STORMWATER MANAGEMENT REPORT – PROPOSED CONDITIONS

FOR

SUDBURY ROAD IMPROVEMENTS

ACTON, MA

(DECEMBER 30, 2008)

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Project Number:
C-472.08
Acton, Massachusetts

RECEIVED
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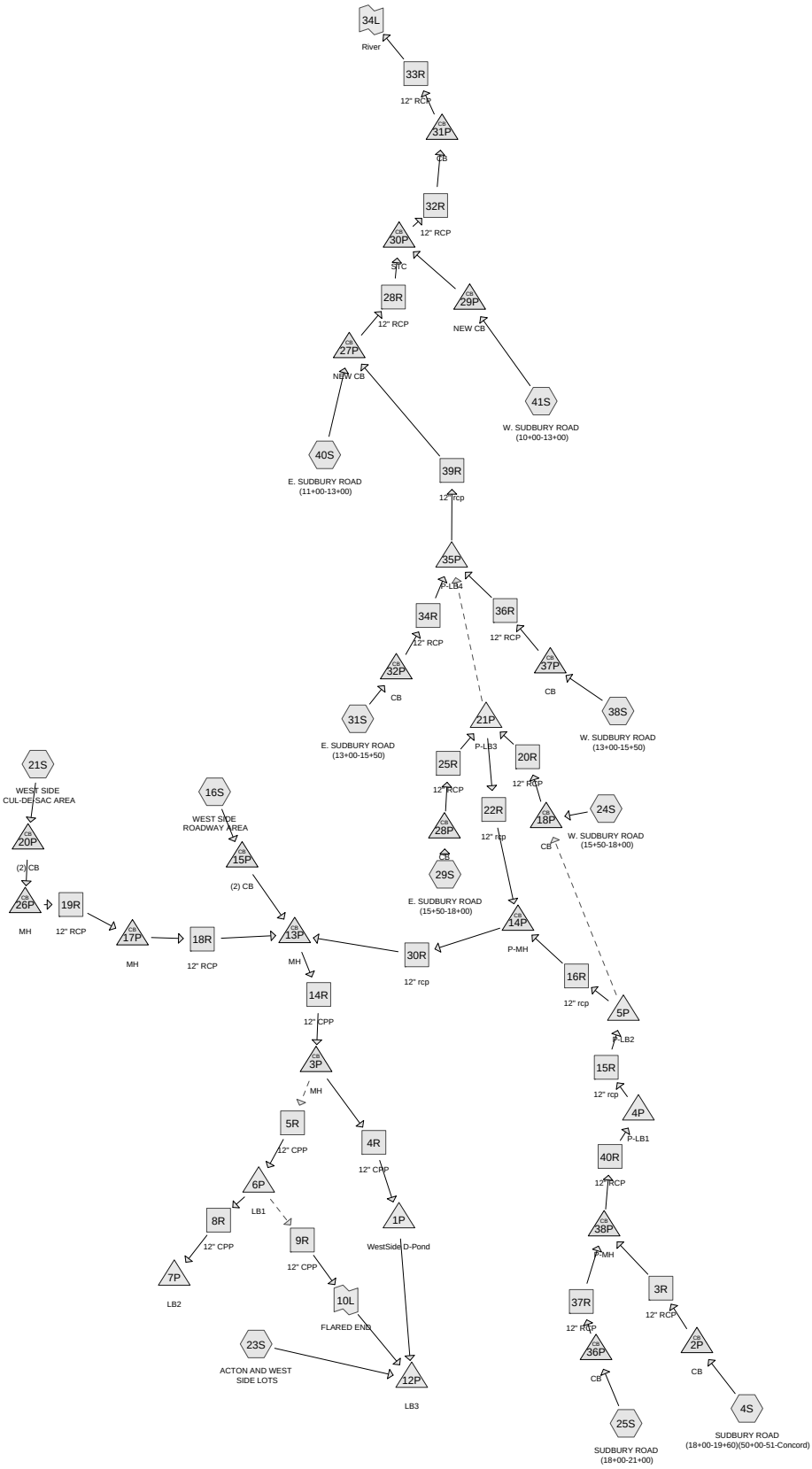
ACTON CONSERVATION COMMISSION

HYDROCAD DRAINAGE ANALYSIS FOR PEAK RATE ATTENUATION



Subcat Reach Pond Link

Drainage Diagram for PROP (12-29-08)

Prepared by {enter your company name here} 1/6/2009

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4S: SUDBURY ROAD (18+00-19+60)(50+00-51-C Runoff Area=8,769 sf Runoff Depth=2.86"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.62 cfs 2,088 cf

Subcatchment 16S: WEST SIDE ROADWAY AREA Runoff Area=36,499 sf Runoff Depth=0.33"
Tc=0.0 min CN=59 Runoff=0.19 cfs 1,016 cf

Subcatchment 21S: WEST SIDE CUL-DE-SAC AREA Runoff Area=31,802 sf Runoff Depth=0.37"
Tc=0.0 min CN=60 Runoff=0.20 cfs 971 cf

Subcatchment 23S: ACTON AND WEST SIDE LOTS Runoff Area=82,575 sf Runoff Depth=0.00"
Tc=0.0 min CN=40 Runoff=0.00 cfs 4 cf

Subcatchment 24S: W. SUDBURY ROAD (15+50-18+00) Runoff Area=4,222 sf Runoff Depth=2.86"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.30 cfs 1,006 cf

Subcatchment 25S: SUDBURY ROAD (18+00-21+00) Runoff Area=6,971 sf Runoff Depth=2.34"
Flow Length=1,086' Tc=5.0 min CN=93 Runoff=0.44 cfs 1,359 cf

Subcatchment 29S: E. SUDBURY ROAD (15+50-18+00) Runoff Area=3,476 sf Runoff Depth=2.86"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.25 cfs 828 cf

Subcatchment 31S: E. SUDBURY ROAD (13+00-15+50) Runoff Area=2,914 sf Runoff Depth=2.86"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.21 cfs 694 cf

Subcatchment 38S: W. SUDBURY ROAD (13+00-15+50) Runoff Area=4,436 sf Runoff Depth=2.86"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.32 cfs 1,056 cf

Subcatchment 40S: E. SUDBURY ROAD (11+00-13+00) Runoff Area=2,695 sf Runoff Depth=2.86"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.19 cfs 642 cf

Subcatchment 41S: W. SUDBURY ROAD (10+00-13+00) Runoff Area=7,315 sf Runoff Depth=2.86"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.52 cfs 1,742 cf

Reach 3R: 12" RCP Peak Depth=0.21' Max Vel=5.1 fps Inflow=0.62 cfs 2,088 cf
D=12.0" n=0.011 L=11.0' S=0.0227 '/' Capacity=6.35 cfs Outflow=0.62 cfs 2,088 cf

Reach 4R: 12" CPP Peak Depth=0.26' Max Vel=2.2 fps Inflow=0.37 cfs 1,987 cf
D=12.0" n=0.020 L=27.0' S=0.0111 '/' Capacity=2.44 cfs Outflow=0.36 cfs 1,987 cf

Reach 5R: 12" CPP Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.020 L=16.0' S=0.0313 '/' Capacity=4.09 cfs Outflow=0.00 cfs 0 cf

Reach 8R: 12" CPP Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.020 L=30.0' S=0.0033 '/' Capacity=1.34 cfs Outflow=0.00 cfs 0 cf

Reach 9R: 12" CPP Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.020 L=48.0' S=0.0115 '/' Capacity=2.48 cfs Outflow=0.00 cfs 0 cf

Reach 14R: 12" CPP Peak Depth=0.23' Max Vel=2.8 fps Inflow=0.37 cfs 1,987 cf
D=12.0" n=0.020 L=135.0' S=0.0200 '/' Capacity=3.28 cfs Outflow=0.37 cfs 1,987 cf

Reach 15R: 12" rcp Peak Depth=0.15' Max Vel=3.9 fps Inflow=0.28 cfs 187 cf
D=12.0" n=0.011 L=5.0' S=0.0200 '/' Capacity=5.95 cfs Outflow=0.28 cfs 187 cf

Reach 16R: 12" rcp Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.011 L=22.0' S=0.0386 '/' Capacity=8.28 cfs Outflow=0.00 cfs 0 cf

Reach 18R: 12" RCP Peak Depth=0.12' Max Vel=3.6 fps Inflow=0.20 cfs 971 cf
D=12.0" n=0.011 L=145.0' S=0.0221 '/' Capacity=6.26 cfs Outflow=0.19 cfs 971 cf

Reach 19R: 12" RCP Peak Depth=0.11' Max Vel=4.3 fps Inflow=0.20 cfs 971 cf
D=12.0" n=0.011 L=62.0' S=0.0371 '/' Capacity=8.11 cfs Outflow=0.20 cfs 971 cf

Reach 20R: 12" RCP Peak Depth=0.14' Max Vel=4.6 fps Inflow=0.30 cfs 1,006 cf
D=12.0" n=0.011 L=8.0' S=0.0313 '/' Capacity=7.44 cfs Outflow=0.30 cfs 1,006 cf

Reach 22R: 12" rcp Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.011 L=14.0' S=0.0071 '/' Capacity=3.56 cfs Outflow=0.00 cfs 0 cf

Reach 25R: 12" RCP Peak Depth=0.12' Max Vel=4.4 fps Inflow=0.25 cfs 828 cf
D=12.0" n=0.011 L=8.0' S=0.0313 '/' Capacity=7.44 cfs Outflow=0.25 cfs 828 cf

Reach 28R: 12" RCP Peak Depth=0.13' Max Vel=3.1 fps Inflow=0.19 cfs 642 cf
D=12.0" n=0.011 L=94.0' S=0.0149 '/' Capacity=5.14 cfs Outflow=0.19 cfs 642 cf

Reach 30R: 12" rcp Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.011 L=96.0' S=0.0057 '/' Capacity=3.19 cfs Outflow=0.00 cfs 0 cf

Reach 32R: 12" RCP Peak Depth=0.20' Max Vel=6.2 fps Inflow=0.71 cfs 2,384 cf
D=12.0" n=0.011 L=62.0' S=0.0347 '/' Capacity=7.84 cfs Outflow=0.70 cfs 2,384 cf

Reach 33R: 12" RCP Peak Depth=0.11' Max Vel=14.5 fps Inflow=0.70 cfs 2,384 cf
D=12.0" n=0.011 L=13.0' S=0.3885 '/' Capacity=26.24 cfs Outflow=0.70 cfs 2,384 cf

Reach 34R: 12" RCP Peak Depth=0.10' Max Vel=4.9 fps Inflow=0.21 cfs 694 cf
D=12.0" n=0.011 L=10.0' S=0.0500 '/' Capacity=9.42 cfs Outflow=0.21 cfs 694 cf

Reach 36R: 12" RCP Peak Depth=0.13' Max Vel=5.5 fps Inflow=0.32 cfs 1,056 cf
D=12.0" n=0.011 L=10.0' S=0.0500 '/' Capacity=9.42 cfs Outflow=0.31 cfs 1,056 cf

Reach 37R: 12" RCP Peak Depth=0.18' Max Vel=4.6 fps Inflow=0.44 cfs 1,359 cf
D=12.0" n=0.011 L=11.0' S=0.0227 '/' Capacity=6.35 cfs Outflow=0.44 cfs 1,359 cf

Reach 39R: 12" rcp Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.011 L=172.0' S=0.0814 '/' Capacity=12.01 cfs Outflow=0.00 cfs 0 cf

Reach 40R: 12" RCP Peak Depth=0.23' Max Vel=7.9 fps Inflow=1.06 cfs 3,448 cf
D=12.0" n=0.011 L=204.0' S=0.0502 '/' Capacity=9.44 cfs Outflow=1.05 cfs 3,448 cf

Pond 1P: WestSide D-Pond Peak Elev=178.50' Storage=1,987 cf Inflow=0.36 cfs 1,987 cf
Outflow=0.00 cfs 1 cf

Pond 2P: CB Peak Elev=192.90' Inflow=0.62 cfs 2,088 cf
Outflow=0.62 cfs 2,088 cf

Pond 3P: MH Peak Elev=176.30' Inflow=0.37 cfs 1,987 cf
Primary=0.37 cfs 1,987 cf Secondary=0.00 cfs 0 cf Outflow=0.37 cfs 1,987 cf

Pond 4P: P-LB1 Peak Elev=182.26' Storage=710 cf Inflow=1.05 cfs 3,448 cf
Discarded=0.18 cfs 3,262 cf Primary=0.28 cfs 187 cf Outflow=0.47 cfs 3,449 cf

Pond 5P: P-LB2 Peak Elev=173.56' Storage=30 cf Inflow=0.28 cfs 187 cf
Discarded=0.18 cfs 187 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.18 cfs 187 cf

Pond 6P: LB1 Peak Elev=167.50' Storage=0.000 af Inflow=0.00 cfs 0 cf
Discarded=0.00 cfs 0 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 7P: LB2 Peak Elev=167.00' Storage=0.000 af Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 12P: LB3 Peak Elev=167.00' Storage=0 cf Inflow=0.00 cfs 4 cf
Discarded=0.00 cfs 4 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 4 cf

Pond 13P: MH Peak Elev=180.00' Inflow=0.37 cfs 1,987 cf
Outflow=0.37 cfs 1,987 cf

Pond 14P: P-MH Peak Elev=180.55' Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 15P: (2) CB Peak Elev=180.29' Inflow=0.19 cfs 1,016 cf
12.0" x 10.0' Culvert Outflow=0.19 cfs 1,016 cf

Pond 17P: MH Peak Elev=183.21' Inflow=0.20 cfs 971 cf
Outflow=0.20 cfs 971 cf

Pond 18P: CB Peak Elev=181.27' Inflow=0.30 cfs 1,006 cf
Outflow=0.30 cfs 1,006 cf

Pond 20P: (2) CB Peak Elev=185.78' Inflow=0.20 cfs 971 cf
12.0" x 9.0' Culvert Outflow=0.20 cfs 971 cf

Pond 21P: P-LB3 Peak Elev=175.81' Storage=236 cf Inflow=0.55 cfs 1,833 cf
Discarded=0.18 cfs 1,834 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.18 cfs 1,834 cf

Pond 26P: MH Peak Elev=185.62' Inflow=0.20 cfs 971 cf
Outflow=0.20 cfs 971 cf

Pond 27P: NEW CB Peak Elev=142.91' Inflow=0.19 cfs 642 cf
Outflow=0.19 cfs 642 cf

Pond 28P: CB Peak Elev=181.24' Inflow=0.25 cfs 828 cf
Outflow=0.25 cfs 828 cf

Pond 29P: NEW CB Peak Elev=143.06' Inflow=0.52 cfs 1,742 cf
Outflow=0.52 cfs 1,742 cf

Pond 30P: STC Peak Elev=141.62' Inflow=0.71 cfs 2,384 cf
Outflow=0.71 cfs 2,384 cf

Pond 31P: CB Peak Elev=139.47' Inflow=0.70 cfs 2,384 cf
Outflow=0.70 cfs 2,384 cf

Pond 32P: CB Peak Elev=157.22' Inflow=0.21 cfs 694 cf
Outflow=0.21 cfs 694 cf

Pond 35P: P-LB4 Peak Elev=152.26' Storage=211 cf Inflow=0.52 cfs 1,750 cf
Discarded=0.18 cfs 1,751 cf Primary=0.00 cfs 0 cf Outflow=0.18 cfs 1,751 cf

Pond 36P: CB Peak Elev=192.83' Inflow=0.44 cfs 1,359 cf
Outflow=0.44 cfs 1,359 cf

Pond 37P: CB Peak Elev=157.28' Inflow=0.32 cfs 1,056 cf
Outflow=0.32 cfs 1,056 cf

Pond 38P: P-MH Peak Elev=192.78' Inflow=1.06 cfs 3,448 cf
Outflow=1.06 cfs 3,448 cf

Link 10L: FLARED END Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 34L: River Inflow=0.70 cfs 2,384 cf
Primary=0.70 cfs 2,384 cf

Total Runoff Area = 191,674 sf Runoff Volume = 11,407 cf Average Runoff Depth = 0.71"

Subcatchment 4S: SUDBURY ROAD (18+00-19+60)(50+00-51-Concord)

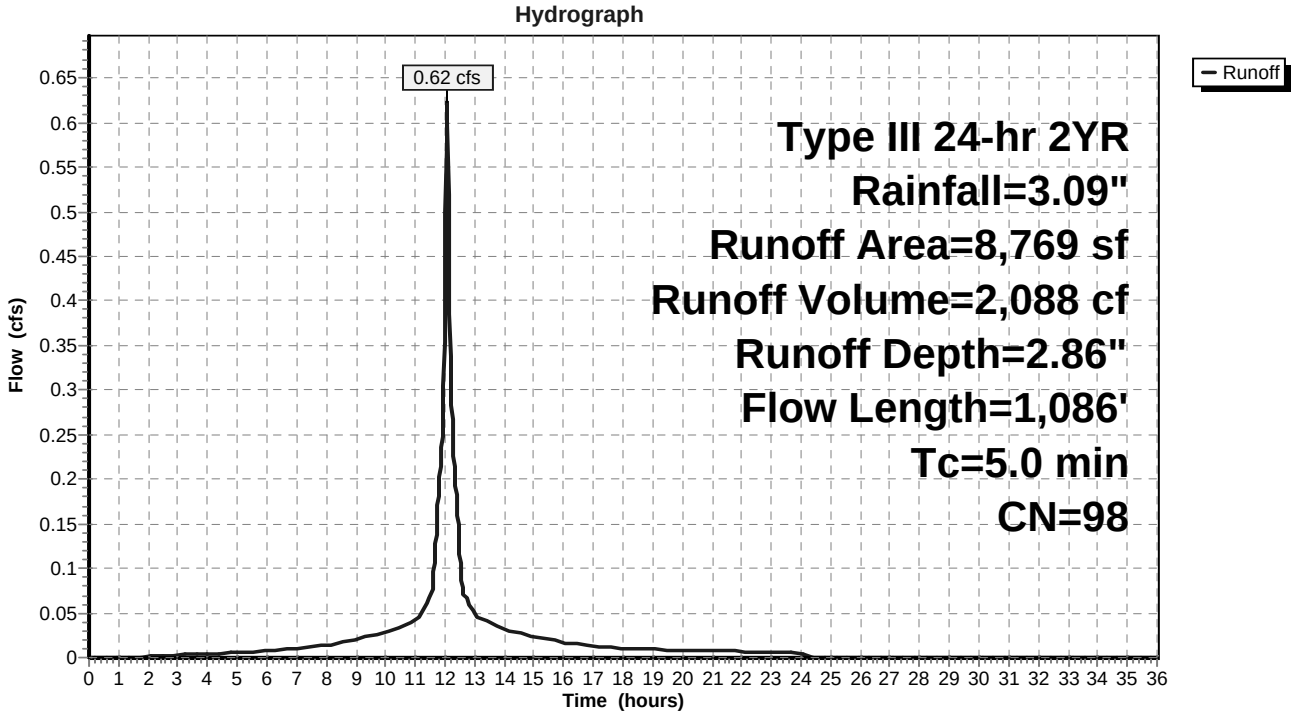
Runoff = 0.62 cfs @ 12.07 hrs, Volume= 2,088 cf, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
8,769	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 4S: SUDBURY ROAD (18+00-19+60)(50+00-51-Concord)



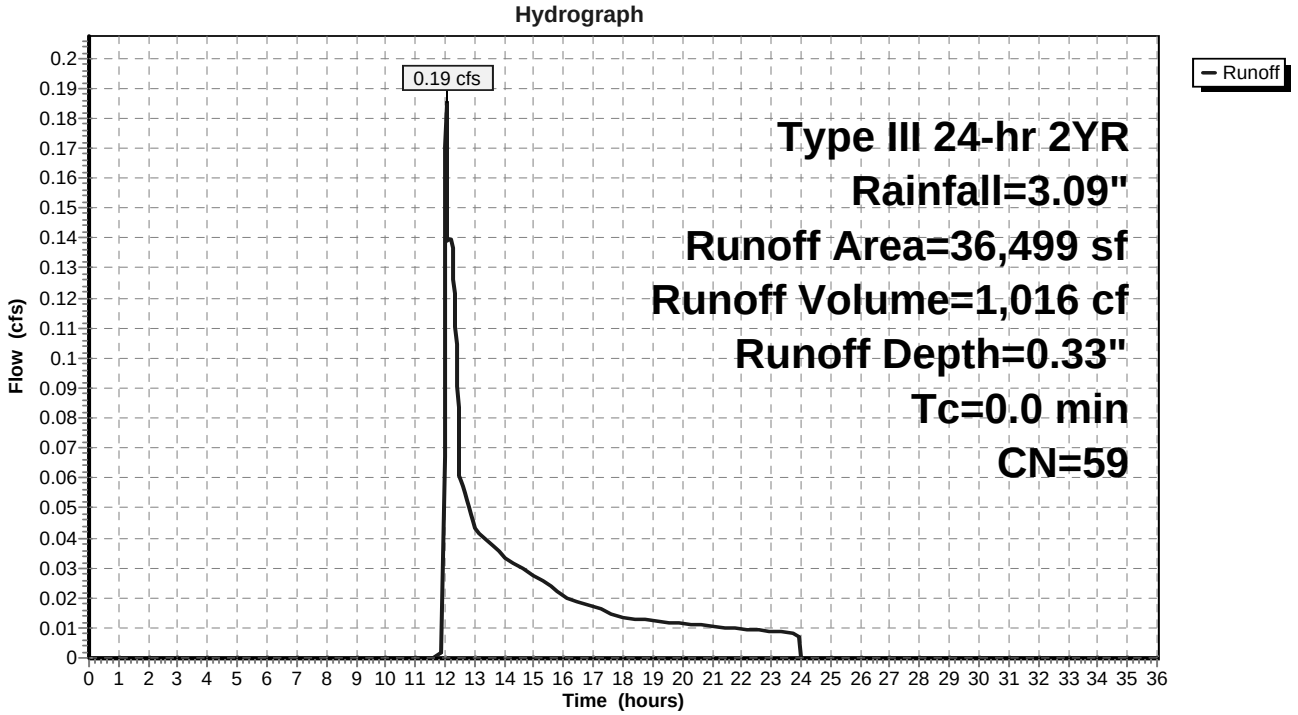
Subcatchment 16S: WEST SIDE ROADWAY AREA

Runoff = 0.19 cfs @ 12.05 hrs, Volume= 1,016 cf, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
12,279	98	Paved parking & roofs
20,007	39	>75% Grass cover, Good, HSG A
4,213	39	OFFSITE GRASS
36,499	59	Weighted Average

Subcatchment 16S: WEST SIDE ROADWAY AREA



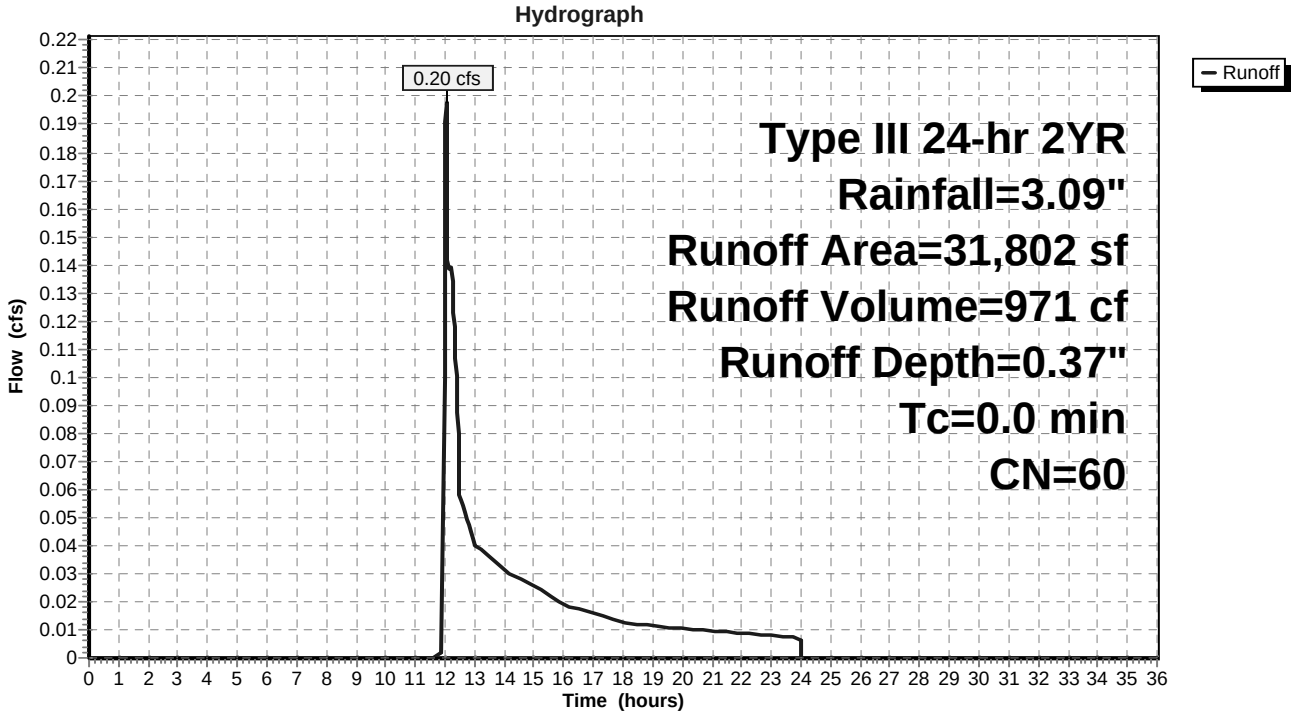
Subcatchment 21S: WEST SIDE CUL-DE-SAC AREA

Runoff = 0.20 cfs @ 12.04 hrs, Volume= 971 cf, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
11,344	98	Paved parking & roofs
17,104	39	>75% Grass cover, Good, HSG A
3,354	39	OFFSITE GRASS
31,802	60	Weighted Average

Subcatchment 21S: WEST SIDE CUL-DE-SAC AREA



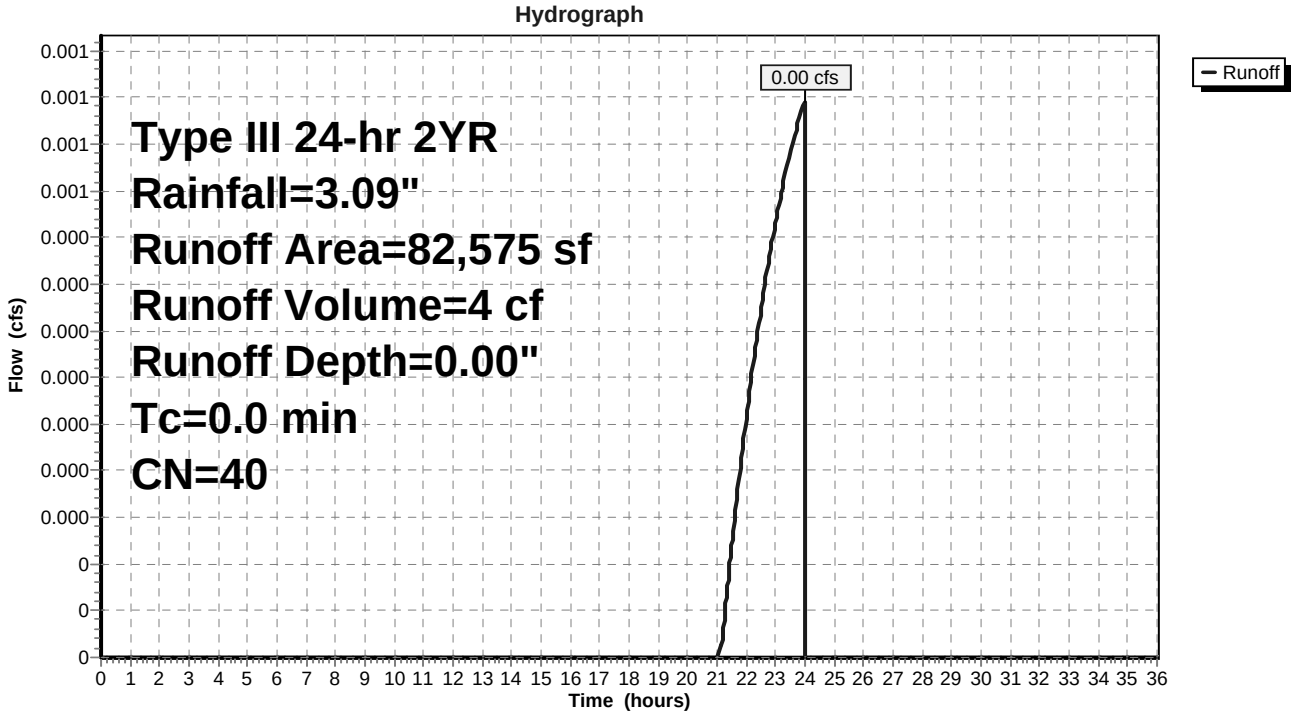
Subcatchment 23S: ACTON AND WEST SIDE LOTS

Runoff = 0.00 cfs @ 23.98 hrs, Volume= 4 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
7,259	98	Paved parking & roofs
42,441	30	Woods, Good, HSG A
19,562	39	>75% Grass cover, Good, HSG A
13,313	39	OFFSITE GRASS
82,575	40	Weighted Average

Subcatchment 23S: ACTON AND WEST SIDE LOTS



Subcatchment 24S: W. SUDBURY ROAD (15+50-18+00)

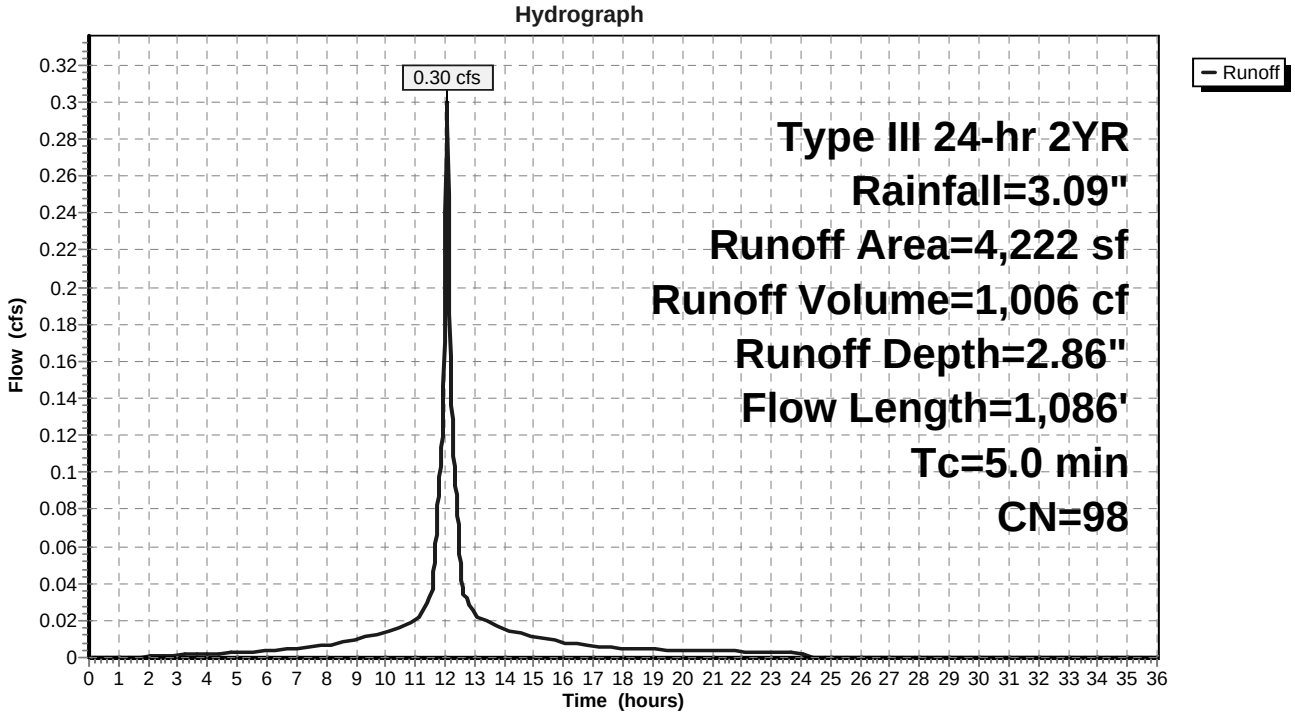
Runoff = 0.30 cfs @ 12.07 hrs, Volume= 1,006 cf, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
4,222	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 24S: W. SUDBURY ROAD (15+50-18+00)



Subcatchment 25S: SUDBURY ROAD (18+00-21+00)

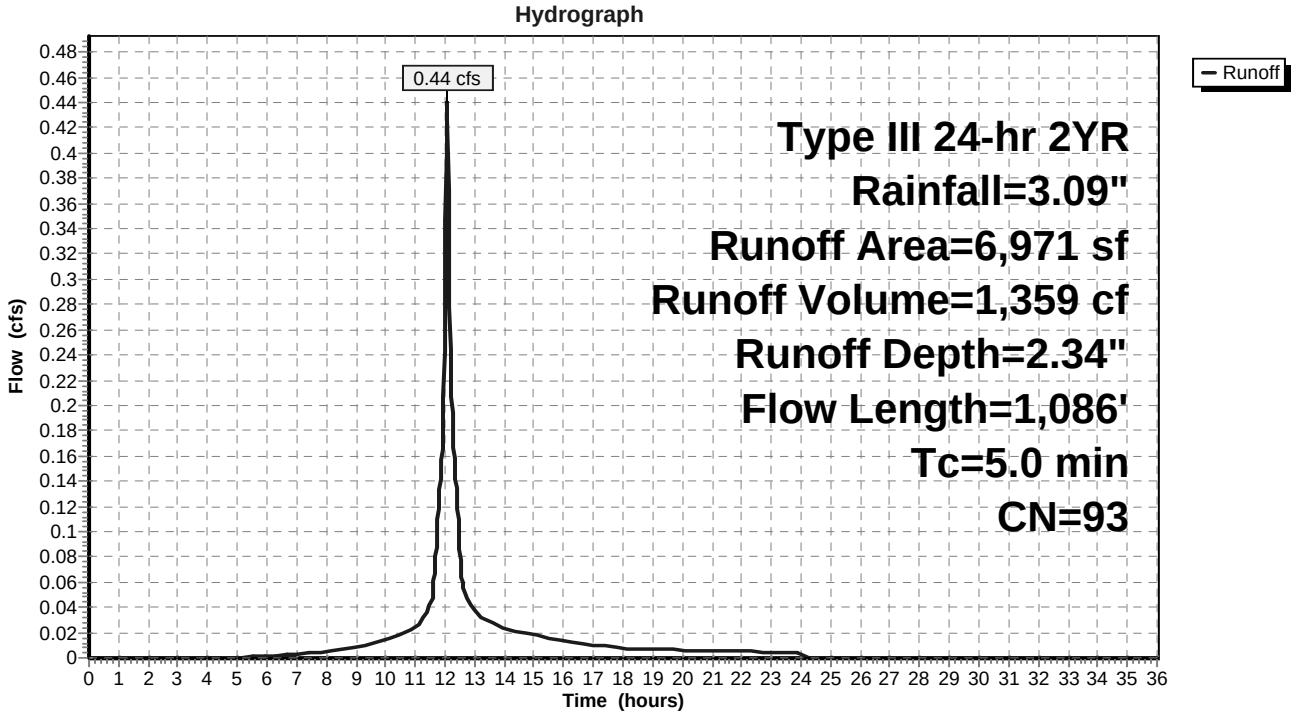
Runoff = 0.44 cfs @ 12.07 hrs, Volume= 1,359 cf, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
6,421	98	Paved roads w/curbs & sewers
550	32	Woods/grass comb., Good, HSG A
6,971	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 25S: SUDBURY ROAD (18+00-21+00)



Subcatchment 29S: E. SUDBURY ROAD (15+50-18+00)

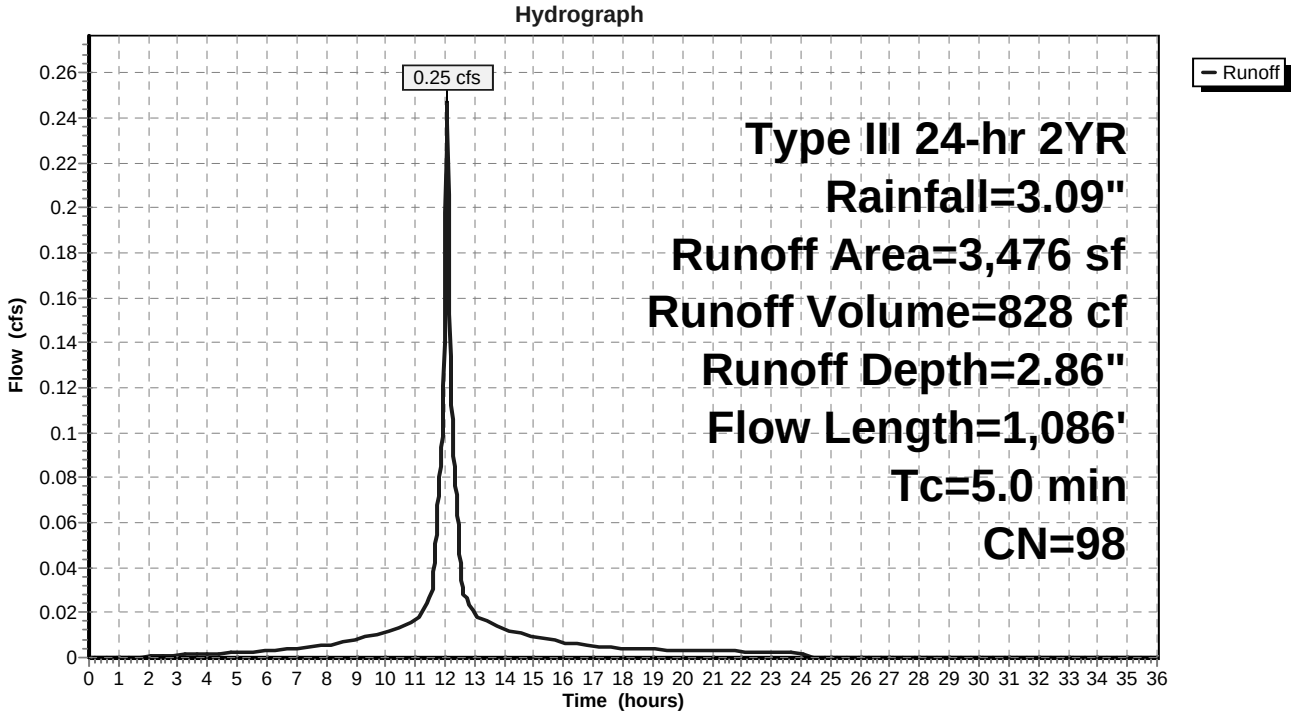
Runoff = 0.25 cfs @ 12.07 hrs, Volume= 828 cf, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
3,476	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 29S: E. SUDBURY ROAD (15+50-18+00)



Subcatchment 31S: E. SUDBURY ROAD (13+00-15+50)

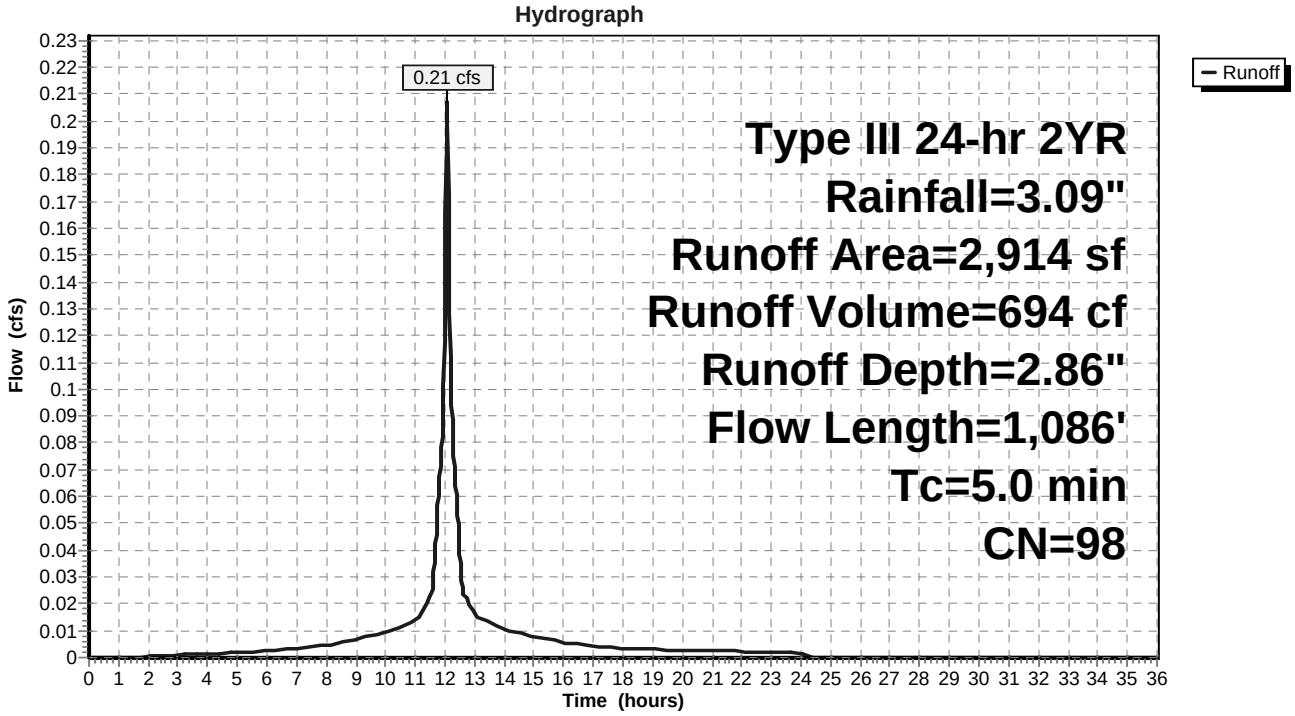
Runoff = 0.21 cfs @ 12.07 hrs, Volume= 694 cf, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
2,914	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 31S: E. SUDBURY ROAD (13+00-15+50)



Subcatchment 38S: W. SUDBURY ROAD (13+00-15+50)

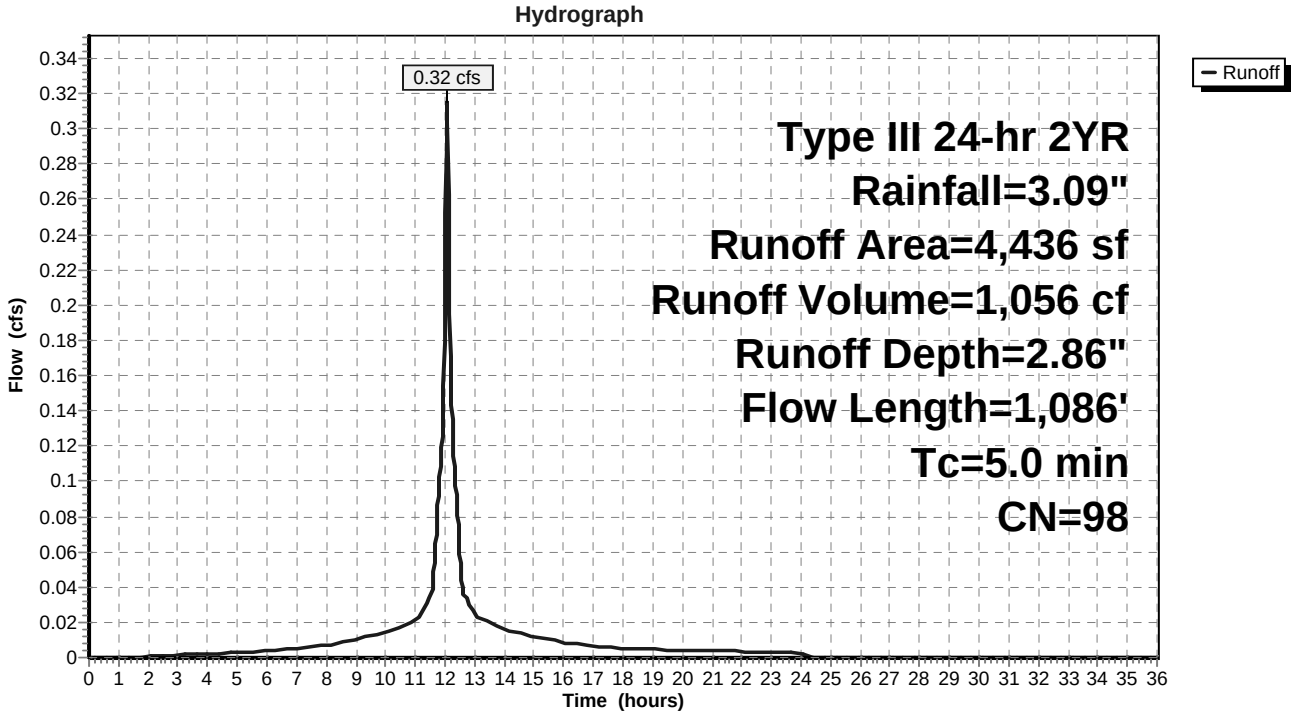
Runoff = 0.32 cfs @ 12.07 hrs, Volume= 1,056 cf, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
4,436	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 38S: W. SUDBURY ROAD (13+00-15+50)



Subcatchment 40S: E. SUDBURY ROAD (11+00-13+00)

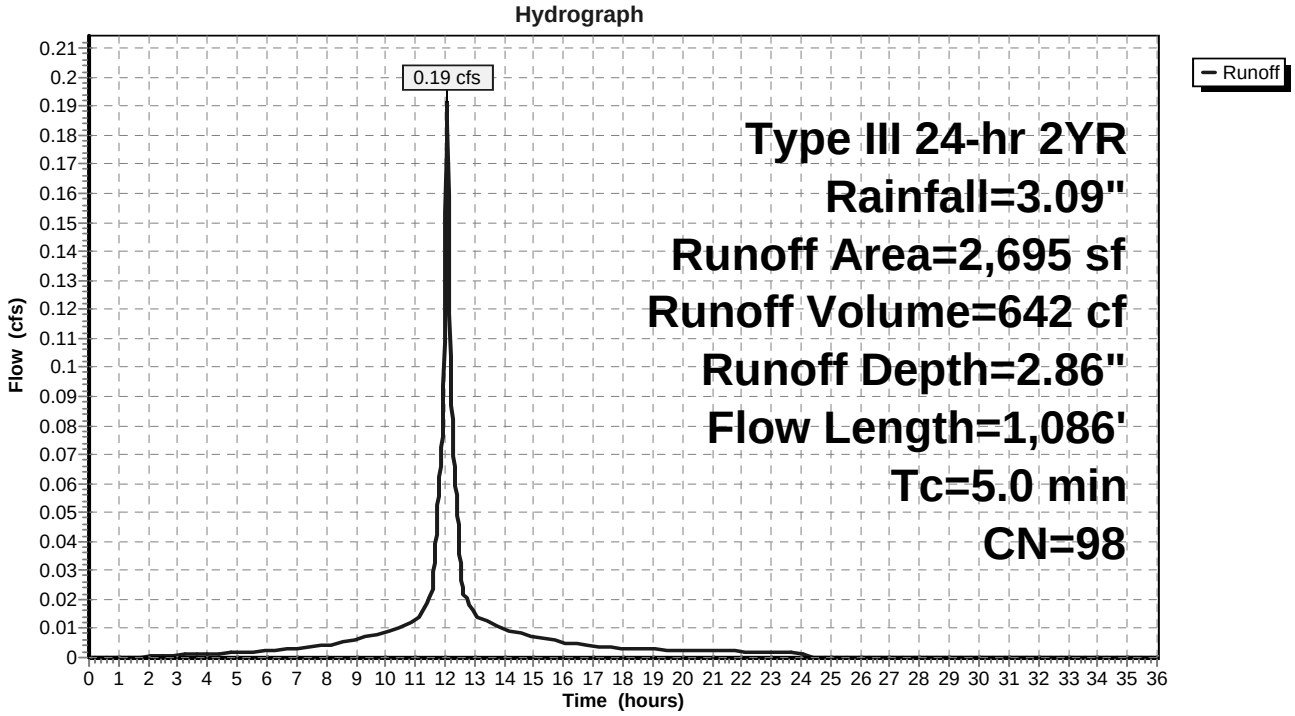
Runoff = 0.19 cfs @ 12.07 hrs, Volume= 642 cf, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
2,695	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 40S: E. SUDBURY ROAD (11+00-13+00)



Subcatchment 41S: W. SUDBURY ROAD (10+00-13+00)

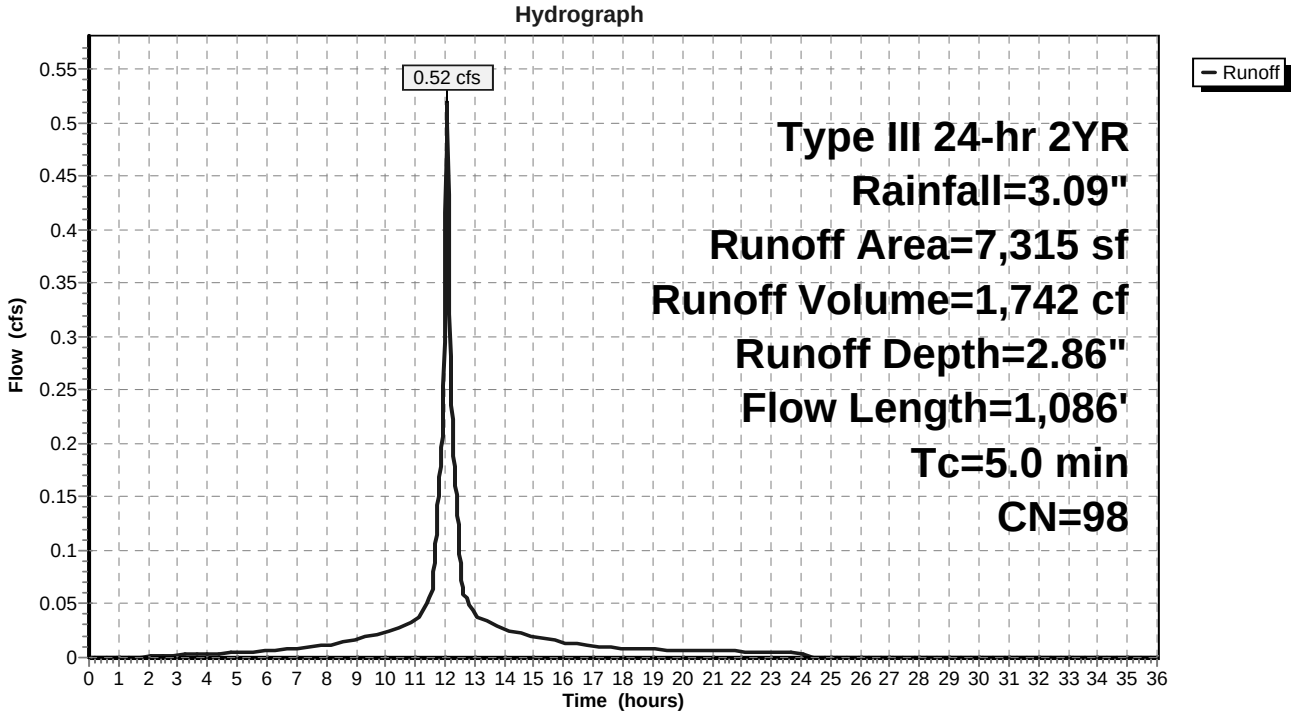
Runoff = 0.52 cfs @ 12.07 hrs, Volume= 1,742 cf, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2YR Rainfall=3.09"

Area (sf)	CN	Description
7,315	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 41S: W. SUDBURY ROAD (10+00-13+00)



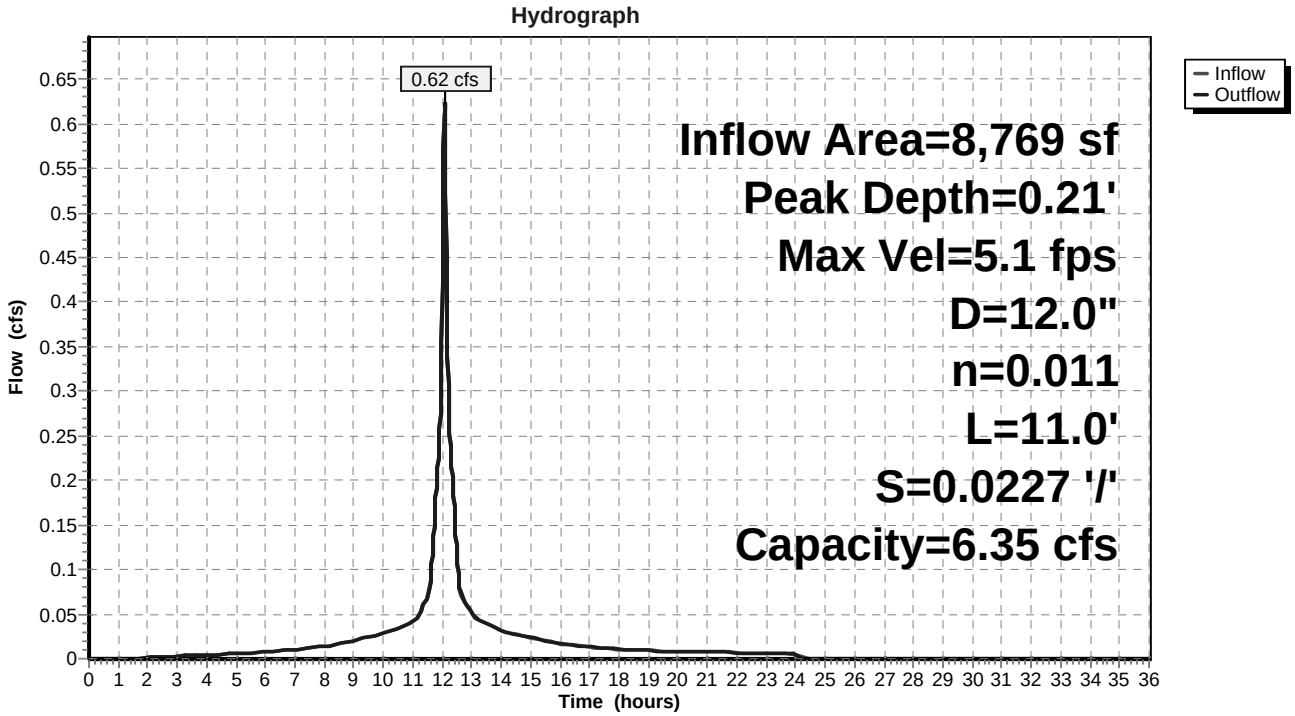
Reach 3R: 12" RCP

Inflow Area = 8,769 sf, Inflow Depth = 2.86" for 2YR event
Inflow = 0.62 cfs @ 12.07 hrs, Volume= 2,088 cf
Outflow = 0.62 cfs @ 12.07 hrs, Volume= 2,088 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.1 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.21' @ 12.07 hrs
Capacity at bank full= 6.35 cfs
Inlet Invert= 192.50', Outlet Invert= 192.25'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 11.0' Slope= 0.0227 '/'

Reach 3R: 12" RCP



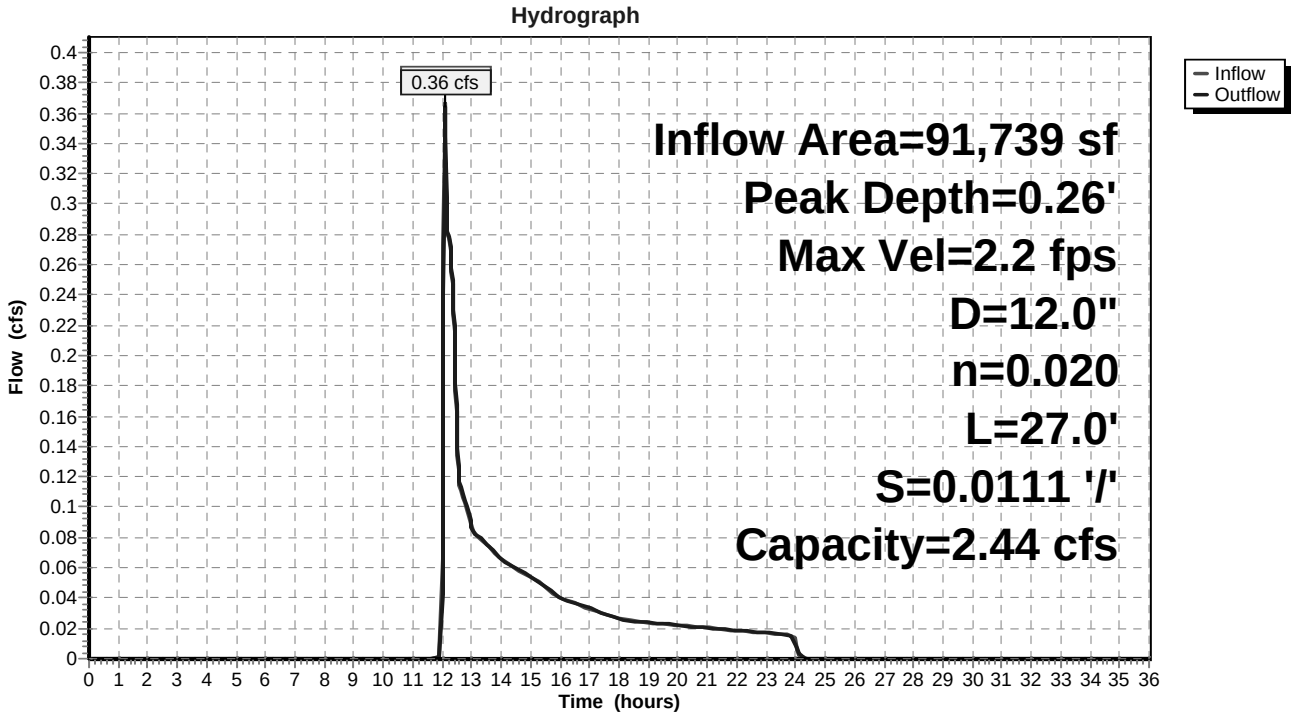
Reach 4R: 12" CPP

Inflow Area = 91,739 sf, Inflow Depth = 0.26" for 2YR event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 1,987 cf
Outflow = 0.36 cfs @ 12.09 hrs, Volume= 1,987 cf, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.2 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 0.4 min

Peak Depth= 0.26' @ 12.09 hrs
Capacity at bank full= 2.44 cfs
Inlet Invert= 176.00', Outlet Invert= 175.70'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 27.0' Slope= 0.0111 '/'

Reach 4R: 12" CPP



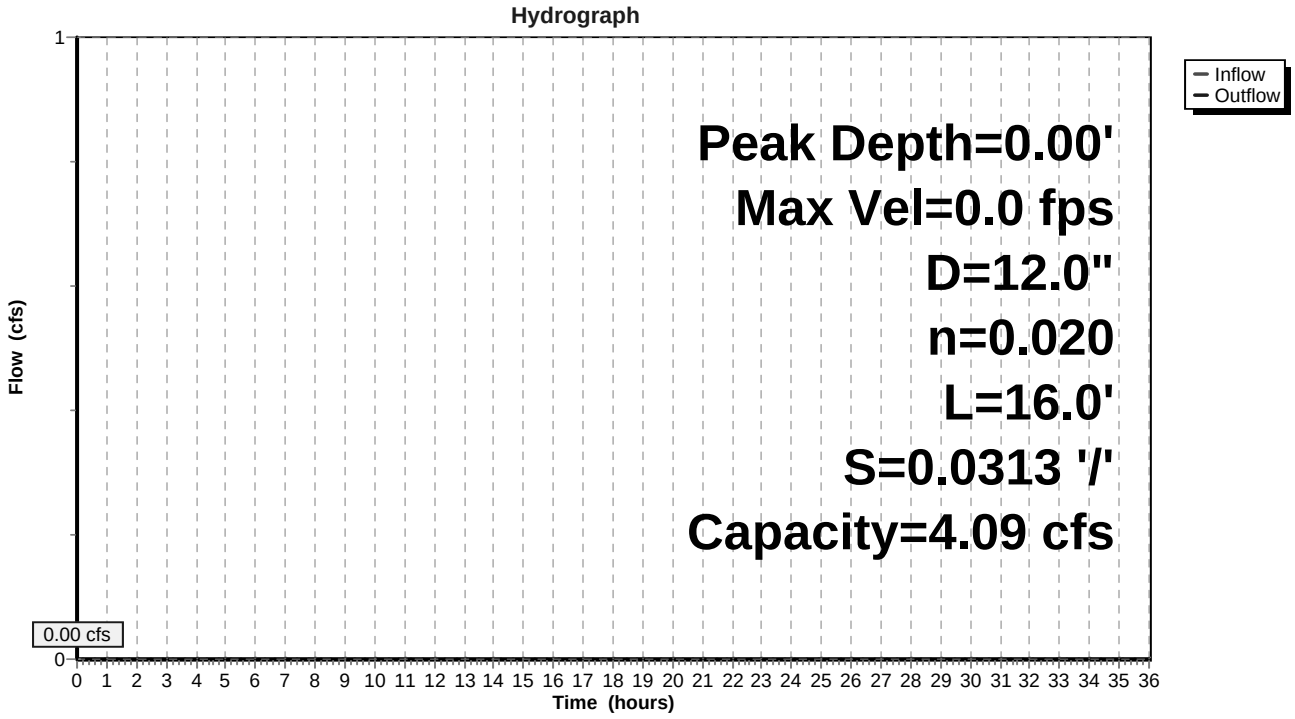
Reach 5R: 12" CPP

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

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 4.09 cfs
Inlet Invert= 176.00', Outlet Invert= 175.50'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 16.0' Slope= 0.0313 '/'

Reach 5R: 12" CPP



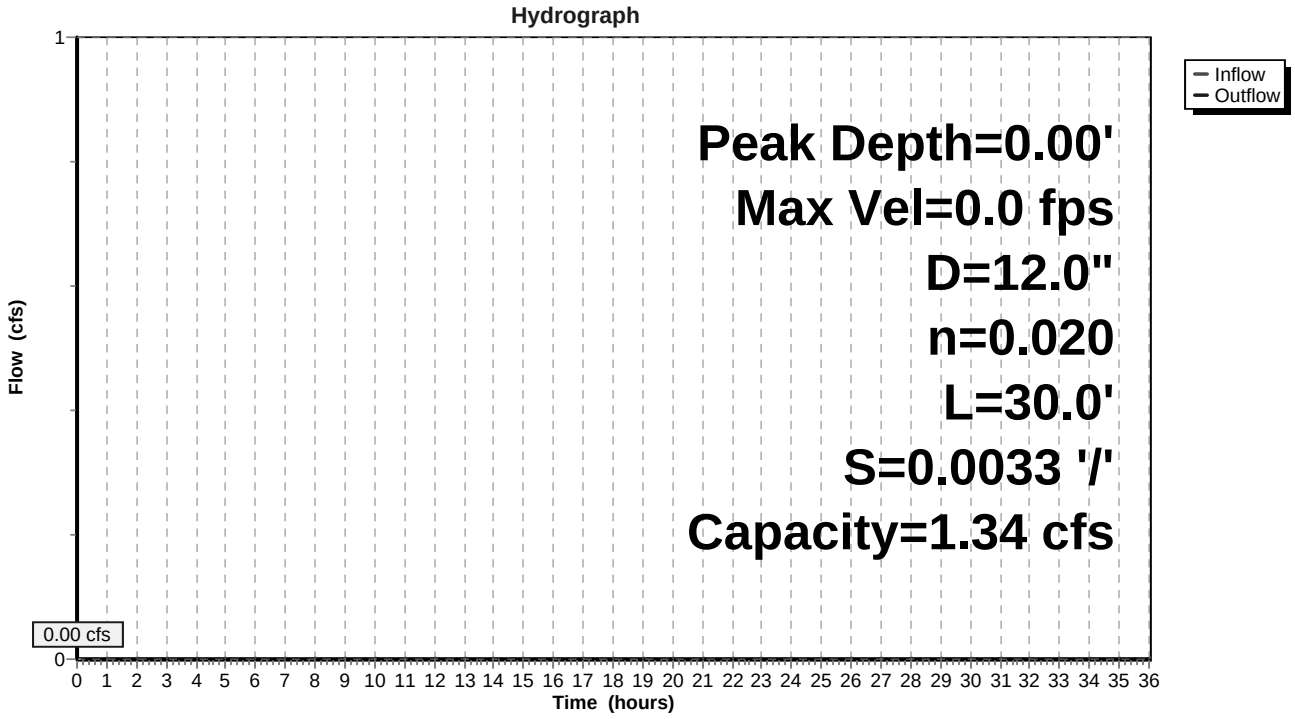
Reach 8R: 12" CPP

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

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 1.34 cfs
Inlet Invert= 175.20', Outlet Invert= 175.10'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 30.0' Slope= 0.0033 '/'

Reach 8R: 12" CPP



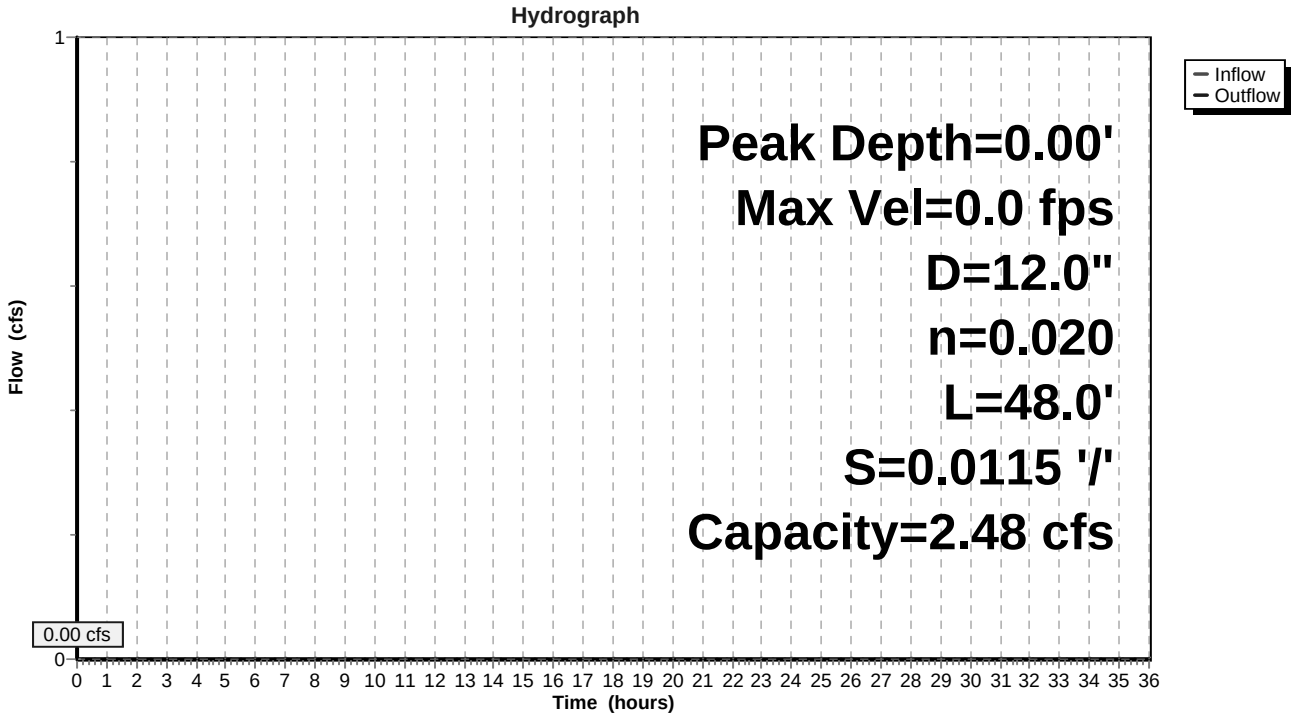
Reach 9R: 12" CPP

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

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 2.48 cfs
Inlet Invert= 177.00', Outlet Invert= 176.45'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 48.0' Slope= 0.0115 '/'

Reach 9R: 12" CPP



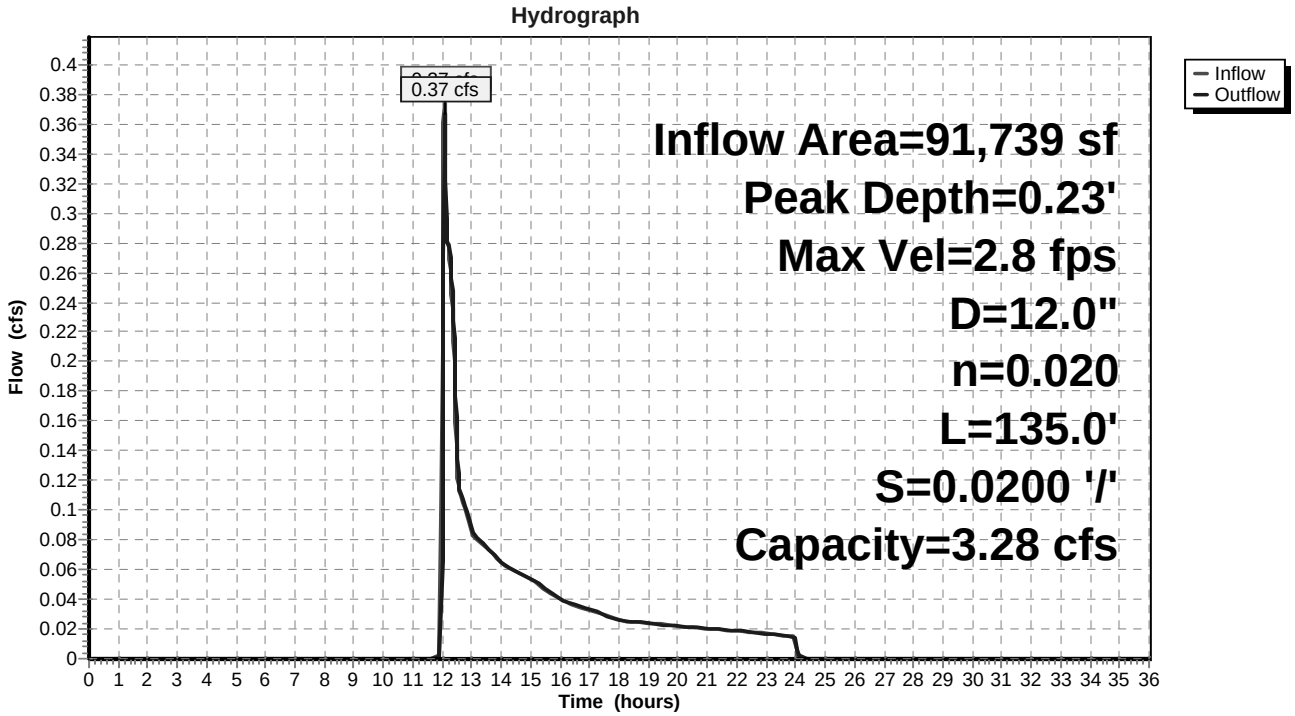
Reach 14R: 12" CPP

Inflow Area = 91,739 sf, Inflow Depth = 0.26" for 2YR event
Inflow = 0.37 cfs @ 12.06 hrs, Volume= 1,987 cf
Outflow = 0.37 cfs @ 12.08 hrs, Volume= 1,987 cf, Atten= 2%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.8 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 1.7 min

Peak Depth= 0.23' @ 12.07 hrs
Capacity at bank full= 3.28 cfs
Inlet Invert= 179.70', Outlet Invert= 177.00'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 135.0' Slope= 0.0200 '/'

Reach 14R: 12" CPP



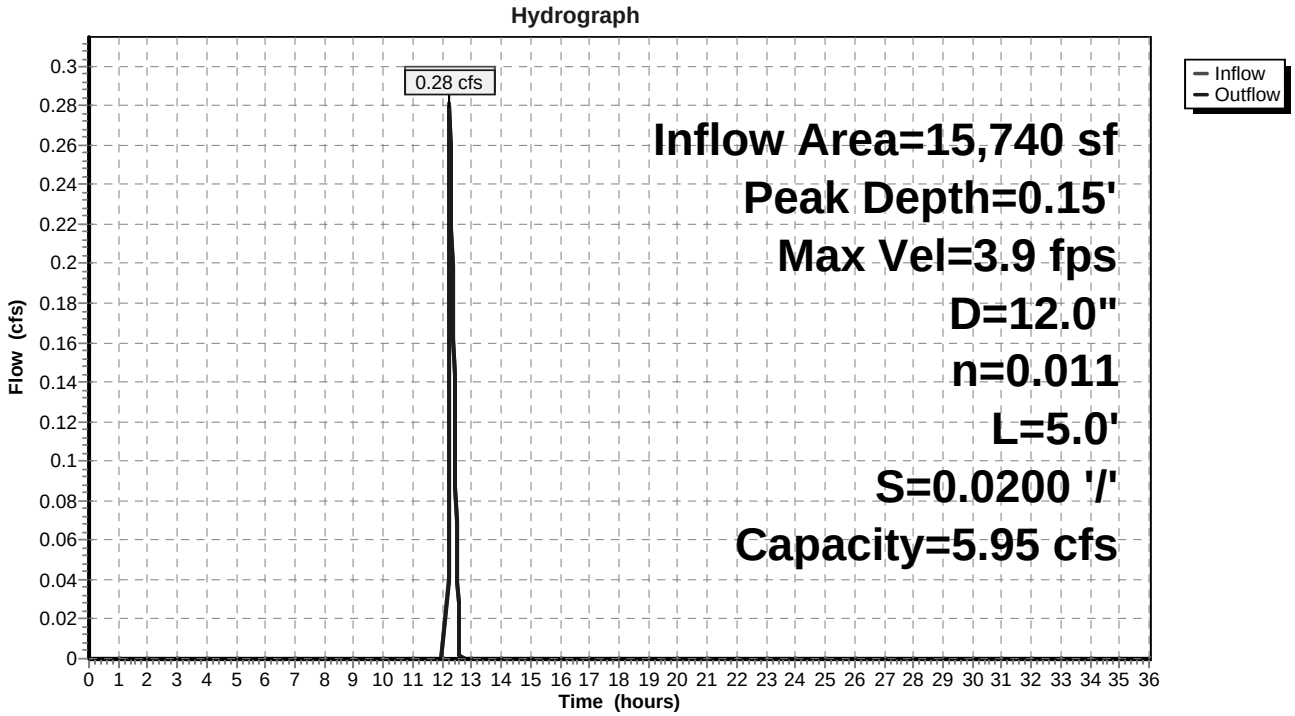
Reach 15R: 12" rcp

Inflow Area = 15,740 sf, Inflow Depth = 0.14" for 2YR event
Inflow = 0.28 cfs @ 12.25 hrs, Volume= 187 cf
Outflow = 0.28 cfs @ 12.25 hrs, Volume= 187 cf, Atten= 1%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.9 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.9 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.15' @ 12.25 hrs
Capacity at bank full= 5.95 cfs
Inlet Invert= 182.00', Outlet Invert= 181.90'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 5.0' Slope= 0.0200 '/'

Reach 15R: 12" rcp



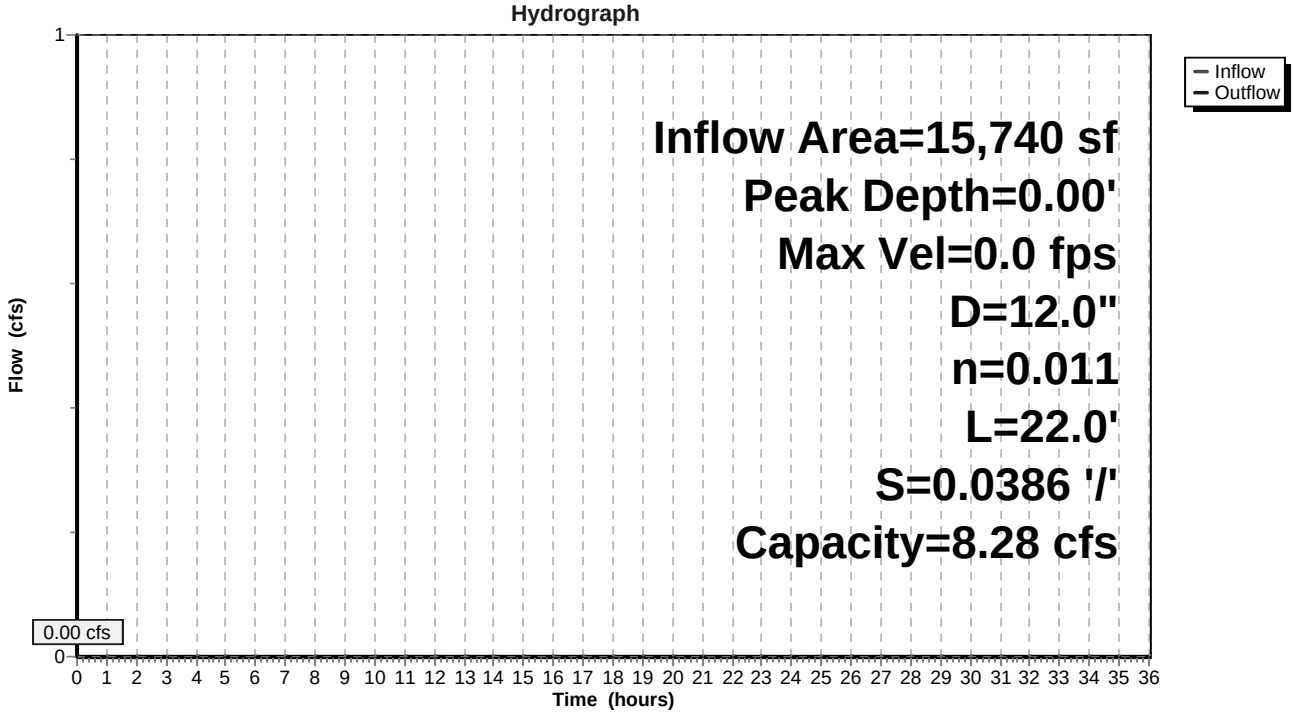
Reach 16R: 12" rcp

Inflow Area = 15,740 sf, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 8.28 cfs
Inlet Invert= 181.50', Outlet Invert= 180.65'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 22.0' Slope= 0.0386 '/'

Reach 16R: 12" rcp



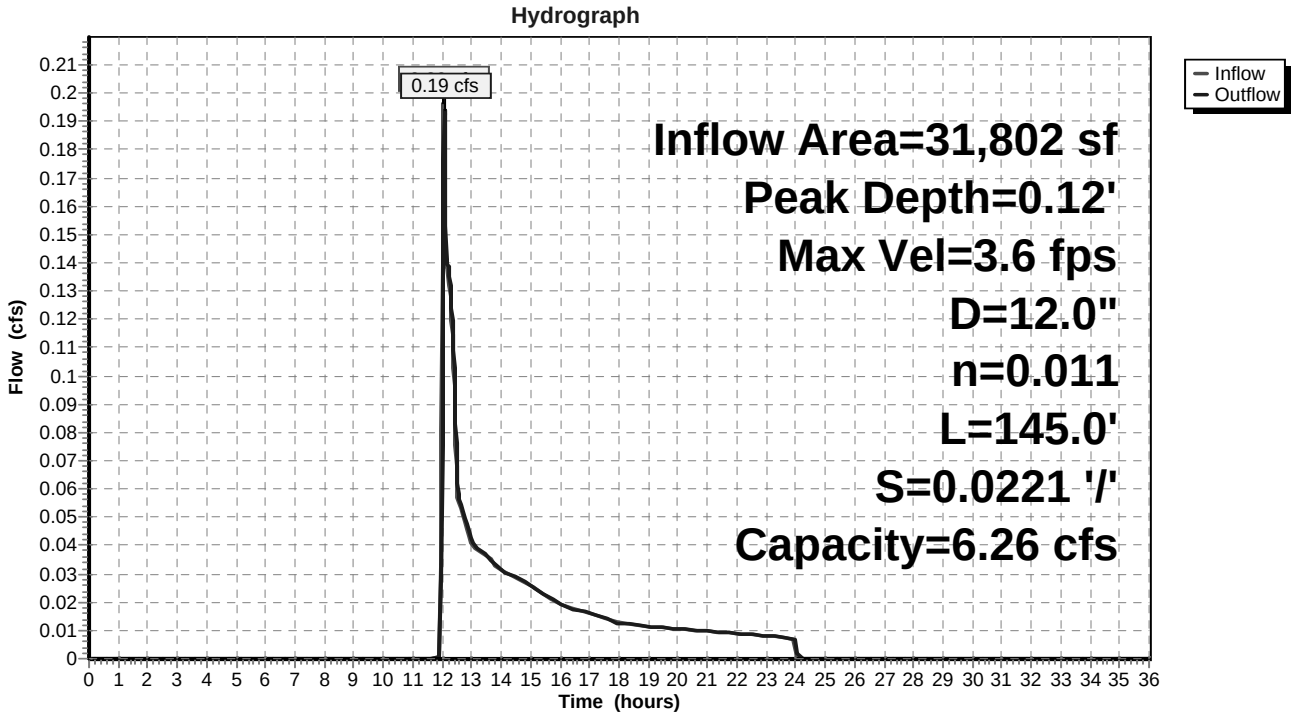
Reach 18R: 12" RCP

Inflow Area = 31,802 sf, Inflow Depth = 0.37" for 2YR event
Inflow = 0.20 cfs @ 12.05 hrs, Volume= 971 cf
Outflow = 0.19 cfs @ 12.07 hrs, Volume= 971 cf, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.6 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.12' @ 12.05 hrs
Capacity at bank full= 6.26 cfs
Inlet Invert= 183.00', Outlet Invert= 179.80'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 145.0' Slope= 0.0221 '/'

Reach 18R: 12" RCP



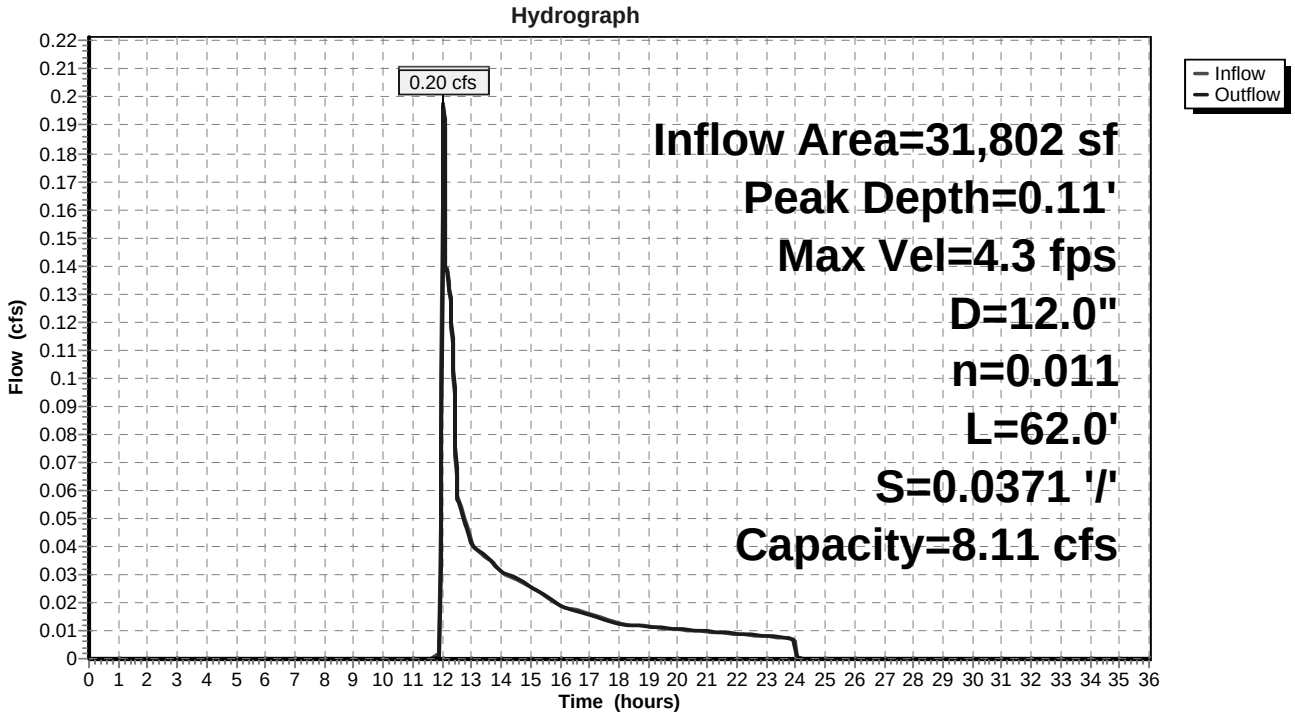
Reach 19R: 12" RCP

Inflow Area = 31,802 sf, Inflow Depth = 0.37" for 2YR event
Inflow = 0.20 cfs @ 12.04 hrs, Volume= 971 cf
Outflow = 0.20 cfs @ 12.05 hrs, Volume= 971 cf, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 0.5 min

Peak Depth= 0.11' @ 12.04 hrs
Capacity at bank full= 8.11 cfs
Inlet Invert= 185.40', Outlet Invert= 183.10'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 62.0' Slope= 0.0371 '/'

