SUMMERWOOD SPORTS GYM #3

DRAINAGE REPORT

Date: **01-10-2024**

Located in: **Bryant, Arkansas**

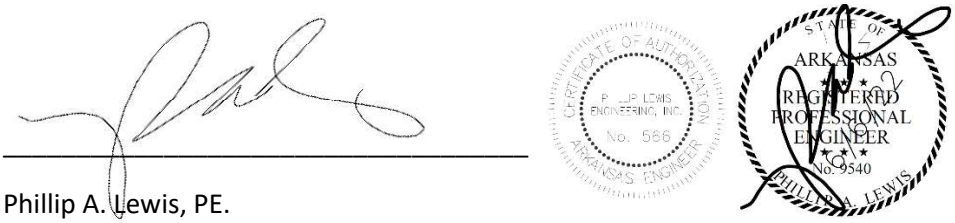
Prepared for:
City of Bryant, Arkansas

Prepared by:

PHILLIP LEWIS ENGINEERING
Structural + Civil Consultants
23620 Interstate 30 | Bryant, AR
PH: 501-350-9840

CERTIFICATION

I hereby state that this Final Drainage has been prepared by me or under my supervision and meets the standard of care and expertise which is usual and customary in this community of professional engineers. The analysis has been prepared utilizing procedures and practices by the City of Bryant and within the standard accepted practices.



DATE: 01-10-2024

Phillip A. Lewis, PE.

PROJECT LOCATION MAP



DESCRIPTION OF PROPERTY

The proposed project is for the consruction of the third gymnasium of the Summerwood Sports Complex located along Bryant Parkway and Hwy 5. The proposed development is a 19,000 sq. ft. building and parking lot.

The intent of this drainage analysis is to reevaluate the previous drainage design and ensure that the completetion of this development still meets the design intent and capacity of the previous constructed onsite detention facilities.

The existing ground coverage for the entire development drainage basin consisted of and partially still consists of natural vegetation (3%-8% slope), hydrologic soil group C/D (C = 0.50).

According to FEMA Flood Insurance Rate Map, Panel 05125C0240E, this property lies within Zone X, areas determined to be outside the 0.2% annual chance floodplain. A copy of the map can be found in the appendix.

DRAINAGE CRITERIA

In accordance with the requirements of the City of Bryant, the proposed developments drainage plan and this drainage report were developed with the criteria established in the Bryant Stormwater Management & Drainage Manual provided on cityofbryant.com.

All drainage calculations were performed using HydroCAD software to determine and analyze the changes in stormrunoff volume, flow rates, and design the outlet release structure. Hydraflow Express software was used to appropriately design and size all storm sewer inlets, pipes and channels.

Calculations were performed using the Rational Method, using NOAA rainfall data, and the pond volume and outlet structure was determined by the 100-year storm event while

the outlet structure is designed to match or reduce pre-development flow rates for all storm events: 2-yr, 10-yr, 25-yr, and 100-yr storms.

Detention Basin Design Specifications:

- *3:1 maximum side slopes*
- *Outlet structures designed to reduce flow rate to match or reduce the pre-development runoff rates for the 2-yr, 5-yr, 10-yr, 25-yr and 100-yr storms.*
- *The pond bottom and side is to be solid sod to prevent erosion*
- *The basins are located and designed to allow access for continued maintenance after construction is completed*

DESCRIPTION OF PREVIOUS DETENTION FACILITIES

Phillip Lewis Engineering has evaluated the previously supplied drainage analysis and made site investigations to fully understand the current drainage situation.

The previous drainage analysis studied the pre vs. post scenarios as a single 6 acre node. Post development was studied as one node routing through the detention pond that is now constructed on the site. Due to the nature of how phase one construction evolved, some areas were not routed to this detention pond. Some of these areas ultimately discharge to other detention facilities located elsewhere on the site, and some are freely discharged to the adjacent eastern parcel.

This drainage study is intended to account for these descrepencies and ensure that the detention basin is throttling appropriately to offset the free discharges from the previous phase and this new proposed phase.

PROPOSED DRAINAGE SYSTEM

This develompent is designed to capture the majority of runoff within the parking lot curb and gutter, collecting stormwater with “Nyloplast” area inlets, and downspout collector pipes. The existing storm sewer network will remain, with the addition of two area grates along the frontage of gym #3. The existing detention basin that was constructed for the first two gymnasiums will remain as planned previously with the development of gym 1 and 2. This drainage analysis will provide supporting evidence to validate the previously constructed detention basin’s functionality.

While the pond footprint will remain as constructed, current design plans detail for this pond rim to be reestablished at the intended 400.00’ elevation, and for adequate trickle channels to be constructed within the pond bottom (per city of Bryant Requirements).

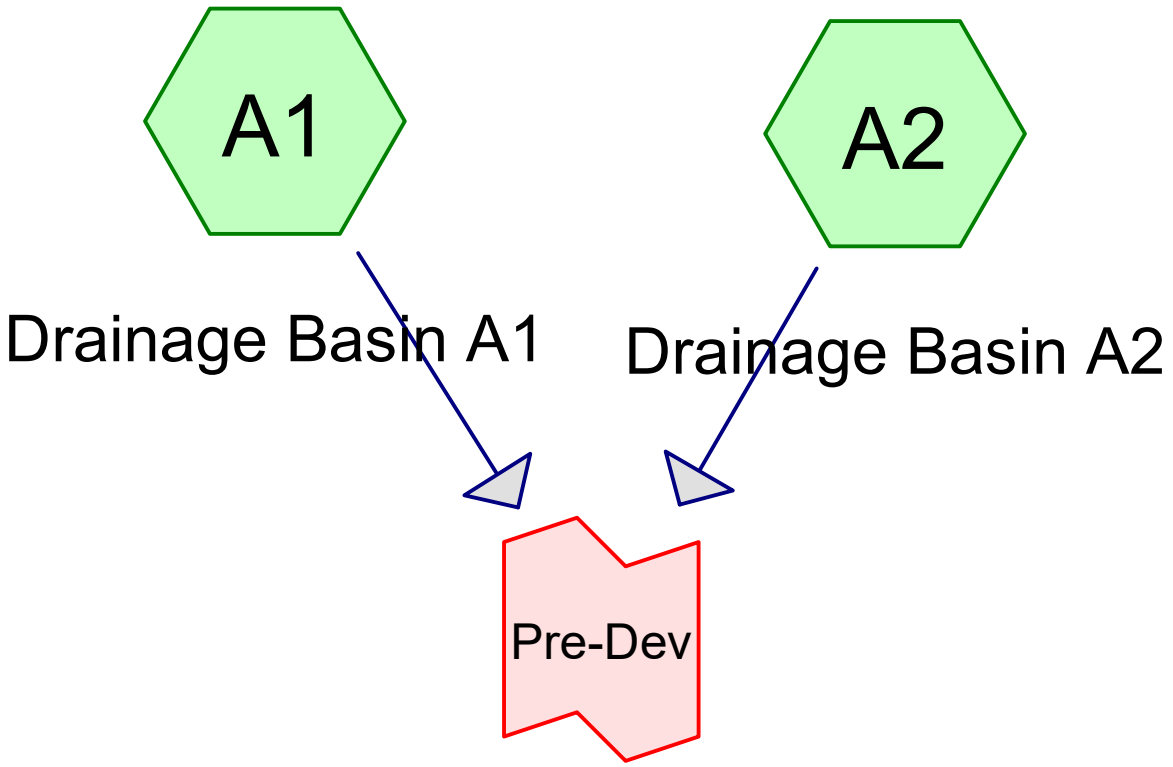
The detention pond was designed to detain stromwater volumes based off the 100-yr storm events with a concrete overflow spillway to release water if a rainfall event were to exceed the 100-yr storm event. The outlet control structures are detailed within this report.

Overall Pre-development and Post-development runoff/discharge rates are compared below:

Storm Event	Pre-development Discharge (cfs)	Post-development Discharge (cfs)
2-yr	10.33	10.14
5-yr	12.27	12.27
10-yr	13.82	13.74
25-yr	15.94	15.69
100-yr	18.93	18.25

Overall pre development and post development discharge rates are displayed in the following hydrographs. A final discharge link has been added to each to show one comparable discharge number. This final discharge will verify that the design detention basin should offset any bypassing watershed within the development.

PRE DEVELOPMENT HYDROGRAPHS



Pre Dev Runoff

Subcat Reach Pond Link

Routing Diagram for Summerwood Gym 3
Prepared by Phillip Lewis Engineering, Printed 1/11/2024
HydroCAD® 10.20-2f s/n 12520 © 2022 HydroCAD Software Solutions LLC

Summary for Subcatchment A1: Drainage Basin A1

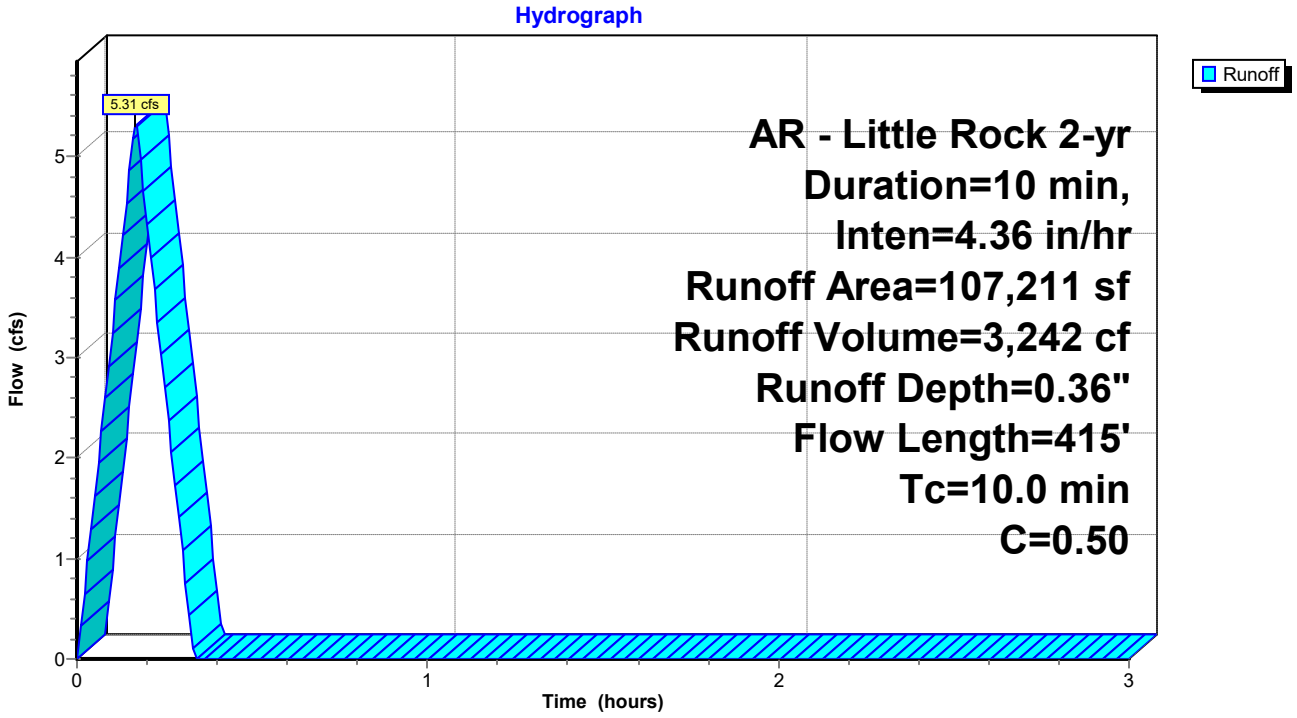
Runoff = 5.31 cfs @ 0.17 hrs, Volume= 3,242 cf, Depth= 0.36"
Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
107,211	0.50	Existing Natural Vegeation
107,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment A1: Drainage Basin A1



Summary for Subcatchment A2: Drainage Basin A2

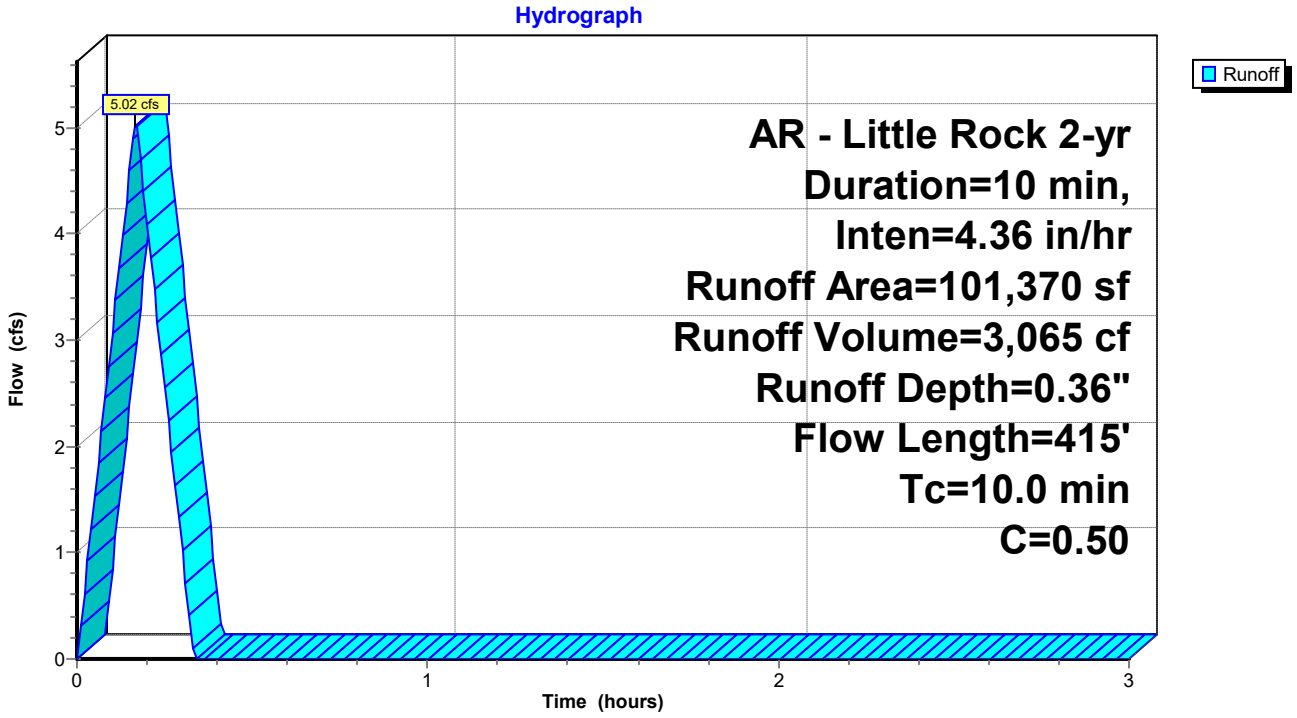
Runoff = 5.02 cfs @ 0.17 hrs, Volume= 3,065 cf, Depth= 0.36"
Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
101,370	0.50	Existing Natural Vegetation
101,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment A2: Drainage Basin A2

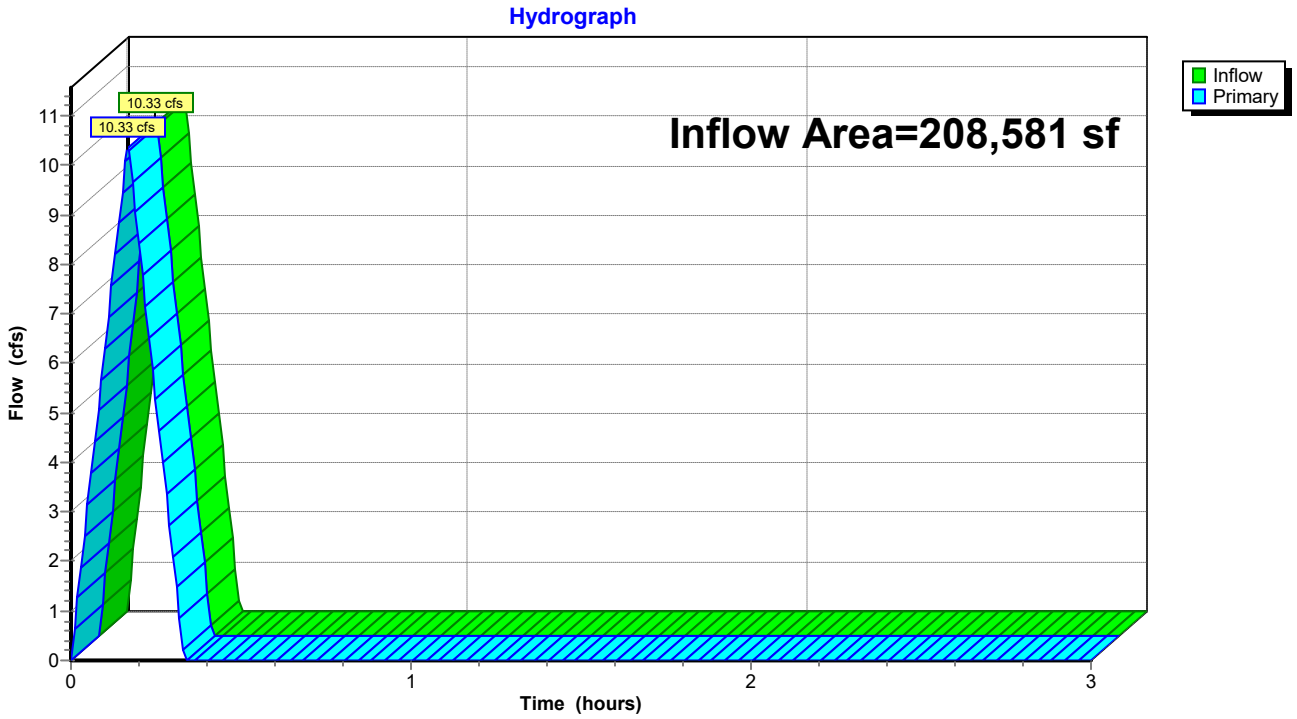


Summary for Link Pre-Dev: Pre Dev Runoff

Inflow Area = 208,581 sf, 0.00% Impervious, Inflow Depth = 0.36" for 2-yr event
Inflow = 10.33 cfs @ 0.17 hrs, Volume= 6,307 cf
Primary = 10.33 cfs @ 0.17 hrs, Volume= 6,307 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

Link Pre-Dev: Pre Dev Runoff



Summary for Subcatchment A1: Drainage Basin A1

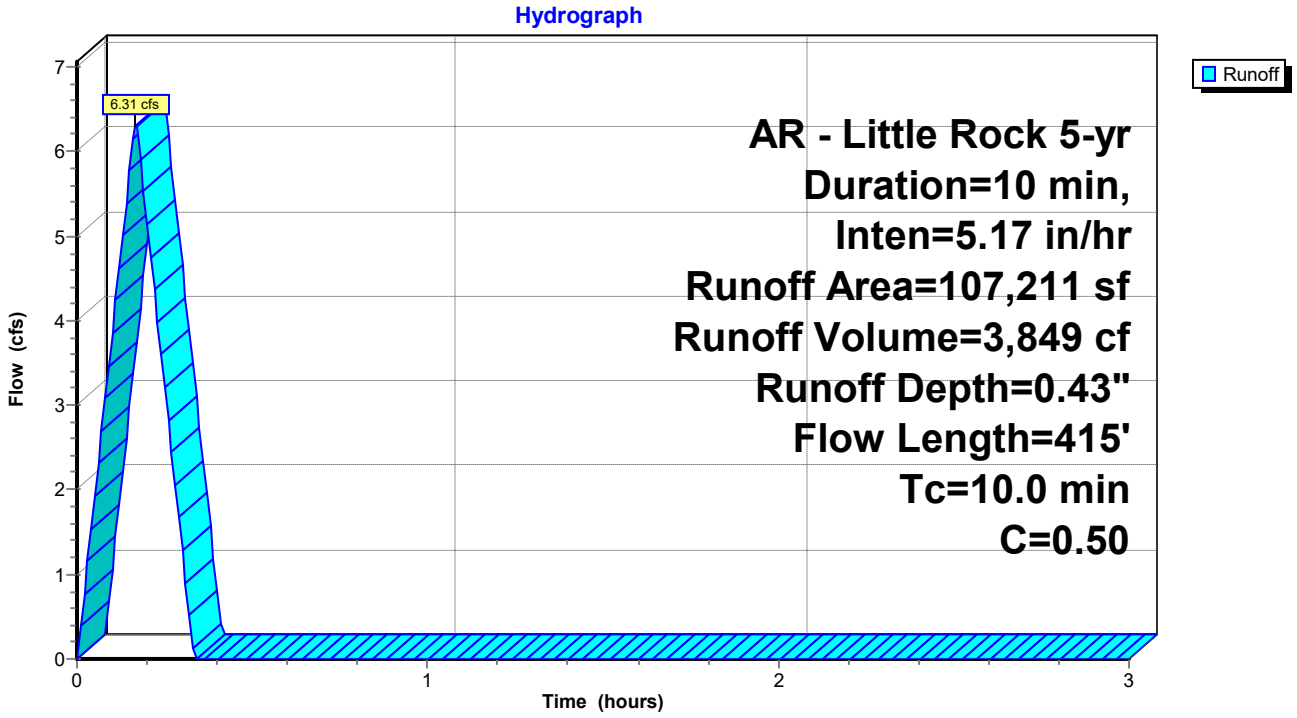
Runoff = 6.31 cfs @ 0.17 hrs, Volume= 3,849 cf, Depth= 0.43"
Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
107,211	0.50	Existing Natural Vegeation
107,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment A1: Drainage Basin A1



