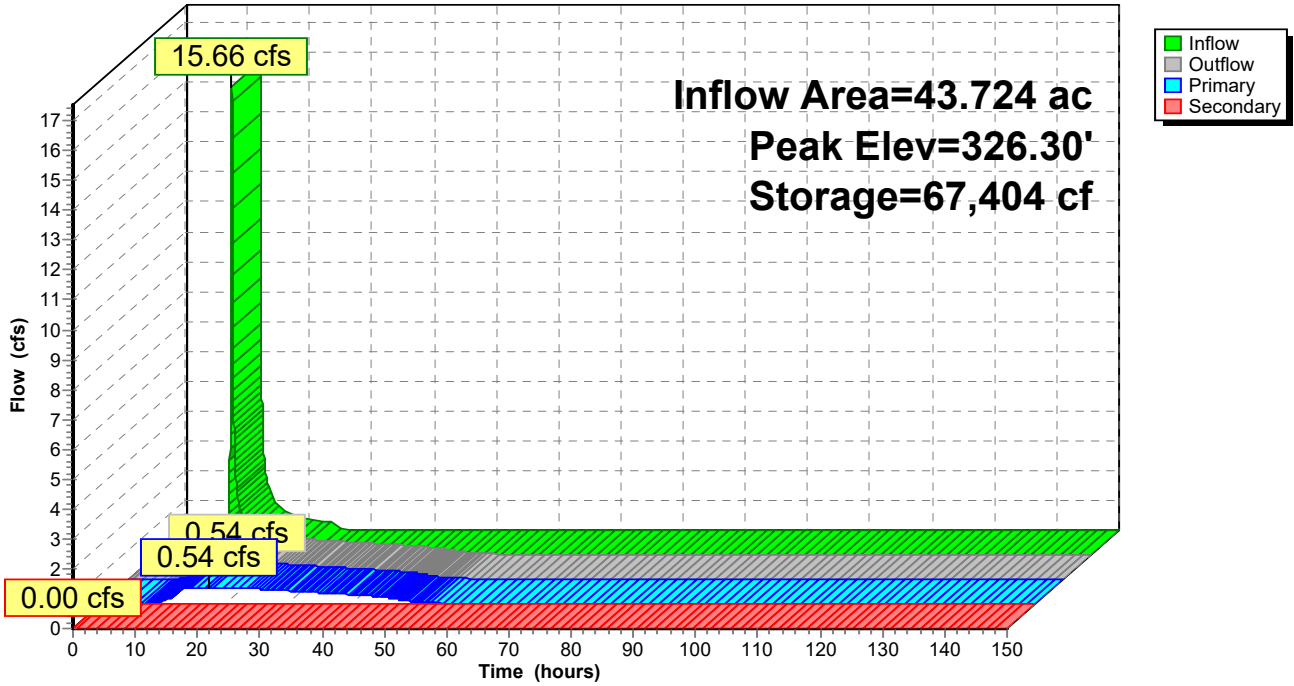
- ↑ **1=Culvert** (Passes 0.54 cfs of 10.95 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.54 cfs @ 6.15 fps)
- ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=324.50' TW=328.70' (Dynamic Tailwater)

- ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 16P: Main Gravel Wetland

Hydrograph



Summary for Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2)

Inflow Area = 9.116 ac, 63.70% Impervious, Inflow Depth = 0.53" for WQv event
 Inflow = 3.45 cfs @ 12.00 hrs, Volume= 0.404 af
 Outflow = 3.45 cfs @ 12.00 hrs, Volume= 0.404 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.45 cfs @ 12.00 hrs, Volume= 0.404 af