Reach 19R: 12" RCP



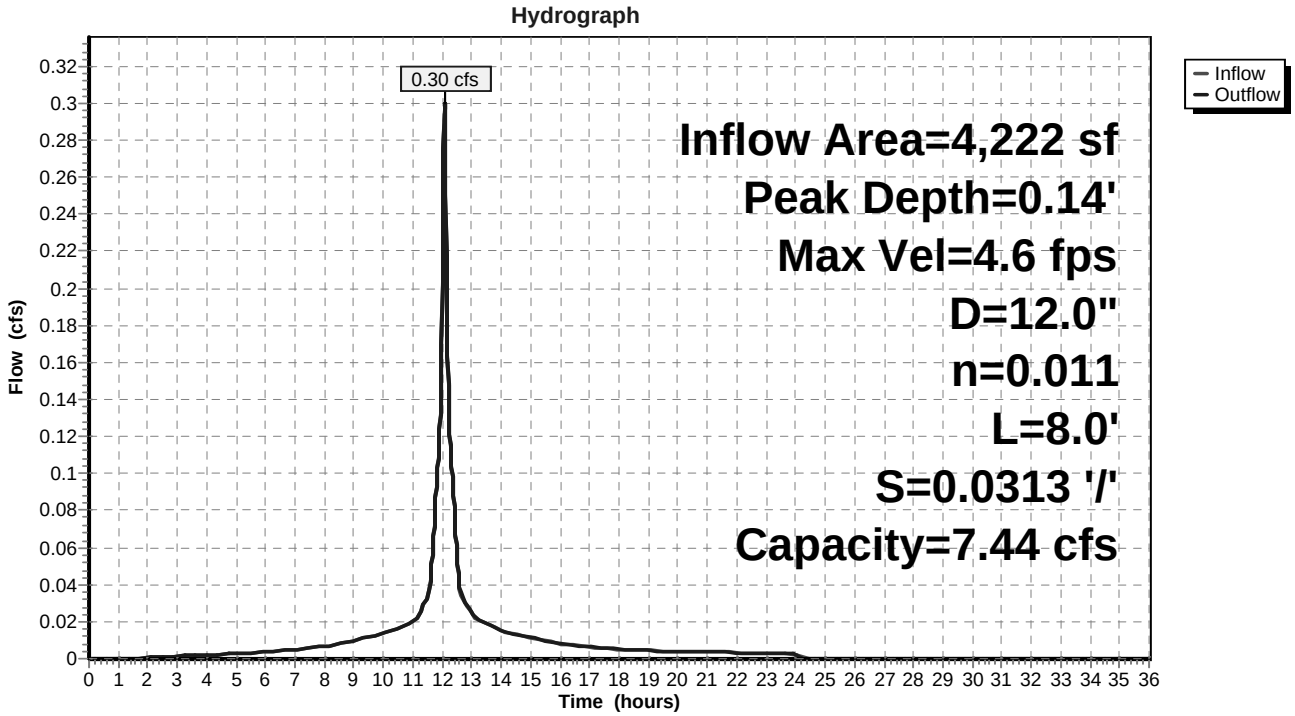
Reach 20R: 12" RCP

Inflow Area = 4,222 sf, Inflow Depth = 2.86" for 2YR event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 1,006 cf
Outflow = 0.30 cfs @ 12.07 hrs, Volume= 1,006 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.6 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.14' @ 12.07 hrs
Capacity at bank full= 7.44 cfs
Inlet Invert= 181.00', Outlet Invert= 180.75'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 8.0' Slope= 0.0313 '/'

Reach 20R: 12" RCP



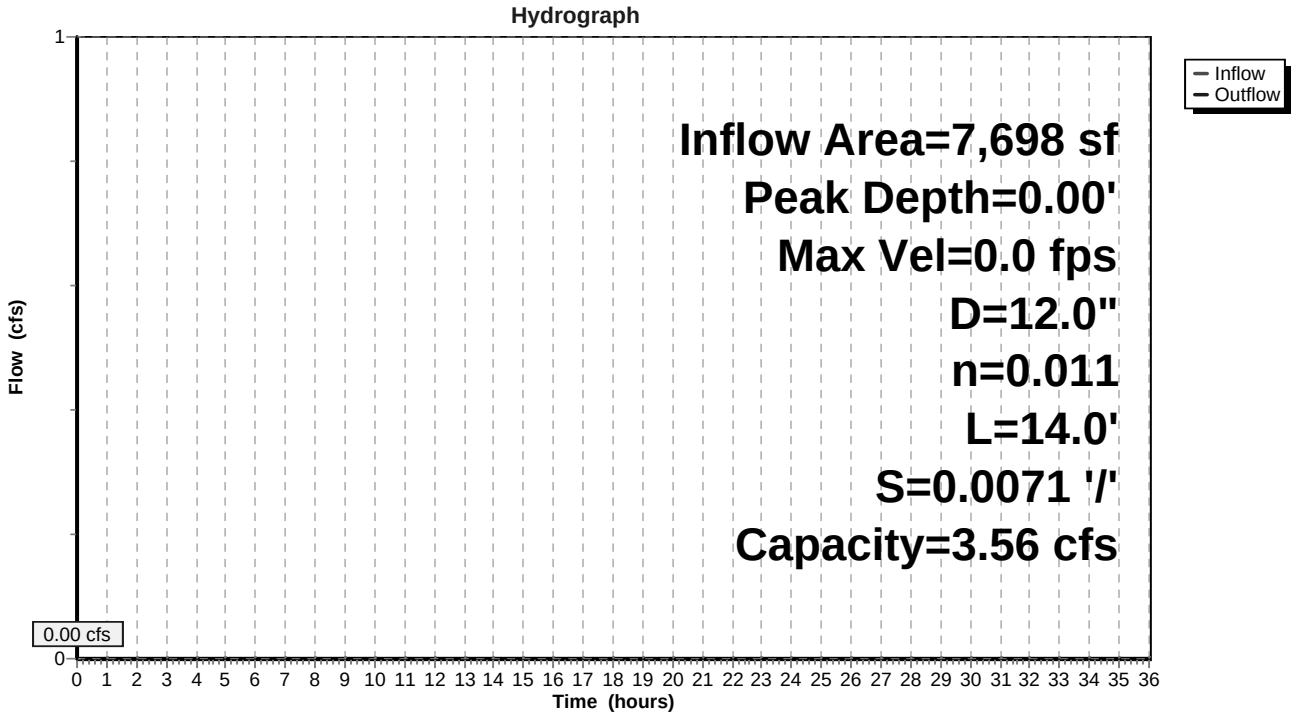
Reach 22R: 12" rcp

Inflow Area = 7,698 sf, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 3.56 cfs
Inlet Invert= 180.75', Outlet Invert= 180.65'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 14.0' Slope= 0.0071 '/'

Reach 22R: 12" rcp



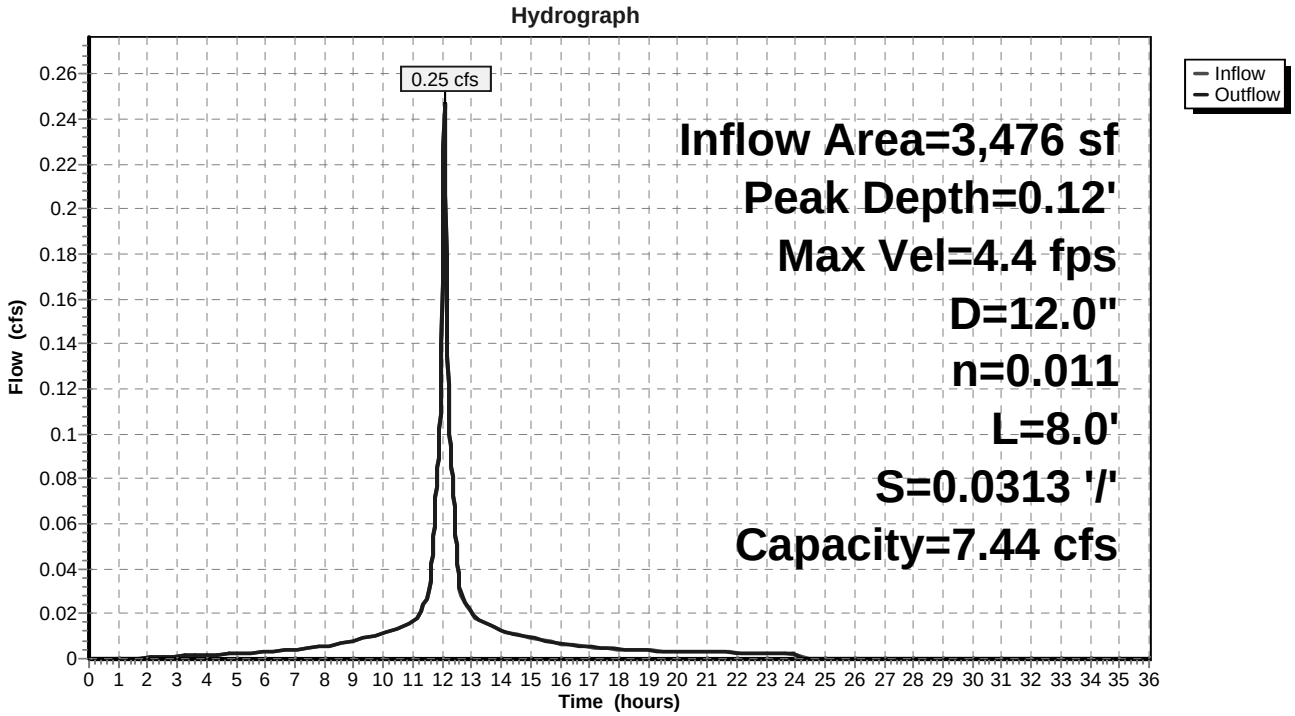
Reach 25R: 12" RCP

Inflow Area = 3,476 sf, Inflow Depth = 2.86" for 2YR event
Inflow = 0.25 cfs @ 12.07 hrs, Volume= 828 cf
Outflow = 0.25 cfs @ 12.07 hrs, Volume= 828 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.4 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.4 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.12' @ 12.07 hrs
Capacity at bank full= 7.44 cfs
Inlet Invert= 181.00', Outlet Invert= 180.75'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 8.0' Slope= 0.0313 '/'

Reach 25R: 12" RCP



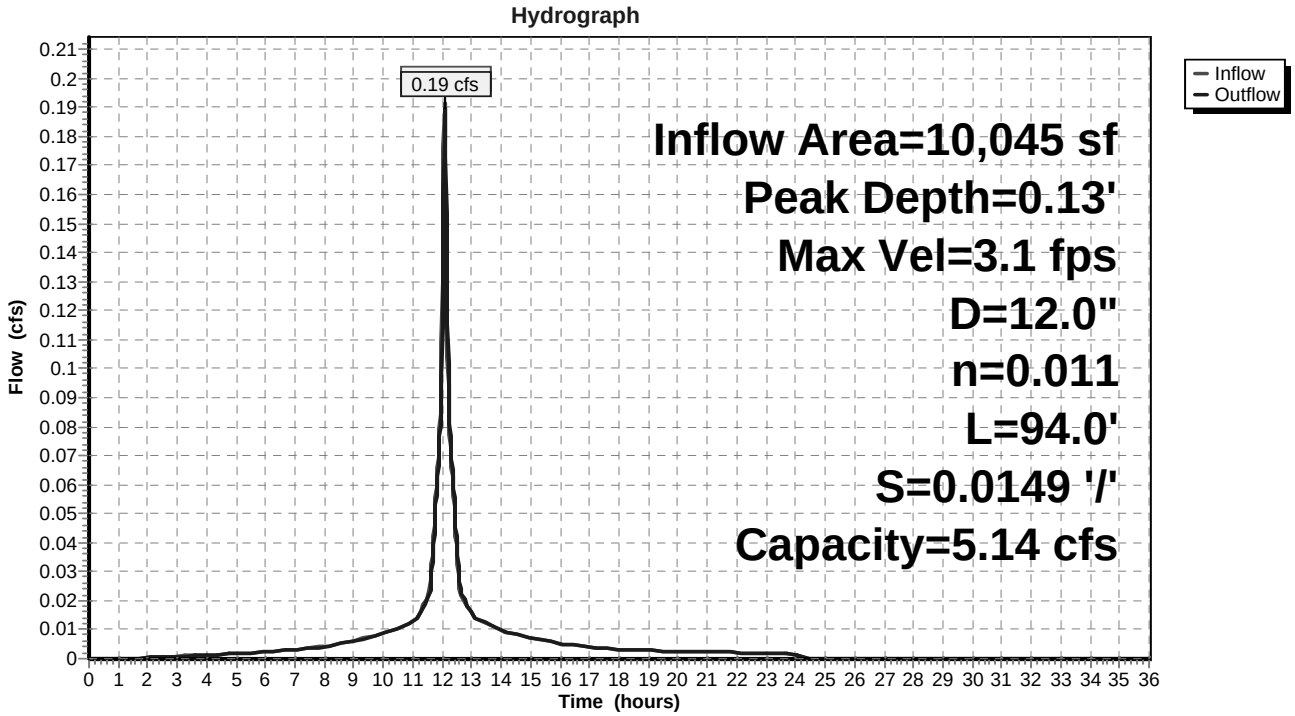
Reach 28R: 12" RCP

Inflow Area = 10,045 sf, Inflow Depth = 0.77" for 2YR event
Inflow = 0.19 cfs @ 12.07 hrs, Volume= 642 cf
Outflow = 0.19 cfs @ 12.09 hrs, Volume= 642 cf, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.1 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.0 fps, Avg. Travel Time= 1.5 min

Peak Depth= 0.13' @ 12.08 hrs
Capacity at bank full= 5.14 cfs
Inlet Invert= 142.70', Outlet Invert= 141.30'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 94.0' Slope= 0.0149 '/'

Reach 28R: 12" RCP



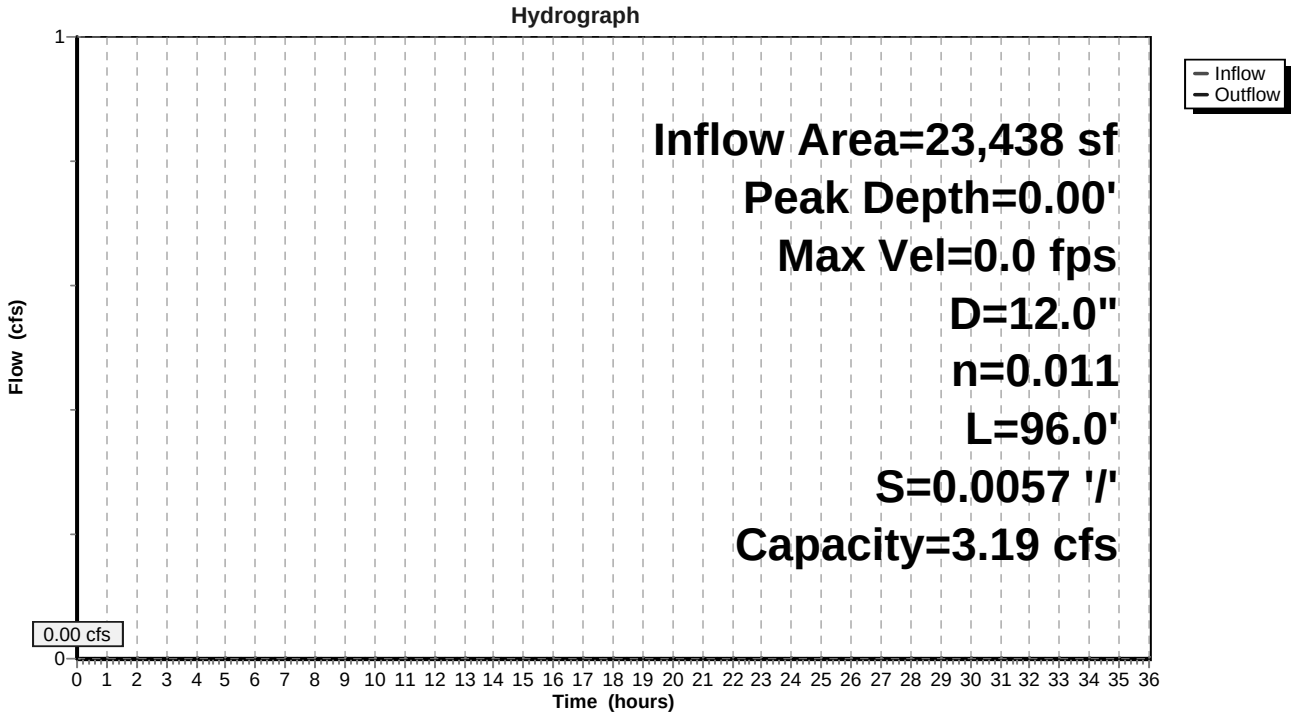
Reach 30R: 12" rcp

Inflow Area = 23,438 sf, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 3.19 cfs
Inlet Invert= 180.55', Outlet Invert= 180.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 96.0' Slope= 0.0057 '/'

Reach 30R: 12" rcp



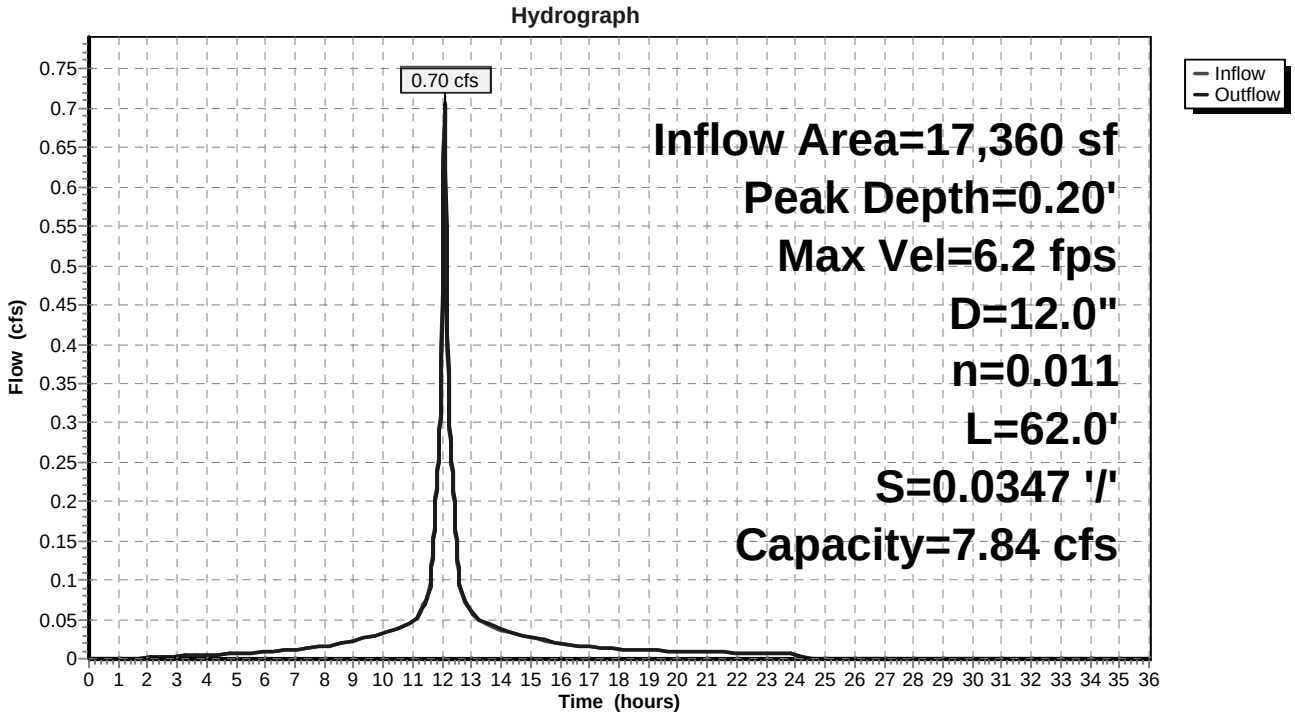
Reach 32R: 12" RCP

Inflow Area = 17,360 sf, Inflow Depth = 1.65" for 2YR event
Inflow = 0.71 cfs @ 12.07 hrs, Volume= 2,384 cf
Outflow = 0.70 cfs @ 12.08 hrs, Volume= 2,384 cf, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.2 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 0.5 min

Peak Depth= 0.20' @ 12.08 hrs
Capacity at bank full= 7.84 cfs
Inlet Invert= 141.20', Outlet Invert= 139.05'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 62.0' Slope= 0.0347 '/'

Reach 32R: 12" RCP



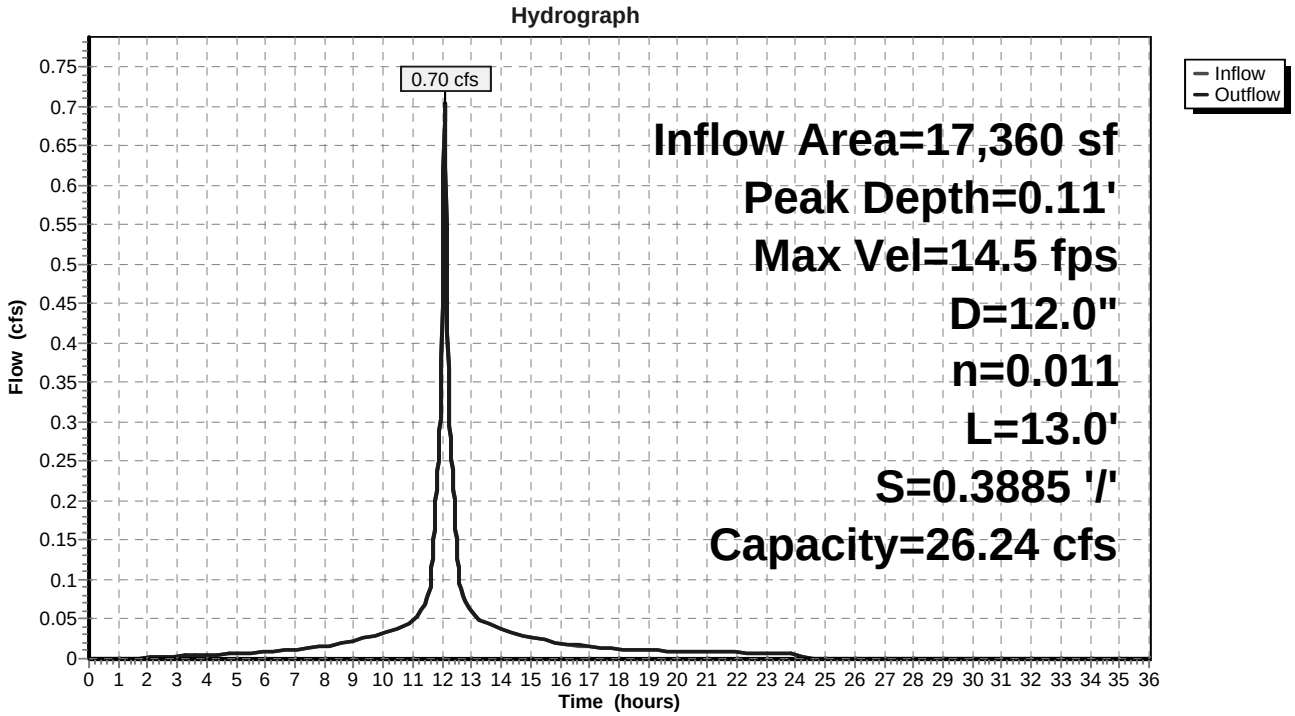
Reach 33R: 12" RCP

Inflow Area = 17,360 sf, Inflow Depth = 1.65" for 2YR event
Inflow = 0.70 cfs @ 12.08 hrs, Volume= 2,384 cf
Outflow = 0.70 cfs @ 12.08 hrs, Volume= 2,384 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 14.5 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.11' @ 12.08 hrs
Capacity at bank full= 26.24 cfs
Inlet Invert= 139.05', Outlet Invert= 134.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 13.0' Slope= 0.3885 '/'

Reach 33R: 12" RCP



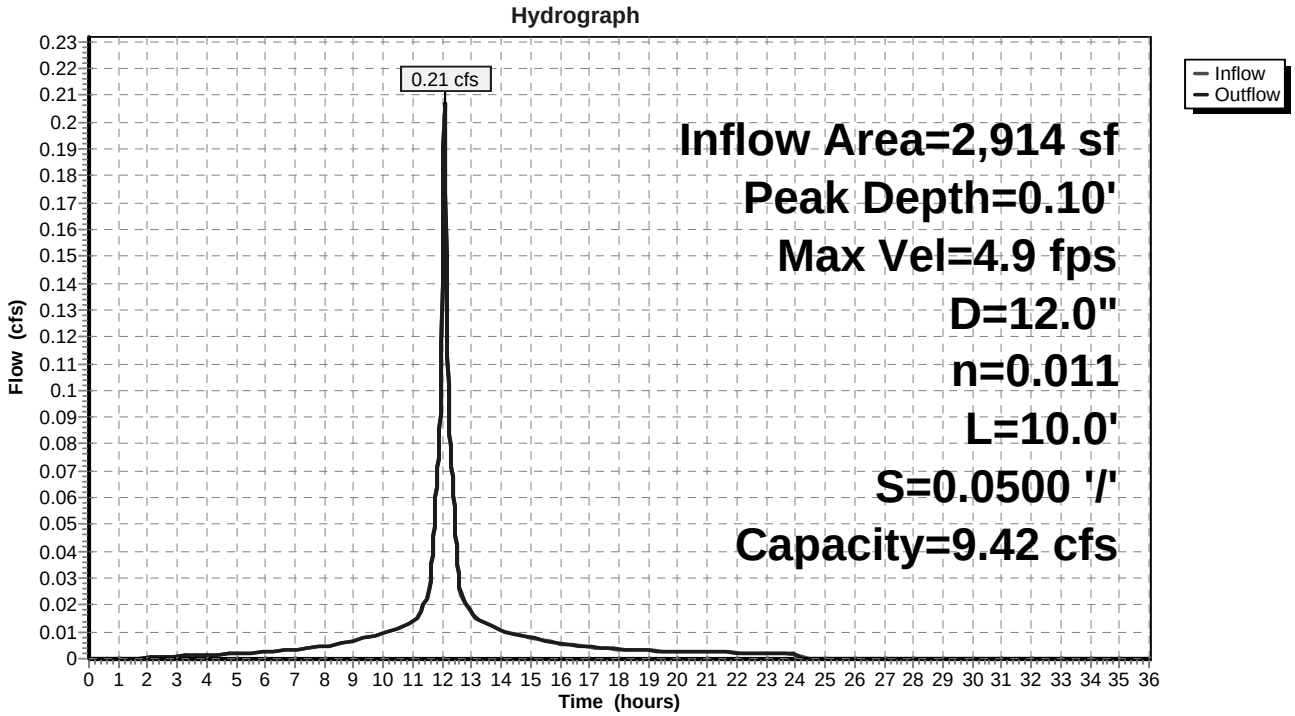
Reach 34R: 12" RCP

Inflow Area = 2,914 sf, Inflow Depth = 2.86" for 2YR event
Inflow = 0.21 cfs @ 12.07 hrs, Volume= 694 cf
Outflow = 0.21 cfs @ 12.07 hrs, Volume= 694 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.9 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.10' @ 12.07 hrs
Capacity at bank full= 9.42 cfs
Inlet Invert= 157.00', Outlet Invert= 156.50'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.0500 '/'

Reach 34R: 12" RCP



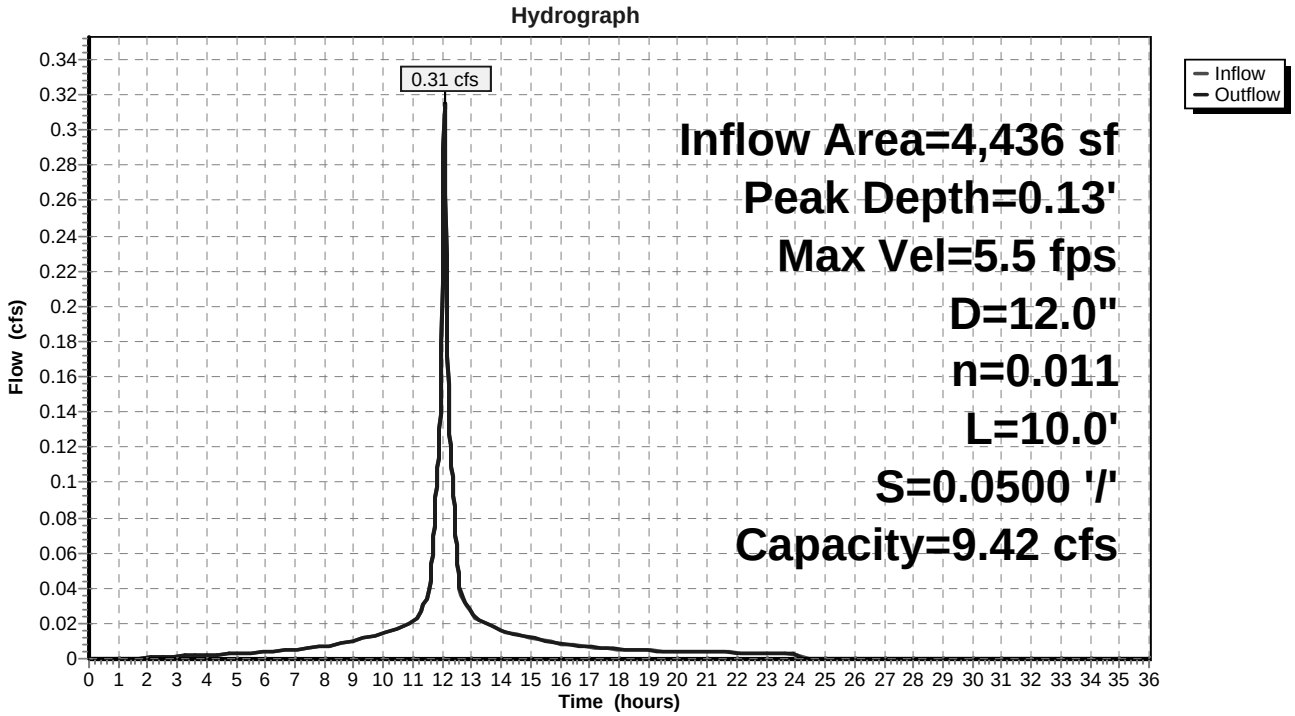
Reach 36R: 12" RCP

Inflow Area = 4,436 sf, Inflow Depth = 2.86" for 2YR event
Inflow = 0.32 cfs @ 12.07 hrs, Volume= 1,056 cf
Outflow = 0.31 cfs @ 12.07 hrs, Volume= 1,056 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.13' @ 12.07 hrs
Capacity at bank full= 9.42 cfs
Inlet Invert= 157.00', Outlet Invert= 156.50'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.0500 '/'

Reach 36R: 12" RCP



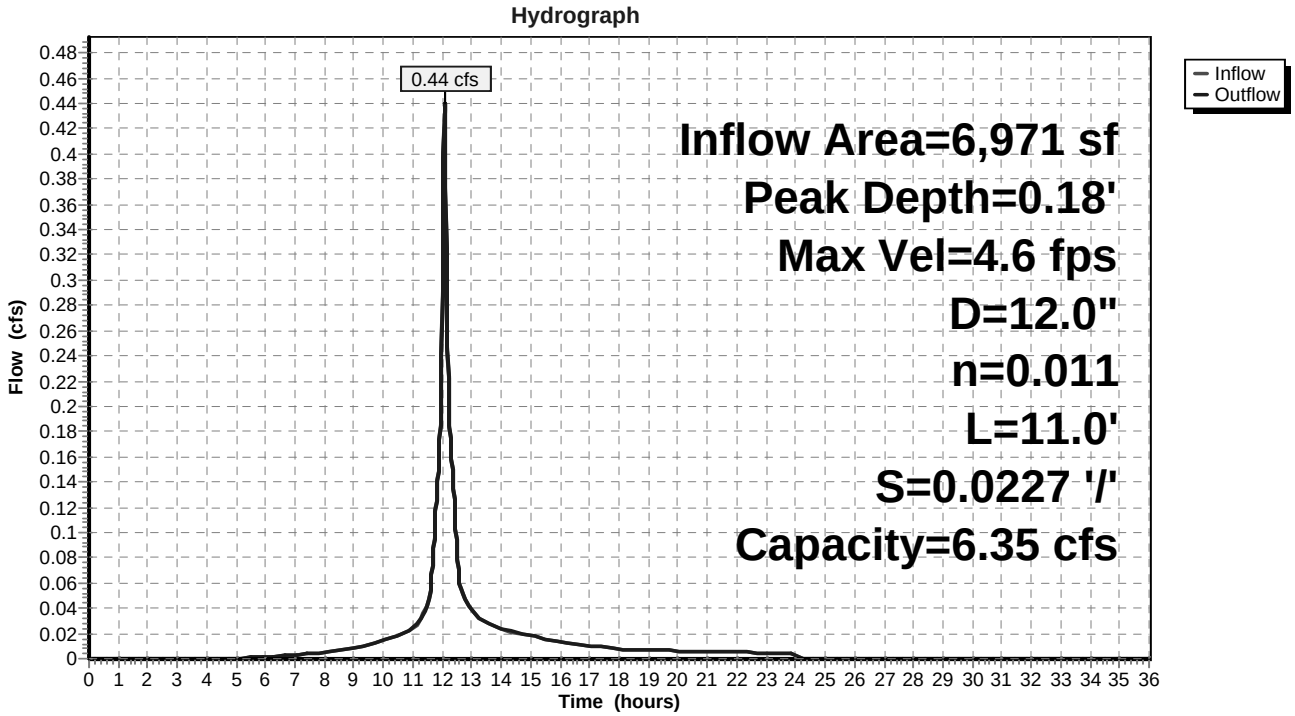
Reach 37R: 12" RCP

Inflow Area = 6,971 sf, Inflow Depth = 2.34" for 2YR event
Inflow = 0.44 cfs @ 12.07 hrs, Volume= 1,359 cf
Outflow = 0.44 cfs @ 12.07 hrs, Volume= 1,359 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.6 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.18' @ 12.07 hrs
Capacity at bank full= 6.35 cfs
Inlet Invert= 192.50', Outlet Invert= 192.25'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 11.0' Slope= 0.0227 '/'

Reach 37R: 12" RCP



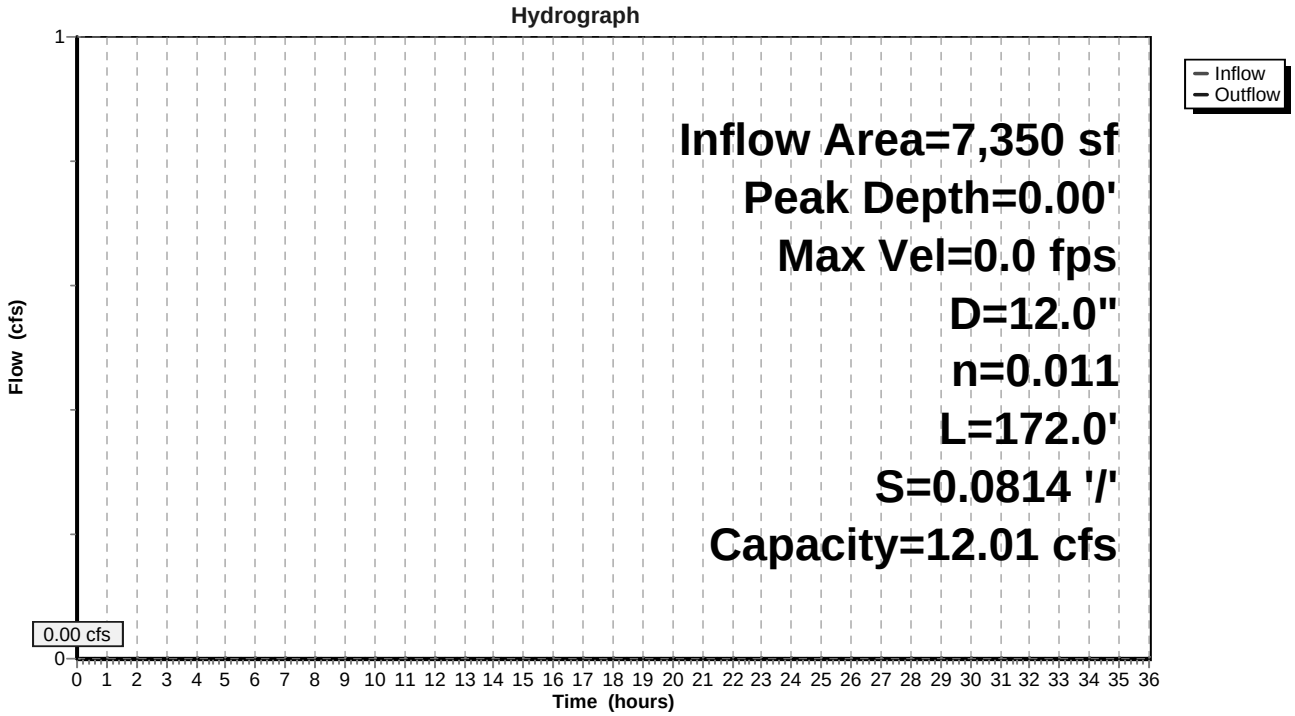
Reach 39R: 12" rcp

Inflow Area = 7,350 sf, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 12.01 cfs
Inlet Invert= 157.00', Outlet Invert= 143.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 172.0' Slope= 0.0814 '/'

Reach 39R: 12" rcp



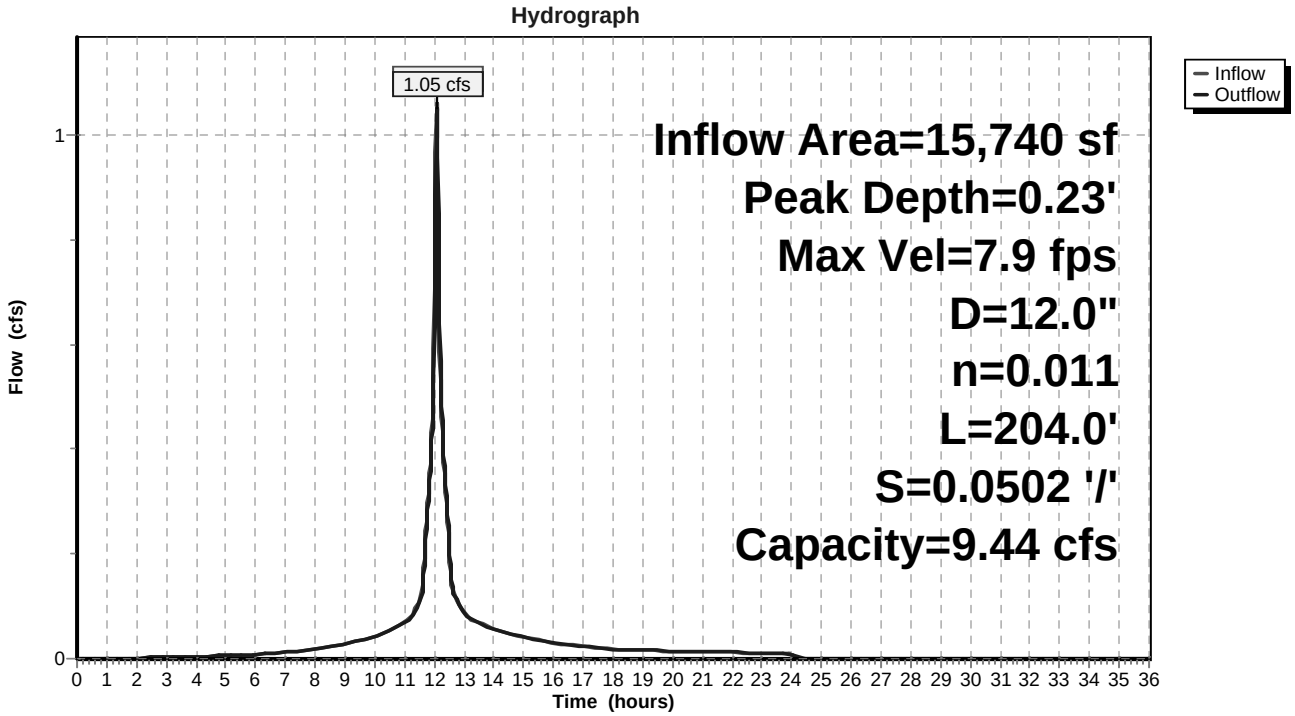
Reach 40R: 12" RCP

Inflow Area = 15,740 sf, Inflow Depth = 2.63" for 2YR event
Inflow = 1.06 cfs @ 12.07 hrs, Volume= 3,448 cf
Outflow = 1.05 cfs @ 12.08 hrs, Volume= 3,448 cf, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 7.9 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.23' @ 12.08 hrs
Capacity at bank full= 9.44 cfs
Inlet Invert= 192.25', Outlet Invert= 182.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 204.0' Slope= 0.0502 '/'

Reach 40R: 12" RCP



Pond 1P: WestSide D-Pond

Inflow Area = 91,739 sf, Inflow Depth = 0.26" for 2YR event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 1,987 cf
Outflow = 0.00 cfs @ 24.16 hrs, Volume= 1 cf, Atten= 99%, Lag= 724.5 min
Primary = 0.00 cfs @ 24.16 hrs, Volume= 1 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 178.50' @ 24.17 hrs Surf.Area= 899 sf Storage= 1,987 cf
Flood Elev= 177.00' Surf.Area= 598 sf Storage= 869 cf
Plug-Flow detention time= 736.1 min calculated for 1 cf (0% of inflow)
Center-of-Mass det. time= 528.0 min (1,455.1 - 927.1)

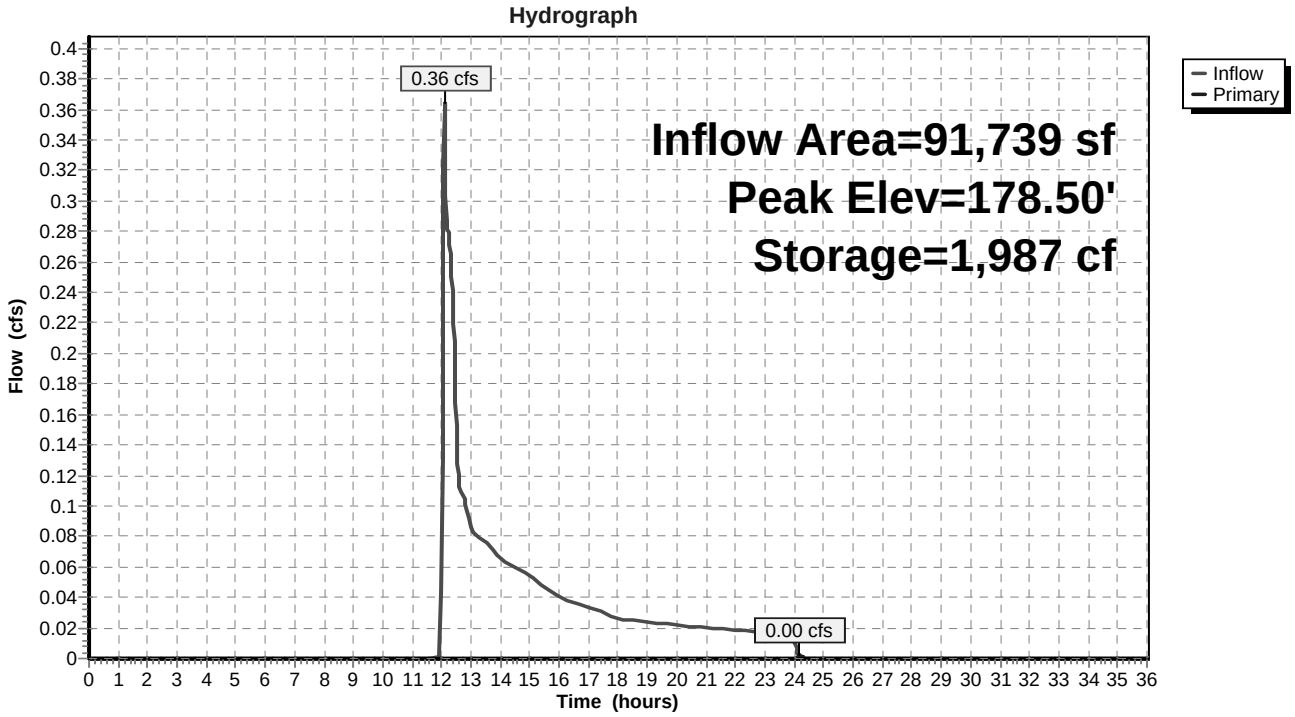
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	1,987 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.00	284	0	0
176.00	428	356	356
177.00	598	513	869
178.00	792	695	1,564
178.50	899	423	1,987

Device	Routing	Invert	Outlet Devices
#1	Primary	178.50'	**10.0' long x 110.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 24.16 hrs HW=178.50' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.00 cfs @ 0.1 fps)

Pond 1P: WestSide D-Pond



Pond 2P: CB

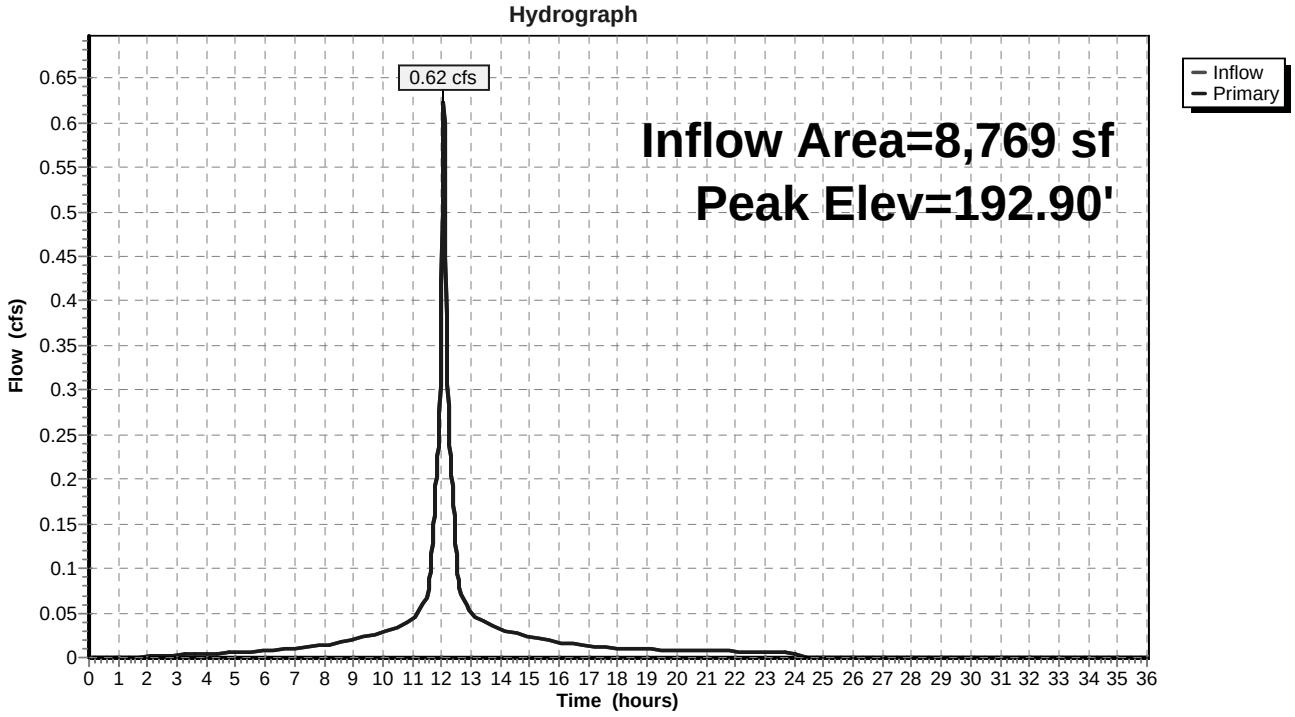
Inflow Area =	8,769 sf,	Inflow Depth =	2.86"	for	2YR event	
Inflow =	0.62 cfs @	12.07 hrs,	Volume=		2,088 cf	
Outflow =	0.62 cfs @	12.07 hrs,	Volume=		2,088 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.62 cfs @	12.07 hrs,	Volume=		2,088 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 192.90' @ 12.07 hrs
Flood Elev= 196.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	192.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.62 cfs @ 12.07 hrs HW=192.90' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.62 cfs @ 2.1 fps)

Pond 2P: CB



Pond 3P: MH

Inflow Area =	91,739 sf,	Inflow Depth =	0.26"	for	2YR event
Inflow =	0.37 cfs @	12.08 hrs,	Volume=	1,987 cf	
Outflow =	0.37 cfs @	12.08 hrs,	Volume=	1,987 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.37 cfs @	12.08 hrs,	Volume=	1,987 cf	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

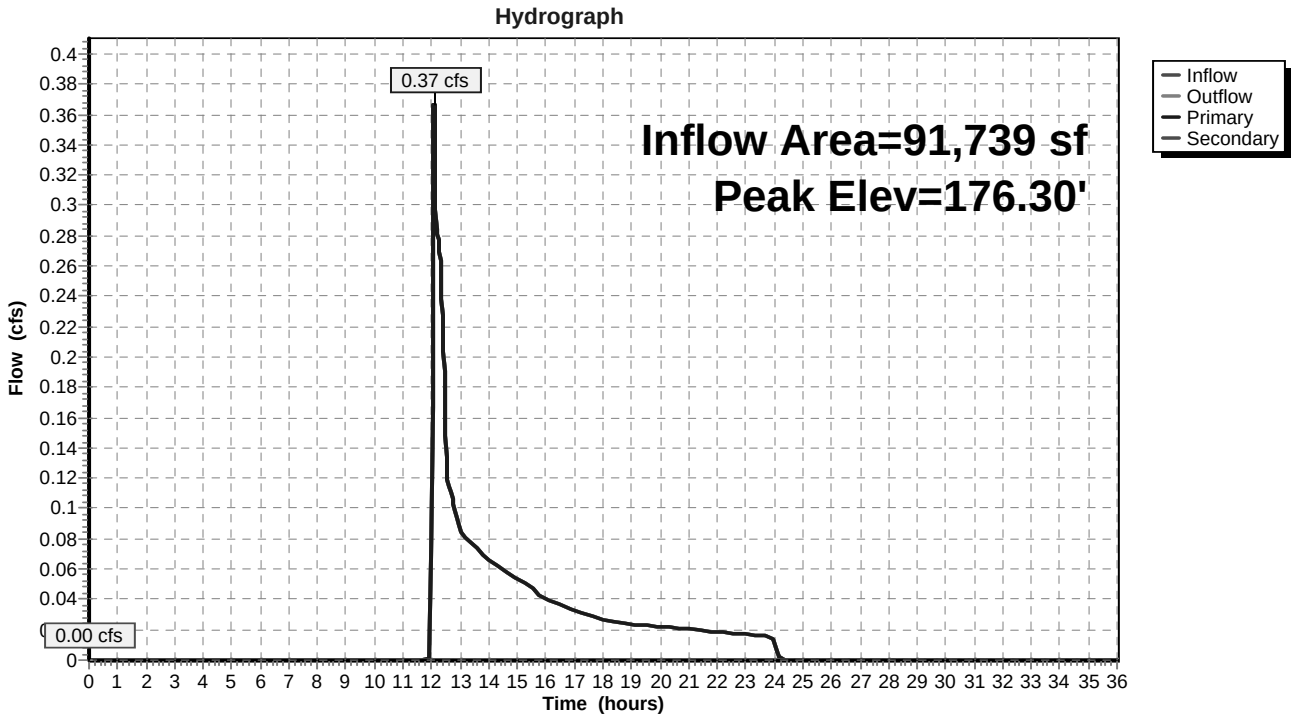
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 176.30' @ 12.08 hrs
Flood Elev= 180.30'
Plug-Flow detention time= 0.0 min calculated for 1,987 cf (100% of inflow)
Center-of-Mass det. time= 0.0 min (926.6 - 926.6)

Device	Routing	Invert	Outlet Devices
#1	Secondary	177.00'	**0.5' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	176.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.36 cfs @ 12.08 hrs HW=176.30' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 0.36 cfs @ 1.9 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=176.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: MH



Pond 4P: P-LB1

Inflow Area =	15,740 sf,	Inflow Depth =	2.63"	for	2YR event
Inflow =	1.05 cfs @	12.08 hrs,	Volume=	3,448 cf	
Outflow =	0.47 cfs @	12.25 hrs,	Volume=	3,449 cf,	Atten= 56%, Lag= 10.1 min
Discarded =	0.18 cfs @	11.68 hrs,	Volume=	3,262 cf	
Primary =	0.28 cfs @	12.25 hrs,	Volume=	187 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 182.26' @ 12.25 hrs Surf.Area= 133 sf Storage= 710 cf
Flood Elev= 186.00' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 18.7 min (790.8 - 772.2)

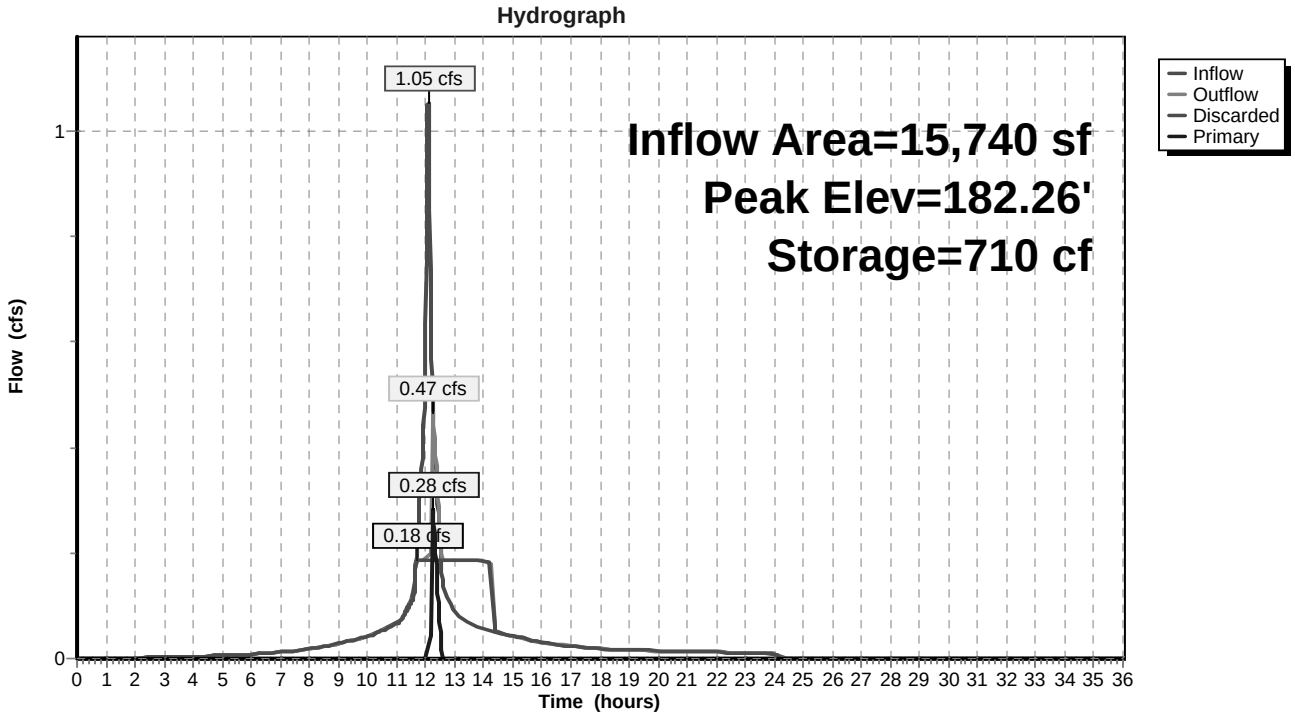
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	173.00'	370 cf	**13.00'D x 10.00'H BED OF STONE**
			1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	182.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.18 cfs @ 11.68 hrs HW=173.13' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.27 cfs @ 12.25 hrs HW=182.25' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 0.27 cfs @ 1.7 fps)

Pond 4P: P-LB1


Hydrograph
Inflow
Outflow
Discarded
Primary
1.05 cfs
0.47 cfs
0.28 cfs
0.18 cfs
Inflow Area=15,740 sf
Peak Elev=182.26'
Storage=710 cf
Flow (cfs)
Time (hours)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

Pond 5P: P-LB2

Inflow Area =	15,740 sf,	Inflow Depth =	0.14"	for 2YR event	
Inflow =	0.28 cfs @	12.25 hrs,	Volume=	187 cf	
Outflow =	0.18 cfs @	12.24 hrs,	Volume=	187 cf,	Atten= 34%, Lag= 0.0 min
Discarded =	0.18 cfs @	12.24 hrs,	Volume=	187 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 173.56' @ 12.36 hrs Surf.Area= 133 sf Storage= 30 cf
Flood Elev= 186.00' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= 1.7 min calculated for 187 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min (742.0 - 740.2)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	173.00'	370 cf	**13.00'D x 10.00'H BED OF STONE**
			1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

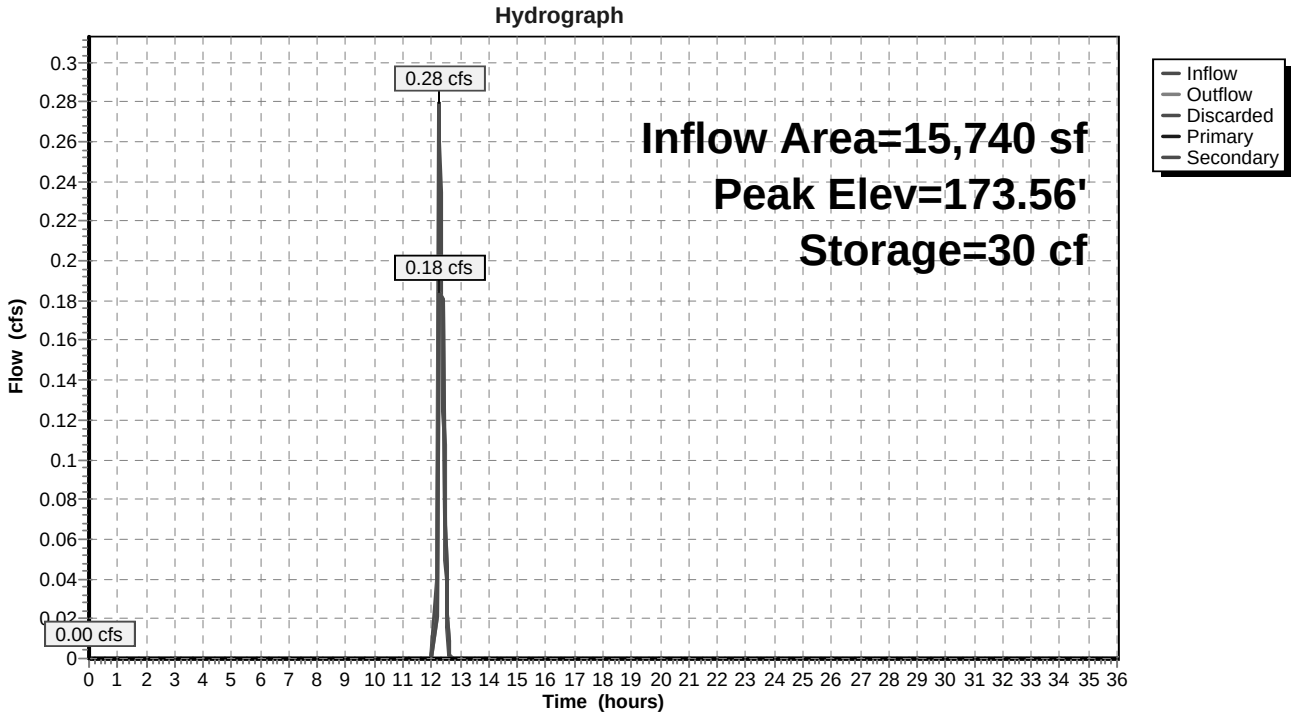
Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	181.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	181.75'	**12.0" x 15.0' long Culvert** RCP, groove end projecting, Ke= 0.200
			Outlet Invert= 181.50' S= 0.0167 '/' Cc= 0.900
			n= 0.011 Concrete pipe, straight & clean

Discarded OutFlow Max=0.18 cfs @ 12.24 hrs HW=173.14' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=173.00' (Free Discharge)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=173.00' (Free Discharge)
└─**3=Culvert** (Controls 0.00 cfs)

Pond 5P: P-LB2


Hydrograph
Inflow Area=15,740 sf
Peak Elev=173.56'
Storage=30 cf
0.28 cfs
0.18 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Pond 6P: LB1

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf, Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Secondary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 167.50' @ 0.00 hrs Surf.Area= 0.006 ac Storage= 0.000 af
Flood Elev= 180.00' Surf.Area= 0.007 ac Storage= 0.029 af
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	175.50'	0.005 af	**8.00'D x 4.50'H Vertical Cone/Cylinder**
#2	168.50'	0.008 af	**8.00'D x 7.00'H Vertical Cone/Cylinder** Inside #3
#3	167.50'	0.015 af	**18.00'D x 8.00'H Vertical Cone/Cylinder**
			0.047 af Overall - 0.008 af Embedded = 0.039 af x 40.0% Voids
		0.029 af	Total Available Storage

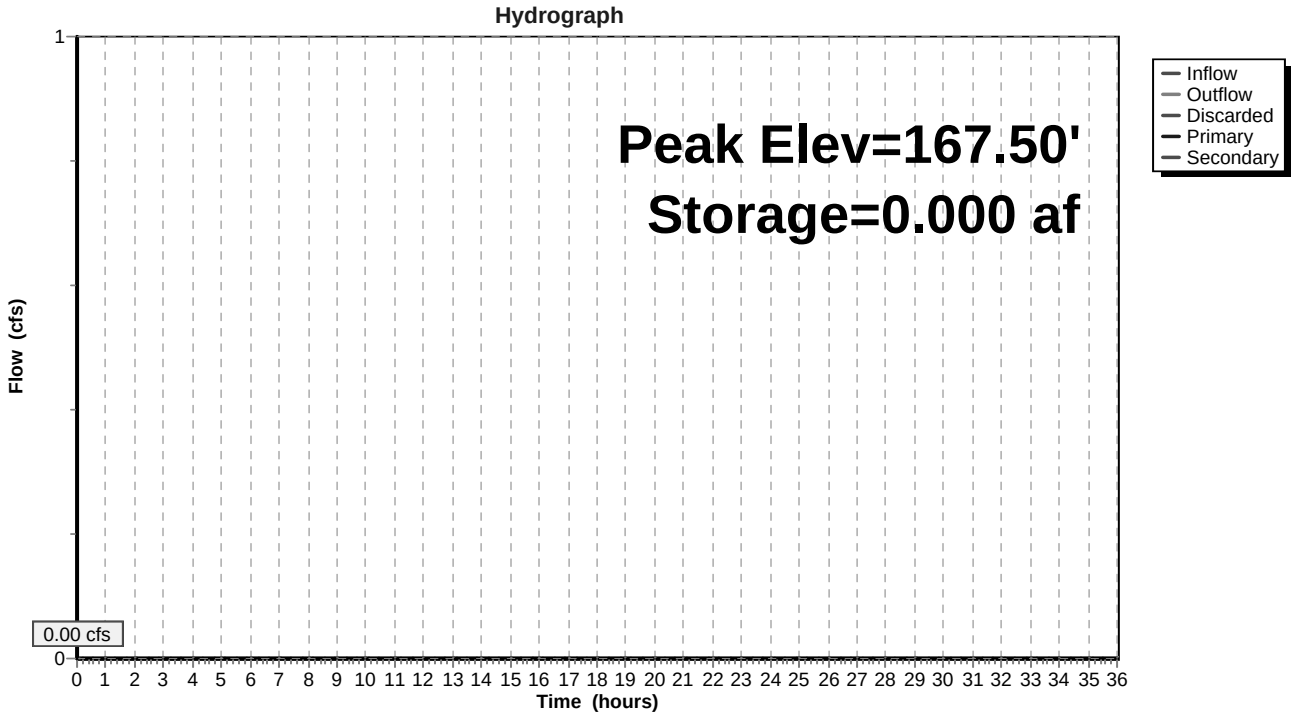
Device	Routing	Invert	Outlet Devices
#1	Primary	175.20'	**12.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	177.00'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.50' (Free Discharge)
└─**3=Exfiltration** (Passes 0.00 cfs of 0.35 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.50' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.50' (Free Discharge)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 6P: LB1


Hydrograph
Peak Elev=167.50'
Storage=0.000 af
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
1
0
0.00 cfs
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
Time (hours)

Pond 7P: LB2

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf, Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf

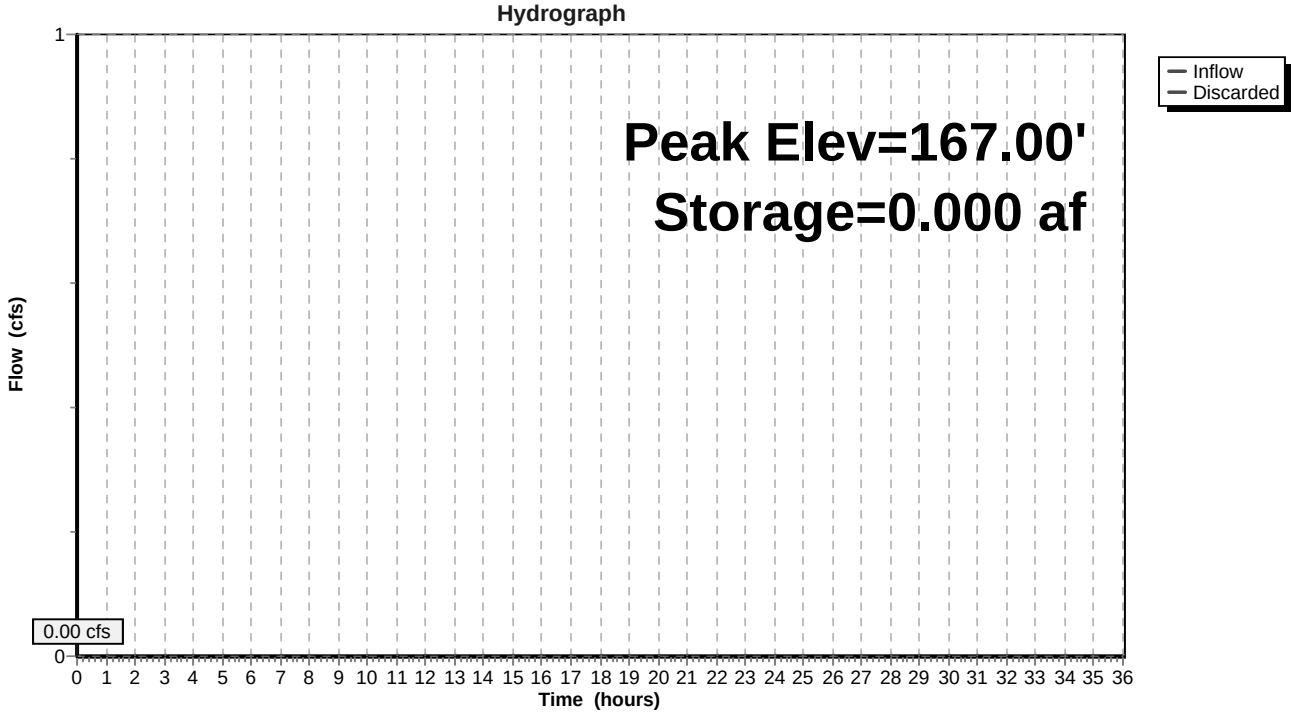
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 167.00' @ 0.00 hrs Surf.Area= 0.006 ac Storage= 0.000 af
Flood Elev= 180.50' Surf.Area= 0.007 ac Storage= 0.030 af
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	0.006 af	**8.00'D x 5.50'H Vertical Cone/Cylinder**
#2	168.30'	0.008 af	**8.00'D x 6.70'H Vertical Cone/Cylinder** Inside #3
#3	167.00'	0.016 af	**18.00'D x 8.00'H Vertical Cone/Cylinder**
			0.047 af Overall - 0.008 af Embedded = 0.039 af x 40.0% Voids
		0.030 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.35 cfs potential flow)

Pond 7P: LB2



Pond 12P: LB3

Inflow Area =	174,314 sf,	Inflow Depth =	0.00"	for 2YR event	
Inflow =	0.00 cfs @	24.16 hrs,	Volume=	4 cf	
Outflow =	0.00 cfs @	24.18 hrs,	Volume=	4 cf,	Atten= 19%, Lag= 1.0 min
Discarded =	0.00 cfs @	24.18 hrs,	Volume=	4 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 167.00' @ 24.18 hrs Surf.Area= 254 sf Storage= 0 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min (1,389.4 - 1,388.9)

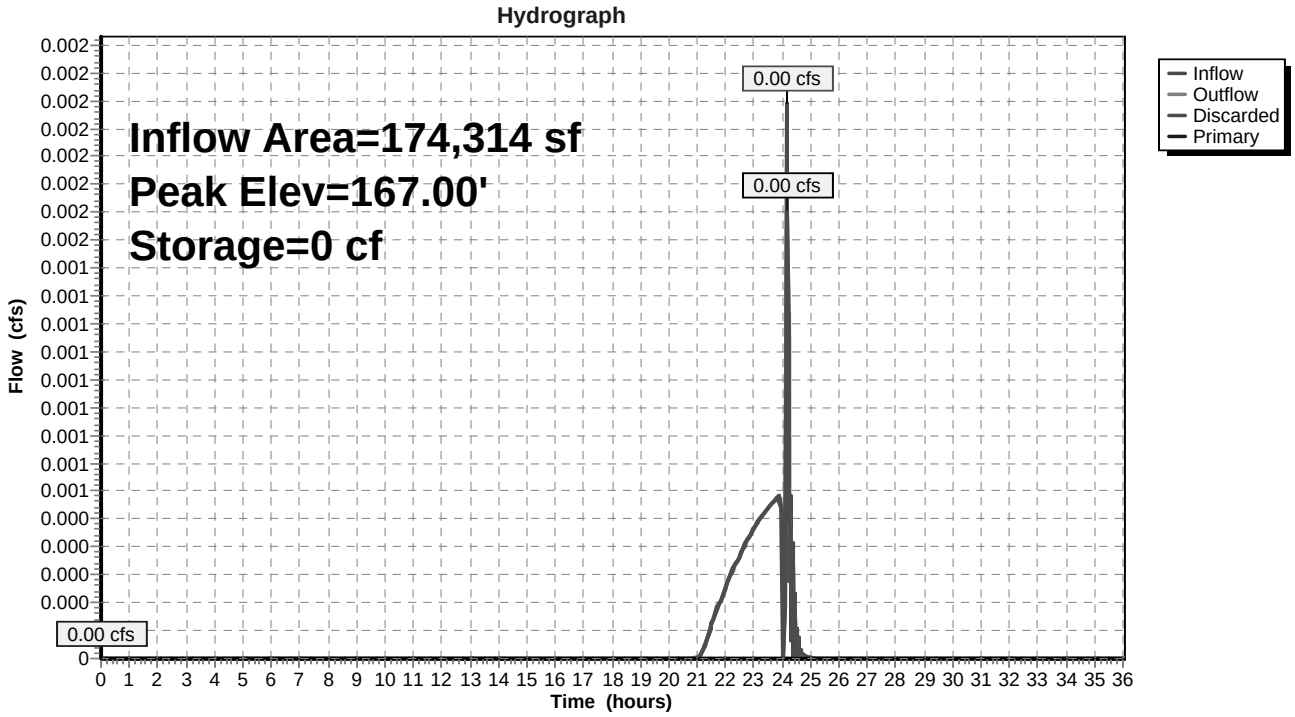
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	73 cf	**8.00'D x 1.45'H Vertical Cone/Cylinder**
#2	168.30'	337 cf	**8.00'D x 6.70'H Vertical Cone/Cylinder** Inside #3
#3	167.00'	680 cf	**18.00'D x 8.00'H Vertical Cone/Cylinder**
			2,036 cf Overall - 337 cf Embedded = 1,699 cf x 40.0% Voids
		1,089 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	176.45'	**2.0' long x 2.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50
			Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.35 cfs @ 24.18 hrs HW=167.00' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.35 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: LB3


Hydrograph
Inflow Area=174,314 sf
Peak Elev=167.00'
Storage=0 cf
0.00 cfs
0.00 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Pond 13P: MH

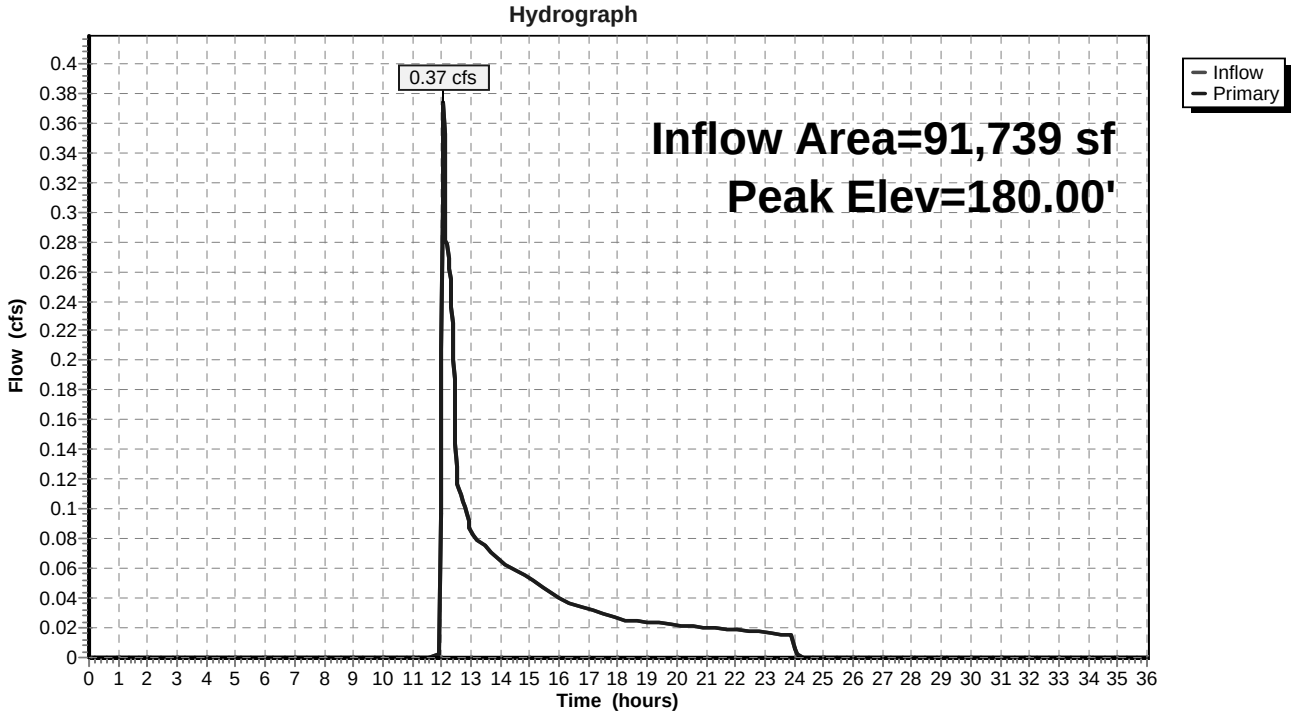
Inflow Area =	91,739 sf,	Inflow Depth =	0.26"	for	2YR event	
Inflow =	0.37 cfs @	12.06 hrs,	Volume=		1,987 cf	
Outflow =	0.37 cfs @	12.06 hrs,	Volume=		1,987 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.37 cfs @	12.06 hrs,	Volume=		1,987 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 180.00' @ 12.06 hrs
Flood Elev= 184.90'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	179.70'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.37 cfs @ 12.06 hrs HW=180.00' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.37 cfs @ 1.9 fps)

Pond 13P: MH



Pond 14P: P-MH

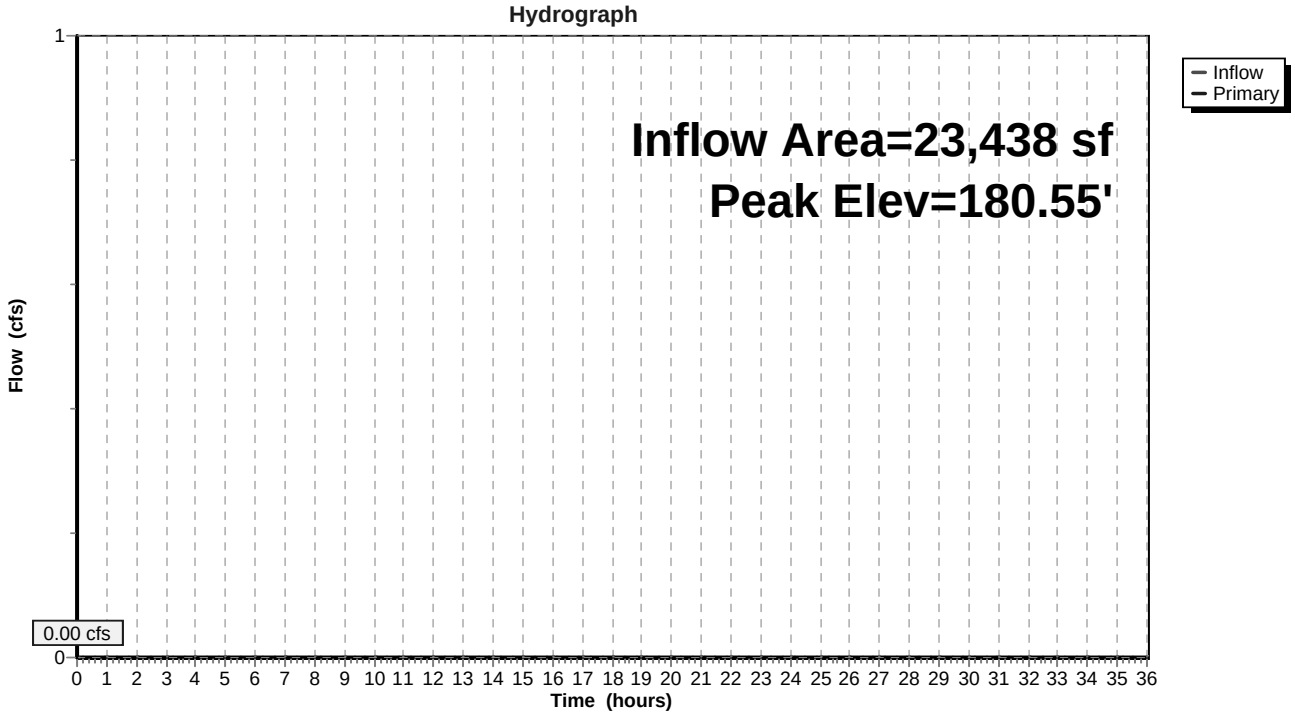
Inflow Area =	23,438 sf,	Inflow Depth =	0.00"	for	2YR event
Inflow =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	
Outflow =	0.00 cfs @	0.00 hrs,	Volume=	0 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 180.55' @ 0.00 hrs
Flood Elev= 186.00'
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	180.55'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=180.55' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 14P: P-MH



Pond 15P: (2) CB

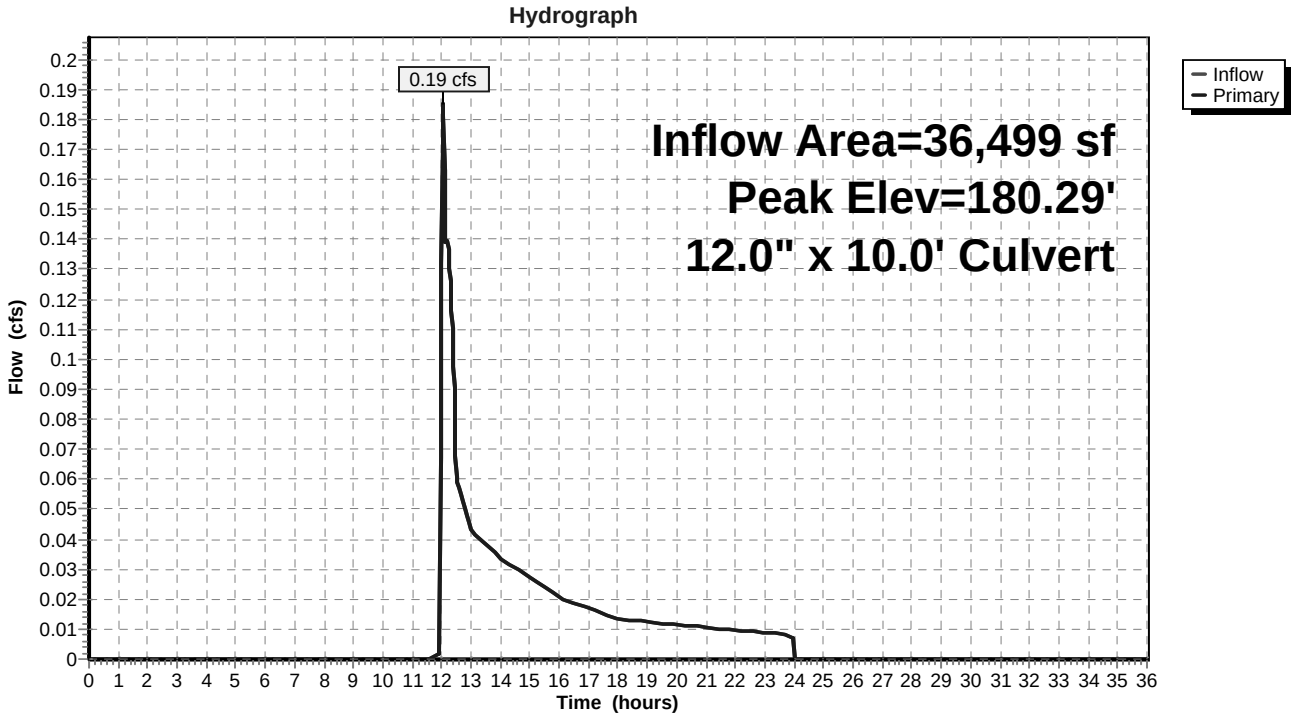
Inflow Area =	36,499 sf,	Inflow Depth =	0.33"	for	2YR event
Inflow =	0.19 cfs @	12.05 hrs,	Volume=	1,016 cf	
Outflow =	0.19 cfs @	12.05 hrs,	Volume=	1,016 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.19 cfs @	12.05 hrs,	Volume=	1,016 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 180.29' @ 12.05 hrs
Flood Elev= 184.90'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (926.2 - 926.2)

Device	Routing	Invert	Outlet Devices
#1	Primary	180.15'	**12.0" x 10.0' long Culvert X 2.00** RCP, groove end projecting, Ke= 0.200 Outlet Invert= 179.80' S= 0.0350 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.18 cfs @ 12.05 hrs HW=180.29' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.18 cfs @ 2.1 fps)

Pond 15P: (2) CB



Pond 17P: MH

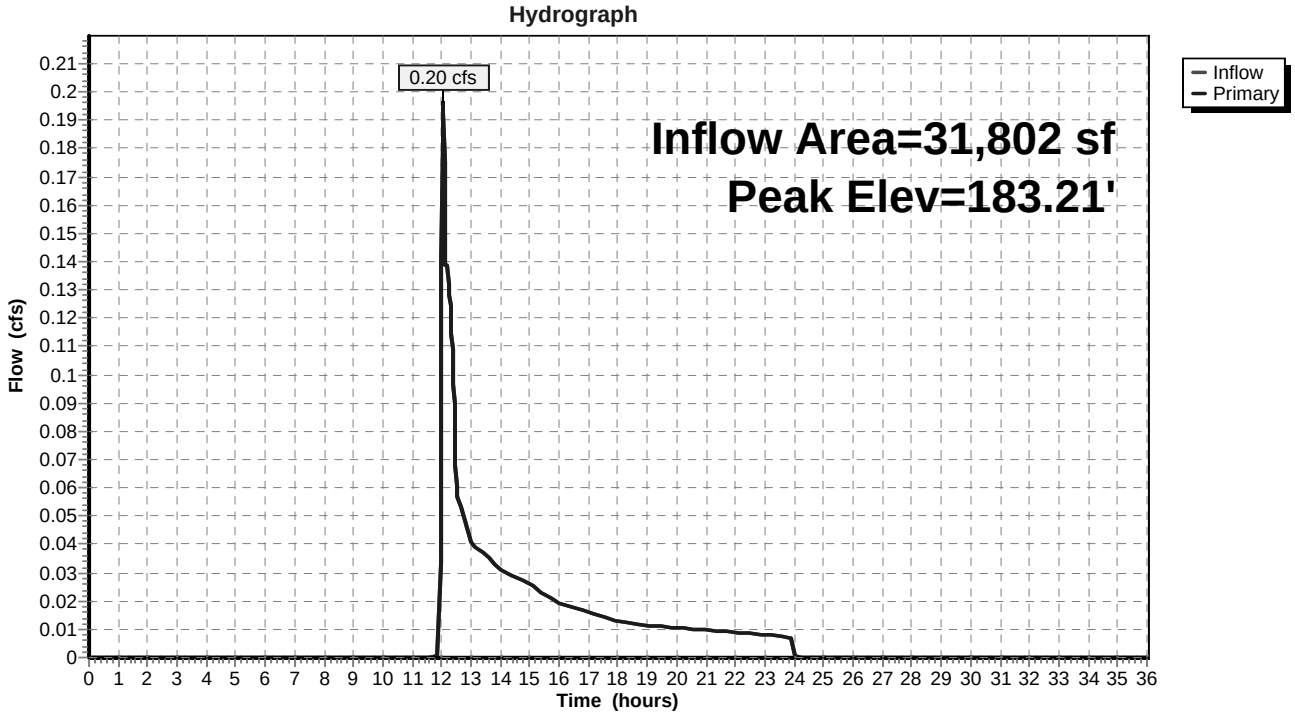
Inflow Area =	31,802 sf,	Inflow Depth =	0.37"	for	2YR event	
Inflow =	0.20 cfs @	12.05 hrs,	Volume=		971 cf	
Outflow =	0.20 cfs @	12.05 hrs,	Volume=		971 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.20 cfs @	12.05 hrs,	Volume=		971 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 183.21' @ 12.05 hrs
Flood Elev= 188.05'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	183.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.19 cfs @ 12.05 hrs HW=183.21' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.19 cfs @ 1.6 fps)