Summary for Subcatchment A2: Drainage Basin A2

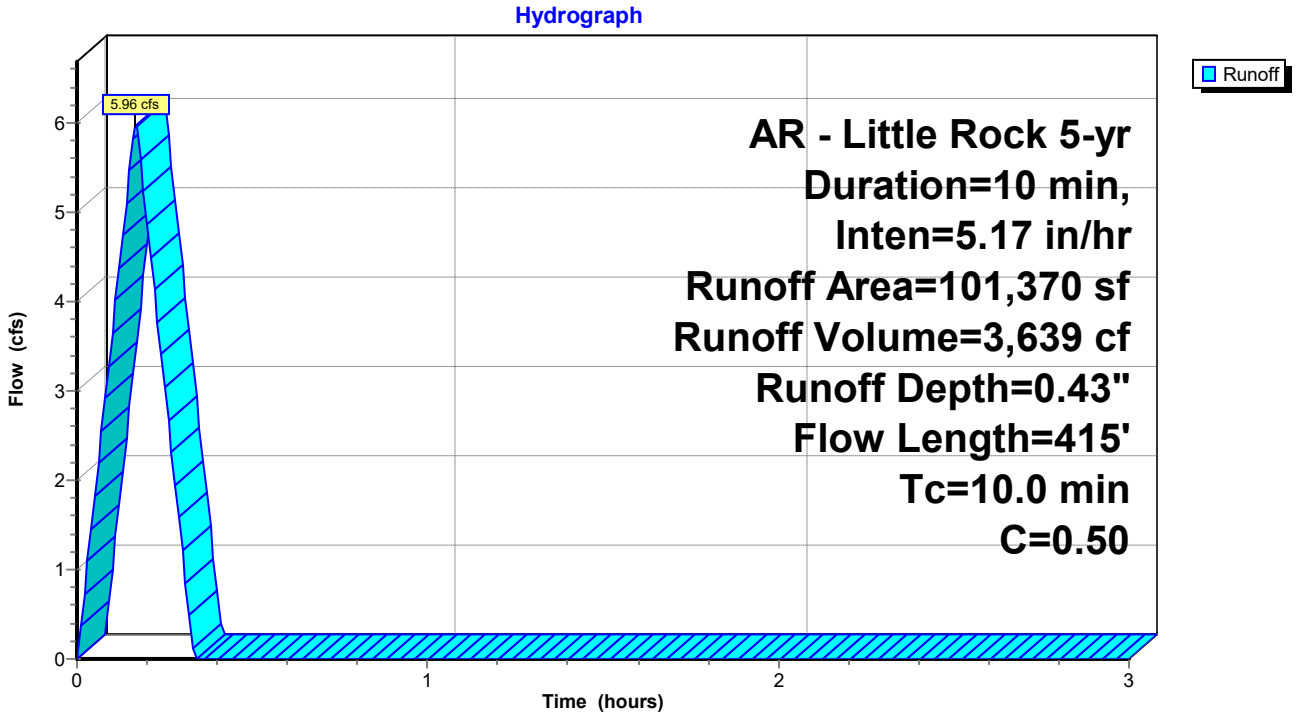
Runoff = 5.96 cfs @ 0.17 hrs, Volume= 3,639 cf, Depth= 0.43"
Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
101,370	0.50	Existing Natural Vegetation
101,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment A2: Drainage Basin A2

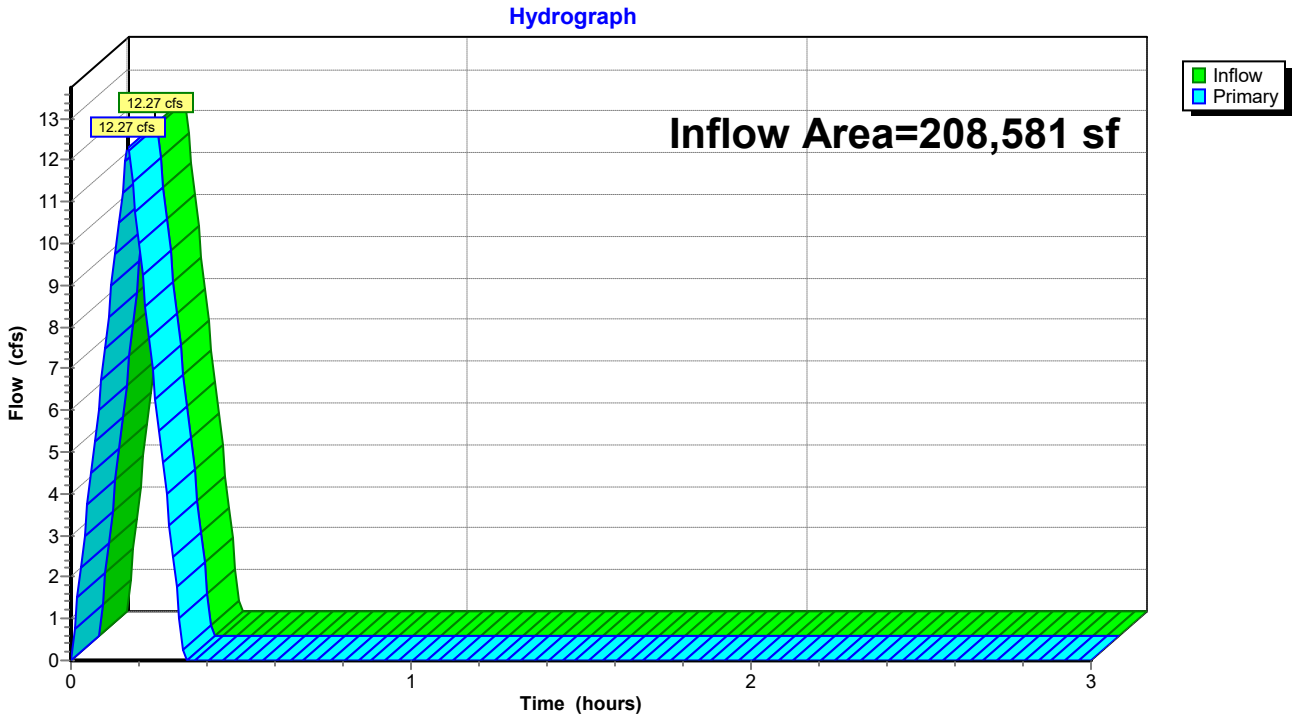


Summary for Link Pre-Dev: Pre Dev Runoff

Inflow Area = 208,581 sf, 0.00% Impervious, Inflow Depth = 0.43" for 5-yr event
Inflow = 12.27 cfs @ 0.17 hrs, Volume= 7,489 cf
Primary = 12.27 cfs @ 0.17 hrs, Volume= 7,489 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

Link Pre-Dev: Pre Dev Runoff



Summary for Subcatchment A1: Drainage Basin A1

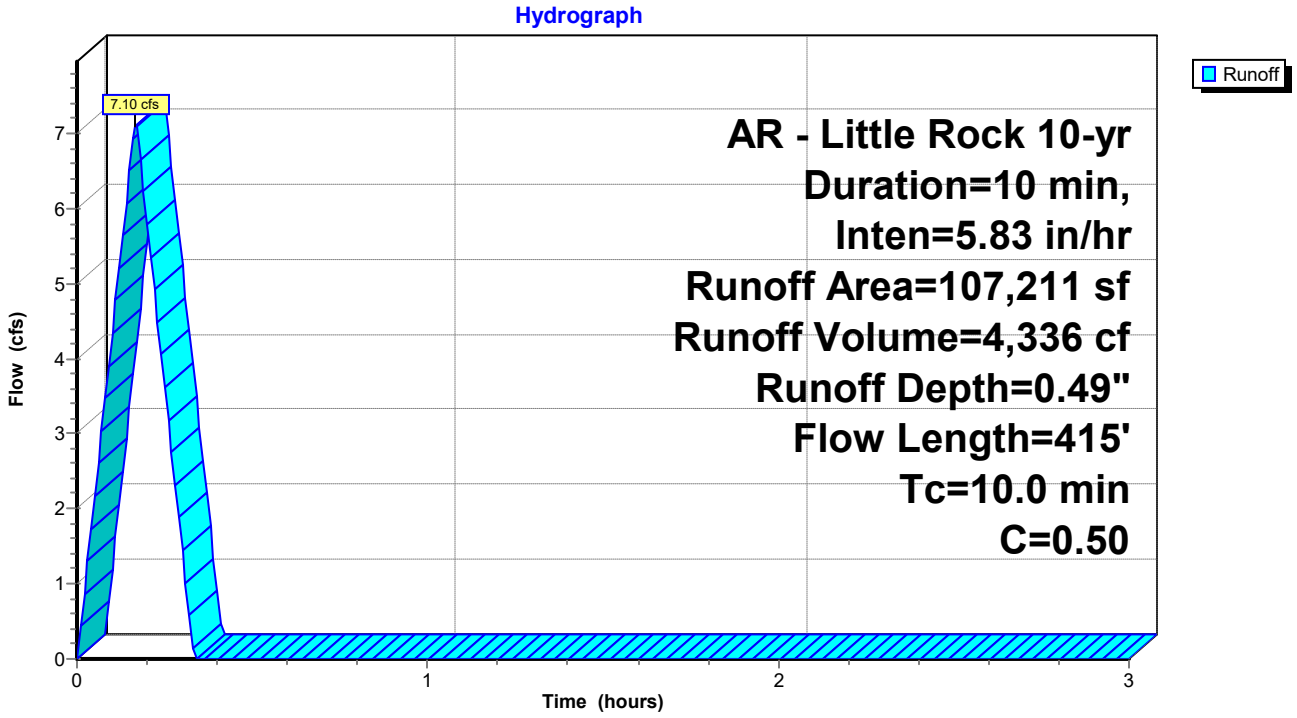
Runoff = 7.10 cfs @ 0.17 hrs, Volume= 4,336 cf, Depth= 0.49"
Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
107,211	0.50	Existing Natural Vegeation
107,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment A1: Drainage Basin A1



Summary for Subcatchment A2: Drainage Basin A2

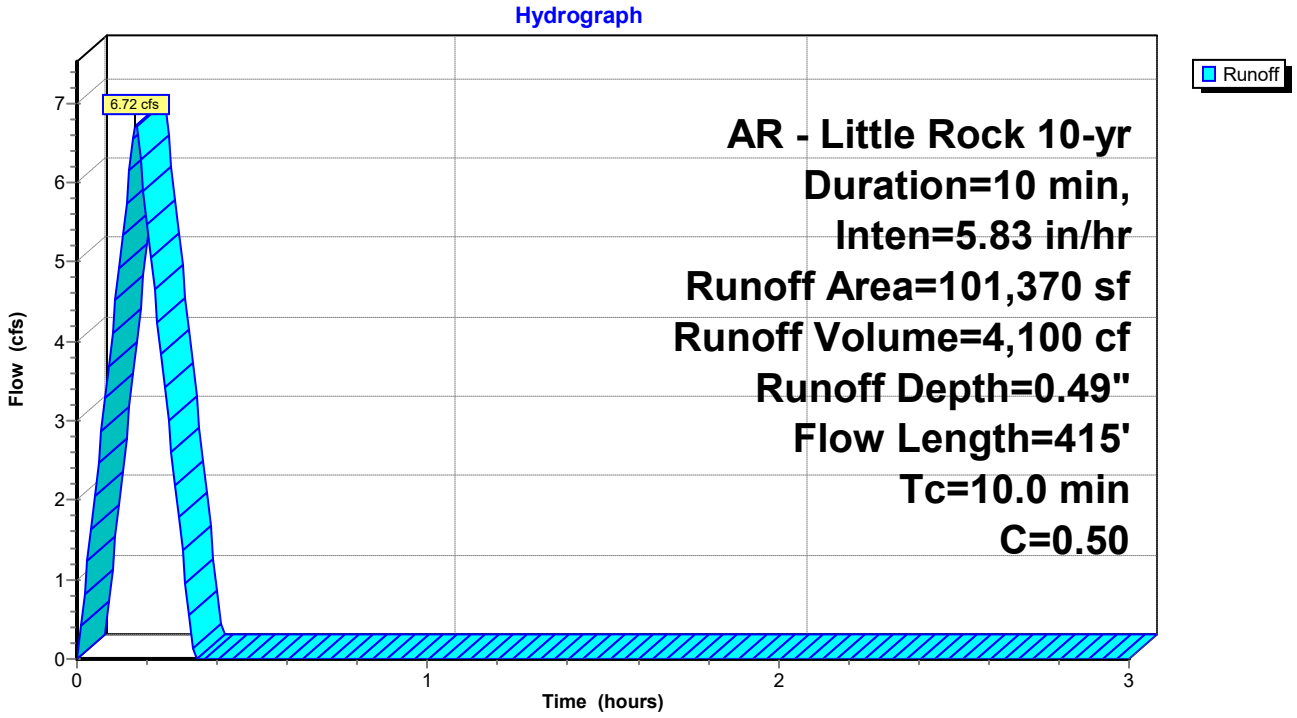
Runoff = 6.72 cfs @ 0.17 hrs, Volume= 4,100 cf, Depth= 0.49"
Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
101,370	0.50	Existing Natural Vegetation
101,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment A2: Drainage Basin A2

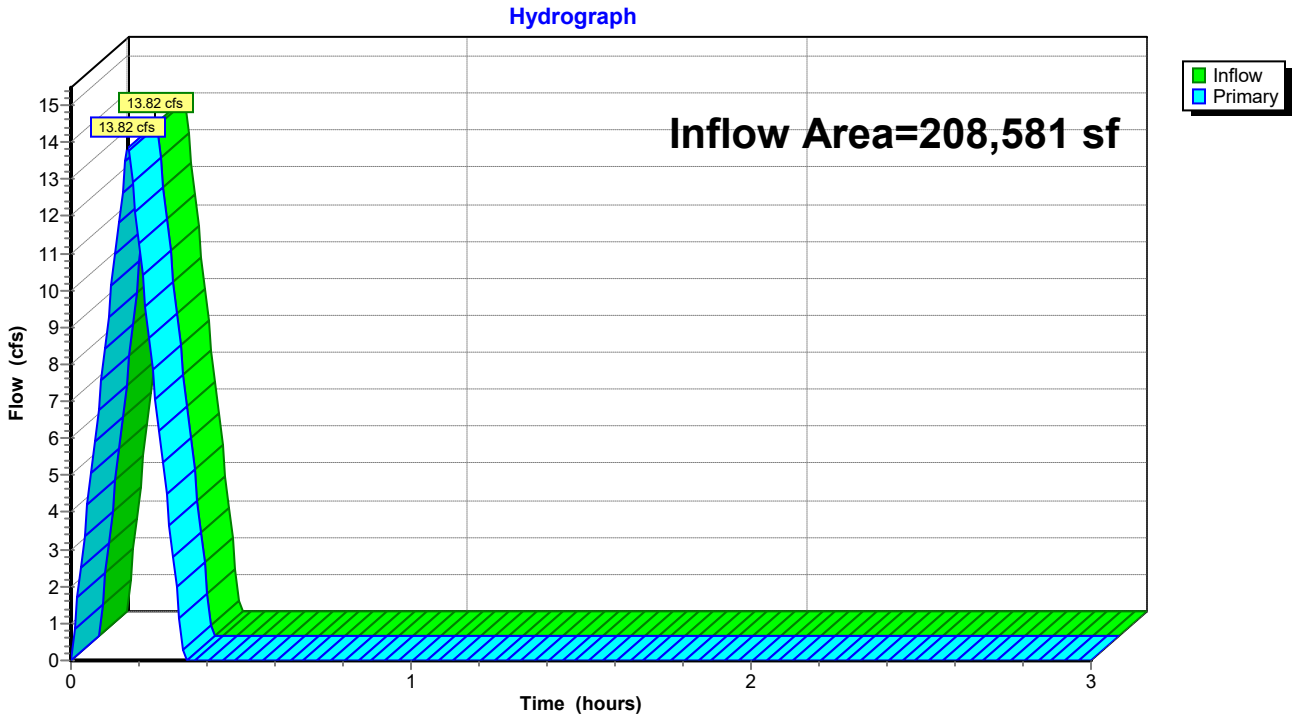


Summary for Link Pre-Dev: Pre Dev Runoff

Inflow Area = 208,581 sf, 0.00% Impervious, Inflow Depth = 0.49" for 10-yr event
Inflow = 13.82 cfs @ 0.17 hrs, Volume= 8,435 cf
Primary = 13.82 cfs @ 0.17 hrs, Volume= 8,435 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

Link Pre-Dev: Pre Dev Runoff



Summary for Subcatchment A1: Drainage Basin A1

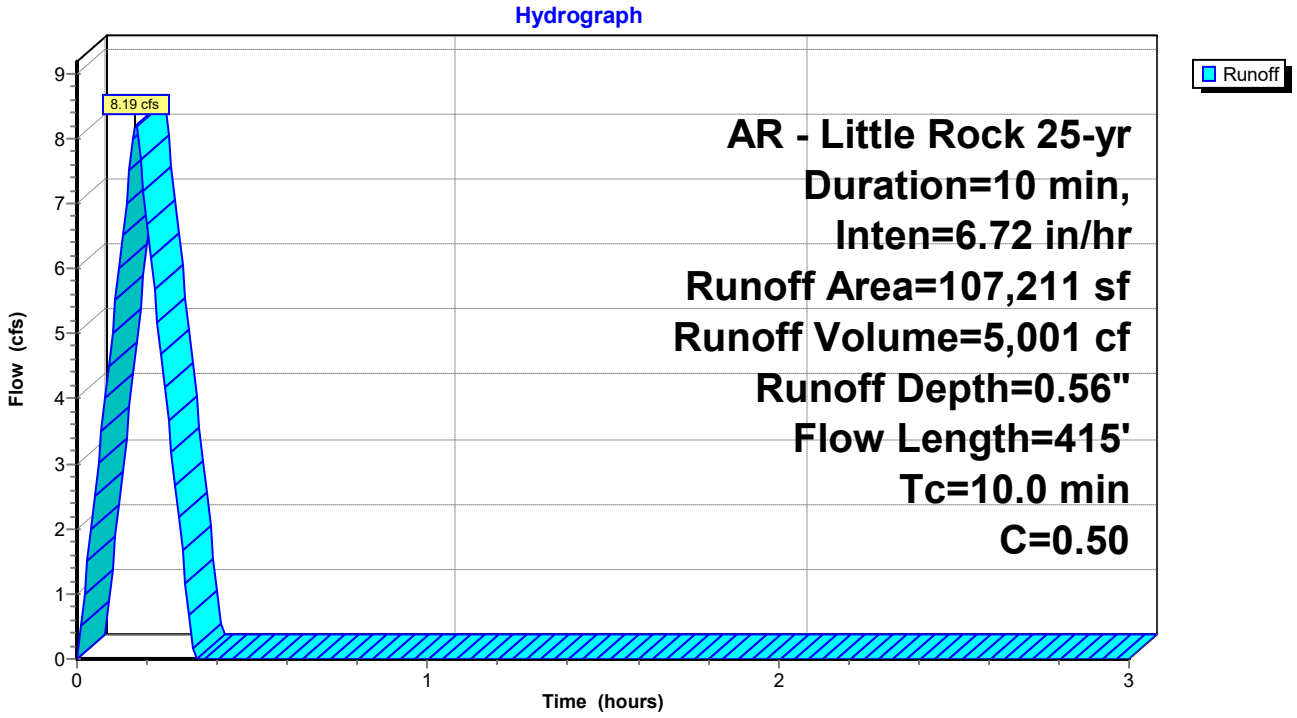
Runoff = 8.19 cfs @ 0.17 hrs, Volume= 5,001 cf, Depth= 0.56"
Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
107,211	0.50	Existing Natural Vegeation
107,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment A1: Drainage Basin A1



Summary for Subcatchment A2: Drainage Basin A2

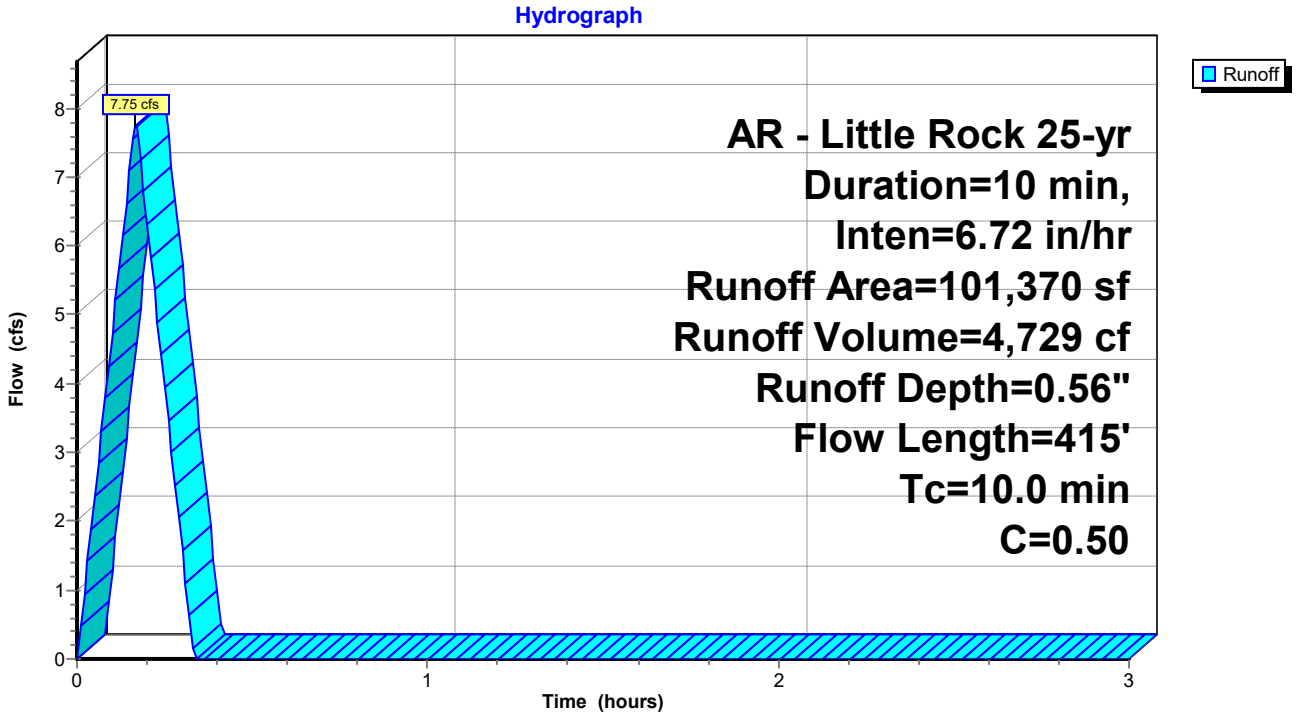
Runoff = 7.75 cfs @ 0.17 hrs, Volume= 4,729 cf, Depth= 0.56"
Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
101,370	0.50	Existing Natural Vegetation
101,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment A2: Drainage Basin A2