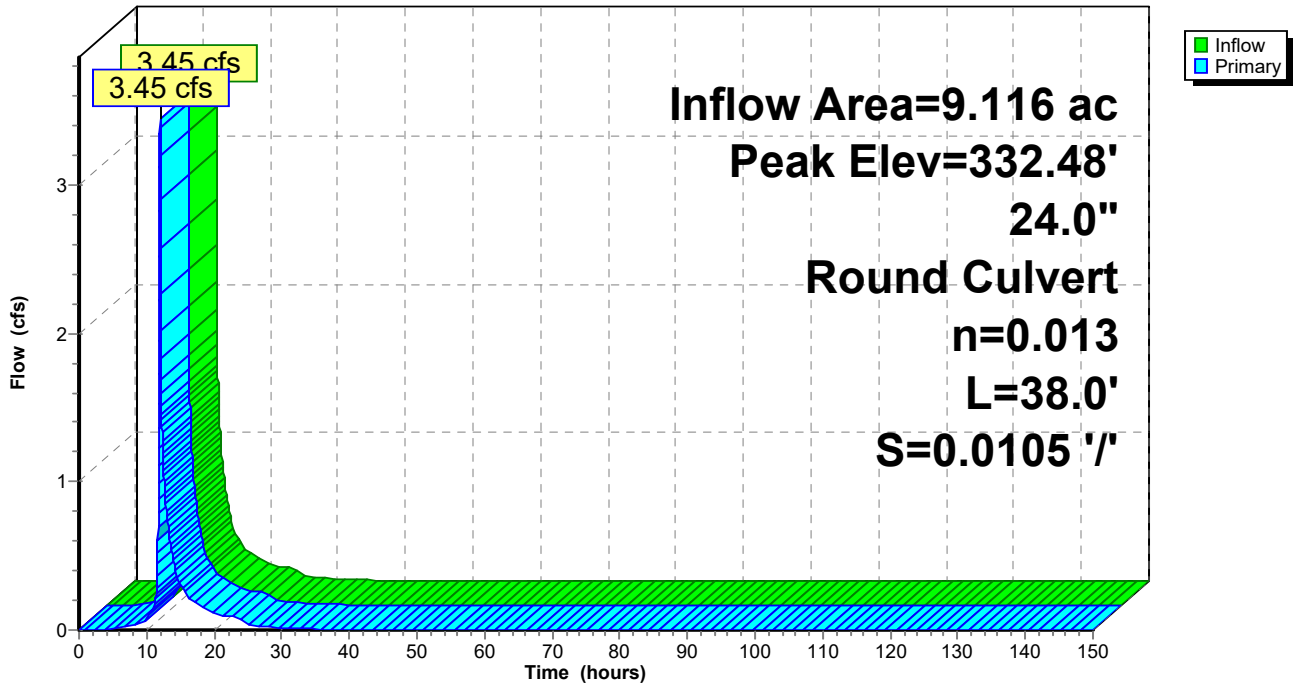
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 332.48' @ 12.01 hrs
 Flood Elev= 338.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	331.55'	24.0" Round Culvert L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 331.55' / 331.15' S= 0.0105 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.37 cfs @ 12.00 hrs HW=332.48' TW=332.07' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 3.37 cfs @ 3.46 fps)

Pond 17P: (Rim @ 338.7) (CB #52 to DMH #2)

Hydrograph



Summary for Pond 21P: (Rim @ 333.5) (CB#4 to CB#1)

Inflow Area = 5.212 ac, 38.38% Impervious, Inflow Depth = 0.35" for WQv event
 Inflow = 2.15 cfs @ 12.06 hrs, Volume= 0.154 af
 Outflow = 2.15 cfs @ 12.06 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.15 cfs @ 12.06 hrs, Volume= 0.154 af

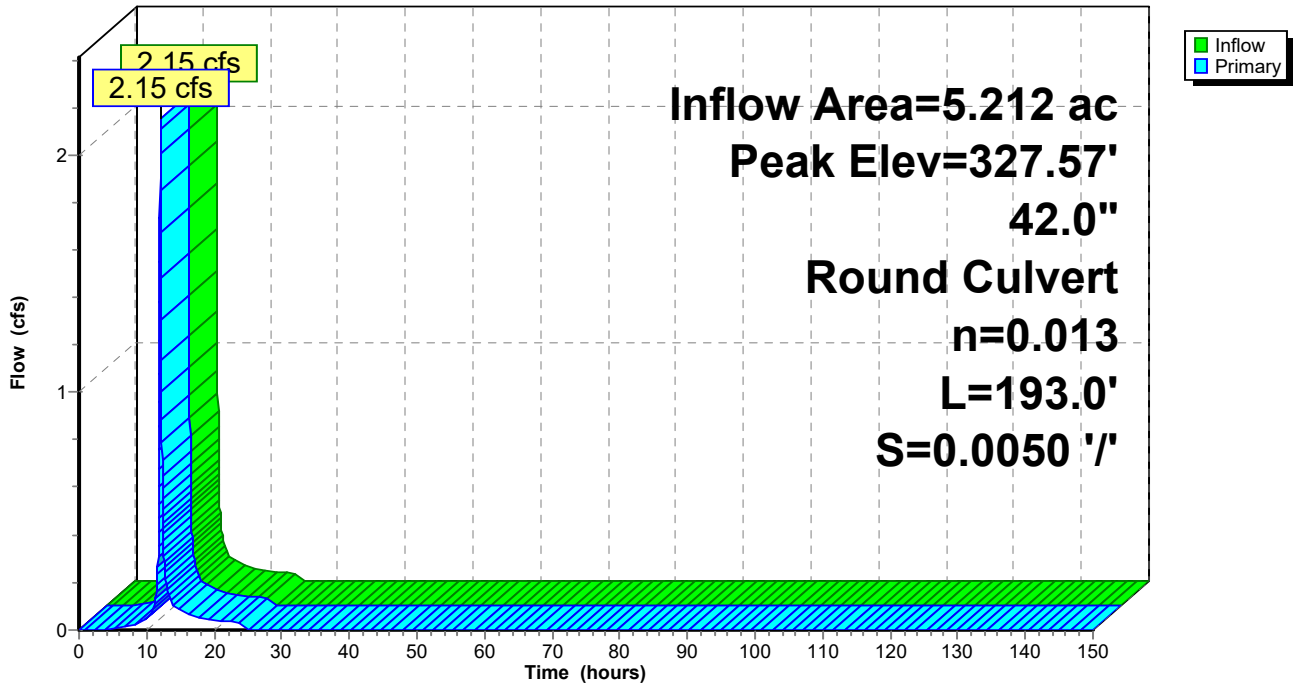
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 327.57' @ 12.06 hrs
 Flood Elev= 333.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	326.98'	42.0" Round Culvert L= 193.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.98' / 326.02' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=2.14 cfs @ 12.06 hrs HW=327.57' TW=326.60' (Dynamic Tailwater)
 ←1=Culvert (Outlet Controls 2.14 cfs @ 3.04 fps)