Pond 17P: MH



Pond 18P: CB

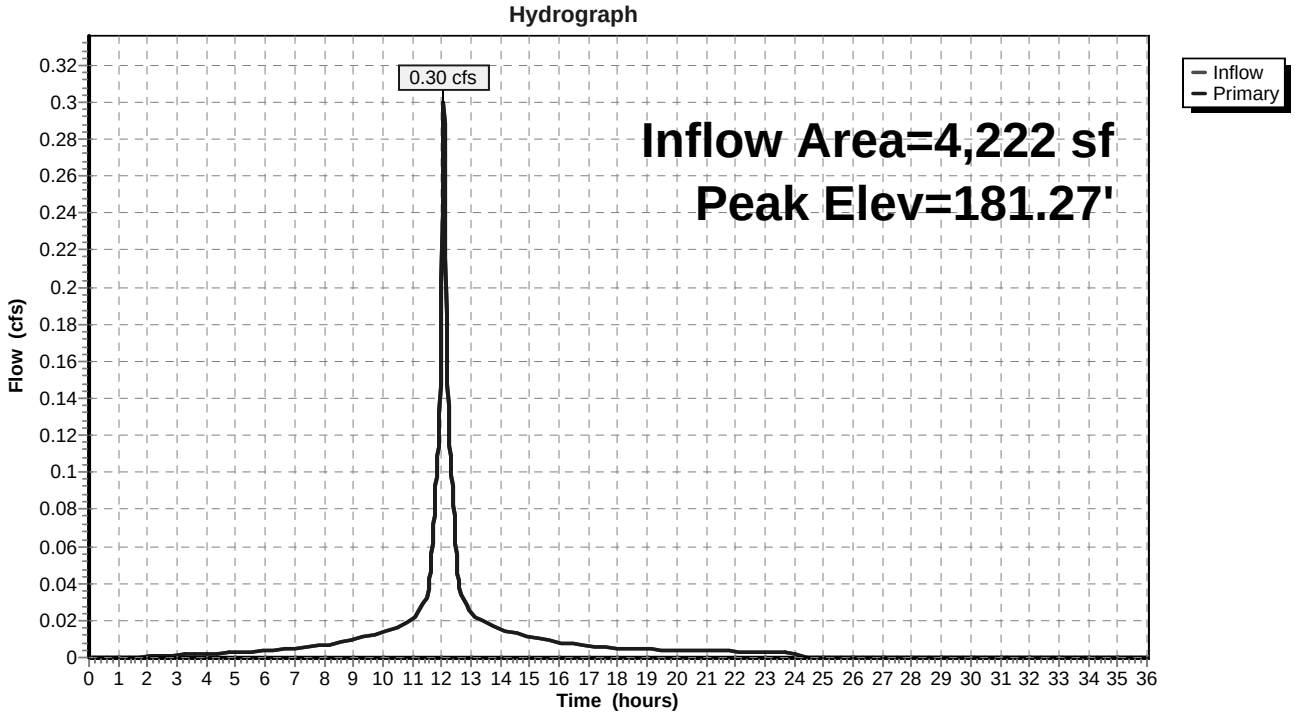
Inflow Area =	4,222 sf,	Inflow Depth =	2.86"	for	2YR event
Inflow =	0.30 cfs @	12.07 hrs,	Volume=	1,006 cf	
Outflow =	0.30 cfs @	12.07 hrs,	Volume=	1,006 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.30 cfs @	12.07 hrs,	Volume=	1,006 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 181.27' @ 12.07 hrs
Flood Elev= 185.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (756.2 - 756.2)

Device	Routing	Invert	Outlet Devices
#1	Primary	181.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.30 cfs @ 12.07 hrs HW=181.27' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.30 cfs @ 1.8 fps)

Pond 18P: CB



Pond 20P: (2) CB

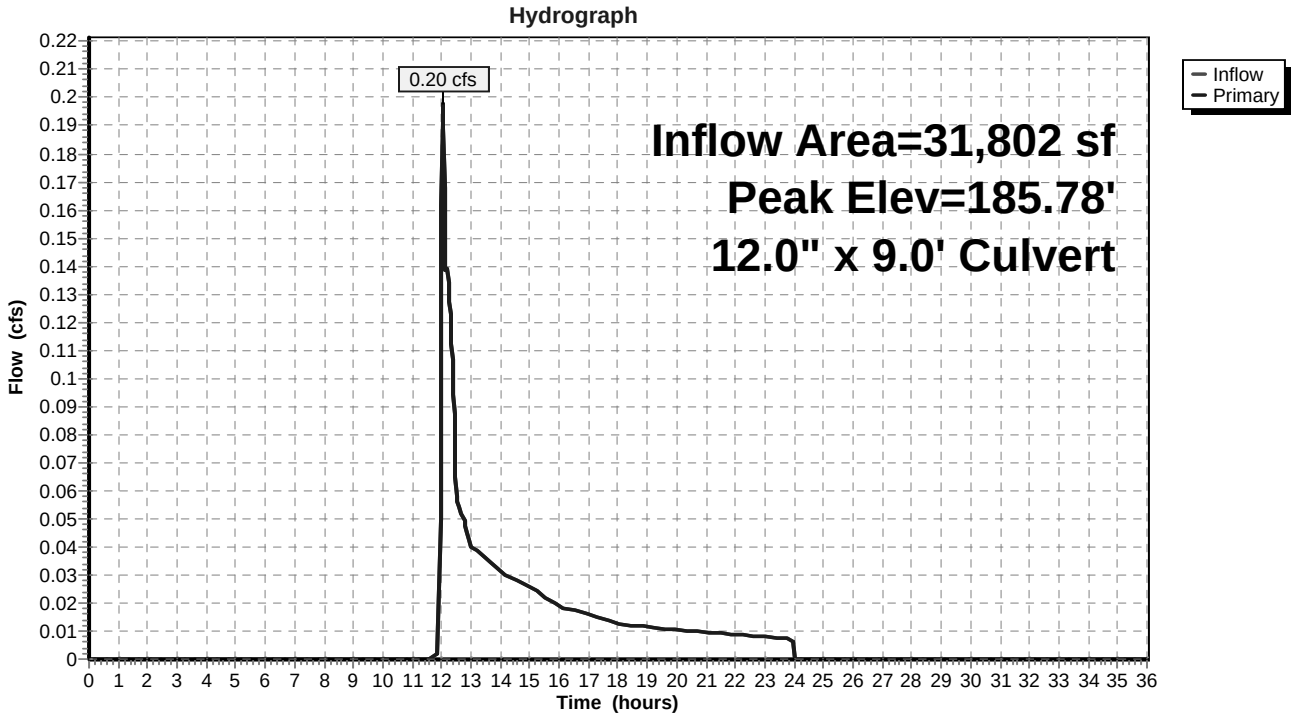
Inflow Area =	31,802 sf,	Inflow Depth =	0.37"	for	2YR event
Inflow =	0.20 cfs @	12.04 hrs,	Volume=	971 cf	
Outflow =	0.20 cfs @	12.04 hrs,	Volume=	971 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.20 cfs @	12.04 hrs,	Volume=	971 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 185.78' @ 12.04 hrs
Flood Elev= 190.14'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (919.8 - 919.8)

Device	Routing	Invert	Outlet Devices
#1	Primary	185.65'	**12.0" x 9.0' long Culvert X 2.00** RCP, groove end projecting, Ke= 0.200 Outlet Invert= 185.40' S= 0.0278 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.20 cfs @ 12.04 hrs HW=185.78' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.20 cfs @ 1.6 fps)

Pond 20P: (2) CB



Pond 21P: P-LB3

Inflow Area =	7,698 sf,	Inflow Depth =	2.86"	for	2YR event
Inflow =	0.55 cfs @	12.07 hrs,	Volume=	1,833 cf	
Outflow =	0.18 cfs @	11.86 hrs,	Volume=	1,834 cf,	Atten= 66%, Lag= 0.0 min
Discarded =	0.18 cfs @	11.86 hrs,	Volume=	1,834 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 175.81' @ 12.33 hrs Surf.Area= 133 sf Storage= 236 cf
Flood Elev= 182.25' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.3 min (761.6 - 756.3)

Volume	Invert	Avail.Storage	Storage Description
#1	174.25'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	172.25'	370 cf	**13.00'D x 10.00'H BED OF STONE** 1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

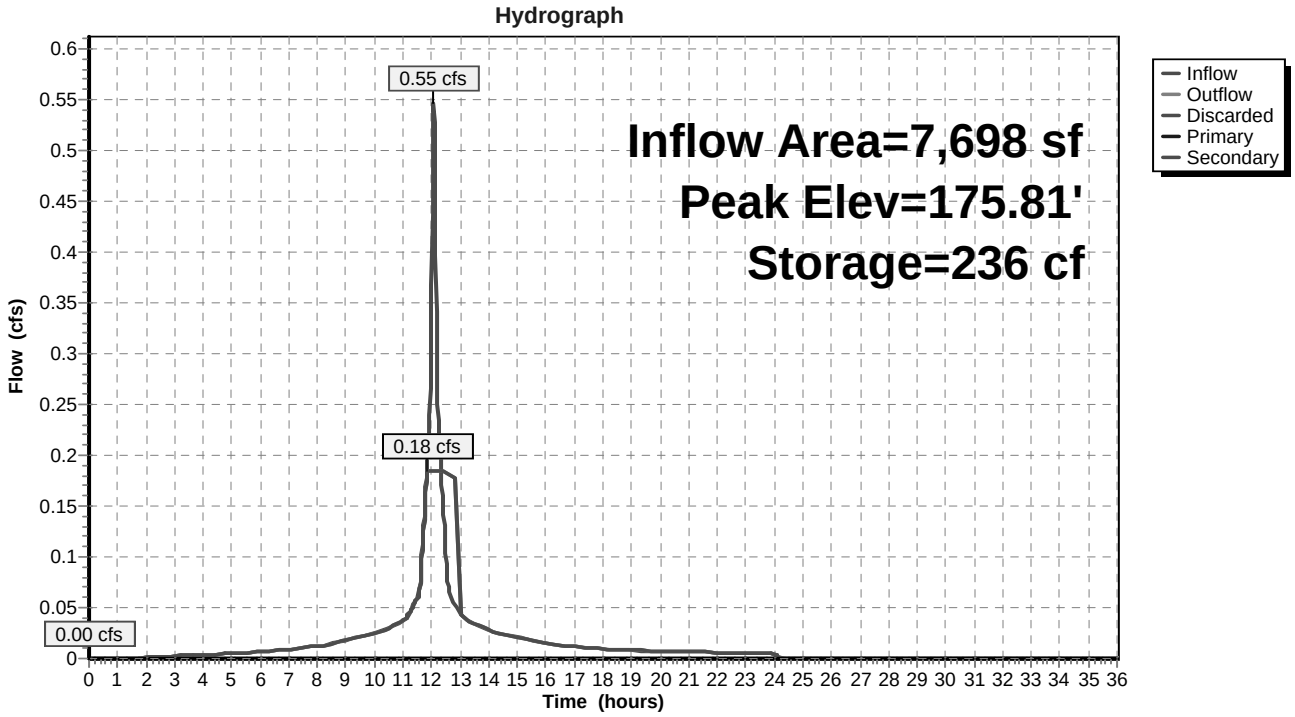
Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	180.75'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	181.25'	**12.0" x 246.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 157.25' S= 0.0976 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Discarded OutFlow Max=0.18 cfs @ 11.86 hrs HW=172.36' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=172.25' (Free Discharge)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=172.25' (Free Discharge)
└─**3=Culvert** (Controls 0.00 cfs)

Pond 21P: P-LB3



Pond 26P: MH

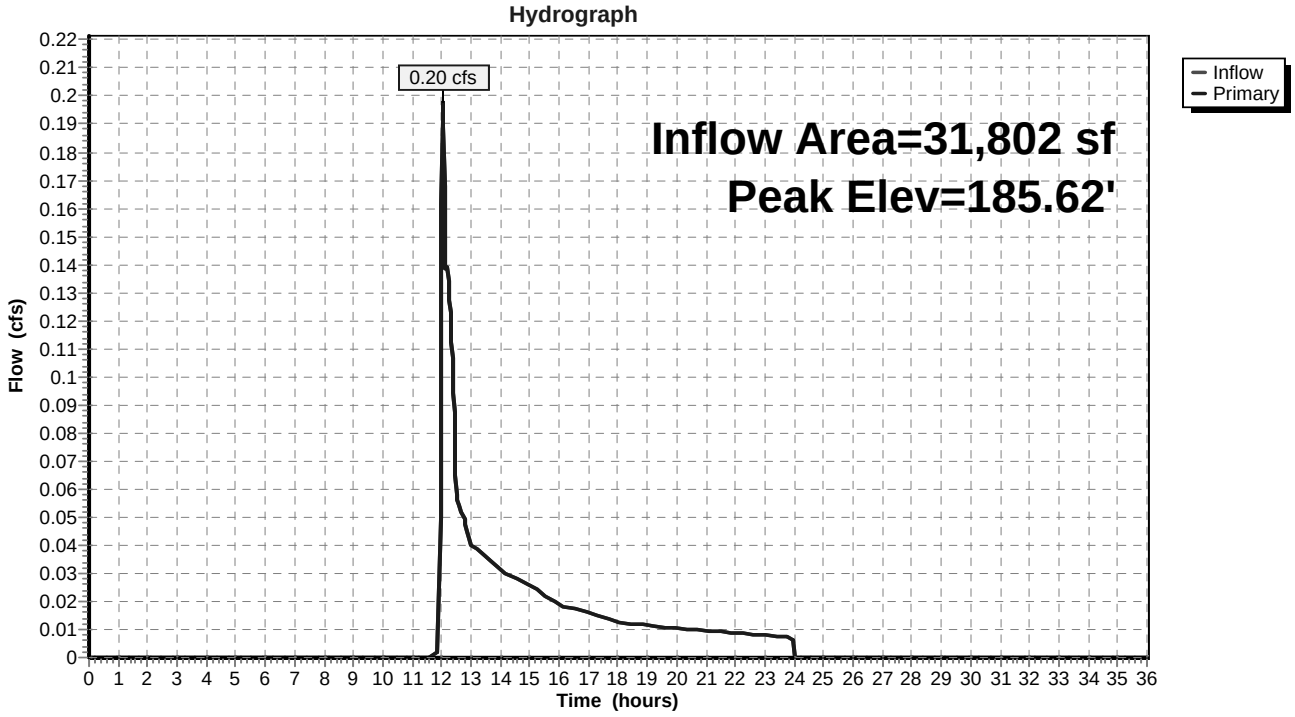
Inflow Area = 31,802 sf, Inflow Depth = 0.37" for 2YR event
Inflow = 0.20 cfs @ 12.04 hrs, Volume= 971 cf
Outflow = 0.20 cfs @ 12.04 hrs, Volume= 971 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.04 hrs, Volume= 971 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 185.62' @ 12.04 hrs
Flood Elev= 190.08'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	185.40'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.20 cfs @ 12.04 hrs HW=185.61' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.6 fps)

Pond 26P: MH



Pond 27P: NEW CB

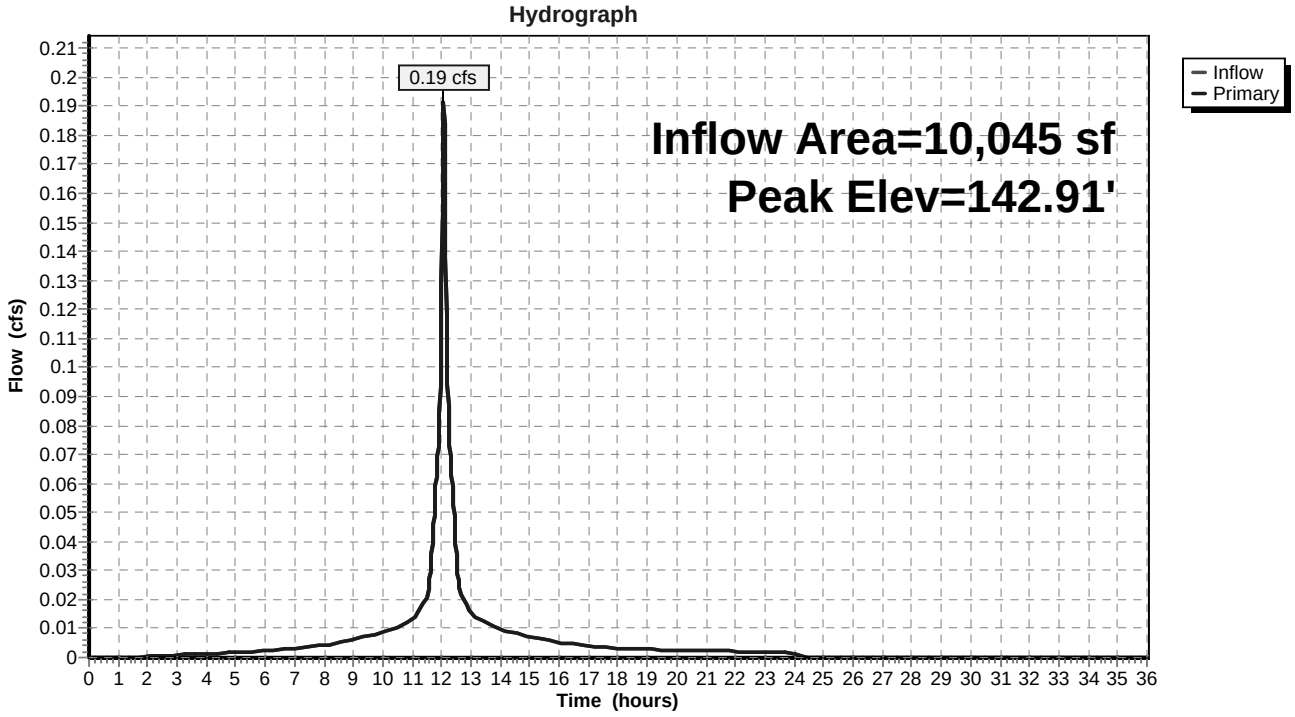
Inflow Area =	10,045 sf,	Inflow Depth =	0.77"	for	2YR event
Inflow =	0.19 cfs @	12.07 hrs,	Volume=	642 cf	
Outflow =	0.19 cfs @	12.07 hrs,	Volume=	642 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.19 cfs @	12.07 hrs,	Volume=	642 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 142.91' @ 12.07 hrs
Flood Elev= 146.98'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.19 cfs @ 12.07 hrs HW=142.91' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.19 cfs @ 1.6 fps)

Pond 27P: NEW CB



Pond 28P: CB

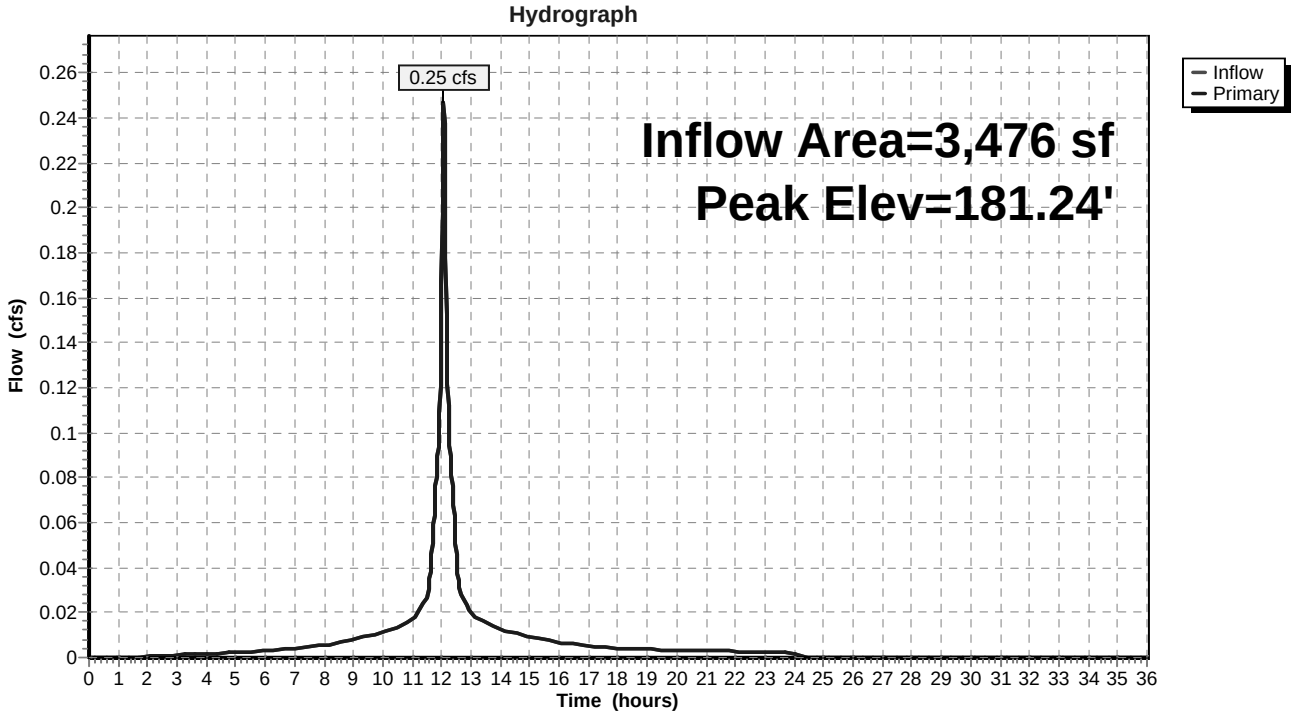
Inflow Area =	3,476 sf,	Inflow Depth =	2.86"	for	2YR event
Inflow =	0.25 cfs @	12.07 hrs,	Volume=	828 cf	
Outflow =	0.25 cfs @	12.07 hrs,	Volume=	828 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.25 cfs @	12.07 hrs,	Volume=	828 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 181.24' @ 12.07 hrs
Flood Elev= 185.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	181.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.24 cfs @ 12.07 hrs HW=181.24' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.24 cfs @ 1.7 fps)

Pond 28P: CB



Pond 29P: NEW CB

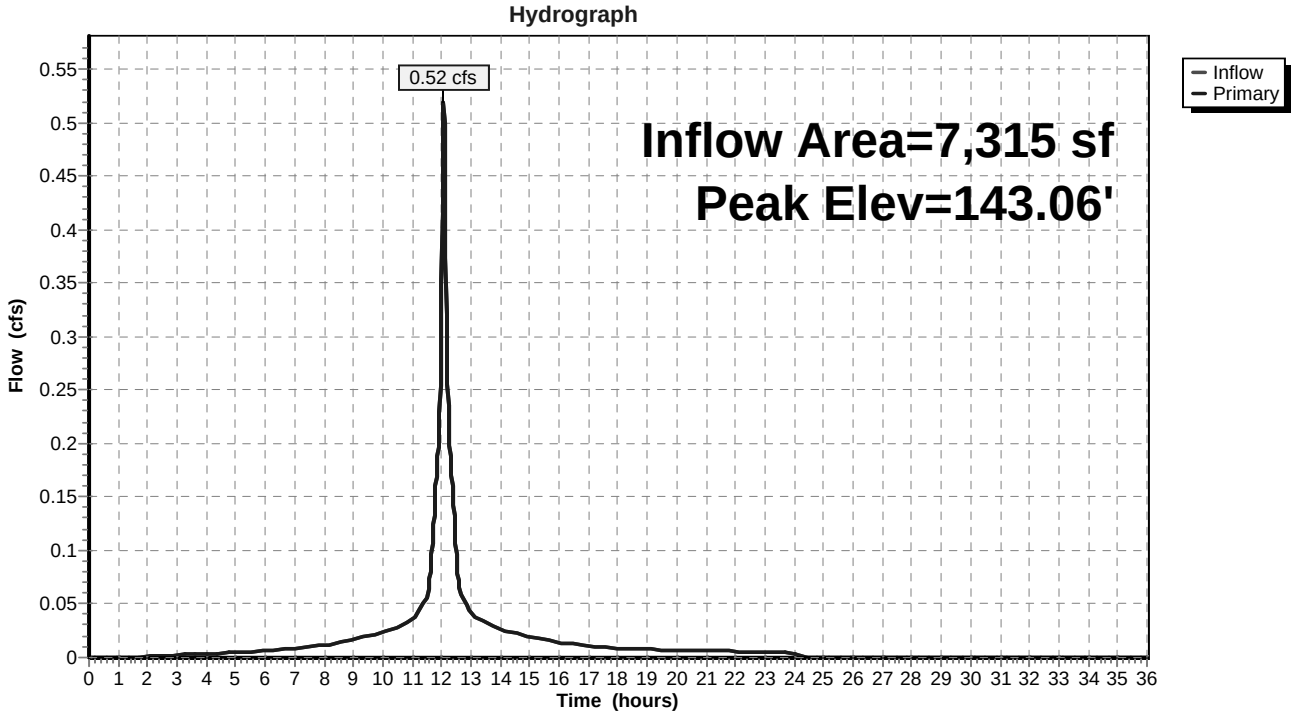
Inflow Area =	7,315 sf,	Inflow Depth =	2.86"	for	2YR event	
Inflow =	0.52 cfs @	12.07 hrs,	Volume=		1,742 cf	
Outflow =	0.52 cfs @	12.07 hrs,	Volume=		1,742 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.52 cfs @	12.07 hrs,	Volume=		1,742 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 143.06' @ 12.07 hrs
Flood Elev= 145.60'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (756.2 - 756.2)

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.51 cfs @ 12.07 hrs HW=143.06' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.51 cfs @ 2.0 fps)

Pond 29P: NEW CB



Pond 30P: STC

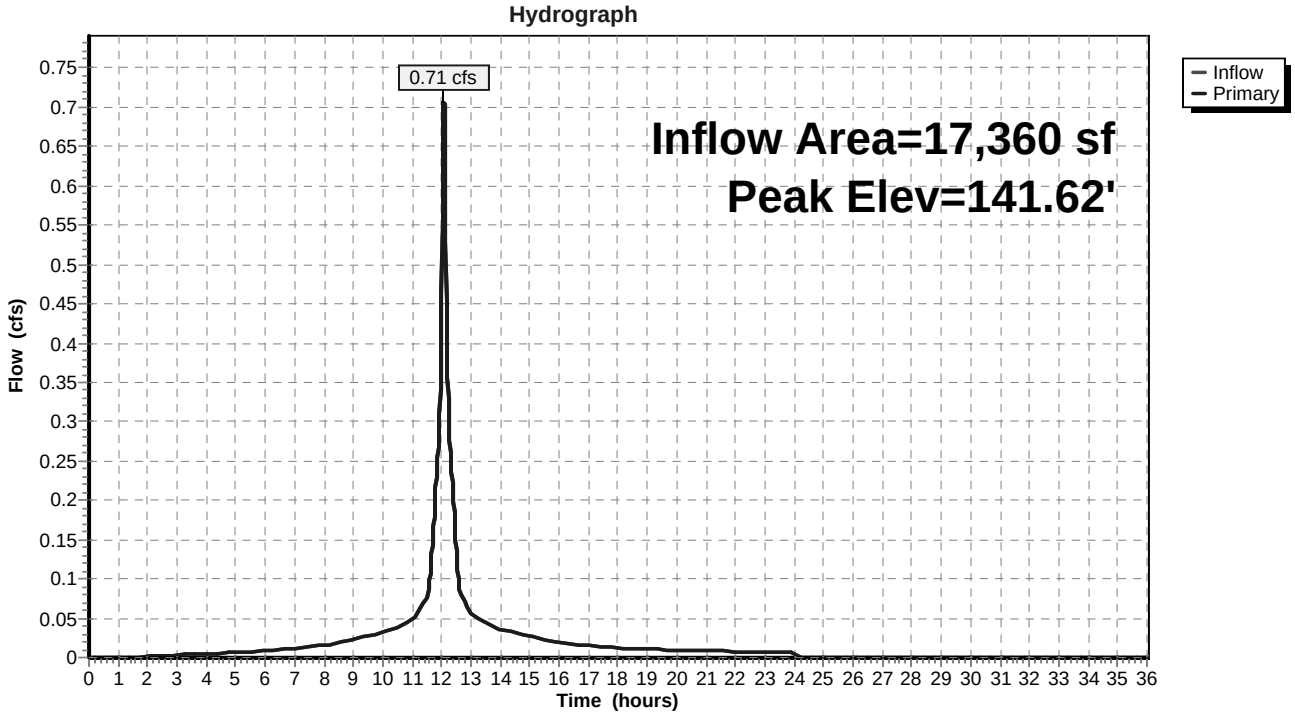
Inflow Area =	17,360 sf,	Inflow Depth =	1.65"	for	2YR event	
Inflow =	0.71 cfs @	12.07 hrs,	Volume=		2,384 cf	
Outflow =	0.71 cfs @	12.07 hrs,	Volume=		2,384 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.71 cfs @	12.07 hrs,	Volume=		2,384 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 141.62' @ 12.07 hrs
Flood Elev= 145.60'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	141.20'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.70 cfs @ 12.07 hrs HW=141.62' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.70 cfs @ 2.2 fps)

Pond 30P: STC



Pond 31P: CB

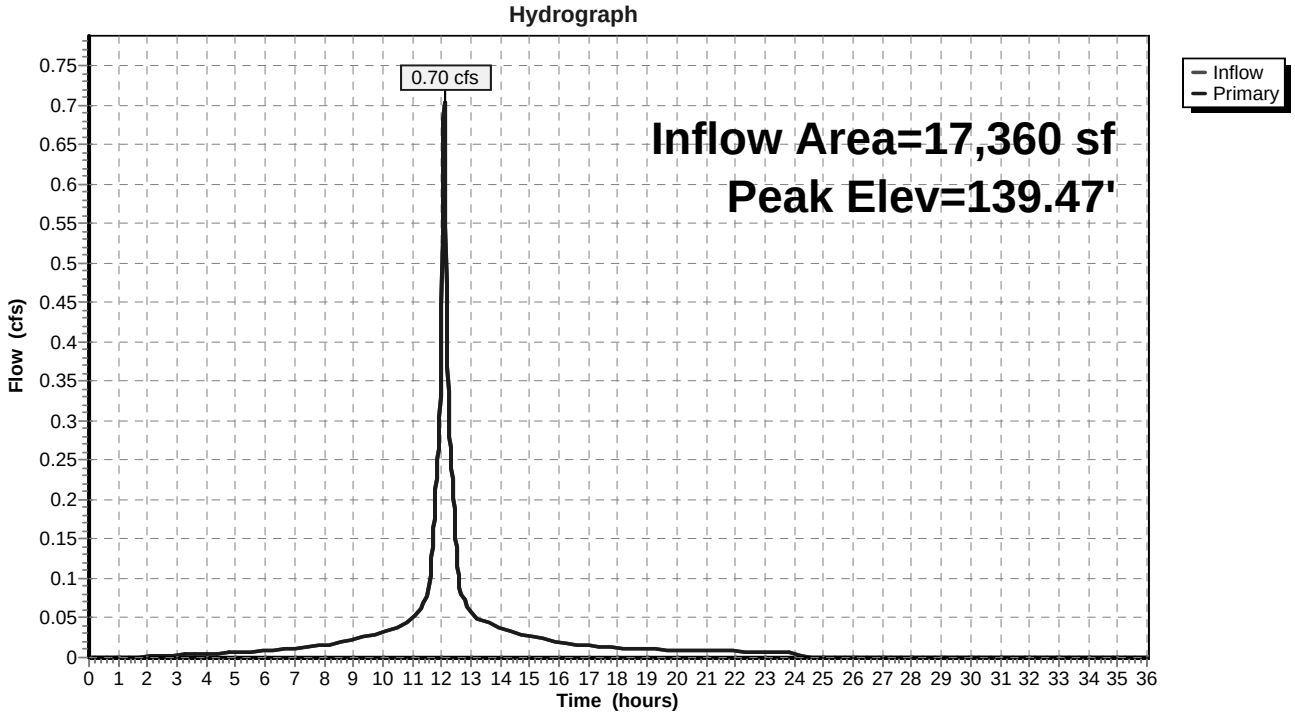
Inflow Area = 17,360 sf, Inflow Depth = 1.65" for 2YR event
Inflow = 0.70 cfs @ 12.08 hrs, Volume= 2,384 cf
Outflow = 0.70 cfs @ 12.08 hrs, Volume= 2,384 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.08 hrs, Volume= 2,384 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 139.47' @ 12.08 hrs
Flood Elev= 142.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (757.2 - 757.2)

Device	Routing	Invert	Outlet Devices
#1	Primary	139.05'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.70 cfs @ 12.08 hrs HW=139.47' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.70 cfs @ 2.2 fps)

Pond 31P: CB



Pond 32P: CB

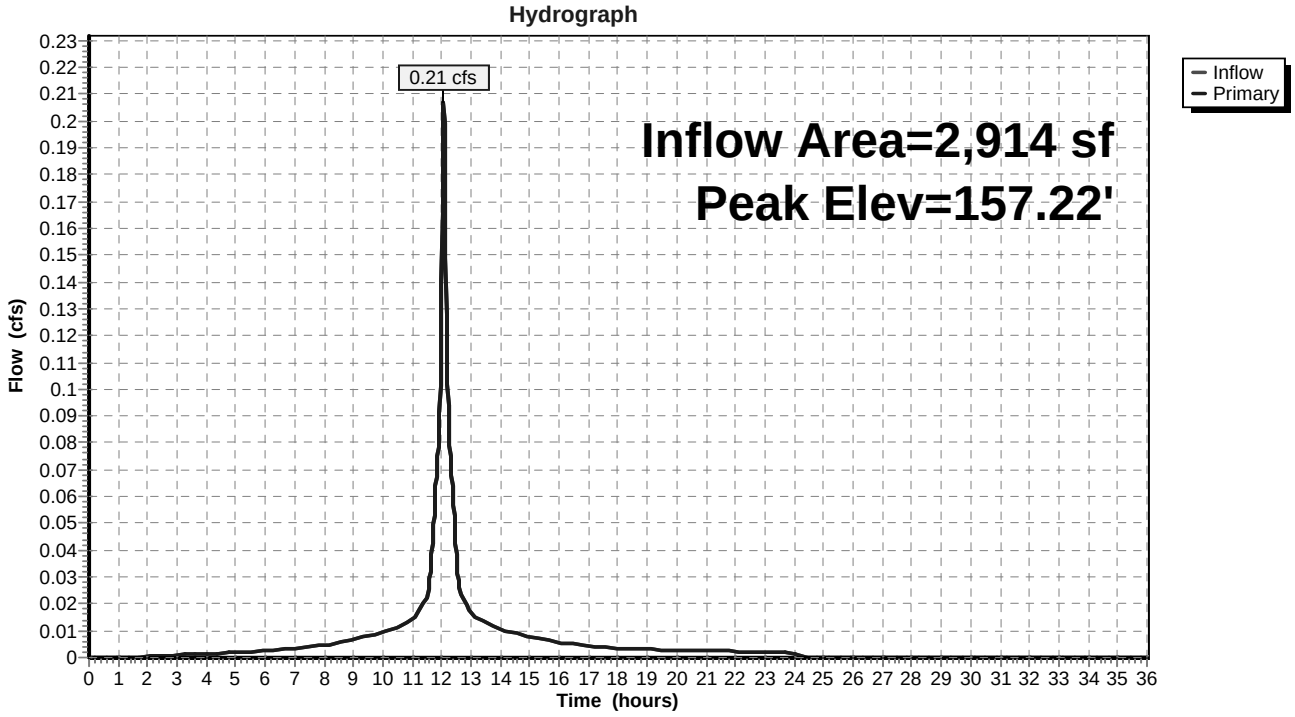
Inflow Area =	2,914 sf,	Inflow Depth =	2.86"	for	2YR event
Inflow =	0.21 cfs @	12.07 hrs,	Volume=	694 cf	
Outflow =	0.21 cfs @	12.07 hrs,	Volume=	694 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.21 cfs @	12.07 hrs,	Volume=	694 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 157.22' @ 12.07 hrs
Flood Elev= 161.50'
Plug-Flow detention time= 0.0 min calculated for 694 cf (100% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	157.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.20 cfs @ 12.07 hrs HW=157.22' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.6 fps)

Pond 32P: CB



Pond 35P: P-LB4

Inflow Area =	7,350 sf,	Inflow Depth =	2.86"	for	2YR event	
Inflow =	0.52 cfs @	12.07 hrs,	Volume=		1,750 cf	
Outflow =	0.18 cfs @	11.86 hrs,	Volume=		1,751 cf,	Atten= 65%, Lag= 0.0 min
Discarded =	0.18 cfs @	11.86 hrs,	Volume=		1,751 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=		0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 152.26' @ 12.31 hrs Surf.Area= 133 sf Storage= 211 cf
Flood Elev= 159.00' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.6 min (761.0 - 756.3)

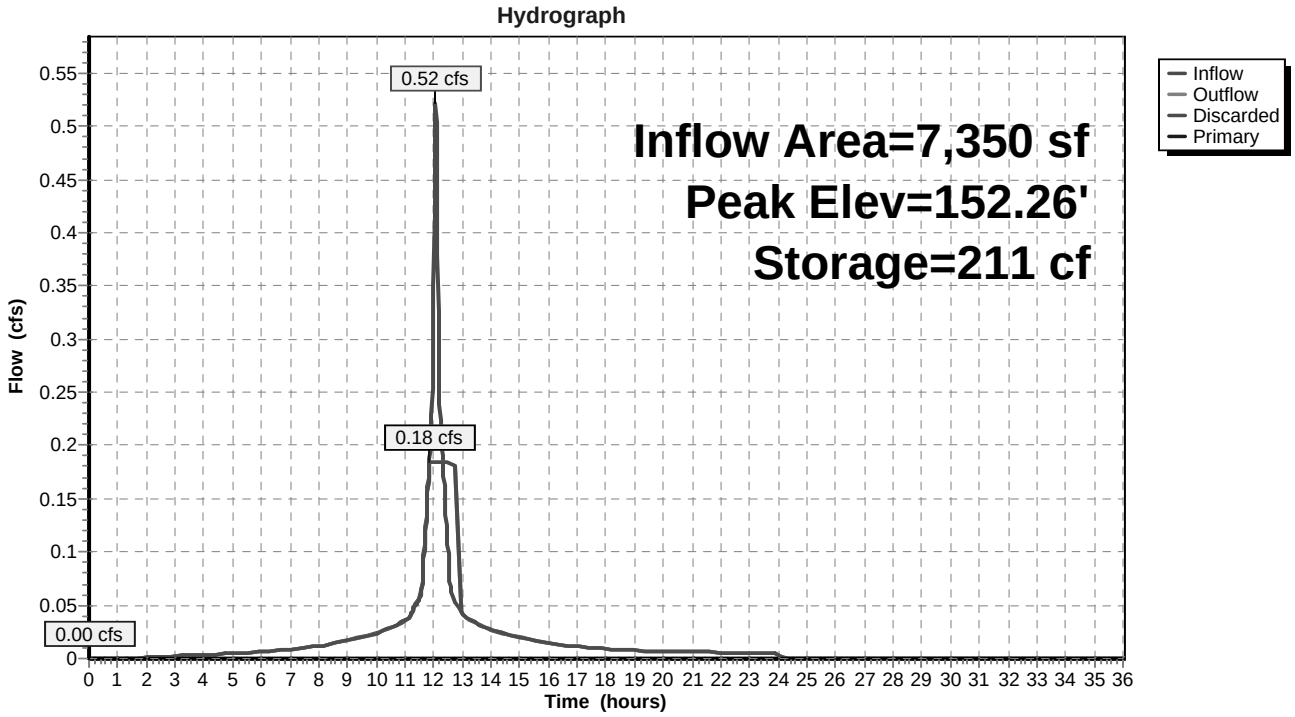
Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	149.00'	370 cf	**13.00'D x 10.00'H BED OF STONE**
			1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	157.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.18 cfs @ 11.86 hrs HW=149.10' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=149.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 35P: P-LB4



Pond 36P: CB

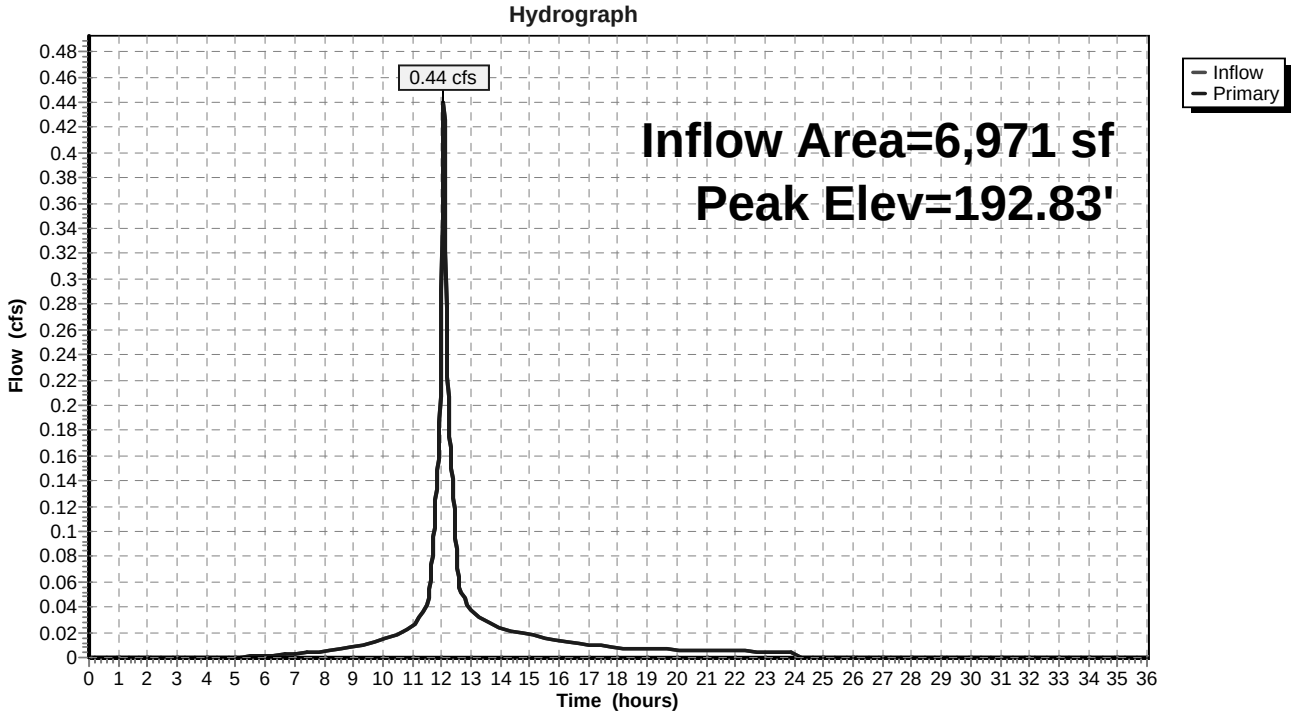
Inflow Area =	6,971 sf,	Inflow Depth =	2.34"	for	2YR event	
Inflow =	0.44 cfs @	12.07 hrs,	Volume=		1,359 cf	
Outflow =	0.44 cfs @	12.07 hrs,	Volume=		1,359 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.44 cfs @	12.07 hrs,	Volume=		1,359 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 192.83' @ 12.07 hrs
Flood Elev= 196.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (793.0 - 793.0)

Device	Routing	Invert	Outlet Devices
#1	Primary	192.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.44 cfs @ 12.07 hrs HW=192.83' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.44 cfs @ 1.9 fps)

Pond 36P: CB



Pond 37P: CB

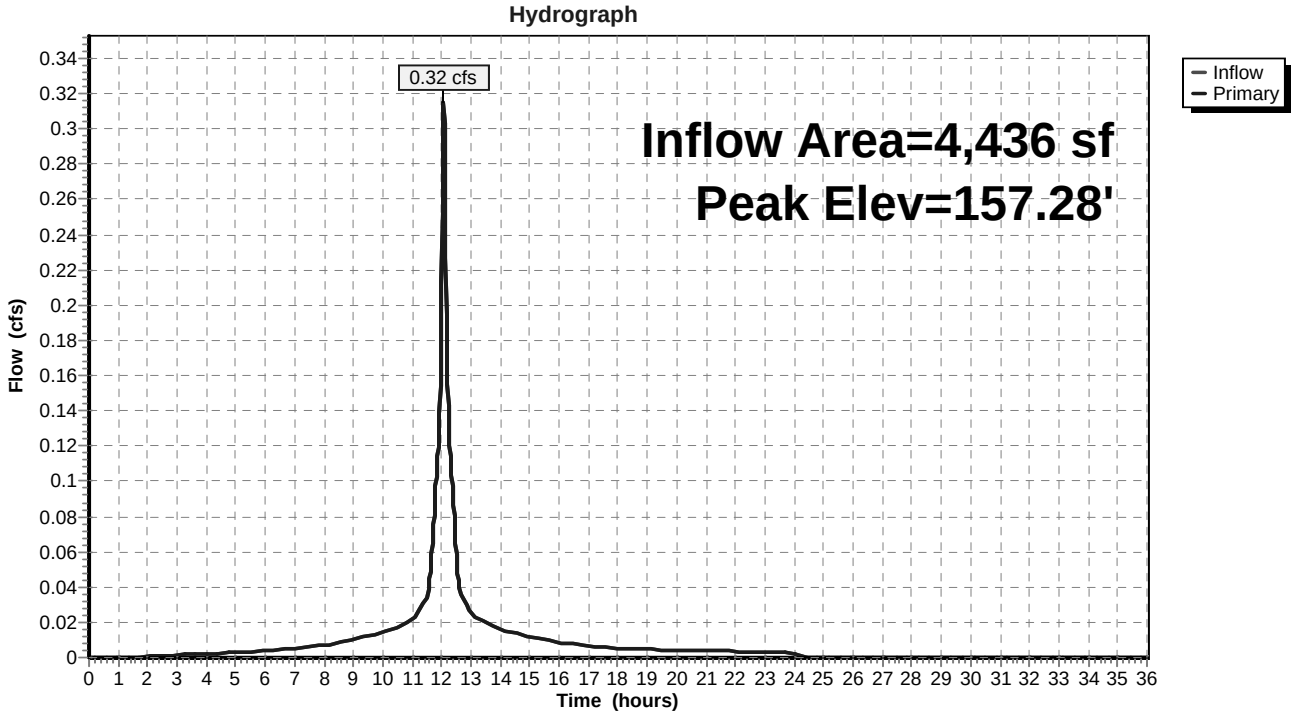
Inflow Area =	4,436 sf,	Inflow Depth =	2.86"	for	2YR event	
Inflow =	0.32 cfs @	12.07 hrs,	Volume=		1,056 cf	
Outflow =	0.32 cfs @	12.07 hrs,	Volume=		1,056 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.32 cfs @	12.07 hrs,	Volume=		1,056 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 157.28' @ 12.07 hrs
Flood Elev= 161.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (756.2 - 756.2)

Device	Routing	Invert	Outlet Devices
#1	Primary	157.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.31 cfs @ 12.07 hrs HW=157.27' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.31 cfs @ 1.8 fps)

Pond 37P: CB



Pond 38P: P-MH

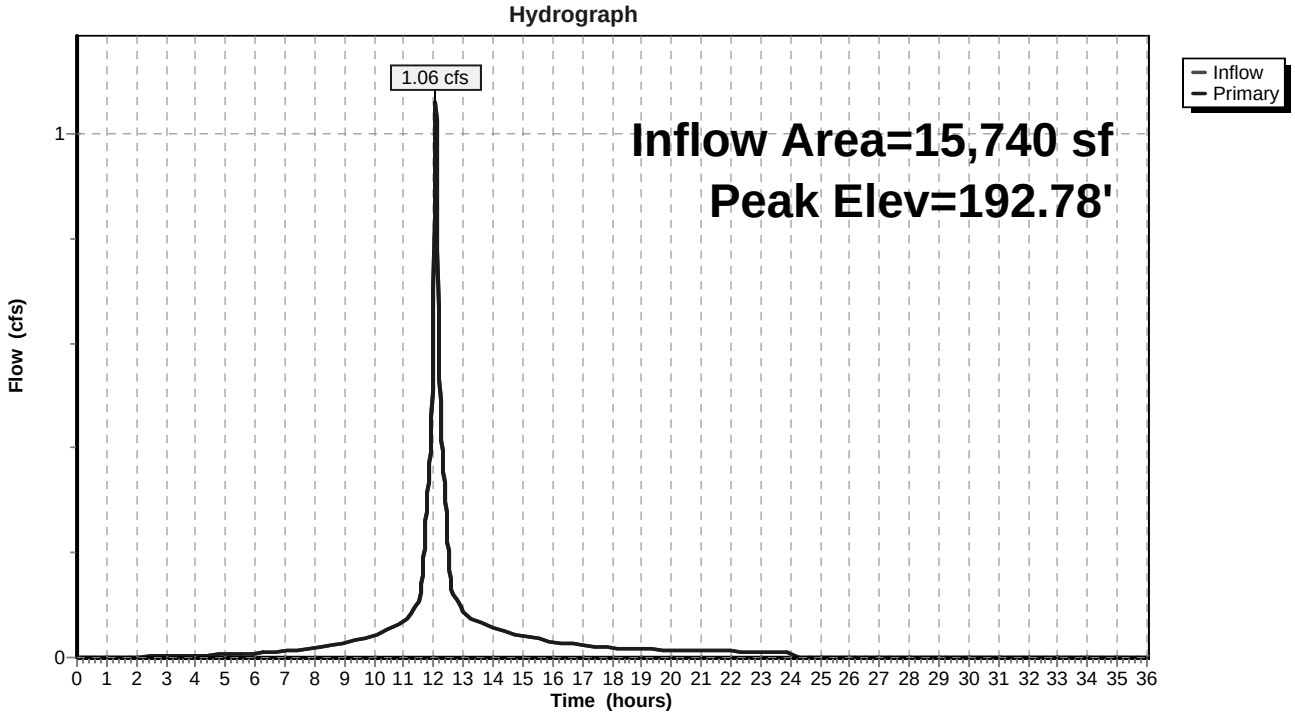
Inflow Area =	15,740 sf,	Inflow Depth =	2.63"	for	2YR event
Inflow =	1.06 cfs @	12.07 hrs,	Volume=	3,448 cf	
Outflow =	1.06 cfs @	12.07 hrs,	Volume=	3,448 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.06 cfs @	12.07 hrs,	Volume=	3,448 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 192.78' @ 12.07 hrs
Flood Elev= 196.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (770.8 - 770.8)

Device	Routing	Invert	Outlet Devices
#1	Primary	192.25'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.05 cfs @ 12.07 hrs HW=192.78' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.05 cfs @ 2.5 fps)

Pond 38P: P-MH

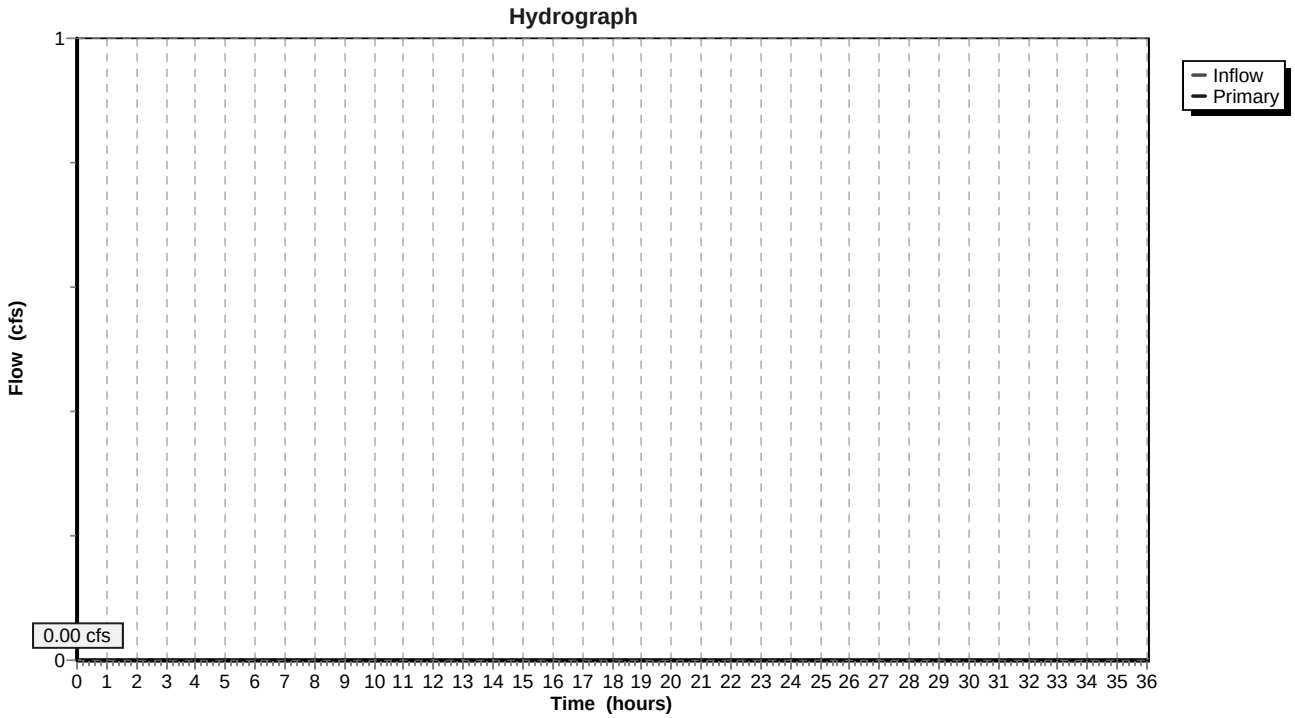


Link 10L: FLARED END

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0 cf
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 10L: FLARED END

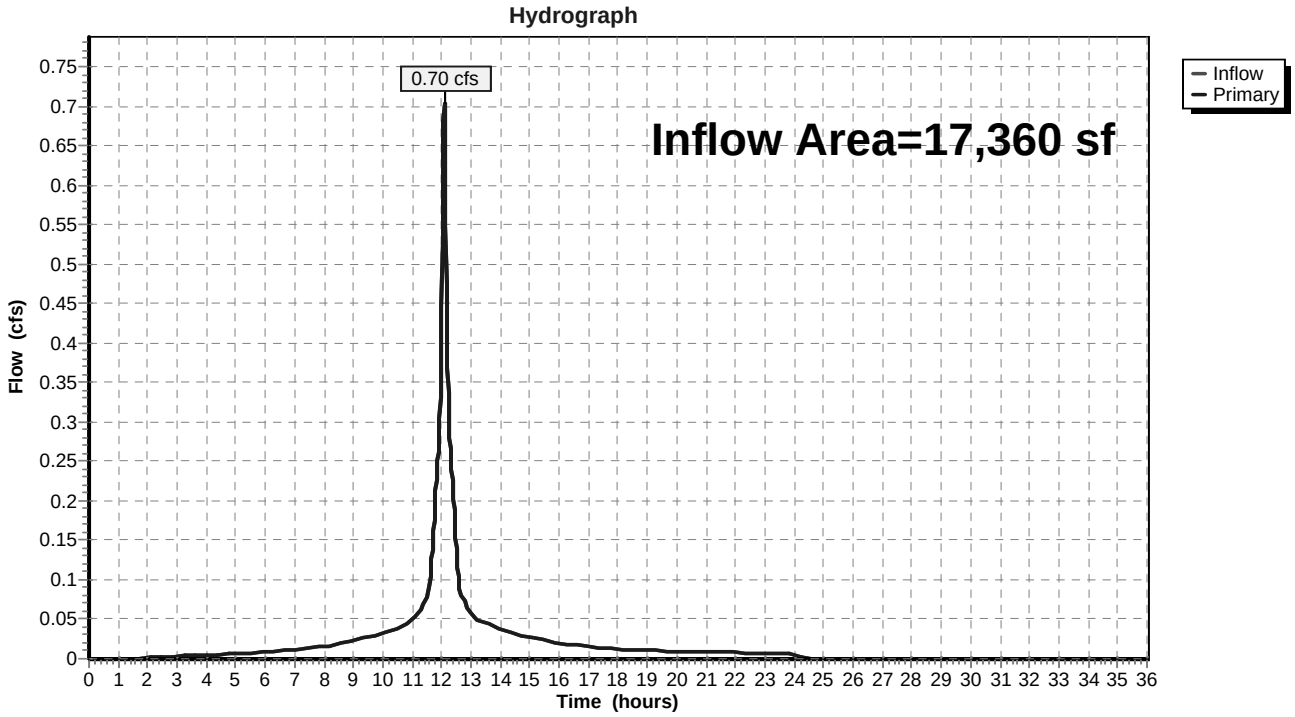


Link 34L: River

Inflow Area = 17,360 sf, Inflow Depth = 1.65" for 2YR event
Inflow = 0.70 cfs @ 12.08 hrs, Volume= 2,384 cf
Primary = 0.70 cfs @ 12.08 hrs, Volume= 2,384 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 34L: River



Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4S: SUDBURY ROAD (18+00-19+60)(50+00-51-C Runoff Area=8,769 sf Runoff Depth=4.31"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.92 cfs 3,152 cf

Subcatchment 16S: WEST SIDE ROADWAY AREA Runoff Area=36,499 sf Runoff Depth=0.99"
Tc=0.0 min CN=59 Runoff=0.98 cfs 3,005 cf

Subcatchment 21S: WEST SIDE CUL-DE-SAC AREA Runoff Area=31,802 sf Runoff Depth=1.05"
Tc=0.0 min CN=60 Runoff=0.93 cfs 2,774 cf

Subcatchment 23S: ACTON AND WEST SIDE LOTS Runoff Area=82,575 sf Runoff Depth=0.15"
Tc=0.0 min CN=40 Runoff=0.04 cfs 999 cf

Subcatchment 24S: W. SUDBURY ROAD (15+50-18+00) Runoff Area=4,222 sf Runoff Depth=4.31"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.44 cfs 1,518 cf

Subcatchment 25S: SUDBURY ROAD (18+00-21+00) Runoff Area=6,971 sf Runoff Depth=3.76"
Flow Length=1,086' Tc=5.0 min CN=93 Runoff=0.69 cfs 2,182 cf

Subcatchment 29S: E. SUDBURY ROAD (15+50-18+00) Runoff Area=3,476 sf Runoff Depth=4.31"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.37 cfs 1,250 cf

Subcatchment 31S: E. SUDBURY ROAD (13+00-15+50) Runoff Area=2,914 sf Runoff Depth=4.31"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.31 cfs 1,048 cf

Subcatchment 38S: W. SUDBURY ROAD (13+00-15+50) Runoff Area=4,436 sf Runoff Depth=4.31"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.47 cfs 1,595 cf

Subcatchment 40S: E. SUDBURY ROAD (11+00-13+00) Runoff Area=2,695 sf Runoff Depth=4.31"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.28 cfs 969 cf

Subcatchment 41S: W. SUDBURY ROAD (10+00-13+00) Runoff Area=7,315 sf Runoff Depth=4.31"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.77 cfs 2,630 cf

Reach 3R: 12" RCP Peak Depth=0.26' Max Vel=5.8 fps Inflow=0.92 cfs 3,152 cf
D=12.0" n=0.011 L=11.0' S=0.0227 '/' Capacity=6.35 cfs Outflow=0.92 cfs 3,152 cf

Reach 4R: 12" CPP Peak Depth=0.64' Max Vel=3.4 fps Inflow=1.80 cfs 5,779 cf
D=12.0" n=0.020 L=27.0' S=0.0111 '/' Capacity=2.44 cfs Outflow=1.80 cfs 5,779 cf

Reach 5R: 12" CPP Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.020 L=16.0' S=0.0313 '/' Capacity=4.09 cfs Outflow=0.00 cfs 0 cf

Reach 8R: 12" CPP Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.020 L=30.0' S=0.0033 '/' Capacity=1.34 cfs Outflow=0.00 cfs 0 cf

Reach 9R: 12" CPP Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.020 L=48.0' S=0.0115 '/' Capacity=2.48 cfs Outflow=0.00 cfs 0 cf

Reach 14R: 12" CPP Peak Depth=0.54' Max Vel=4.3 fps Inflow=1.84 cfs 5,779 cf
D=12.0" n=0.020 L=135.0' S=0.0200 '/' Capacity=3.28 cfs Outflow=1.80 cfs 5,779 cf

Reach 15R: 12" rcp Peak Depth=0.33' Max Vel=6.2 fps Inflow=1.39 cfs 974 cf
D=12.0" n=0.011 L=5.0' S=0.0200 '/' Capacity=5.95 cfs Outflow=1.41 cfs 974 cf

Reach 16R: 12" rcp Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.011 L=22.0' S=0.0386 '/' Capacity=8.28 cfs Outflow=0.00 cfs 0 cf

Reach 18R: 12" RCP Peak Depth=0.26' Max Vel=5.7 fps Inflow=0.91 cfs 2,774 cf
D=12.0" n=0.011 L=145.0' S=0.0221 '/' Capacity=6.26 cfs Outflow=0.90 cfs 2,774 cf

Reach 19R: 12" RCP Peak Depth=0.23' Max Vel=6.8 fps Inflow=0.93 cfs 2,774 cf
D=12.0" n=0.011 L=62.0' S=0.0371 '/' Capacity=8.11 cfs Outflow=0.91 cfs 2,774 cf

Reach 20R: 12" RCP Peak Depth=0.17' Max Vel=5.2 fps Inflow=0.44 cfs 1,518 cf
D=12.0" n=0.011 L=8.0' S=0.0313 '/' Capacity=7.44 cfs Outflow=0.44 cfs 1,518 cf

Reach 22R: 12" rcp Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.011 L=14.0' S=0.0071 '/' Capacity=3.56 cfs Outflow=0.00 cfs 0 cf

Reach 25R: 12" RCP Peak Depth=0.15' Max Vel=4.9 fps Inflow=0.37 cfs 1,250 cf
D=12.0" n=0.011 L=8.0' S=0.0313 '/' Capacity=7.44 cfs Outflow=0.37 cfs 1,250 cf

Reach 28R: 12" RCP Peak Depth=0.16' Max Vel=3.5 fps Inflow=0.28 cfs 969 cf
D=12.0" n=0.011 L=94.0' S=0.0149 '/' Capacity=5.14 cfs Outflow=0.28 cfs 969 cf

Reach 30R: 12" rcp Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.011 L=96.0' S=0.0057 '/' Capacity=3.19 cfs Outflow=0.00 cfs 0 cf

Reach 32R: 12" RCP Peak Depth=0.25' Max Vel=6.9 fps Inflow=1.05 cfs 3,599 cf
D=12.0" n=0.011 L=62.0' S=0.0347 '/' Capacity=7.84 cfs Outflow=1.05 cfs 3,599 cf

Reach 33R: 12" RCP Peak Depth=0.14' Max Vel=16.3 fps Inflow=1.05 cfs 3,599 cf
D=12.0" n=0.011 L=13.0' S=0.3885 '/' Capacity=26.24 cfs Outflow=1.04 cfs 3,599 cf

Reach 34R: 12" RCP Peak Depth=0.12' Max Vel=5.5 fps Inflow=0.31 cfs 1,048 cf
D=12.0" n=0.011 L=10.0' S=0.0500 '/' Capacity=9.42 cfs Outflow=0.31 cfs 1,048 cf

Reach 36R: 12" RCP Peak Depth=0.15' Max Vel=6.2 fps Inflow=0.47 cfs 1,595 cf
D=12.0" n=0.011 L=10.0' S=0.0500 '/' Capacity=9.42 cfs Outflow=0.47 cfs 1,595 cf

Reach 37R: 12" RCP Peak Depth=0.22' Max Vel=5.3 fps Inflow=0.69 cfs 2,182 cf
D=12.0" n=0.011 L=11.0' S=0.0227 '/' Capacity=6.35 cfs Outflow=0.69 cfs 2,182 cf

Reach 39R: 12" rcp Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.011 L=172.0' S=0.0814 '/' Capacity=12.01 cfs Outflow=0.00 cfs 0 cf

Reach 40R: 12" RCP Peak Depth=0.28' Max Vel=9.0 fps Inflow=1.61 cfs 5,335 cf
D=12.0" n=0.011 L=204.0' S=0.0502 '/' Capacity=9.44 cfs Outflow=1.60 cfs 5,335 cf

Pond 1P: WestSide D-Pond Peak Elev=178.59' Storage=1,987 cf Inflow=1.80 cfs 5,779 cf
Outflow=0.75 cfs 3,798 cf

Pond 2P: CB Peak Elev=192.99' Inflow=0.92 cfs 3,152 cf
Outflow=0.92 cfs 3,152 cf

Pond 3P: MH Peak Elev=176.73' Inflow=1.80 cfs 5,779 cf
Primary=1.80 cfs 5,779 cf Secondary=0.00 cfs 0 cf Outflow=1.80 cfs 5,779 cf

Pond 4P: P-LB1 Peak Elev=182.62' Storage=741 cf Inflow=1.60 cfs 5,335 cf
Discarded=0.18 cfs 4,364 cf Primary=1.39 cfs 974 cf Outflow=1.57 cfs 5,337 cf

Pond 5P: P-LB2 Peak Elev=181.43' Storage=641 cf Inflow=1.41 cfs 974 cf
Discarded=0.18 cfs 971 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.18 cfs 971 cf

Pond 6P: LB1 Peak Elev=167.50' Storage=0.000 af Inflow=0.00 cfs 0 cf
Discarded=0.00 cfs 0 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 7P: LB2 Peak Elev=167.00' Storage=0.000 af Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 12P: LB3 Peak Elev=167.66' Storage=68 cf Inflow=0.78 cfs 4,797 cf
Discarded=0.35 cfs 4,797 cf Primary=0.00 cfs 0 cf Outflow=0.35 cfs 4,797 cf

Pond 13P: MH Peak Elev=180.44' Inflow=1.84 cfs 5,779 cf
Outflow=1.84 cfs 5,779 cf

Pond 14P: P-MH Peak Elev=180.55' Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 15P: (2) CB Peak Elev=180.48' Inflow=0.98 cfs 3,005 cf
12.0" x 10.0' Culvert Outflow=0.98 cfs 3,005 cf

Pond 17P: MH Peak Elev=183.49' Inflow=0.91 cfs 2,774 cf
Outflow=0.91 cfs 2,774 cf

Pond 18P: CB Peak Elev=181.33' Inflow=0.44 cfs 1,518 cf
Outflow=0.44 cfs 1,518 cf

Pond 20P: (2) CB Peak Elev=185.95' Inflow=0.93 cfs 2,774 cf
12.0" x 9.0' Culvert Outflow=0.93 cfs 2,774 cf

Pond 21P: P-LB3 Peak Elev=179.55' Storage=548 cf Inflow=0.81 cfs 2,767 cf
Discarded=0.18 cfs 2,768 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.18 cfs 2,768 cf

Pond 26P: MH Peak Elev=185.89' Inflow=0.93 cfs 2,774 cf
Outflow=0.93 cfs 2,774 cf

Pond 27P: NEW CB Peak Elev=142.96' Inflow=0.28 cfs 969 cf
Outflow=0.28 cfs 969 cf

Pond 28P: CB Peak Elev=181.30' Inflow=0.37 cfs 1,250 cf
Outflow=0.37 cfs 1,250 cf

Pond 29P: NEW CB Peak Elev=143.15' Inflow=0.77 cfs 2,630 cf
Outflow=0.77 cfs 2,630 cf

Pond 30P: STC Peak Elev=141.73' Inflow=1.05 cfs 3,599 cf
Outflow=1.05 cfs 3,599 cf

Pond 31P: CB Peak Elev=139.58' Inflow=1.05 cfs 3,599 cf
Outflow=1.05 cfs 3,599 cf

Pond 32P: CB Peak Elev=157.27' Inflow=0.31 cfs 1,048 cf
Outflow=0.31 cfs 1,048 cf

Pond 35P: P-LB4 Peak Elev=155.74' Storage=501 cf Inflow=0.77 cfs 2,642 cf
Discarded=0.18 cfs 2,642 cf Primary=0.00 cfs 0 cf Outflow=0.18 cfs 2,642 cf

Pond 36P: CB Peak Elev=192.92' Inflow=0.69 cfs 2,182 cf
Outflow=0.69 cfs 2,182 cf

Pond 37P: CB Peak Elev=157.34' Inflow=0.47 cfs 1,595 cf
Outflow=0.47 cfs 1,595 cf

Pond 38P: P-MH Peak Elev=192.93' Inflow=1.61 cfs 5,335 cf
Outflow=1.61 cfs 5,335 cf

Link 10L: FLARED END Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 34L: River Inflow=1.04 cfs 3,599 cf
Primary=1.04 cfs 3,599 cf

Total Runoff Area = 191,674 sf Runoff Volume = 21,121 cf Average Runoff Depth = 1.32"

Subcatchment 4S: SUDBURY ROAD (18+00-19+60)(50+00-51-Concord)

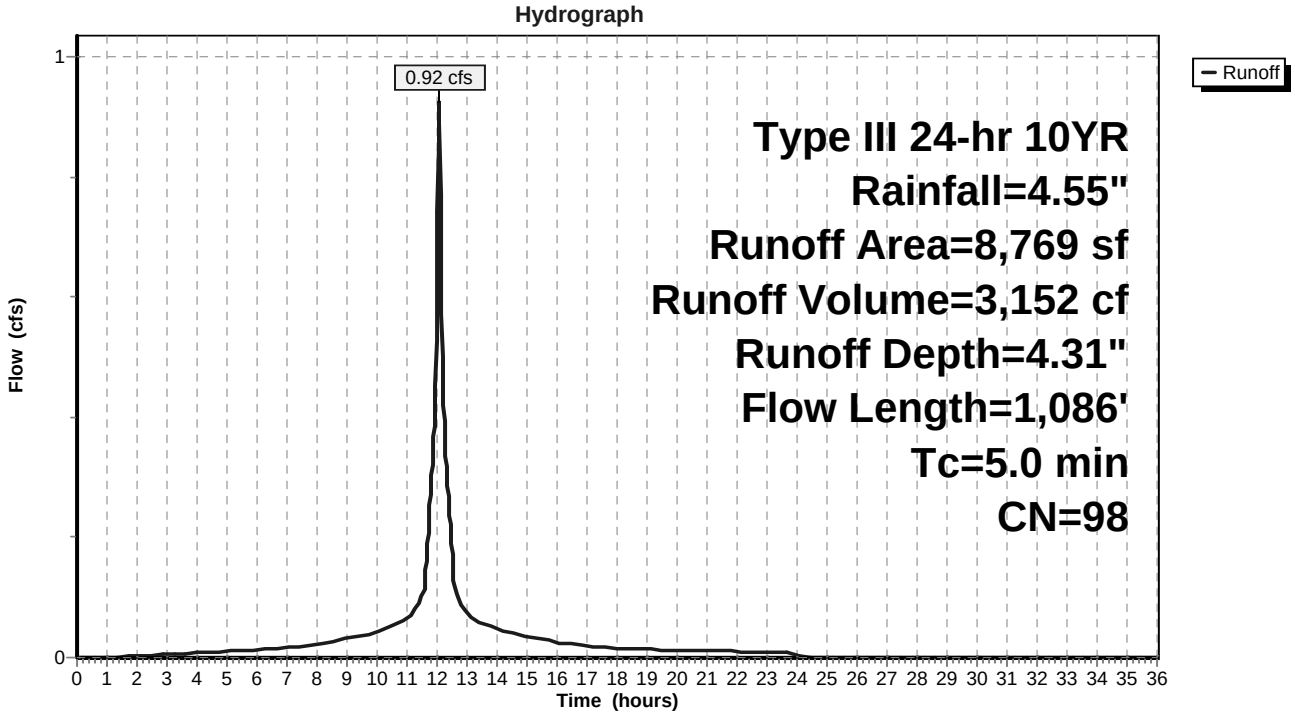
Runoff = 0.92 cfs @ 12.07 hrs, Volume= 3,152 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
8,769	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 4S: SUDBURY ROAD (18+00-19+60)(50+00-51-Concord)



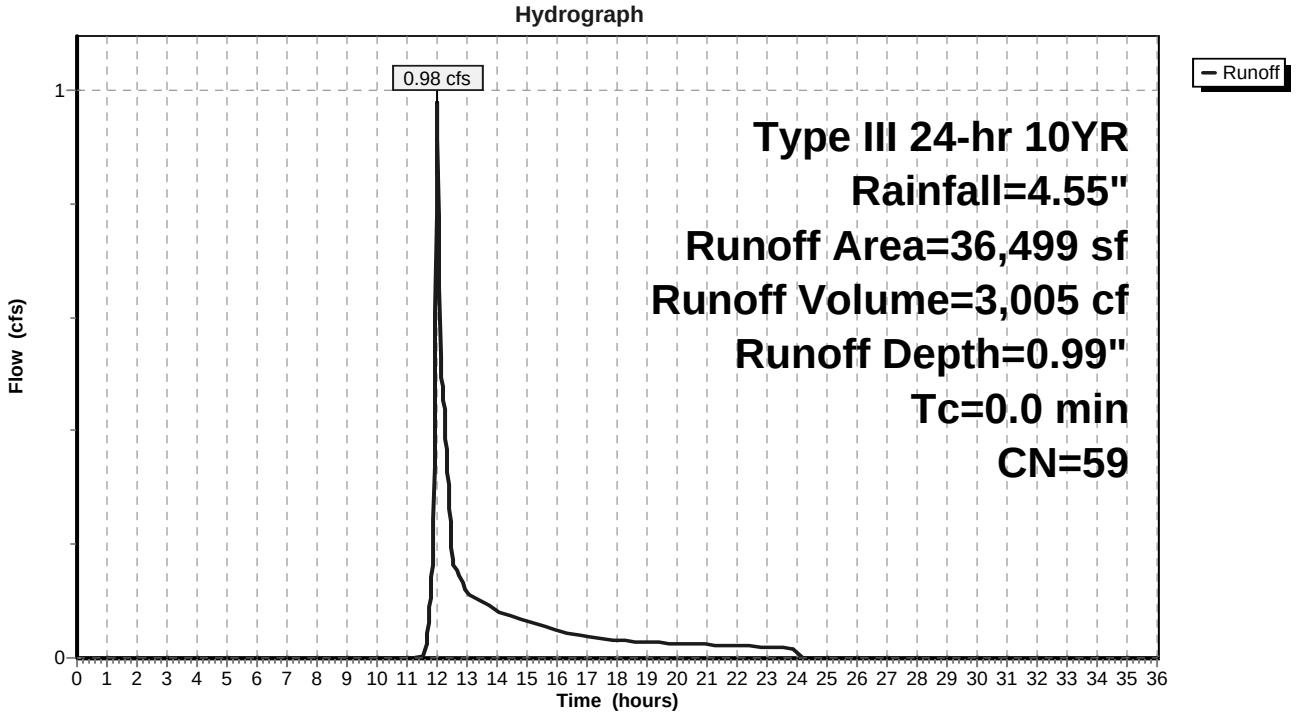
Subcatchment 16S: WEST SIDE ROADWAY AREA

Runoff = 0.98 cfs @ 12.01 hrs, Volume= 3,005 cf, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
12,279	98	Paved parking & roofs
20,007	39	>75% Grass cover, Good, HSG A
4,213	39	OFFSITE GRASS
36,499	59	Weighted Average

Subcatchment 16S: WEST SIDE ROADWAY AREA



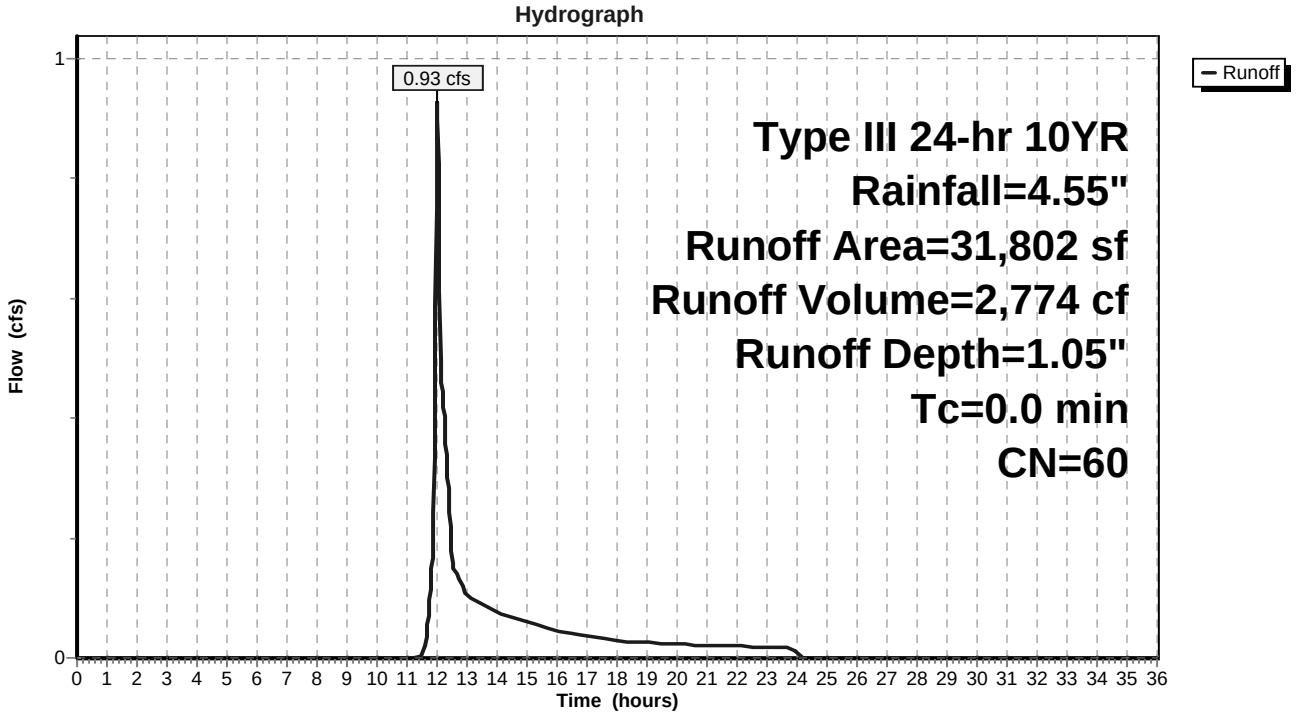
Subcatchment 21S: WEST SIDE CUL-DE-SAC AREA

Runoff = 0.93 cfs @ 12.01 hrs, Volume= 2,774 cf, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
11,344	98	Paved parking & roofs
17,104	39	>75% Grass cover, Good, HSG A
3,354	39	OFFSITE GRASS
31,802	60	Weighted Average

Subcatchment 21S: WEST SIDE CUL-DE-SAC AREA



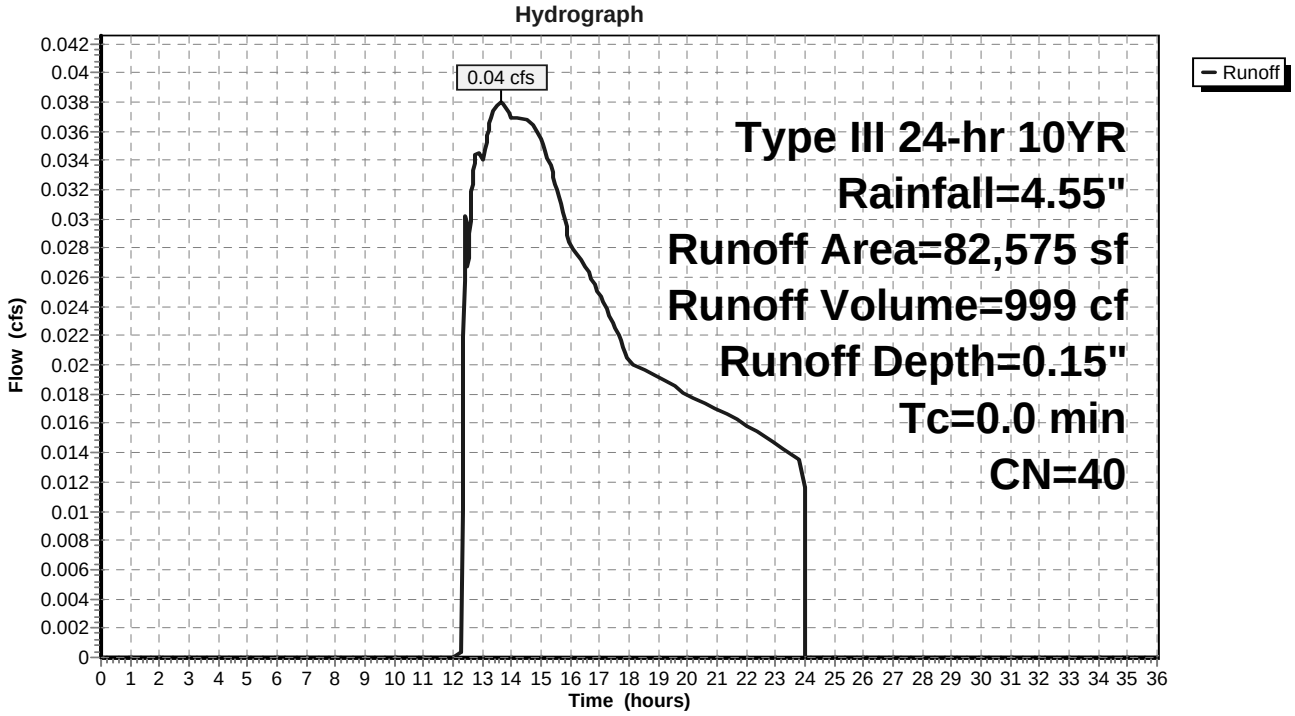
Subcatchment 23S: ACTON AND WEST SIDE LOTS

Runoff = 0.04 cfs @ 13.63 hrs, Volume= 999 cf, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
7,259	98	Paved parking & roofs
42,441	30	Woods, Good, HSG A
19,562	39	>75% Grass cover, Good, HSG A
13,313	39	OFFSITE GRASS
82,575	40	Weighted Average

Subcatchment 23S: ACTON AND WEST SIDE LOTS



Subcatchment 24S: W. SUDBURY ROAD (15+50-18+00)

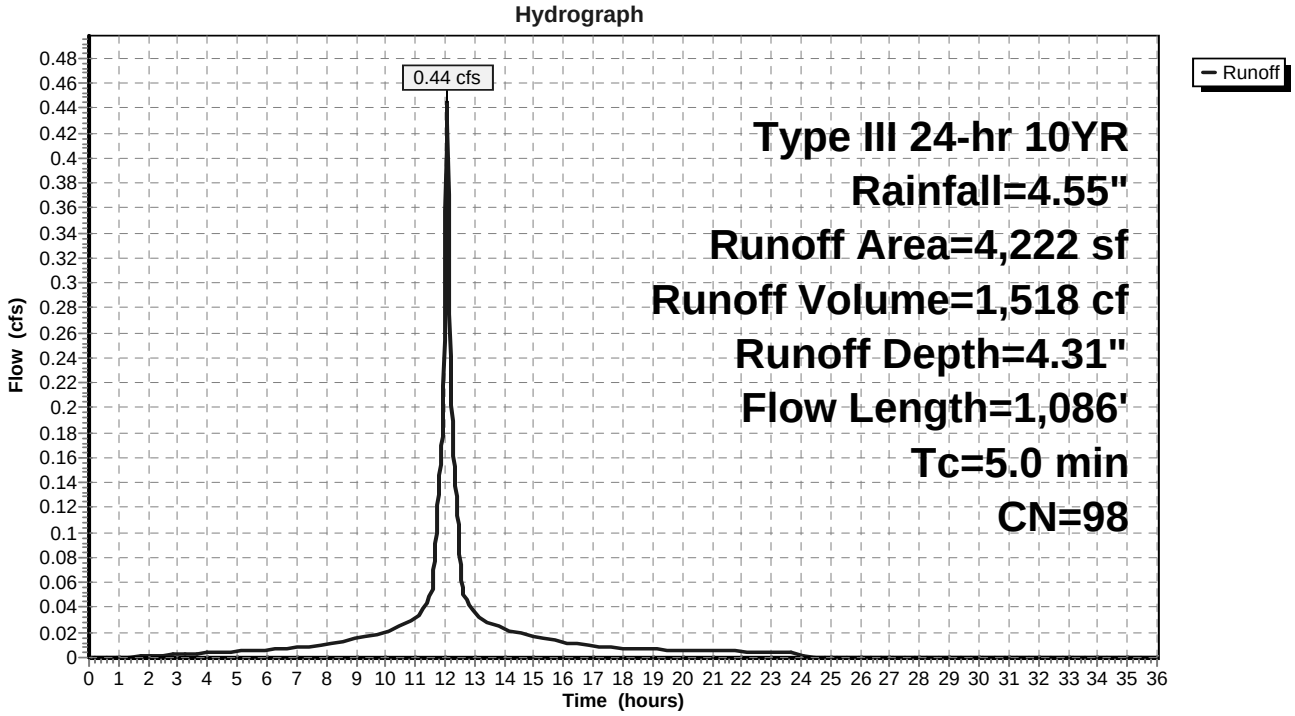
Runoff = 0.44 cfs @ 12.07 hrs, Volume= 1,518 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
4,222	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 24S: W. SUDBURY ROAD (15+50-18+00)



Subcatchment 25S: SUDBURY ROAD (18+00-21+00)