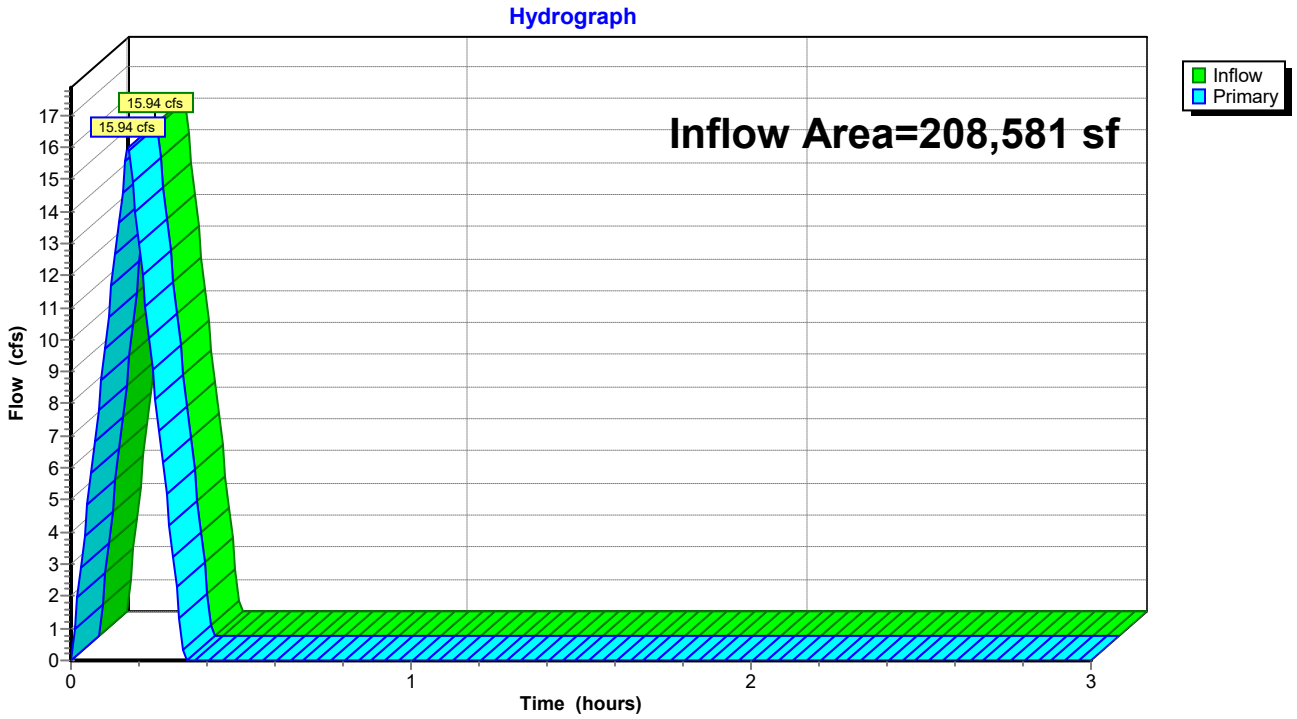


Summary for Link Pre-Dev: Pre Dev Runoff

Inflow Area = 208,581 sf, 0.00% Impervious, Inflow Depth = 0.56" for 25-yr event
Inflow = 15.94 cfs @ 0.17 hrs, Volume= 9,730 cf
Primary = 15.94 cfs @ 0.17 hrs, Volume= 9,730 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

Link Pre-Dev: Pre Dev Runoff



Summary for Subcatchment A1: Drainage Basin A1

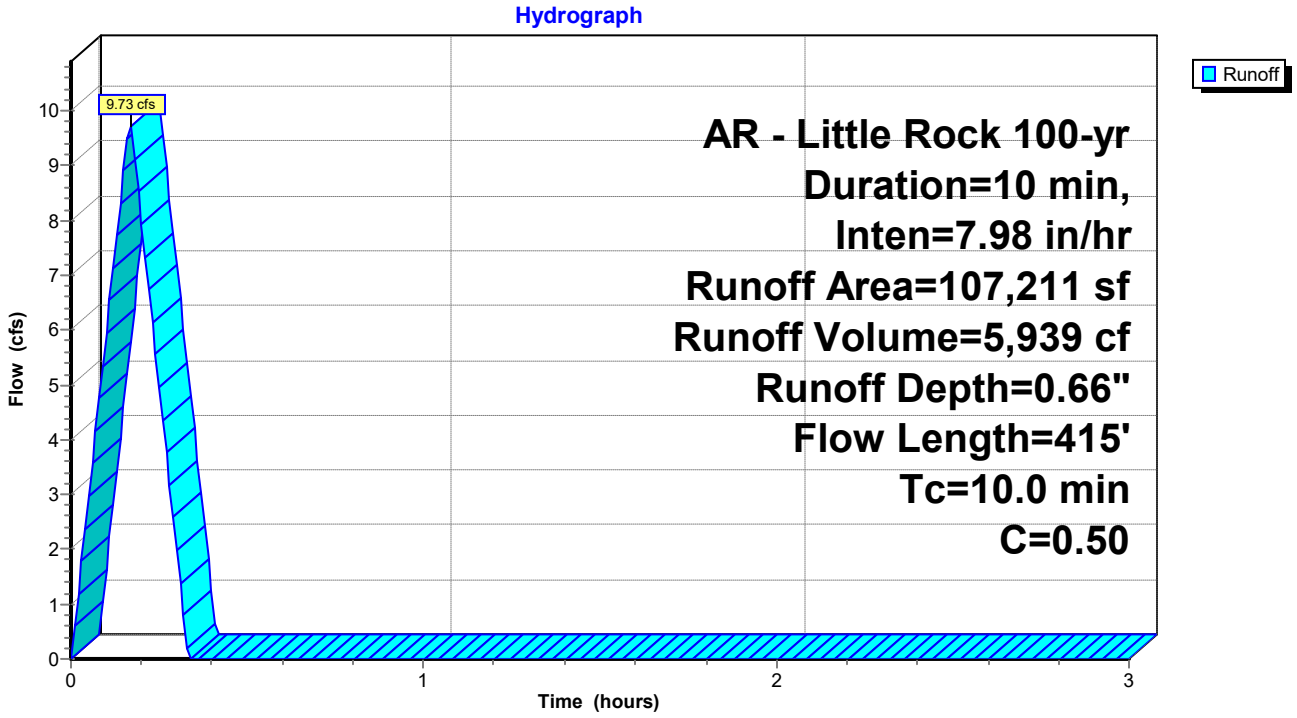
Runoff = 9.73 cfs @ 0.17 hrs, Volume= 5,939 cf, Depth= 0.66"
Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
107,211	0.50	Existing Natural Vegeation
107,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment A1: Drainage Basin A1



Summary for Subcatchment A2: Drainage Basin A2

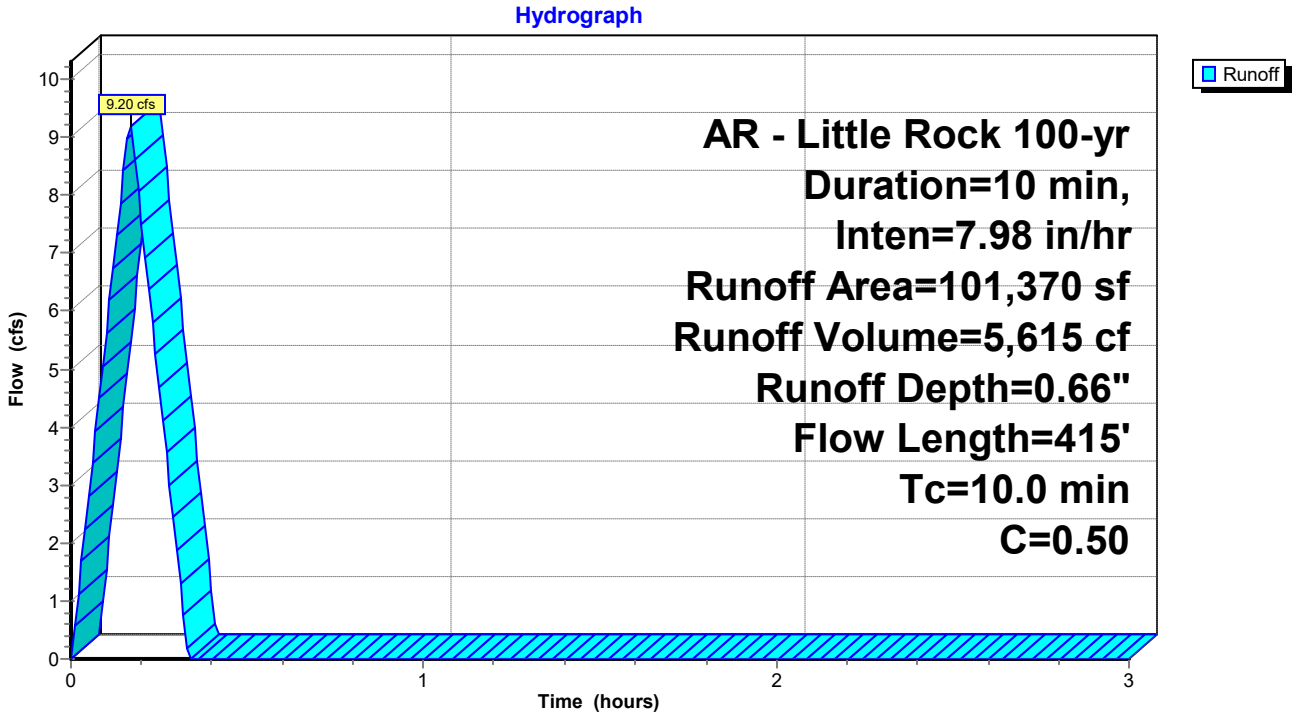
Runoff = 9.20 cfs @ 0.17 hrs, Volume= 5,615 cf, Depth= 0.66"
Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
101,370	0.50	Existing Natural Vegetation
101,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment A2: Drainage Basin A2

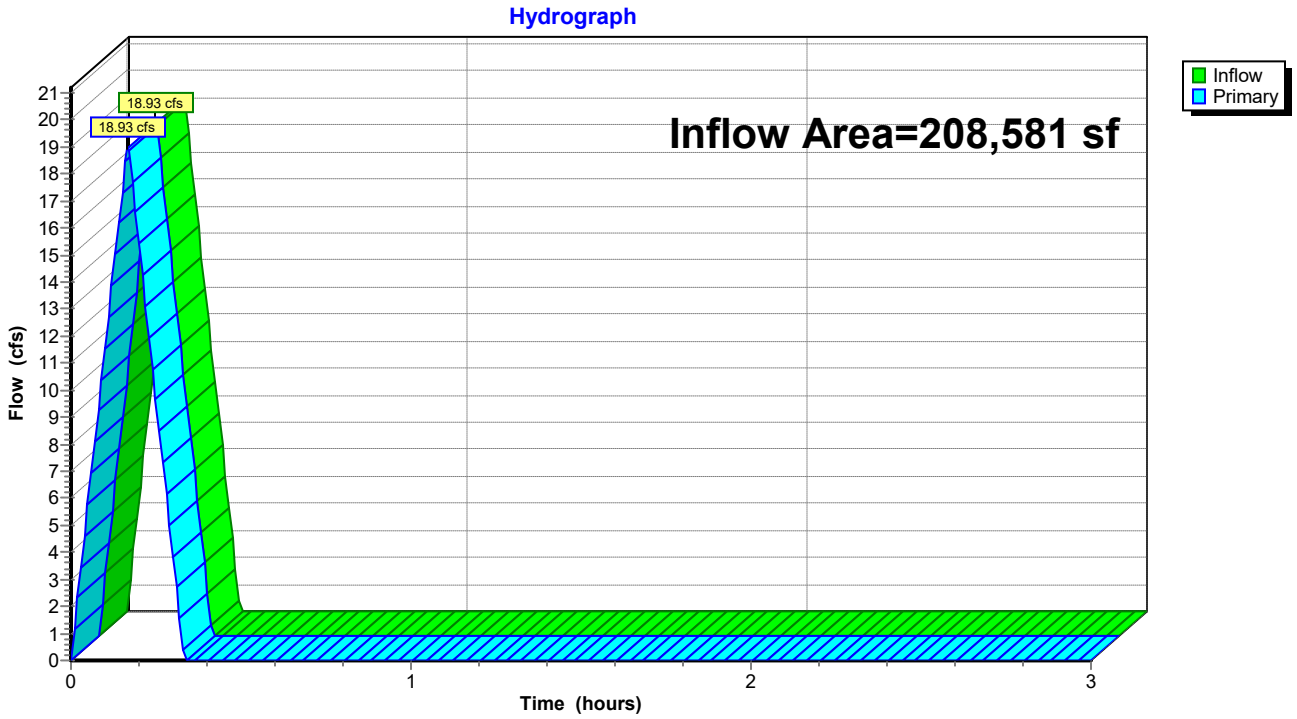


Summary for Link Pre-Dev: Pre Dev Runoff

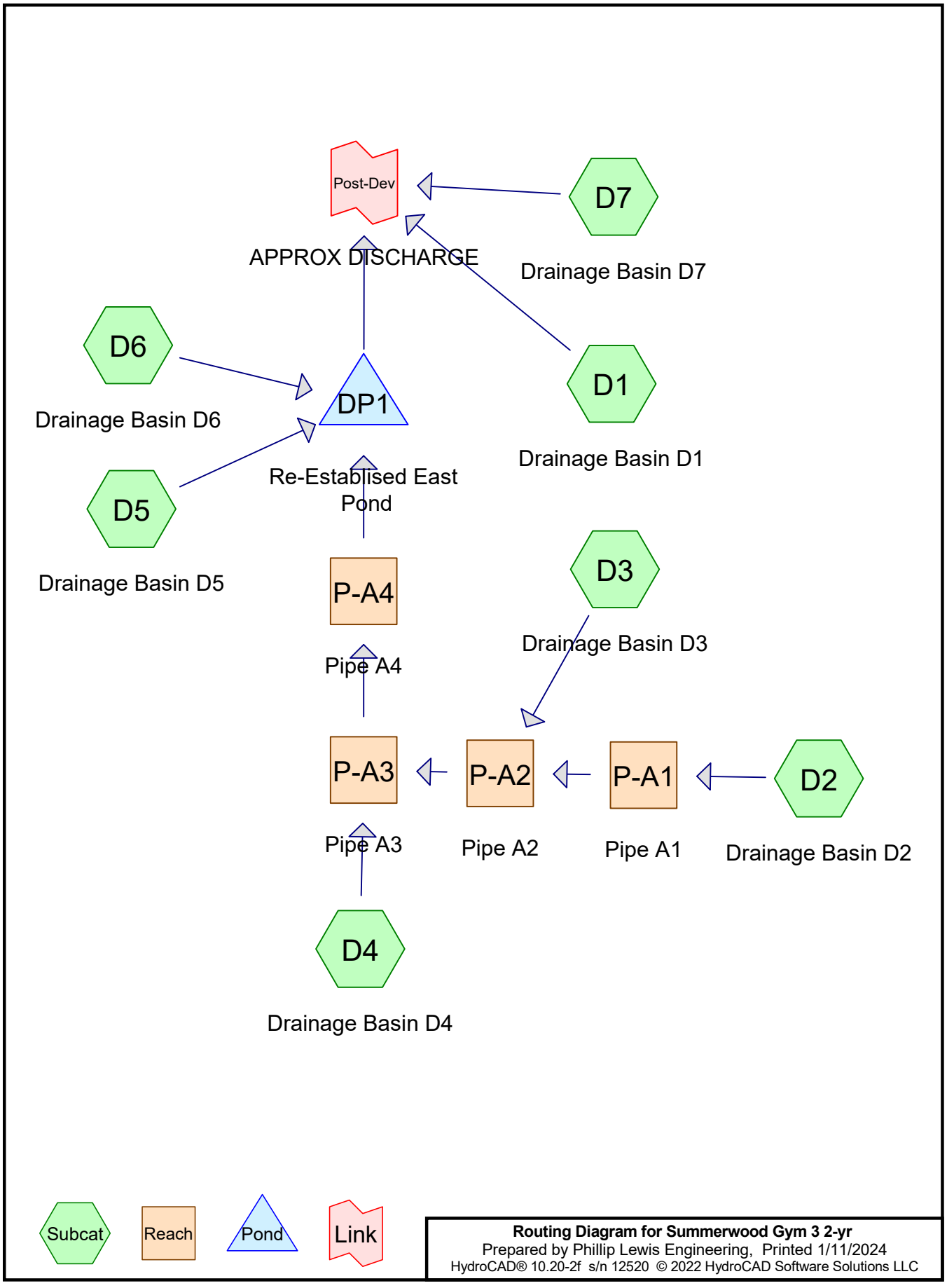
Inflow Area = 208,581 sf, 0.00% Impervious, Inflow Depth = 0.66" for 100-yr event
Inflow = 18.93 cfs @ 0.17 hrs, Volume= 11,554 cf
Primary = 18.93 cfs @ 0.17 hrs, Volume= 11,554 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

Link Pre-Dev: Pre Dev Runoff



POST DEVELOPMENT HYDROGRAPHS



Routing Diagram for Summerwood Gym 3 2-yr
Prepared by Phillip Lewis Engineering, Printed 1/11/2024
HydroCAD® 10.20-2f s/n 12520 © 2022 HydroCAD Software Solutions LLC

Summary for Subcatchment D1: Drainage Basin D1

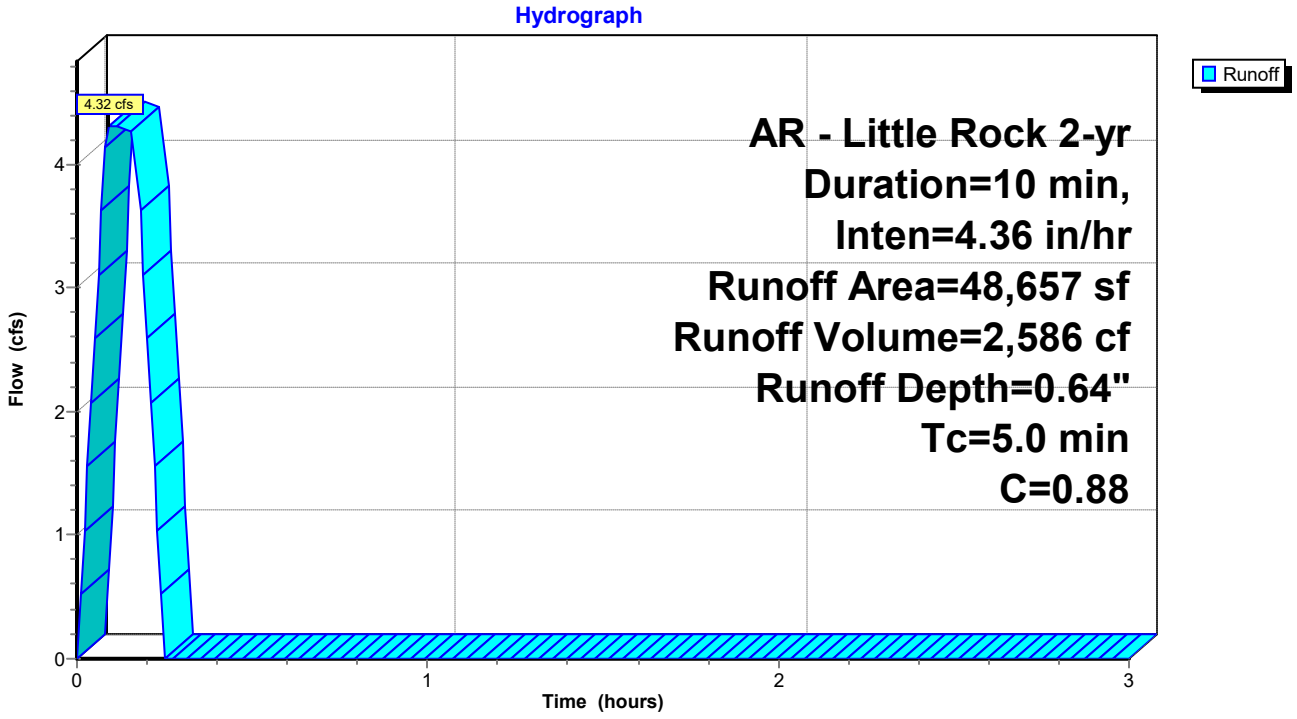
Runoff = 4.32 cfs @ 0.09 hrs, Volume= 2,586 cf, Depth= 0.64"
Routed to Link Post-Dev : APPROX DISCHARGE