Pond 21P: (Rim @ 333.5) (CB#4 to CB#1)

Hydrograph



Summary for Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4)

Inflow Area = 5.212 ac, 38.38% Impervious, Inflow Depth = 0.35" for WQv event
 Inflow = 2.15 cfs @ 12.06 hrs, Volume= 0.154 af
 Outflow = 2.15 cfs @ 12.06 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.15 cfs @ 12.06 hrs, Volume= 0.154 af

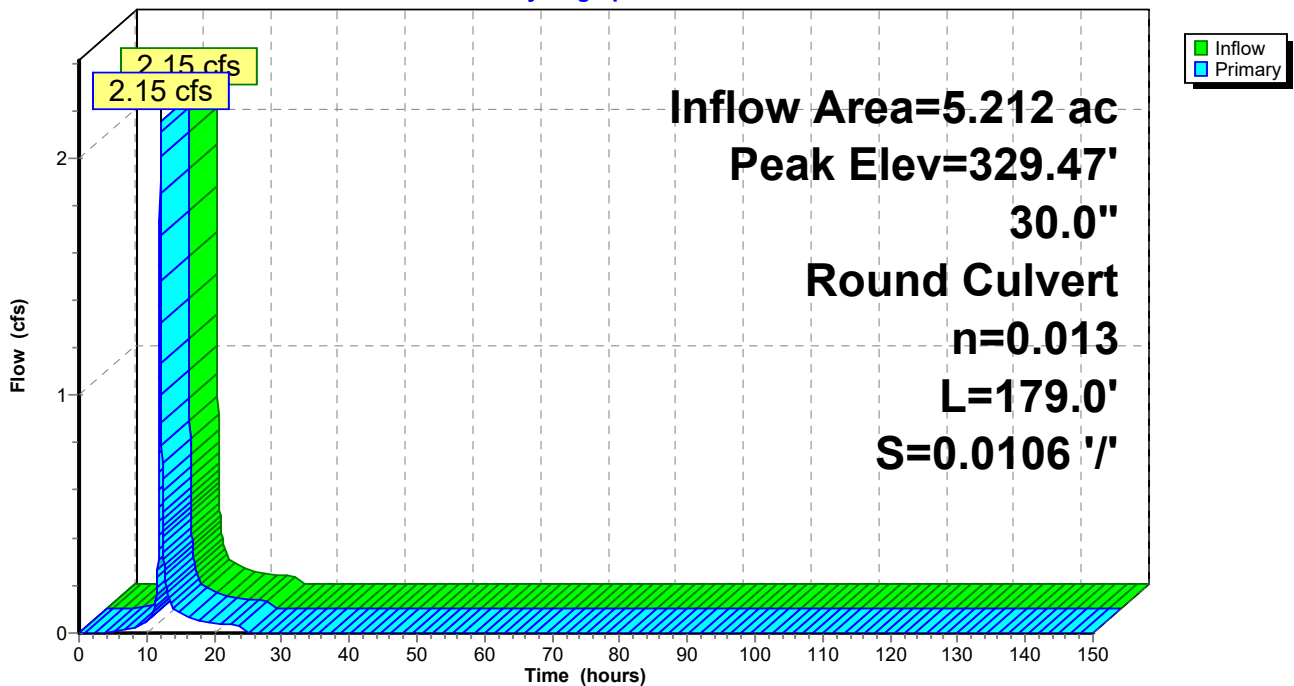
Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 329.47' @ 12.06 hrs
 Flood Elev= 333.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	328.90'	30.0" Round Culvert L= 179.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 328.90' / 327.00' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=2.15 cfs @ 12.06 hrs HW=329.47' TW=327.57' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 2.15 cfs @ 2.56 fps)

Pond 33P: (Rim @ 333.8) (DMH #4 to CB #4)

Hydrograph



Summary for Pond CB1: (Rim @ 331.15) (CB#1 to GW)

Inflow Area = 9.631 ac, 28.05% Impervious, Inflow Depth = 0.28" for WQv event
 Inflow = 2.48 cfs @ 12.07 hrs, Volume= 0.225 af
 Outflow = 2.48 cfs @ 12.07 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.48 cfs @ 12.07 hrs, Volume= 0.225 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs
 Peak Elev= 326.60' @ 12.07 hrs
 Flood Elev= 331.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	326.00'	42.0" Round Culvert L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 326.00' / 325.50' S= 0.0066 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=2.47 cfs @ 12.07 hrs HW=326.60' TW=325.56' (Dynamic Tailwater)
 ↳ **1=Culvert** (Barrel Controls 2.47 cfs @ 3.43 fps)

Pond CB1: (Rim @ 331.15) (CB#1 to GW)

Hydrograph