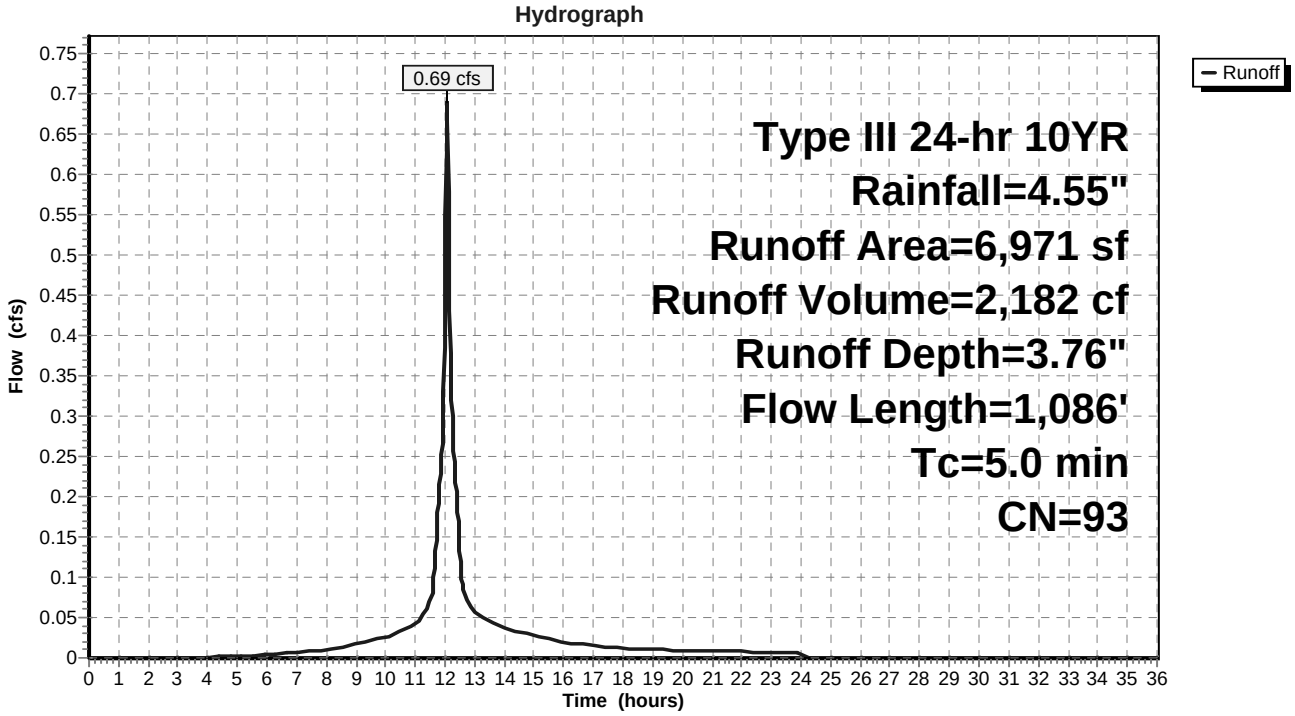
Runoff = 0.69 cfs @ 12.07 hrs, Volume= 2,182 cf, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
6,421	98	Paved roads w/curbs & sewers
550	32	Woods/grass comb., Good, HSG A
6,971	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 25S: SUDBURY ROAD (18+00-21+00)



Subcatchment 29S: E. SUDBURY ROAD (15+50-18+00)

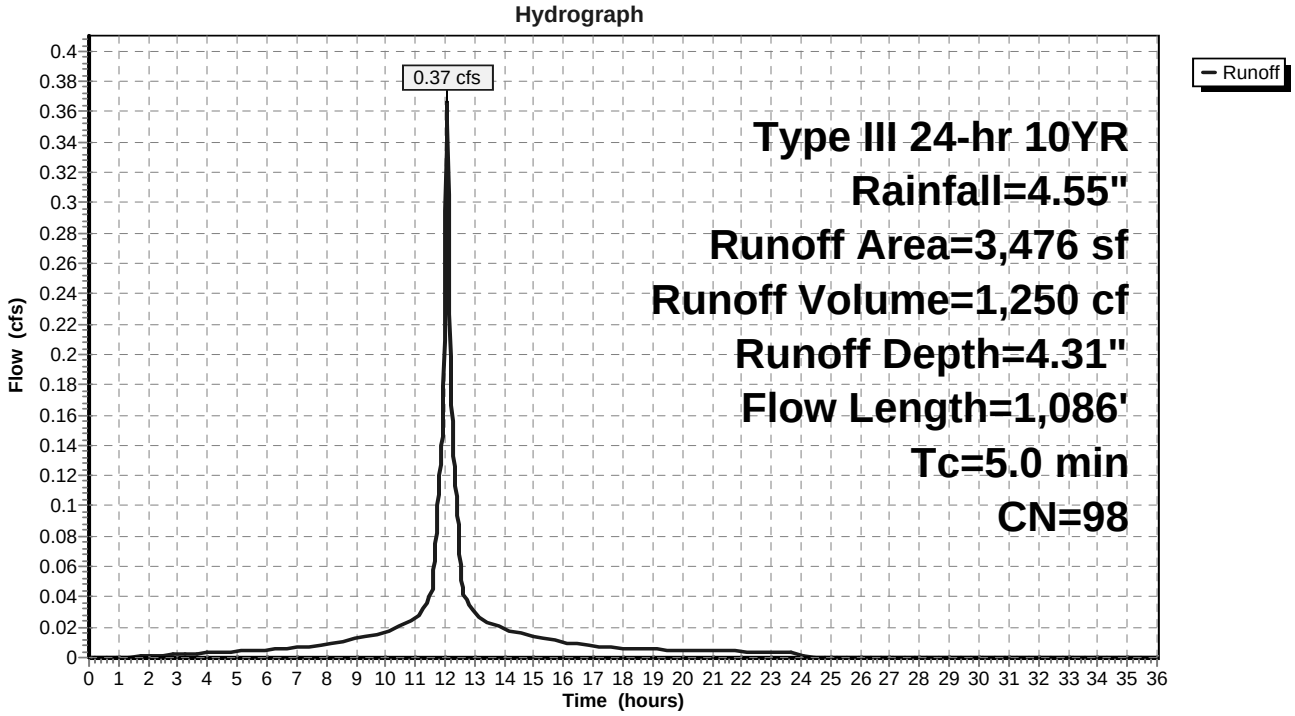
Runoff = 0.37 cfs @ 12.07 hrs, Volume= 1,250 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
3,476	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 29S: E. SUDBURY ROAD (15+50-18+00)



Subcatchment 31S: E. SUDBURY ROAD (13+00-15+50)

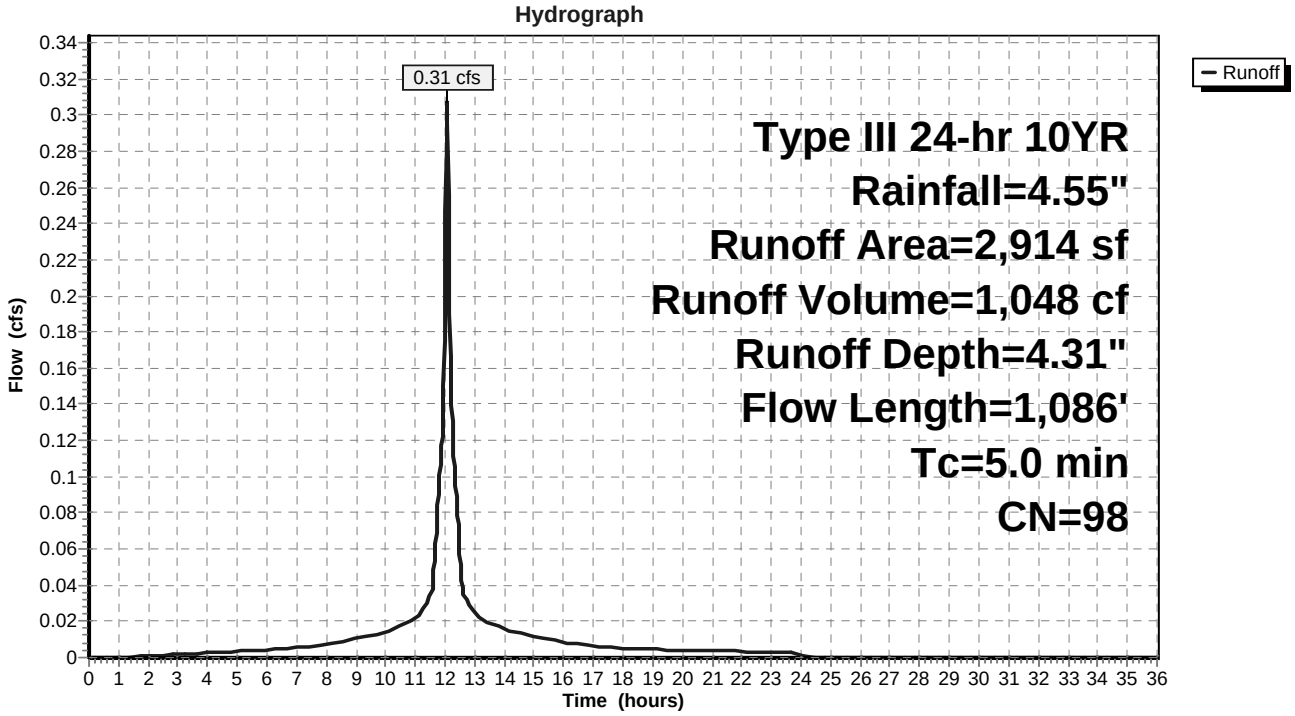
Runoff = 0.31 cfs @ 12.07 hrs, Volume= 1,048 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
2,914	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 31S: E. SUDBURY ROAD (13+00-15+50)



Subcatchment 38S: W. SUDBURY ROAD (13+00-15+50)

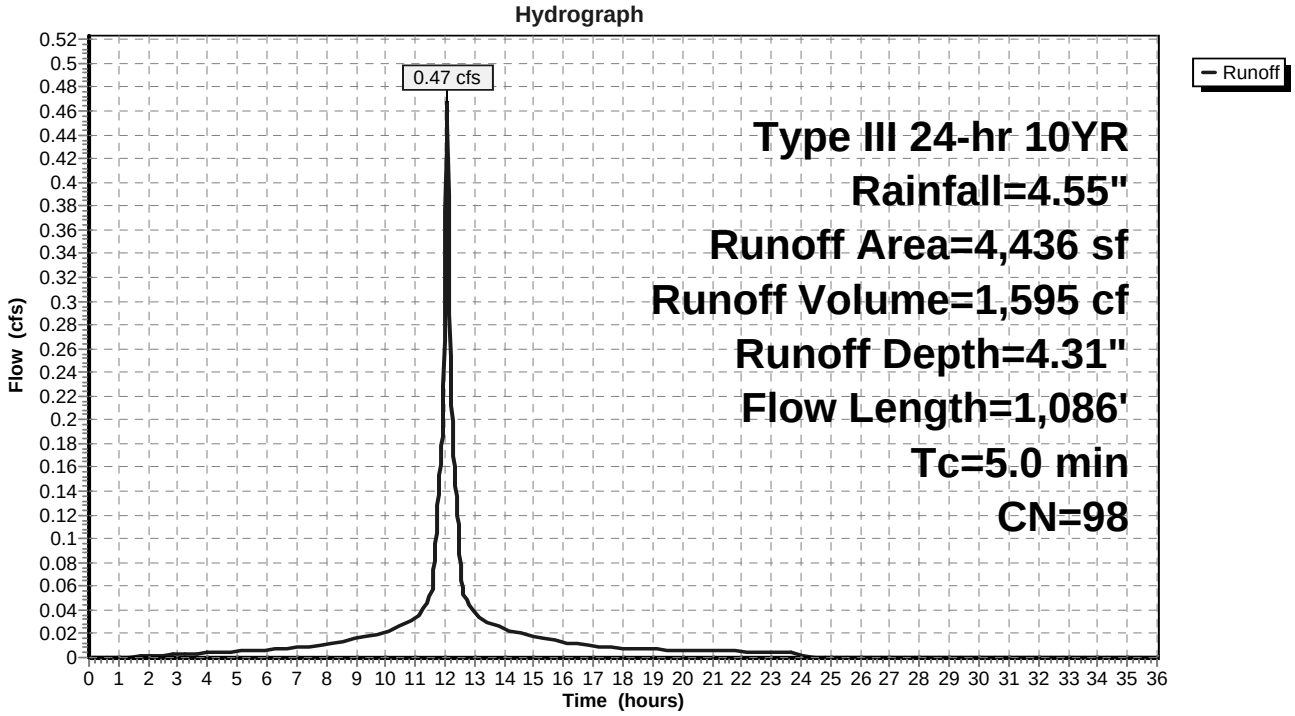
Runoff = 0.47 cfs @ 12.07 hrs, Volume= 1,595 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
4,436	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 38S: W. SUDBURY ROAD (13+00-15+50)



Subcatchment 40S: E. SUDBURY ROAD (11+00-13+00)

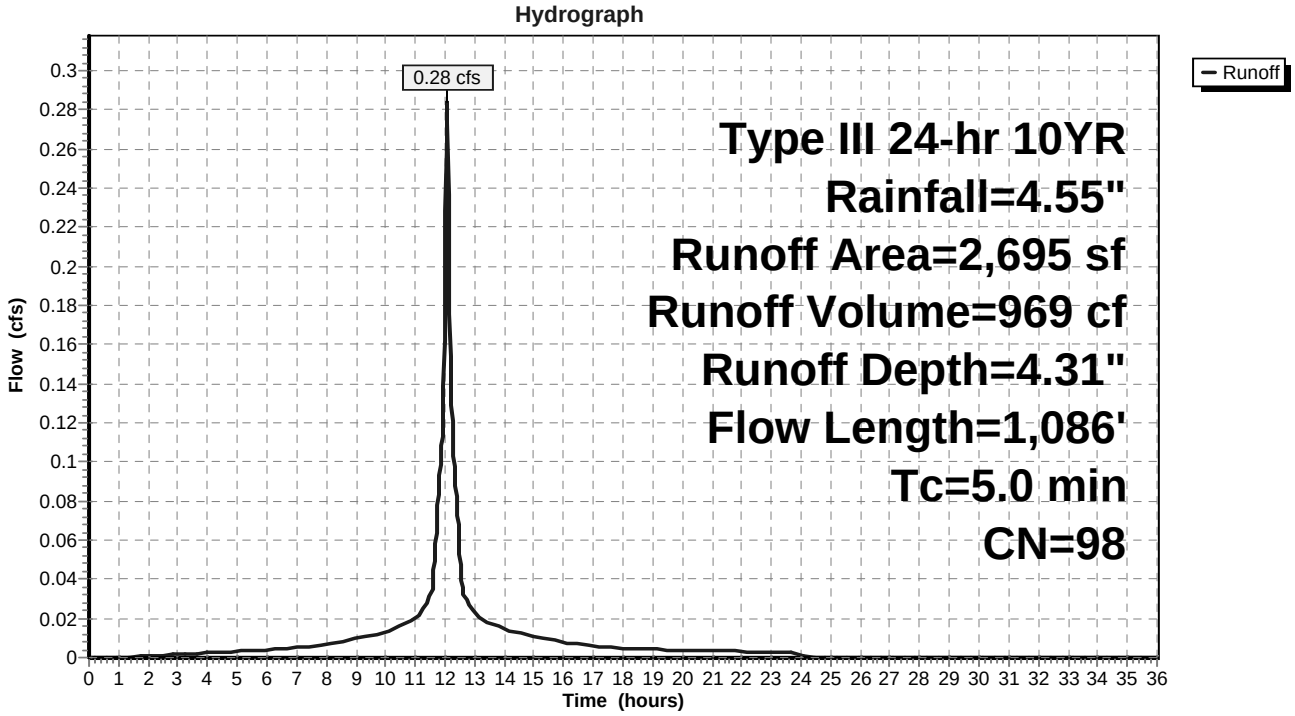
Runoff = 0.28 cfs @ 12.07 hrs, Volume= 969 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
2,695	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 40S: E. SUDBURY ROAD (11+00-13+00)



Subcatchment 41S: W. SUDBURY ROAD (10+00-13+00)

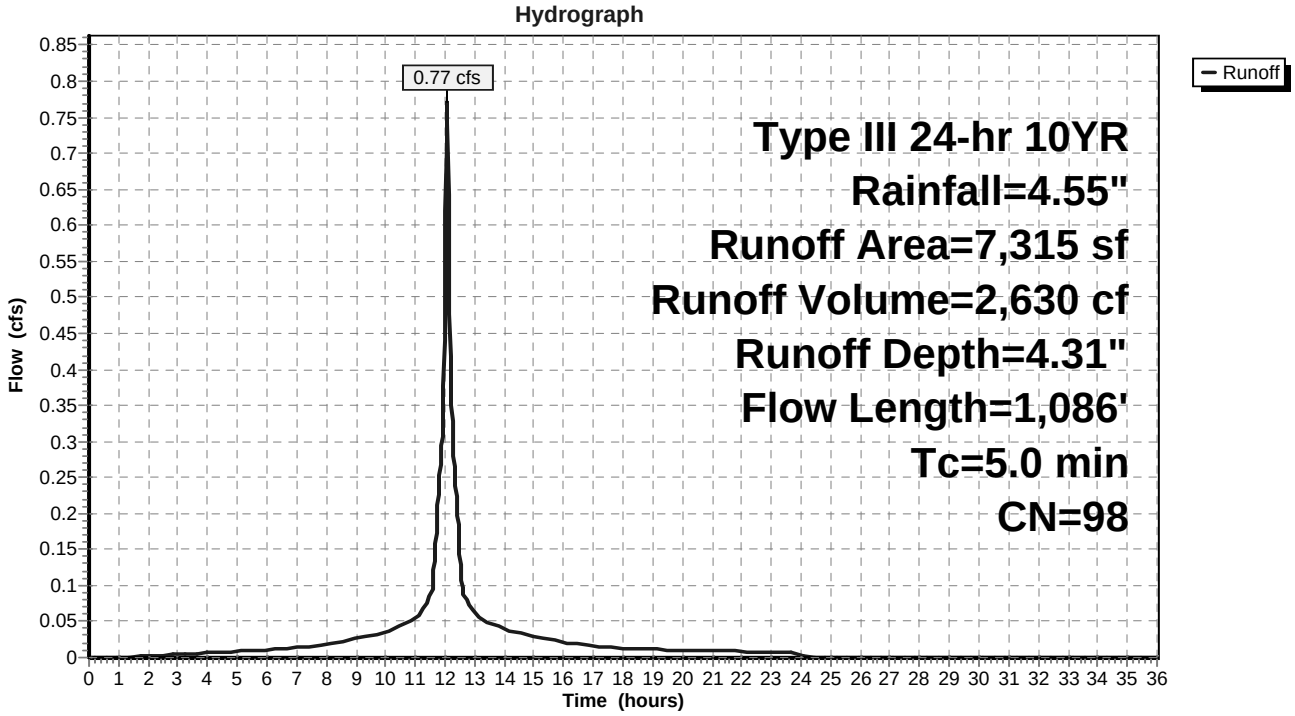
Runoff = 0.77 cfs @ 12.07 hrs, Volume= 2,630 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 10YR Rainfall=4.55"

Area (sf)	CN	Description
7,315	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 41S: W. SUDBURY ROAD (10+00-13+00)



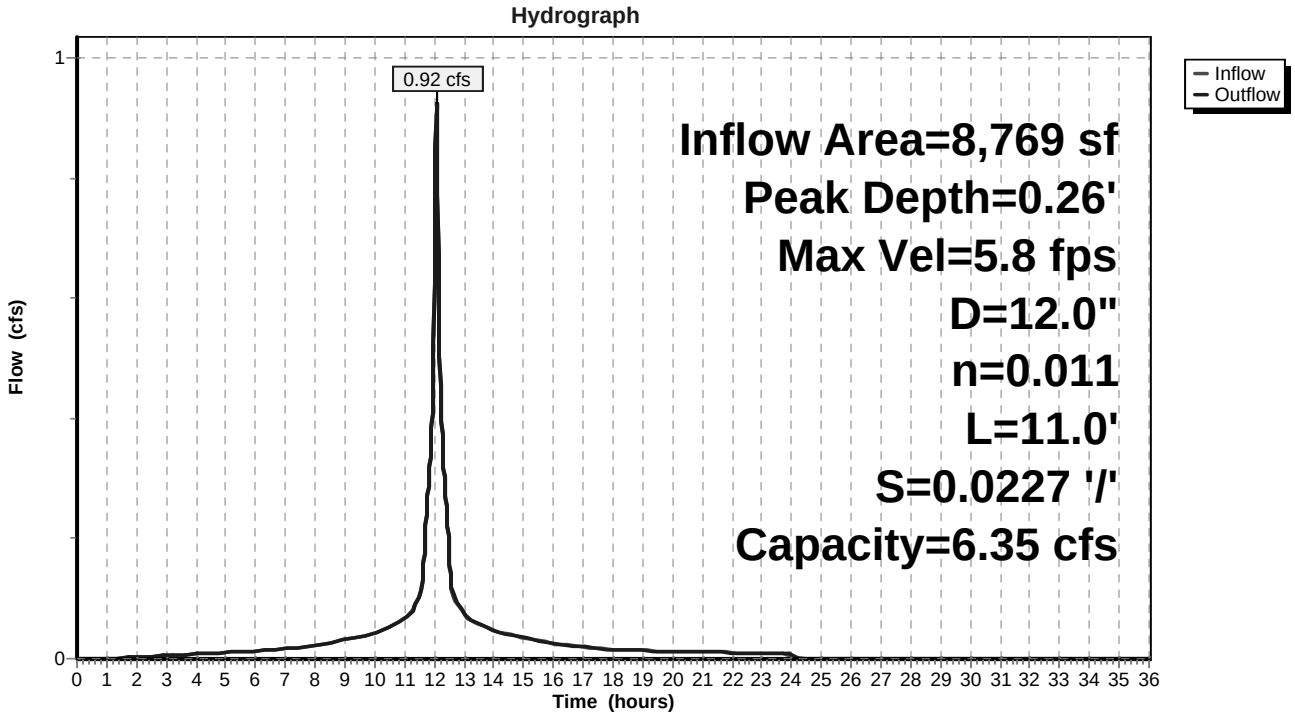
Reach 3R: 12" RCP

Inflow Area = 8,769 sf, Inflow Depth = 4.31" for 10YR event
Inflow = 0.92 cfs @ 12.07 hrs, Volume= 3,152 cf
Outflow = 0.92 cfs @ 12.07 hrs, Volume= 3,152 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.8 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.26' @ 12.07 hrs
Capacity at bank full= 6.35 cfs
Inlet Invert= 192.50', Outlet Invert= 192.25'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 11.0' Slope= 0.0227 '/'

Reach 3R: 12" RCP



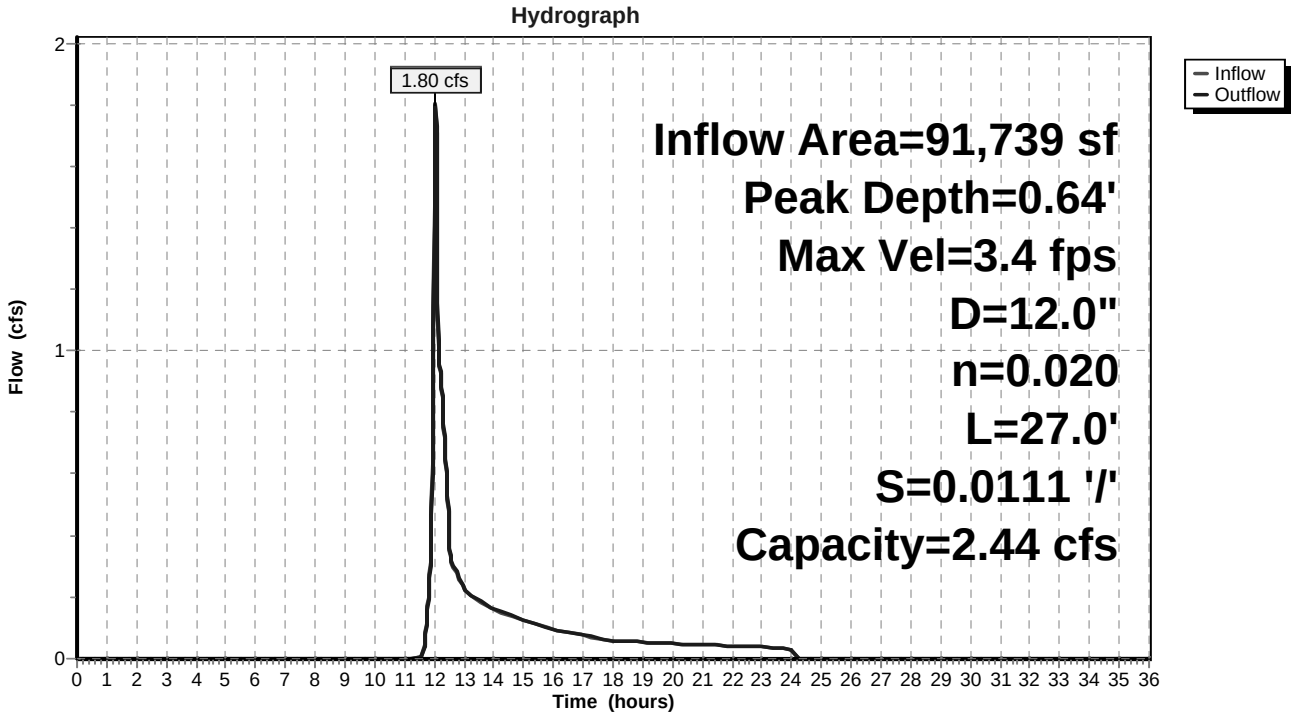
Reach 4R: 12" CPP

Inflow Area = 91,739 sf, Inflow Depth = 0.76" for 10YR event
Inflow = 1.80 cfs @ 12.04 hrs, Volume= 5,779 cf
Outflow = 1.80 cfs @ 12.04 hrs, Volume= 5,779 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.4 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.4 fps, Avg. Travel Time= 0.3 min

Peak Depth= 0.64' @ 12.04 hrs
Capacity at bank full= 2.44 cfs
Inlet Invert= 176.00', Outlet Invert= 175.70'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 27.0' Slope= 0.0111 '/'

Reach 4R: 12" CPP



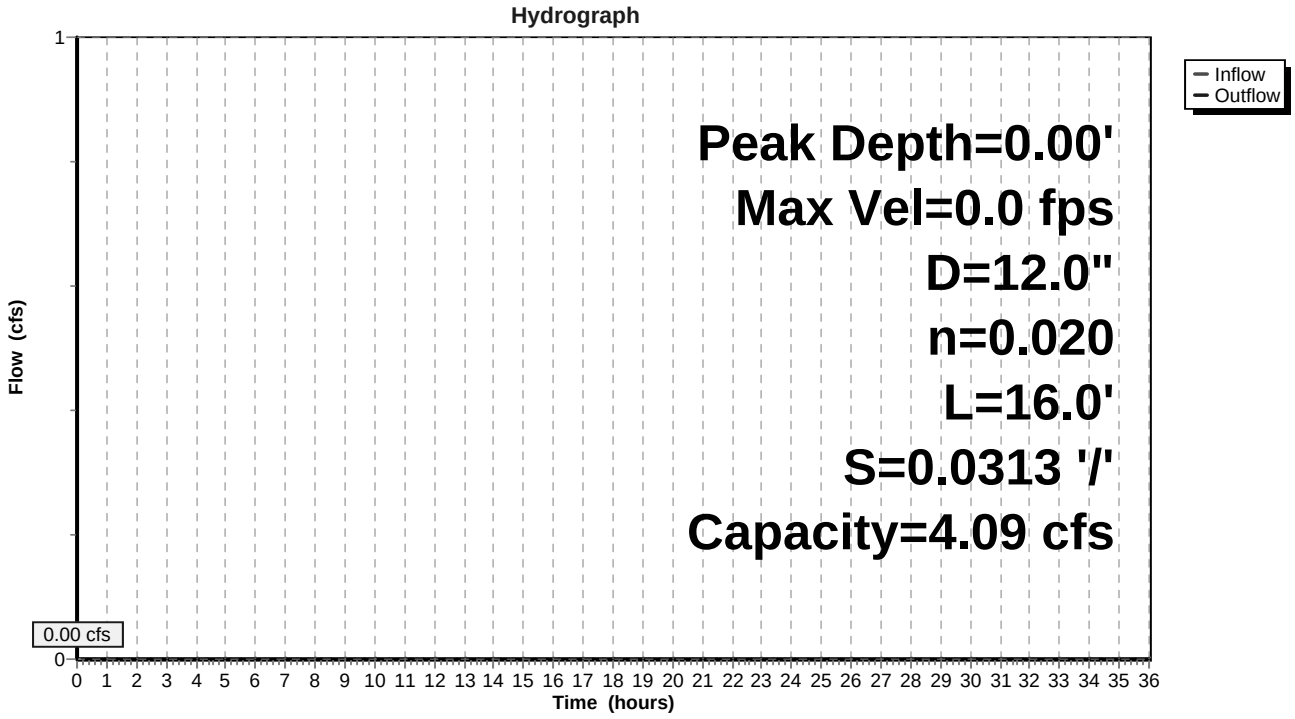
Reach 5R: 12" CPP

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

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 4.09 cfs
Inlet Invert= 176.00', Outlet Invert= 175.50'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 16.0' Slope= 0.0313 '/'

Reach 5R: 12" CPP



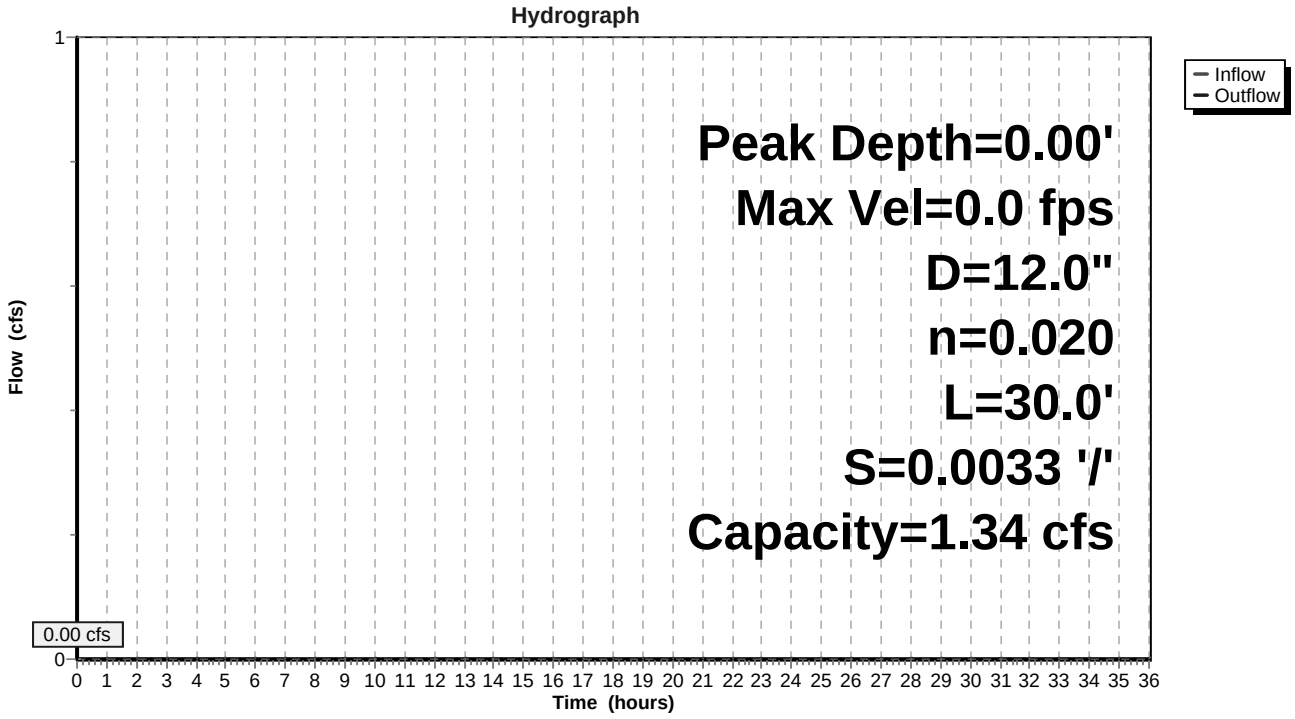
Reach 8R: 12" CPP

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

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 1.34 cfs
Inlet Invert= 175.20', Outlet Invert= 175.10'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 30.0' Slope= 0.0033 '/'

Reach 8R: 12" CPP



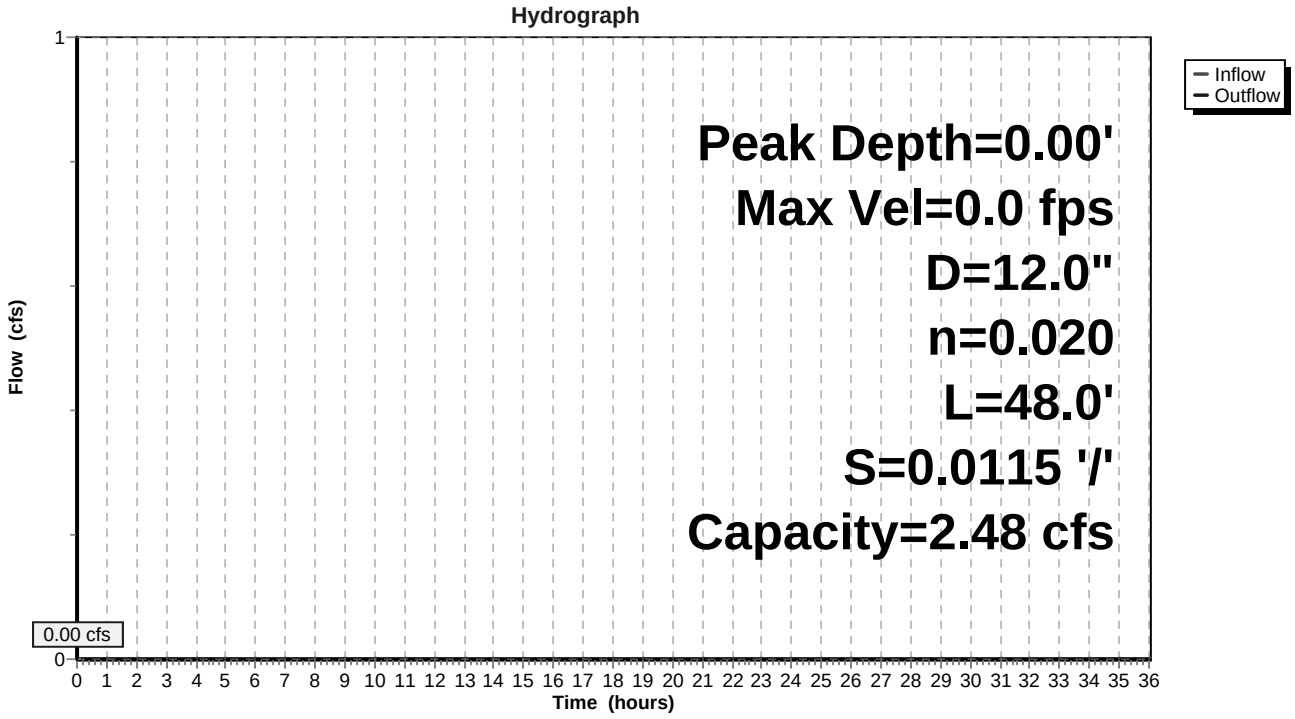
Reach 9R: 12" CPP

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

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 2.48 cfs
Inlet Invert= 177.00', Outlet Invert= 176.45'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 48.0' Slope= 0.0115 '/'

Reach 9R: 12" CPP



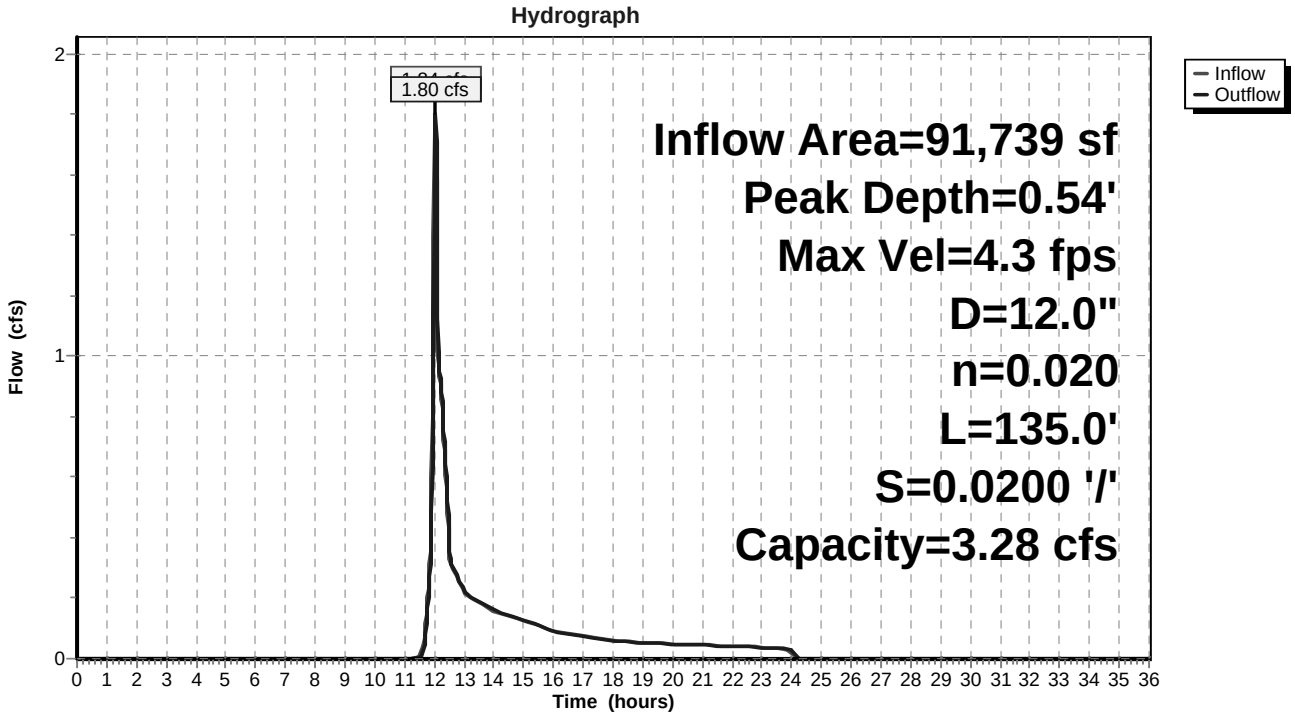
Reach 14R: 12" CPP

Inflow Area = 91,739 sf, Inflow Depth = 0.76" for 10YR event
Inflow = 1.84 cfs @ 12.02 hrs, Volume= 5,779 cf
Outflow = 1.80 cfs @ 12.04 hrs, Volume= 5,779 cf, Atten= 2%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 1.3 min

Peak Depth= 0.54' @ 12.03 hrs
Capacity at bank full= 3.28 cfs
Inlet Invert= 179.70', Outlet Invert= 177.00'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 135.0' Slope= 0.0200 '/'

Reach 14R: 12" CPP



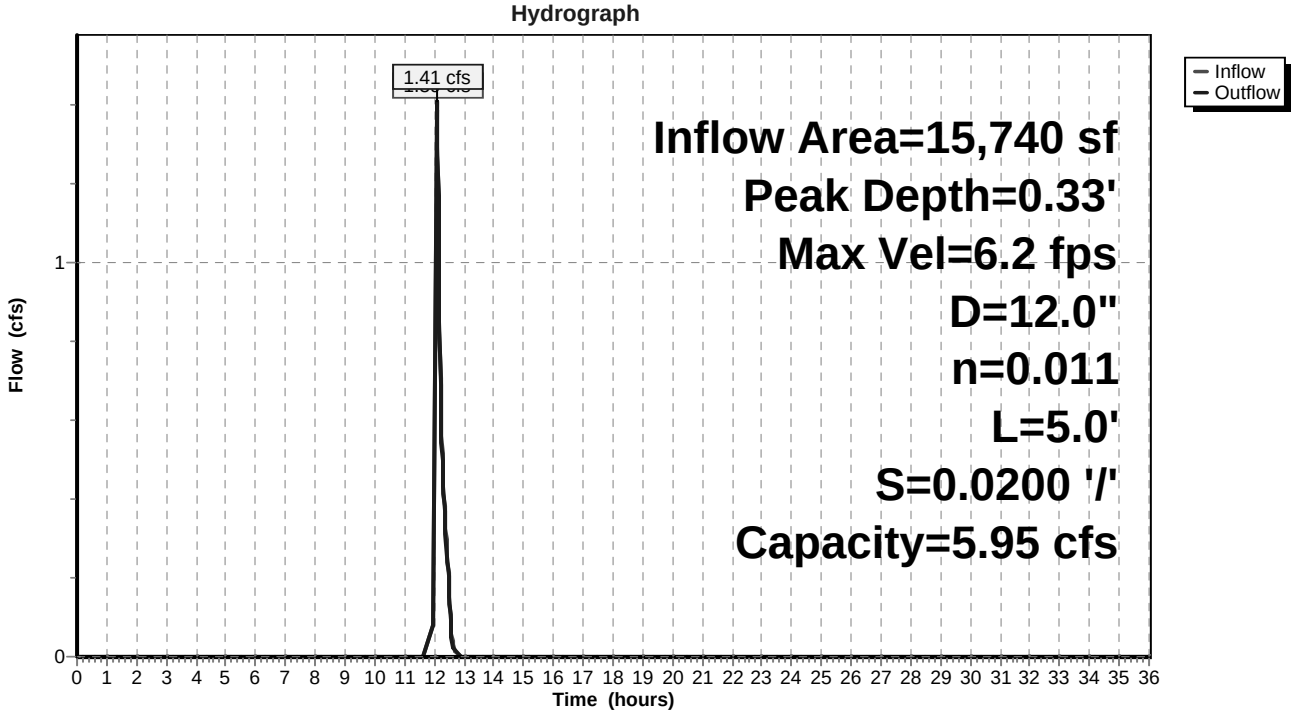
Reach 15R: 12" rcp

Inflow Area = 15,740 sf, Inflow Depth = 0.74" for 10YR event
Inflow = 1.39 cfs @ 12.10 hrs, Volume= 974 cf
Outflow = 1.41 cfs @ 12.10 hrs, Volume= 974 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.2 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.8 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.33' @ 12.10 hrs
Capacity at bank full= 5.95 cfs
Inlet Invert= 182.00', Outlet Invert= 181.90'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 5.0' Slope= 0.0200 '/'

Reach 15R: 12" rcp



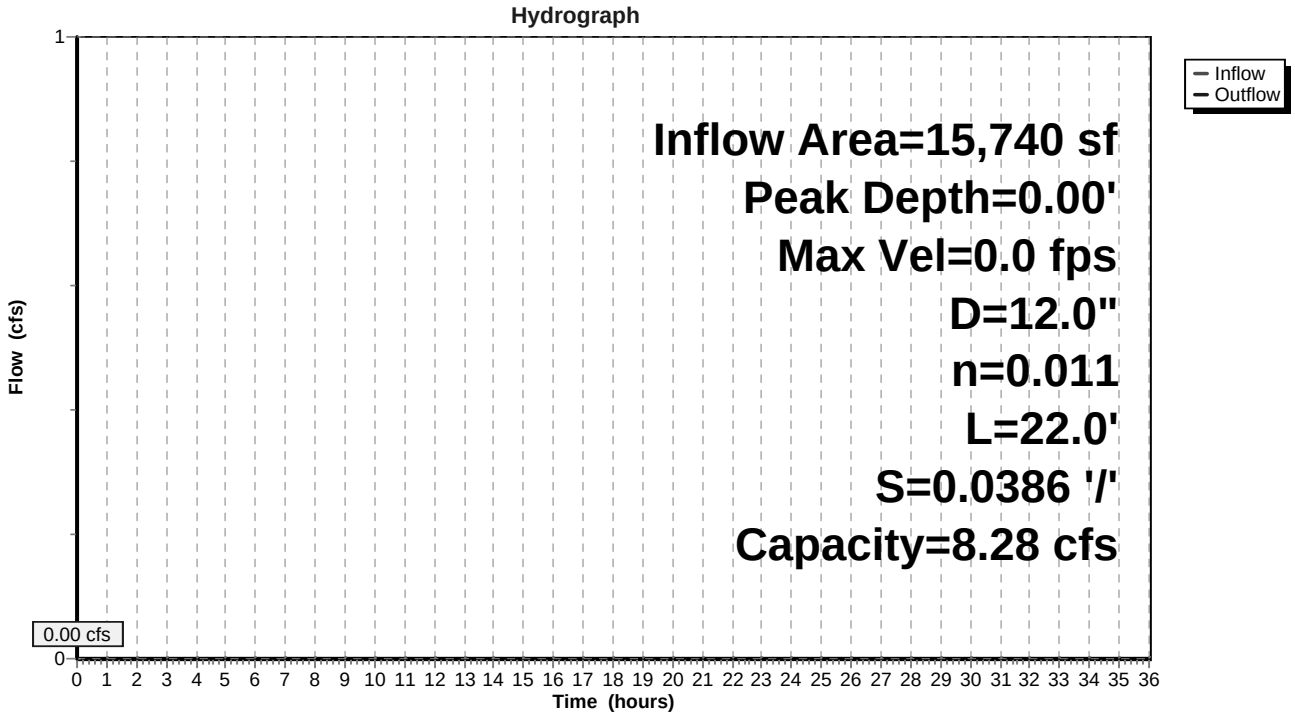
Reach 16R: 12" rcp

Inflow Area = 15,740 sf, Inflow Depth = 0.00" for 10YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 8.28 cfs
Inlet Invert= 181.50', Outlet Invert= 180.65'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 22.0' Slope= 0.0386 '/'

Reach 16R: 12" rcp



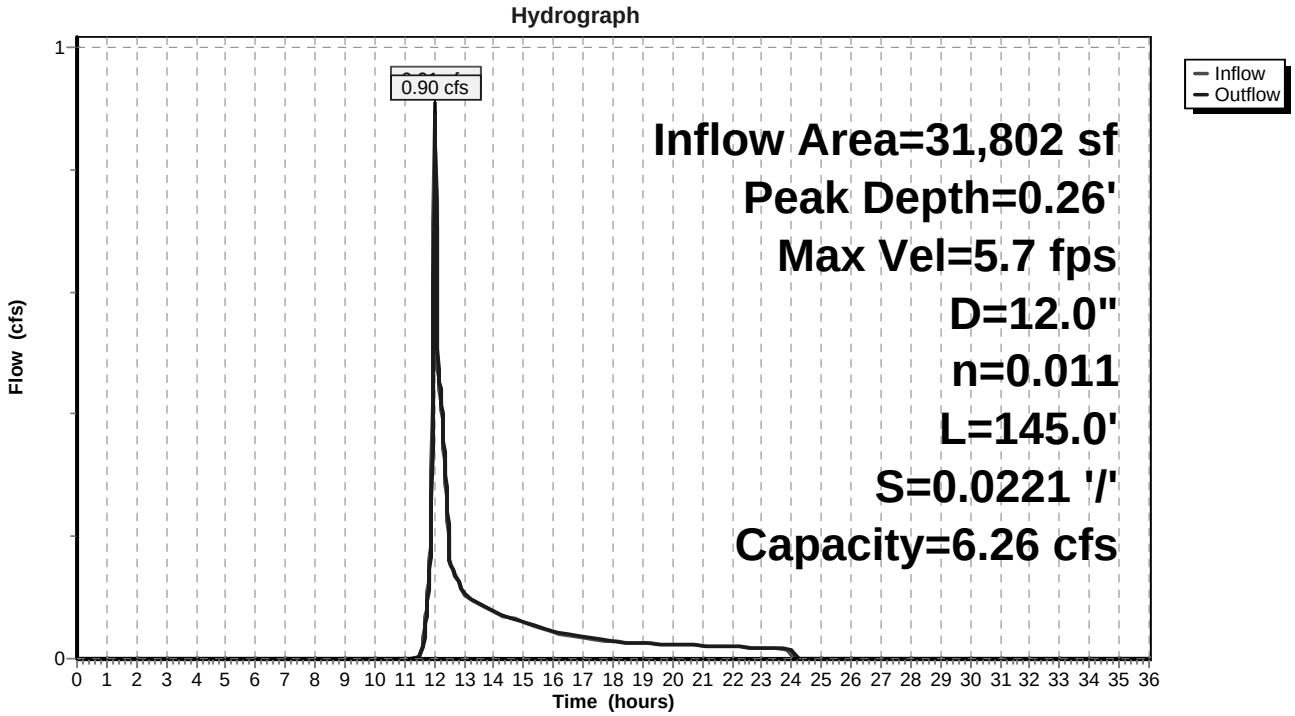
Reach 18R: 12" RCP

Inflow Area = 31,802 sf, Inflow Depth = 1.05" for 10YR event
Inflow = 0.91 cfs @ 12.02 hrs, Volume= 2,774 cf
Outflow = 0.90 cfs @ 12.03 hrs, Volume= 2,774 cf, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.7 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 1.1 min

Peak Depth= 0.26' @ 12.02 hrs
Capacity at bank full= 6.26 cfs
Inlet Invert= 183.00', Outlet Invert= 179.80'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 145.0' Slope= 0.0221 '/'

Reach 18R: 12" RCP



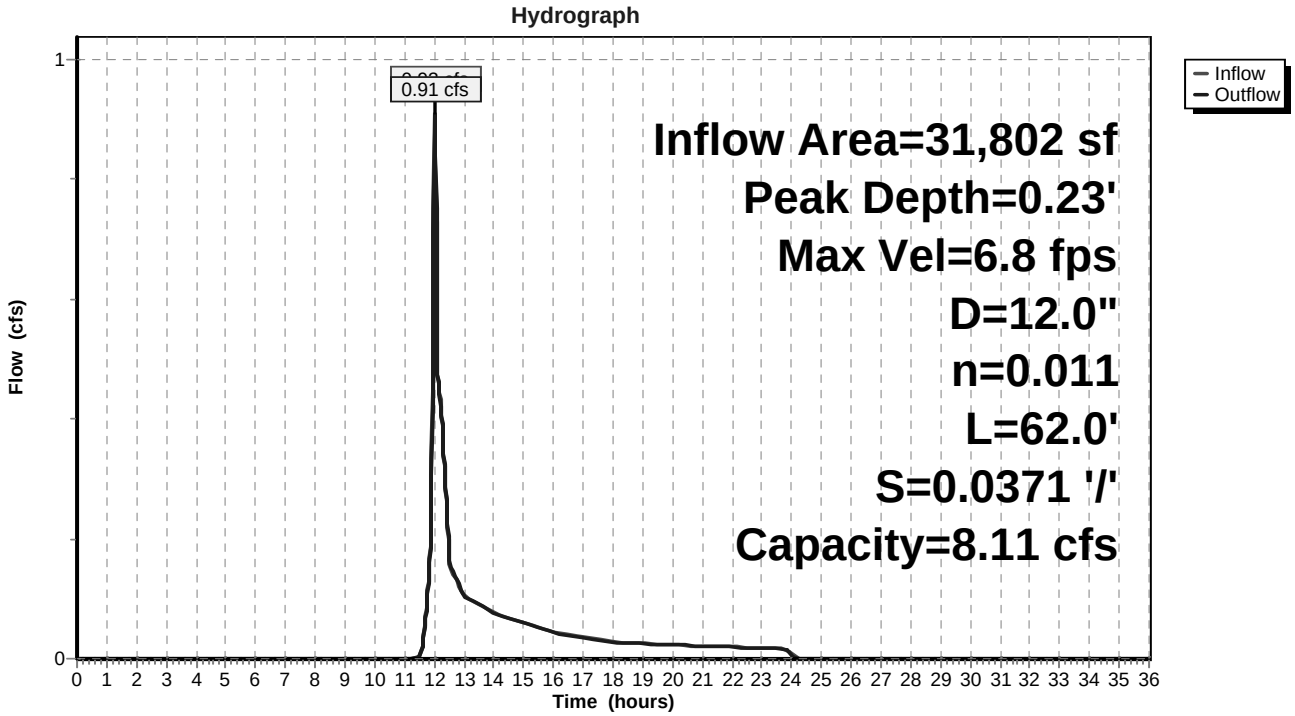
Reach 19R: 12" RCP

Inflow Area = 31,802 sf, Inflow Depth = 1.05" for 10YR event
Inflow = 0.93 cfs @ 12.01 hrs, Volume= 2,774 cf
Outflow = 0.91 cfs @ 12.02 hrs, Volume= 2,774 cf, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.8 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.7 fps, Avg. Travel Time= 0.4 min

Peak Depth= 0.23' @ 12.01 hrs
Capacity at bank full= 8.11 cfs
Inlet Invert= 185.40', Outlet Invert= 183.10'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 62.0' Slope= 0.0371 '/'

Reach 19R: 12" RCP



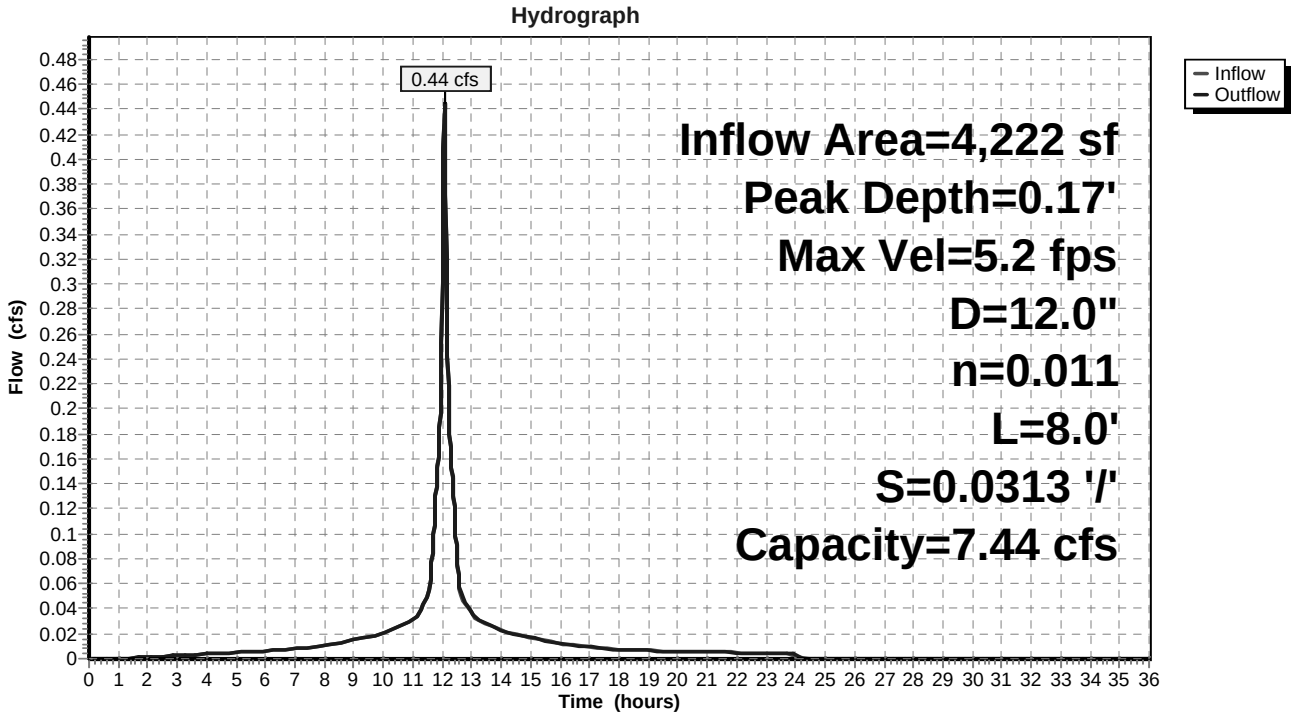
Reach 20R: 12" RCP

Inflow Area = 4,222 sf, Inflow Depth = 4.31" for 10YR event
Inflow = 0.44 cfs @ 12.07 hrs, Volume= 1,518 cf
Outflow = 0.44 cfs @ 12.07 hrs, Volume= 1,518 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.17' @ 12.07 hrs
Capacity at bank full= 7.44 cfs
Inlet Invert= 181.00', Outlet Invert= 180.75'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 8.0' Slope= 0.0313 '/'

Reach 20R: 12" RCP



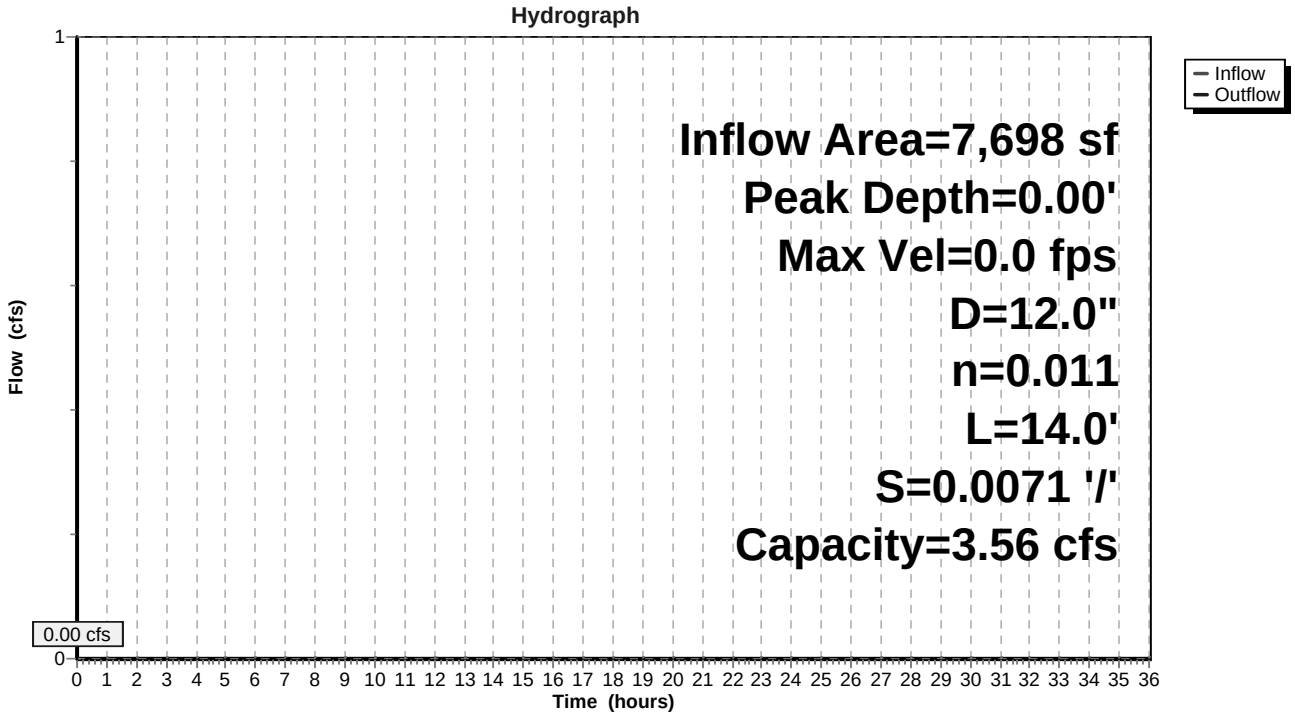
Reach 22R: 12" rcp

Inflow Area = 7,698 sf, Inflow Depth = 0.00" for 10YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 3.56 cfs
Inlet Invert= 180.75', Outlet Invert= 180.65'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 14.0' Slope= 0.0071 '/'

Reach 22R: 12" rcp



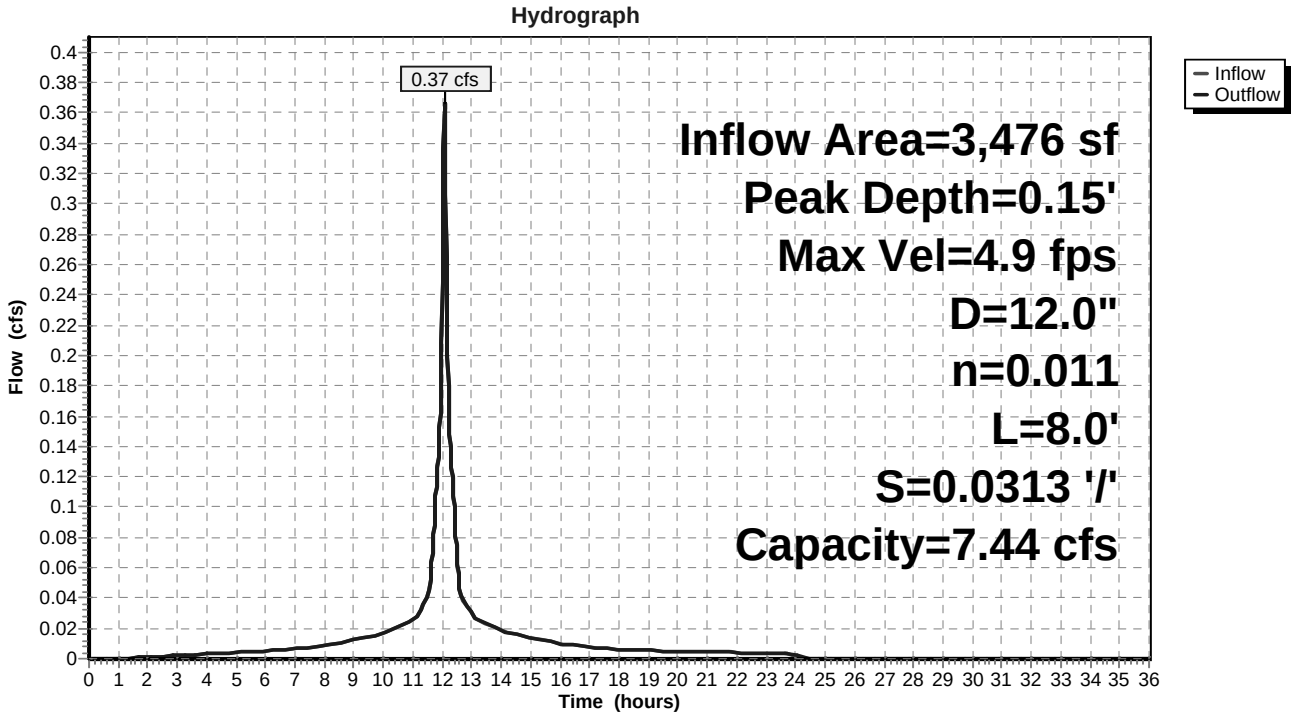
Reach 25R: 12" RCP

Inflow Area = 3,476 sf, Inflow Depth = 4.31" for 10YR event
Inflow = 0.37 cfs @ 12.07 hrs, Volume= 1,250 cf
Outflow = 0.37 cfs @ 12.07 hrs, Volume= 1,250 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.9 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.15' @ 12.07 hrs
Capacity at bank full= 7.44 cfs
Inlet Invert= 181.00', Outlet Invert= 180.75'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 8.0' Slope= 0.0313 '/'

Reach 25R: 12" RCP



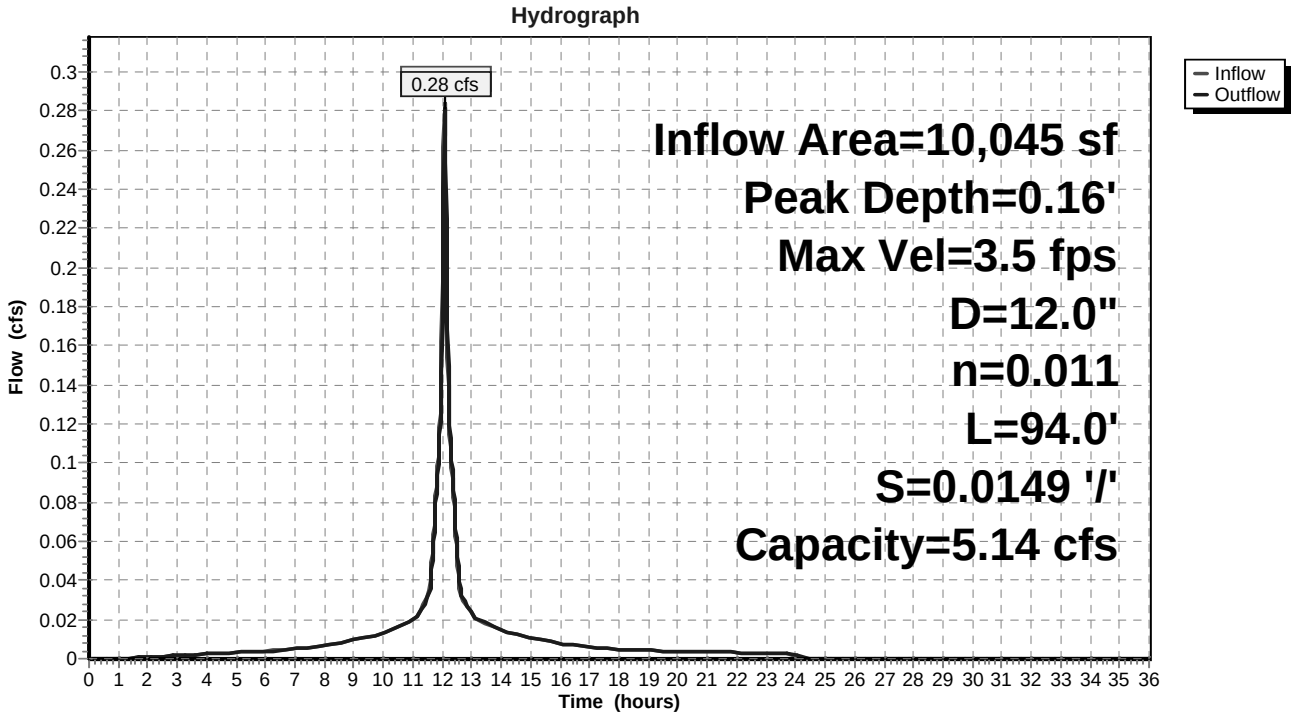
Reach 28R: 12" RCP

Inflow Area = 10,045 sf, Inflow Depth = 1.16" for 10YR event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 969 cf
Outflow = 0.28 cfs @ 12.08 hrs, Volume= 969 cf, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.5 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.16' @ 12.08 hrs
Capacity at bank full= 5.14 cfs
Inlet Invert= 142.70', Outlet Invert= 141.30'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 94.0' Slope= 0.0149 '/'

Reach 28R: 12" RCP



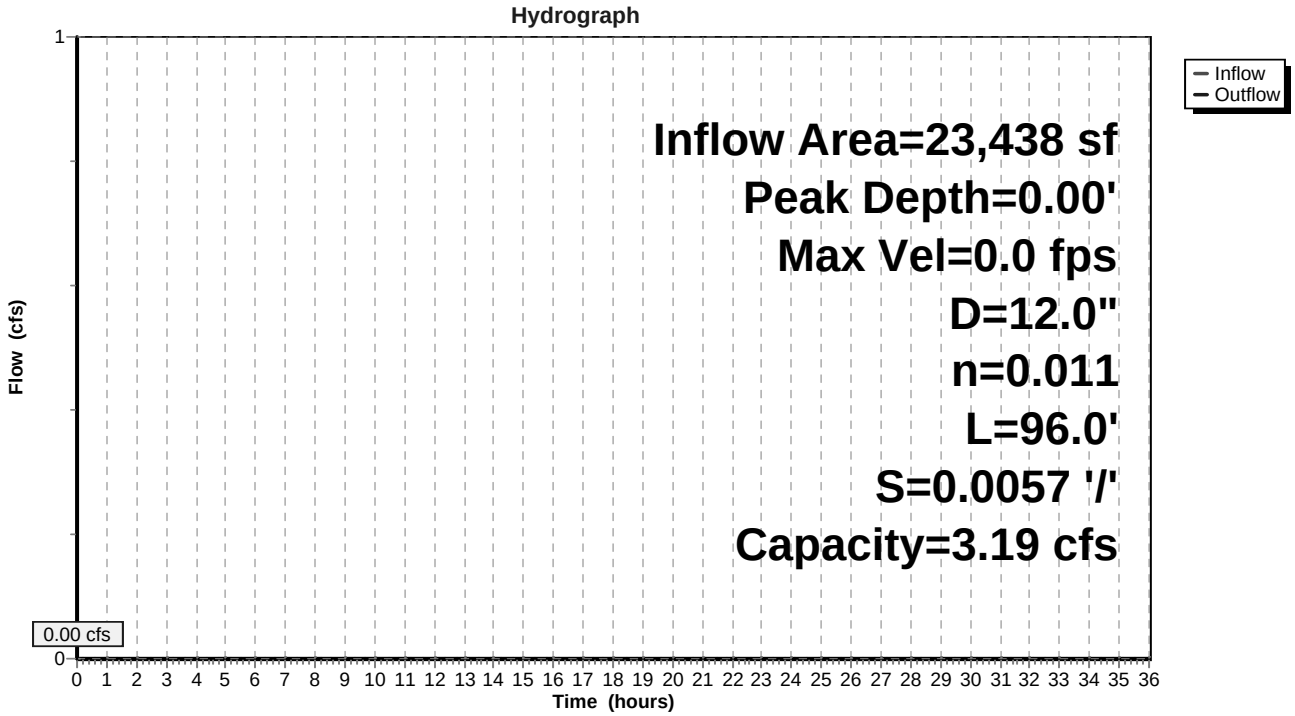
Reach 30R: 12" rcp

Inflow Area = 23,438 sf, Inflow Depth = 0.00" for 10YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 3.19 cfs
Inlet Invert= 180.55', Outlet Invert= 180.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 96.0' Slope= 0.0057 '/'

Reach 30R: 12" rcp



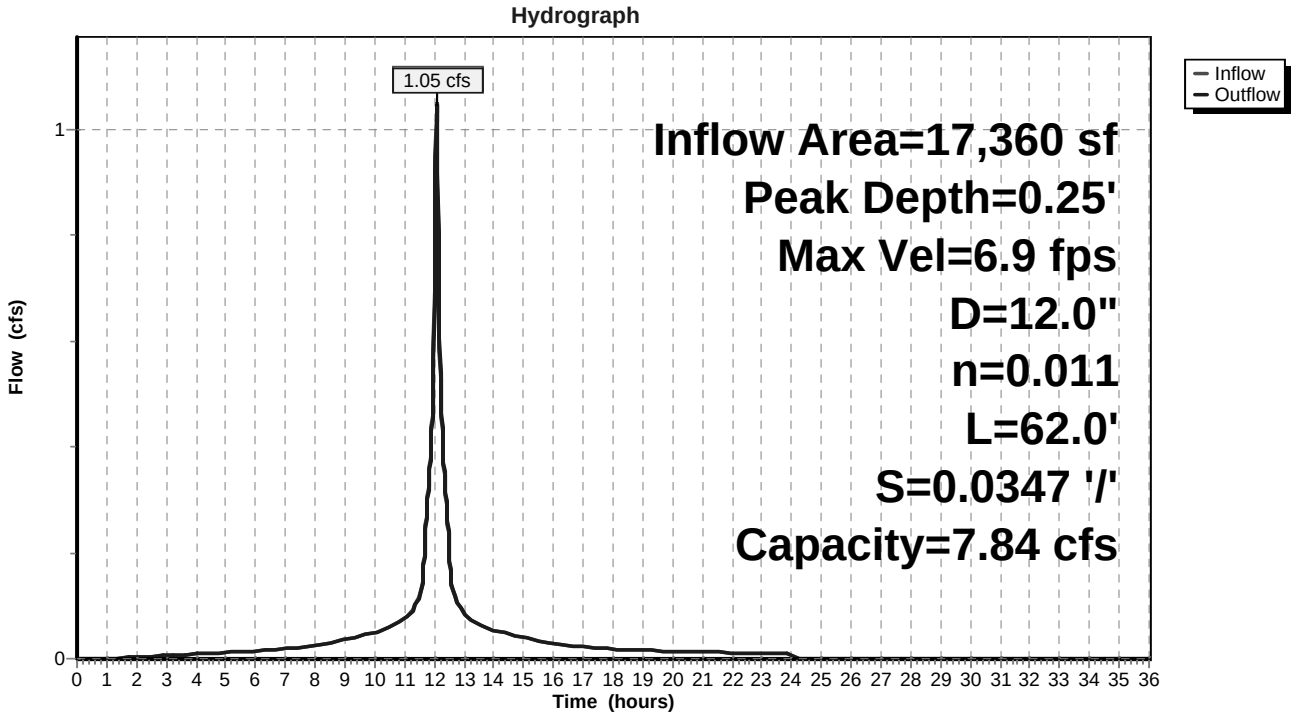
Reach 32R: 12" RCP

Inflow Area = 17,360 sf, Inflow Depth = 2.49" for 10YR event
Inflow = 1.05 cfs @ 12.07 hrs, Volume= 3,599 cf
Outflow = 1.05 cfs @ 12.08 hrs, Volume= 3,599 cf, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.9 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 0.5 min

Peak Depth= 0.25' @ 12.08 hrs
Capacity at bank full= 7.84 cfs
Inlet Invert= 141.20', Outlet Invert= 139.05'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 62.0' Slope= 0.0347 '/'

Reach 32R: 12" RCP



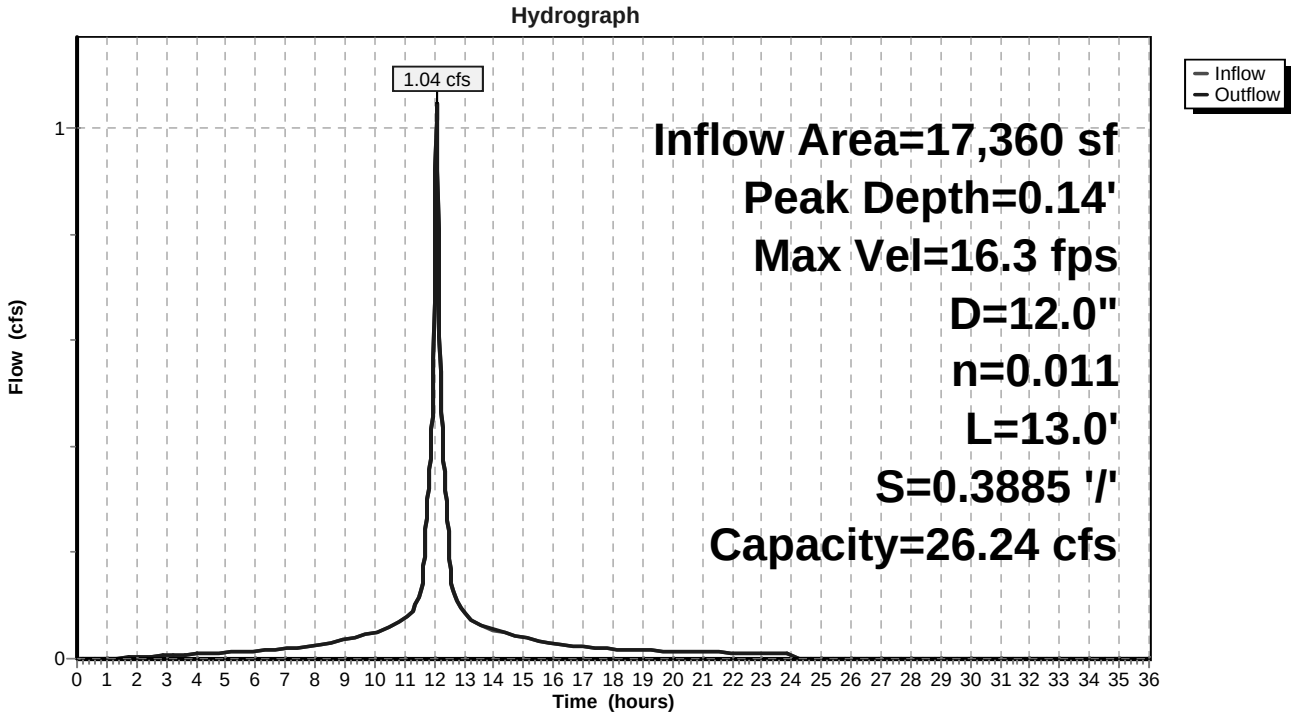
Reach 33R: 12" RCP

Inflow Area = 17,360 sf, Inflow Depth = 2.49" for 10YR event
Inflow = 1.05 cfs @ 12.08 hrs, Volume= 3,599 cf
Outflow = 1.04 cfs @ 12.08 hrs, Volume= 3,599 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 16.3 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 5.3 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.14' @ 12.08 hrs
Capacity at bank full= 26.24 cfs
Inlet Invert= 139.05', Outlet Invert= 134.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 13.0' Slope= 0.3885 '/'

Reach 33R: 12" RCP



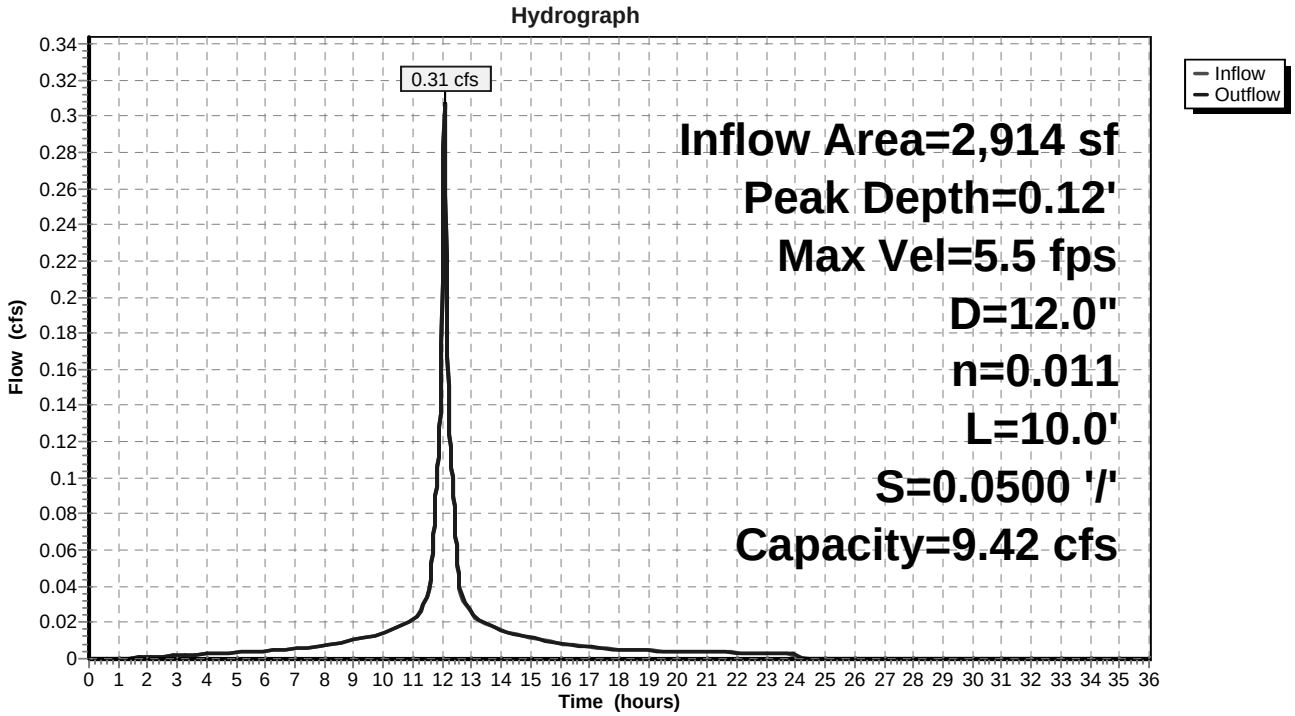
Reach 34R: 12" RCP

Inflow Area = 2,914 sf, Inflow Depth = 4.31" for 10YR event
Inflow = 0.31 cfs @ 12.07 hrs, Volume= 1,048 cf
Outflow = 0.31 cfs @ 12.07 hrs, Volume= 1,048 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.12' @ 12.07 hrs
Capacity at bank full= 9.42 cfs
Inlet Invert= 157.00', Outlet Invert= 156.50'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.0500 '/'

Reach 34R: 12" RCP



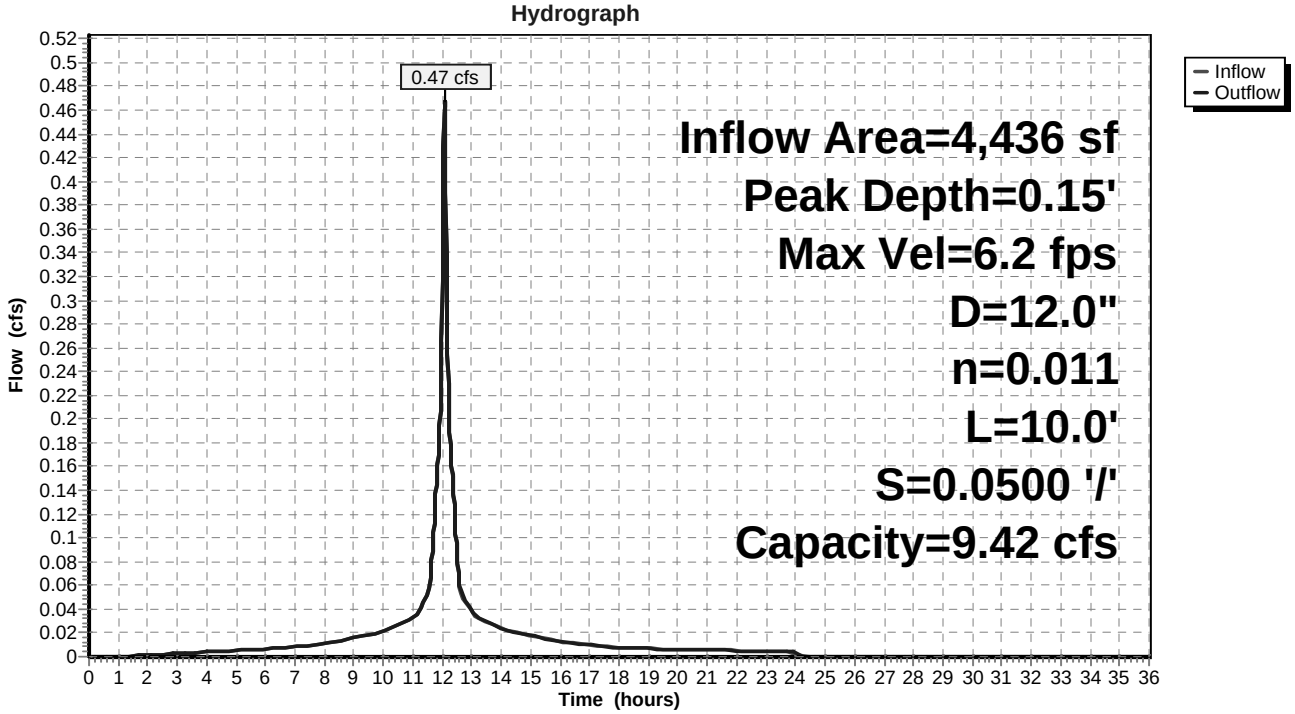
Reach 36R: 12" RCP

Inflow Area = 4,436 sf, Inflow Depth = 4.31" for 10YR event
Inflow = 0.47 cfs @ 12.07 hrs, Volume= 1,595 cf
Outflow = 0.47 cfs @ 12.07 hrs, Volume= 1,595 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.2 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.15' @ 12.07 hrs
Capacity at bank full= 9.42 cfs
Inlet Invert= 157.00', Outlet Invert= 156.50'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.0500 '/'

Reach 36R: 12" RCP



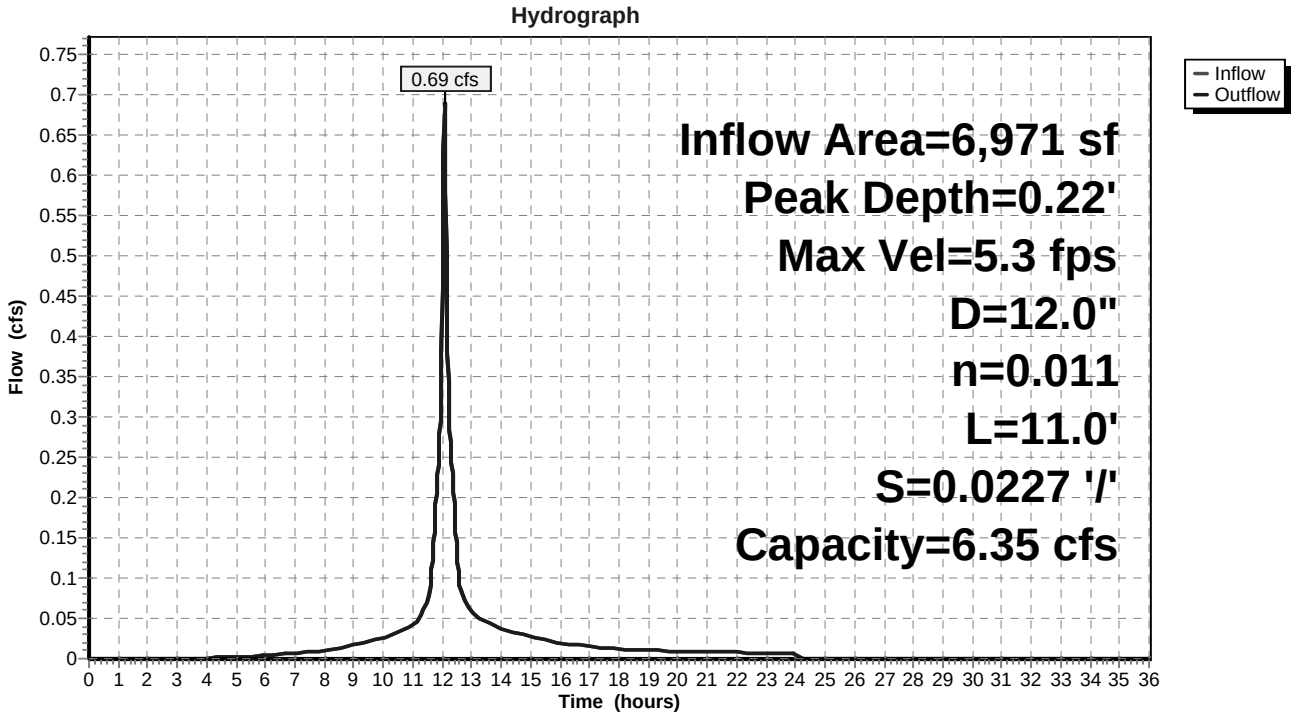
Reach 37R: 12" RCP

Inflow Area = 6,971 sf, Inflow Depth = 3.76" for 10YR event
Inflow = 0.69 cfs @ 12.07 hrs, Volume= 2,182 cf
Outflow = 0.69 cfs @ 12.07 hrs, Volume= 2,182 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.3 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.22' @ 12.07 hrs
Capacity at bank full= 6.35 cfs
Inlet Invert= 192.50', Outlet Invert= 192.25'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 11.0' Slope= 0.0227 '/'