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
3,421	0.40	Sod Yard
45,236	0.92	Rood, Drives, Sidewalks
48,657	0.88	Weighted Average
48,657		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D1: Drainage Basin D1



Summary for Subcatchment D2: Drainage Basin D2

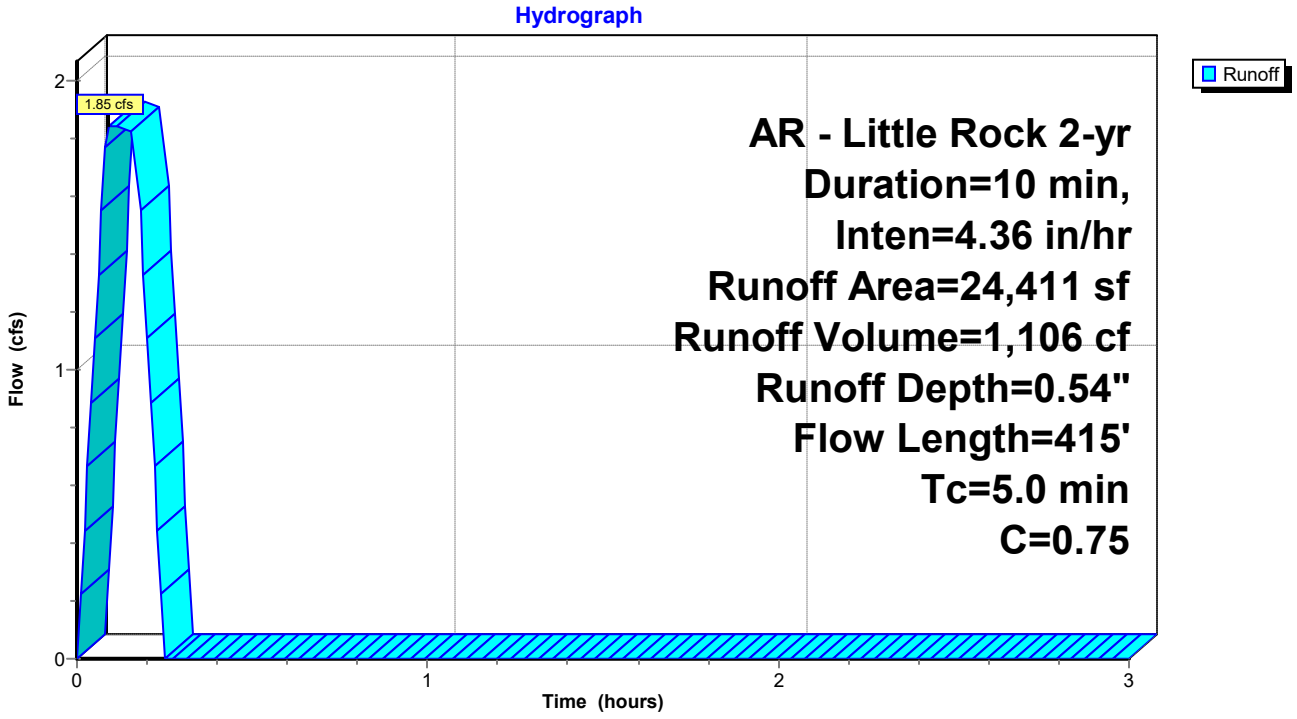
Runoff = 1.85 cfs @ 0.09 hrs, Volume= 1,106 cf, Depth= 0.54"
Routed to Reach P-A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
8,845	0.45	Rip Rap Embankment
15,566	0.92	Roof, Drives, Sidewalks
24,411	0.75	Weighted Average
24,411		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D2: Drainage Basin D2



Summary for Subcatchment D3: Drainage Basin D3

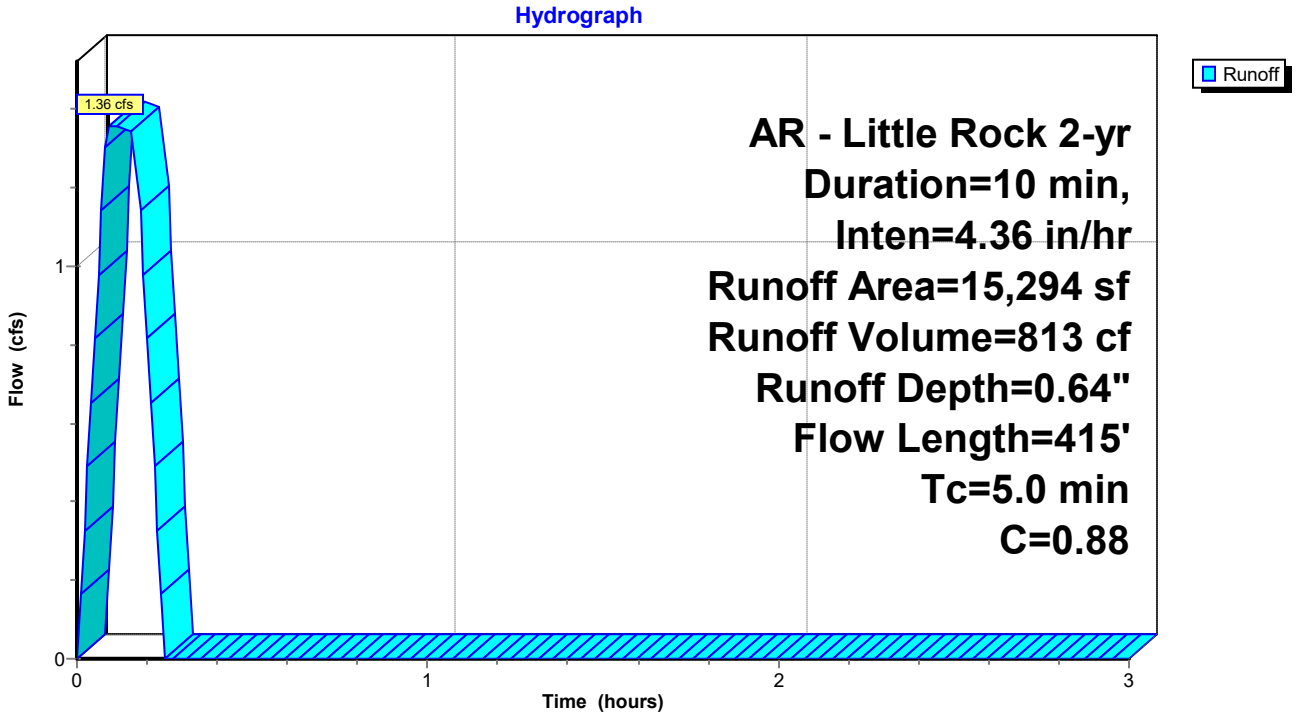
Runoff = 1.36 cfs @ 0.09 hrs, Volume= 813 cf, Depth= 0.64"
Routed to Reach P-A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
1,065	0.40	Sod Yard
14,229	0.92	Paving, Sidewalks
15,294	0.88	Weighted Average
15,294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D3: Drainage Basin D3



Summary for Subcatchment D4: Drainage Basin D4

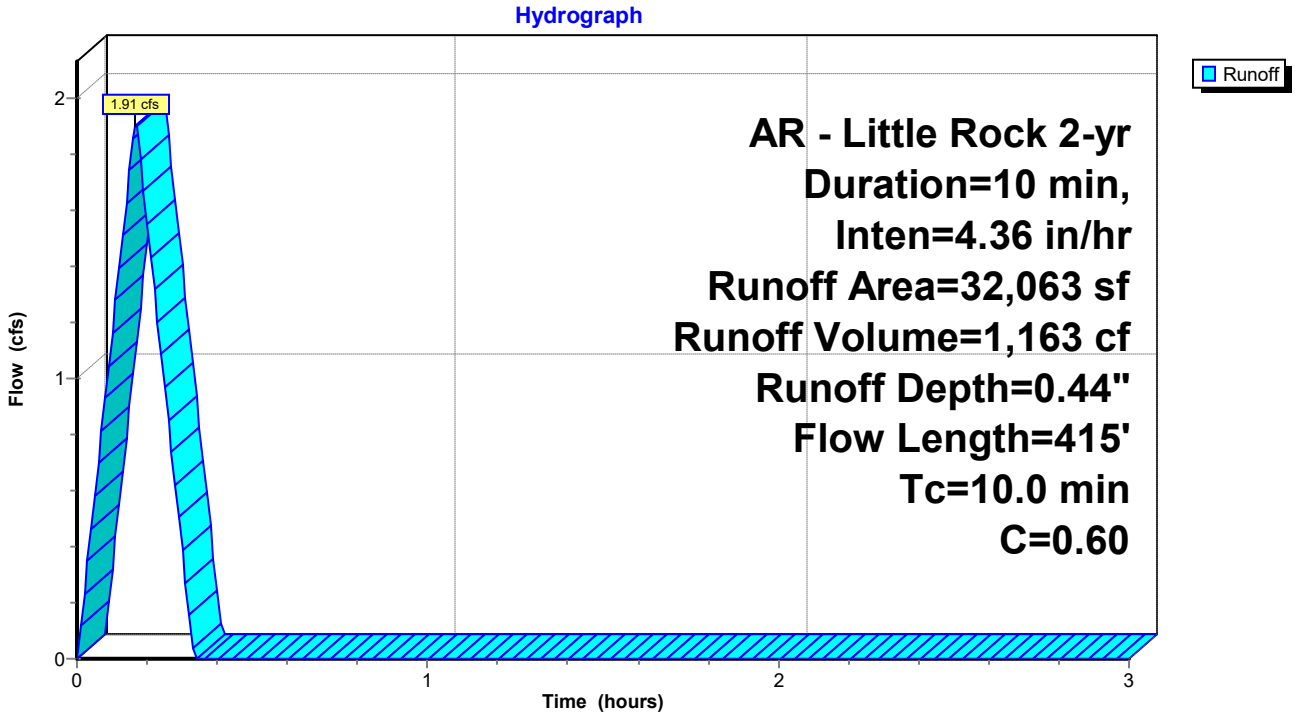
Runoff = 1.91 cfs @ 0.17 hrs, Volume= 1,163 cf, Depth= 0.44"
Routed to Reach P-A3 : Pipe A3

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
20,032	0.40	
12,031	0.92	
32,063	0.60	Weighted Average
32,063		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D4: Drainage Basin D4



Summary for Subcatchment D5: Drainage Basin D5

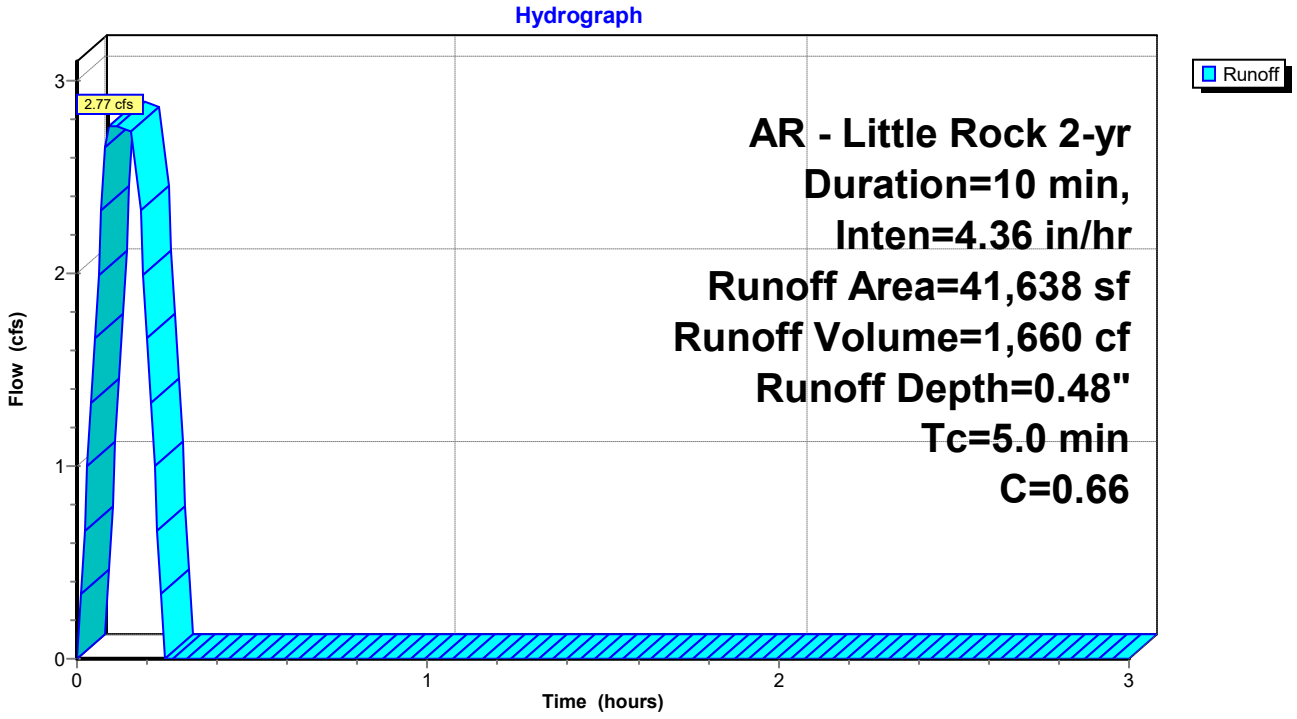
Runoff = 2.77 cfs @ 0.09 hrs, Volume= 1,660 cf, Depth= 0.48"
Routed to Pond DP1 : Re-Establised East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
21,201	0.40	Sod Yard, Natural Vegetation
20,437	0.92	Paving, Sidewalks
41,638	0.66	Weighted Average
41,638		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D5: Drainage Basin D5



Summary for Subcatchment D6: Drainage Basin D6

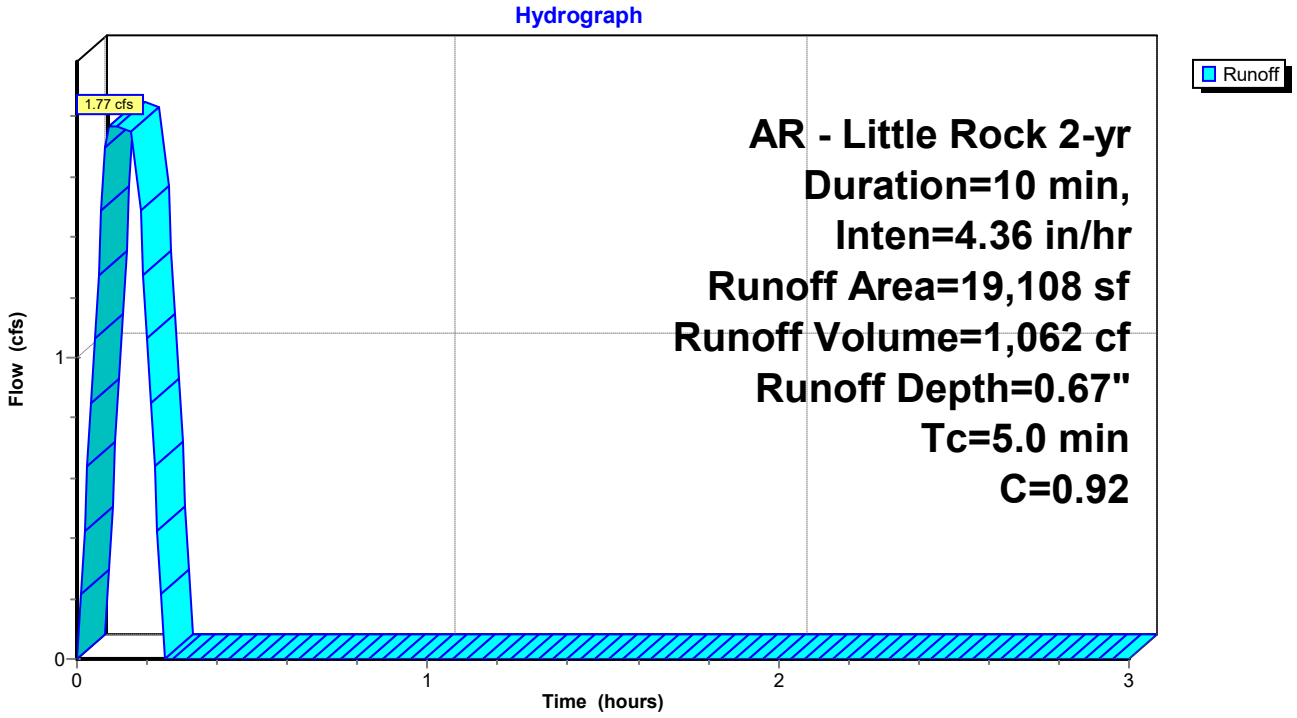
Runoff = 1.77 cfs @ 0.09 hrs, Volume= 1,062 cf, Depth= 0.67"
Routed to Pond DP1 : Re-Establised East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
19,108	0.92	Roof
19,108		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D6: Drainage Basin D6



Summary for Subcatchment D7: Drainage Basin D7

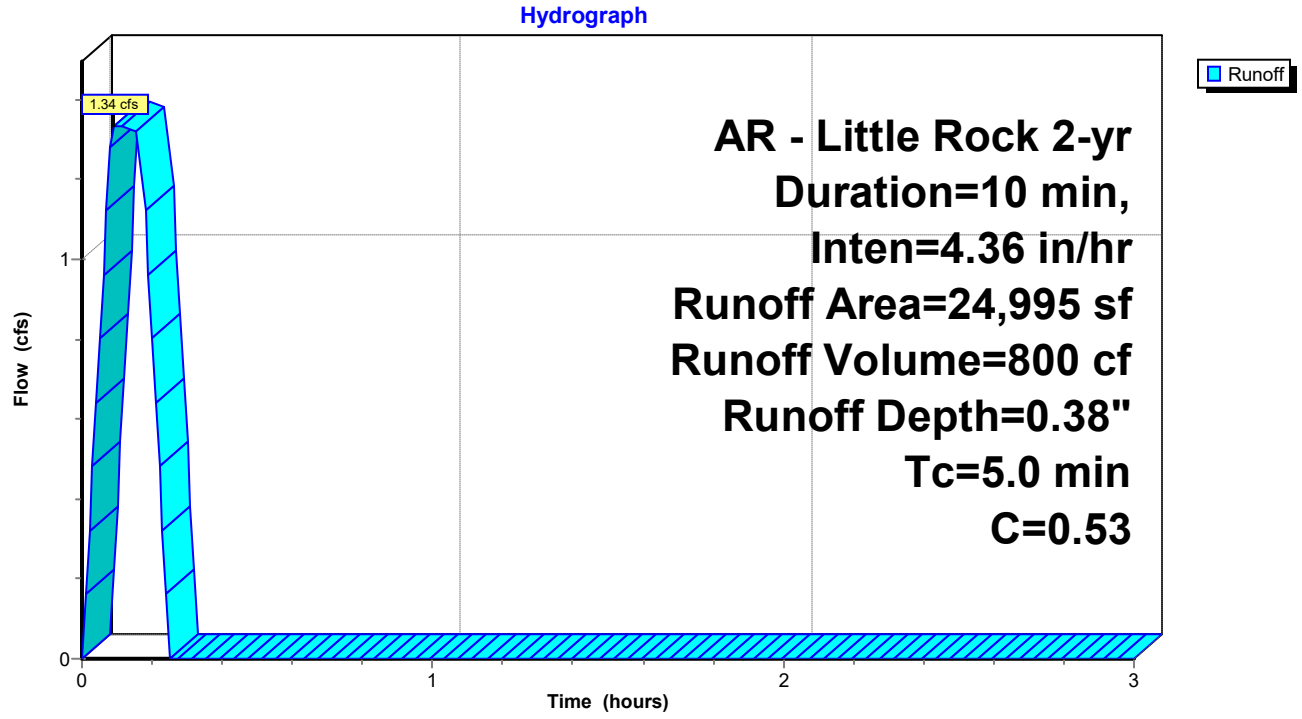
Runoff = 1.34 cfs @ 0.09 hrs, Volume= 800 cf, Depth= 0.38"
Routed to Link Post-Dev : APPROX DISCHARGE

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
18,798	0.40	Sod Yard, Natural Vegetation
6,197	0.92	Paving, Sidewalks
24,995	0.53	Weighted Average
24,995		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D7: Drainage Basin D7



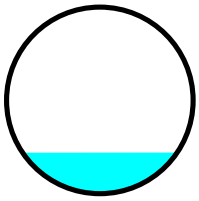
Summary for Reach P-A1: Pipe A1

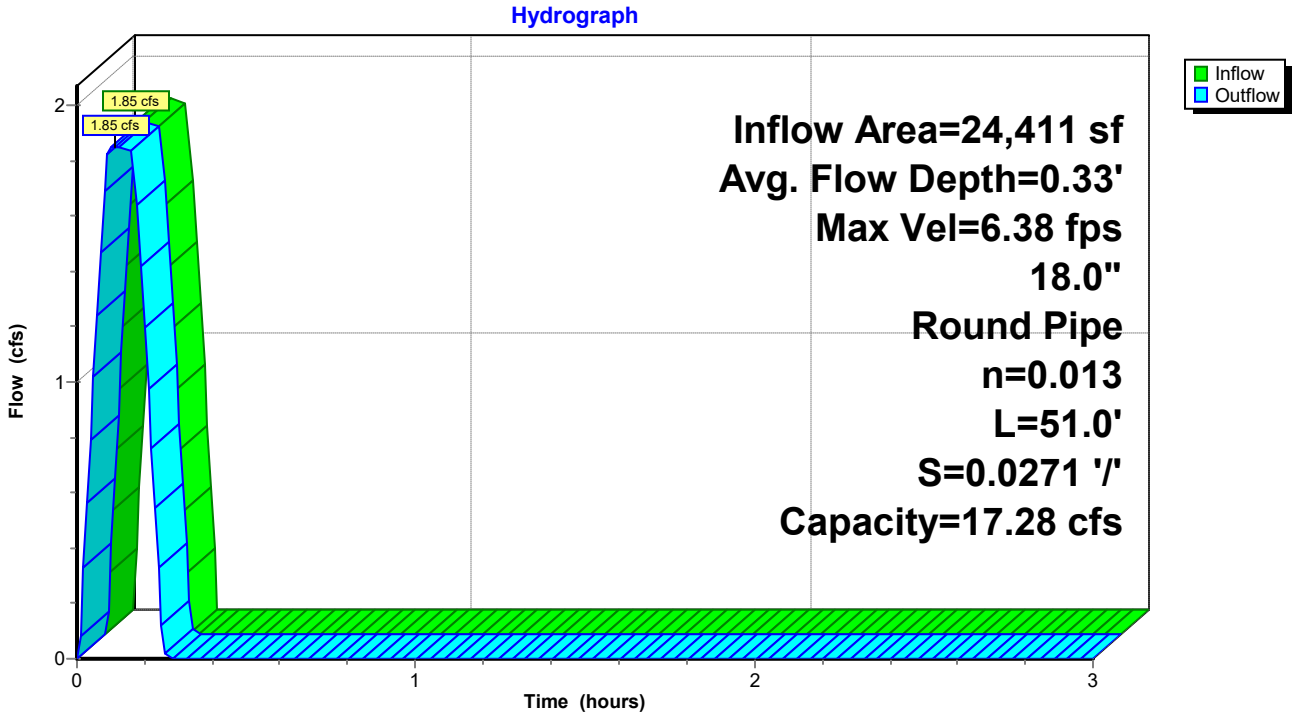
Inflow Area = 24,411 sf, 0.00% Impervious, Inflow Depth = 0.54" for 2-yr event
Inflow = 1.85 cfs @ 0.09 hrs, Volume= 1,106 cf
Outflow = 1.85 cfs @ 0.11 hrs, Volume= 1,106 cf, Atten= 0%, Lag= 1.2 min
Routed to Reach P-A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.38 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.53 fps, Avg. Travel Time= 0.2 min

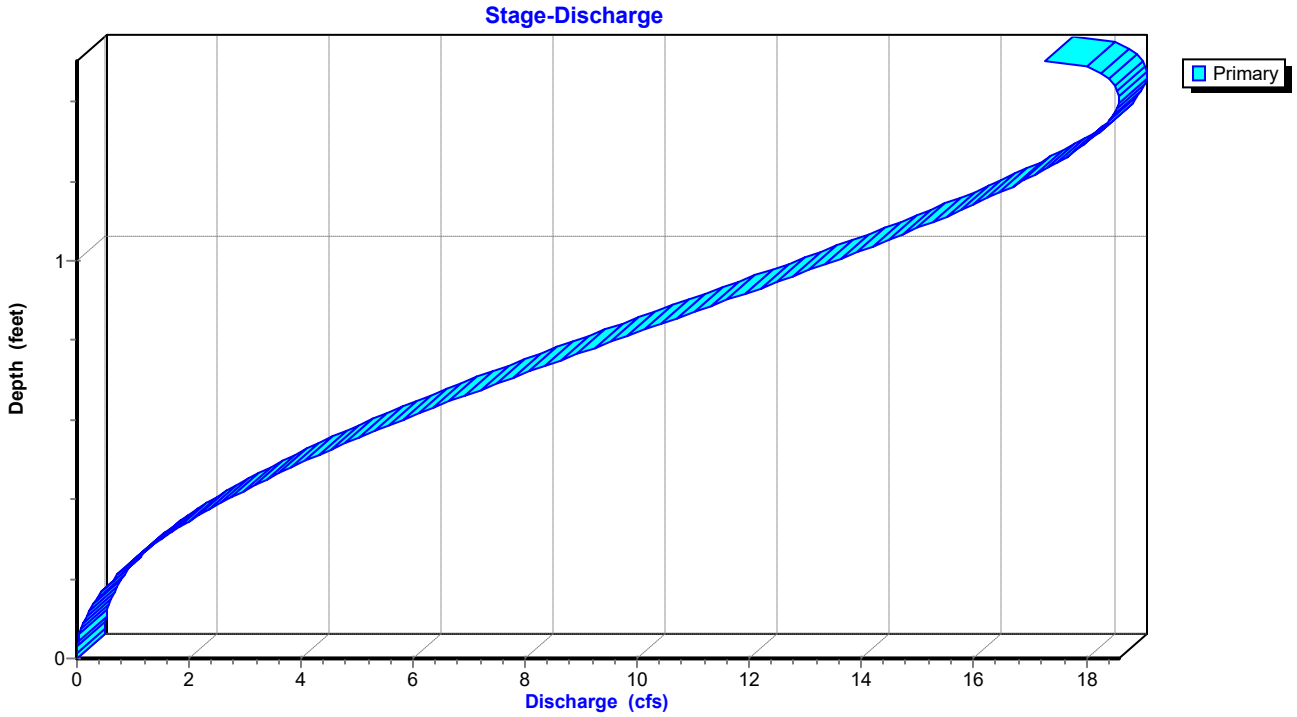
Peak Storage= 15 cf @ 0.09 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 1.24'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.28 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 51.0' Slope= 0.0271 '/'
Inlet Invert= 408.33', Outlet Invert= 406.95'





Reach P-A1: Pipe A1



Stage-Area-Storage for Reach P-A1: Pipe A1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
408.33	0.0	0
408.35	0.0	0
408.37	0.0	1
408.39	0.0	1
408.41	0.0	2
408.43	0.1	3
408.45	0.1	3
408.47	0.1	4
408.49	0.1	5
408.51	0.1	6
408.53	0.1	7
408.55	0.2	8
408.57	0.2	9
408.59	0.2	10
408.61	0.2	12
408.63	0.3	13
408.65	0.3	14
408.67	0.3	15
408.69	0.3	17
408.71	0.4	18
408.73	0.4	19
408.75	0.4	21
408.77	0.4	22
408.79	0.5	23
408.81	0.5	25
408.83	0.5	26
408.85	0.5	28
408.87	0.6	29
408.89	0.6	31
408.91	0.6	32
408.93	0.7	34
408.95	0.7	35
408.97	0.7	37
408.99	0.7	38
409.01	0.8	40
409.03	0.8	41
409.05	0.8	43
409.07	0.9	44
409.09	0.9	46
409.11	0.9	47
409.13	1.0	49
409.15	1.0	50
409.17	1.0	52
409.19	1.0	53
409.21	1.1	55
409.23	1.1	56
409.25	1.1	58
409.27	1.2	59
409.29	1.2	61
409.31	1.2	62
409.33	1.3	64
409.35	1.3	65
409.37	1.3	67
409.39	1.3	68
409.41	1.4	69
409.43	1.4	71
409.45	1.4	72
409.47	1.4	73
409.49	1.5	75
409.51	1.5	76
409.53	1.5	77
409.55	1.5	78
409.57	1.6	80
409.59	1.6	81
409.61	1.6	82
409.63	1.6	83
409.65	1.6	84
409.67	1.7	85
409.69	1.7	86
409.71	1.7	87
409.73	1.7	88
409.75	1.7	88
409.77	1.7	89
409.79	1.8	89
409.81	1.8	90
409.83	**1.8**	**90**

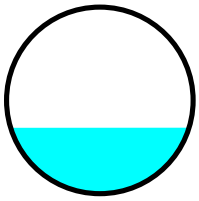
Summary for Reach P-A2: Pipe A2

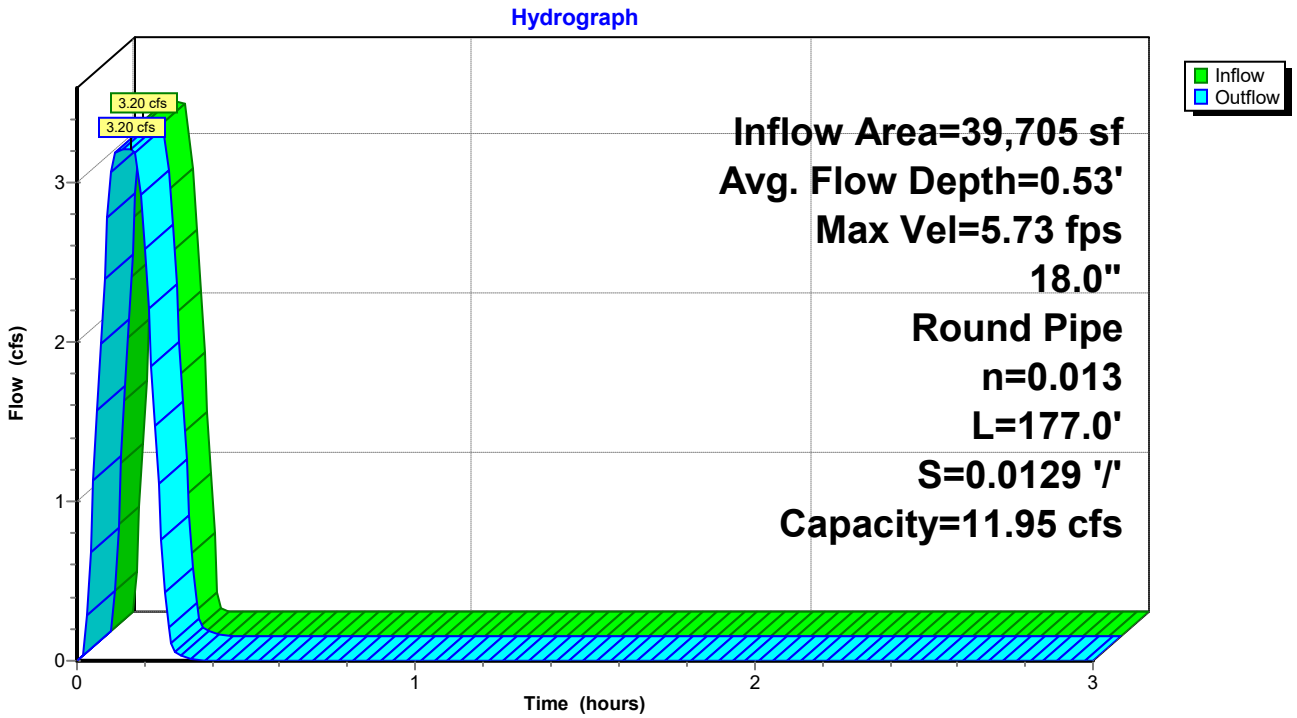
Inflow Area = 39,705 sf, 0.00% Impervious, Inflow Depth = 0.58" for 2-yr event
Inflow = 3.20 cfs @ 0.11 hrs, Volume= 1,919 cf
Outflow = 3.20 cfs @ 0.16 hrs, Volume= 1,919 cf, Atten= 0%, Lag= 3.0 min
Routed to Reach P-A3 : Pipe A3

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.73 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 1.3 min

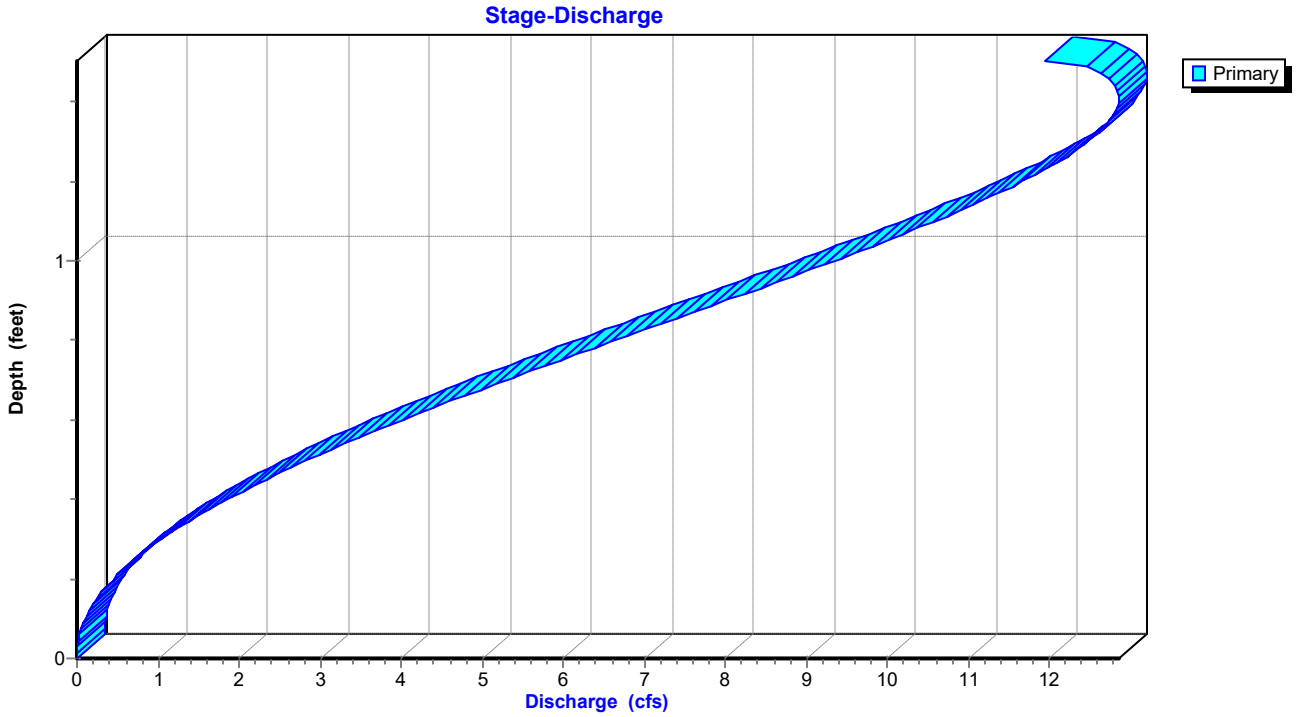
Peak Storage= 99 cf @ 0.16 hrs
Average Depth at Peak Storage= 0.53' , Surface Width= 1.43'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.95 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 177.0' Slope= 0.0129 '/'
Inlet Invert= 406.85', Outlet Invert= 404.56'





Reach P-A2: Pipe A2



Stage-Area-Storage for Reach P-A2: Pipe A2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
406.85	0.0	0
406.87	0.0	1
406.89	0.0	2
406.91	0.0	4
406.93	0.0	6
406.95	0.1	9
406.97	0.1	12
406.99	0.1	15
407.01	0.1	18
407.03	0.1	21
407.05	0.1	25
407.07	0.2	28
407.09	0.2	32
407.11	0.2	36
407.13	0.2	40
407.15	0.3	45
407.17	0.3	49
407.19	0.3	53
407.21	0.3	58
407.23	0.4	62
407.25	0.4	67
407.27	0.4	72
407.29	0.4	76
407.31	0.5	81
407.33	0.5	86
407.35	0.5	91
407.37	0.5	96
407.39	0.6	101
407.41	0.6	106
407.43	0.6	112
407.45	0.7	117
407.47	0.7	122
407.49	0.7	127
407.51	0.7	133
407.53	0.8	138
407.55	0.8	143
407.57	0.8	148
407.59	0.9	154
407.61	0.9	159
407.63	0.9	164
407.65	1.0	170
407.67	1.0	175
407.69	1.0	180
407.71	1.0	185
407.73	1.1	191
407.75	1.1	196
407.77	1.1	201
407.79	1.2	206
407.81	1.2	211
407.83	1.2	216
407.85	1.3	222
407.87	1.3	226
407.89	1.3	231
407.91	1.3	236
407.93	1.4	241
407.95	1.4	246
407.97	1.4	250
407.99	1.4	255
408.01	1.5	260
408.03	1.5	264
408.05	1.5	268
408.07	1.5	272
408.09	1.6	277
408.11	1.6	280
408.13	1.6	284
408.15	1.6	288
408.17	1.6	292
408.19	1.7	295
408.21	1.7	298
408.23	1.7	301
408.25	1.7	304
408.27	1.7	306
408.29	1.7	309
408.31	1.8	310
408.33	1.8	312
408.35	**1.8**	**313**

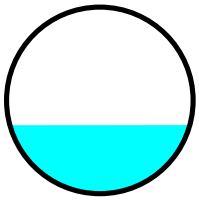
Summary for Reach P-A3: Pipe A3

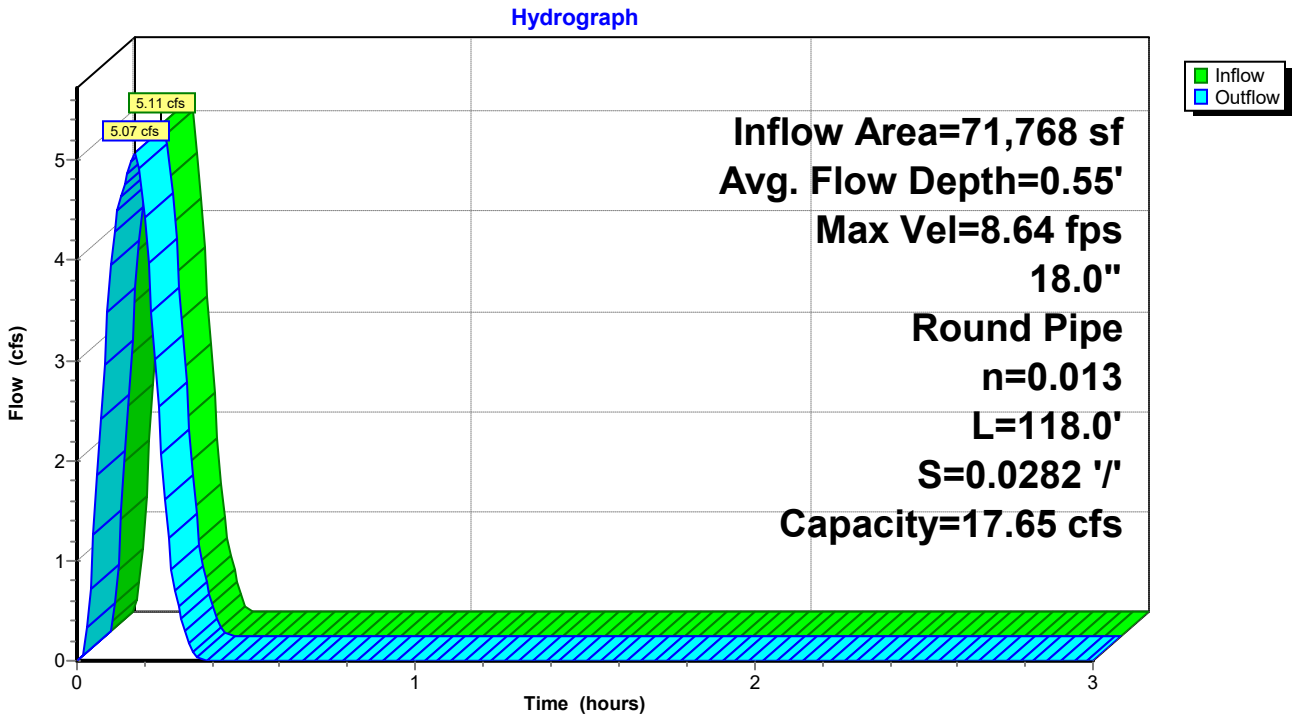
Inflow Area = 71,768 sf, 0.00% Impervious, Inflow Depth = 0.52" for 2-yr event
Inflow = 5.11 cfs @ 0.17 hrs, Volume= 3,082 cf
Outflow = 5.07 cfs @ 0.17 hrs, Volume= 3,082 cf, Atten= 1%, Lag= 0.3 min
Routed to Reach P-A4 : Pipe A4

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.64 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.61 fps, Avg. Travel Time= 0.5 min