Reach 37R: 12" RCP



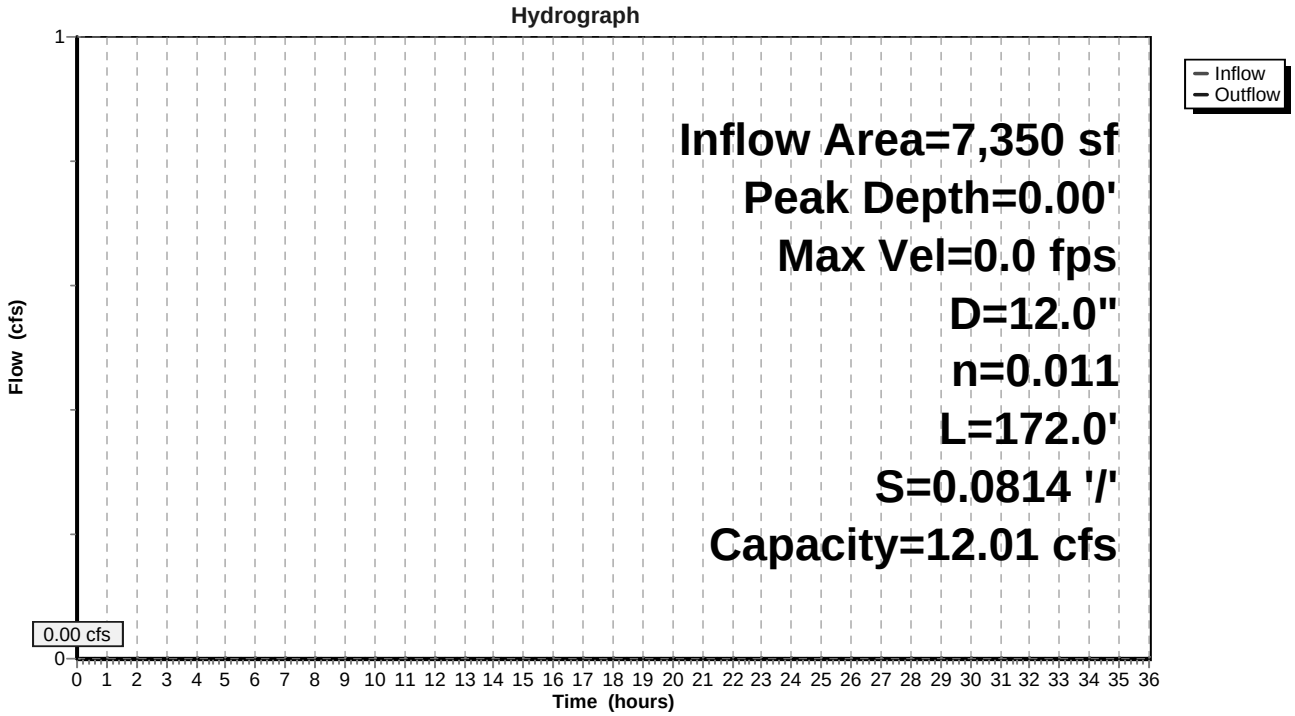
Reach 39R: 12" rcp

Inflow Area = 7,350 sf, Inflow Depth = 0.00" for 10YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 12.01 cfs
Inlet Invert= 157.00', Outlet Invert= 143.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 172.0' Slope= 0.0814 '/'

Reach 39R: 12" rcp



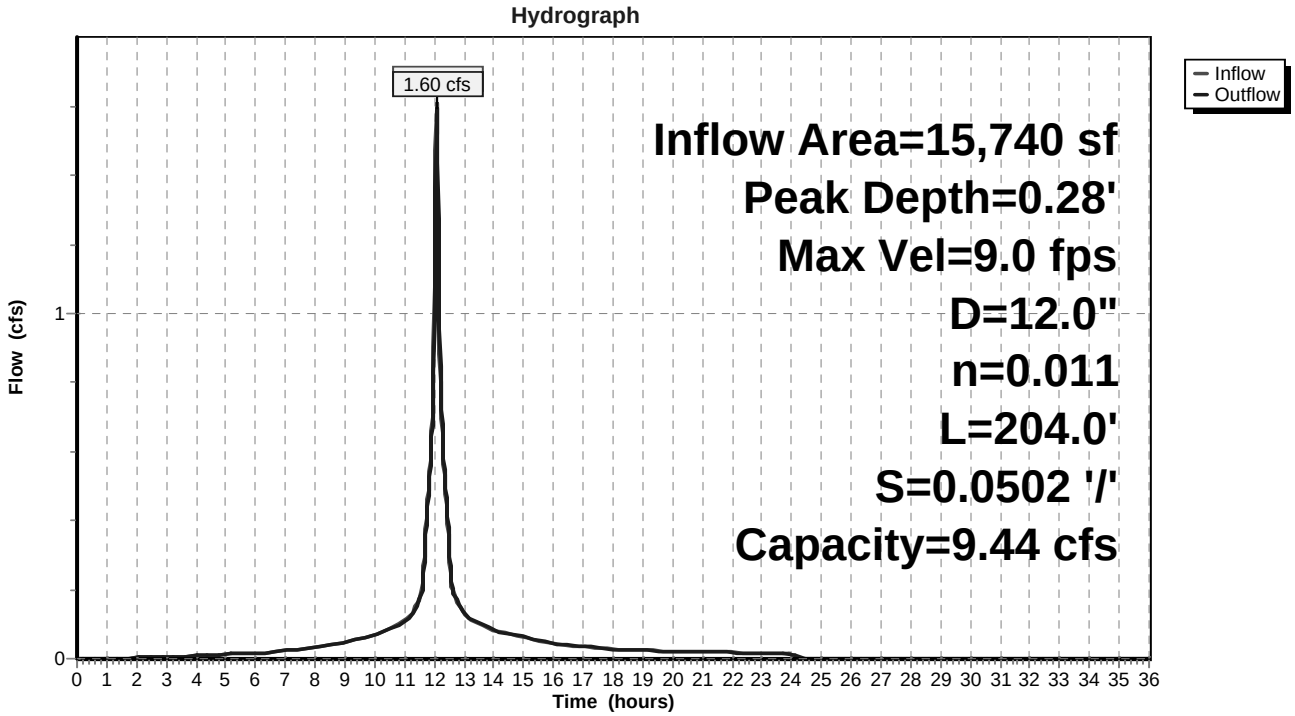
Reach 40R: 12" RCP

Inflow Area = 15,740 sf, Inflow Depth = 4.07" for 10YR event
Inflow = 1.61 cfs @ 12.07 hrs, Volume= 5,335 cf
Outflow = 1.60 cfs @ 12.08 hrs, Volume= 5,335 cf, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 9.0 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 1.2 min

Peak Depth= 0.28' @ 12.08 hrs
Capacity at bank full= 9.44 cfs
Inlet Invert= 192.25', Outlet Invert= 182.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 204.0' Slope= 0.0502 '/'

Reach 40R: 12" RCP



Pond 1P: WestSide D-Pond

Inflow Area =	91,739 sf,	Inflow Depth =	0.76"	for	10YR event
Inflow =	1.80 cfs @	12.04 hrs,	Volume=	5,779 cf	
Outflow =	0.75 cfs @	12.42 hrs,	Volume=	3,798 cf,	Atten= 58%, Lag= 22.8 min
Primary =	0.75 cfs @	12.42 hrs,	Volume=	3,798 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 178.59' @ 12.42 hrs Surf.Area= 899 sf Storage= 1,987 cf
Flood Elev= 177.00' Surf.Area= 598 sf Storage= 869 cf
Plug-Flow detention time= 199.6 min calculated for 3,798 cf (66% of inflow)
Center-of-Mass det. time= 81.5 min (963.4 - 881.8)

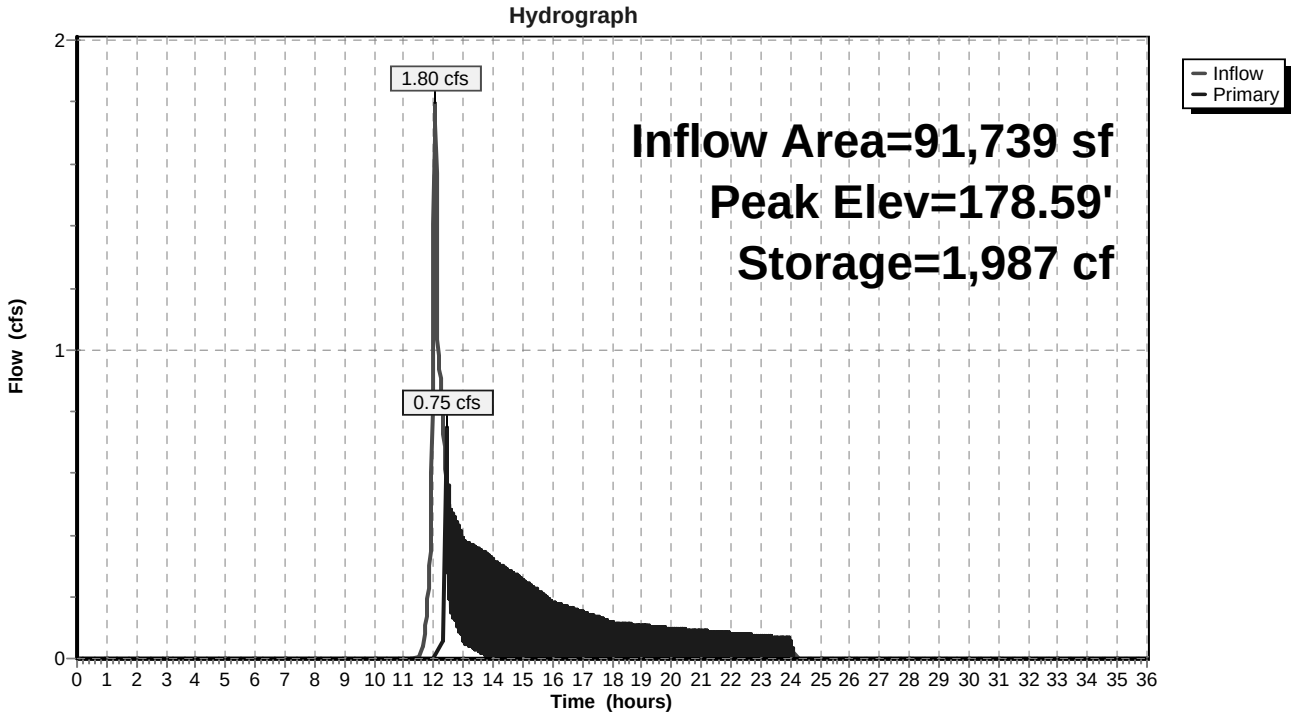
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	1,987 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.00	284	0	0
176.00	428	356	356
177.00	598	513	869
178.00	792	695	1,564
178.50	899	423	1,987

Device	Routing	Invert	Outlet Devices
#1	Primary	178.50'	**10.0' long x 110.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.66 cfs @ 12.42 hrs HW=178.58' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.66 cfs @ 0.8 fps)

Pond 1P: WestSide D-Pond



Pond 2P: CB

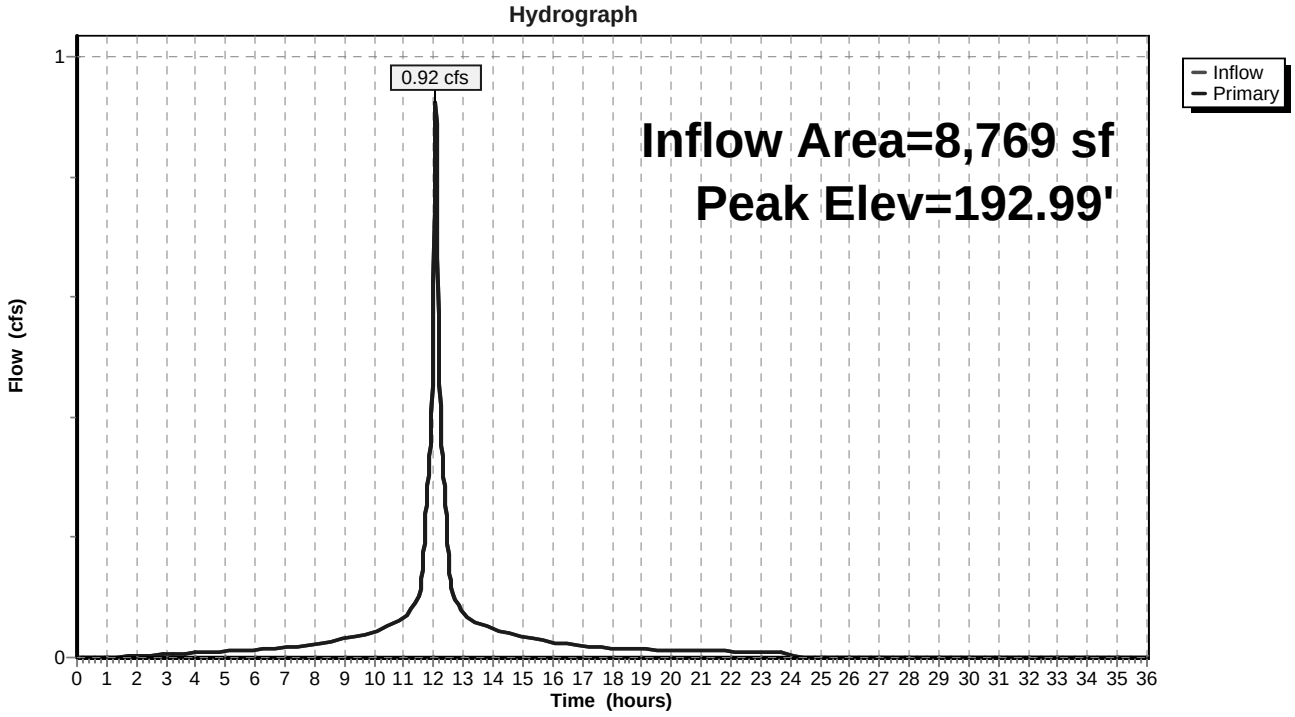
Inflow Area =	8,769 sf,	Inflow Depth =	4.31"	for	10YR event
Inflow =	0.92 cfs @	12.07 hrs,	Volume=	3,152 cf	
Outflow =	0.92 cfs @	12.07 hrs,	Volume=	3,152 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.92 cfs @	12.07 hrs,	Volume=	3,152 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 192.99' @ 12.07 hrs
Flood Elev= 196.50'
Plug-Flow detention time= 0.0 min calculated for 3,151 cf (100% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	192.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.92 cfs @ 12.07 hrs HW=192.99' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.92 cfs @ 2.4 fps)

Pond 2P: CB



Pond 3P: MH

Inflow Area =	91,739 sf,	Inflow Depth =	0.76"	for	10YR event
Inflow =	1.80 cfs @	12.04 hrs,	Volume=	5,779 cf	
Outflow =	1.80 cfs @	12.04 hrs,	Volume=	5,779 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.80 cfs @	12.04 hrs,	Volume=	5,779 cf	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

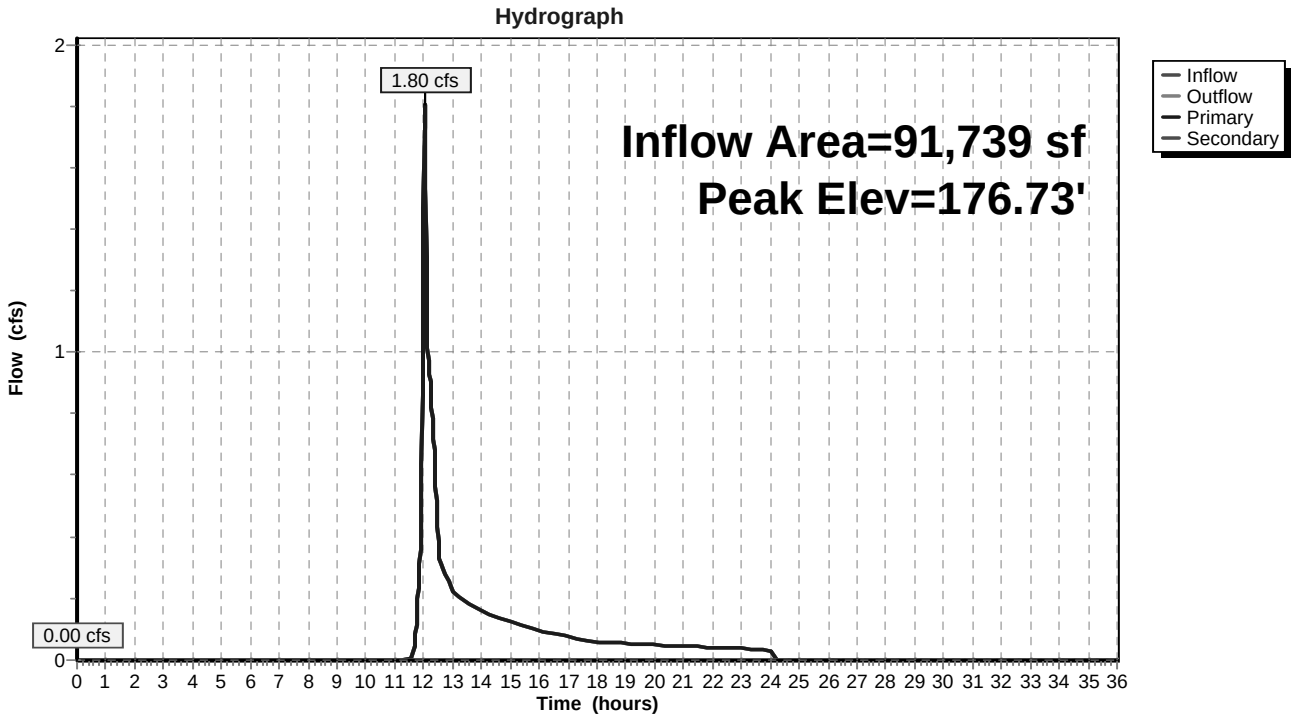
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 176.73' @ 12.04 hrs
Flood Elev= 180.30'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (881.4 - 881.4)

Device	Routing	Invert	Outlet Devices
#1	Secondary	177.00'	**0.5' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	176.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.80 cfs @ 12.04 hrs HW=176.73' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 1.80 cfs @ 2.9 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=176.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: MH



Pond 4P: P-LB1

Inflow Area =	15,740 sf,	Inflow Depth =	4.07"	for	10YR event
Inflow =	1.60 cfs @	12.08 hrs,	Volume=	5,335 cf	
Outflow =	1.57 cfs @	12.10 hrs,	Volume=	5,337 cf,	Atten= 2%, Lag= 1.2 min
Discarded =	0.18 cfs @	11.58 hrs,	Volume=	4,364 cf	
Primary =	1.39 cfs @	12.10 hrs,	Volume=	974 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 182.62' @ 12.10 hrs Surf.Area= 133 sf Storage= 741 cf
Flood Elev= 186.00' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 16.6 min (779.5 - 762.9)

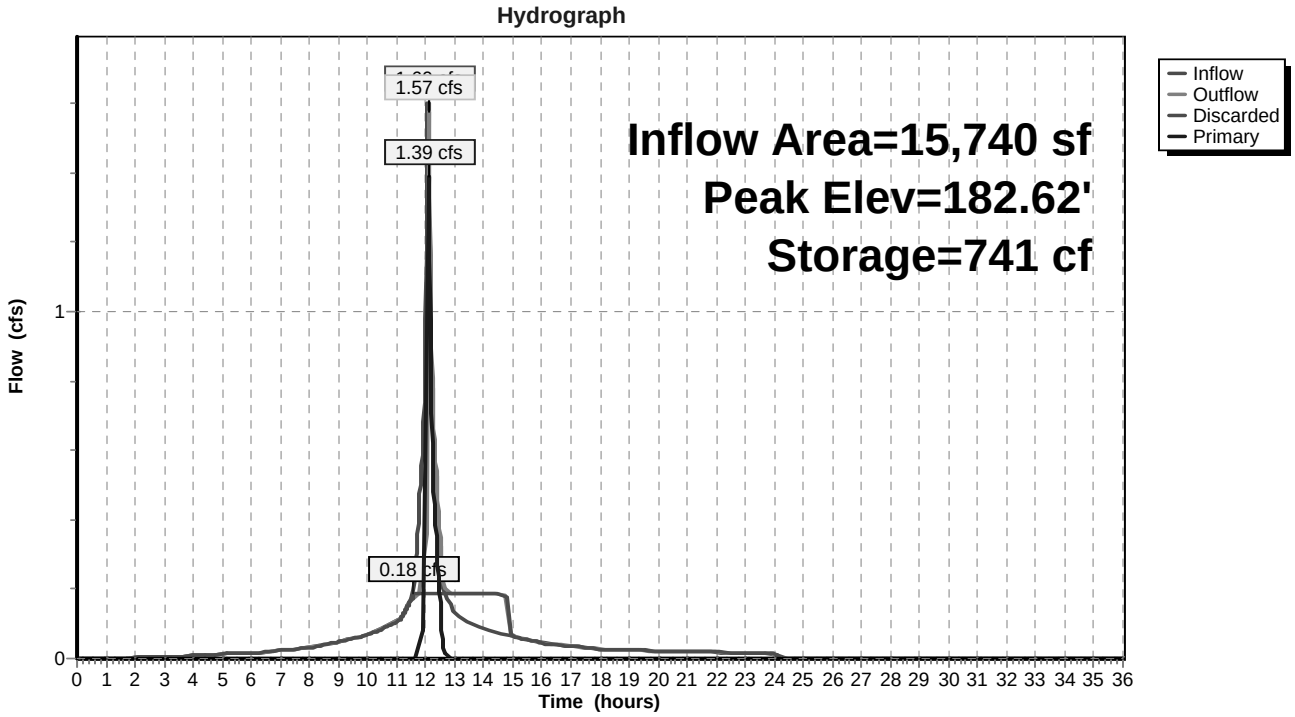
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	173.00'	370 cf	**13.00'D x 10.00'H BED OF STONE**
			1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	182.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.18 cfs @ 11.58 hrs HW=173.13' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=1.37 cfs @ 12.10 hrs HW=182.62' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 1.37 cfs @ 2.7 fps)

Pond 4P: P-LB1


Hydrograph
Inflow Area=15,740 sf
Peak Elev=182.62'
Storage=741 cf
1.57 cfs
1.39 cfs
0.18 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

Pond 5P: P-LB2

Inflow Area =	15,740 sf,	Inflow Depth =	0.74"	for	10YR event
Inflow =	1.41 cfs @	12.10 hrs,	Volume=	974 cf	
Outflow =	0.18 cfs @	12.08 hrs,	Volume=	971 cf,	Atten= 87%, Lag= 0.0 min
Discarded =	0.18 cfs @	12.08 hrs,	Volume=	971 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 181.43' @ 12.48 hrs Surf.Area= 133 sf Storage= 641 cf
Flood Elev= 186.00' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= 34.5 min calculated for 971 cf (100% of inflow)
Center-of-Mass det. time= 34.4 min (768.1 - 733.7)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	173.00'	370 cf	**13.00'D x 10.00'H BED OF STONE** 1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

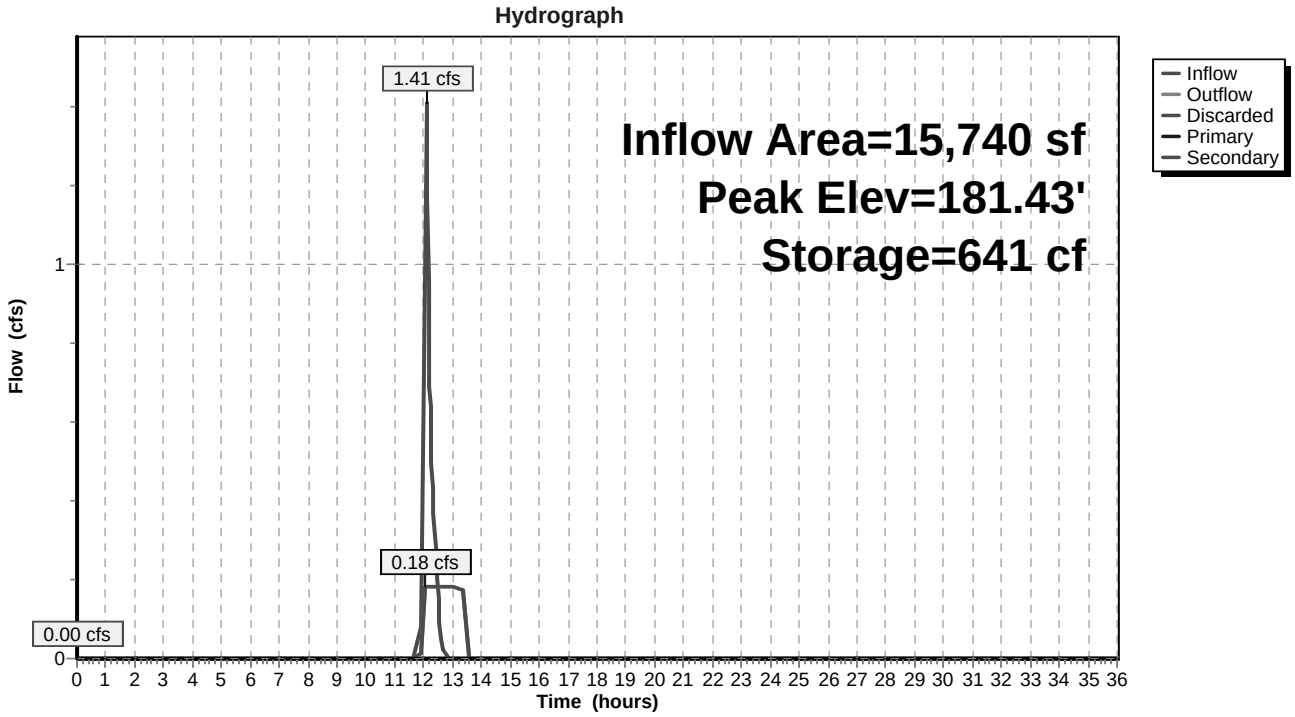
Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	181.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	181.75'	**12.0" x 15.0' long Culvert** RCP, groove end projecting, Ke= 0.200 Outlet Invert= 181.50' S= 0.0167 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Discarded OutFlow Max=0.18 cfs @ 12.08 hrs HW=173.60' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=173.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=173.00' (Free Discharge)
└**3=Culvert** (Controls 0.00 cfs)

Pond 5P: P-LB2


Hydrograph
1.41 cfs
0.18 cfs
0.00 cfs
Inflow Area=15,740 sf
Peak Elev=181.43'
Storage=641 cf
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

Pond 6P: LB1

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf, Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Secondary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 167.50' @ 0.00 hrs Surf.Area= 0.006 ac Storage= 0.000 af
Flood Elev= 180.00' Surf.Area= 0.007 ac Storage= 0.029 af
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	175.50'	0.005 af	**8.00'D x 4.50'H Vertical Cone/Cylinder**
#2	168.50'	0.008 af	**8.00'D x 7.00'H Vertical Cone/Cylinder** Inside #3
#3	167.50'	0.015 af	**18.00'D x 8.00'H Vertical Cone/Cylinder**
			0.047 af Overall - 0.008 af Embedded = 0.039 af x 40.0% Voids
		0.029 af	Total Available Storage

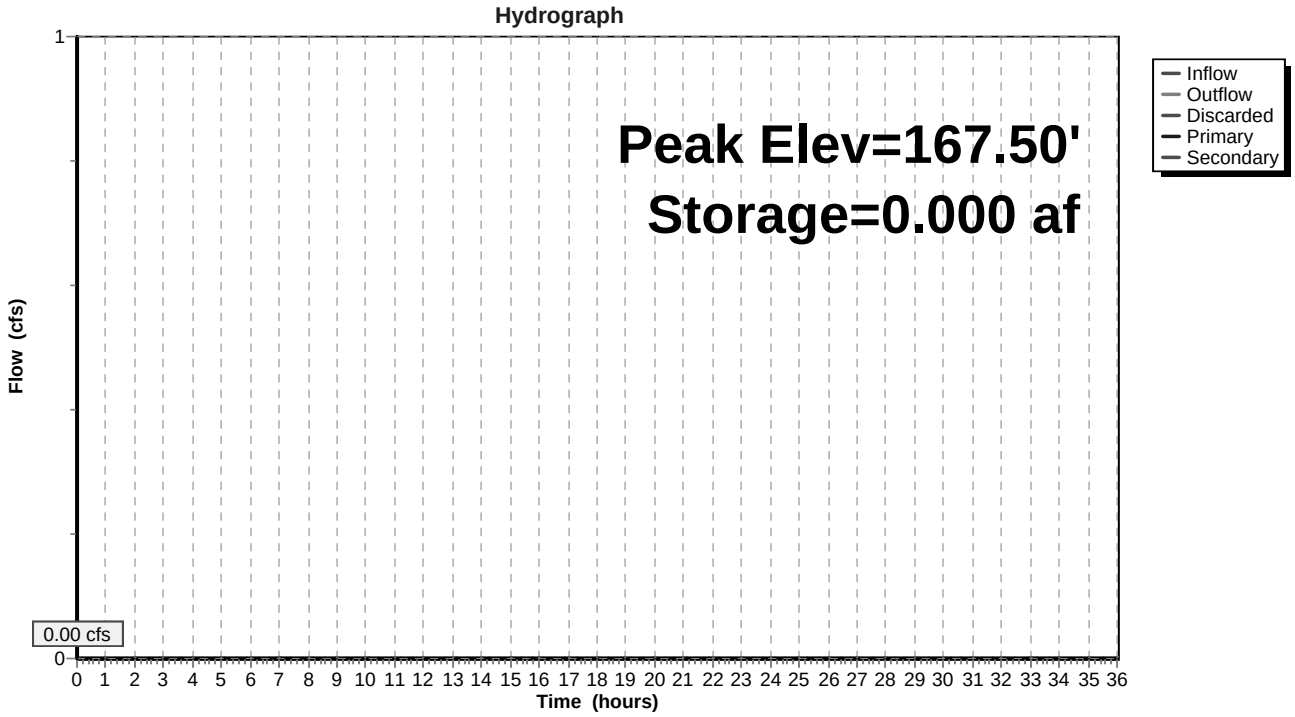
Device	Routing	Invert	Outlet Devices
#1	Primary	175.20'	**12.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	177.00'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.50' (Free Discharge)
└─**3=Exfiltration** (Passes 0.00 cfs of 0.35 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.50' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.50' (Free Discharge)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 6P: LB1


Hydrograph
Peak Elev=167.50'
Storage=0.000 af
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
1
0
0.00 cfs
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
Time (hours)

Pond 7P: LB2

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf, Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf

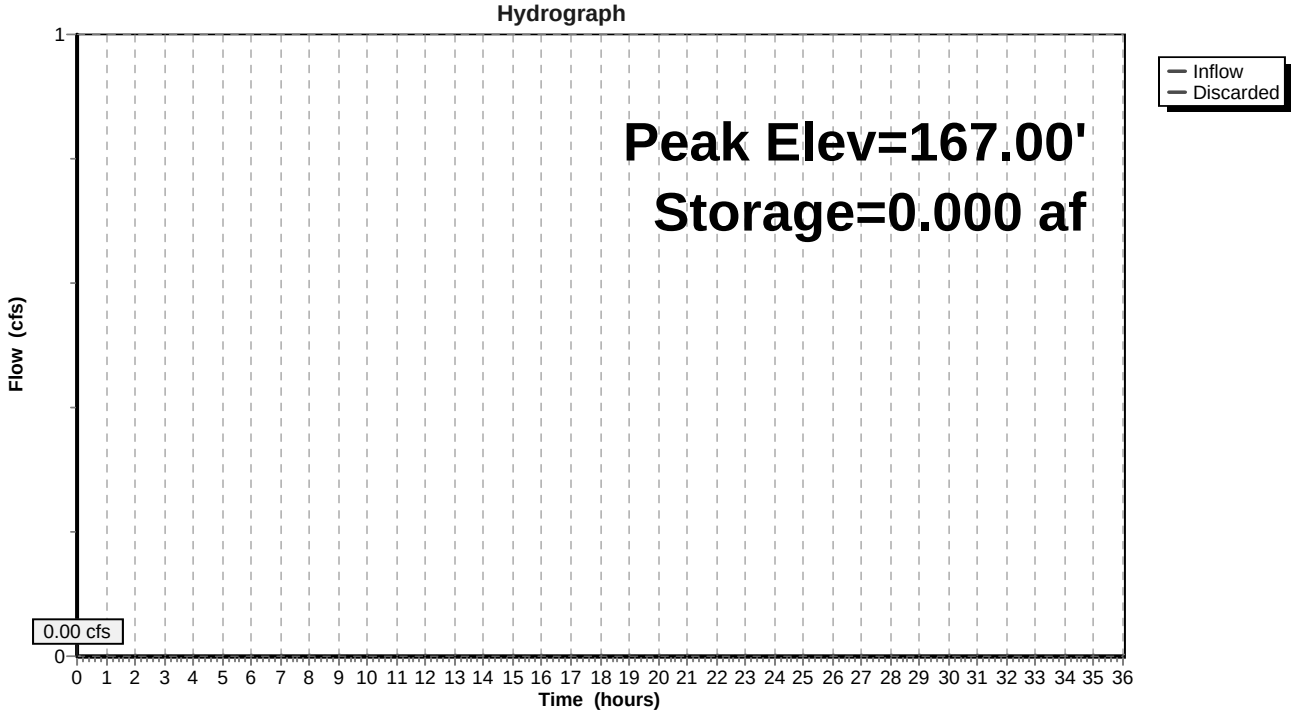
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 167.00' @ 0.00 hrs Surf.Area= 0.006 ac Storage= 0.000 af
Flood Elev= 180.50' Surf.Area= 0.007 ac Storage= 0.030 af
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	0.006 af	**8.00'D x 5.50'H Vertical Cone/Cylinder**
#2	168.30'	0.008 af	**8.00'D x 6.70'H Vertical Cone/Cylinder** Inside #3
#3	167.00'	0.016 af	**18.00'D x 8.00'H Vertical Cone/Cylinder**
			0.047 af Overall - 0.008 af Embedded = 0.039 af x 40.0% Voids
		0.030 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.35 cfs potential flow)

Pond 7P: LB2



Pond 12P: LB3

Inflow Area =	174,314 sf,	Inflow Depth =	0.33"	for	10YR event	
Inflow =	0.78 cfs @	12.42 hrs,	Volume=		4,797 cf	
Outflow =	0.35 cfs @	12.42 hrs,	Volume=		4,797 cf,	Atten= 55%, Lag= 0.0 min
Discarded =	0.35 cfs @	12.42 hrs,	Volume=		4,797 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=		0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 167.66' @ 12.56 hrs Surf.Area= 254 sf Storage= 68 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.7 min (976.8 - 976.1)

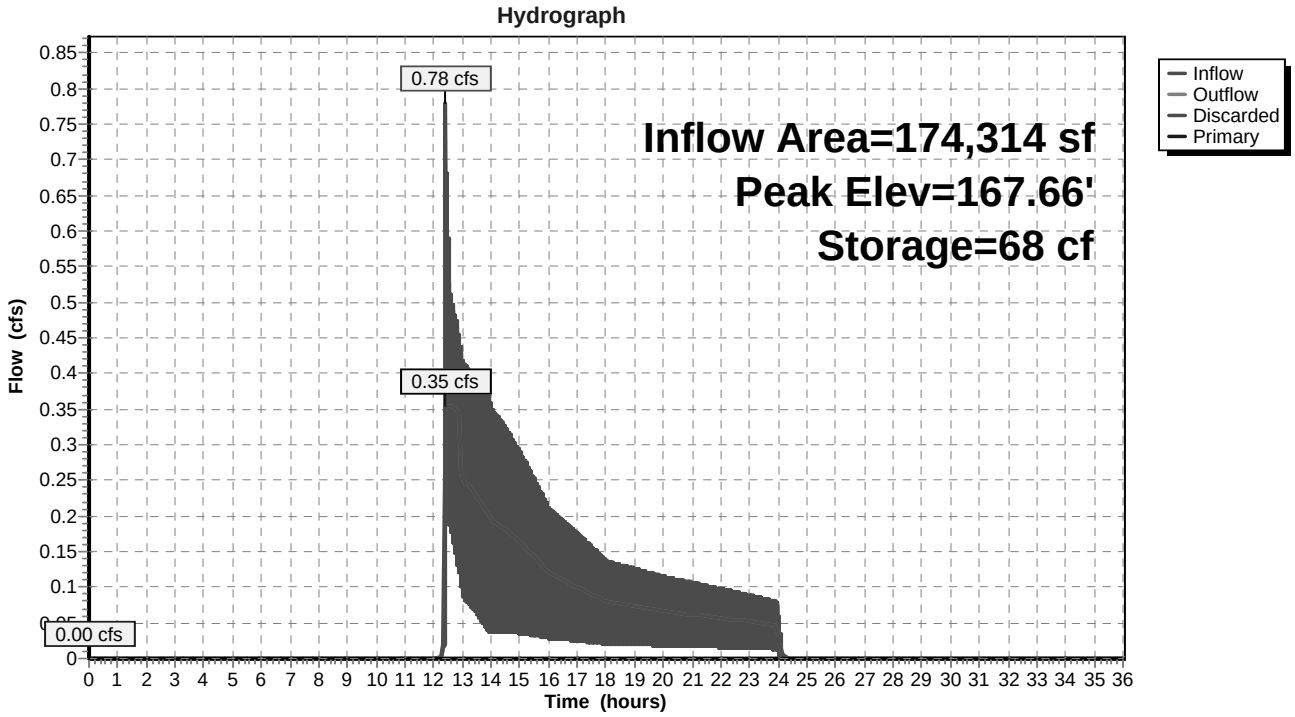
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	73 cf	**8.00'D x 1.45'H Vertical Cone/Cylinder**
#2	168.30'	337 cf	**8.00'D x 6.70'H Vertical Cone/Cylinder** Inside #3
#3	167.00'	680 cf	**18.00'D x 8.00'H Vertical Cone/Cylinder**
			2,036 cf Overall - 337 cf Embedded = 1,699 cf x 40.0% Voids
		1,089 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	176.45'	**2.0' long x 2.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50
			Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.35 cfs @ 12.42 hrs HW=167.15' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.35 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.00' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: LB3


Hydrograph
Inflow Area=174,314 sf
Peak Elev=167.66'
Storage=68 cf
0.78 cfs
0.35 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Pond 13P: MH

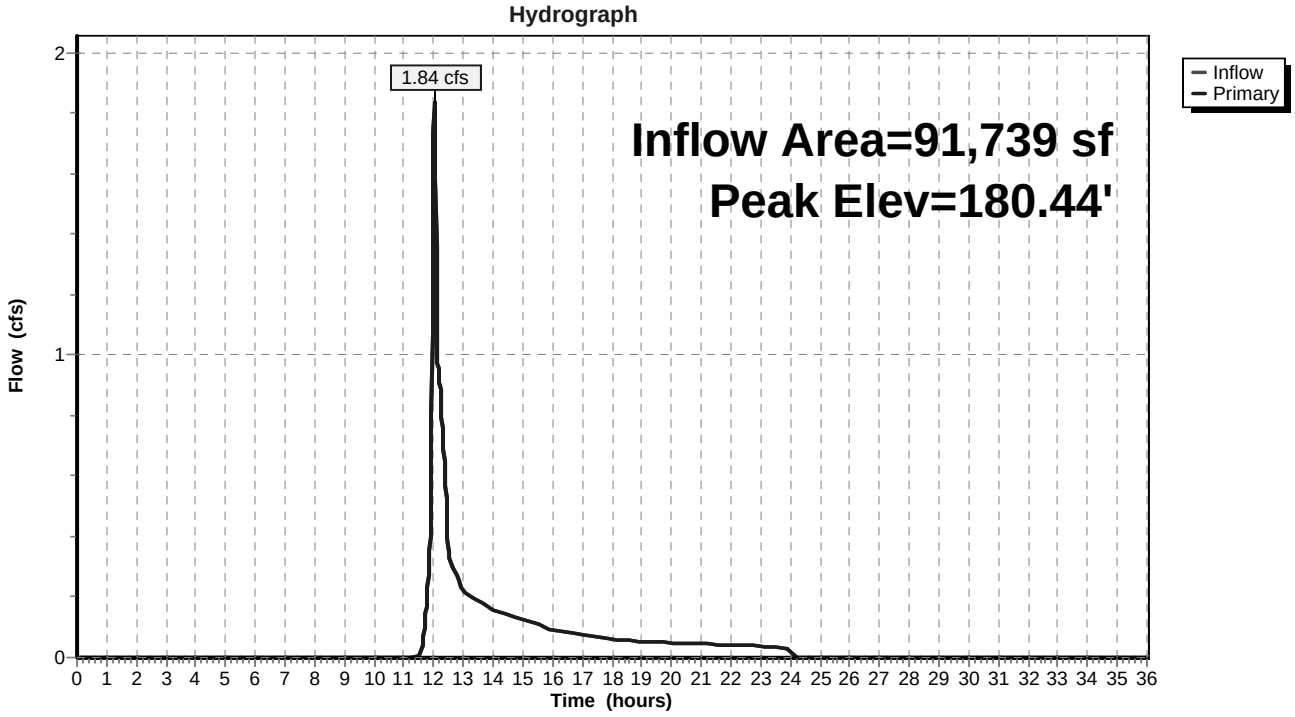
Inflow Area =	91,739 sf,	Inflow Depth =	0.76"	for	10YR event
Inflow =	1.84 cfs @	12.02 hrs,	Volume=	5,779 cf	
Outflow =	1.84 cfs @	12.02 hrs,	Volume=	5,779 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.84 cfs @	12.02 hrs,	Volume=	5,779 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 180.44' @ 12.02 hrs
Flood Elev= 184.90'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	179.70'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.83 cfs @ 12.02 hrs HW=180.44' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.83 cfs @ 2.9 fps)

Pond 13P: MH



Pond 14P: P-MH

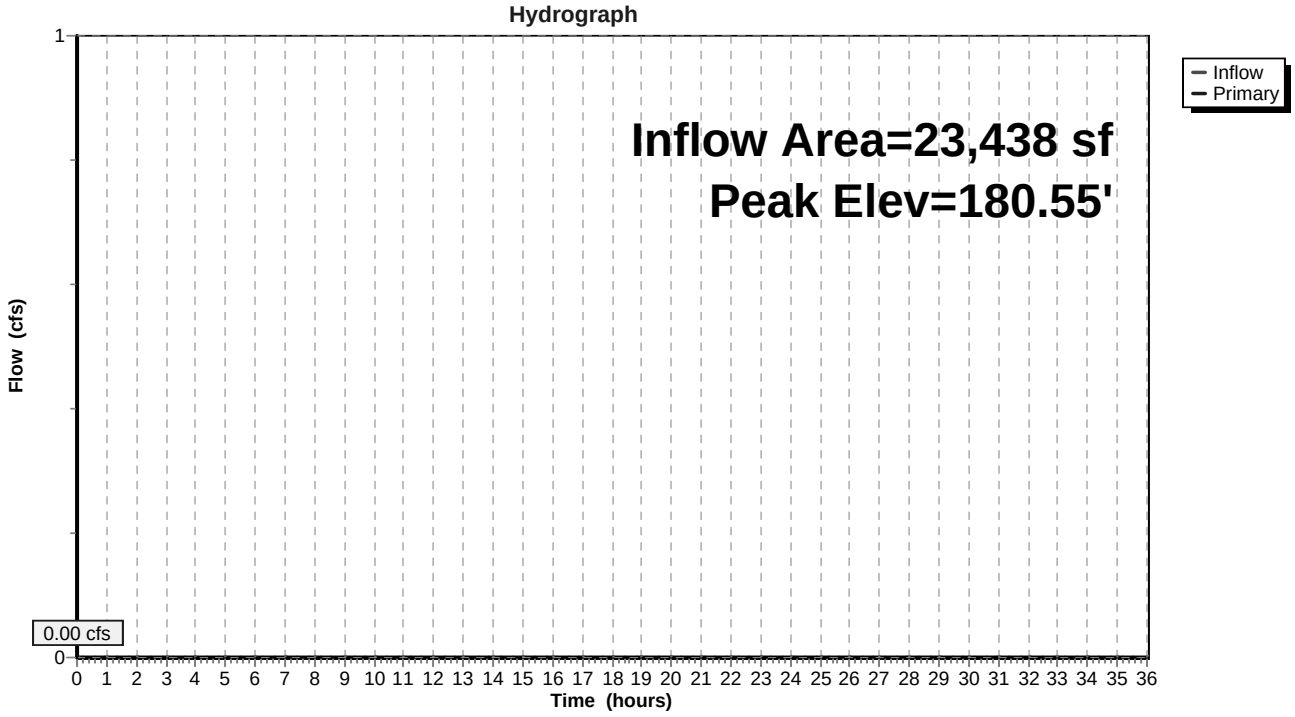
Inflow Area =	23,438 sf,	Inflow Depth =	0.00"	for	10YR event
Inflow =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	
Outflow =	0.00 cfs @	0.00 hrs,	Volume=	0 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 180.55' @ 0.00 hrs
Flood Elev= 186.00'
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	180.55'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=180.55' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 14P: P-MH



Pond 15P: (2) CB

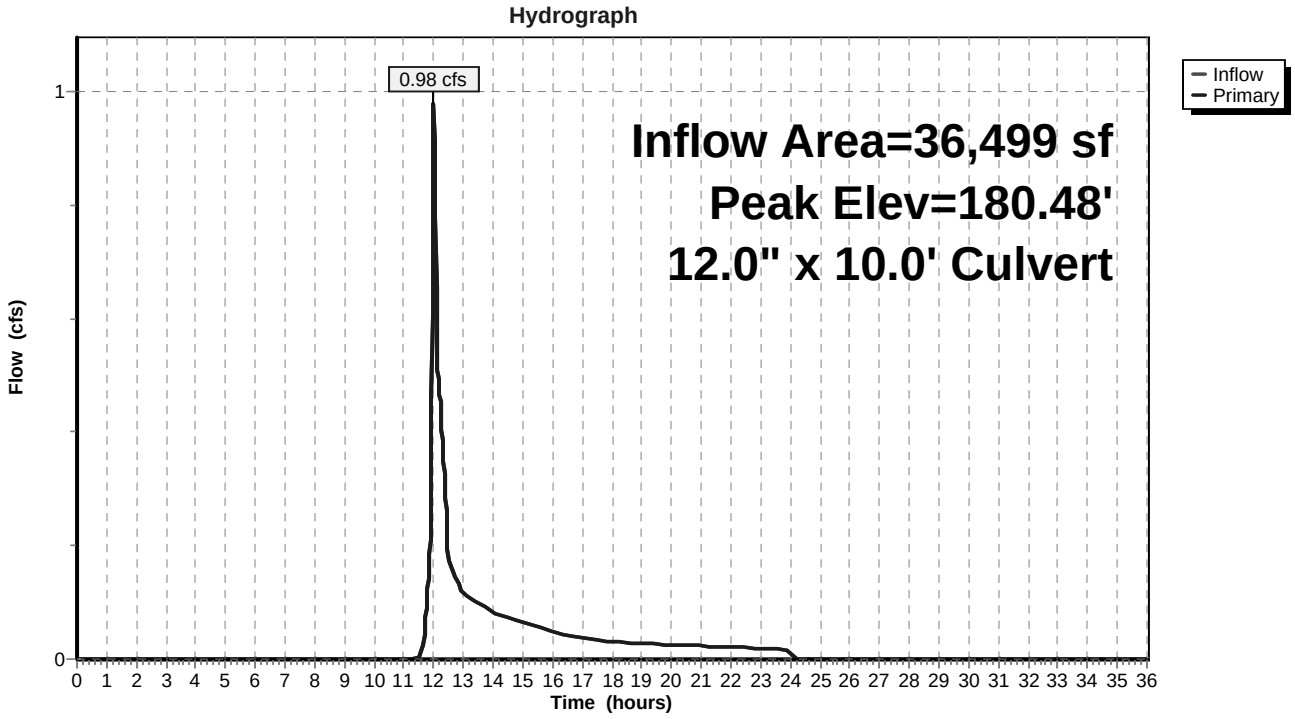
Inflow Area =	36,499 sf,	Inflow Depth =	0.99"	for	10YR event
Inflow =	0.98 cfs @	12.01 hrs,	Volume=	3,005 cf	
Outflow =	0.98 cfs @	12.01 hrs,	Volume=	3,005 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.98 cfs @	12.01 hrs,	Volume=	3,005 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 180.48' @ 12.01 hrs
Flood Elev= 184.90'
Plug-Flow detention time= 0.0 min calculated for 3,003 cf (100% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	180.15'	**12.0" x 10.0' long Culvert X 2.00** RCP, groove end projecting, Ke= 0.200 Outlet Invert= 179.80' S= 0.0350 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=0.96 cfs @ 12.01 hrs HW=180.48' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.96 cfs @ 3.2 fps)

Pond 15P: (2) CB



Pond 17P: MH

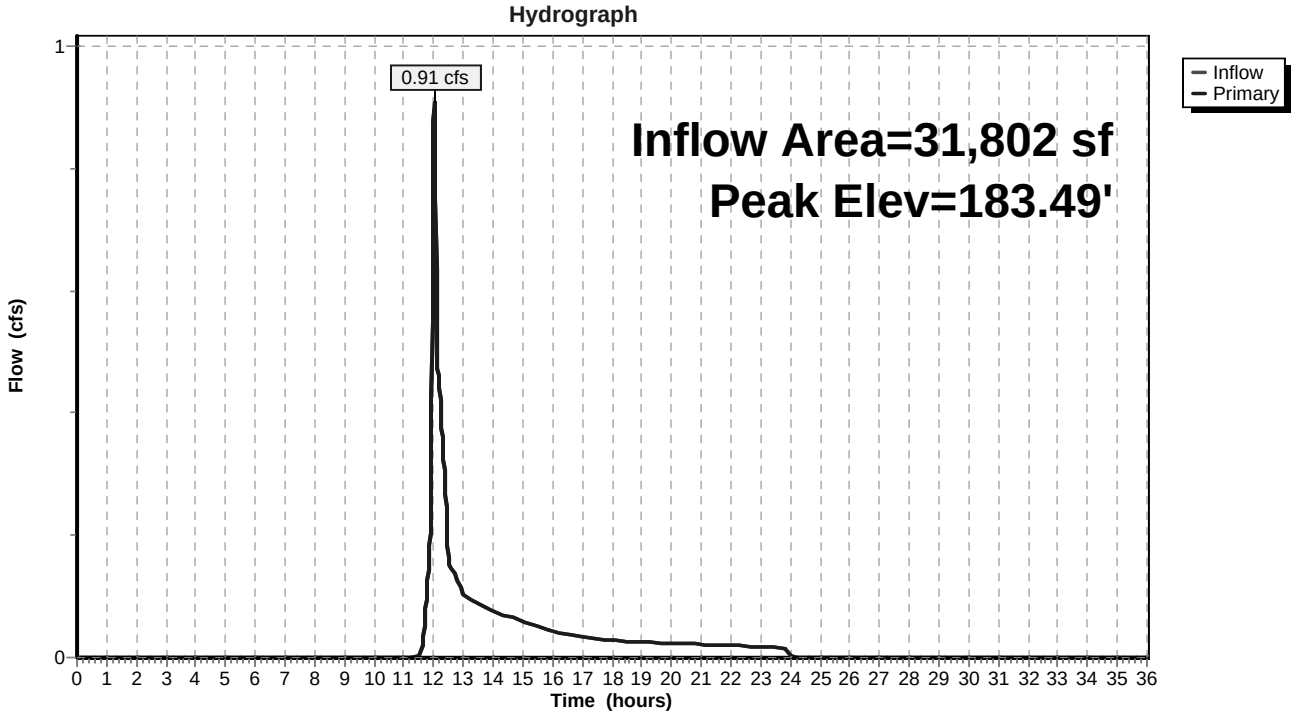
Inflow Area =	31,802 sf,	Inflow Depth =	1.05"	for	10YR event
Inflow =	0.91 cfs @	12.02 hrs,	Volume=	2,774 cf	
Outflow =	0.91 cfs @	12.02 hrs,	Volume=	2,774 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.91 cfs @	12.02 hrs,	Volume=	2,774 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 183.49' @ 12.02 hrs
Flood Elev= 188.05'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (877.7 - 877.7)

Device	Routing	Invert	Outlet Devices
#1	Primary	183.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.90 cfs @ 12.02 hrs HW=183.49' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.90 cfs @ 2.4 fps)

Pond 17P: MH



Pond 18P: CB

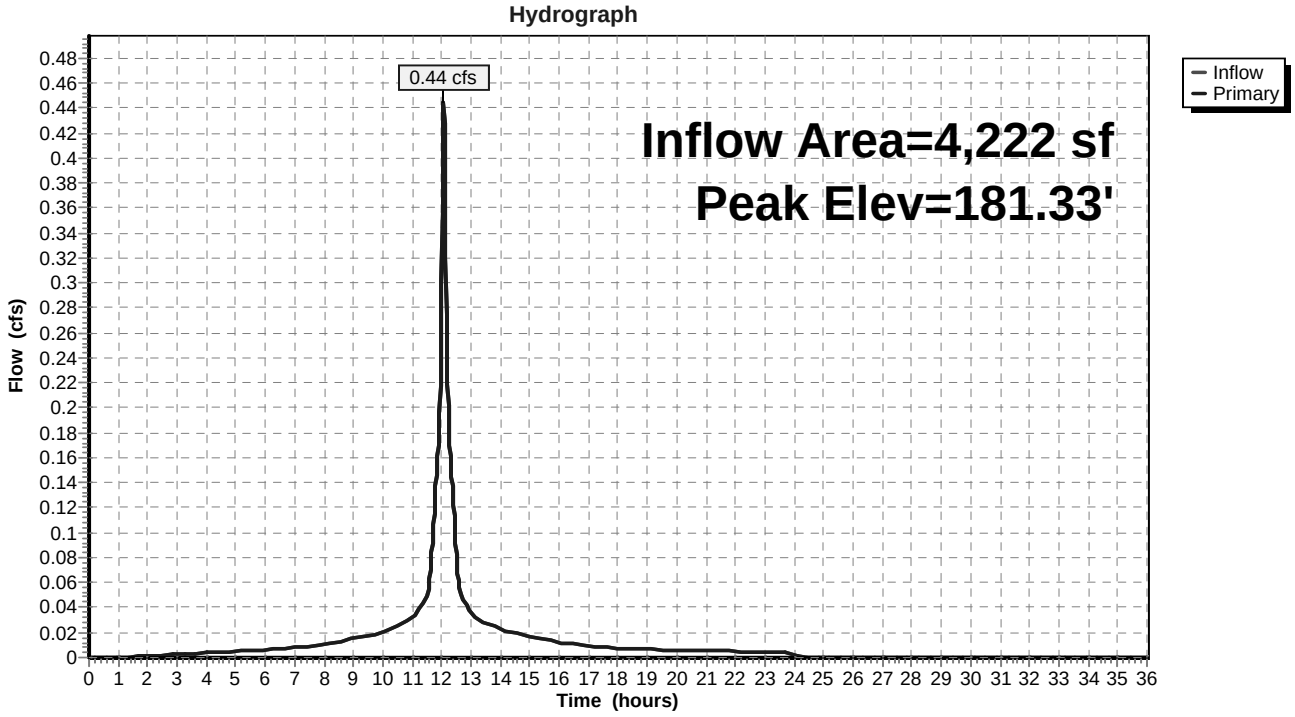
Inflow Area = 4,222 sf, Inflow Depth = 4.31" for 10YR event
Inflow = 0.44 cfs @ 12.07 hrs, Volume= 1,518 cf
Outflow = 0.44 cfs @ 12.07 hrs, Volume= 1,518 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.07 hrs, Volume= 1,518 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 181.33' @ 12.07 hrs
Flood Elev= 185.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (748.7 - 748.7)

Device	Routing	Invert	Outlet Devices
#1	Primary	181.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.44 cfs @ 12.07 hrs HW=181.33' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.44 cfs @ 2.0 fps)

Pond 18P: CB



Pond 20P: (2) CB

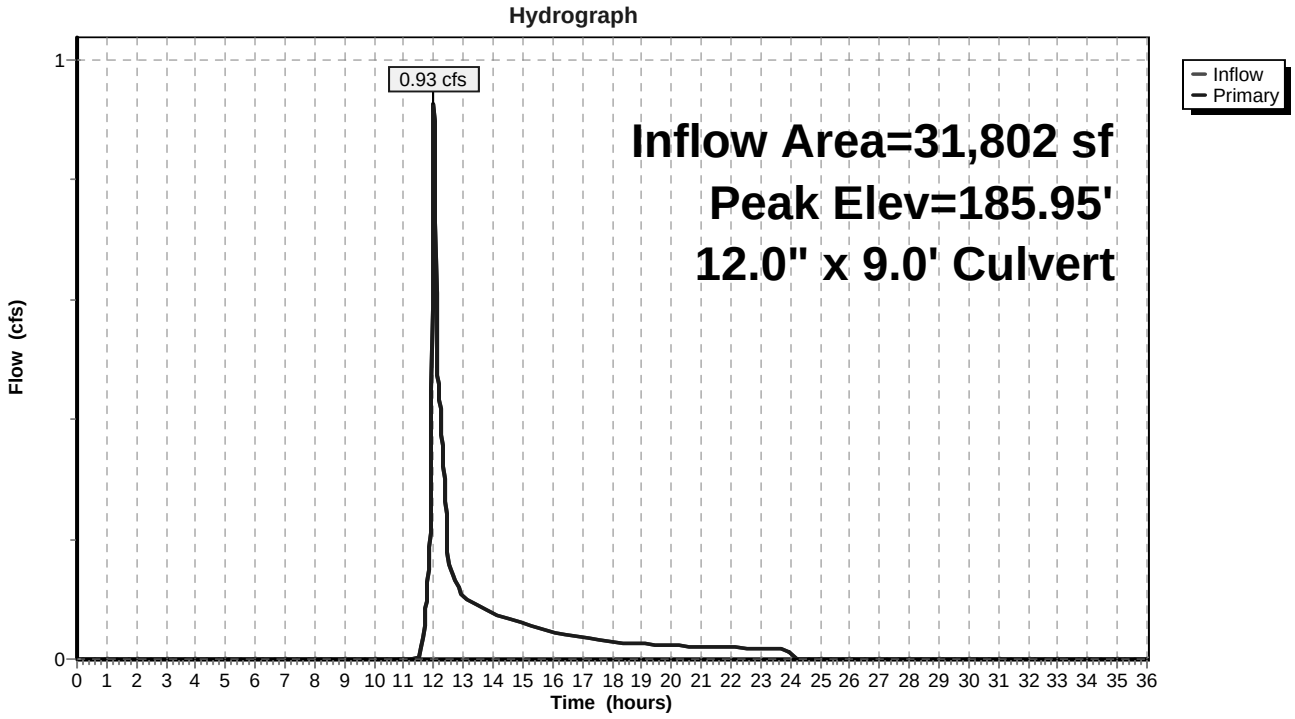
Inflow Area =	31,802 sf,	Inflow Depth =	1.05"	for	10YR event
Inflow =	0.93 cfs @	12.01 hrs,	Volume=	2,774 cf	
Outflow =	0.93 cfs @	12.01 hrs,	Volume=	2,774 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.93 cfs @	12.01 hrs,	Volume=	2,774 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 185.95' @ 12.01 hrs
Flood Elev= 190.14'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (877.3 - 877.3)

Device	Routing	Invert	Outlet Devices
#1	Primary	185.65'	**12.0" x 9.0' long Culvert X 2.00** RCP, groove end projecting, Ke= 0.200 Outlet Invert= 185.40' S= 0.0278 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.90 cfs @ 12.01 hrs HW=185.95' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.90 cfs @ 2.3 fps)

Pond 20P: (2) CB



Pond 21P: P-LB3

Inflow Area =	7,698 sf,	Inflow Depth =	4.31"	for	10YR event
Inflow =	0.81 cfs @	12.07 hrs,	Volume=	2,767 cf	
Outflow =	0.18 cfs @	11.72 hrs,	Volume=	2,768 cf,	Atten= 77%, Lag= 0.0 min
Discarded =	0.18 cfs @	11.72 hrs,	Volume=	2,768 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 179.55' @ 12.45 hrs Surf.Area= 133 sf Storage= 548 cf
Flood Elev= 182.25' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 13.6 min (762.4 - 748.8)

Volume	Invert	Avail.Storage	Storage Description
#1	174.25'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	172.25'	370 cf	**13.00'D x 10.00'H BED OF STONE** 1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

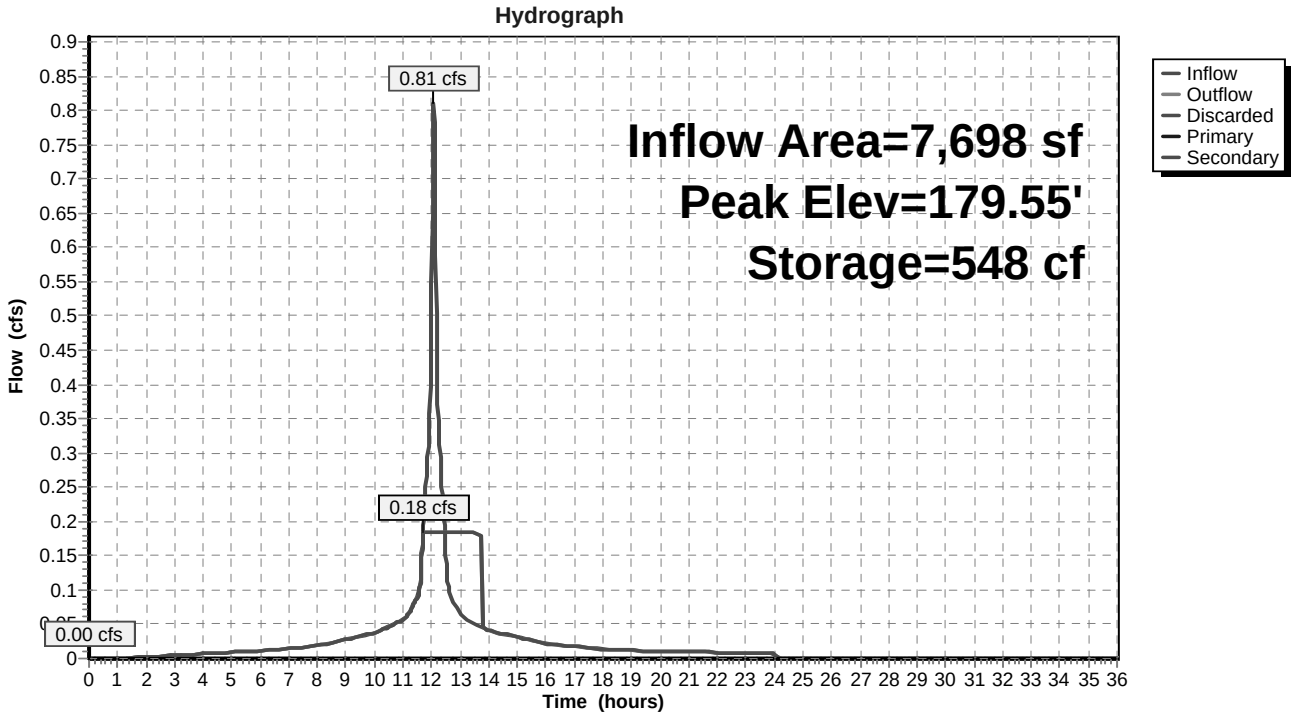
Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	180.75'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	181.25'	**12.0" x 246.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 157.25' S= 0.0976 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Discarded OutFlow Max=0.18 cfs @ 11.72 hrs HW=172.35' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=172.25' (Free Discharge)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=172.25' (Free Discharge)
└─**3=Culvert** (Controls 0.00 cfs)

Pond 21P: P-LB3



Pond 26P: MH

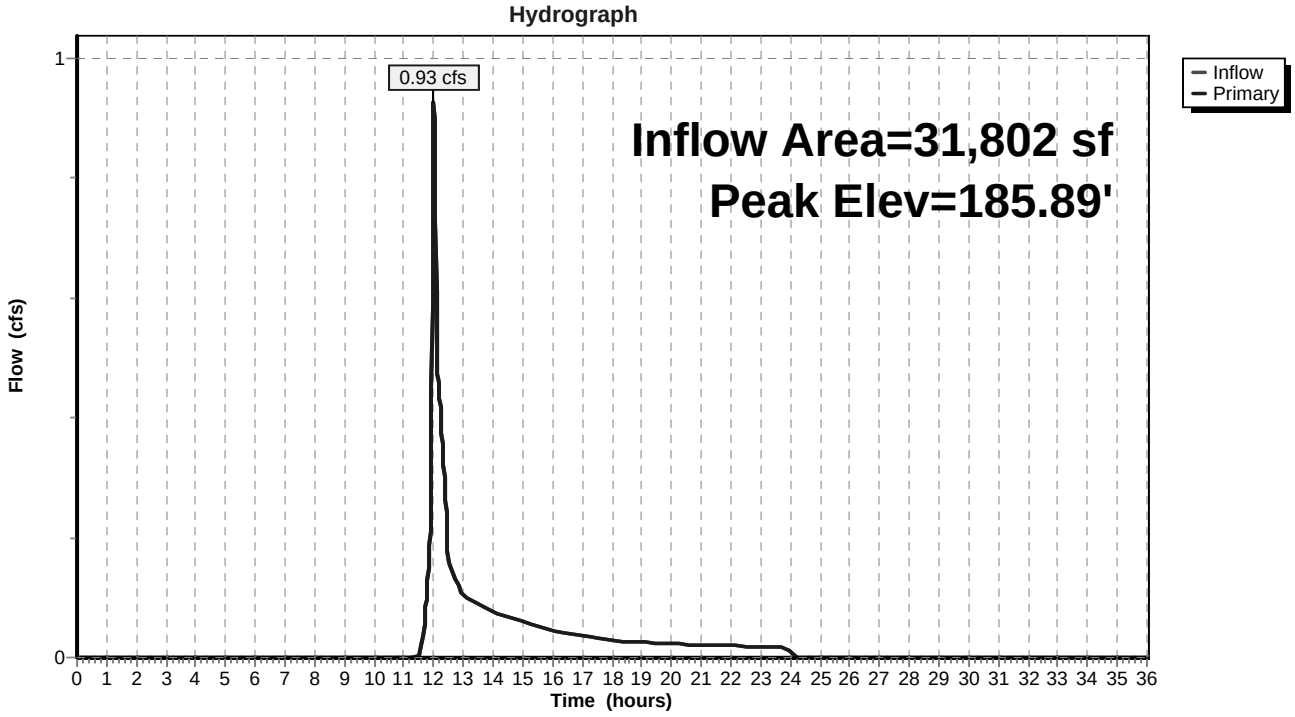
Inflow Area =	31,802 sf,	Inflow Depth =	1.05"	for	10YR event
Inflow =	0.93 cfs @	12.01 hrs,	Volume=	2,774 cf	
Outflow =	0.93 cfs @	12.01 hrs,	Volume=	2,774 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.93 cfs @	12.01 hrs,	Volume=	2,774 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 185.89' @ 12.01 hrs
Flood Elev= 190.08'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	185.40'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.90 cfs @ 12.01 hrs HW=185.89' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.90 cfs @ 2.4 fps)

Pond 26P: MH



Pond 27P: NEW CB

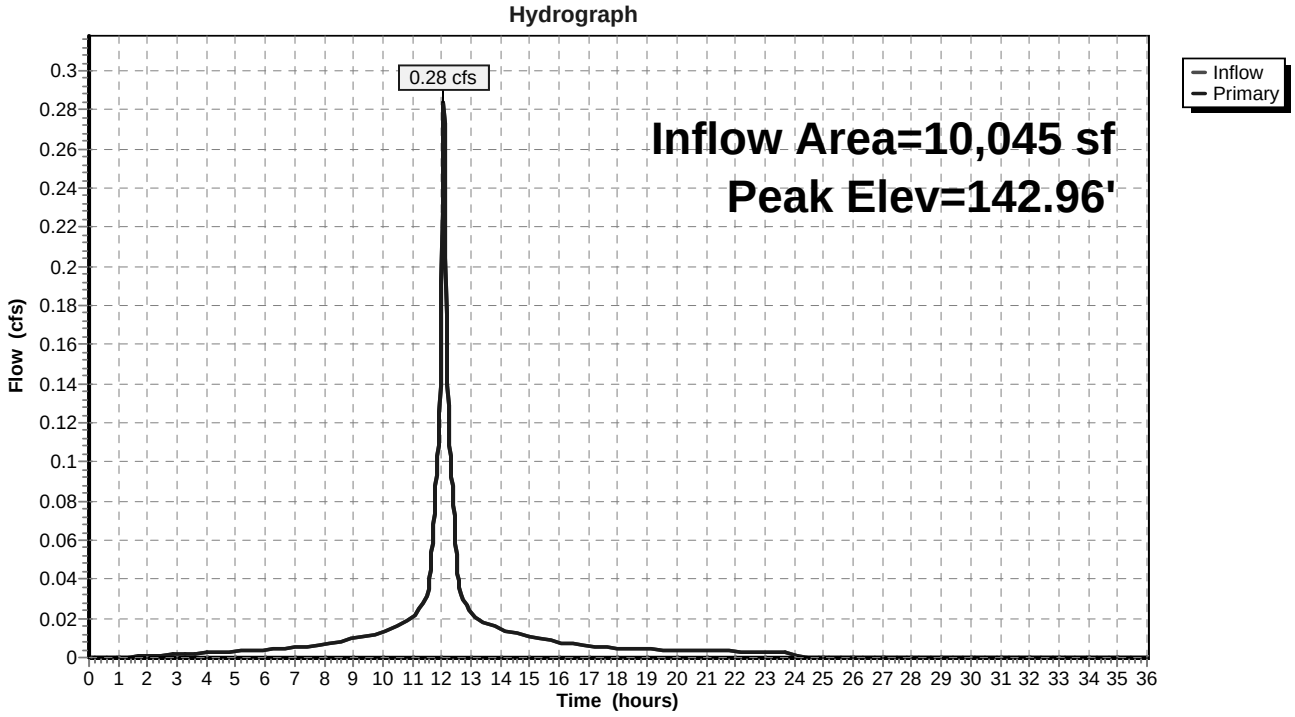
Inflow Area =	10,045 sf,	Inflow Depth =	1.16"	for	10YR event
Inflow =	0.28 cfs @	12.07 hrs,	Volume=	969 cf	
Outflow =	0.28 cfs @	12.07 hrs,	Volume=	969 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.28 cfs @	12.07 hrs,	Volume=	969 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 142.96' @ 12.07 hrs
Flood Elev= 146.98'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (748.7 - 748.7)

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.28 cfs @ 12.07 hrs HW=142.96' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.28 cfs @ 1.7 fps)

Pond 27P: NEW CB



Pond 28P: CB

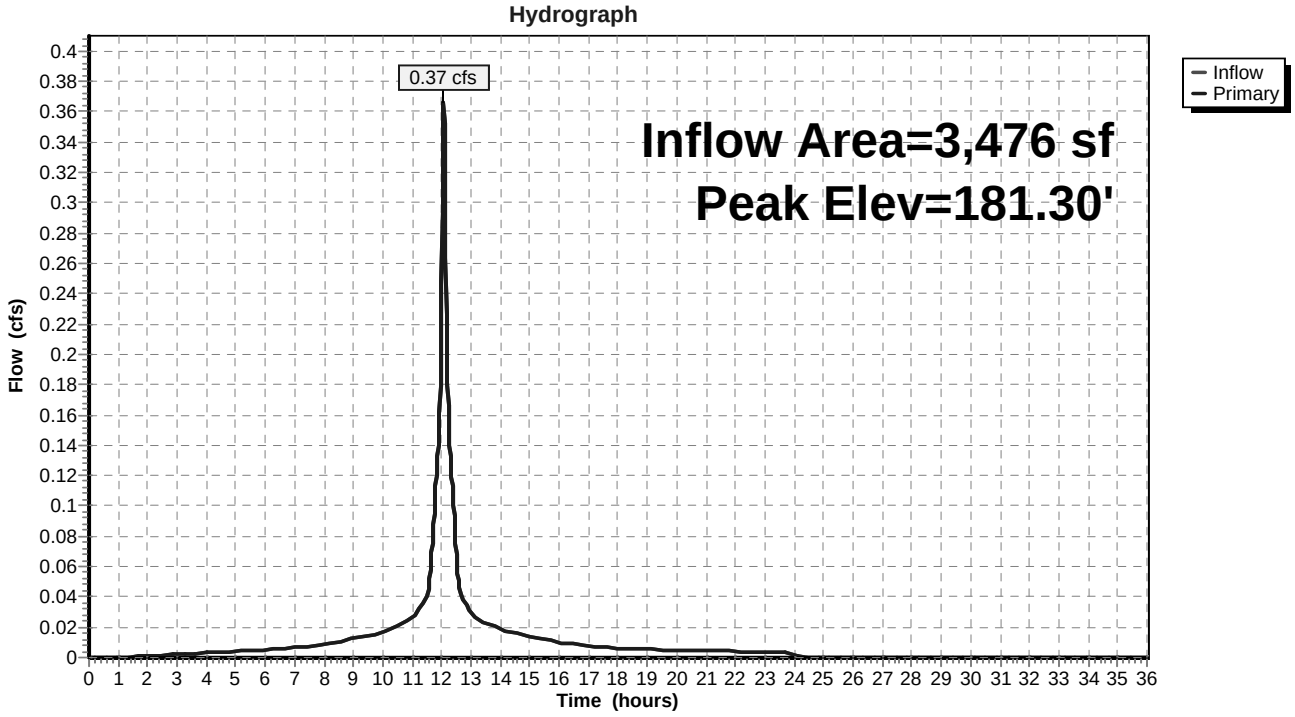
Inflow Area =	3,476 sf,	Inflow Depth =	4.31"	for	10YR event	
Inflow =	0.37 cfs @	12.07 hrs,	Volume=		1,250 cf	
Outflow =	0.37 cfs @	12.07 hrs,	Volume=		1,250 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.37 cfs @	12.07 hrs,	Volume=		1,250 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 181.30' @ 12.07 hrs
Flood Elev= 185.00'
Plug-Flow detention time= 0.0 min calculated for 1,249 cf (100% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	181.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.36 cfs @ 12.07 hrs HW=181.30' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.36 cfs @ 1.9 fps)

Pond 28P: CB



Pond 29P: NEW CB

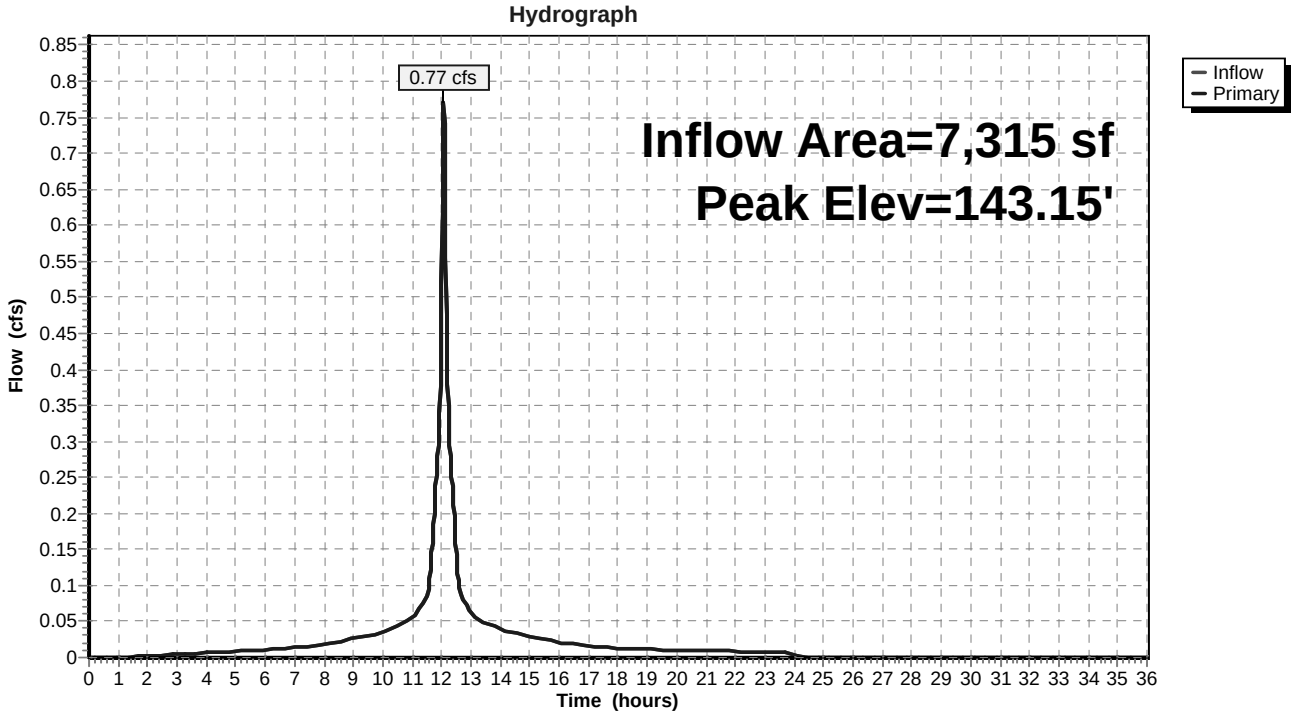
Inflow Area =	7,315 sf,	Inflow Depth =	4.31"	for	10YR event	
Inflow =	0.77 cfs @	12.07 hrs,	Volume=		2,630 cf	
Outflow =	0.77 cfs @	12.07 hrs,	Volume=		2,630 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.77 cfs @	12.07 hrs,	Volume=		2,630 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 143.15' @ 12.07 hrs
Flood Elev= 145.60'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.76 cfs @ 12.07 hrs HW=143.14' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.76 cfs @ 2.3 fps)

Pond 29P: NEW CB



Pond 30P: STC

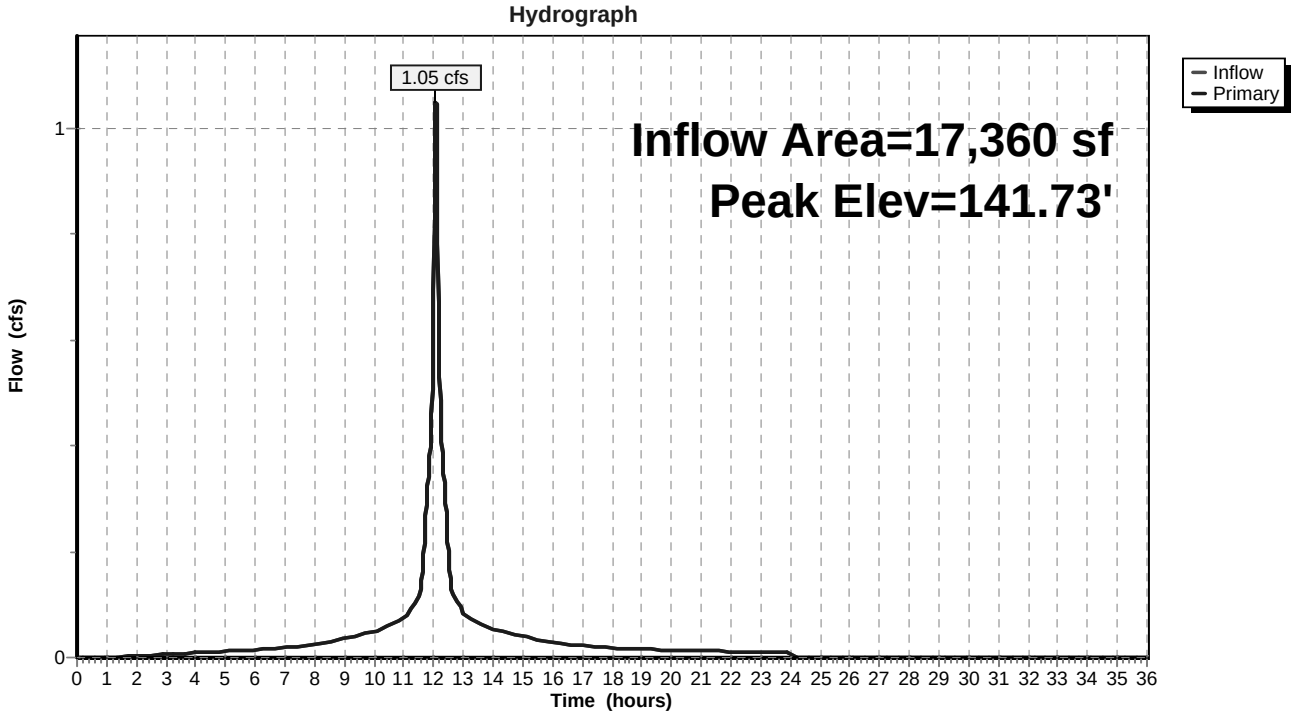
Inflow Area =	17,360 sf,	Inflow Depth =	2.49"	for	10YR event	
Inflow =	1.05 cfs @	12.07 hrs,	Volume=		3,599 cf	
Outflow =	1.05 cfs @	12.07 hrs,	Volume=		3,599 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.05 cfs @	12.07 hrs,	Volume=		3,599 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 141.73' @ 12.07 hrs
Flood Elev= 145.60'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	141.20'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.04 cfs @ 12.07 hrs HW=141.73' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.04 cfs @ 2.5 fps)

Pond 30P: STC



Pond 31P: CB

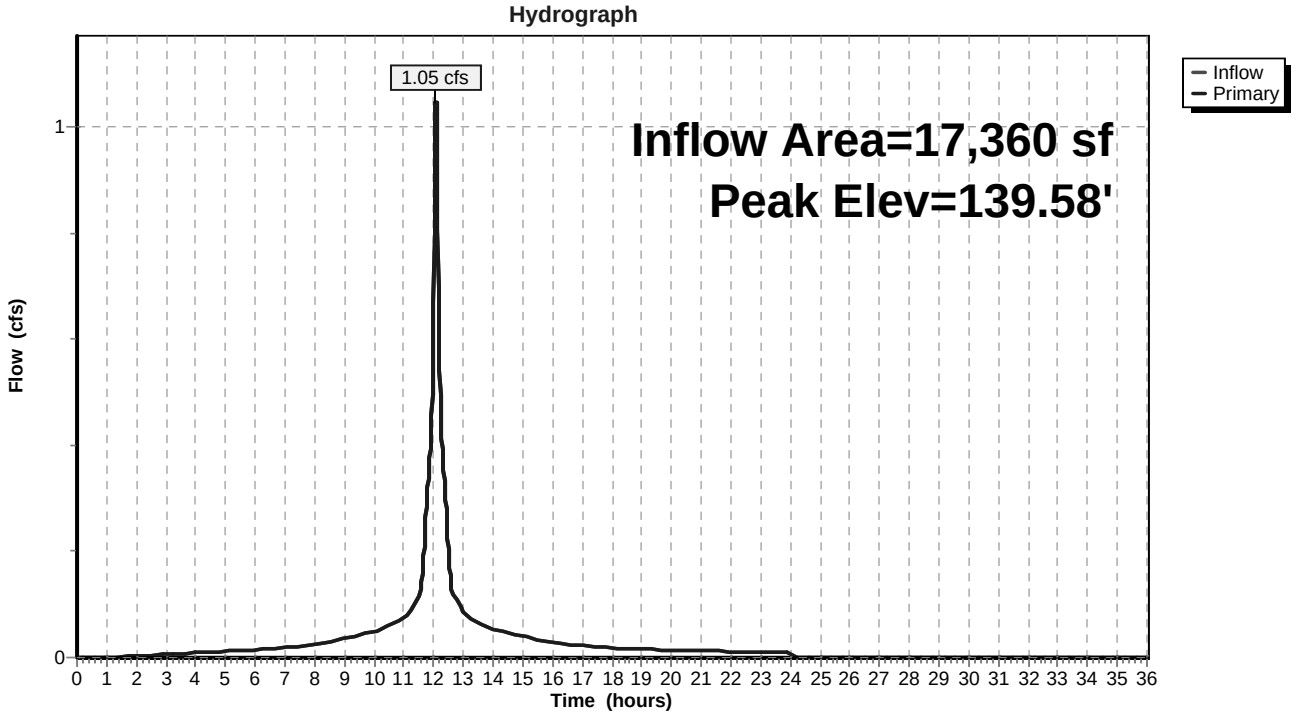
Inflow Area =	17,360 sf,	Inflow Depth =	2.49"	for	10YR event
Inflow =	1.05 cfs @	12.08 hrs,	Volume=	3,599 cf	
Outflow =	1.05 cfs @	12.08 hrs,	Volume=	3,599 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.05 cfs @	12.08 hrs,	Volume=	3,599 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 139.58' @ 12.08 hrs
Flood Elev= 142.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	139.05'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.04 cfs @ 12.08 hrs HW=139.58' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.04 cfs @ 2.5 fps)