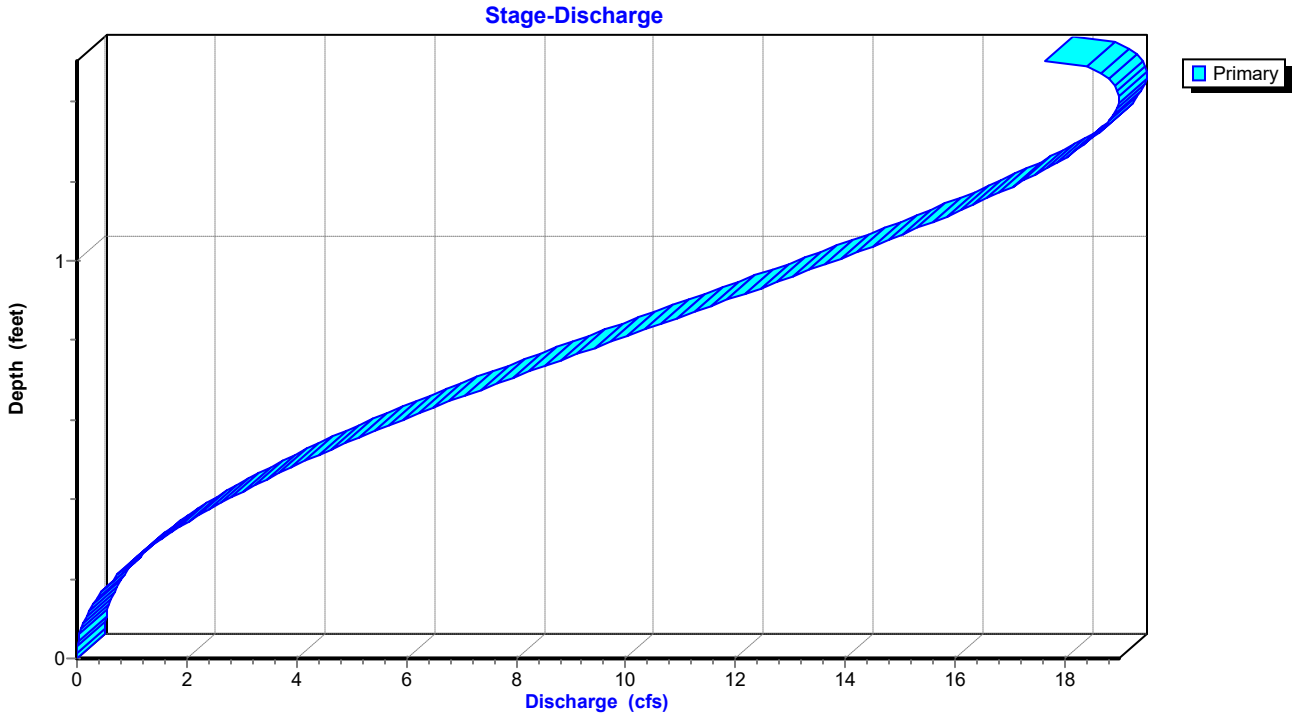
Peak Storage= 70 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.55' , Surface Width= 1.45'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.65 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 118.0' Slope= 0.0282 '/'
Inlet Invert= 404.46', Outlet Invert= 401.13'





Reach P-A3: Pipe A3



Stage-Area-Storage for Reach P-A3: Pipe A3

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
404.46	0.0	0
404.48	0.0	1
404.50	0.0	2
404.52	0.0	3
404.54	0.0	4
404.56	0.1	6
404.58	0.1	8
404.60	0.1	10
404.62	0.1	12
404.64	0.1	14
404.66	0.1	17
404.68	0.2	19
404.70	0.2	22
404.72	0.2	24
404.74	0.2	27
404.76	0.3	30
404.78	0.3	33
404.80	0.3	35
404.82	0.3	38
404.84	0.4	42
404.86	0.4	45
404.88	0.4	48
404.90	0.4	51
404.92	0.5	54
404.94	0.5	58
404.96	0.5	61
404.98	0.5	64
405.00	0.6	68
405.02	0.6	71
405.04	0.6	74
405.06	0.7	78
405.08	0.7	81
405.10	0.7	85
405.12	0.7	88
405.14	0.8	92
405.16	0.8	95
405.18	0.8	99
405.20	0.9	102
405.22	0.9	106
405.24	0.9	110
405.26	1.0	113
405.28	1.0	117
405.30	1.0	120
405.32	1.0	124
405.34	1.1	127
405.36	1.1	131
405.38	1.1	134
405.40	1.2	138
405.42	1.2	141
405.44	1.2	144
405.46	1.3	148
405.48	1.3	151
405.50	1.3	154
405.52	1.3	158
405.54	1.4	161
405.56	1.4	164
405.58	1.4	167
405.60	1.4	170
405.62	1.5	173
405.64	1.5	176
405.66	1.5	179
405.68	1.5	182
405.70	1.6	184
405.72	1.6	187
405.74	1.6	190
405.76	1.6	192
405.78	1.6	194
405.80	1.7	197
405.82	1.7	199
405.84	1.7	201
405.86	1.7	203
405.88	1.7	204
405.90	1.7	206
405.92	1.8	207
405.94	1.8	208
405.96	**1.8**	**209**

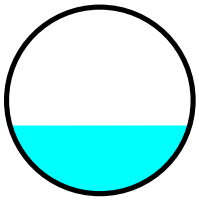
Summary for Reach P-A4: Pipe A4

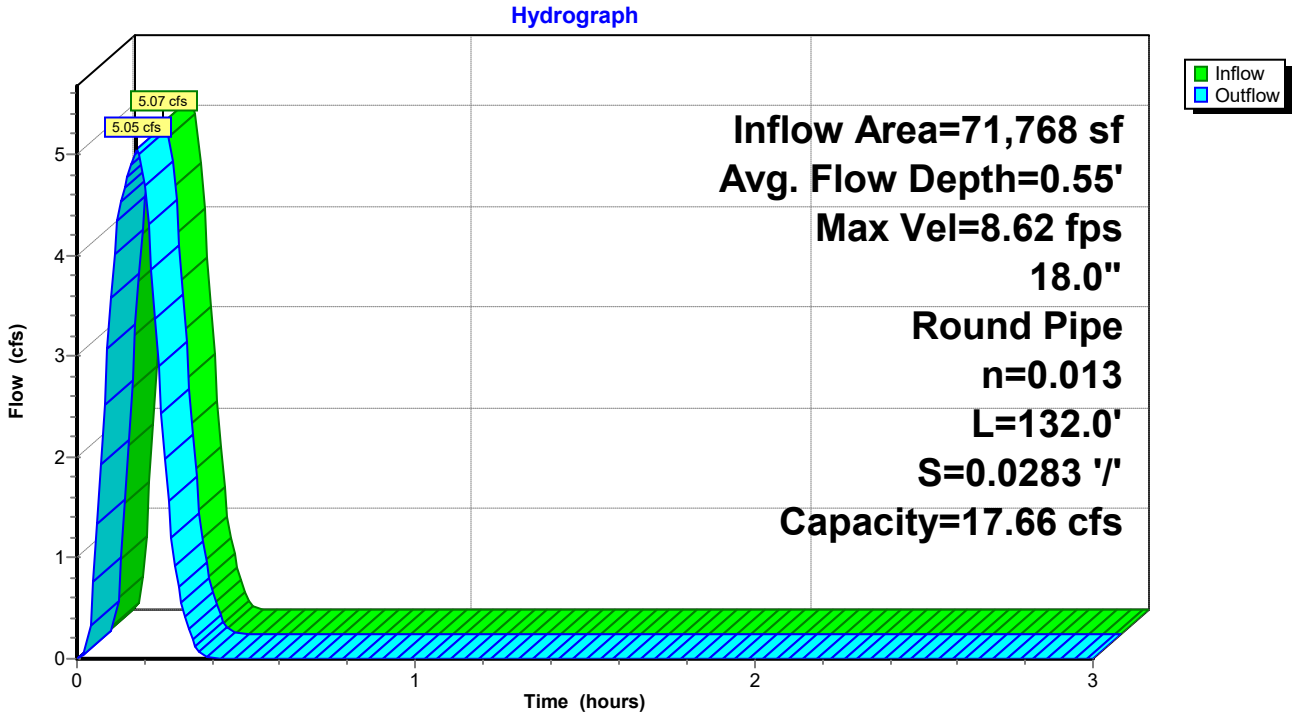
Inflow Area = 71,768 sf, 0.00% Impervious, Inflow Depth = 0.52" for 2-yr event
Inflow = 5.07 cfs @ 0.17 hrs, Volume= 3,082 cf
Outflow = 5.05 cfs @ 0.18 hrs, Volume= 3,082 cf, Atten= 0%, Lag= 0.4 min
Routed to Pond DP1 : Re-Establised East Pond

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.62 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.43 fps, Avg. Travel Time= 0.6 min

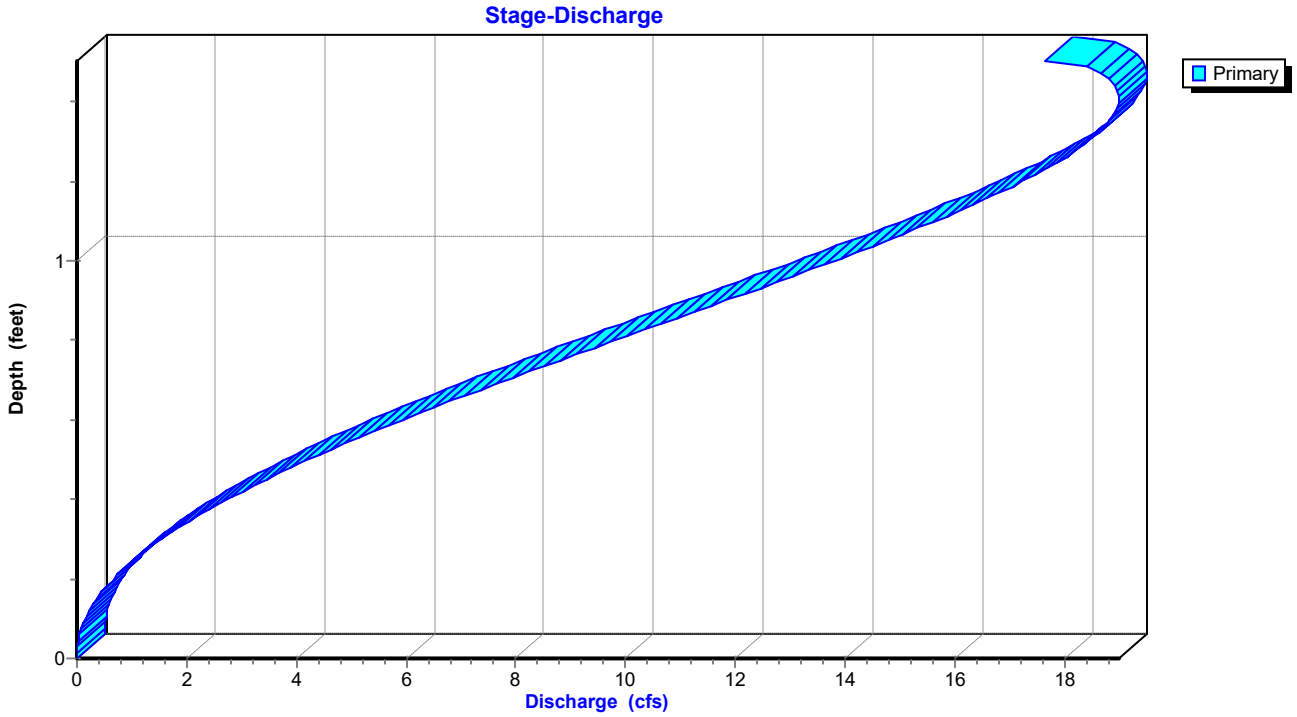
Peak Storage= 77 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.55' , Surface Width= 1.45'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.66 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 132.0' Slope= 0.0283 '/'
Inlet Invert= 401.03', Outlet Invert= 397.30'





Reach P-A4: Pipe A4



Stage-Area-Storage for Reach P-A4: Pipe A4

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
401.03	0.0	0
401.05	0.0	1
401.07	0.0	2
401.09	0.0	3
401.11	0.0	5
401.13	0.1	7
401.15	0.1	9
401.17	0.1	11
401.19	0.1	13
401.21	0.1	16
401.23	0.1	18
401.25	0.2	21
401.27	0.2	24
401.29	0.2	27
401.31	0.2	30
401.33	0.3	33
401.35	0.3	36
401.37	0.3	40
401.39	0.3	43
401.41	0.4	46
401.43	0.4	50
401.45	0.4	53
401.47	0.4	57
401.49	0.5	61
401.51	0.5	64
401.53	0.5	68
401.55	0.5	72
401.57	0.6	76
401.59	0.6	79
401.61	0.6	83
401.63	0.7	87
401.65	0.7	91
401.67	0.7	95
401.69	0.7	99
401.71	0.8	103
401.73	0.8	107
401.75	0.8	111
401.77	0.9	115
401.79	0.9	119
401.81	0.9	123
401.83	1.0	127
401.85	1.0	130
401.87	1.0	134
401.89	1.0	138
401.91	1.1	142
401.93	1.1	146
401.95	1.1	150
401.97	1.2	154
401.99	1.2	158
402.01	1.2	161
402.03	1.3	165
402.05	1.3	169
402.07	1.3	173
402.09	1.3	176
402.11	1.4	180
402.13	1.4	183
402.15	1.4	187
402.17	1.4	190
402.19	1.5	194
402.21	1.5	197
402.23	1.5	200
402.25	1.5	203
402.27	1.6	206
402.29	1.6	209
402.31	1.6	212
402.33	1.6	215
402.35	1.6	217
402.37	1.7	220
402.39	1.7	222
402.41	1.7	225
402.43	1.7	227
402.45	1.7	228
402.47	1.7	230
402.49	1.8	232
402.51	1.8	233
402.53	**1.8**	**233**

Summary for Pond DP1: Re-Establised East Pond

Inflow Area = 132,514 sf, 0.00% Impervious, Inflow Depth = 0.53" for 2-yr event
Inflow = 9.45 cfs @ 0.16 hrs, Volume= 5,804 cf
Outflow = 5.39 cfs @ 0.22 hrs, Volume= 5,804 cf, Atten= 43%, Lag= 3.6 min
Primary = 5.39 cfs @ 0.22 hrs, Volume= 5,804 cf
Routed to Link Post-Dev : APPROX DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 397.63' @ 0.22 hrs Storage= 2,855 cf

Plug-Flow detention time= 7.8 min calculated for 5,804 cf (100% of inflow)
Center-of-Mass det. time= 7.7 min (16.7 - 9.0)

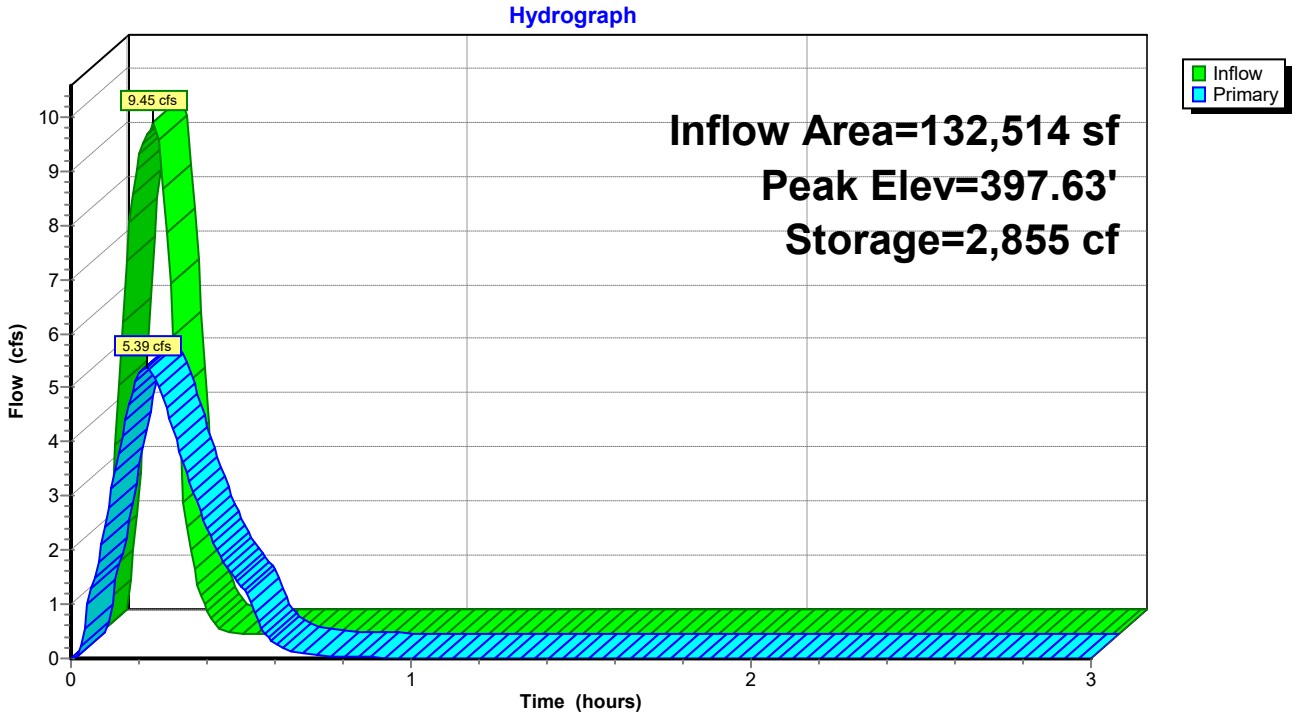
Volume	Invert	Avail.Storage	Storage Description
#1	396.00'	8,557 cf	**Custom Stage Data** Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
396.00	0	0
396.50	250	250
397.00	1,092	1,342
398.00	2,387	3,729
399.00	2,405	6,134
400.00	2,423	8,557

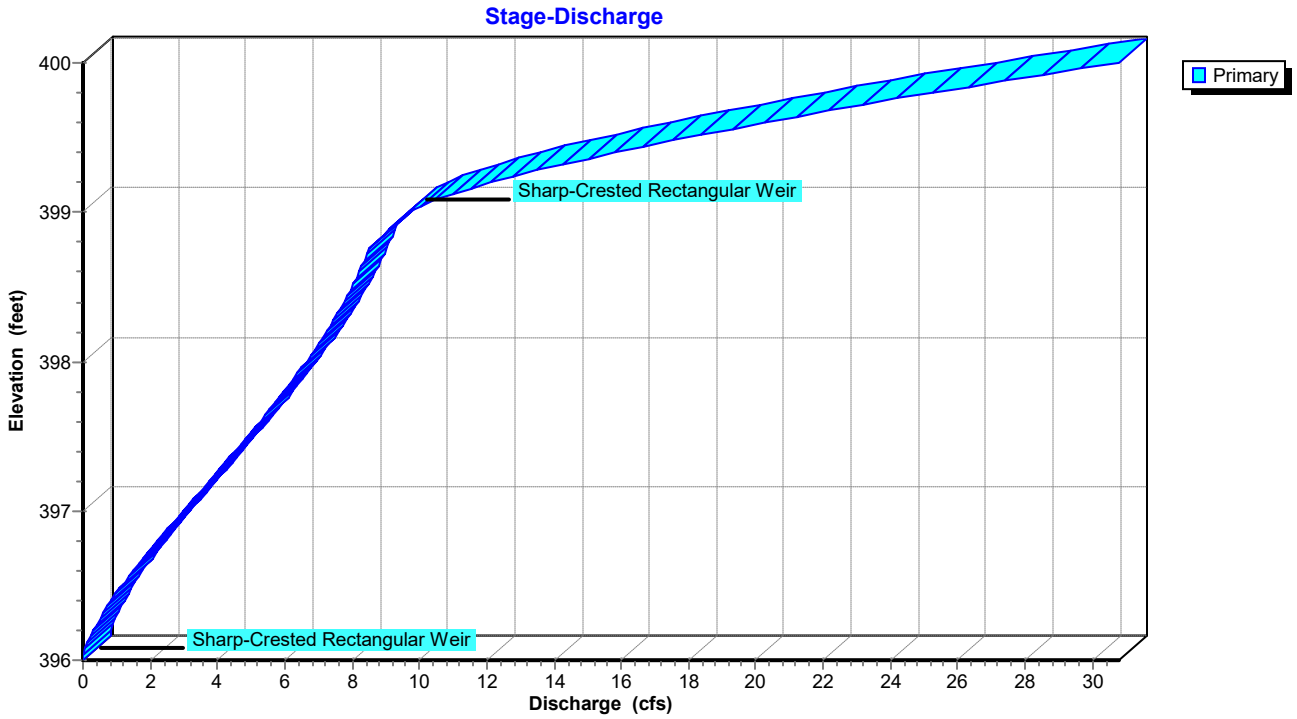
Device	Routing	Invert	Outlet Devices
#1	Primary	399.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	396.00'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 10.0' Crest Height

Primary OutFlow Max=5.38 cfs @ 0.22 hrs HW=397.63' (Free Discharge)
└**1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 5.38 cfs @ 4.26 fps)

Pond DP1: Re-Establised East Pond



Pond DP1: Re-Establised East Pond



Stage-Area-Storage for Pond DP1: Re-Establised East Pond

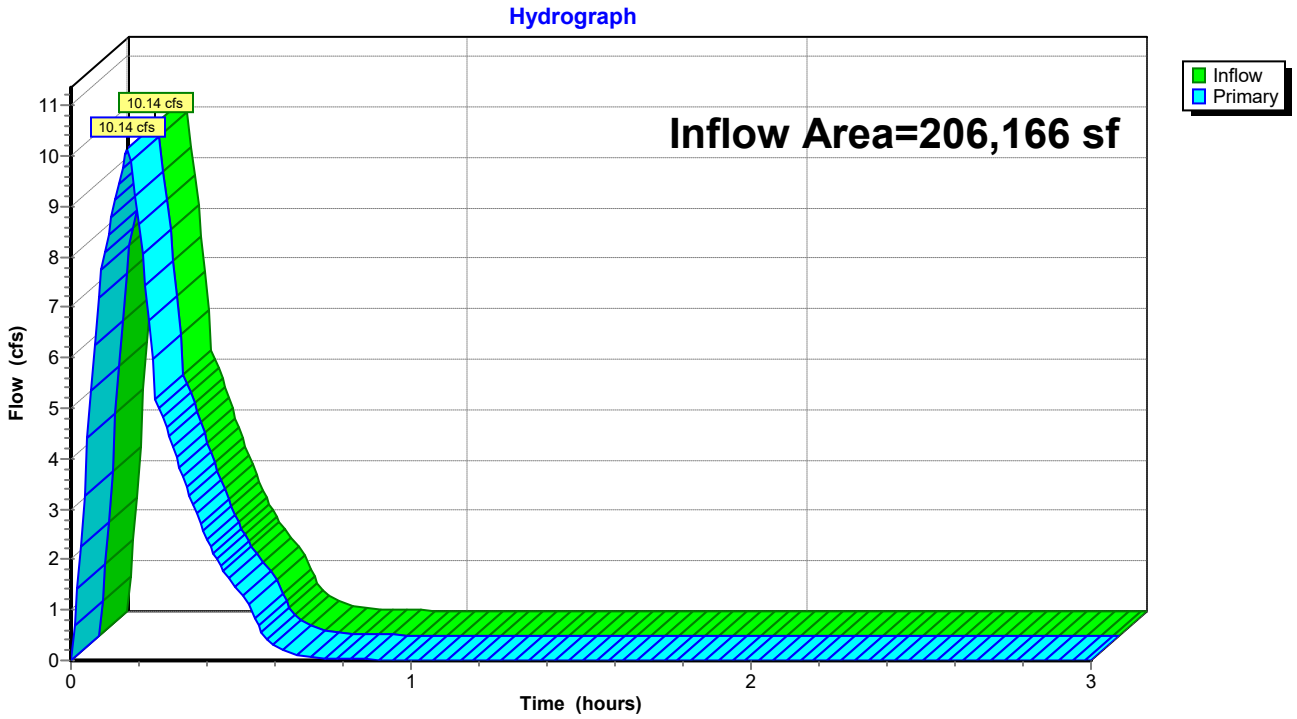
Elevation (feet)	Storage (cubic-feet)
396.00	0
396.05	25
396.10	50
396.15	75
396.20	100
396.25	125
396.30	150
396.35	175
396.40	200
396.45	225
396.50	250
396.55	359
396.60	468
396.65	578
396.70	687
396.75	796
396.80	905
396.85	1,014
396.90	1,124
396.95	1,233
397.00	1,342
397.05	1,461
397.10	1,581
397.15	1,700
397.20	1,819
397.25	1,939
397.30	2,058
397.35	2,177
397.40	2,297
397.45	2,416
397.50	2,536
397.55	2,655
397.60	2,774
397.65	2,894
397.70	3,013
397.75	3,132
397.80	3,252
397.85	3,371
397.90	3,490
397.95	3,610
398.00	3,729
398.05	3,849
398.10	3,970
398.15	4,090
398.20	4,210
398.25	4,330
398.30	4,451
398.35	4,571
398.40	4,691
398.45	4,811
398.50	4,932
398.55	5,052
398.60	5,172
398.65	5,292
398.70	5,412
398.75	5,533
398.80	5,653
398.85	5,773
398.90	5,893
398.95	6,014
399.00	6,134
399.05	6,255
399.10	6,376
399.15	6,497
399.20	6,619
399.25	6,740
399.30	6,861
399.35	6,982
399.40	7,103
399.45	7,224
399.50	7,346
399.55	7,467
399.60	7,588
399.65	7,709
399.70	7,830
399.75	7,951
399.80	8,072
399.85	8,194
399.90	8,315
399.95	8,436
400.00	**8,557**

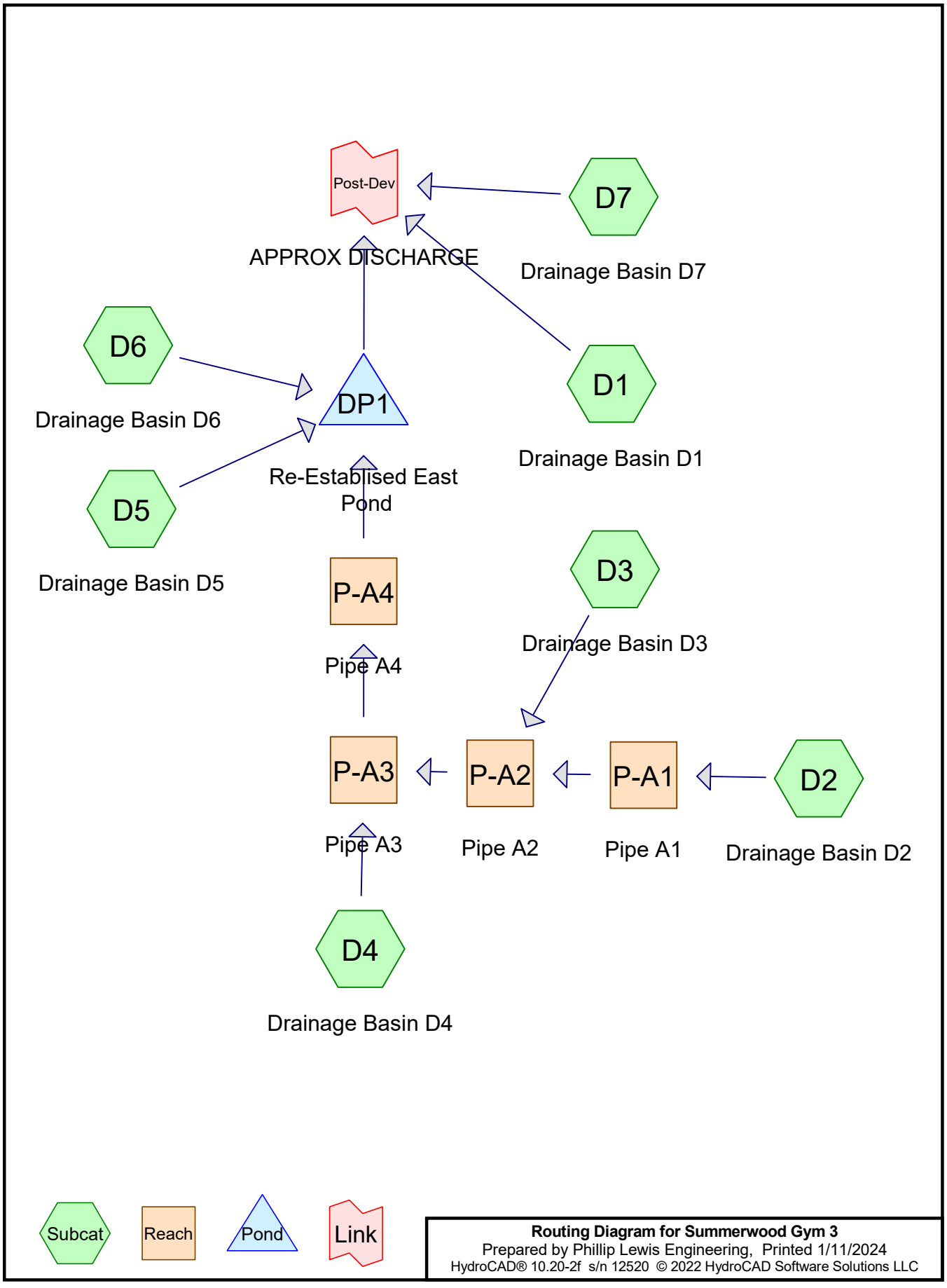
Summary for Link Post-Dev: APPROX DISCHARGE

Inflow Area = 206,166 sf, 0.00% Impervious, Inflow Depth = 0.53" for 2-yr event
Inflow = 10.14 cfs @ 0.17 hrs, Volume= 9,191 cf
Primary = 10.14 cfs @ 0.17 hrs, Volume= 9,191 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

Link Post-Dev: APPROX DISCHARGE





Routing Diagram for Summerwood Gym 3
Prepared by Phillip Lewis Engineering, Printed 1/11/2024
HydroCAD® 10.20-2f s/n 12520 © 2022 HydroCAD Software Solutions LLC

Summary for Subcatchment D1: Drainage Basin D1

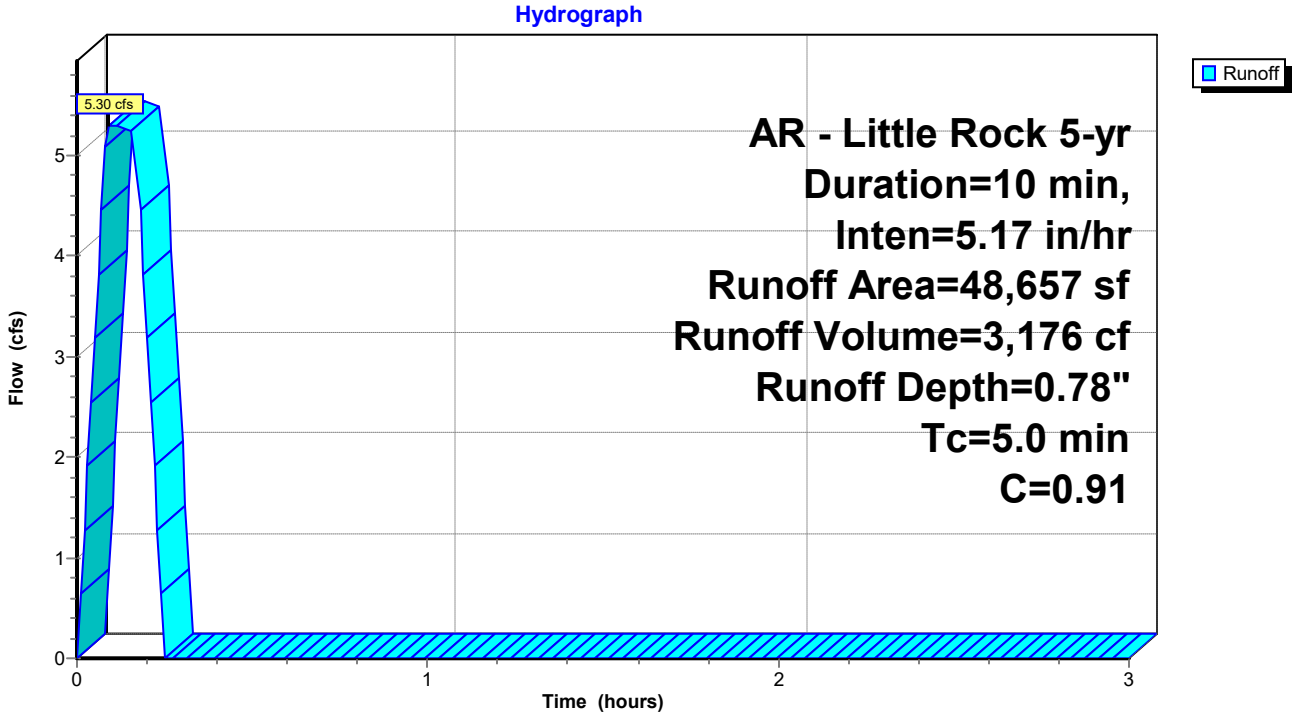
Runoff = 5.30 cfs @ 0.09 hrs, Volume= 3,176 cf, Depth= 0.78"
Routed to Link Post-Dev : APPROX DISCHARGE

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
3,421	0.40	Sod Yard
45,236	0.95	Rood, Drives, Sidewalks
48,657	0.91	Weighted Average
3,421		7.03% Pervious Area
45,236		92.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D1: Drainage Basin D1



Summary for Subcatchment D2: Drainage Basin D2

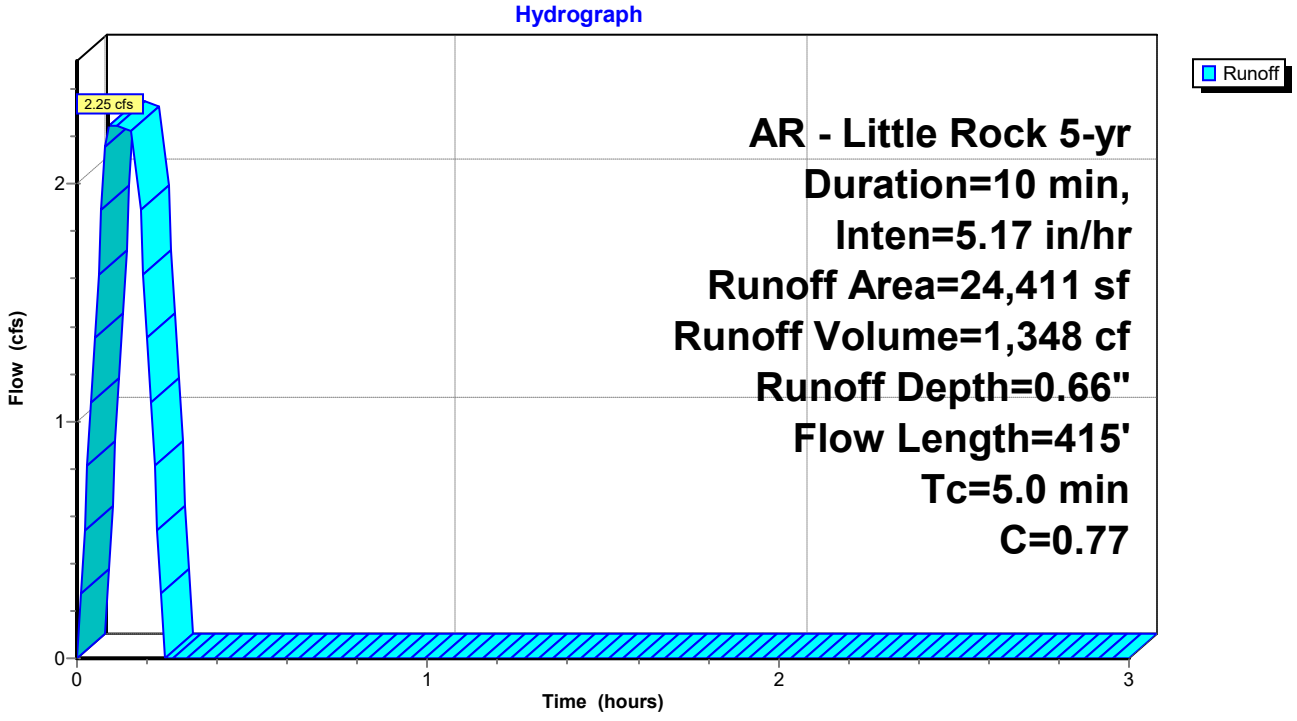
Runoff = 2.25 cfs @ 0.09 hrs, Volume= 1,348 cf, Depth= 0.66"
Routed to Reach P-A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
8,845	0.45	Rip Rap Embankment
15,566	0.95	Roof, Drives, Sidewalks
24,411	0.77	Weighted Average
8,845		36.23% Pervious Area
15,566		63.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D2: Drainage Basin D2



Summary for Subcatchment D3: Drainage Basin D3

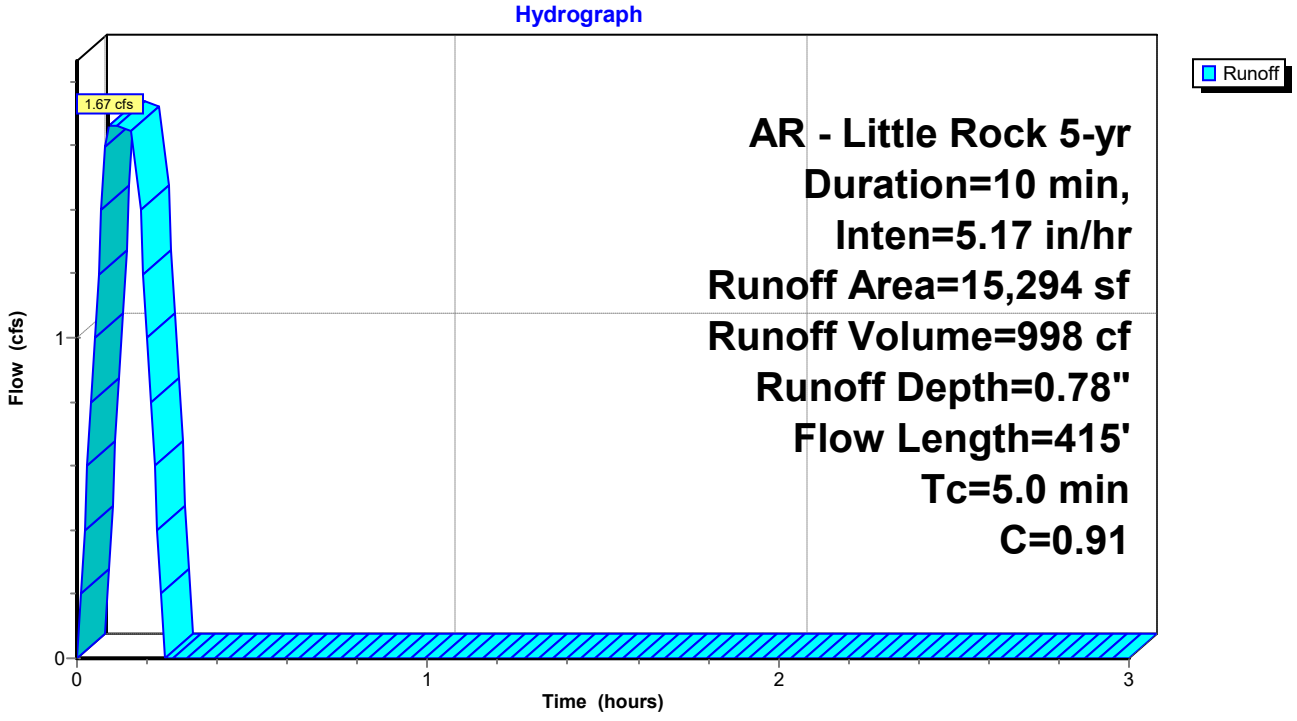
Runoff = 1.67 cfs @ 0.09 hrs, Volume= 998 cf, Depth= 0.78"
Routed to Reach P-A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
1,065	0.40	Sod Yard
14,229	0.95	Paving, Sidewalks
15,294	0.91	Weighted Average
1,065		6.96% Pervious Area
14,229		93.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D3: Drainage Basin D3



Summary for Subcatchment D4: Drainage Basin D4

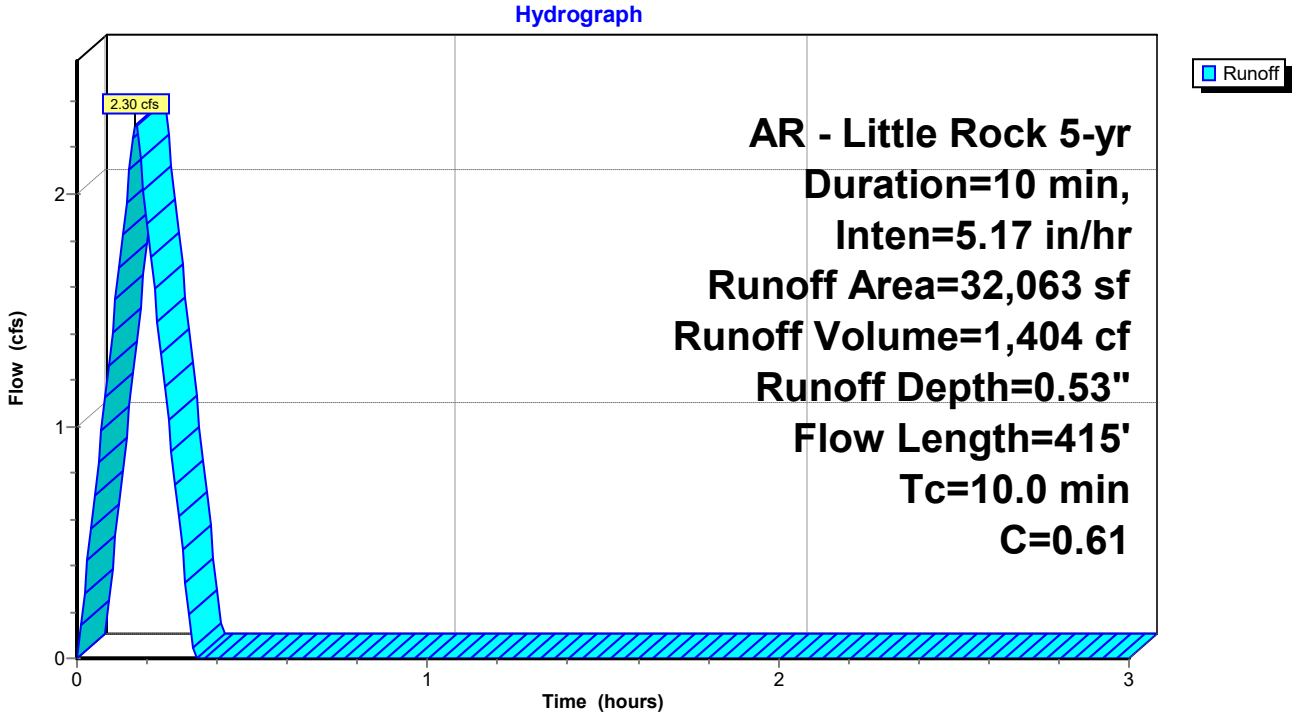
Runoff = 2.30 cfs @ 0.17 hrs, Volume= 1,404 cf, Depth= 0.53"
Routed to Reach P-A3 : Pipe A3

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
20,032	0.40	
12,031	0.95	
32,063	0.61	Weighted Average
20,032		62.48% Pervious Area
12,031		37.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D4: Drainage Basin D4