Pond 31P: CB



Pond 32P: CB

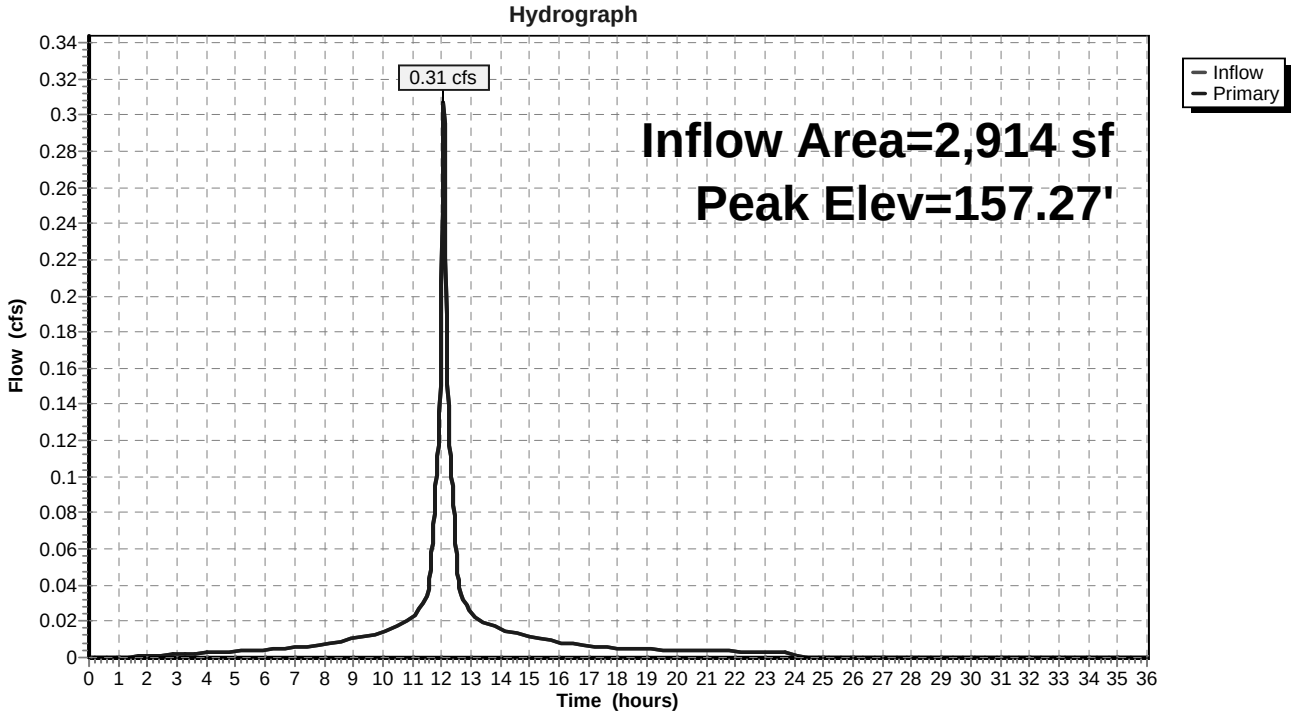
Inflow Area =	2,914 sf,	Inflow Depth =	4.31"	for	10YR event
Inflow =	0.31 cfs @	12.07 hrs,	Volume=	1,048 cf	
Outflow =	0.31 cfs @	12.07 hrs,	Volume=	1,048 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.31 cfs @	12.07 hrs,	Volume=	1,048 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 157.27' @ 12.07 hrs
Flood Elev= 161.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	157.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.30 cfs @ 12.07 hrs HW=157.27' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.30 cfs @ 1.8 fps)

Pond 32P: CB



Pond 35P: P-LB4

Inflow Area =	7,350 sf,	Inflow Depth =	4.31"	for	10YR event
Inflow =	0.77 cfs @	12.07 hrs,	Volume=	2,642 cf	
Outflow =	0.18 cfs @	11.74 hrs,	Volume=	2,642 cf,	Atten= 76%, Lag= 0.0 min
Discarded =	0.18 cfs @	11.74 hrs,	Volume=	2,642 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 155.74' @ 12.44 hrs Surf.Area= 133 sf Storage= 501 cf
Flood Elev= 159.00' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= 12.3 min calculated for 2,642 cf (100% of inflow)
Center-of-Mass det. time= 12.2 min (761.0 - 748.8)

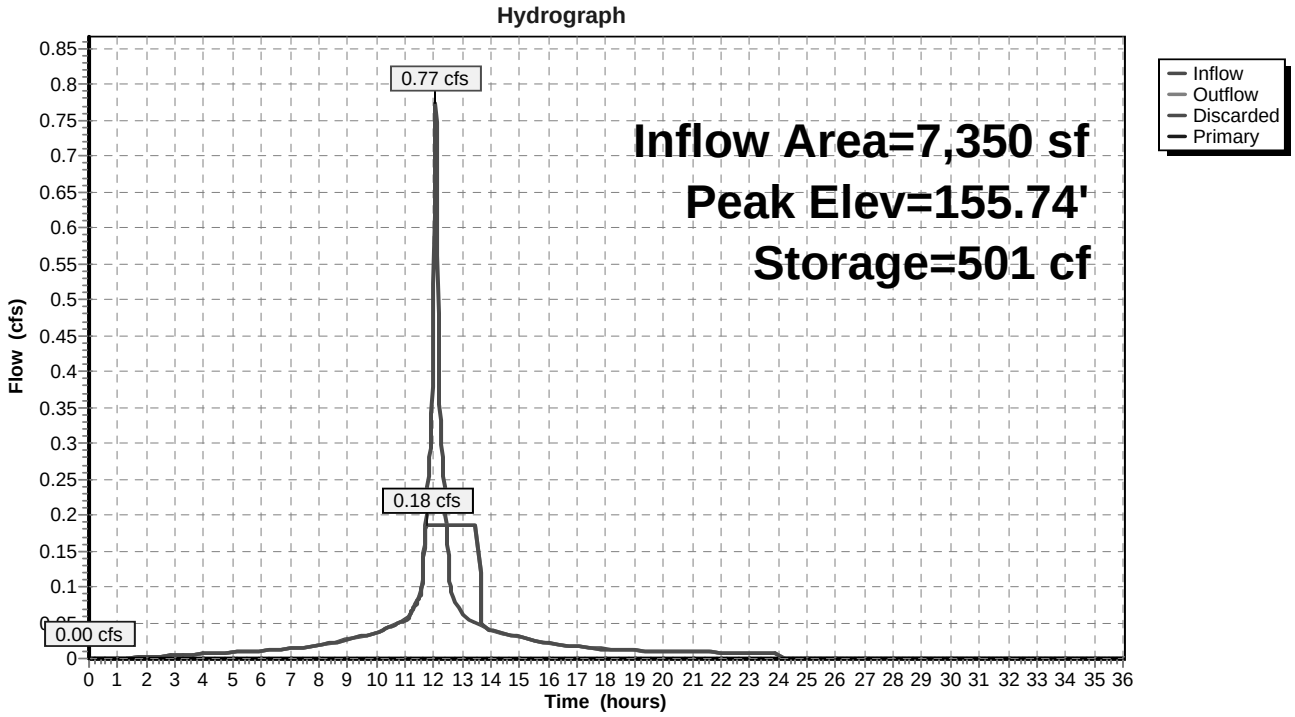
Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	149.00'	370 cf	**13.00'D x 10.00'H BED OF STONE**
			1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	157.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.18 cfs @ 11.74 hrs HW=149.11' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=149.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 35P: P-LB4



Pond 36P: CB

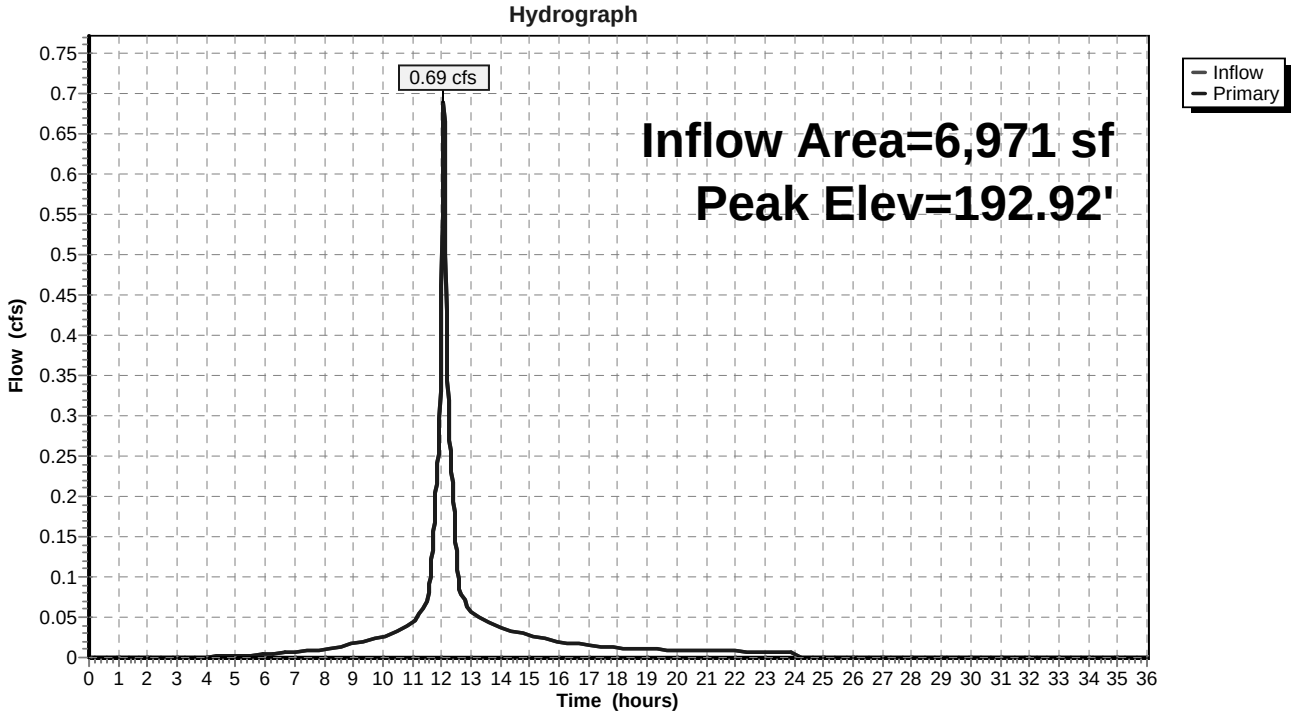
Inflow Area = 6,971 sf, Inflow Depth = 3.76" for 10YR event
Inflow = 0.69 cfs @ 12.07 hrs, Volume= 2,182 cf
Outflow = 0.69 cfs @ 12.07 hrs, Volume= 2,182 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.69 cfs @ 12.07 hrs, Volume= 2,182 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 192.92' @ 12.07 hrs
Flood Elev= 196.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (780.2 - 780.2)

Device	Routing	Invert	Outlet Devices
#1	Primary	192.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.68 cfs @ 12.07 hrs HW=192.92' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.68 cfs @ 2.2 fps)

Pond 36P: CB



Pond 37P: CB

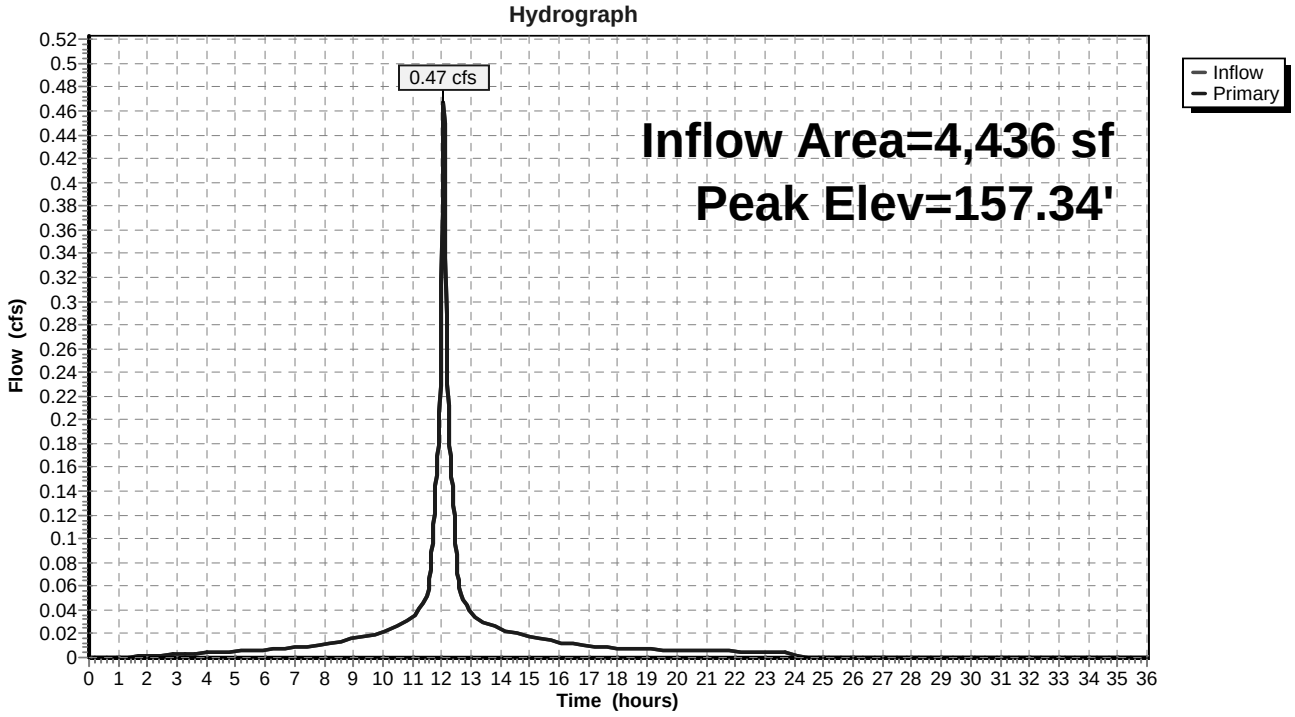
Inflow Area =	4,436 sf,	Inflow Depth =	4.31"	for	10YR event	
Inflow =	0.47 cfs @	12.07 hrs,	Volume=		1,595 cf	
Outflow =	0.47 cfs @	12.07 hrs,	Volume=		1,595 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.47 cfs @	12.07 hrs,	Volume=		1,595 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 157.34' @ 12.07 hrs
Flood Elev= 161.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	157.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.46 cfs @ 12.07 hrs HW=157.34' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.46 cfs @ 2.0 fps)

Pond 37P: CB



Pond 38P: P-MH

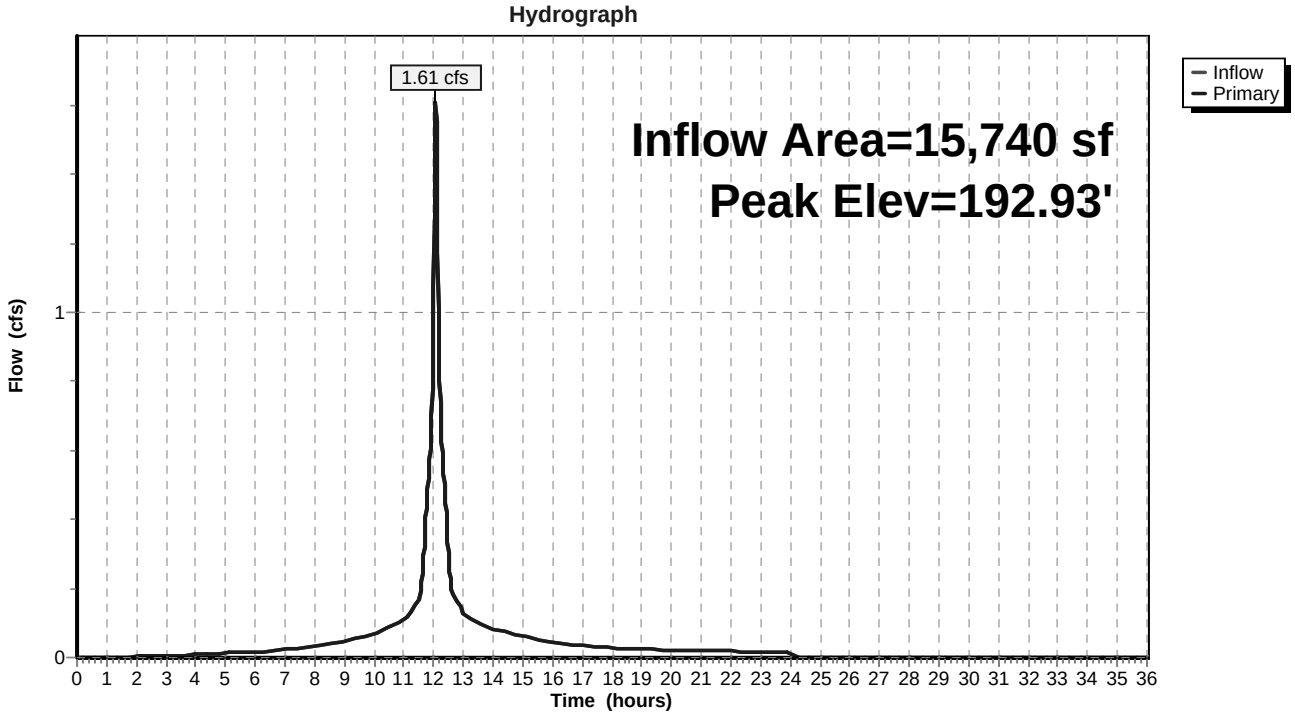
Inflow Area =	15,740 sf,	Inflow Depth =	4.07"	for	10YR event
Inflow =	1.61 cfs @	12.07 hrs,	Volume=	5,335 cf	
Outflow =	1.61 cfs @	12.07 hrs,	Volume=	5,335 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.61 cfs @	12.07 hrs,	Volume=	5,335 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 192.93' @ 12.07 hrs
Flood Elev= 196.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (761.7 - 761.7)

Device	Routing	Invert	Outlet Devices
#1	Primary	192.25'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.60 cfs @ 12.07 hrs HW=192.93' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.60 cfs @ 2.8 fps)

Pond 38P: P-MH

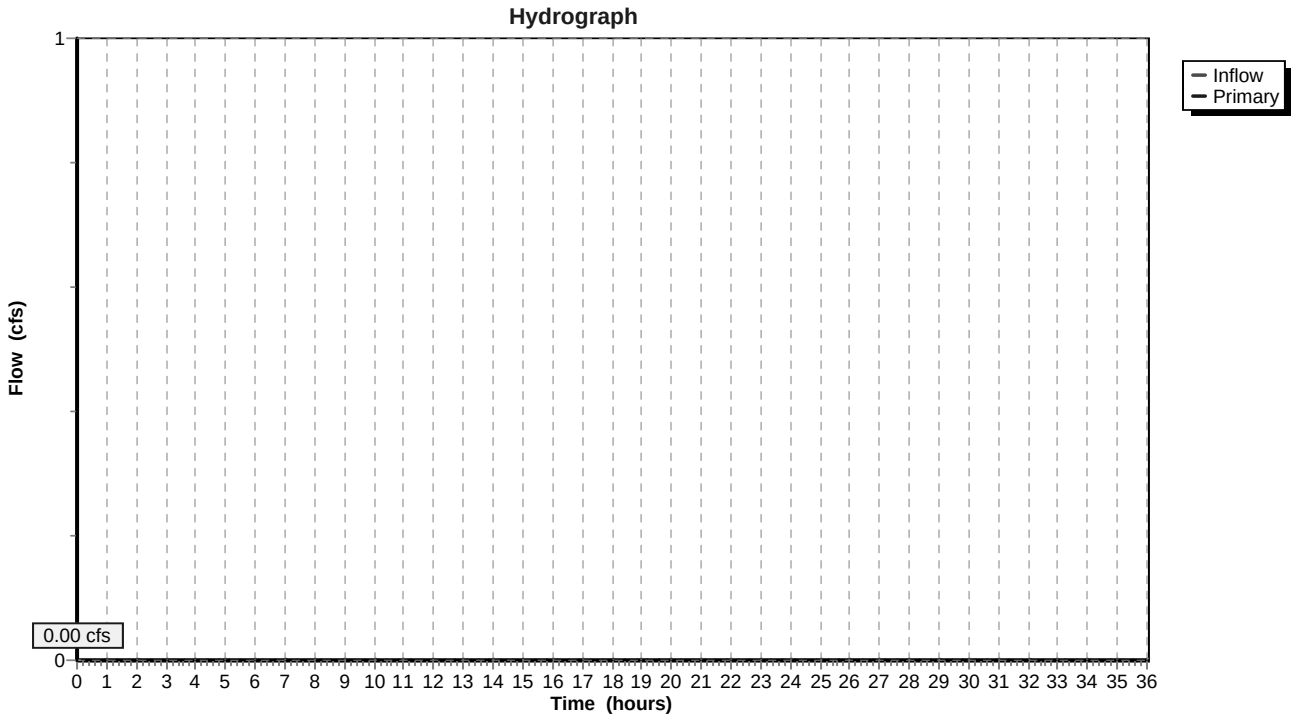


Link 10L: FLARED END

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0 cf
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 10L: FLARED END

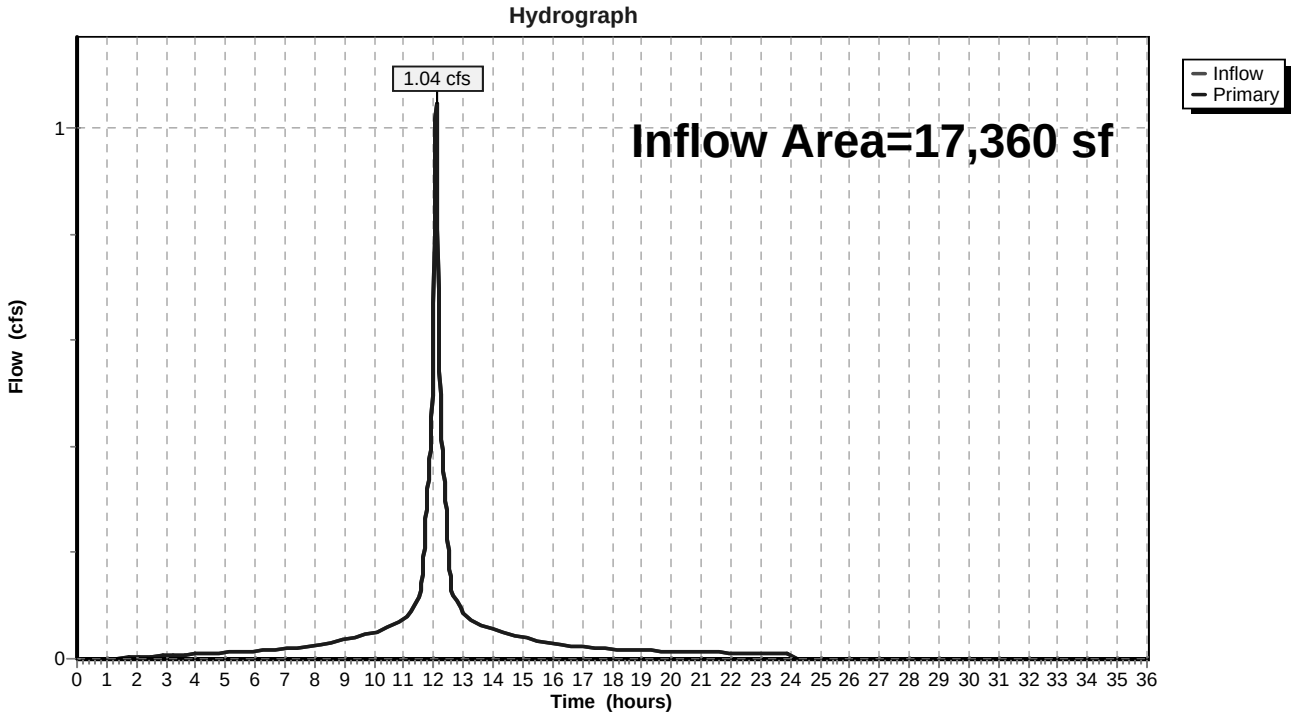


Link 34L: River

Inflow Area = 17,360 sf, Inflow Depth = 2.49" for 10YR event
Inflow = 1.04 cfs @ 12.08 hrs, Volume= 3,599 cf
Primary = 1.04 cfs @ 12.08 hrs, Volume= 3,599 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 34L: River



Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 4S: SUDBURY ROAD (18+00-19+60)(50+00-51-C Runoff Area=8,769 sf Runoff Depth=6.24"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=1.32 cfs 4,561 cf

Subcatchment 16S: WEST SIDE ROADWAY AREA Runoff Area=36,499 sf Runoff Depth=2.15"
Tc=0.0 min CN=59 Runoff=2.43 cfs 6,546 cf

Subcatchment 21S: WEST SIDE CUL-DE-SAC AREA Runoff Area=31,802 sf Runoff Depth=2.24"
Tc=0.0 min CN=60 Runoff=2.22 cfs 5,942 cf

Subcatchment 23S: ACTON AND WEST SIDE LOTS Runoff Area=82,575 sf Runoff Depth=0.66"
Tc=0.0 min CN=40 Runoff=0.75 cfs 4,509 cf

Subcatchment 24S: W. SUDBURY ROAD (15+50-18+00) Runoff Area=4,222 sf Runoff Depth=6.24"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.64 cfs 2,196 cf

Subcatchment 25S: SUDBURY ROAD (18+00-21+00) Runoff Area=6,971 sf Runoff Depth=5.66"
Flow Length=1,086' Tc=5.0 min CN=93 Runoff=1.01 cfs 3,286 cf

Subcatchment 29S: E. SUDBURY ROAD (15+50-18+00) Runoff Area=3,476 sf Runoff Depth=6.24"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.52 cfs 1,808 cf

Subcatchment 31S: E. SUDBURY ROAD (13+00-15+50) Runoff Area=2,914 sf Runoff Depth=6.24"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.44 cfs 1,516 cf

Subcatchment 38S: W. SUDBURY ROAD (13+00-15+50) Runoff Area=4,436 sf Runoff Depth=6.24"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.67 cfs 2,307 cf

Subcatchment 40S: E. SUDBURY ROAD (11+00-13+00) Runoff Area=2,695 sf Runoff Depth=6.24"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=0.41 cfs 1,402 cf

Subcatchment 41S: W. SUDBURY ROAD (10+00-13+00) Runoff Area=7,315 sf Runoff Depth=6.24"
Flow Length=1,086' Tc=5.0 min CN=98 Runoff=1.10 cfs 3,805 cf

Reach 3R: 12" RCP Peak Depth=0.31' Max Vel=6.4 fps Inflow=1.32 cfs 4,561 cf
D=12.0" n=0.011 L=11.0' S=0.0227 '/' Capacity=6.35 cfs Outflow=1.32 cfs 4,561 cf

Reach 4R: 12" CPP Peak Depth=1.00' Max Vel=3.5 fps Inflow=3.21 cfs 13,671 cf
D=12.0" n=0.020 L=27.0' S=0.0111 '/' Capacity=2.44 cfs Outflow=2.45 cfs 13,671 cf

Reach 5R: 12" CPP Peak Depth=0.13' Max Vel=2.4 fps Inflow=0.13 cfs 152 cf
D=12.0" n=0.020 L=16.0' S=0.0313 '/' Capacity=4.09 cfs Outflow=0.14 cfs 153 cf

Reach 8R: 12" CPP Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.020 L=30.0' S=0.0033 '/' Capacity=1.34 cfs Outflow=0.00 cfs 0 cf

Reach 9R: 12" CPP Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0 cf
D=12.0" n=0.020 L=48.0' S=0.0115 '/' Capacity=2.48 cfs Outflow=0.00 cfs 0 cf

Reach 14R: 12" CPP Peak Depth=1.00' Max Vel=4.7 fps Inflow=4.49 cfs 13,824 cf
D=12.0" n=0.020 L=135.0' S=0.0200 '/' Capacity=3.28 cfs Outflow=3.35 cfs 13,824 cf

Reach 15R: 12" rcp Peak Depth=0.41' Max Vel=6.9 fps Inflow=2.11 cfs 2,146 cf
D=12.0" n=0.011 L=5.0' S=0.0200 '/' Capacity=5.95 cfs Outflow=2.12 cfs 2,146 cf

Reach 16R: 12" rcp Peak Depth=0.26' Max Vel=7.5 fps Inflow=1.40 cfs 802 cf
D=12.0" n=0.011 L=22.0' S=0.0386 '/' Capacity=8.28 cfs Outflow=1.24 cfs 802 cf

Reach 18R: 12" RCP Peak Depth=0.41' Max Vel=7.2 fps Inflow=2.19 cfs 5,942 cf
D=12.0" n=0.011 L=145.0' S=0.0221 '/' Capacity=6.26 cfs Outflow=2.15 cfs 5,942 cf

Reach 19R: 12" RCP Peak Depth=0.36' Max Vel=8.8 fps Inflow=2.22 cfs 5,942 cf
D=12.0" n=0.011 L=62.0' S=0.0371 '/' Capacity=8.11 cfs Outflow=2.19 cfs 5,942 cf

Reach 20R: 12" RCP Peak Depth=0.26' Max Vel=6.7 fps Inflow=1.11 cfs 2,371 cf
D=12.0" n=0.011 L=8.0' S=0.0313 '/' Capacity=7.44 cfs Outflow=1.09 cfs 2,371 cf

Reach 22R: 12" rcp Peak Depth=0.40' Max Vel=4.0 fps Inflow=1.19 cfs 533 cf
D=12.0" n=0.011 L=14.0' S=0.0071 '/' Capacity=3.56 cfs Outflow=1.14 cfs 533 cf

Reach 25R: 12" RCP Peak Depth=0.18' Max Vel=5.5 fps Inflow=0.52 cfs 1,808 cf
D=12.0" n=0.011 L=8.0' S=0.0313 '/' Capacity=7.44 cfs Outflow=0.52 cfs 1,808 cf

Reach 28R: 12" RCP Peak Depth=0.26' Max Vel=4.7 fps Inflow=0.80 cfs 1,737 cf
D=12.0" n=0.011 L=94.0' S=0.0149 '/' Capacity=5.14 cfs Outflow=0.76 cfs 1,737 cf

Reach 30R: 12" rcp Peak Depth=0.63' Max Vel=4.4 fps Inflow=2.30 cfs 1,336 cf
D=12.0" n=0.011 L=96.0' S=0.0057 '/' Capacity=3.19 cfs Outflow=2.10 cfs 1,336 cf

Reach 32R: 12" RCP Peak Depth=0.30' Max Vel=7.7 fps Inflow=1.50 cfs 5,542 cf
D=12.0" n=0.011 L=62.0' S=0.0347 '/' Capacity=7.84 cfs Outflow=1.50 cfs 5,542 cf

Reach 33R: 12" RCP Peak Depth=0.16' Max Vel=18.1 fps Inflow=1.50 cfs 5,542 cf
D=12.0" n=0.011 L=13.0' S=0.3885 '/' Capacity=26.24 cfs Outflow=1.50 cfs 5,542 cf

Reach 34R: 12" RCP Peak Depth=0.15' Max Vel=6.1 fps Inflow=0.44 cfs 1,516 cf
D=12.0" n=0.011 L=10.0' S=0.0500 '/' Capacity=9.42 cfs Outflow=0.44 cfs 1,516 cf

Reach 36R: 12" RCP Peak Depth=0.18' Max Vel=6.9 fps Inflow=0.67 cfs 2,307 cf
D=12.0" n=0.011 L=10.0' S=0.0500 '/' Capacity=9.42 cfs Outflow=0.67 cfs 2,307 cf

Reach 37R: 12" RCP Peak Depth=0.27' Max Vel=5.9 fps Inflow=1.01 cfs 3,286 cf
D=12.0" n=0.011 L=11.0' S=0.0227 '/' Capacity=6.35 cfs Outflow=1.01 cfs 3,286 cf

Reach 39R: 12" rcp Peak Depth=0.16' Max Vel=8.1 fps Inflow=0.56 cfs 335 cf
D=12.0" n=0.011 L=172.0' S=0.0814 '/' Capacity=12.01 cfs Outflow=0.57 cfs 335 cf

Reach 40R: 12" RCP Peak Depth=0.34' Max Vel=9.9 fps Inflow=2.33 cfs 7,847 cf
D=12.0" n=0.011 L=204.0' S=0.0502 '/' Capacity=9.44 cfs Outflow=2.31 cfs 7,847 cf

Pond 1P: WestSide D-Pond Peak Elev=178.80' Storage=1,987 cf Inflow=2.45 cfs 13,671 cf
Outflow=4.44 cfs 11,756 cf

Pond 2P: CB Peak Elev=193.11' Inflow=1.32 cfs 4,561 cf
Outflow=1.32 cfs 4,561 cf

Pond 3P: MH Peak Elev=177.22' Inflow=3.35 cfs 13,824 cf
Primary=3.21 cfs 13,671 cf Secondary=0.13 cfs 152 cf Outflow=3.35 cfs 13,824 cf

Pond 4P: P-LB1 Peak Elev=182.82' Storage=757 cf Inflow=2.31 cfs 7,847 cf
Discarded=0.18 cfs 5,702 cf Primary=2.11 cfs 2,146 cf Outflow=2.30 cfs 7,847 cf

Pond 5P: P-LB2 Peak Elev=182.10' Storage=697 cf Inflow=2.12 cfs 2,146 cf
Discarded=0.18 cfs 1,154 cf Primary=1.40 cfs 802 cf Secondary=0.60 cfs 175 cf Outflow=2.18 cfs 2,131 cf

Pond 6P: LB1 Peak Elev=167.54' Storage=0.000 af Inflow=0.14 cfs 153 cf
Discarded=0.12 cfs 153 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.12 cfs 153 cf

Pond 7P: LB2 Peak Elev=167.00' Storage=0.000 af Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 12P: LB3 Peak Elev=177.23' Storage=1,089 cf Inflow=5.17 cfs 16,266 cf
Discarded=0.42 cfs 11,082 cf Primary=3.59 cfs 5,183 cf Outflow=4.01 cfs 16,266 cf

Pond 13P: MH Peak Elev=181.61' Inflow=4.49 cfs 13,824 cf
Outflow=4.49 cfs 13,824 cf

Pond 14P: P-MH Peak Elev=181.42' Inflow=2.30 cfs 1,336 cf
Outflow=2.30 cfs 1,336 cf

Pond 15P: (2) CB Peak Elev=180.71' Inflow=2.43 cfs 6,546 cf
12.0" x 10.0' Culvert Outflow=2.43 cfs 6,546 cf

Pond 17P: MH Peak Elev=183.84' Inflow=2.19 cfs 5,942 cf
Outflow=2.19 cfs 5,942 cf

Pond 18P: CB Peak Elev=181.55' Inflow=1.11 cfs 2,371 cf
Outflow=1.11 cfs 2,371 cf

Pond 20P: (2) CB Peak Elev=186.16' Inflow=2.22 cfs 5,942 cf
12.0" x 9.0' Culvert Outflow=2.22 cfs 5,942 cf

Pond 21P: P-LB3 Peak Elev=181.33' Storage=695 cf Inflow=1.51 cfs 4,179 cf
Discarded=0.18 cfs 3,637 cf Primary=1.19 cfs 533 cf Secondary=0.02 cfs 1 cf Outflow=1.39 cfs 4,172 cf

Pond 26P: MH Peak Elev=186.25' Inflow=2.22 cfs 5,942 cf
Outflow=2.22 cfs 5,942 cf

Pond 27P: NEW CB Peak Elev=143.16' Inflow=0.80 cfs 1,737 cf
Outflow=0.80 cfs 1,737 cf

Pond 28P: CB Peak Elev=181.36' Inflow=0.52 cfs 1,808 cf
Outflow=0.52 cfs 1,808 cf

Pond 29P: NEW CB Peak Elev=143.25' Inflow=1.10 cfs 3,805 cf
Outflow=1.10 cfs 3,805 cf

Pond 30P: STC Peak Elev=141.85' Inflow=1.50 cfs 5,542 cf
Outflow=1.50 cfs 5,542 cf

Pond 31P: CB Peak Elev=139.70' Inflow=1.50 cfs 5,542 cf
Outflow=1.50 cfs 5,542 cf

Pond 32P: CB Peak Elev=157.33' Inflow=0.44 cfs 1,516 cf
Outflow=0.44 cfs 1,516 cf

Pond 35P: P-LB4 Peak Elev=157.37' Storage=637 cf Inflow=1.11 cfs 3,824 cf
Discarded=0.18 cfs 3,488 cf Primary=0.56 cfs 335 cf Outflow=0.74 cfs 3,824 cf

Pond 36P: CB Peak Elev=193.02' Inflow=1.01 cfs 3,286 cf
Outflow=1.01 cfs 3,286 cf

Pond 37P: CB Peak Elev=157.41' Inflow=0.67 cfs 2,307 cf
Outflow=0.67 cfs 2,307 cf

Pond 38P: P-MH Peak Elev=193.13' Inflow=2.33 cfs 7,847 cf
Outflow=2.33 cfs 7,847 cf

Link 10L: FLARED END Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link 34L: River Inflow=1.50 cfs 5,542 cf
Primary=1.50 cfs 5,542 cf

Total Runoff Area = 191,674 sf Runoff Volume = 37,878 cf Average Runoff Depth = 2.37"

Subcatchment 4S: SUDBURY ROAD (18+00-19+60)(50+00-51-Concord)

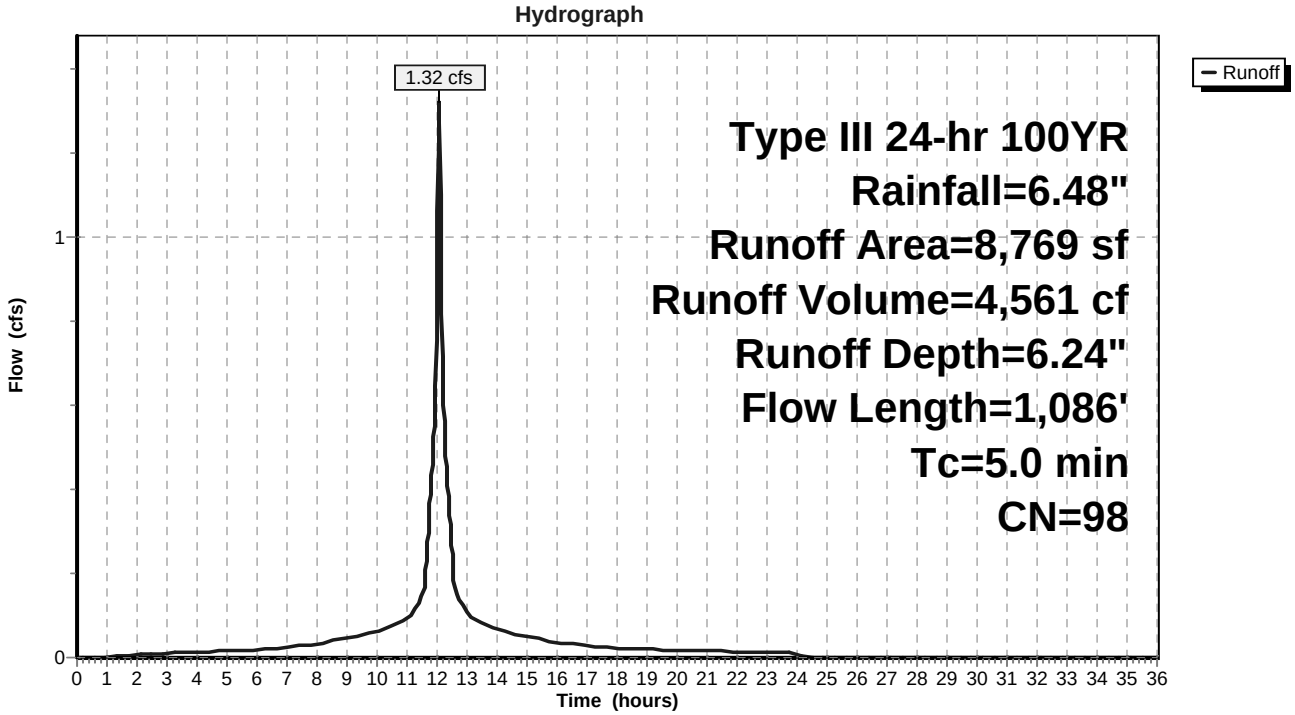
Runoff = 1.32 cfs @ 12.07 hrs, Volume= 4,561 cf, Depth= 6.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
8,769	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 4S: SUDBURY ROAD (18+00-19+60)(50+00-51-Concord)



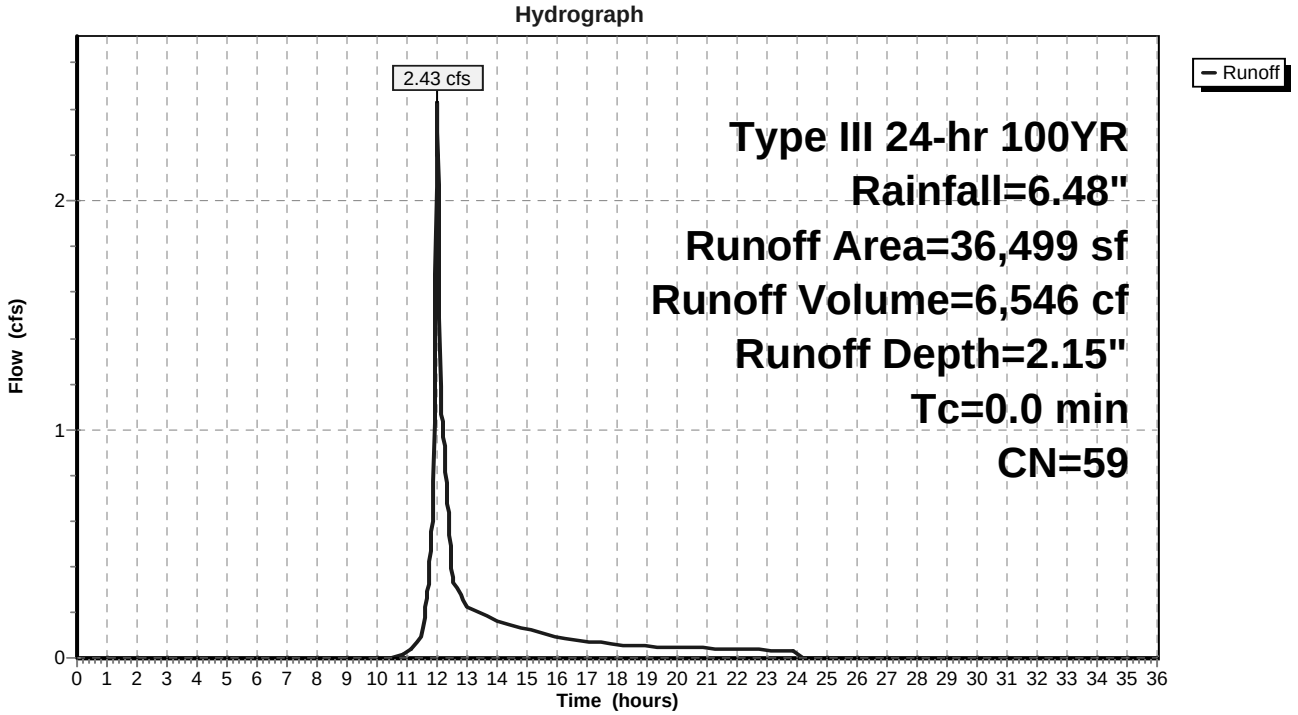
Subcatchment 16S: WEST SIDE ROADWAY AREA

Runoff = 2.43 cfs @ 12.01 hrs, Volume= 6,546 cf, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
12,279	98	Paved parking & roofs
20,007	39	>75% Grass cover, Good, HSG A
4,213	39	OFFSITE GRASS
36,499	59	Weighted Average

Subcatchment 16S: WEST SIDE ROADWAY AREA



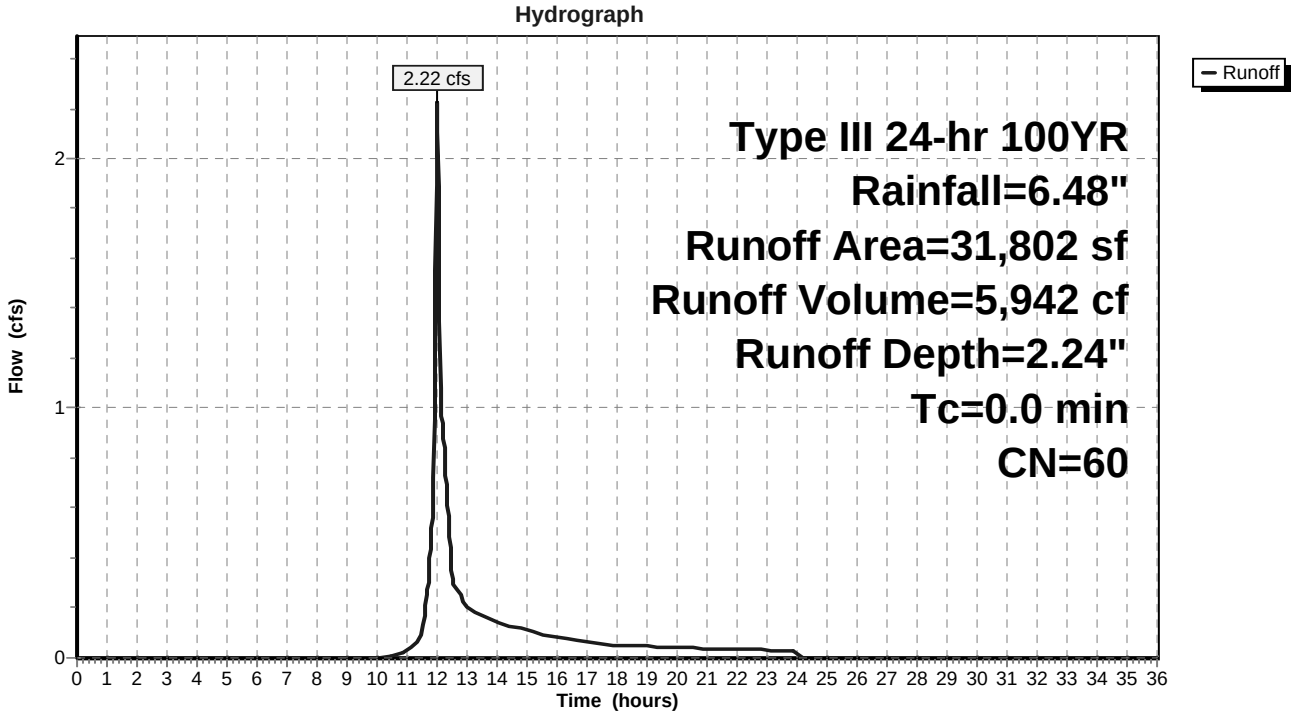
Subcatchment 21S: WEST SIDE CUL-DE-SAC AREA

Runoff = 2.22 cfs @ 12.00 hrs, Volume= 5,942 cf, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
11,344	98	Paved parking & roofs
17,104	39	>75% Grass cover, Good, HSG A
3,354	39	OFFSITE GRASS
31,802	60	Weighted Average

Subcatchment 21S: WEST SIDE CUL-DE-SAC AREA



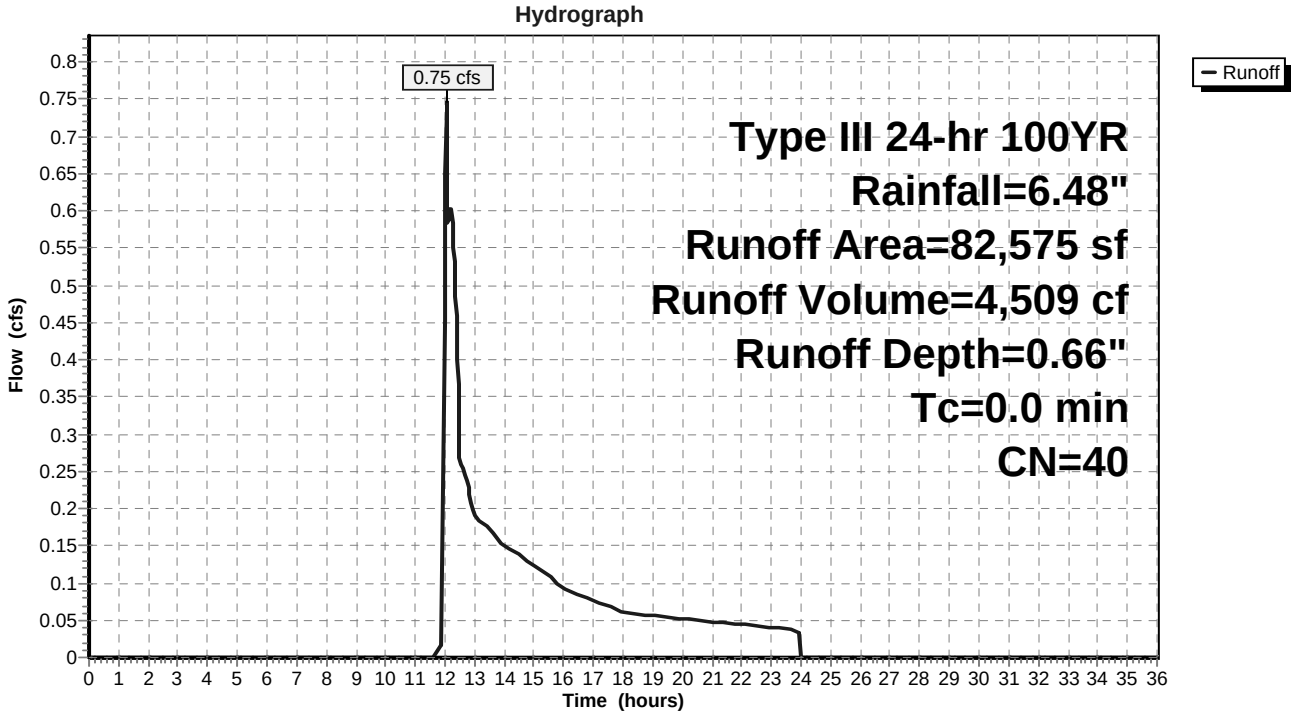
Subcatchment 23S: ACTON AND WEST SIDE LOTS

Runoff = 0.75 cfs @ 12.05 hrs, Volume= 4,509 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
7,259	98	Paved parking & roofs
42,441	30	Woods, Good, HSG A
19,562	39	>75% Grass cover, Good, HSG A
13,313	39	OFFSITE GRASS
82,575	40	Weighted Average

Subcatchment 23S: ACTON AND WEST SIDE LOTS



Subcatchment 24S: W. SUDBURY ROAD (15+50-18+00)

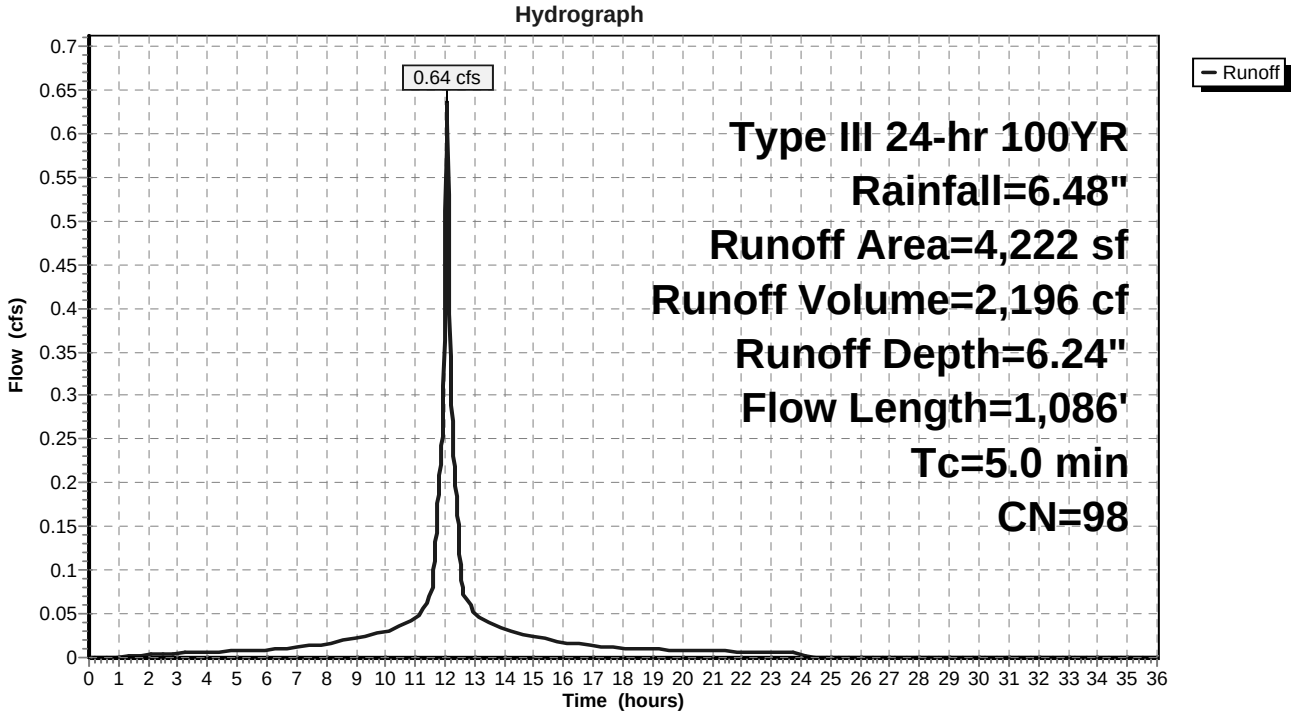
Runoff = 0.64 cfs @ 12.07 hrs, Volume= 2,196 cf, Depth= 6.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
4,222	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 24S: W. SUDBURY ROAD (15+50-18+00)



Subcatchment 25S: SUDBURY ROAD (18+00-21+00)

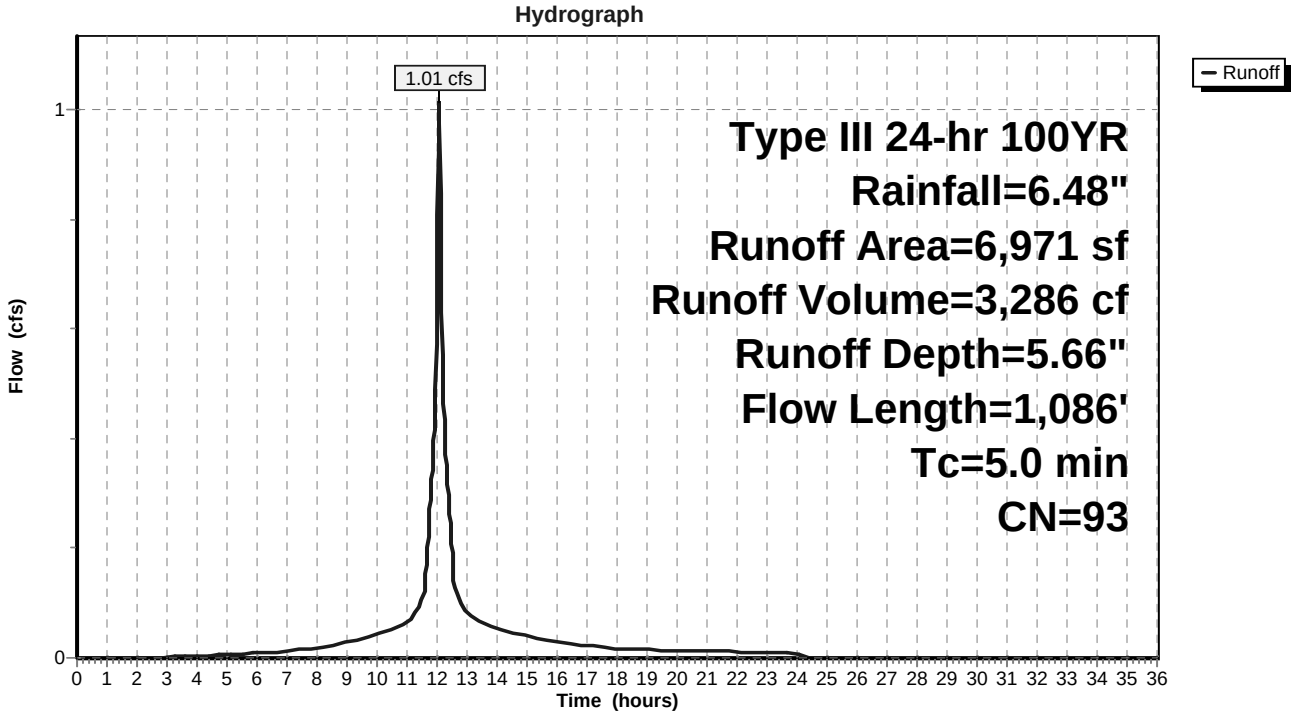
Runoff = 1.01 cfs @ 12.07 hrs, Volume= 3,286 cf, Depth= 5.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
6,421	98	Paved roads w/curbs & sewers
550	32	Woods/grass comb., Good, HSG A
6,971	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 25S: SUDBURY ROAD (18+00-21+00)



Subcatchment 29S: E. SUDBURY ROAD (15+50-18+00)

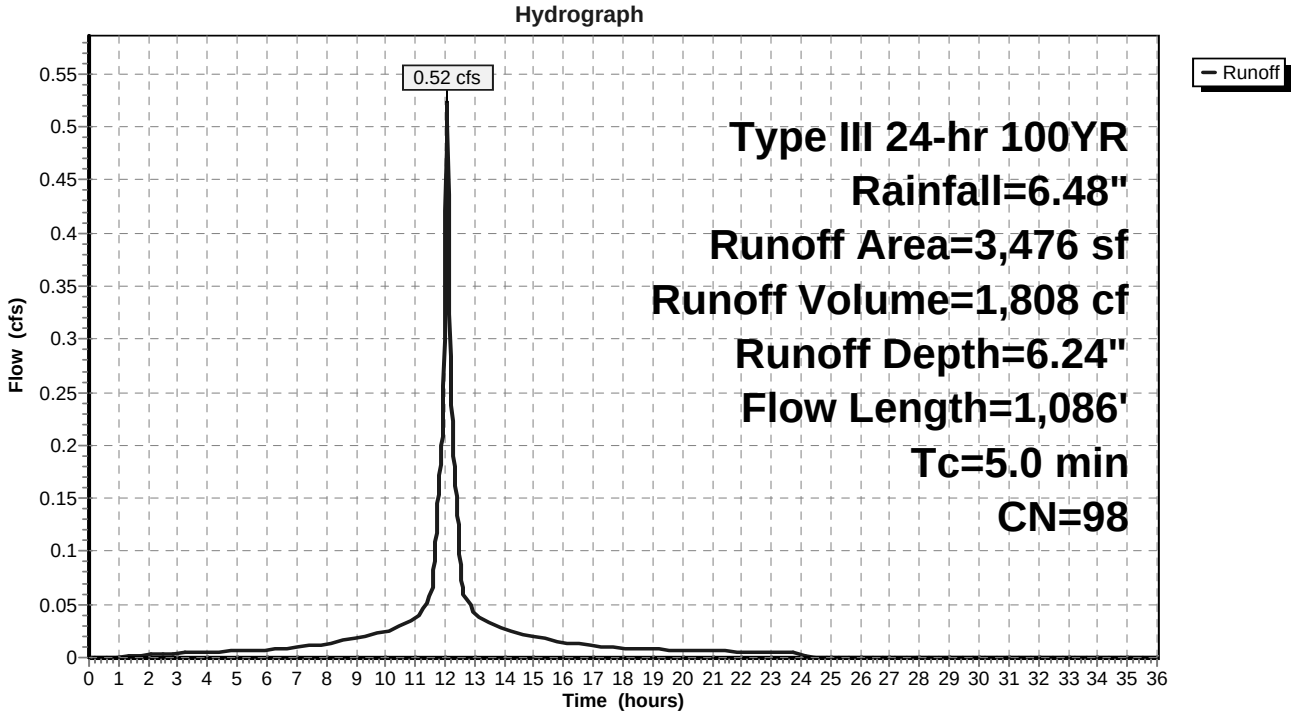
Runoff = 0.52 cfs @ 12.07 hrs, Volume= 1,808 cf, Depth= 6.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
3,476	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 29S: E. SUDBURY ROAD (15+50-18+00)



Subcatchment 31S: E. SUDBURY ROAD (13+00-15+50)

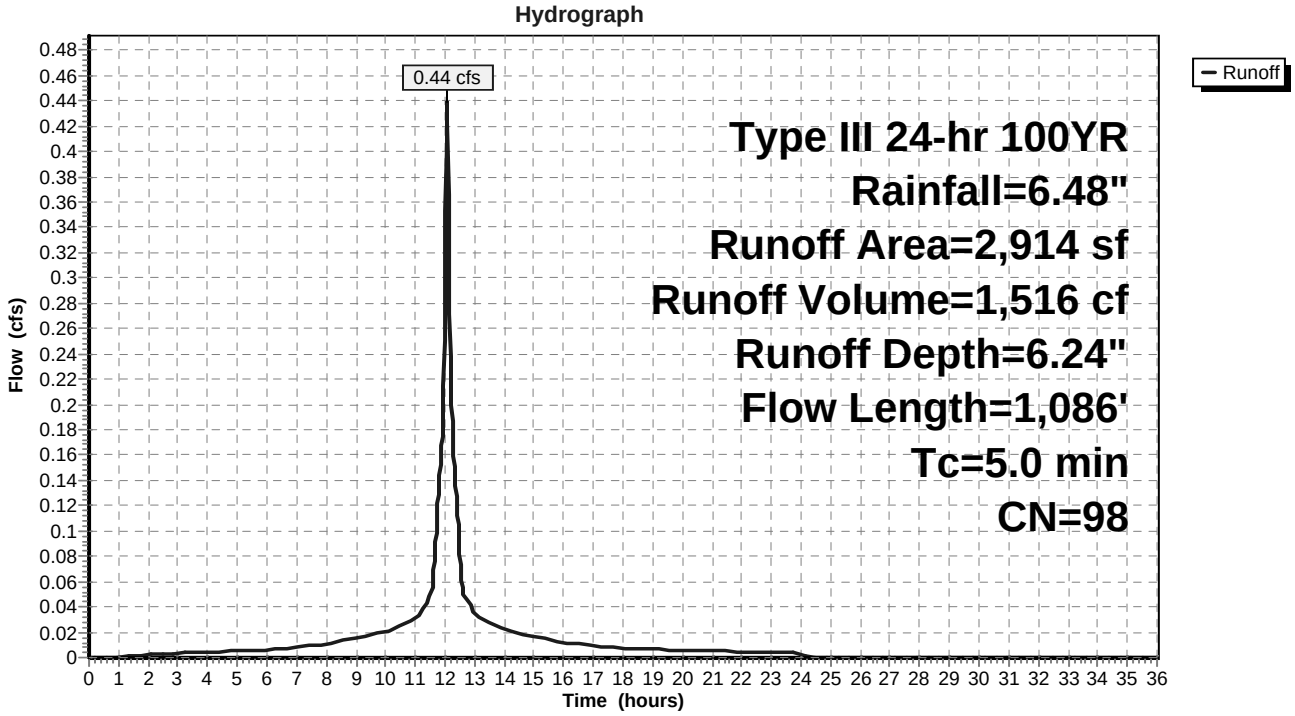
Runoff = 0.44 cfs @ 12.07 hrs, Volume= 1,516 cf, Depth= 6.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
2,914	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 31S: E. SUDBURY ROAD (13+00-15+50)



Subcatchment 38S: W. SUDBURY ROAD (13+00-15+50)

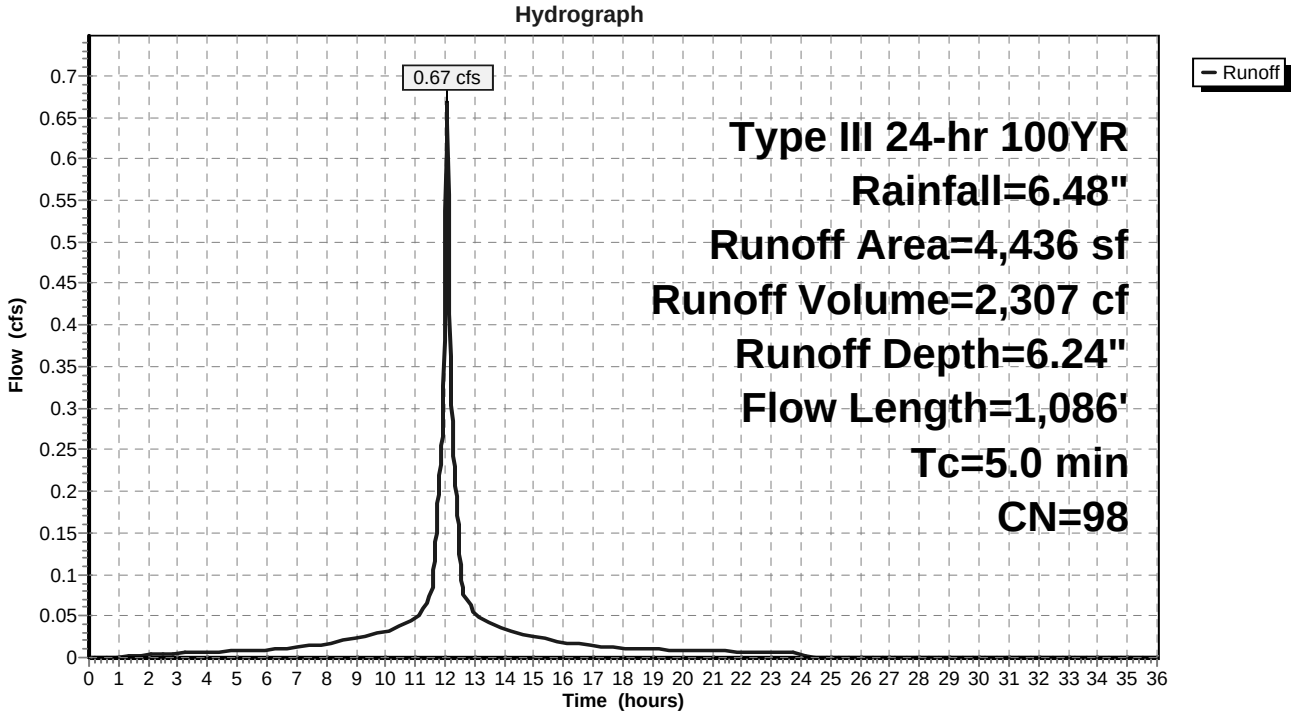
Runoff = 0.67 cfs @ 12.07 hrs, Volume= 2,307 cf, Depth= 6.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
4,436	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 38S: W. SUDBURY ROAD (13+00-15+50)



Subcatchment 40S: E. SUDBURY ROAD (11+00-13+00)

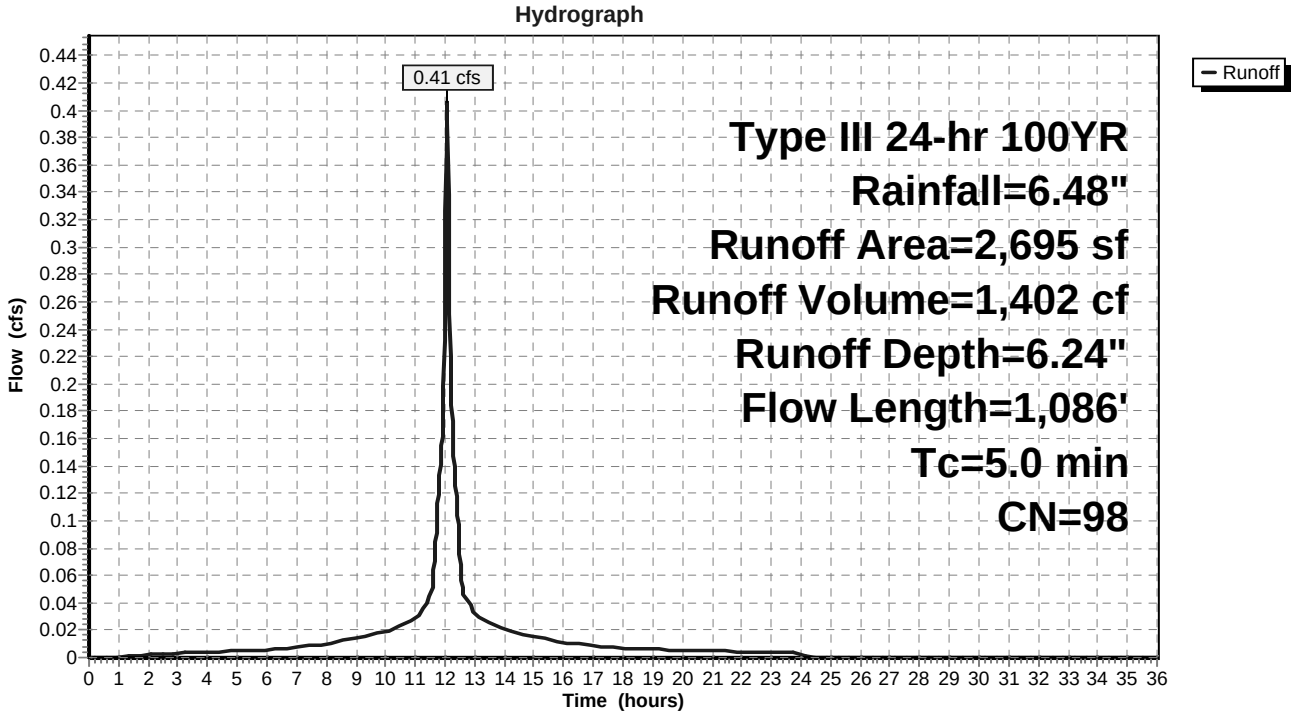
Runoff = 0.41 cfs @ 12.07 hrs, Volume= 1,402 cf, Depth= 6.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
2,695	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 40S: E. SUDBURY ROAD (11+00-13+00)



Subcatchment 41S: W. SUDBURY ROAD (10+00-13+00)

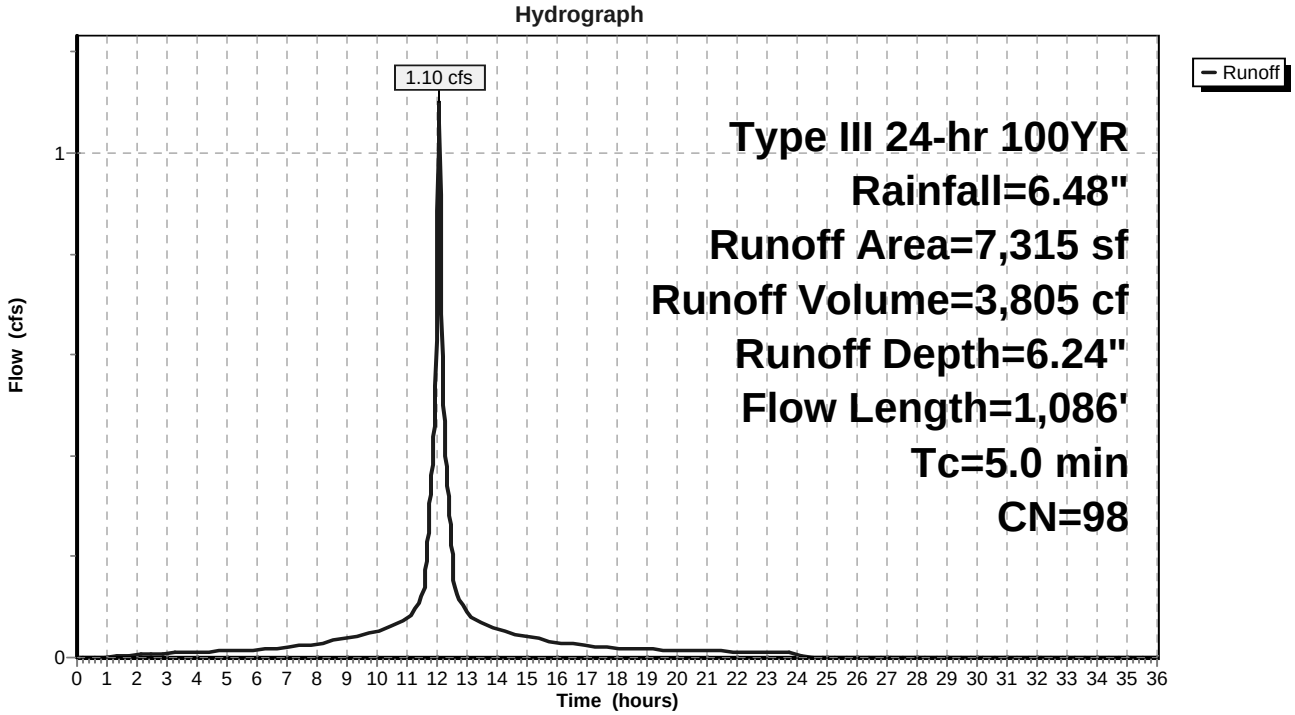
Runoff = 1.10 cfs @ 12.07 hrs, Volume= 3,805 cf, Depth= 6.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 100YR Rainfall=6.48"

Area (sf)	CN	Description
7,315	98	Paved roads w/curbs & sewers

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	1,036	0.0800	5.7		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	50	0.0800	2.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.09"
3.4	1,086	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 41S: W. SUDBURY ROAD (10+00-13+00)



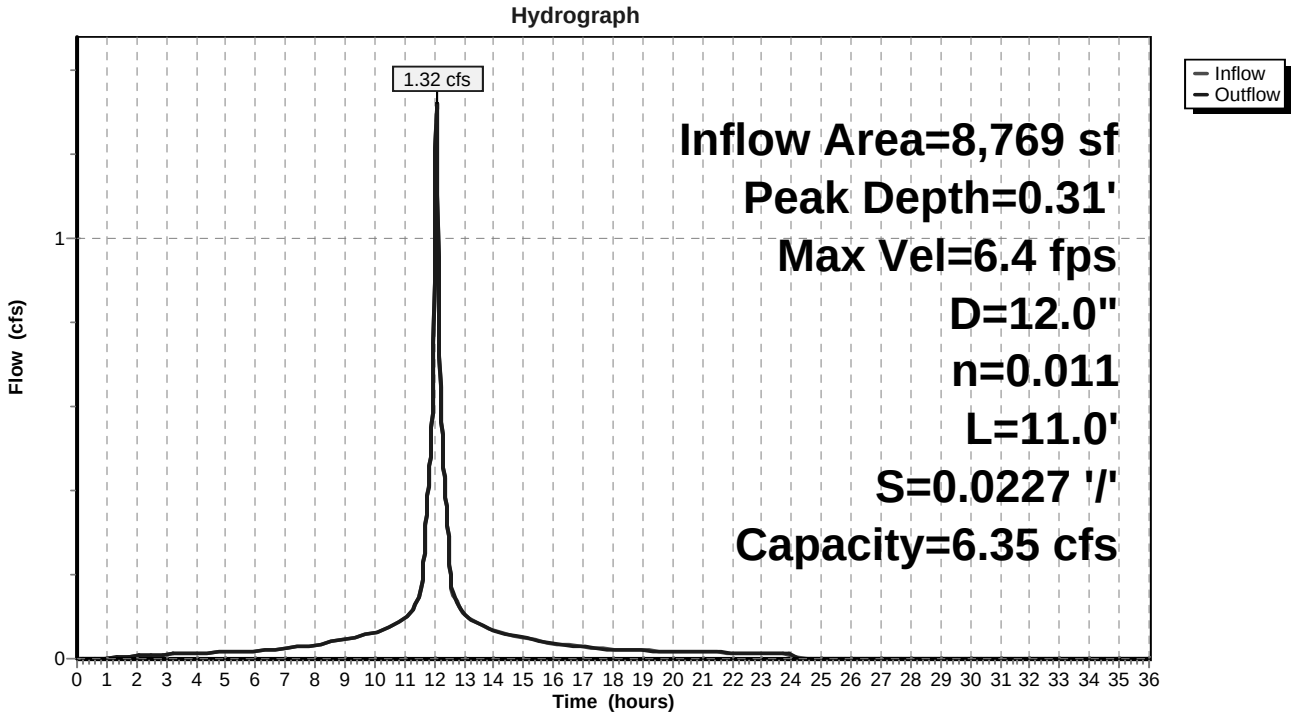
Reach 3R: 12" RCP

Inflow Area = 8,769 sf, Inflow Depth = 6.24" for 100YR event
Inflow = 1.32 cfs @ 12.07 hrs, Volume= 4,561 cf
Outflow = 1.32 cfs @ 12.07 hrs, Volume= 4,561 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.4 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.31' @ 12.07 hrs
Capacity at bank full= 6.35 cfs
Inlet Invert= 192.50', Outlet Invert= 192.25'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 11.0' Slope= 0.0227 '/'

Reach 3R: 12" RCP



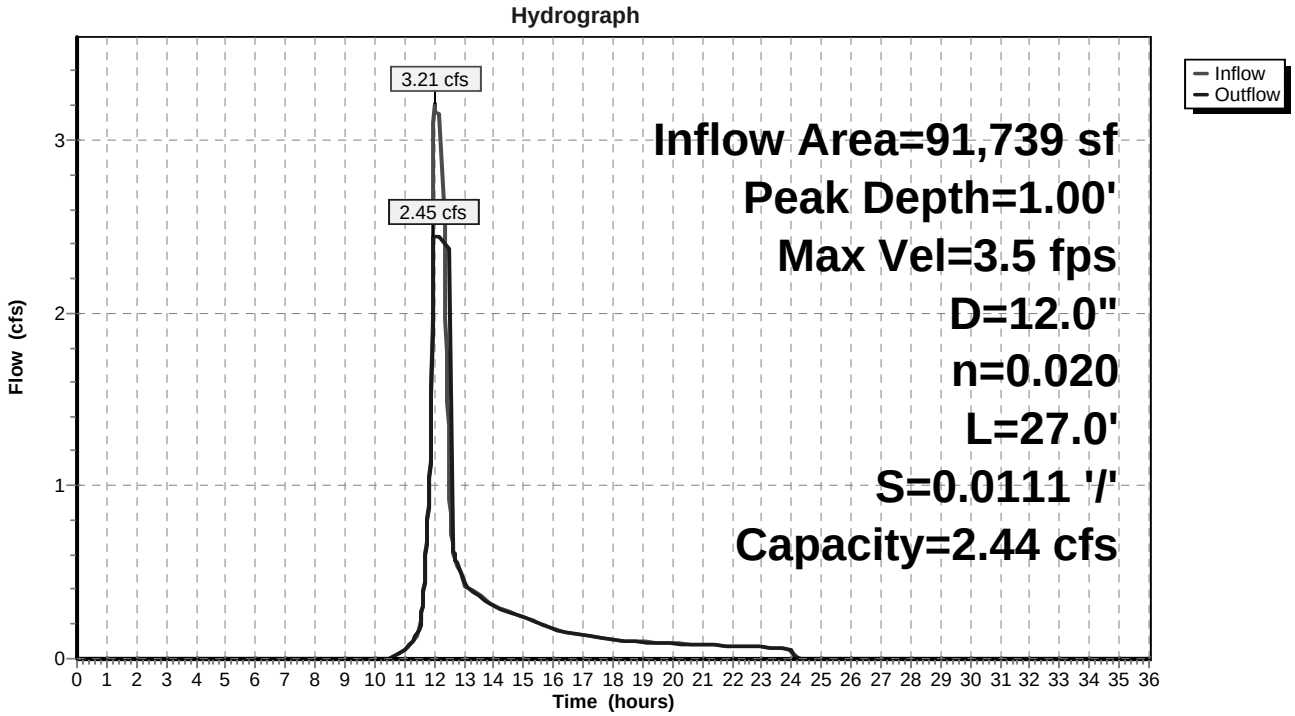
Reach 4R: 12" CPP

Inflow Area = 91,739 sf, Inflow Depth = 1.79" for 100YR event
Inflow = 3.21 cfs @ 12.00 hrs, Volume= 13,671 cf
Outflow = 2.45 cfs @ 11.98 hrs, Volume= 13,671 cf, Atten= 24%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.5 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.3 min

Peak Depth= 1.00' @ 11.98 hrs
Capacity at bank full= 2.44 cfs
Inlet Invert= 176.00', Outlet Invert= 175.70'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 27.0' Slope= 0.0111 '/'

Reach 4R: 12" CPP



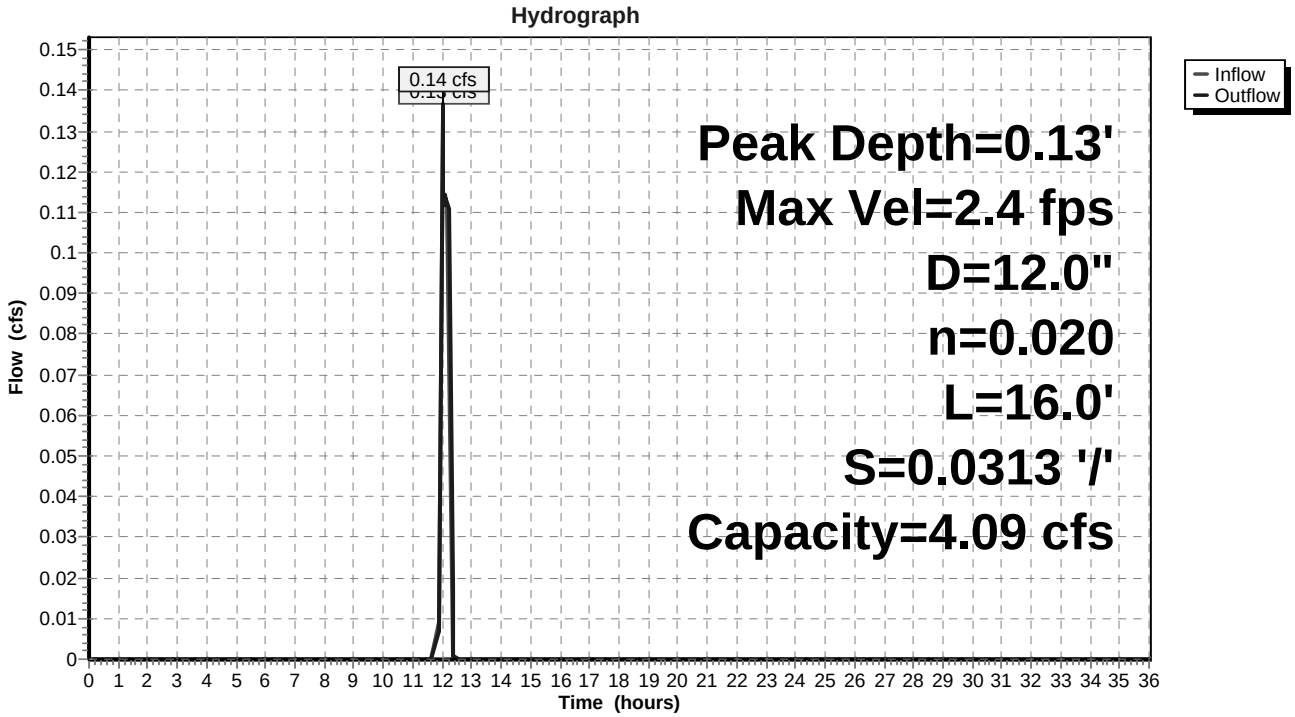
Reach 5R: 12" CPP

Inflow	=	0.13 cfs @	12.00 hrs,	Volume=	152 cf
Outflow	=	0.14 cfs @	12.01 hrs,	Volume=	153 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.4 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.13' @ 12.00 hrs
Capacity at bank full= 4.09 cfs
Inlet Invert= 176.00', Outlet Invert= 175.50'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 16.0' Slope= 0.0313 '/'

Reach 5R: 12" CPP



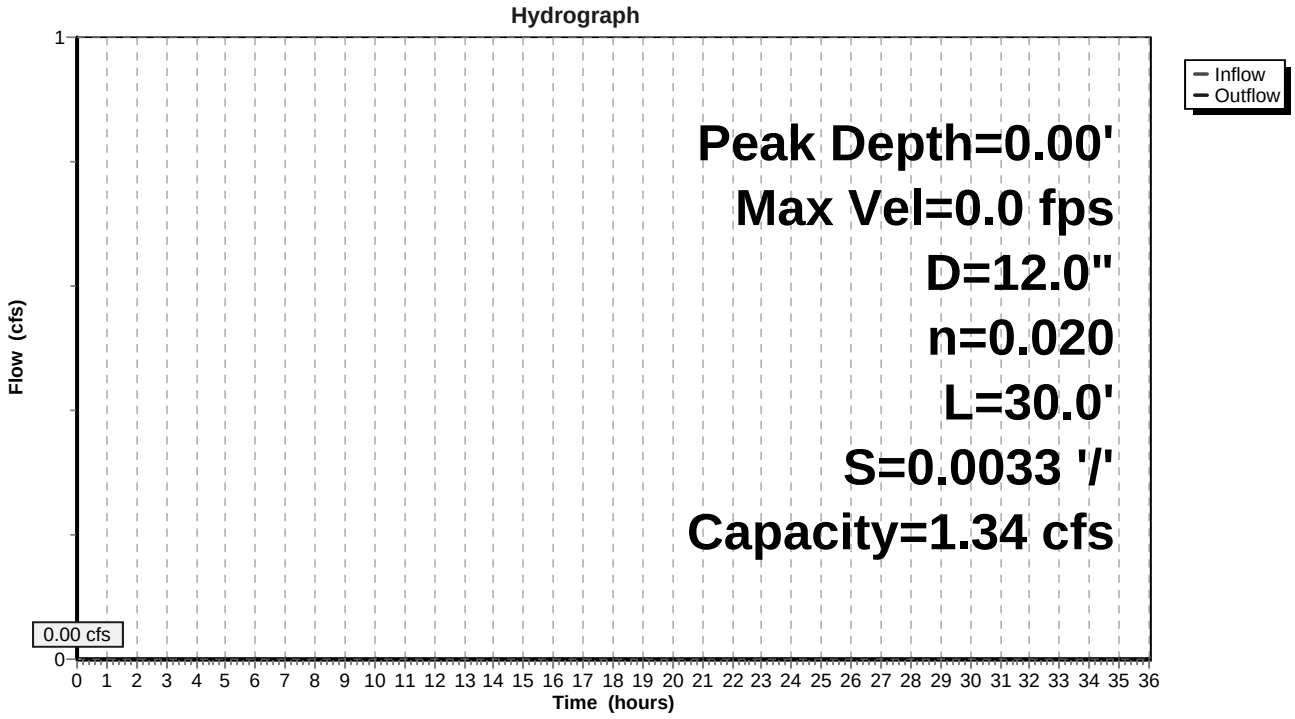
Reach 8R: 12" CPP

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

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 1.34 cfs
Inlet Invert= 175.20', Outlet Invert= 175.10'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 30.0' Slope= 0.0033 '/'

Reach 8R: 12" CPP



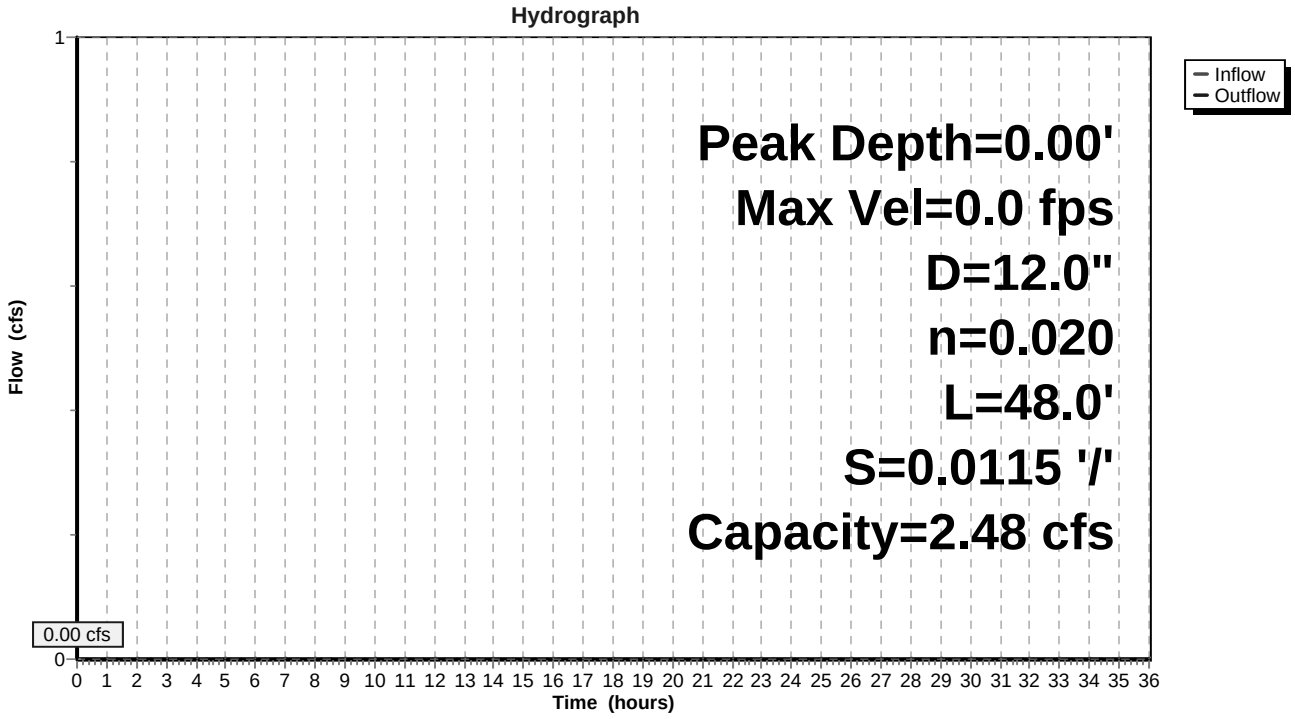
Reach 9R: 12" CPP

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

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 2.48 cfs
Inlet Invert= 177.00', Outlet Invert= 176.45'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 48.0' Slope= 0.0115 '/'

Reach 9R: 12" CPP



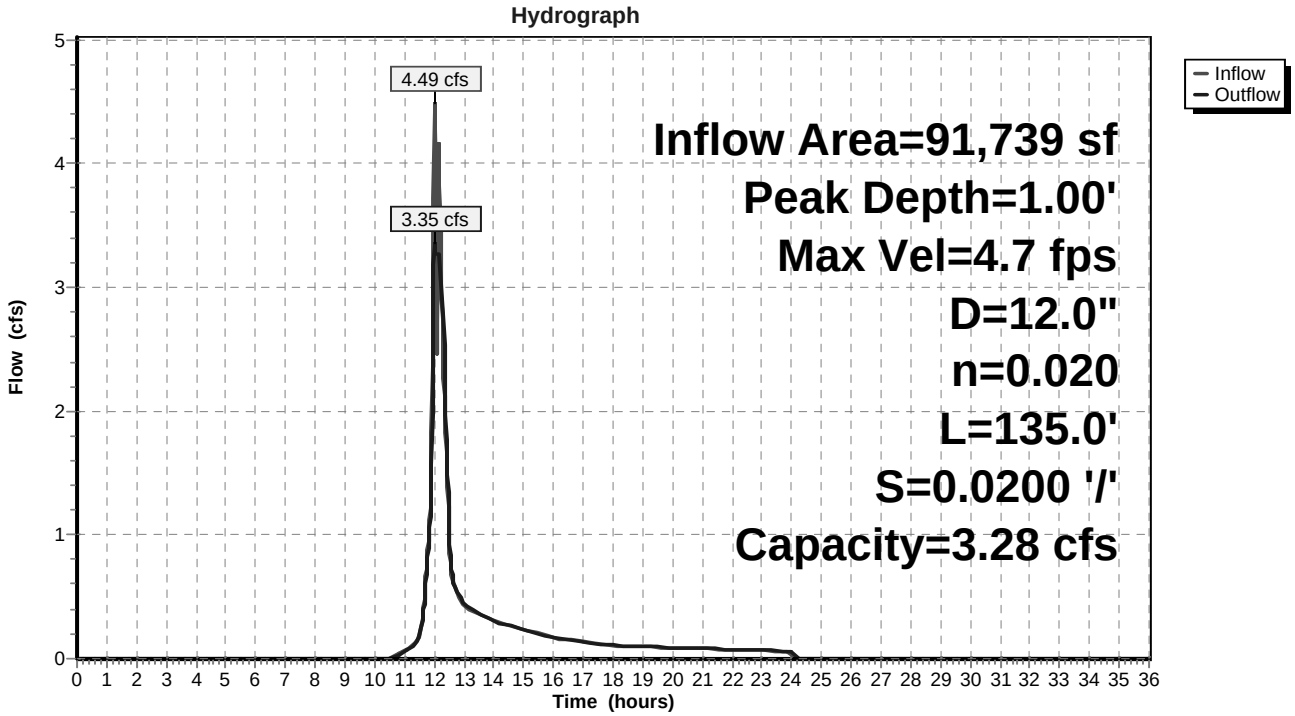
Reach 14R: 12" CPP

Inflow Area = 91,739 sf, Inflow Depth = 1.81" for 100YR event
Inflow = 4.49 cfs @ 12.01 hrs, Volume= 13,824 cf
Outflow = 3.35 cfs @ 12.00 hrs, Volume= 13,824 cf, Atten= 25%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 1.1 min

Peak Depth= 1.00' @ 12.00 hrs
Capacity at bank full= 3.28 cfs
Inlet Invert= 179.70', Outlet Invert= 177.00'
12.0" Diameter Pipe, n= 0.020 Corrugated PE, corrugated interior
Length= 135.0' Slope= 0.0200 '/'

Reach 14R: 12" CPP



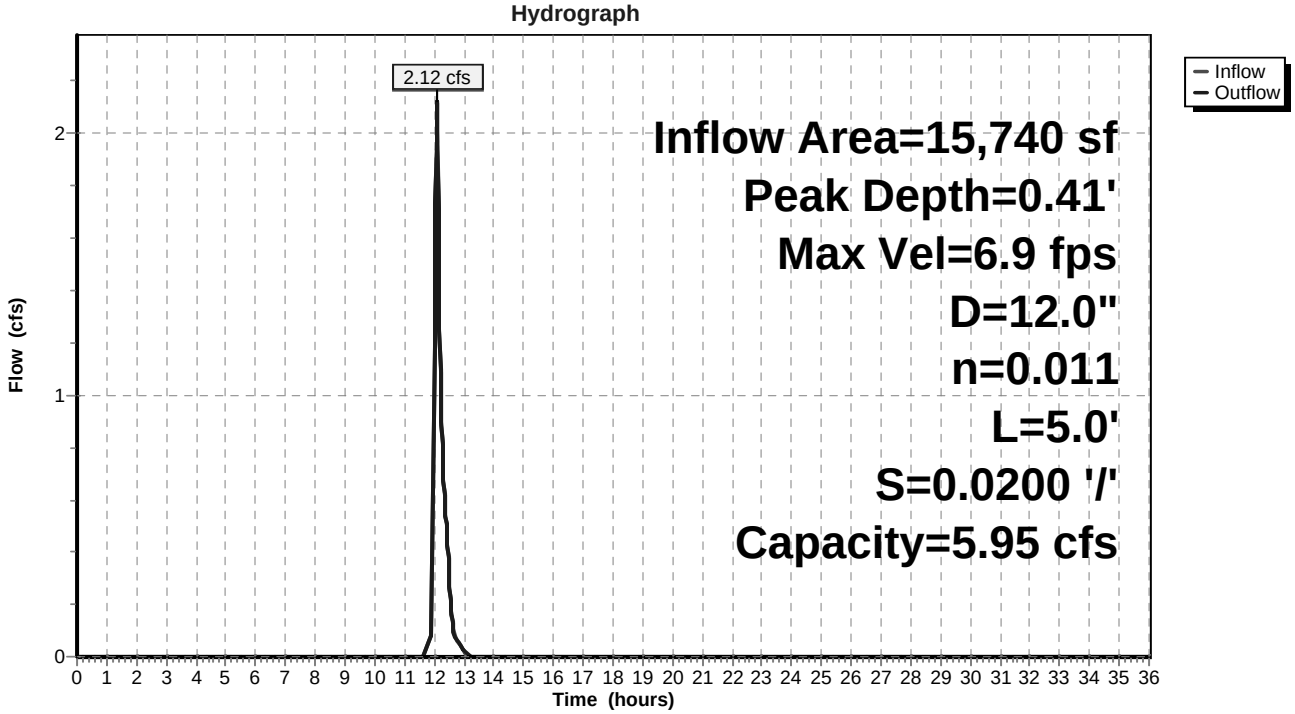
Reach 15R: 12" rcp

Inflow Area = 15,740 sf, Inflow Depth = 1.64" for 100YR event
Inflow = 2.11 cfs @ 12.09 hrs, Volume= 2,146 cf
Outflow = 2.12 cfs @ 12.09 hrs, Volume= 2,146 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.9 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.9 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.41' @ 12.09 hrs
Capacity at bank full= 5.95 cfs
Inlet Invert= 182.00', Outlet Invert= 181.90'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 5.0' Slope= 0.0200 '/'

Reach 15R: 12" rcp



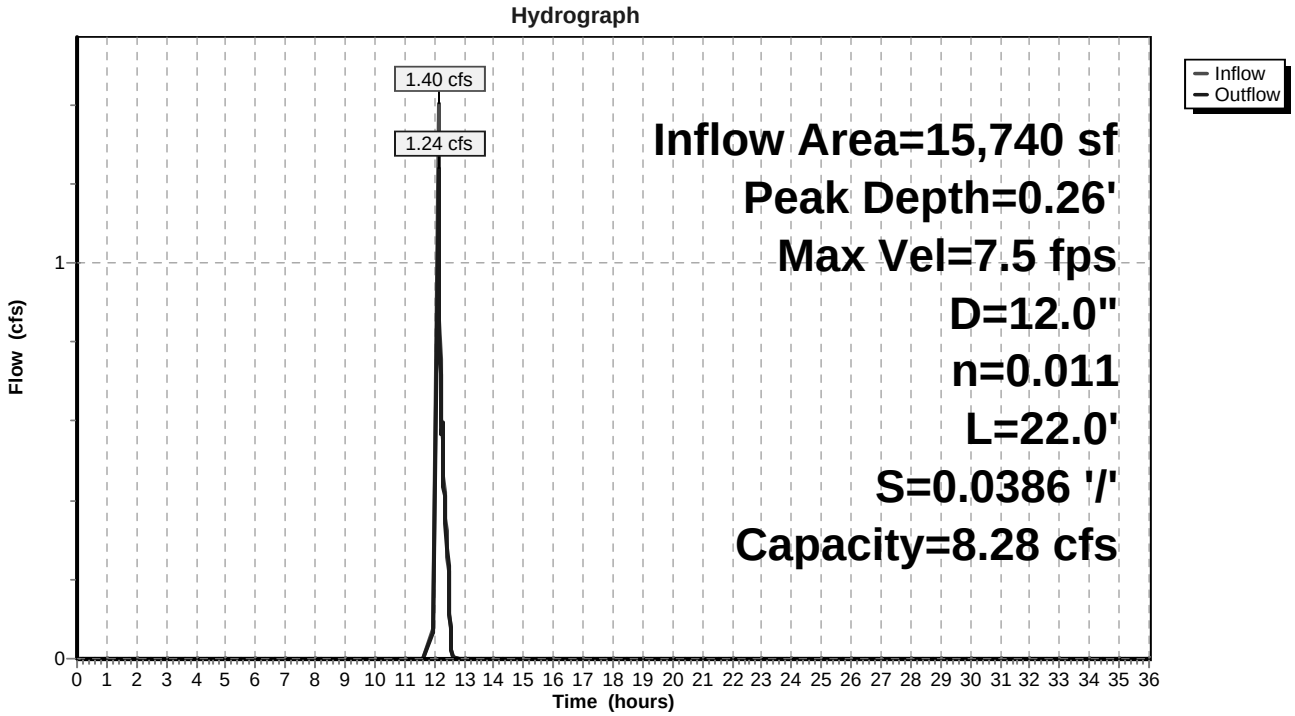
Reach 16R: 12" rcp

Inflow Area = 15,740 sf, Inflow Depth = 0.61" for 100YR event
Inflow = 1.40 cfs @ 12.13 hrs, Volume= 802 cf
Outflow = 1.24 cfs @ 12.13 hrs, Volume= 802 cf, Atten= 12%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 7.5 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.8 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.26' @ 12.13 hrs
Capacity at bank full= 8.28 cfs
Inlet Invert= 181.50', Outlet Invert= 180.65'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 22.0' Slope= 0.0386 '/'

Reach 16R: 12" rcp



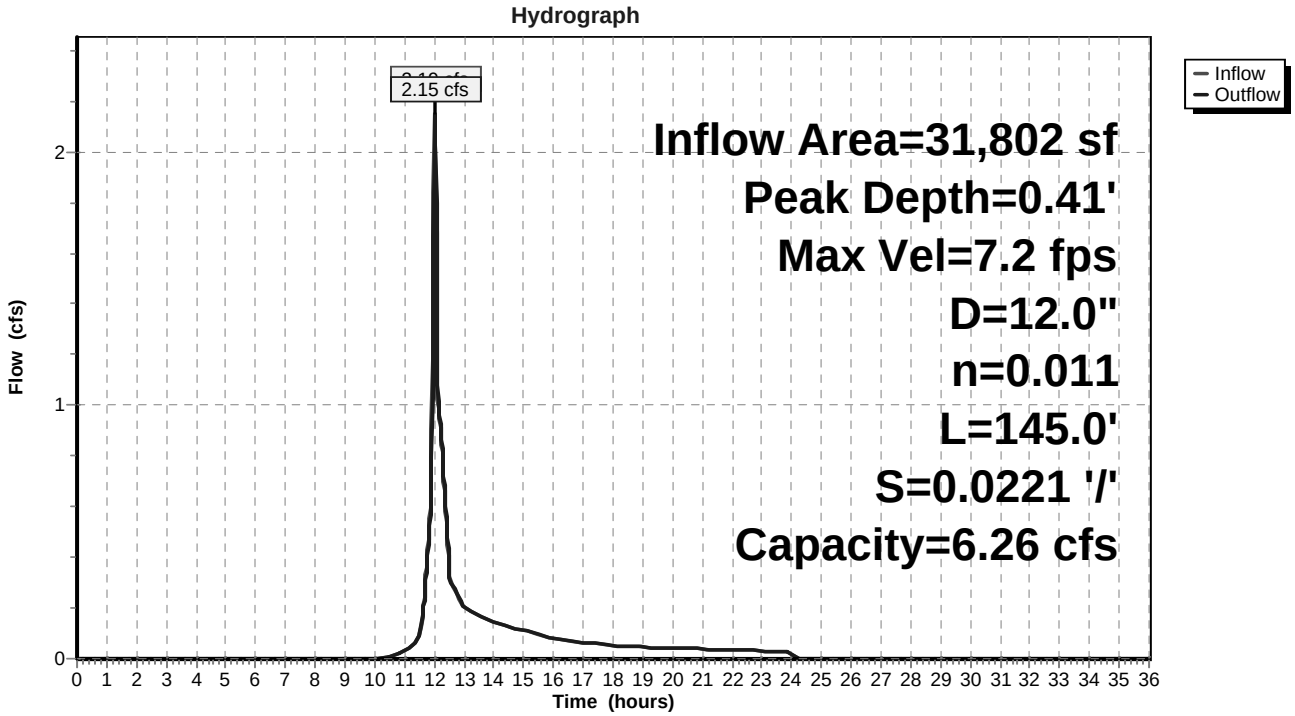
Reach 18R: 12" RCP

Inflow Area = 31,802 sf, Inflow Depth = 2.24" for 100YR event
Inflow = 2.19 cfs @ 12.01 hrs, Volume= 5,942 cf
Outflow = 2.15 cfs @ 12.02 hrs, Volume= 5,942 cf, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 7.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.7 fps, Avg. Travel Time= 0.9 min

Peak Depth= 0.41' @ 12.02 hrs
Capacity at bank full= 6.26 cfs
Inlet Invert= 183.00', Outlet Invert= 179.80'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 145.0' Slope= 0.0221 '/'

Reach 18R: 12" RCP



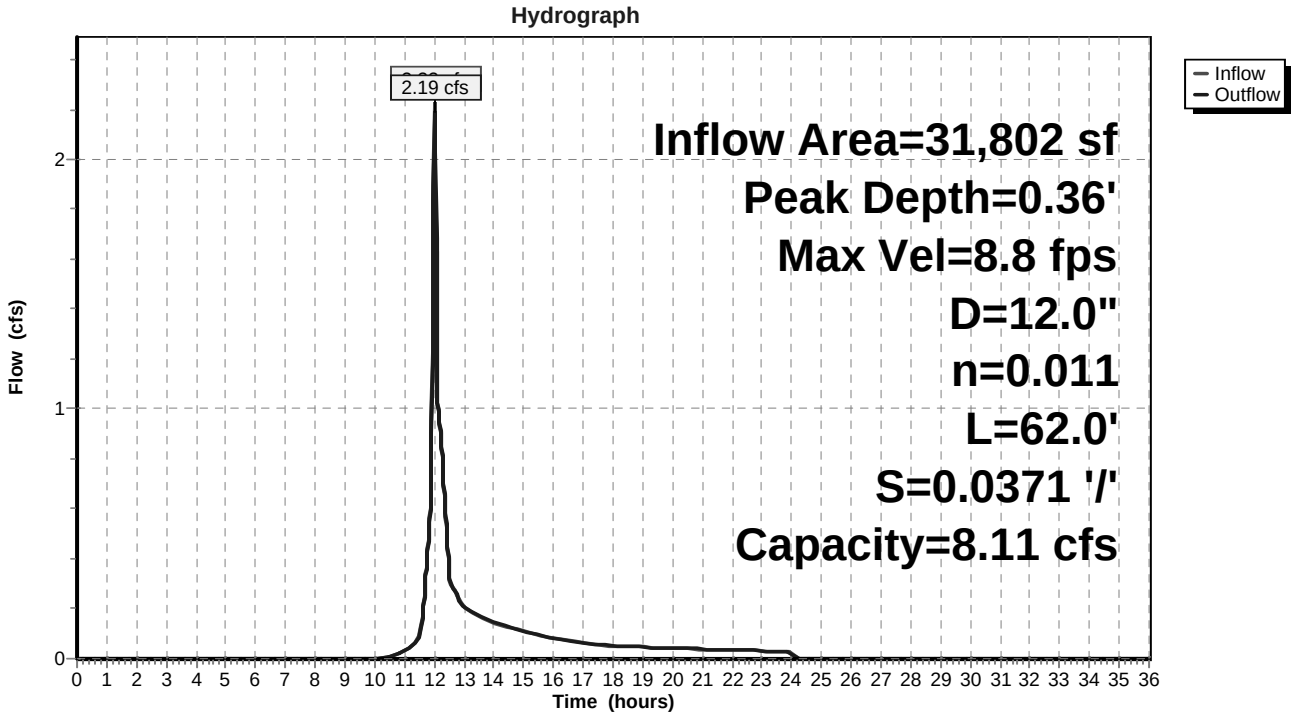
Reach 19R: 12" RCP

Inflow Area = 31,802 sf, Inflow Depth = 2.24" for 100YR event
Inflow = 2.22 cfs @ 12.00 hrs, Volume= 5,942 cf
Outflow = 2.19 cfs @ 12.01 hrs, Volume= 5,942 cf, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 8.8 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 0.3 min

Peak Depth= 0.36' @ 12.01 hrs
Capacity at bank full= 8.11 cfs
Inlet Invert= 185.40', Outlet Invert= 183.10'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 62.0' Slope= 0.0371 '/'

Reach 19R: 12" RCP



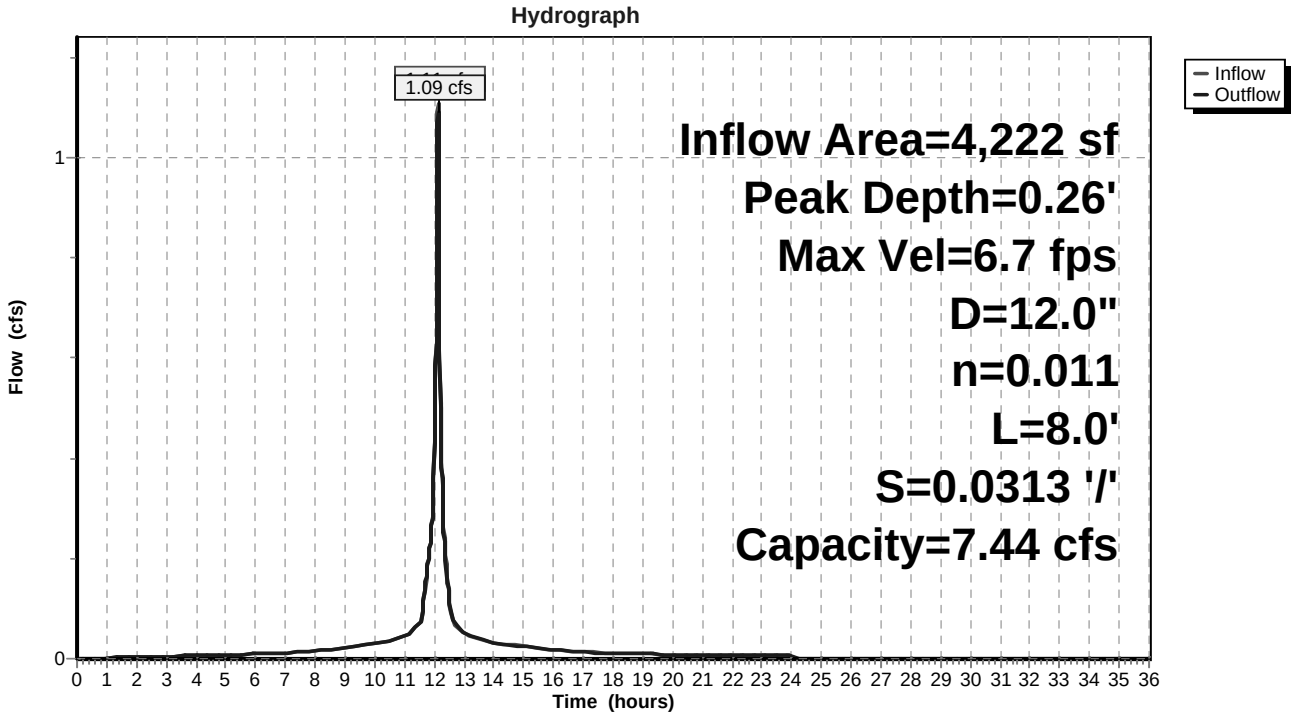
Reach 20R: 12" RCP

Inflow Area = 4,222 sf, Inflow Depth = 6.74" for 100YR event
Inflow = 1.11 cfs @ 12.12 hrs, Volume= 2,371 cf
Outflow = 1.09 cfs @ 12.13 hrs, Volume= 2,371 cf, Atten= 2%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.7 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.26' @ 12.13 hrs
Capacity at bank full= 7.44 cfs
Inlet Invert= 181.00', Outlet Invert= 180.75'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 8.0' Slope= 0.0313 '/'

Reach 20R: 12" RCP



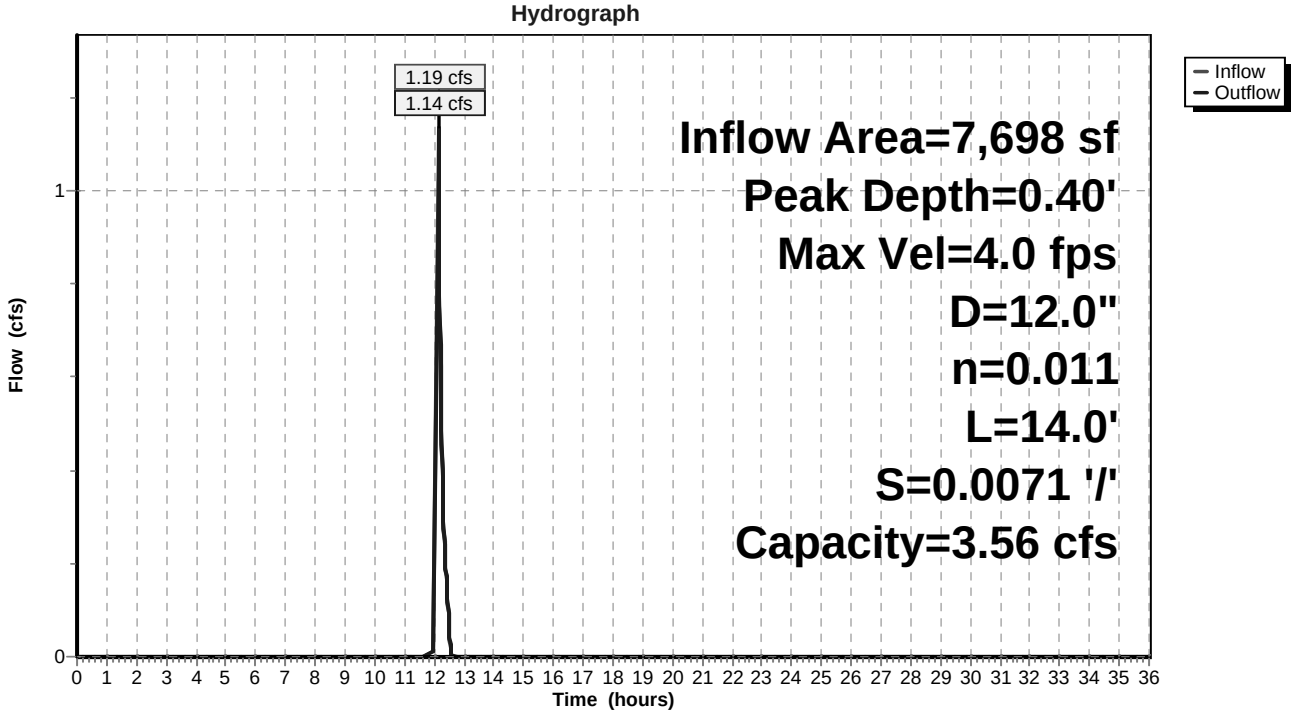
Reach 22R: 12" rcp

Inflow Area = 7,698 sf, Inflow Depth = 0.83" for 100YR event
Inflow = 1.19 cfs @ 12.15 hrs, Volume= 533 cf
Outflow = 1.14 cfs @ 12.15 hrs, Volume= 533 cf, Atten= 5%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.0 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.40' @ 12.15 hrs
Capacity at bank full= 3.56 cfs
Inlet Invert= 180.75', Outlet Invert= 180.65'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 14.0' Slope= 0.0071 '/'

Reach 22R: 12" rcp



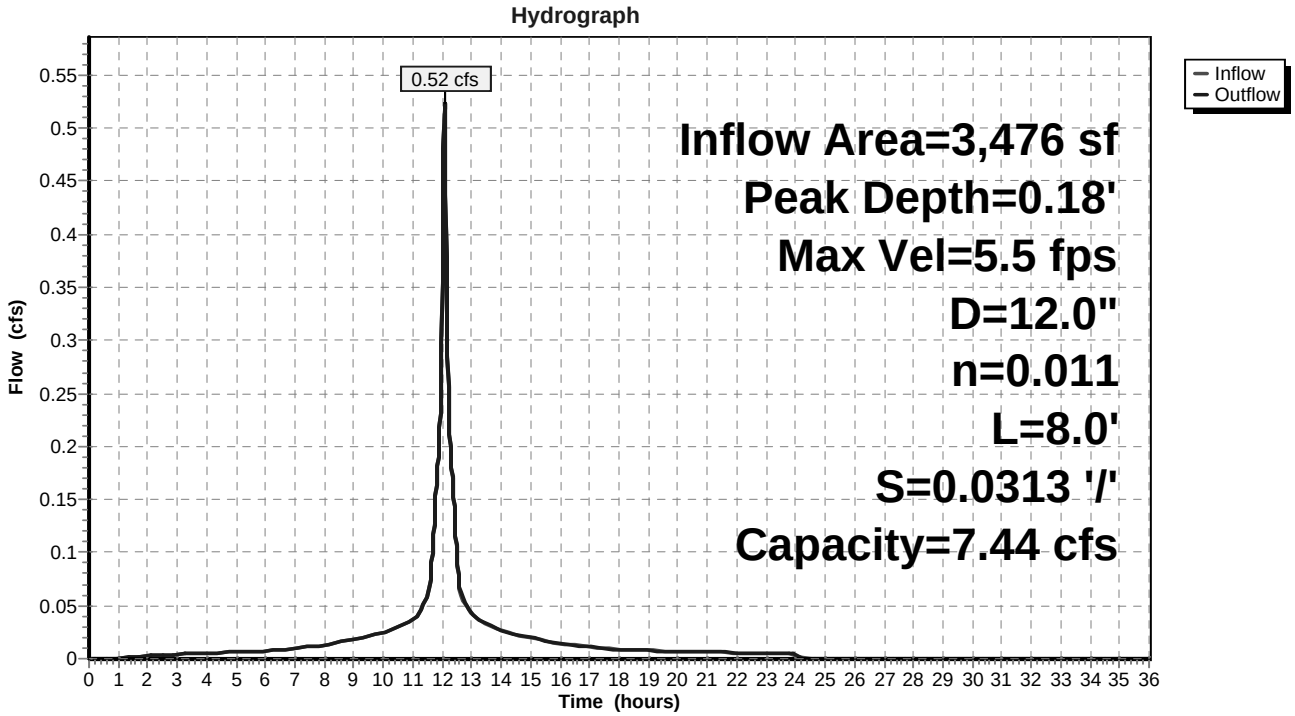
Reach 25R: 12" RCP

Inflow Area = 3,476 sf, Inflow Depth = 6.24" for 100YR event
Inflow = 0.52 cfs @ 12.07 hrs, Volume= 1,808 cf
Outflow = 0.52 cfs @ 12.07 hrs, Volume= 1,808 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.18' @ 12.07 hrs
Capacity at bank full= 7.44 cfs
Inlet Invert= 181.00', Outlet Invert= 180.75'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 8.0' Slope= 0.0313 '/'

Reach 25R: 12" RCP



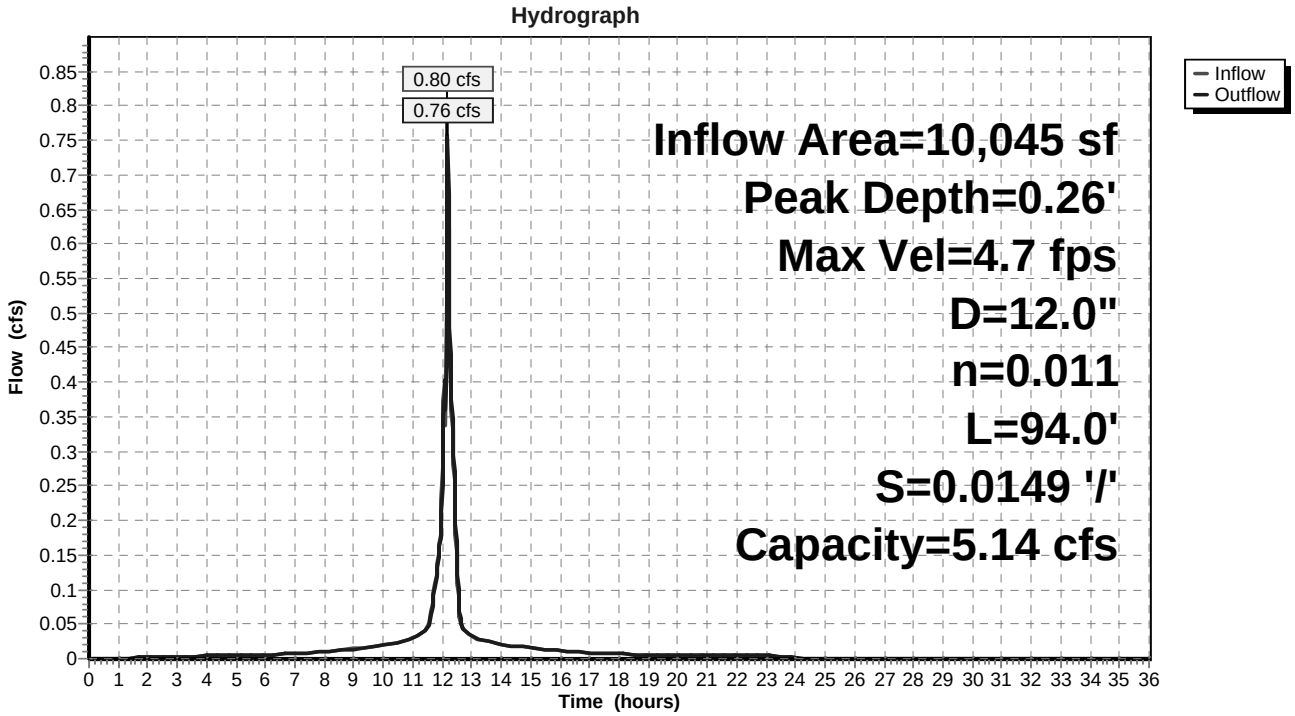
Reach 28R: 12" RCP

Inflow Area = 10,045 sf, Inflow Depth = 2.08" for 100YR event
Inflow = 0.80 cfs @ 12.17 hrs, Volume= 1,737 cf
Outflow = 0.76 cfs @ 12.18 hrs, Volume= 1,737 cf, Atten= 6%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.7 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 1.2 min

Peak Depth= 0.26' @ 12.17 hrs
Capacity at bank full= 5.14 cfs
Inlet Invert= 142.70', Outlet Invert= 141.30'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 94.0' Slope= 0.0149 '/'

Reach 28R: 12" RCP



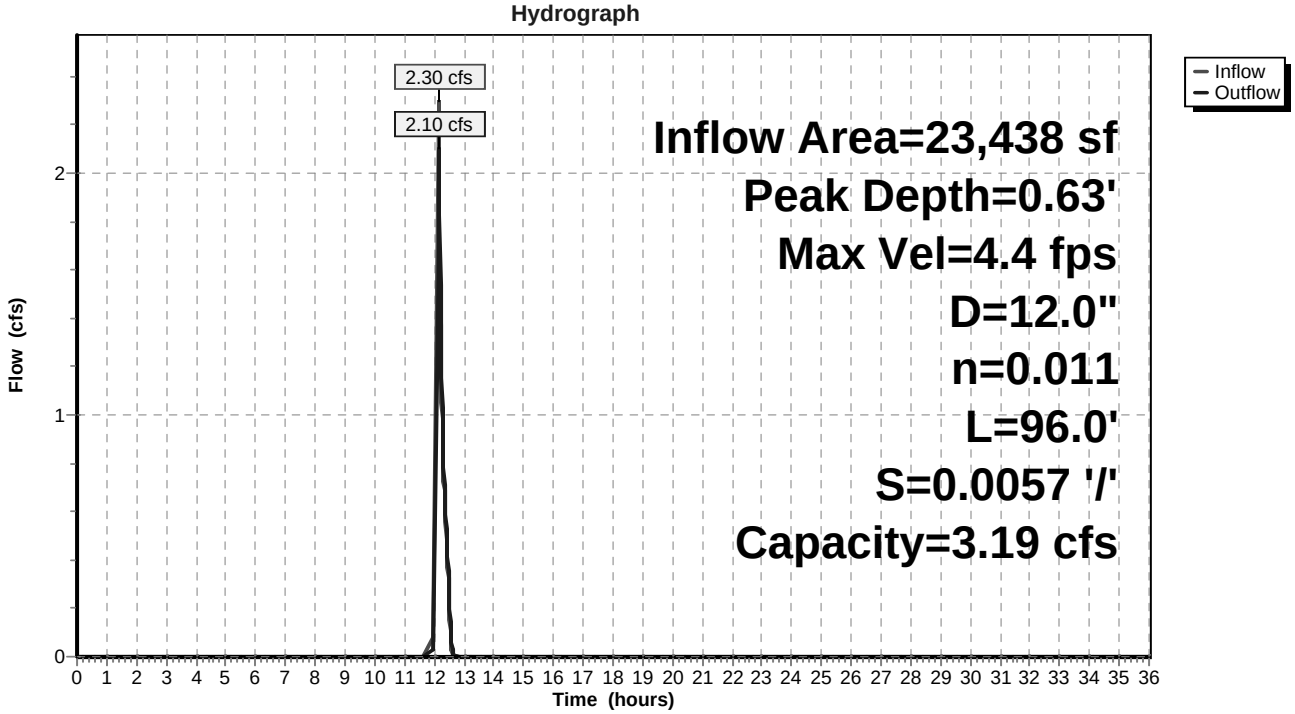
Reach 30R: 12" rcp

Inflow Area = 23,438 sf, Inflow Depth = 0.68" for 100YR event
Inflow = 2.30 cfs @ 12.14 hrs, Volume= 1,336 cf
Outflow = 2.10 cfs @ 12.16 hrs, Volume= 1,336 cf, Atten= 9%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.4 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 0.8 min

Peak Depth= 0.63' @ 12.15 hrs
Capacity at bank full= 3.19 cfs
Inlet Invert= 180.55', Outlet Invert= 180.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 96.0' Slope= 0.0057 '/'

Reach 30R: 12" rcp



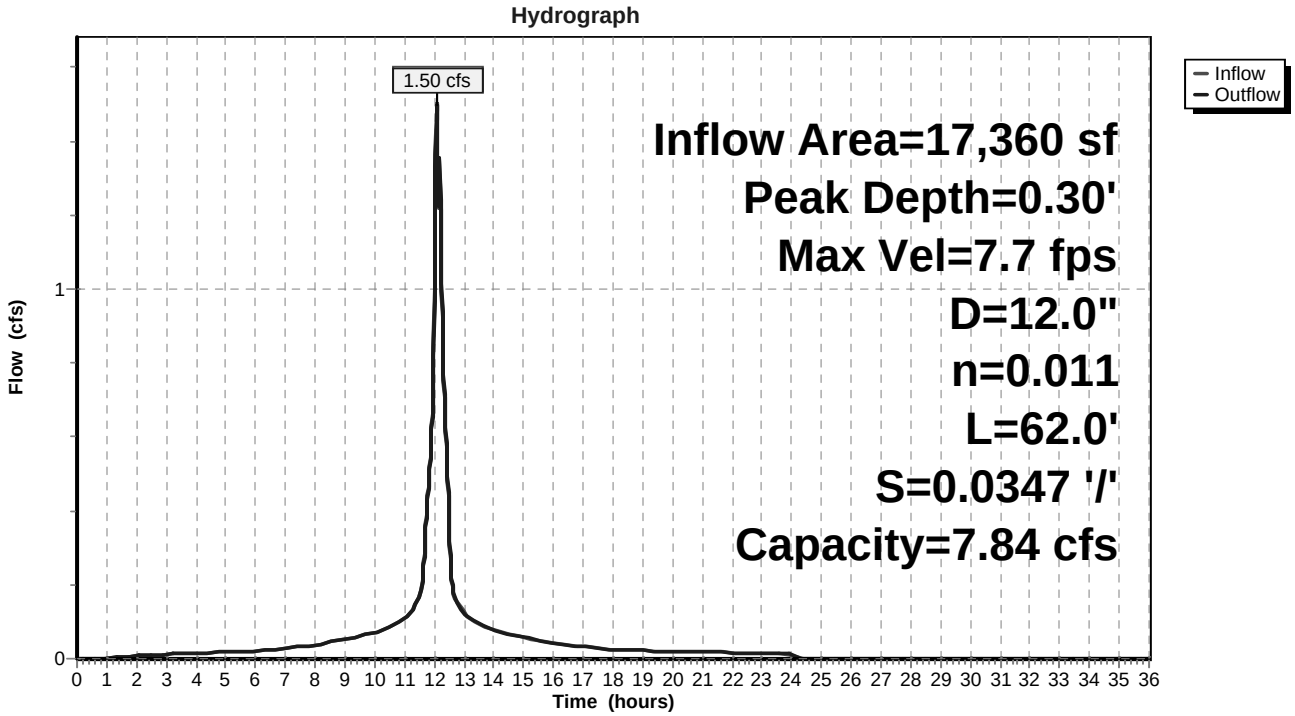
Reach 32R: 12" RCP

Inflow Area = 17,360 sf, Inflow Depth = 3.83" for 100YR event
Inflow = 1.50 cfs @ 12.07 hrs, Volume= 5,542 cf
Outflow = 1.50 cfs @ 12.08 hrs, Volume= 5,542 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 7.7 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.5 fps, Avg. Travel Time= 0.4 min

Peak Depth= 0.30' @ 12.07 hrs
Capacity at bank full= 7.84 cfs
Inlet Invert= 141.20', Outlet Invert= 139.05'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 62.0' Slope= 0.0347 '/'

Reach 32R: 12" RCP



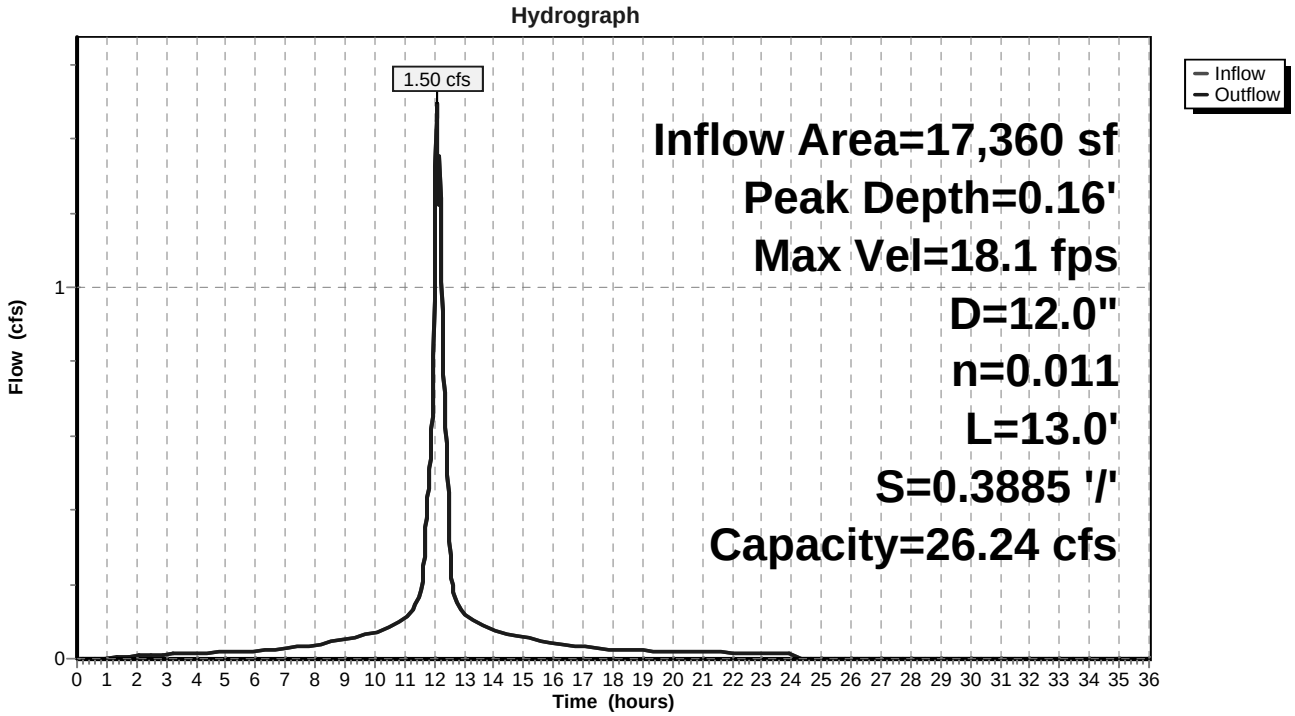
Reach 33R: 12" RCP

Inflow Area = 17,360 sf, Inflow Depth = 3.83" for 100YR event
Inflow = 1.50 cfs @ 12.08 hrs, Volume= 5,542 cf
Outflow = 1.50 cfs @ 12.08 hrs, Volume= 5,542 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 18.1 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 5.9 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.16' @ 12.08 hrs
Capacity at bank full= 26.24 cfs
Inlet Invert= 139.05', Outlet Invert= 134.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 13.0' Slope= 0.3885 '/'

Reach 33R: 12" RCP



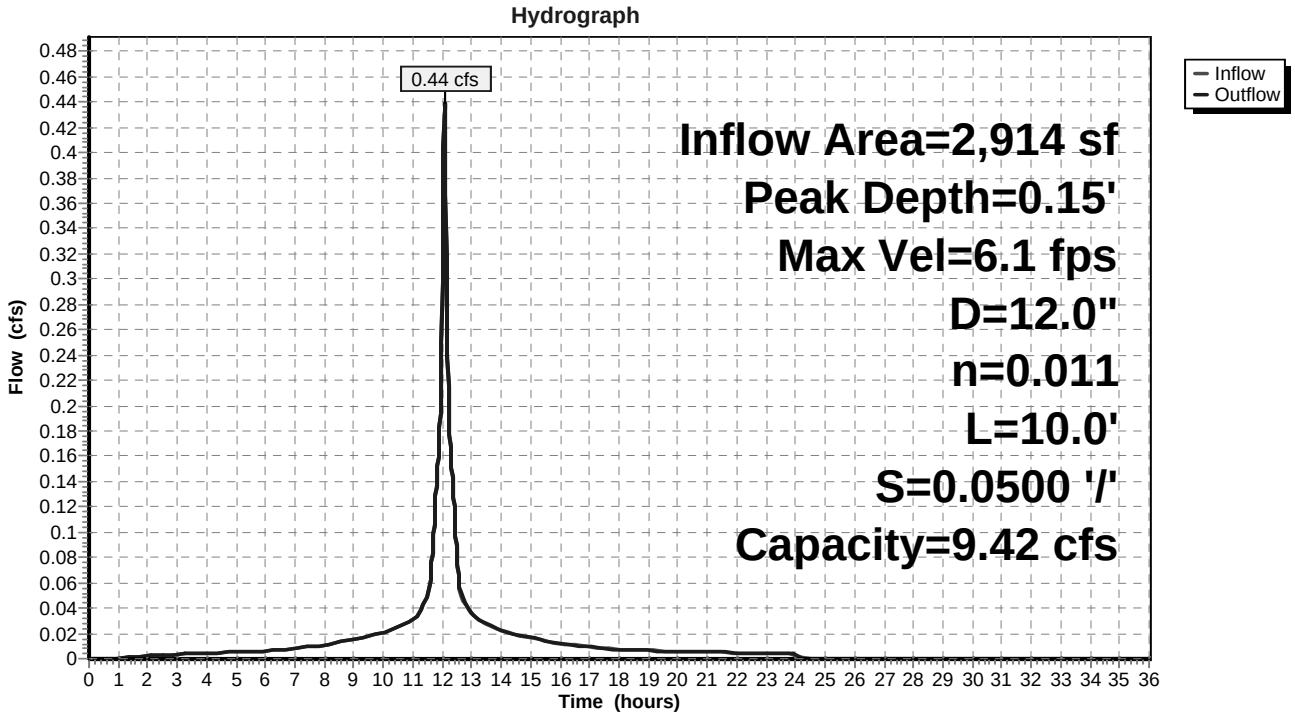
Reach 34R: 12" RCP

Inflow Area = 2,914 sf, Inflow Depth = 6.24" for 100YR event
Inflow = 0.44 cfs @ 12.07 hrs, Volume= 1,516 cf
Outflow = 0.44 cfs @ 12.07 hrs, Volume= 1,516 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.1 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.15' @ 12.07 hrs
Capacity at bank full= 9.42 cfs
Inlet Invert= 157.00', Outlet Invert= 156.50'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.0500 '/'

Reach 34R: 12" RCP



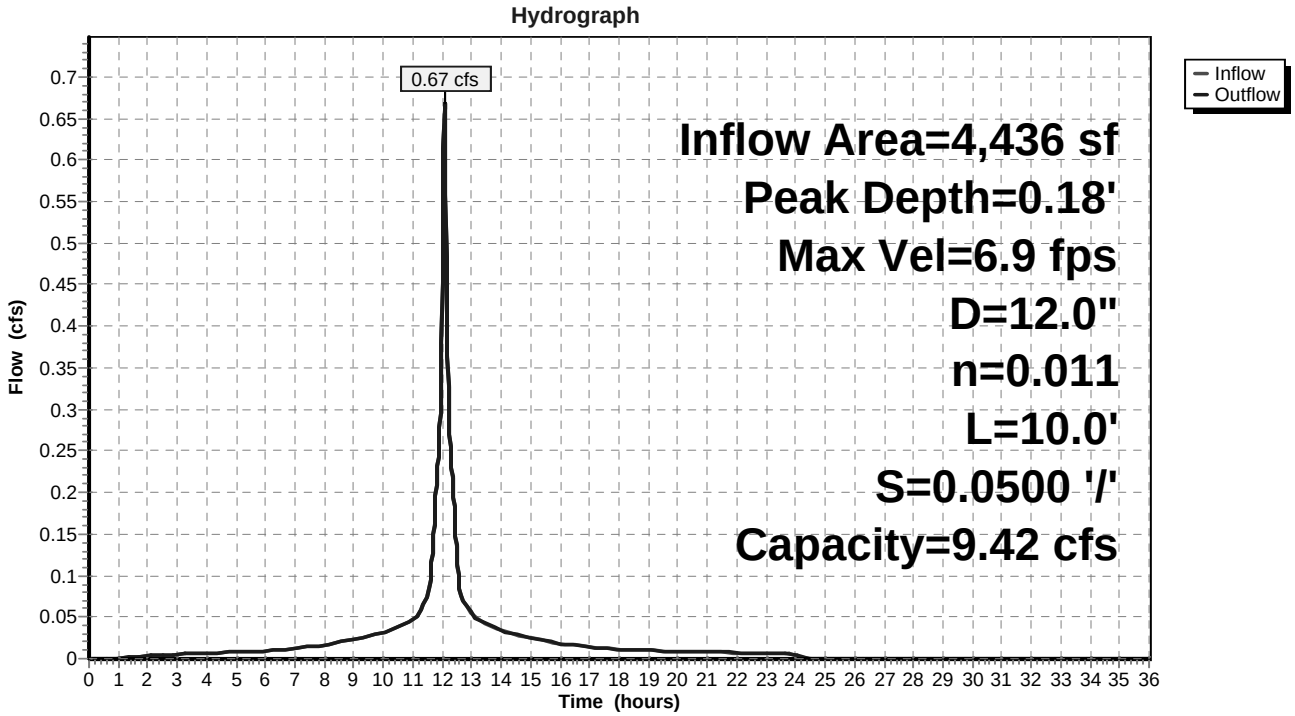
Reach 36R: 12" RCP

Inflow Area = 4,436 sf, Inflow Depth = 6.24" for 100YR event
Inflow = 0.67 cfs @ 12.07 hrs, Volume= 2,307 cf
Outflow = 0.67 cfs @ 12.07 hrs, Volume= 2,307 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.9 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.18' @ 12.07 hrs
Capacity at bank full= 9.42 cfs
Inlet Invert= 157.00', Outlet Invert= 156.50'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 10.0' Slope= 0.0500 '/'

Reach 36R: 12" RCP



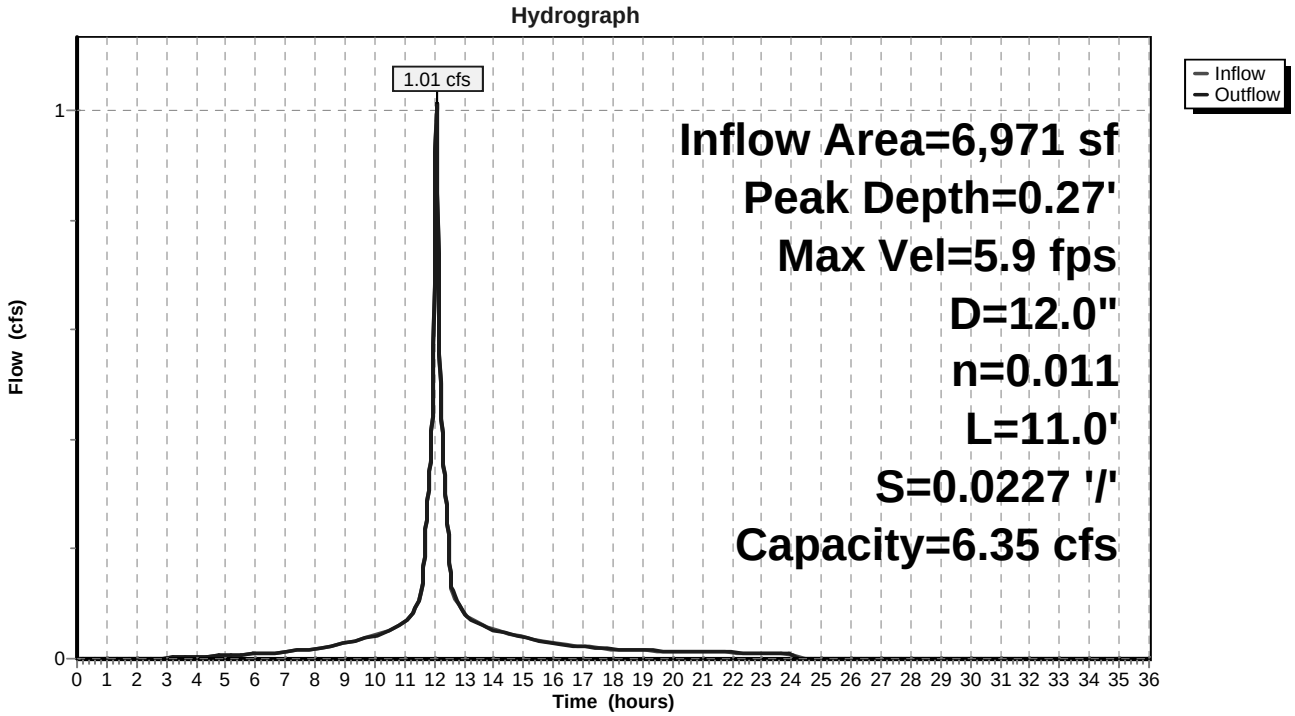
Reach 37R: 12" RCP

Inflow Area = 6,971 sf, Inflow Depth = 5.66" for 100YR event
Inflow = 1.01 cfs @ 12.07 hrs, Volume= 3,286 cf
Outflow = 1.01 cfs @ 12.07 hrs, Volume= 3,286 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.9 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 0.1 min

Peak Depth= 0.27' @ 12.07 hrs
Capacity at bank full= 6.35 cfs
Inlet Invert= 192.50', Outlet Invert= 192.25'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 11.0' Slope= 0.0227 '/'

Reach 37R: 12" RCP



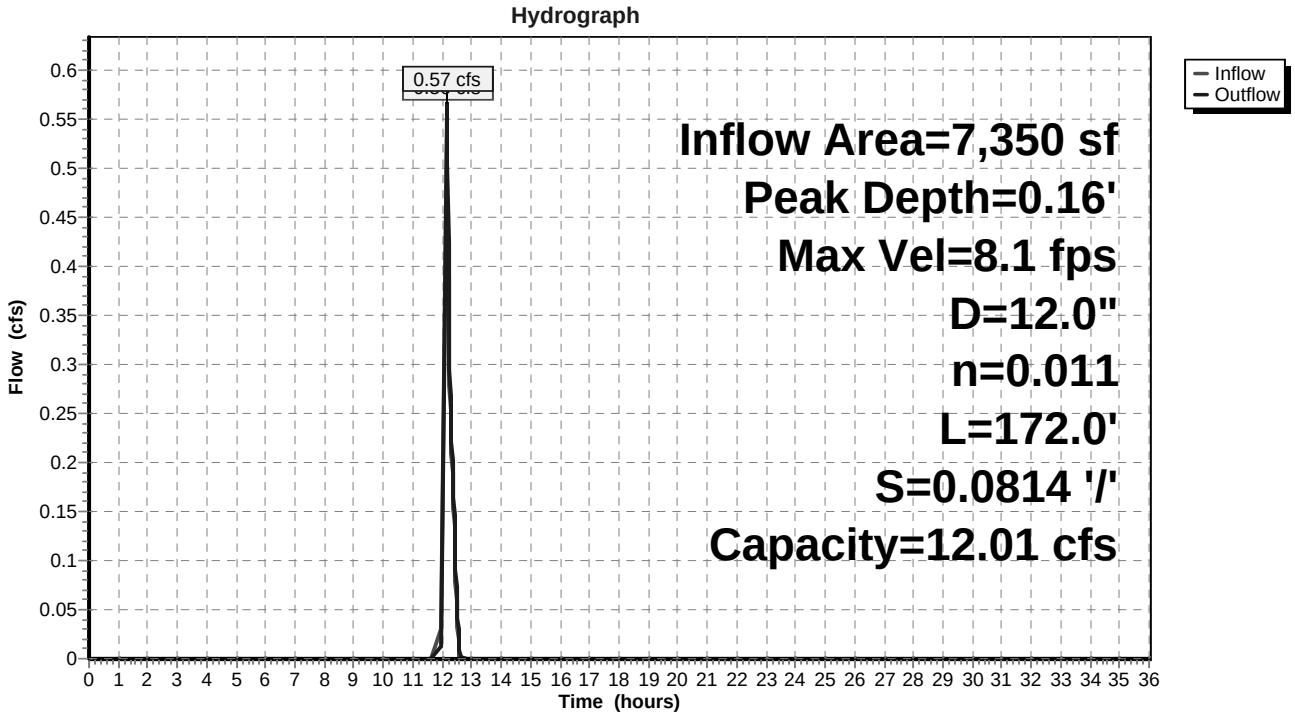
Reach 39R: 12" rcp

Inflow Area = 7,350 sf, Inflow Depth = 0.55" for 100YR event
Inflow = 0.56 cfs @ 12.15 hrs, Volume= 335 cf
Outflow = 0.57 cfs @ 12.17 hrs, Volume= 335 cf, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 8.1 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 4.5 fps, Avg. Travel Time= 0.6 min

Peak Depth= 0.16' @ 12.16 hrs
Capacity at bank full= 12.01 cfs
Inlet Invert= 157.00', Outlet Invert= 143.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 172.0' Slope= 0.0814 '/'

Reach 39R: 12" rcp



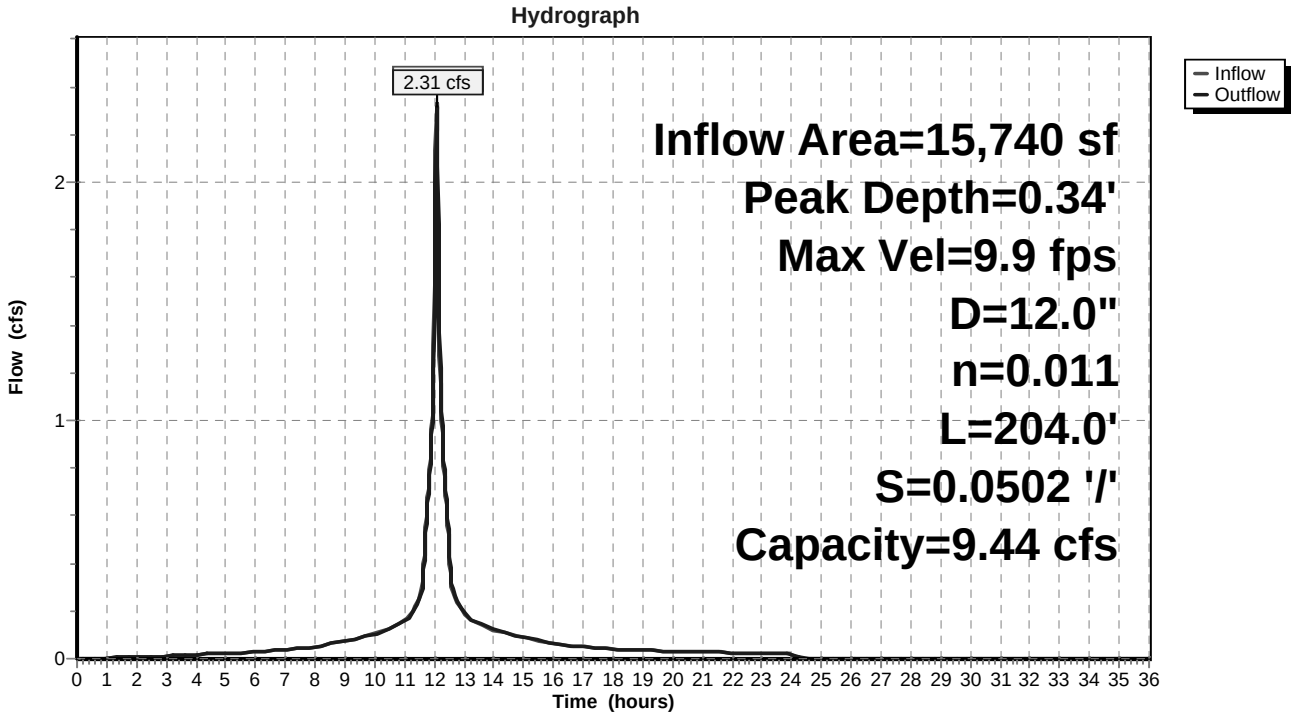
Reach 40R: 12" RCP

Inflow Area = 15,740 sf, Inflow Depth = 5.98" for 100YR event
Inflow = 2.33 cfs @ 12.07 hrs, Volume= 7,847 cf
Outflow = 2.31 cfs @ 12.08 hrs, Volume= 7,847 cf, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 9.9 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 1.1 min

Peak Depth= 0.34' @ 12.08 hrs
Capacity at bank full= 9.44 cfs
Inlet Invert= 192.25', Outlet Invert= 182.00'
12.0" Diameter Pipe, n= 0.011 Concrete pipe, straight & clean
Length= 204.0' Slope= 0.0502 '/'

Reach 40R: 12" RCP



Pond 1P: WestSide D-Pond

Inflow Area =	91,739 sf,	Inflow Depth =	1.79"	for	100YR event
Inflow =	2.45 cfs @	11.98 hrs,	Volume=	13,671 cf	
Outflow =	4.44 cfs @	12.04 hrs,	Volume=	11,756 cf,	Atten= 0%, Lag= 3.6 min
Primary =	4.44 cfs @	12.04 hrs,	Volume=	11,756 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 178.80' @ 12.04 hrs Surf.Area= 899 sf Storage= 1,987 cf
Flood Elev= 177.00' Surf.Area= 598 sf Storage= 869 cf
Plug-Flow detention time= 85.9 min calculated for 11,756 cf (86% of inflow)
Center-of-Mass det. time= 23.5 min (871.1 - 847.6)

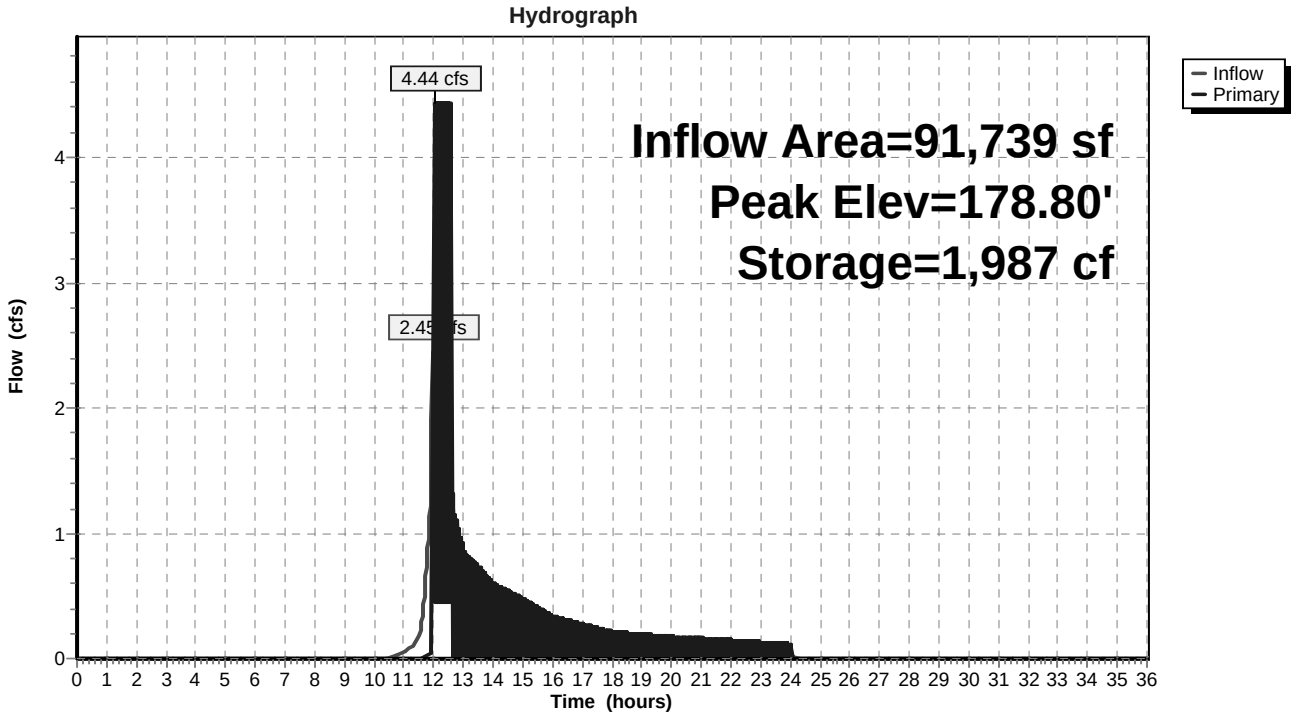
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	1,987 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.00	284	0	0
176.00	428	356	356
177.00	598	513	869
178.00	792	695	1,564
178.50	899	423	1,987

Device	Routing	Invert	Outlet Devices
#1	Primary	178.50'	**10.0' long x 110.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.43 cfs @ 12.04 hrs HW=178.80' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 4.43 cfs @ 1.5 fps)

Pond 1P: WestSide D-Pond



Pond 2P: CB

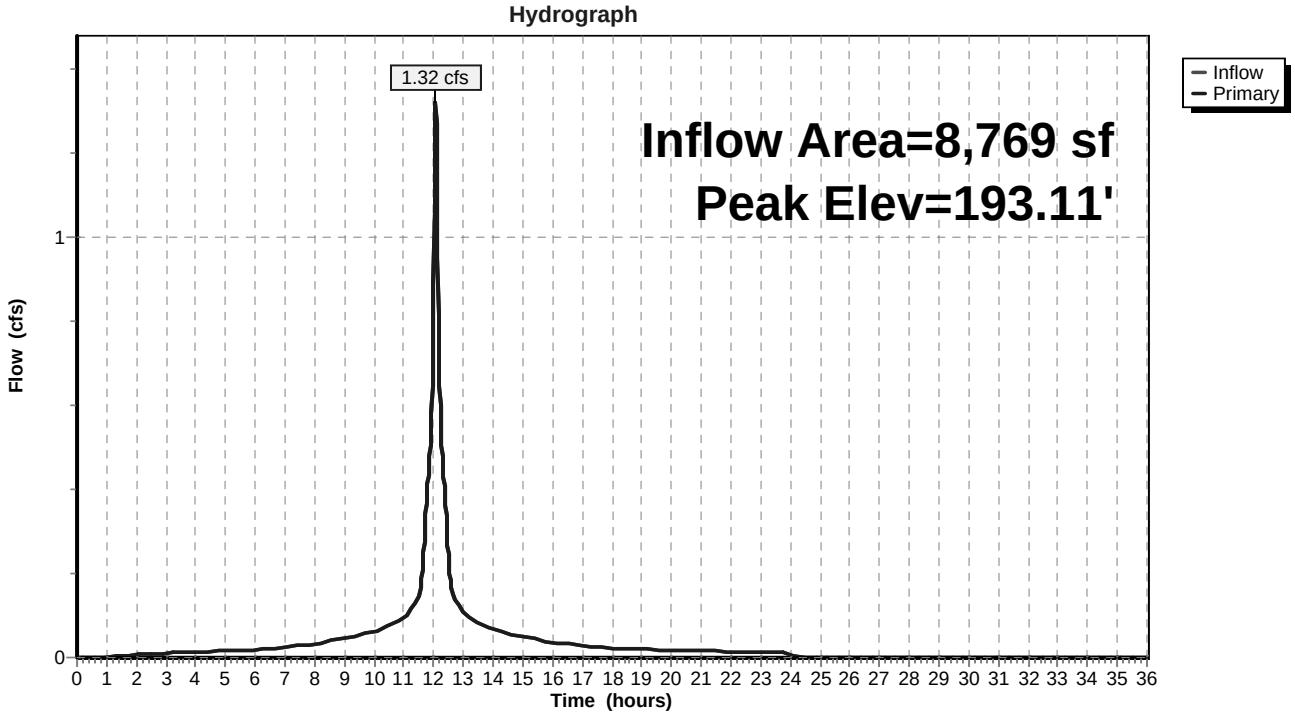
Inflow Area =	8,769 sf,	Inflow Depth =	6.24"	for	100YR event
Inflow =	1.32 cfs @	12.07 hrs,	Volume=	4,561 cf	
Outflow =	1.32 cfs @	12.07 hrs,	Volume=	4,561 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.32 cfs @	12.07 hrs,	Volume=	4,561 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 193.11' @ 12.07 hrs
Flood Elev= 196.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	192.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.31 cfs @ 12.07 hrs HW=193.10' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.31 cfs @ 2.6 fps)

Pond 2P: CB



Pond 3P: MH

Inflow Area =	91,739 sf,	Inflow Depth =	1.81"	for	100YR event
Inflow =	3.35 cfs @	12.00 hrs,	Volume=	13,824 cf	
Outflow =	3.35 cfs @	12.00 hrs,	Volume=	13,824 cf,	Atten= 0%, Lag= 0.0 min
Primary =	3.21 cfs @	12.00 hrs,	Volume=	13,671 cf	
Secondary =	0.13 cfs @	12.00 hrs,	Volume=	152 cf	

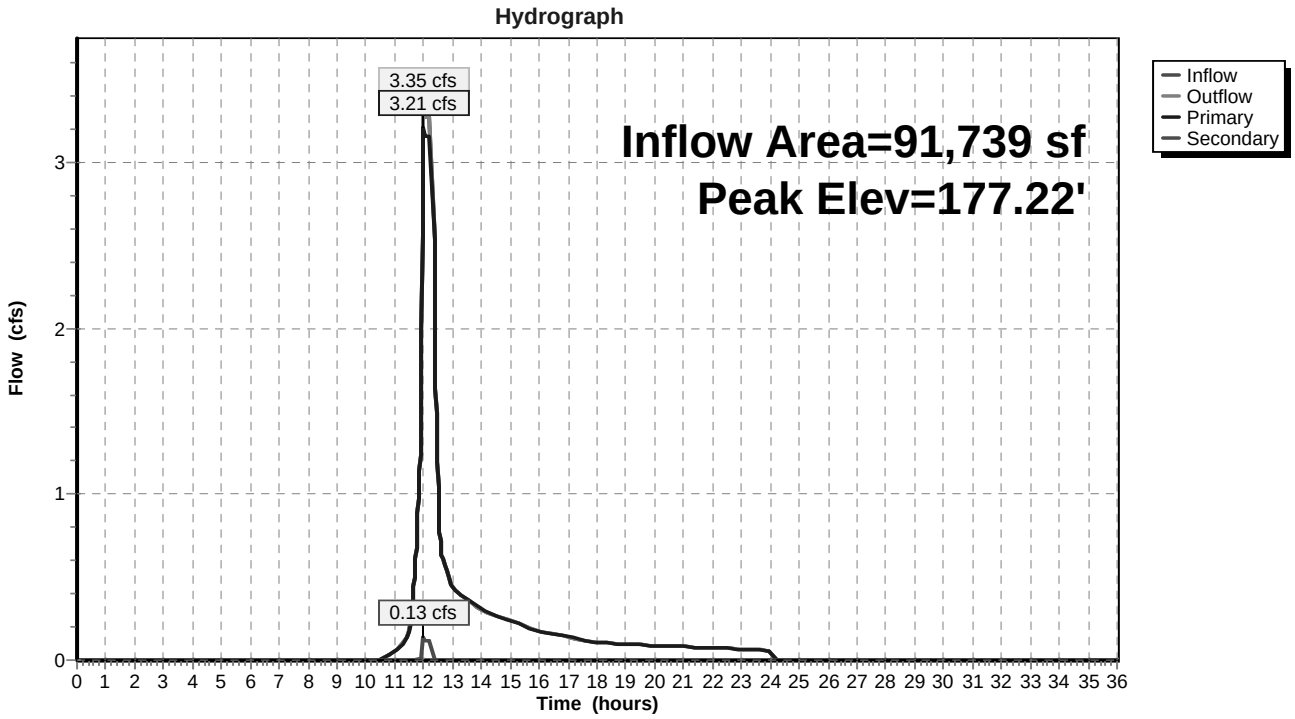
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 177.22' @ 12.00 hrs
Flood Elev= 180.30'
Plug-Flow detention time= 0.0 min calculated for 13,824 cf (100% of inflow)
Center-of-Mass det. time= 0.0 min (844.5 - 844.5)

Device	Routing	Invert	Outlet Devices
#1	Secondary	177.00'	**0.5' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Primary	176.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.20 cfs @ 12.00 hrs HW=177.22' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 3.20 cfs @ 4.1 fps)

Secondary OutFlow Max=0.13 cfs @ 12.00 hrs HW=177.22' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.13 cfs @ 1.2 fps)

Pond 3P: MH



Pond 4P: P-LB1

Inflow Area =	15,740 sf,	Inflow Depth =	5.98"	for	100YR event
Inflow =	2.31 cfs @	12.08 hrs,	Volume=	7,847 cf	
Outflow =	2.30 cfs @	12.09 hrs,	Volume=	7,847 cf,	Atten= 1%, Lag= 0.4 min
Discarded =	0.18 cfs @	11.22 hrs,	Volume=	5,702 cf	
Primary =	2.11 cfs @	12.09 hrs,	Volume=	2,146 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 182.82' @ 12.09 hrs Surf.Area= 133 sf Storage= 757 cf
Flood Elev= 186.00' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= 15.7 min calculated for 7,843 cf (100% of inflow)
Center-of-Mass det. time= 15.8 min (771.3 - 755.5)

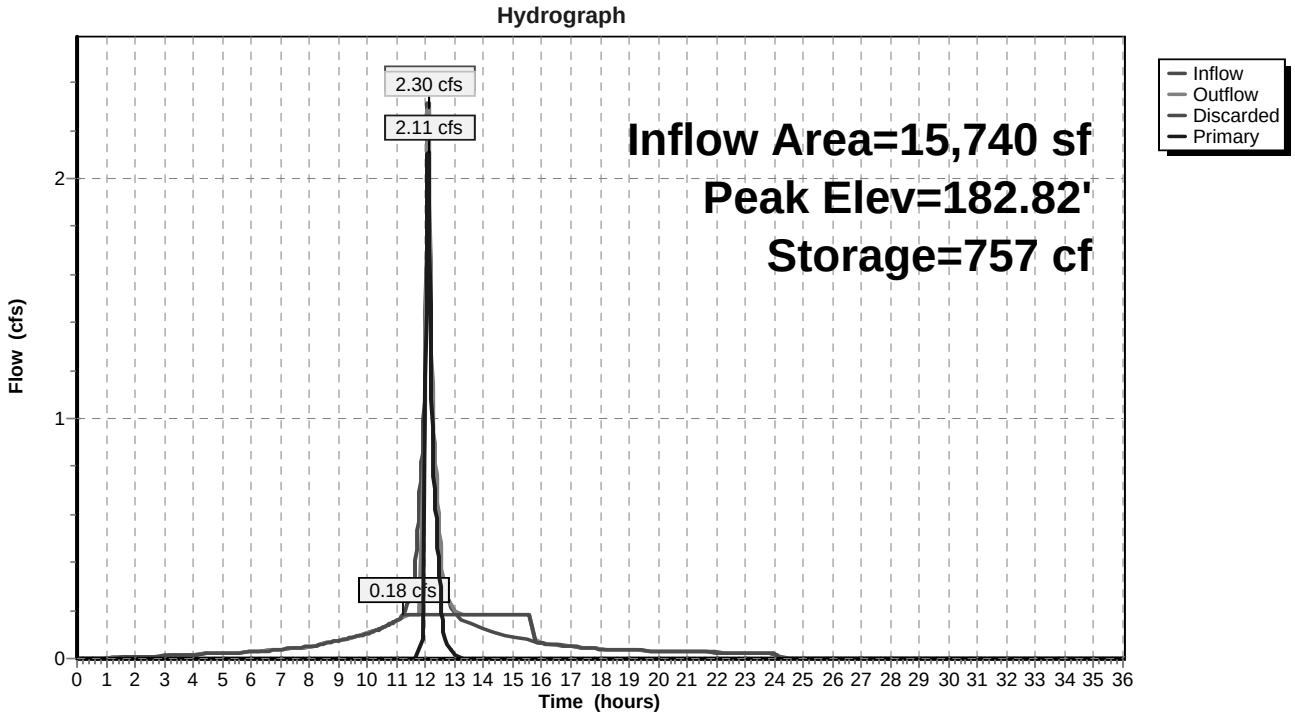
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	173.00'	370 cf	**13.00'D x 10.00'H BED OF STONE**
			1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	182.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.18 cfs @ 11.22 hrs HW=173.13' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=2.10 cfs @ 12.09 hrs HW=182.81' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 2.10 cfs @ 3.1 fps)

Pond 4P: P-LB1


Hydrograph
2.30 cfs
2.11 cfs
0.18 cfs
Inflow Area=15,740 sf
Peak Elev=182.82'
Storage=757 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Pond 5P: P-LB2

Inflow Area =	15,740 sf,	Inflow Depth =	1.64"	for	100YR event
Inflow =	2.12 cfs @	12.09 hrs,	Volume=	2,146 cf	
Outflow =	2.18 cfs @	12.13 hrs,	Volume=	2,131 cf,	Atten= 0%, Lag= 2.5 min
Discarded =	0.18 cfs @	11.98 hrs,	Volume=	1,154 cf	
Primary =	1.40 cfs @	12.13 hrs,	Volume=	802 cf	
Secondary =	0.60 cfs @	12.13 hrs,	Volume=	175 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 182.10' @ 12.12 hrs Surf.Area= 133 sf Storage= 697 cf
Flood Elev= 186.00' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= 21.9 min calculated for 2,130 cf (99% of inflow)
Center-of-Mass det. time= 21.6 min (753.9 - 732.3)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	173.00'	370 cf	**13.00'D x 10.00'H BED OF STONE** 1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

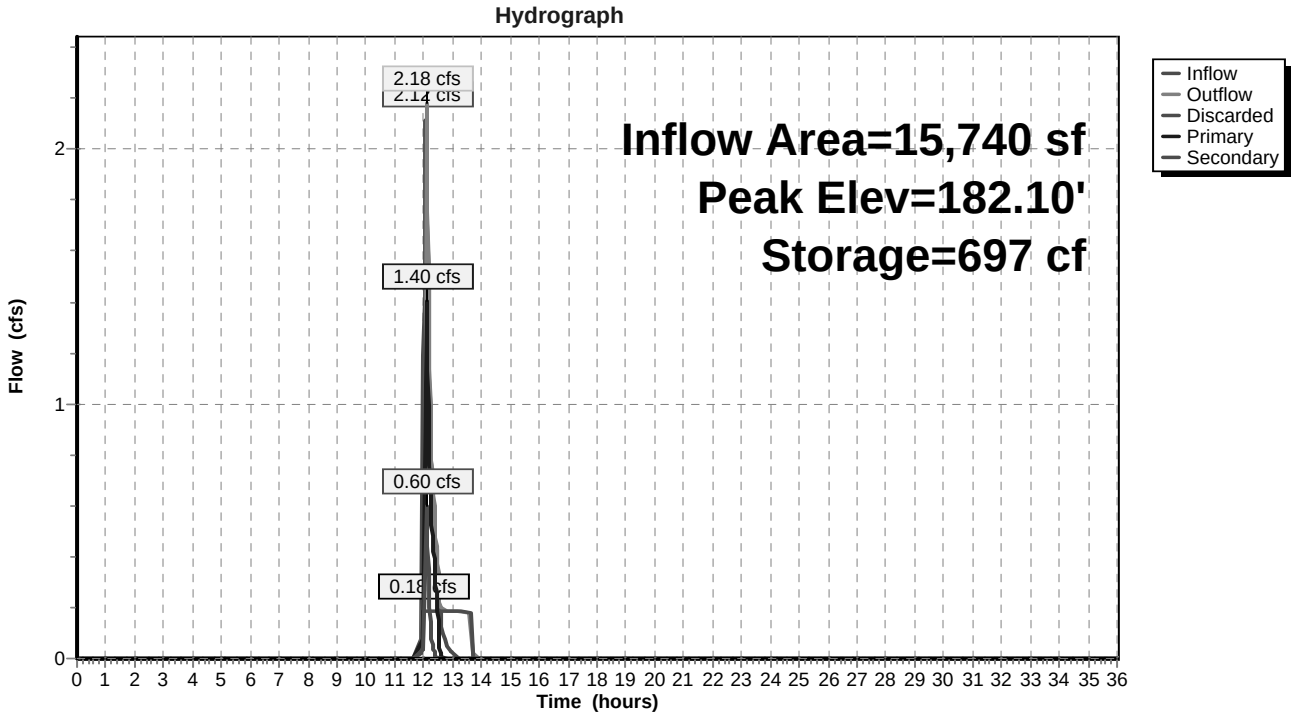
Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	181.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	181.75'	**12.0" x 15.0' long Culvert** RCP, groove end projecting, Ke= 0.200 Outlet Invert= 181.50' S= 0.0167 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Discarded OutFlow Max=0.18 cfs @ 11.98 hrs HW=173.38' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=1.23 cfs @ 12.13 hrs HW=182.08' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 1.23 cfs @ 2.6 fps)

Secondary OutFlow Max=0.52 cfs @ 12.13 hrs HW=182.08' (Free Discharge)
└─**3=Culvert** (Barrel Controls 0.52 cfs @ 3.4 fps)

Pond 5P: P-LB2


Hydrograph
Inflow Area=15,740 sf
Peak Elev=182.10'
Storage=697 cf
2.18 cfs
2.14 cfs
1.40 cfs
0.60 cfs
0.18 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Pond 6P: LB1

Inflow	=	0.14 cfs @	12.01 hrs,	Volume=	153 cf	
Outflow	=	0.12 cfs @	12.02 hrs,	Volume=	153 cf,	Atten= 9%, Lag= 1.1 min
Discarded	=	0.12 cfs @	12.02 hrs,	Volume=	153 cf	
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf	
Secondary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 167.54' @ 12.02 hrs Surf.Area= 0.006 ac Storage= 0.000 af
Flood Elev= 180.00' Surf.Area= 0.007 ac Storage= 0.029 af
Plug-Flow detention time= 0.6 min calculated for 153 cf (100% of inflow)
Center-of-Mass det. time= 0.6 min (730.3 - 729.7)

Volume	Invert	Avail.Storage	Storage Description
#1	175.50'	0.005 af	**8.00'D x 4.50'H Vertical Cone/Cylinder**
#2	168.50'	0.008 af	**8.00'D x 7.00'H Vertical Cone/Cylinder** Inside #3
#3	167.50'	0.015 af	**18.00'D x 8.00'H Vertical Cone/Cylinder**
			0.047 af Overall - 0.008 af Embedded = 0.039 af x 40.0% Voids
		0.029 af	Total Available Storage

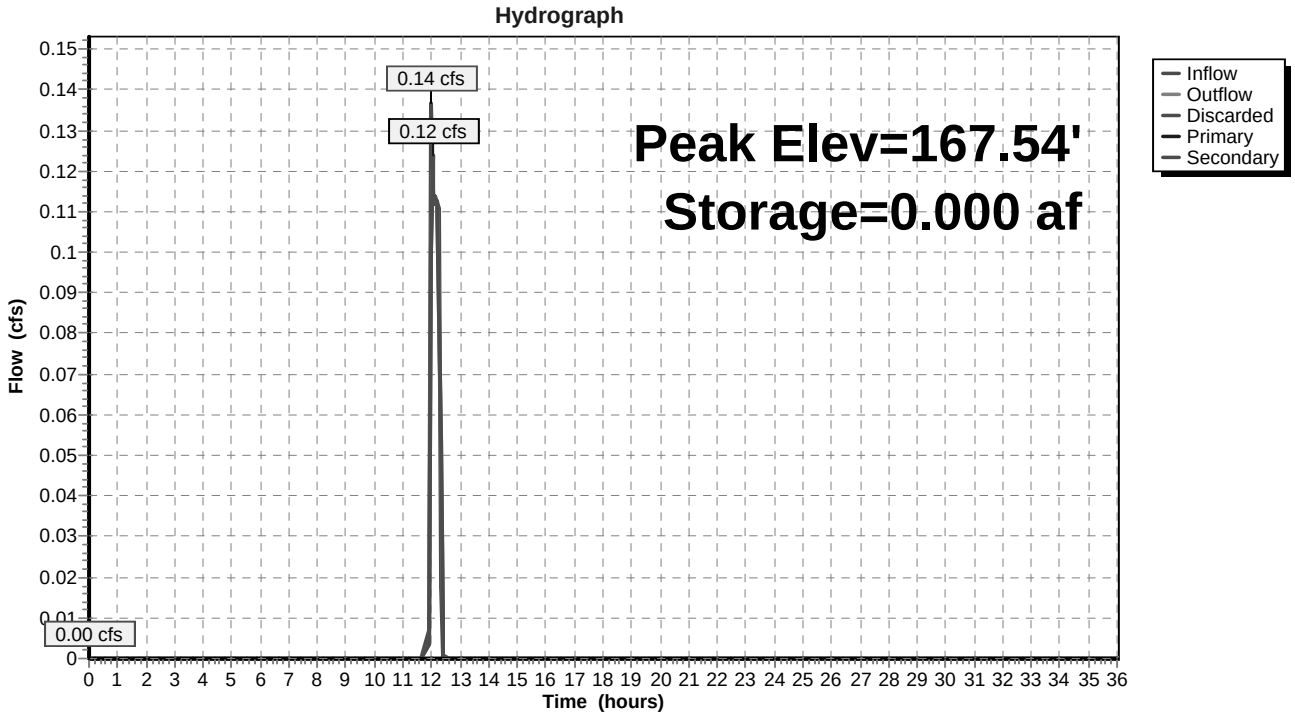
Device	Routing	Invert	Outlet Devices
#1	Primary	175.20'	**12.0" Vert. Orifice/Grate** C= 0.600
#2	Secondary	177.00'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.35 cfs @ 12.02 hrs HW=167.54' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.35 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.50' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.50' (Free Discharge)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 6P: LB1


Hydrograph
0.14 cfs
0.12 cfs
0.00 cfs
Peak Elev=167.54'
Storage=0.000 af
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Pond 7P: LB2

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf, Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf

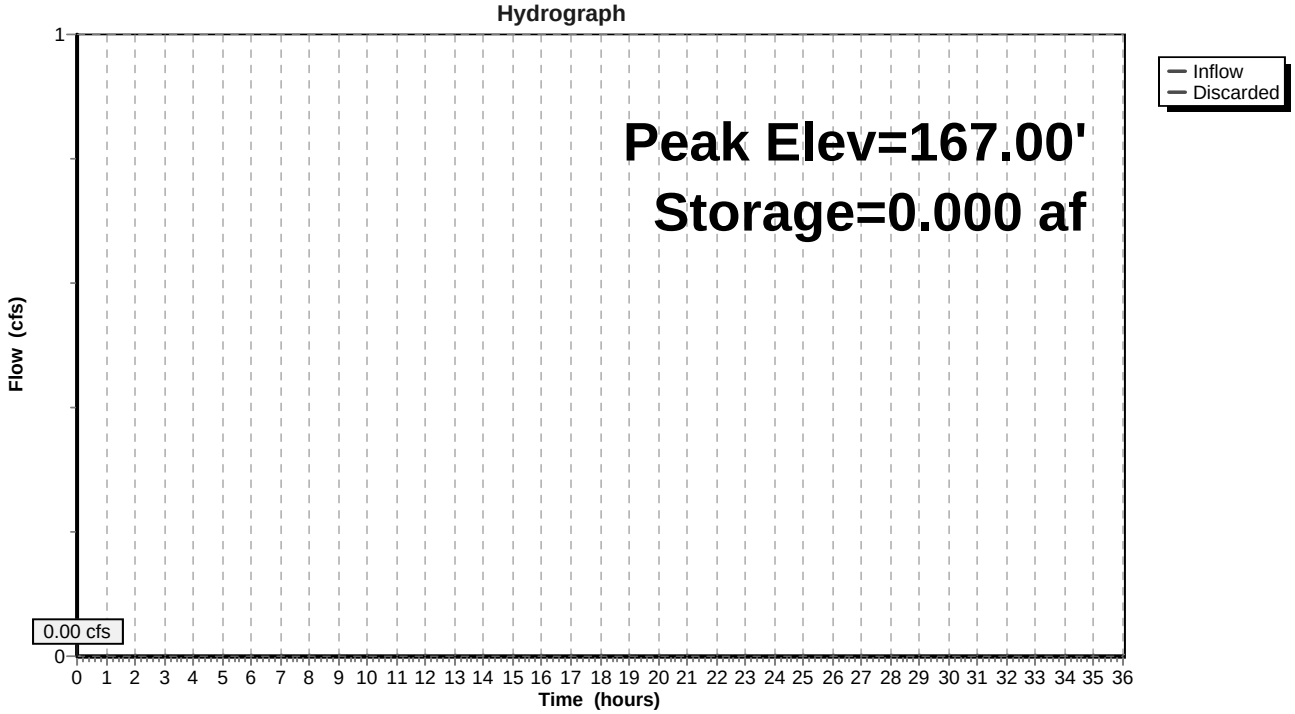
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 167.00' @ 0.00 hrs Surf.Area= 0.006 ac Storage= 0.000 af
Flood Elev= 180.50' Surf.Area= 0.007 ac Storage= 0.030 af
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	0.006 af	**8.00'D x 5.50'H Vertical Cone/Cylinder**
#2	168.30'	0.008 af	**8.00'D x 6.70'H Vertical Cone/Cylinder** Inside #3
#3	167.00'	0.016 af	**18.00'D x 8.00'H Vertical Cone/Cylinder**
			0.047 af Overall - 0.008 af Embedded = 0.039 af x 40.0% Voids
		0.030 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.35 cfs potential flow)

Pond 7P: LB2



Pond 12P: LB3

Inflow Area =	174,314 sf,	Inflow Depth =	1.12"	for	100YR event
Inflow =	5.17 cfs @	12.04 hrs,	Volume=	16,266 cf	
Outflow =	4.01 cfs @	12.18 hrs,	Volume=	16,266 cf,	Atten= 22%, Lag= 8.4 min
Discarded =	0.42 cfs @	12.12 hrs,	Volume=	11,082 cf	
Primary =	3.59 cfs @	12.18 hrs,	Volume=	5,183 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 177.23' @ 12.18 hrs Surf.Area= 305 sf Storage= 1,089 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 18.5 min (906.2 - 887.7)

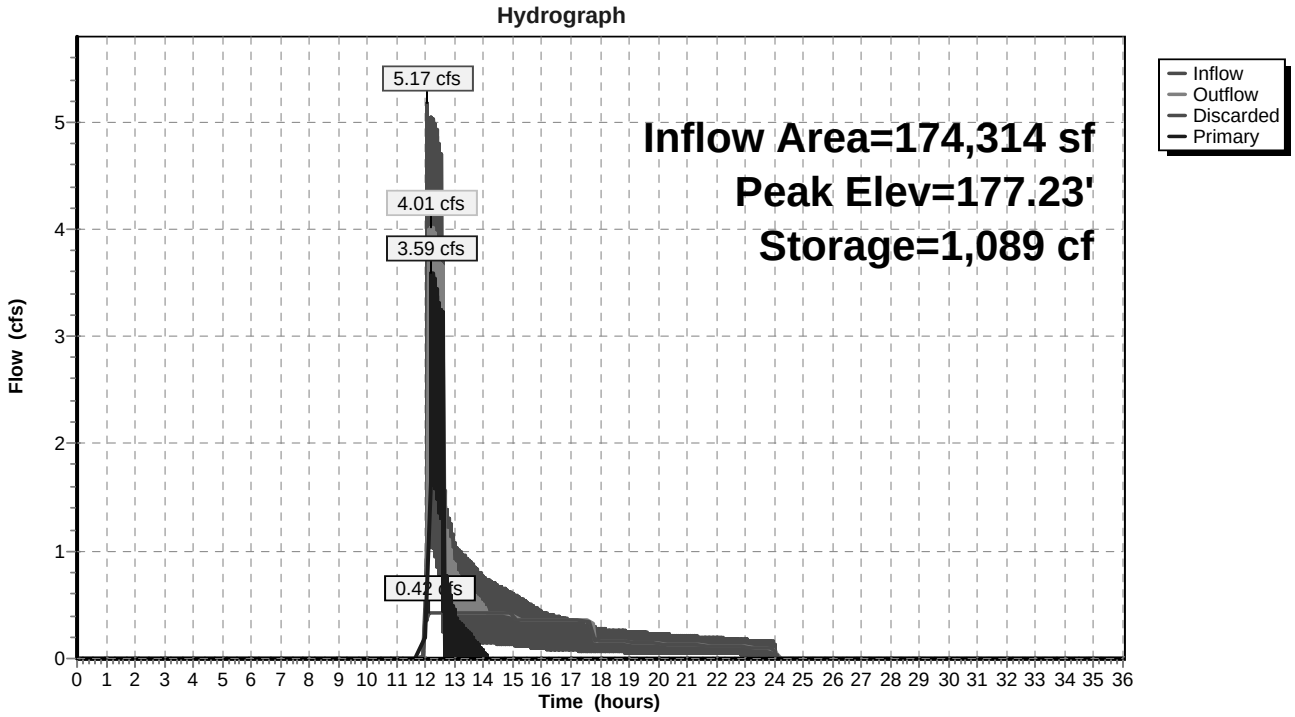
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	73 cf	**8.00'D x 1.45'H Vertical Cone/Cylinder**
#2	168.30'	337 cf	**8.00'D x 6.70'H Vertical Cone/Cylinder** Inside #3
#3	167.00'	680 cf	**18.00'D x 8.00'H Vertical Cone/Cylinder**
			2,036 cf Overall - 337 cf Embedded = 1,699 cf x 40.0% Voids
		1,089 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	176.45'	**2.0' long x 2.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50
			Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.42 cfs @ 12.12 hrs HW=175.28' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=3.58 cfs @ 12.18 hrs HW=177.23' (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 3.58 cfs @ 2.3 fps)

Pond 12P: LB3


Hydrograph
Inflow Area=174,314 sf
Peak Elev=177.23'
Storage=1,089 cf
5.17 cfs
4.01 cfs
3.59 cfs
0.42 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Pond 13P: MH

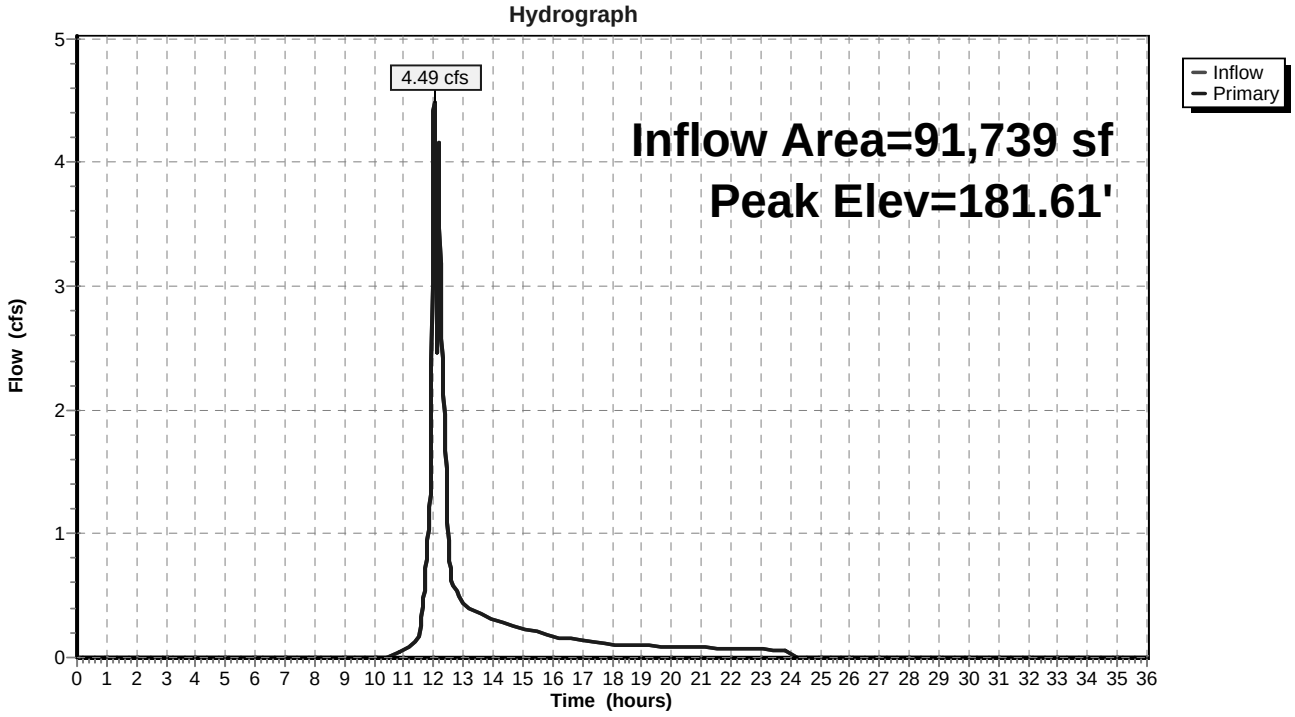
Inflow Area =	91,739 sf,	Inflow Depth =	1.81"	for	100YR event
Inflow =	4.49 cfs @	12.01 hrs,	Volume=	13,824 cf	
Outflow =	4.49 cfs @	12.01 hrs,	Volume=	13,824 cf,	Atten= 0%, Lag= 0.0 min
Primary =	4.49 cfs @	12.01 hrs,	Volume=	13,824 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 181.61' @ 12.01 hrs
Flood Elev= 184.90'
Plug-Flow detention time= 0.0 min calculated for 13,816 cf (100% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	179.70'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.44 cfs @ 12.01 hrs HW=181.58' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 4.44 cfs @ 5.6 fps)

Pond 13P: MH



Pond 14P: P-MH

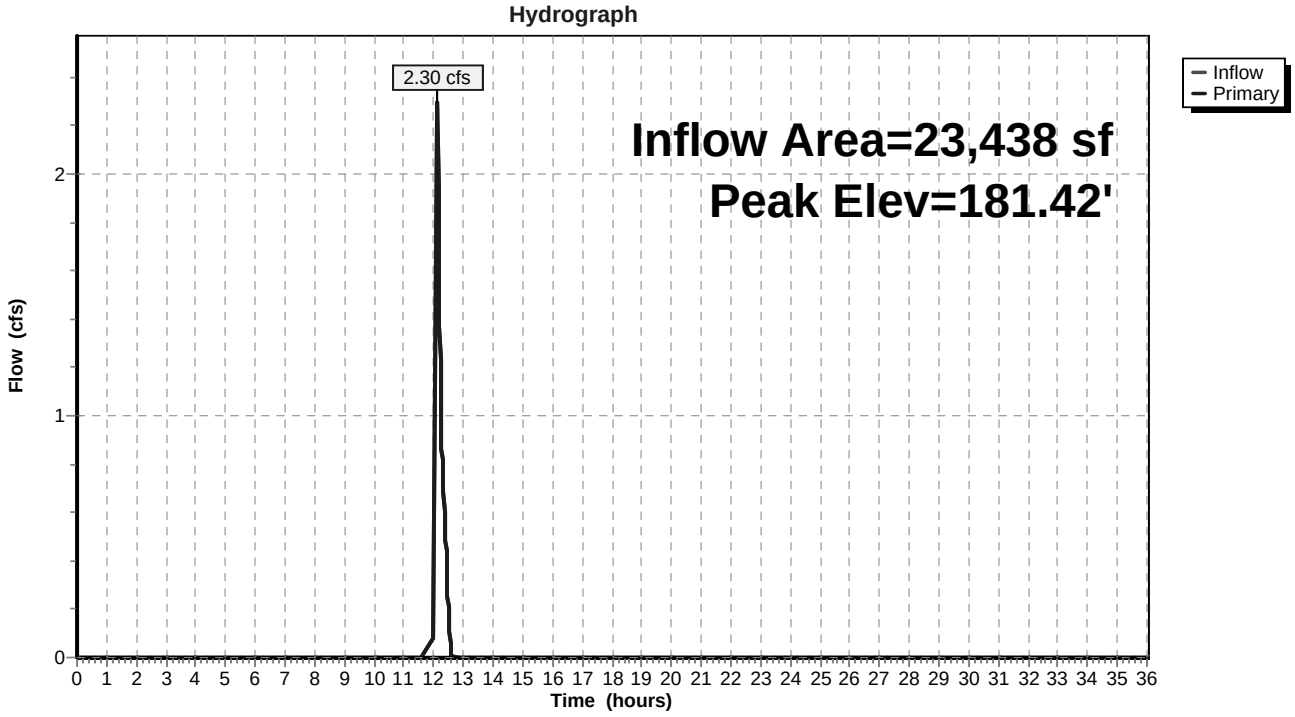
Inflow Area =	23,438 sf,	Inflow Depth =	0.68"	for	100YR event
Inflow =	2.30 cfs @	12.14 hrs,	Volume=	1,336 cf	
Outflow =	2.30 cfs @	12.14 hrs,	Volume=	1,336 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.30 cfs @	12.14 hrs,	Volume=	1,336 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 181.42' @ 12.14 hrs
Flood Elev= 186.00'
Plug-Flow detention time= (not calculated: no plugs found)
Center-of-Mass det. time= 0.0 min (735.0 - 735.0)

Device	Routing	Invert	Outlet Devices
#1	Primary	180.55'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.19 cfs @ 12.14 hrs HW=181.39' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 2.19 cfs @ 3.1 fps)

Pond 14P: P-MH



Pond 15P: (2) CB

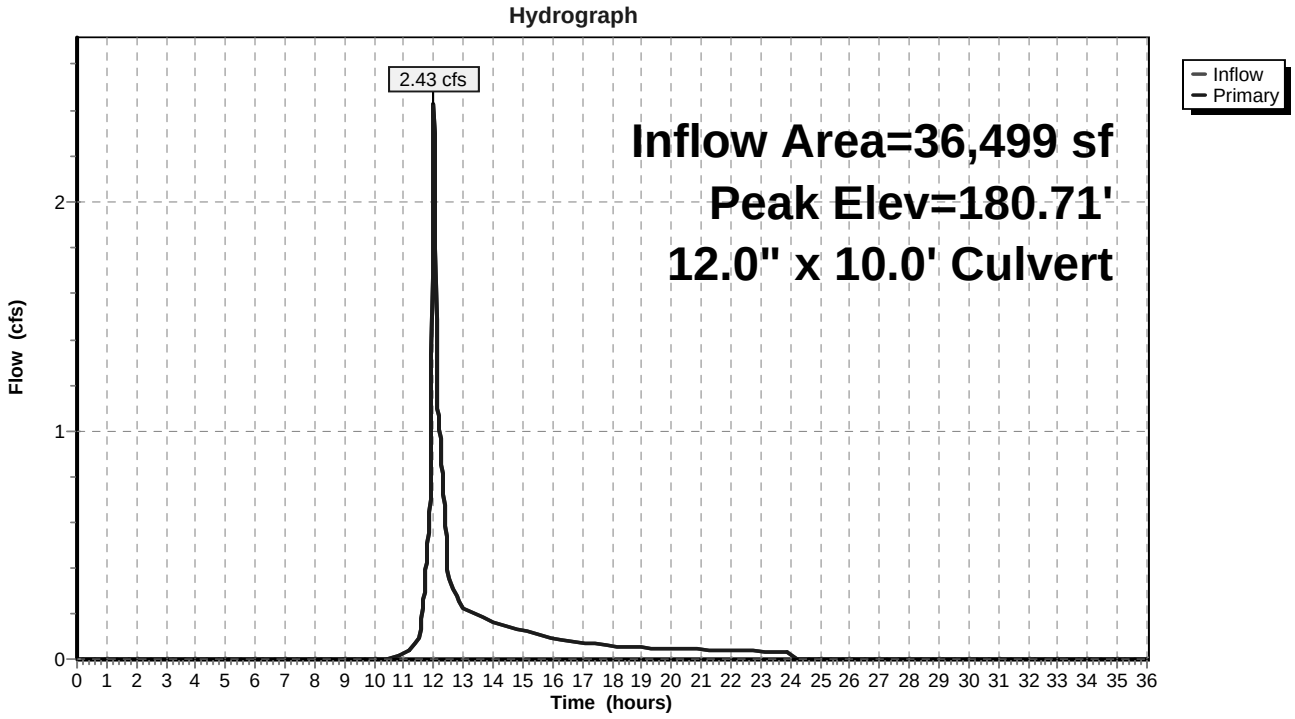
Inflow Area =	36,499 sf,	Inflow Depth =	2.15"	for	100YR event
Inflow =	2.43 cfs @	12.01 hrs,	Volume=	6,546 cf	
Outflow =	2.43 cfs @	12.01 hrs,	Volume=	6,546 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.43 cfs @	12.01 hrs,	Volume=	6,546 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 180.71' @ 12.01 hrs
Flood Elev= 184.90'
Plug-Flow detention time= 0.0 min calculated for 6,542 cf (100% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	180.15'	**12.0" x 10.0' long Culvert X 2.00** RCP, groove end projecting, Ke= 0.200 Outlet Invert= 179.80' S= 0.0350 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior

Primary OutFlow Max=2.38 cfs @ 12.01 hrs HW=180.70' (Free Discharge)
└─**1=Culvert** (Barrel Controls 2.38 cfs @ 3.9 fps)

Pond 15P: (2) CB



Pond 17P: MH

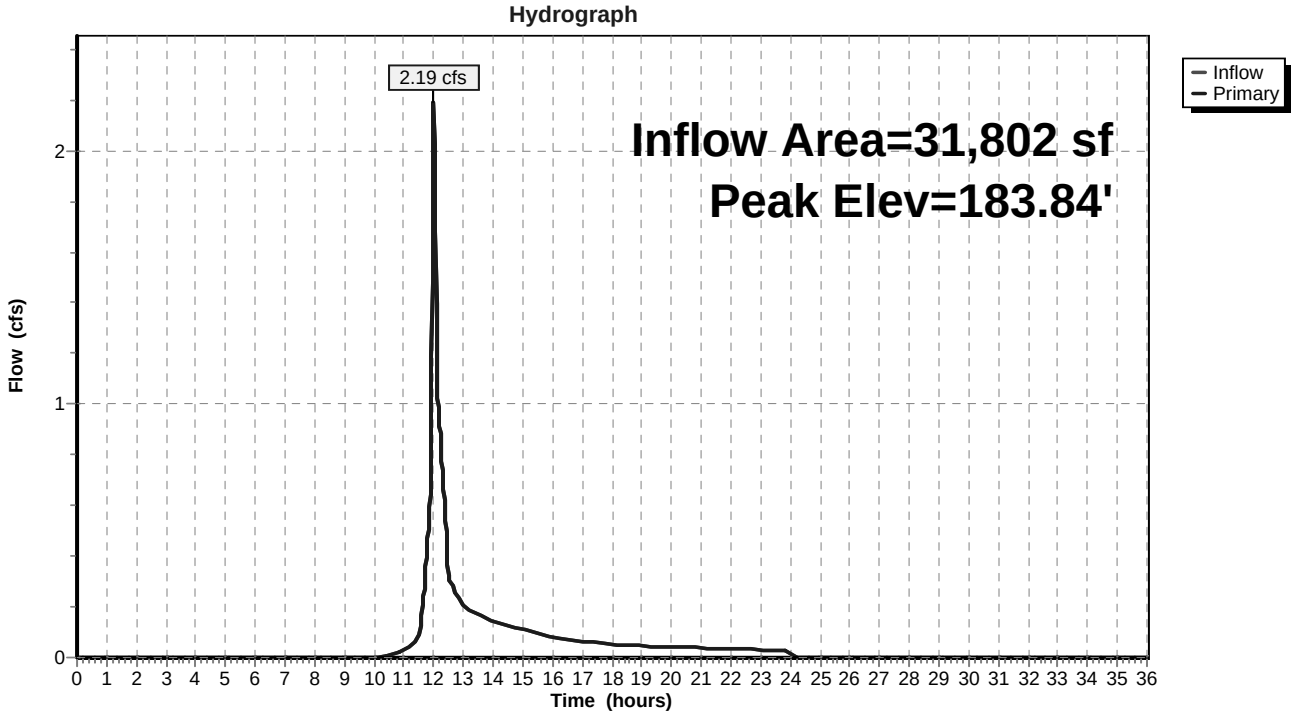
Inflow Area = 31,802 sf, Inflow Depth = 2.24" for 100YR event
Inflow = 2.19 cfs @ 12.01 hrs, Volume= 5,942 cf
Outflow = 2.19 cfs @ 12.01 hrs, Volume= 5,942 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.19 cfs @ 12.01 hrs, Volume= 5,942 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 183.84' @ 12.01 hrs
Flood Elev= 188.05'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (852.9 - 852.9)

Device	Routing	Invert	Outlet Devices
#1	Primary	183.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.15 cfs @ 12.01 hrs HW=183.83' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 2.15 cfs @ 3.1 fps)

Pond 17P: MH



Pond 18P: CB

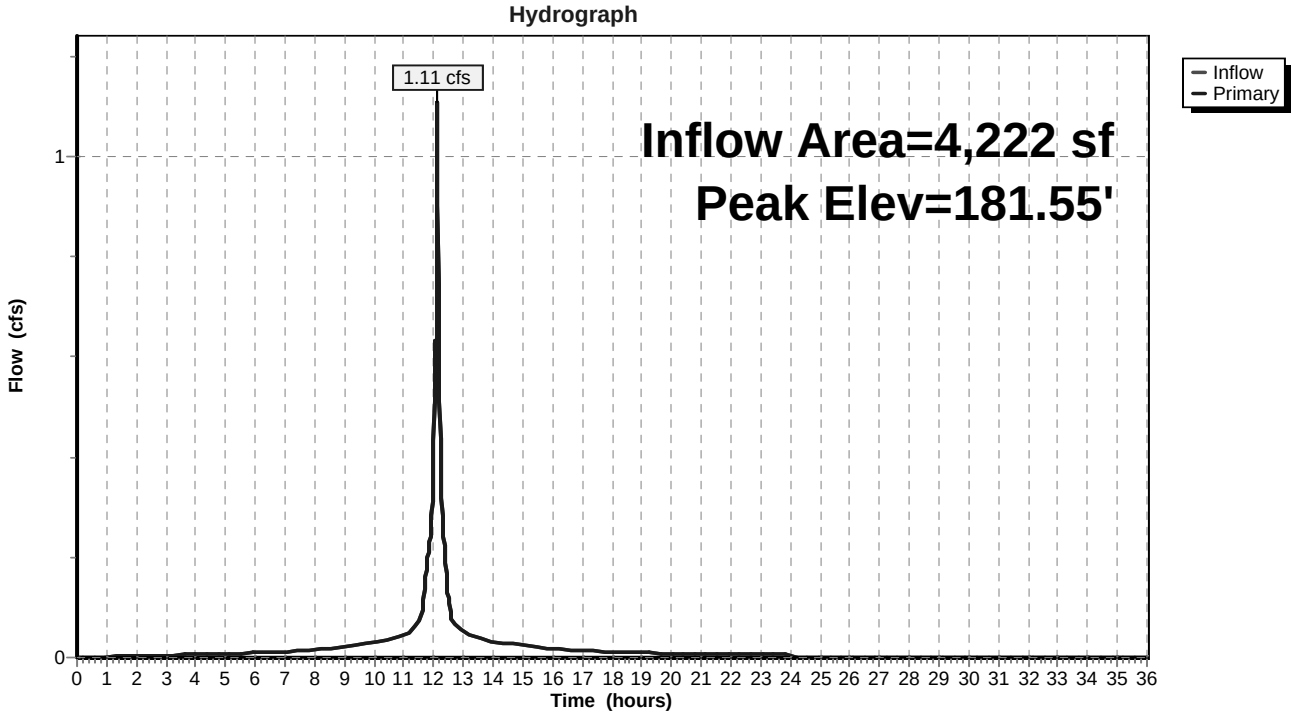
Inflow Area = 4,222 sf, Inflow Depth = 6.74" for 100YR event
Inflow = 1.11 cfs @ 12.12 hrs, Volume= 2,371 cf
Outflow = 1.11 cfs @ 12.12 hrs, Volume= 2,371 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.11 cfs @ 12.12 hrs, Volume= 2,371 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 181.55' @ 12.12 hrs
Flood Elev= 185.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (742.2 - 742.2)

Device	Routing	Invert	Outlet Devices
#1	Primary	181.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.05 cfs @ 12.12 hrs HW=181.53' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.05 cfs @ 2.5 fps)

Pond 18P: CB



Pond 20P: (2) CB

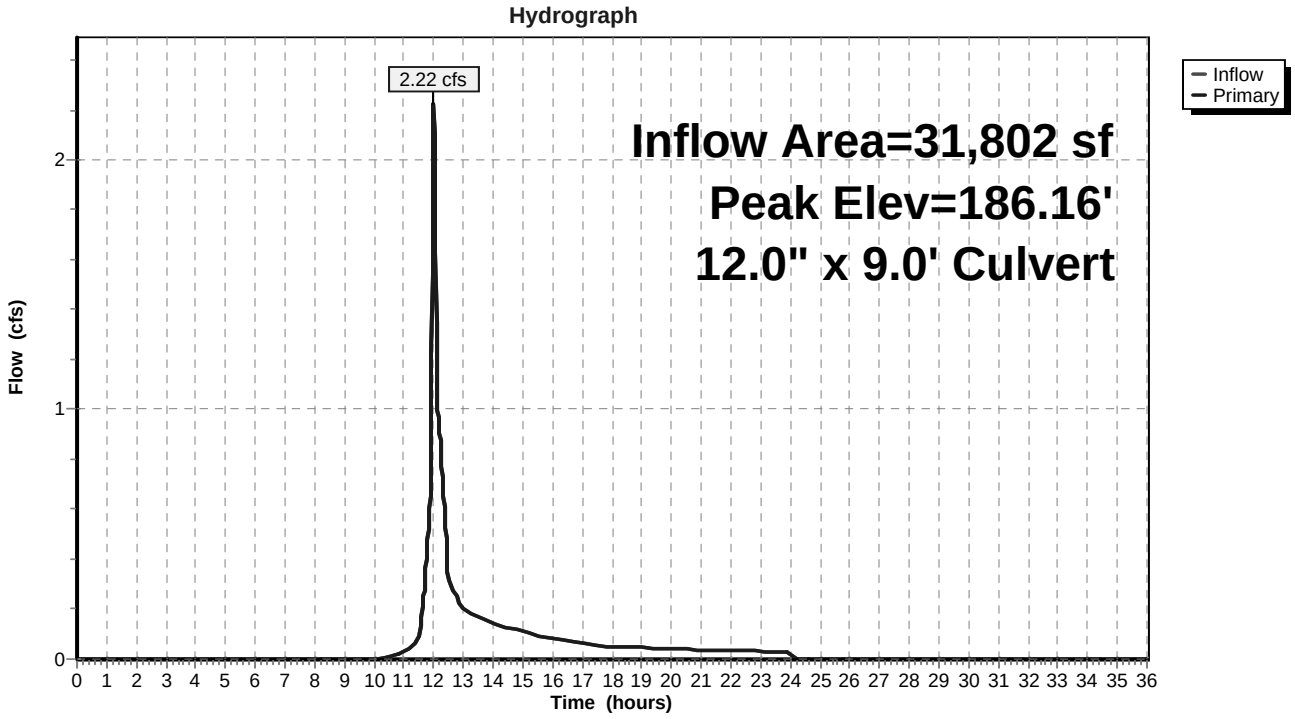
Inflow Area =	31,802 sf,	Inflow Depth =	2.24"	for	100YR event
Inflow =	2.22 cfs @	12.00 hrs,	Volume=	5,942 cf	
Outflow =	2.22 cfs @	12.00 hrs,	Volume=	5,942 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.22 cfs @	12.00 hrs,	Volume=	5,942 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 186.16' @ 12.00 hrs
Flood Elev= 190.14'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	185.65'	**12.0" x 9.0' long Culvert X 2.00** RCP, groove end projecting, Ke= 0.200 Outlet Invert= 185.40' S= 0.0278 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=2.18 cfs @ 12.00 hrs HW=186.15' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.18 cfs @ 4.1 fps)

Pond 20P: (2) CB



Pond 21P: P-LB3

Inflow Area =	7,698 sf,	Inflow Depth =	6.51"	for	100YR event
Inflow =	1.51 cfs @	12.12 hrs,	Volume=	4,179 cf	
Outflow =	1.39 cfs @	12.15 hrs,	Volume=	4,172 cf,	Atten= 8%, Lag= 1.4 min
Discarded =	0.18 cfs @	11.64 hrs,	Volume=	3,637 cf	
Primary =	1.19 cfs @	12.15 hrs,	Volume=	533 cf	
Secondary =	0.02 cfs @	12.14 hrs,	Volume=	1 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 181.33' @ 12.15 hrs Surf.Area= 133 sf Storage= 695 cf
Flood Elev= 182.25' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= 16.1 min calculated for 4,172 cf (100% of inflow)
Center-of-Mass det. time= 14.9 min (757.6 - 742.7)

Volume	Invert	Avail.Storage	Storage Description
#1	174.25'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	172.25'	370 cf	**13.00'D x 10.00'H BED OF STONE** 1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

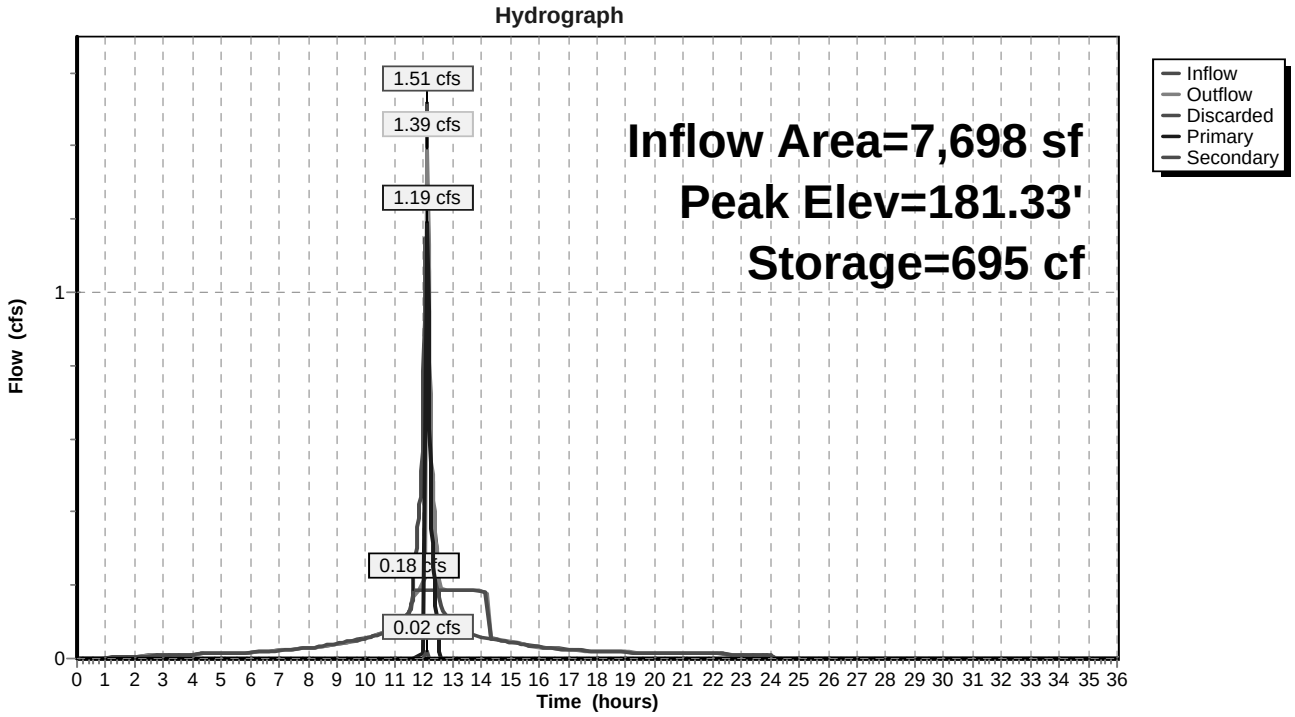
Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	180.75'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Secondary	181.25'	**12.0" x 246.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 157.25' S= 0.0976 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Discarded OutFlow Max=0.18 cfs @ 11.64 hrs HW=172.36' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=1.07 cfs @ 12.15 hrs HW=181.29' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 1.07 cfs @ 2.5 fps)

Secondary OutFlow Max=0.01 cfs @ 12.14 hrs HW=181.30' (Free Discharge)
└─**3=Culvert** (Inlet Controls 0.01 cfs @ 0.6 fps)

Pond 21P: P-LB3



Pond 26P: MH

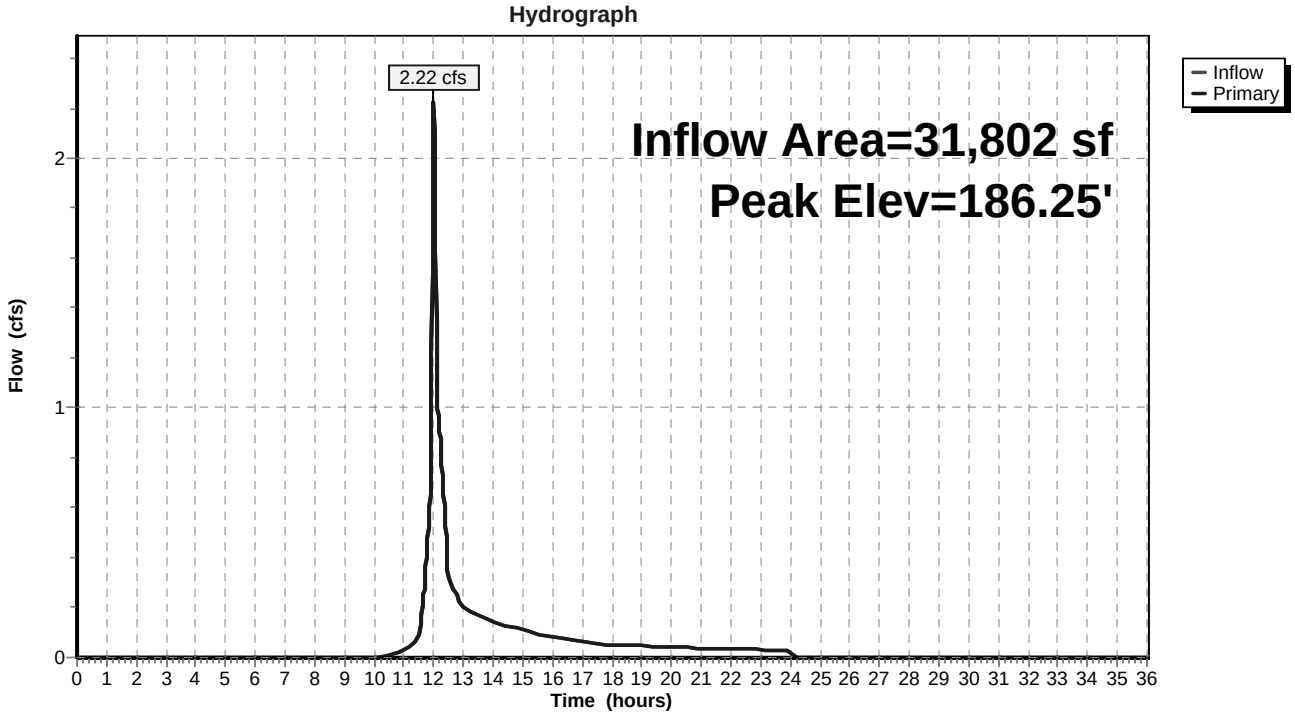
Inflow Area = 31,802 sf, Inflow Depth = 2.24" for 100YR event
Inflow = 2.22 cfs @ 12.00 hrs, Volume= 5,942 cf
Outflow = 2.22 cfs @ 12.00 hrs, Volume= 5,942 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.22 cfs @ 12.00 hrs, Volume= 5,942 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 186.25' @ 12.00 hrs
Flood Elev= 190.08'
Plug-Flow detention time= 0.0 min calculated for 5,942 cf (100% of inflow)
Center-of-Mass det. time= 0.0 min (852.5 - 852.5)

Device	Routing	Invert	Outlet Devices
#1	Primary	185.40'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.18 cfs @ 12.00 hrs HW=186.24' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 2.18 cfs @ 3.1 fps)

Pond 26P: MH



Pond 27P: NEW CB

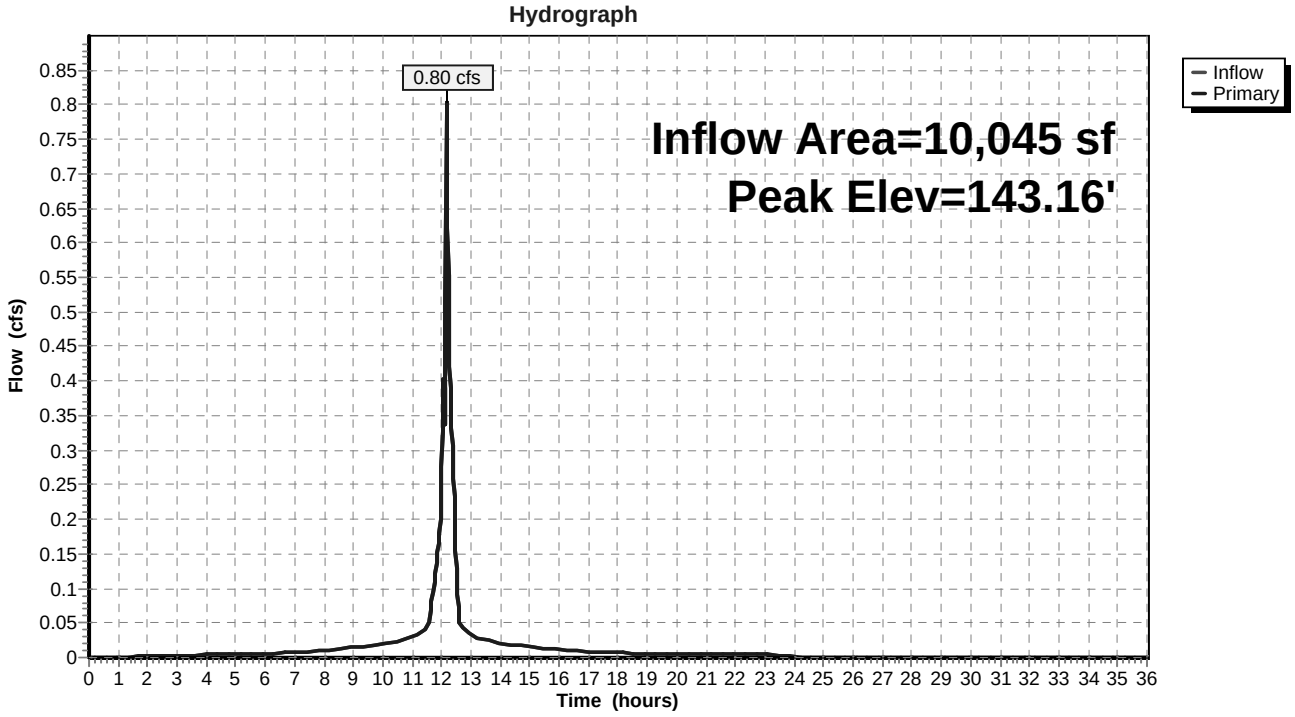
Inflow Area =	10,045 sf,	Inflow Depth =	2.08"	for	100YR event
Inflow =	0.80 cfs @	12.17 hrs,	Volume=	1,737 cf	
Outflow =	0.80 cfs @	12.17 hrs,	Volume=	1,737 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.80 cfs @	12.17 hrs,	Volume=	1,737 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 143.16' @ 12.17 hrs
Flood Elev= 146.98'
Plug-Flow detention time= 0.0 min calculated for 1,737 cf (100% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.77 cfs @ 12.17 hrs HW=143.14' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.77 cfs @ 2.3 fps)

Pond 27P: NEW CB



Pond 28P: CB

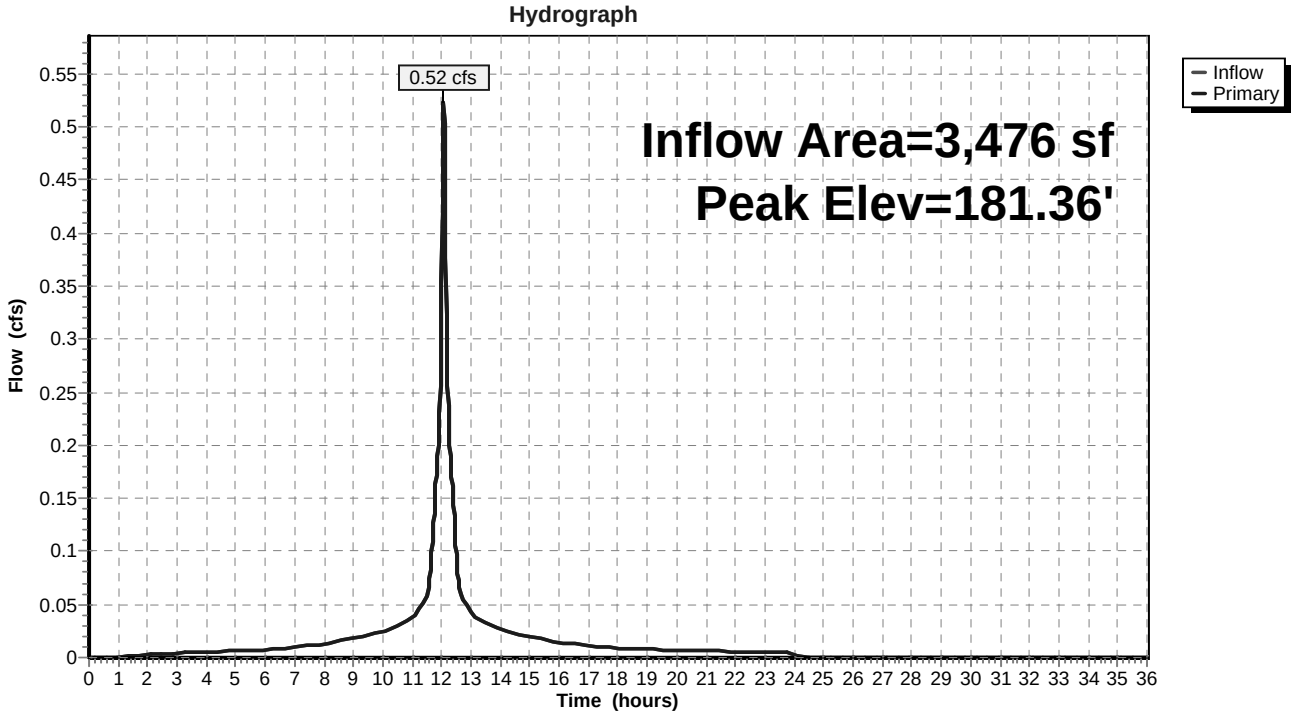
Inflow Area = 3,476 sf, Inflow Depth = 6.24" for 100YR event
Inflow = 0.52 cfs @ 12.07 hrs, Volume= 1,808 cf
Outflow = 0.52 cfs @ 12.07 hrs, Volume= 1,808 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.07 hrs, Volume= 1,808 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 181.36' @ 12.07 hrs
Flood Elev= 185.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (743.1 - 743.1)

Device	Routing	Invert	Outlet Devices
#1	Primary	181.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.52 cfs @ 12.07 hrs HW=181.36' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.52 cfs @ 2.0 fps)

Pond 28P: CB



Pond 29P: NEW CB

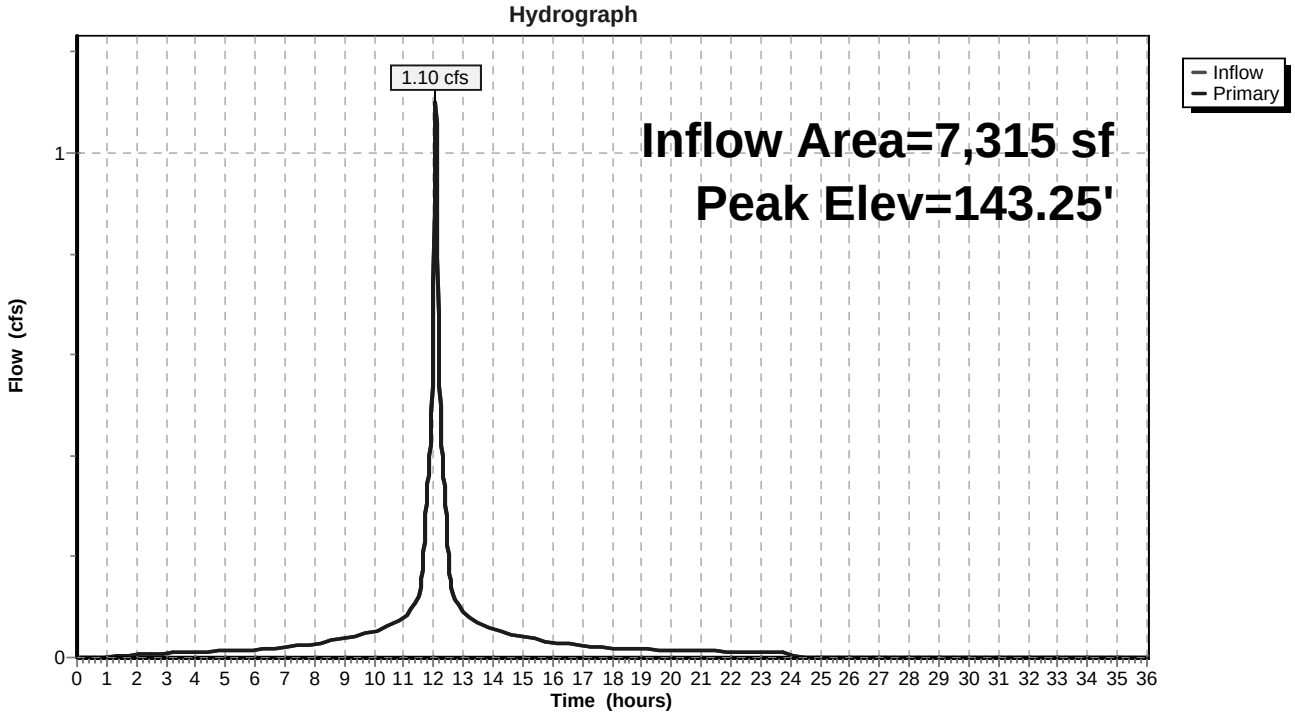
Inflow Area =	7,315 sf,	Inflow Depth =	6.24"	for	100YR event	
Inflow =	1.10 cfs @	12.07 hrs,	Volume=		3,805 cf	
Outflow =	1.10 cfs @	12.07 hrs,	Volume=		3,805 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.10 cfs @	12.07 hrs,	Volume=		3,805 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 143.25' @ 12.07 hrs
Flood Elev= 145.60'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.09 cfs @ 12.07 hrs HW=143.24' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.09 cfs @ 2.5 fps)

Pond 29P: NEW CB



Pond 30P: STC

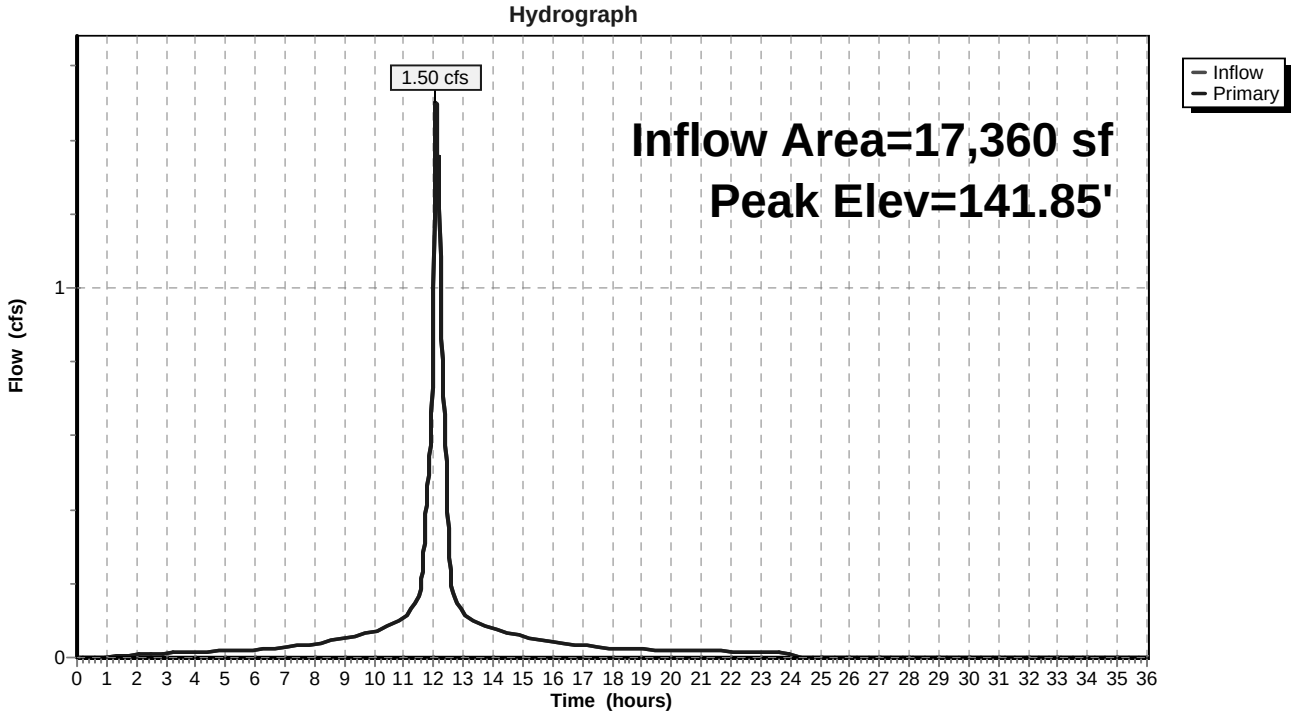
Inflow Area =	17,360 sf,	Inflow Depth =	3.83"	for	100YR event
Inflow =	1.50 cfs @	12.07 hrs,	Volume=	5,542 cf	
Outflow =	1.50 cfs @	12.07 hrs,	Volume=	5,542 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.50 cfs @	12.07 hrs,	Volume=	5,542 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 141.85' @ 12.07 hrs
Flood Elev= 145.60'
Plug-Flow detention time= 0.0 min calculated for 5,542 cf (100% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	141.20'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.49 cfs @ 12.07 hrs HW=141.85' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.49 cfs @ 2.7 fps)

Pond 30P: STC



Pond 31P: CB

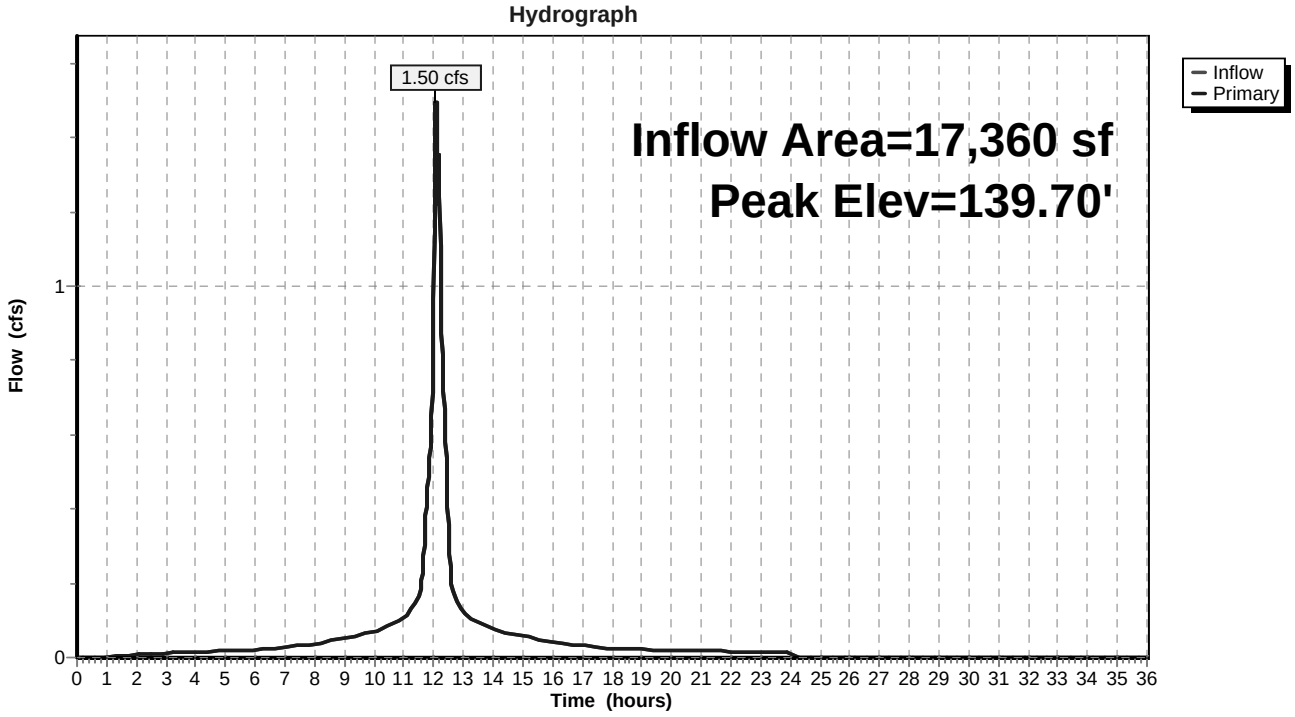
Inflow Area =	17,360 sf,	Inflow Depth =	3.83"	for	100YR event
Inflow =	1.50 cfs @	12.08 hrs,	Volume=	5,542 cf	
Outflow =	1.50 cfs @	12.08 hrs,	Volume=	5,542 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.50 cfs @	12.08 hrs,	Volume=	5,542 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 139.70' @ 12.08 hrs
Flood Elev= 142.00'
Plug-Flow detention time= 0.0 min calculated for 5,542 cf (100% of inflow)
Center-of-Mass det. time= 0.0 min (743.4 - 743.4)

Device	Routing	Invert	Outlet Devices
#1	Primary	139.05'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.49 cfs @ 12.08 hrs HW=139.70' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.49 cfs @ 2.7 fps)

Pond 31P: CB



Pond 32P: CB

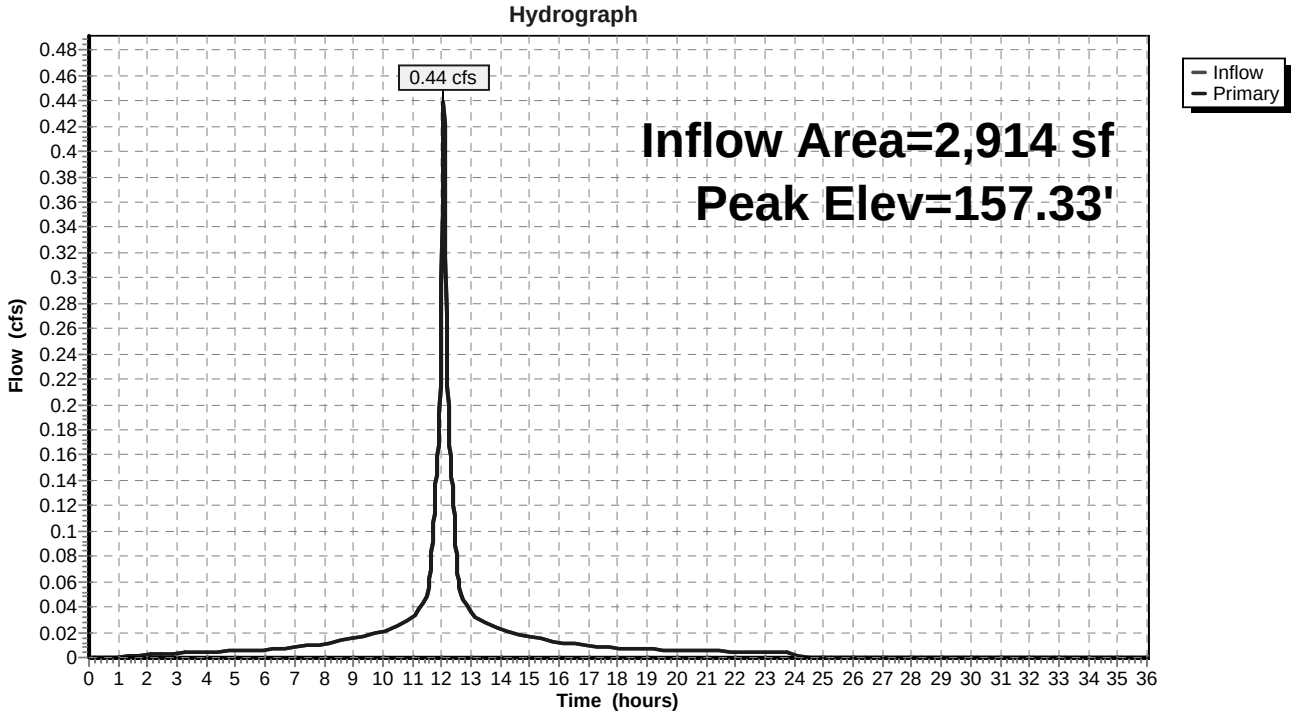
Inflow Area =	2,914 sf,	Inflow Depth =	6.24"	for	100YR event	
Inflow =	0.44 cfs @	12.07 hrs,	Volume=		1,516 cf	
Outflow =	0.44 cfs @	12.07 hrs,	Volume=		1,516 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.44 cfs @	12.07 hrs,	Volume=		1,516 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 157.33' @ 12.07 hrs
Flood Elev= 161.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	157.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.43 cfs @ 12.07 hrs HW=157.33' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.43 cfs @ 1.9 fps)

Pond 32P: CB



Pond 35P: P-LB4

Inflow Area =	7,350 sf,	Inflow Depth =	6.24"	for	100YR event
Inflow =	1.11 cfs @	12.07 hrs,	Volume=	3,824 cf	
Outflow =	0.74 cfs @	12.15 hrs,	Volume=	3,824 cf,	Atten= 33%, Lag= 4.9 min
Discarded =	0.18 cfs @	11.66 hrs,	Volume=	3,488 cf	
Primary =	0.56 cfs @	12.15 hrs,	Volume=	335 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 157.37' @ 12.15 hrs Surf.Area= 133 sf Storage= 637 cf
Flood Elev= 159.00' Surf.Area= 133 sf Storage= 772 cf
Plug-Flow detention time= 14.5 min calculated for 3,824 cf (100% of inflow)
Center-of-Mass det. time= 14.4 min (757.6 - 743.2)

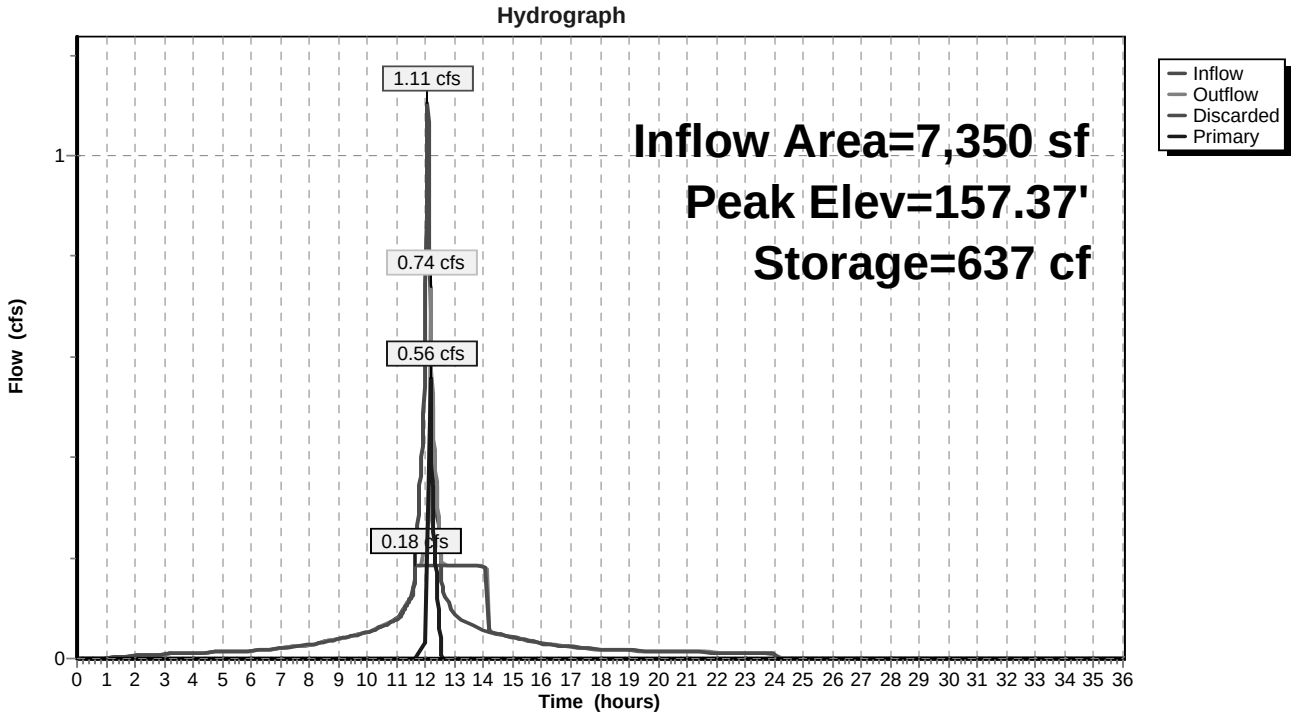
Volume	Invert	Avail.Storage	Storage Description
#1	151.00'	402 cf	**8.00'D x 8.00'H DRY WELL** Inside #2
#2	149.00'	370 cf	**13.00'D x 10.00'H BED OF STONE**
			1,327 cf Overall - 402 cf Embedded = 925 cf x 40.0% Voids
		772 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**60.000 in/hr Exfiltration over Surface area**
#2	Primary	157.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.18 cfs @ 11.66 hrs HW=149.12' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.54 cfs @ 12.15 hrs HW=157.37' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 0.54 cfs @ 2.1 fps)

Pond 35P: P-LB4



Pond 36P: CB

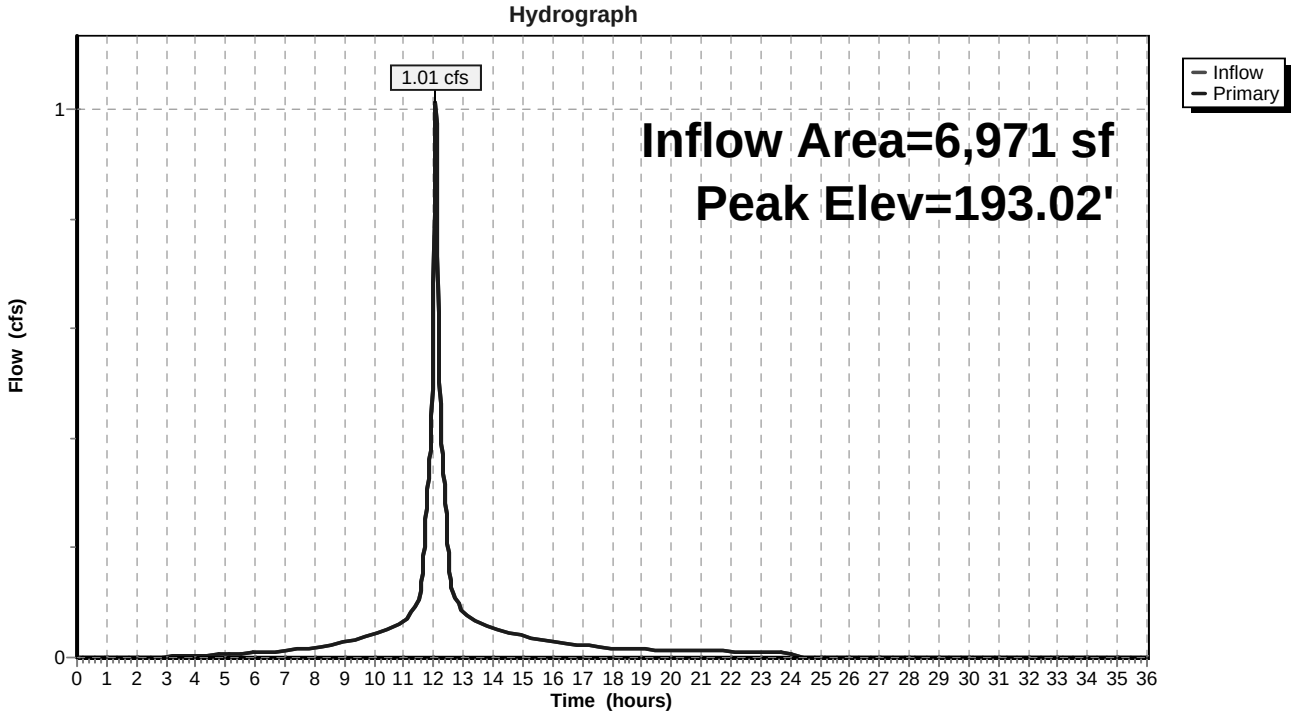
Inflow Area =	6,971 sf,	Inflow Depth =	5.66"	for	100YR event
Inflow =	1.01 cfs @	12.07 hrs,	Volume=	3,286 cf	
Outflow =	1.01 cfs @	12.07 hrs,	Volume=	3,286 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.01 cfs @	12.07 hrs,	Volume=	3,286 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 193.02' @ 12.07 hrs
Flood Elev= 196.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	192.50'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.00 cfs @ 12.07 hrs HW=193.02' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.00 cfs @ 2.4 fps)

Pond 36P: CB



Pond 37P: CB

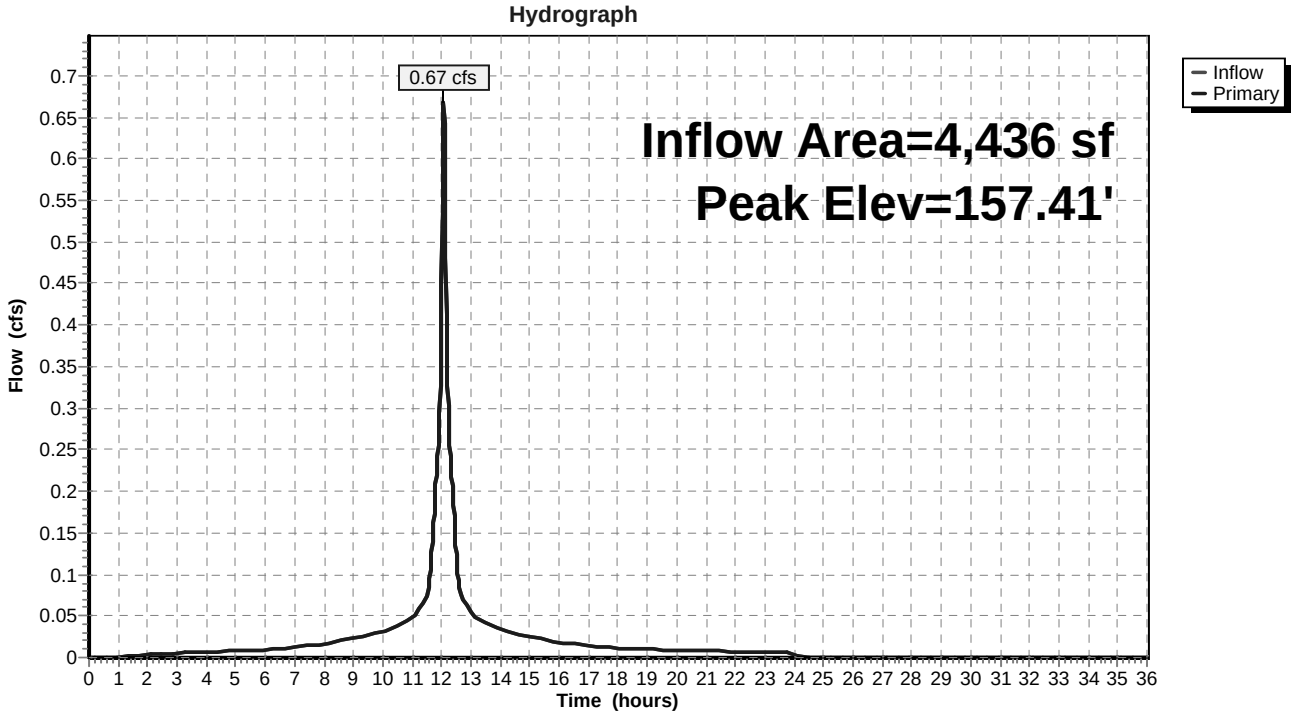
Inflow Area =	4,436 sf,	Inflow Depth =	6.24"	for	100YR event
Inflow =	0.67 cfs @	12.07 hrs,	Volume=	2,307 cf	
Outflow =	0.67 cfs @	12.07 hrs,	Volume=	2,307 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.67 cfs @	12.07 hrs,	Volume=	2,307 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 157.41' @ 12.07 hrs
Flood Elev= 161.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (743.1 - 743.1)

Device	Routing	Invert	Outlet Devices
#1	Primary	157.00'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.66 cfs @ 12.07 hrs HW=157.41' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.66 cfs @ 2.2 fps)

Pond 37P: CB



Pond 38P: P-MH

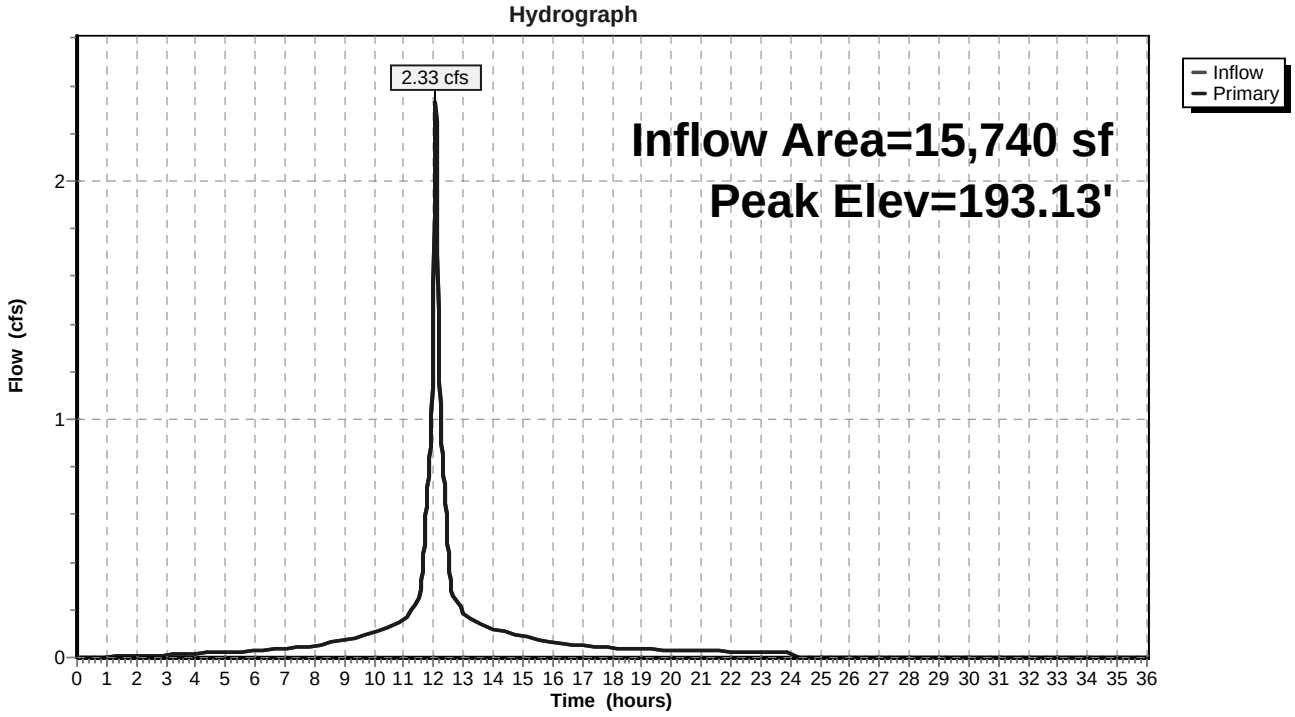
Inflow Area =	15,740 sf,	Inflow Depth =	5.98"	for	100YR event
Inflow =	2.33 cfs @	12.07 hrs,	Volume=	7,847 cf	
Outflow =	2.33 cfs @	12.07 hrs,	Volume=	7,847 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.33 cfs @	12.07 hrs,	Volume=	7,847 cf	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 193.13' @ 12.07 hrs
Flood Elev= 196.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	192.25'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.31 cfs @ 12.07 hrs HW=193.12' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 2.31 cfs @ 3.2 fps)

Pond 38P: P-MH

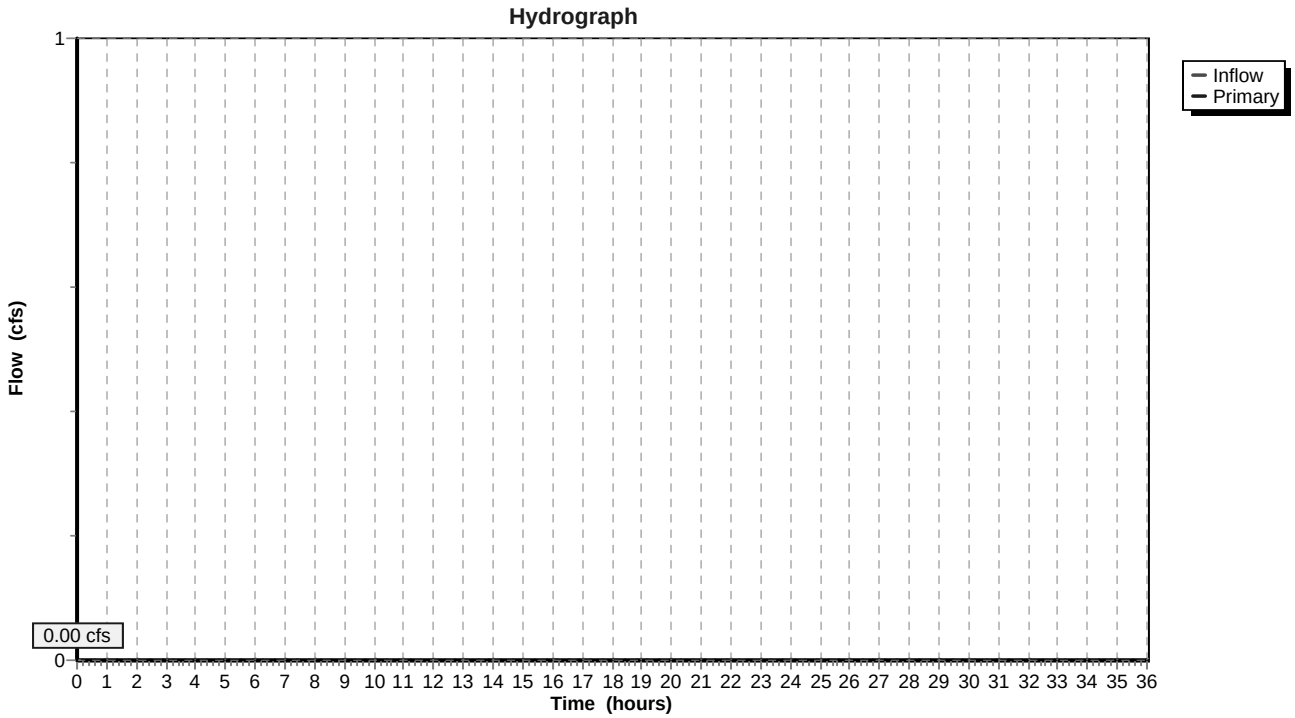


Link 10L: FLARED END

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0 cf
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf, Atten= 0%, Lag= 0.0 min

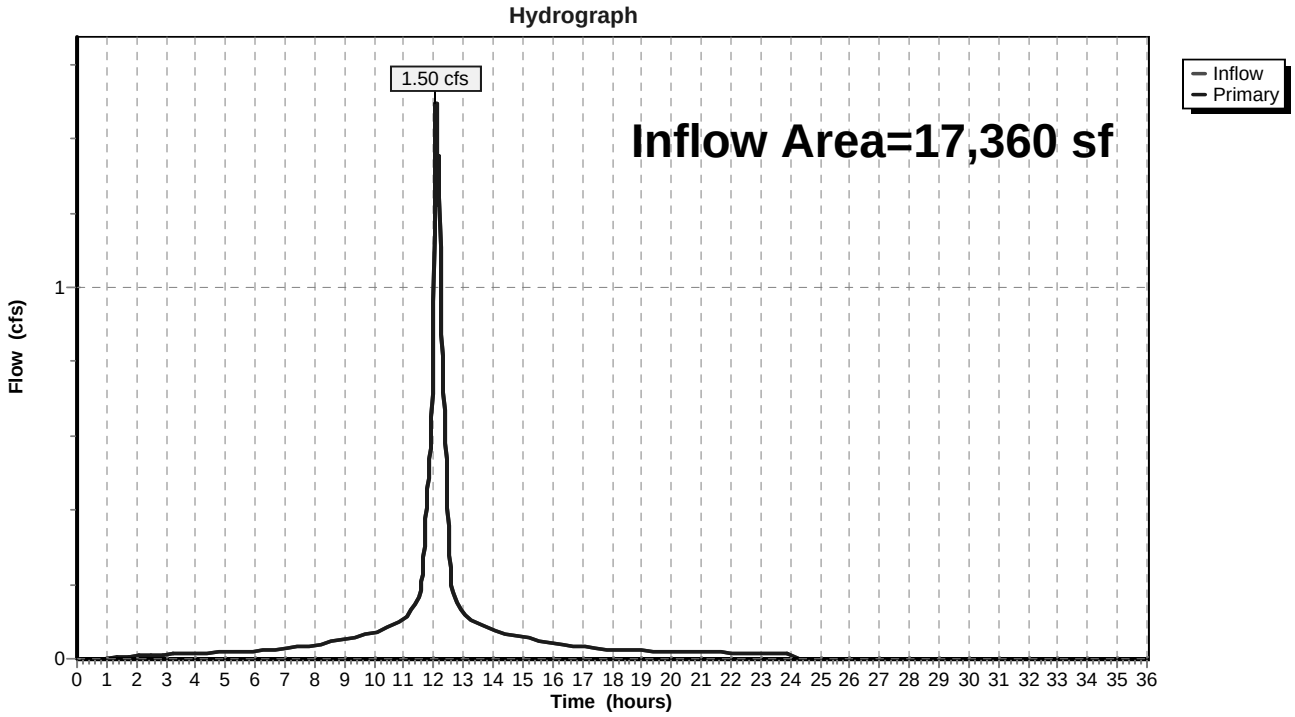
Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 10L: FLARED END



Link 34L: River

Inflow Area = 17,360 sf, Inflow Depth = 3.83" for 100YR event
Inflow = 1.50 cfs @ 12.08 hrs, Volume= 5,542 cf
Primary = 1.50 cfs @ 12.08 hrs, Volume= 5,542 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 34L: River