Summary for Subcatchment D5: Drainage Basin D5

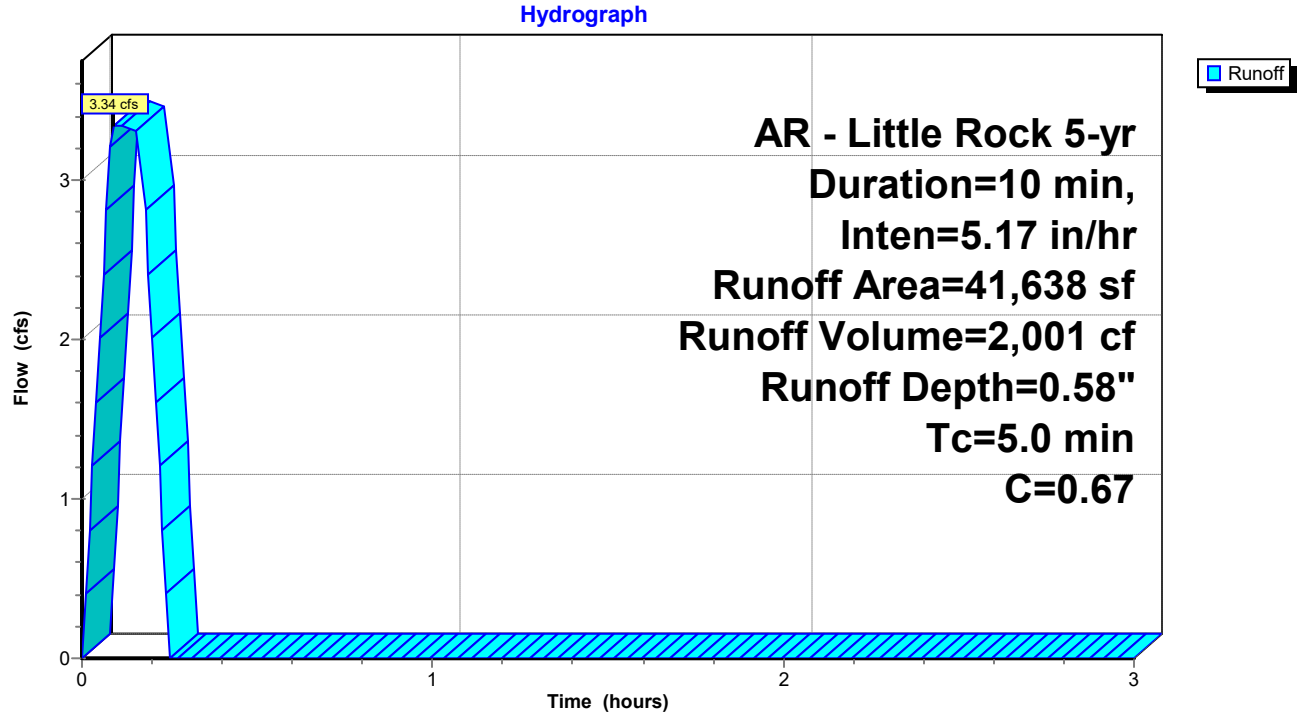
Runoff = 3.34 cfs @ 0.09 hrs, Volume= 2,001 cf, Depth= 0.58"
Routed to Pond DP1 : Re-Establised East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
21,201	0.40	Sod Yard, Natural Vegetation
20,437	0.95	Paving, Sidewalks
41,638	0.67	Weighted Average
21,201		50.92% Pervious Area
20,437		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D5: Drainage Basin D5



Summary for Subcatchment D6: Drainage Basin D6

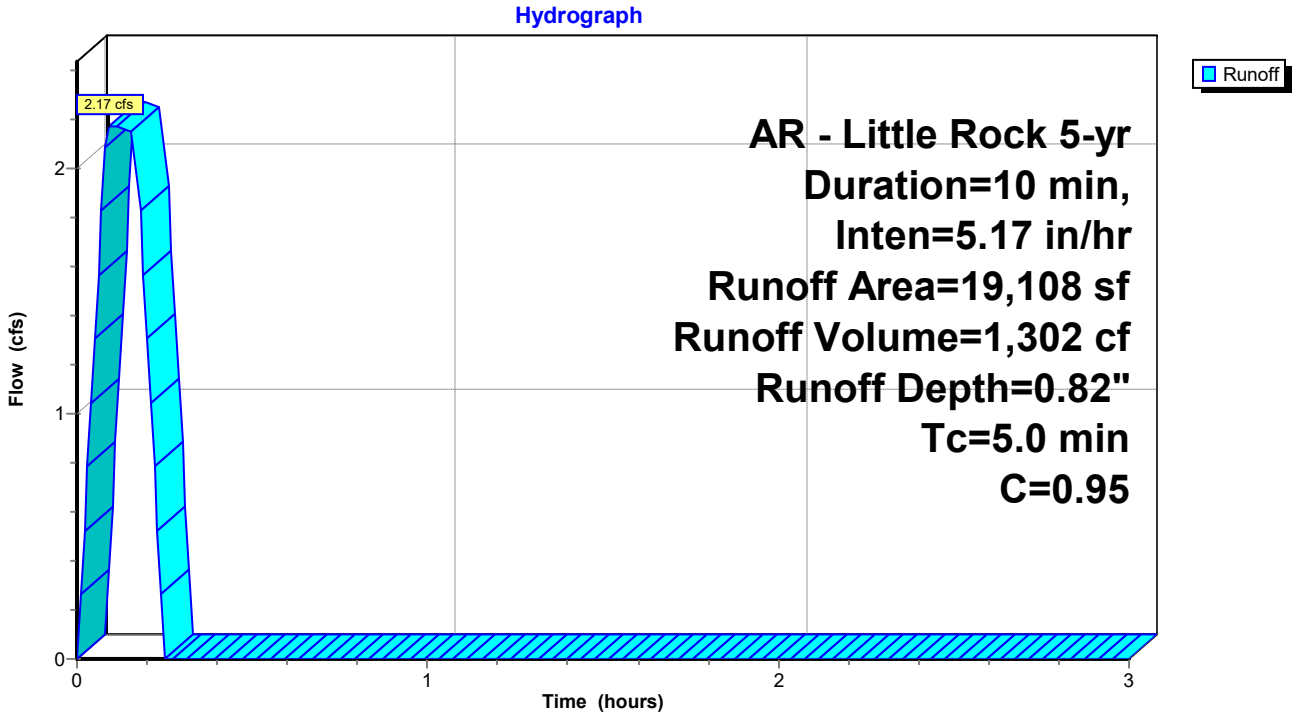
Runoff = 2.17 cfs @ 0.09 hrs, Volume= 1,302 cf, Depth= 0.82"
Routed to Pond DP1 : Re-Establised East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
19,108	0.95	Roof
19,108		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D6: Drainage Basin D6



Summary for Subcatchment D7: Drainage Basin D7

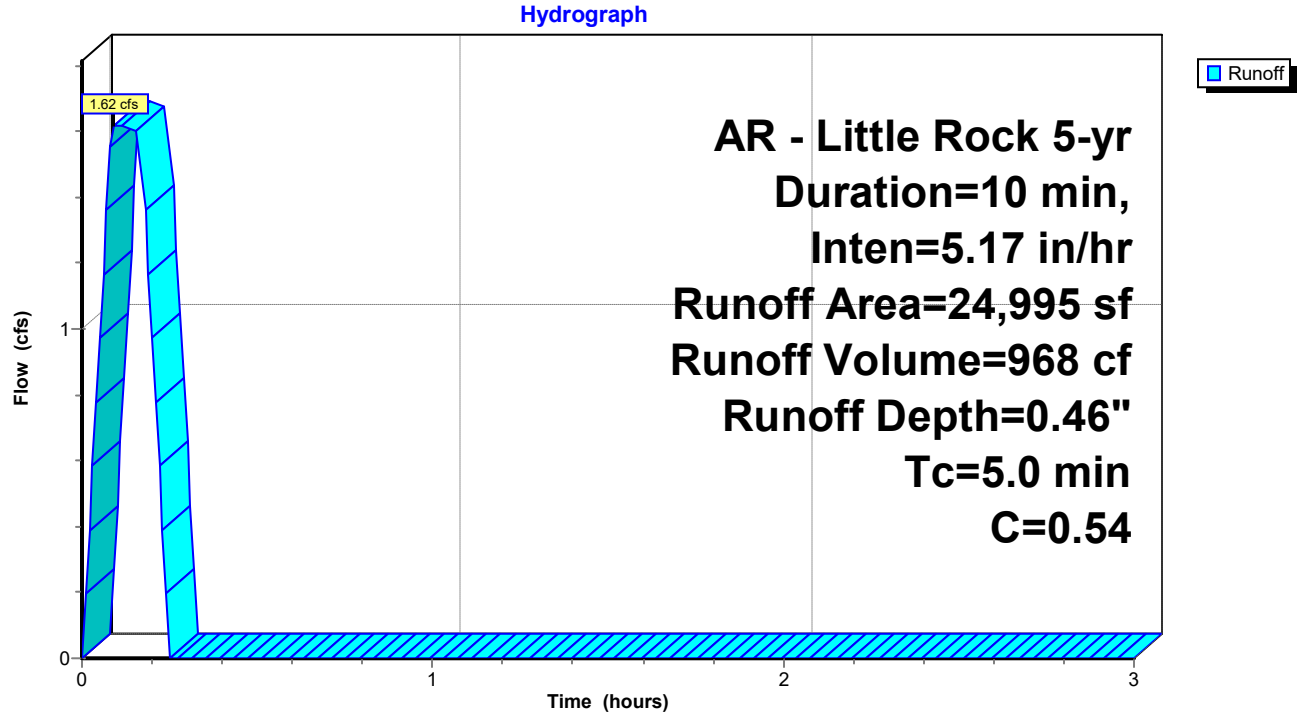
Runoff = 1.62 cfs @ 0.09 hrs, Volume= 968 cf, Depth= 0.46"
Routed to Link Post-Dev : APPROX DISCHARGE

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
18,798	0.40	Sod Yard, Natural Vegetation
6,197	0.95	Paving, Sidewalks
24,995	0.54	Weighted Average
18,798		75.21% Pervious Area
6,197		24.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D7: Drainage Basin D7



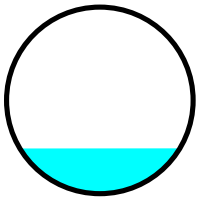
Summary for Reach P-A1: Pipe A1

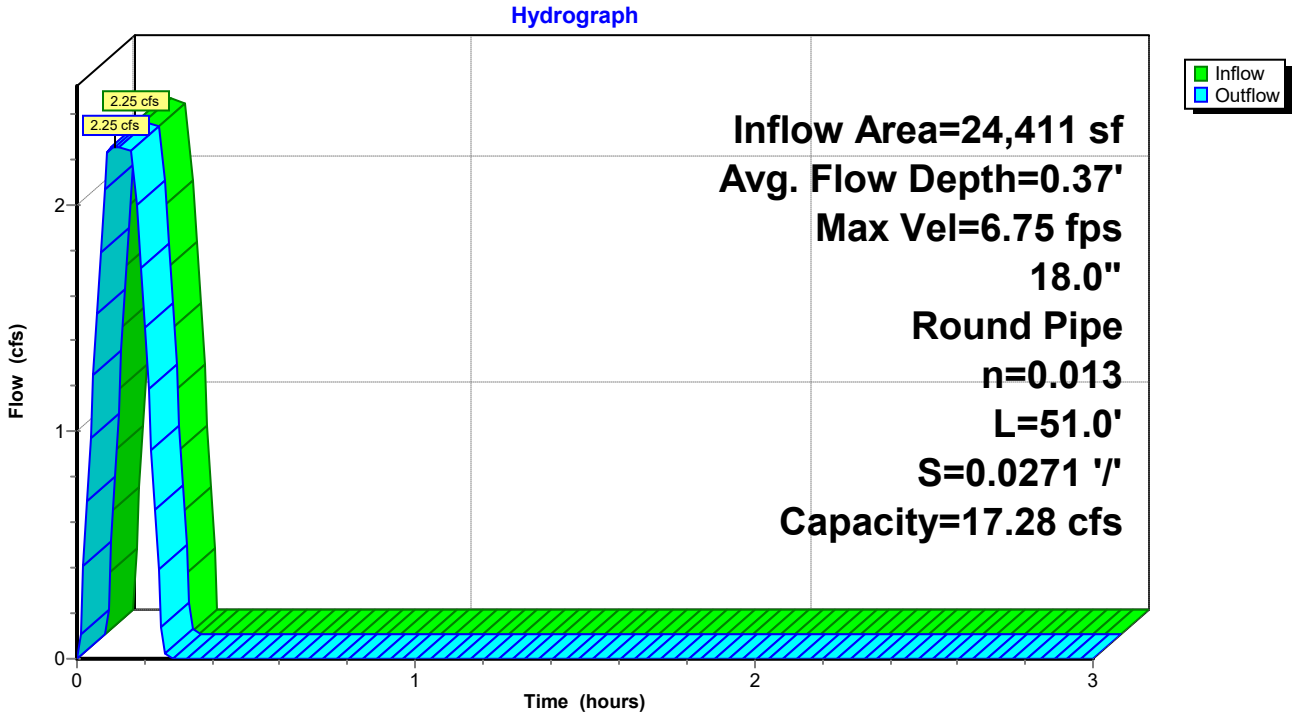
Inflow Area = 24,411 sf, 63.77% Impervious, Inflow Depth = 0.66" for 5-yr event
Inflow = 2.25 cfs @ 0.09 hrs, Volume= 1,348 cf
Outflow = 2.25 cfs @ 0.11 hrs, Volume= 1,348 cf, Atten= 0%, Lag= 1.2 min
Routed to Reach P-A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.75 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.79 fps, Avg. Travel Time= 0.2 min

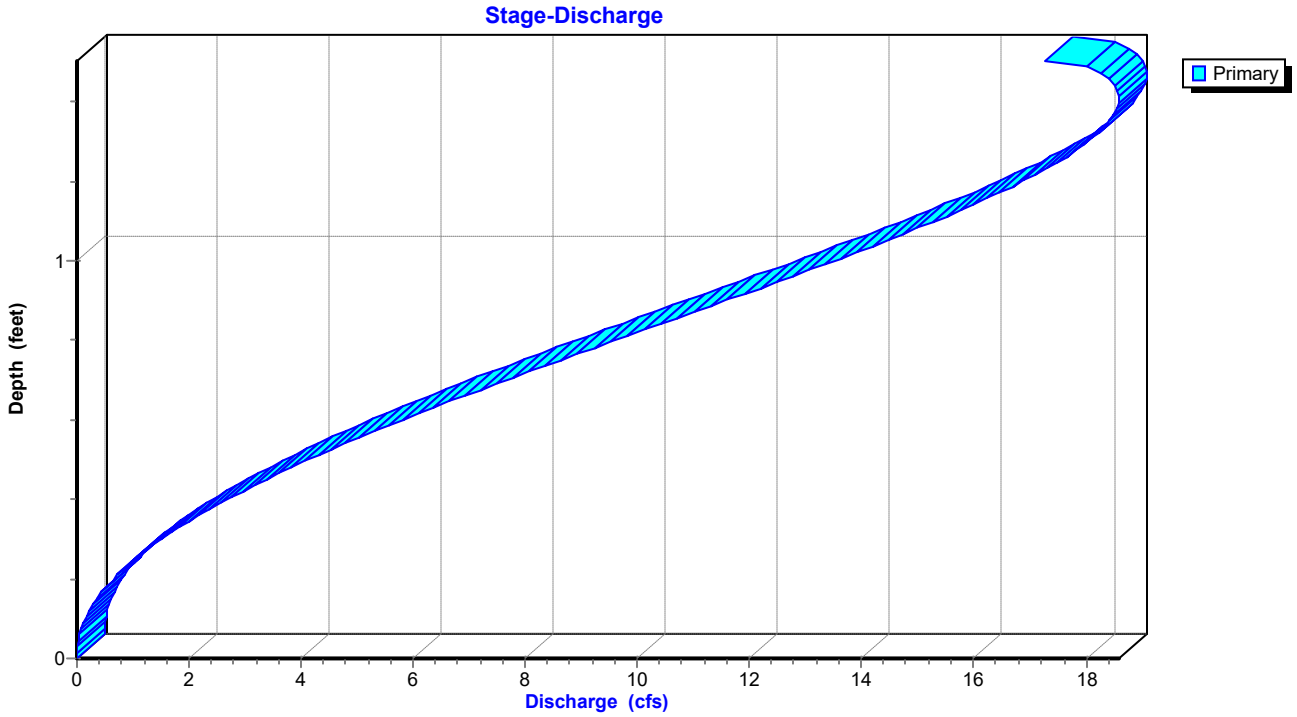
Peak Storage= 17 cf @ 0.09 hrs
Average Depth at Peak Storage= 0.37' , Surface Width= 1.29'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.28 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 51.0' Slope= 0.0271 '/'
Inlet Invert= 408.33', Outlet Invert= 406.95'





Reach P-A1: Pipe A1



Stage-Area-Storage for Reach P-A1: Pipe A1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
408.33	0.0	0
408.35	0.0	0
408.37	0.0	1
408.39	0.0	1
408.41	0.0	2
408.43	0.1	3
408.45	0.1	3
408.47	0.1	4
408.49	0.1	5
408.51	0.1	6
408.53	0.1	7
408.55	0.2	8
408.57	0.2	9
408.59	0.2	10
408.61	0.2	12
408.63	0.3	13
408.65	0.3	14
408.67	0.3	15
408.69	0.3	17
408.71	0.4	18
408.73	0.4	19
408.75	0.4	21
408.77	0.4	22
408.79	0.5	23
408.81	0.5	25
408.83	0.5	26
408.85	0.5	28
408.87	0.6	29
408.89	0.6	31
408.91	0.6	32
408.93	0.7	34
408.95	0.7	35
408.97	0.7	37
408.99	0.7	38
409.01	0.8	40
409.03	0.8	41
409.05	0.8	43
409.07	0.9	44
409.09	0.9	46
409.11	0.9	47
409.13	1.0	49
409.15	1.0	50
409.17	1.0	52
409.19	1.0	53
409.21	1.1	55
409.23	1.1	56
409.25	1.1	58
409.27	1.2	59
409.29	1.2	61
409.31	1.2	62
409.33	1.3	64
409.35	1.3	65
409.37	1.3	67
409.39	1.3	68
409.41	1.4	69
409.43	1.4	71
409.45	1.4	72
409.47	1.4	73
409.49	1.5	75
409.51	1.5	76
409.53	1.5	77
409.55	1.5	78
409.57	1.6	80
409.59	1.6	81
409.61	1.6	82
409.63	1.6	83
409.65	1.6	84
409.67	1.7	85
409.69	1.7	86
409.71	1.7	87
409.73	1.7	88
409.75	1.7	88
409.77	1.7	89
409.79	1.8	89
409.81	1.8	90
409.83	**1.8**	**90**

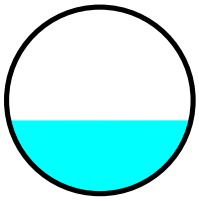
Summary for Reach P-A2: Pipe A2

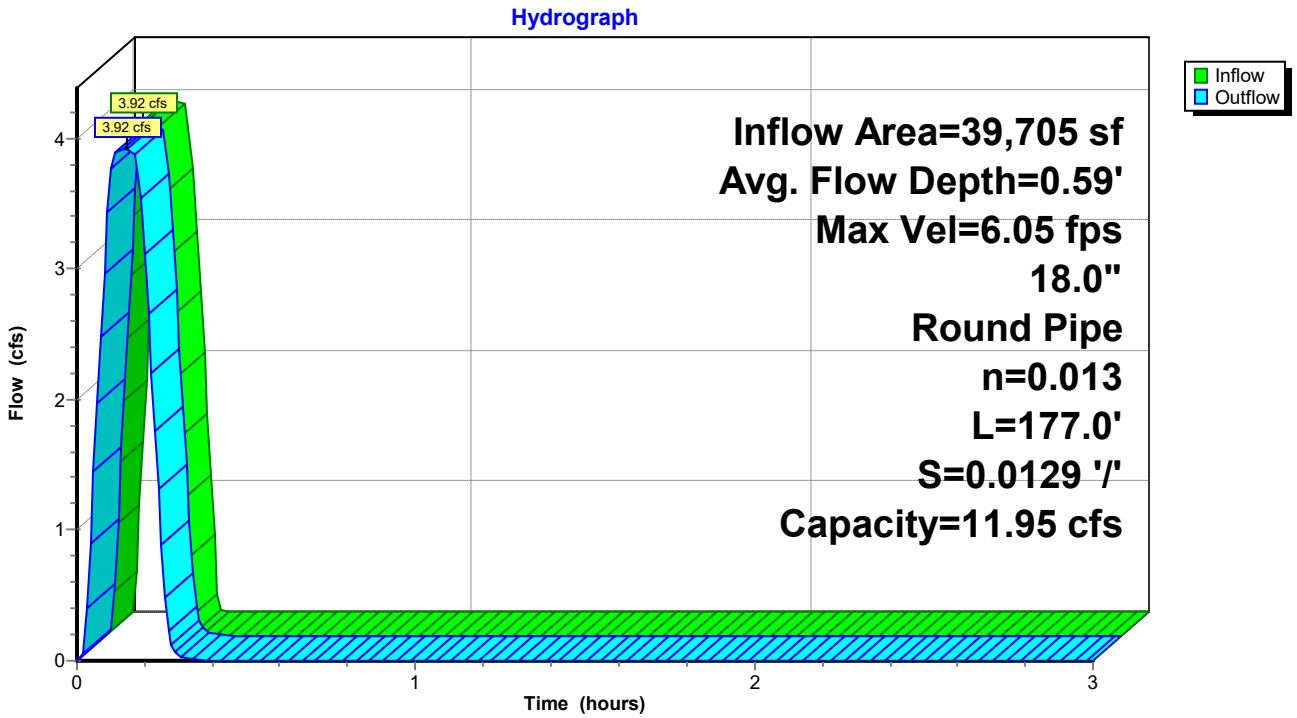
Inflow Area = 39,705 sf, 75.04% Impervious, Inflow Depth = 0.71" for 5-yr event
Inflow = 3.92 cfs @ 0.11 hrs, Volume= 2,346 cf
Outflow = 3.92 cfs @ 0.15 hrs, Volume= 2,346 cf, Atten= 0%, Lag= 2.4 min
Routed to Reach P-A3 : Pipe A3

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.05 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.43 fps, Avg. Travel Time= 1.2 min

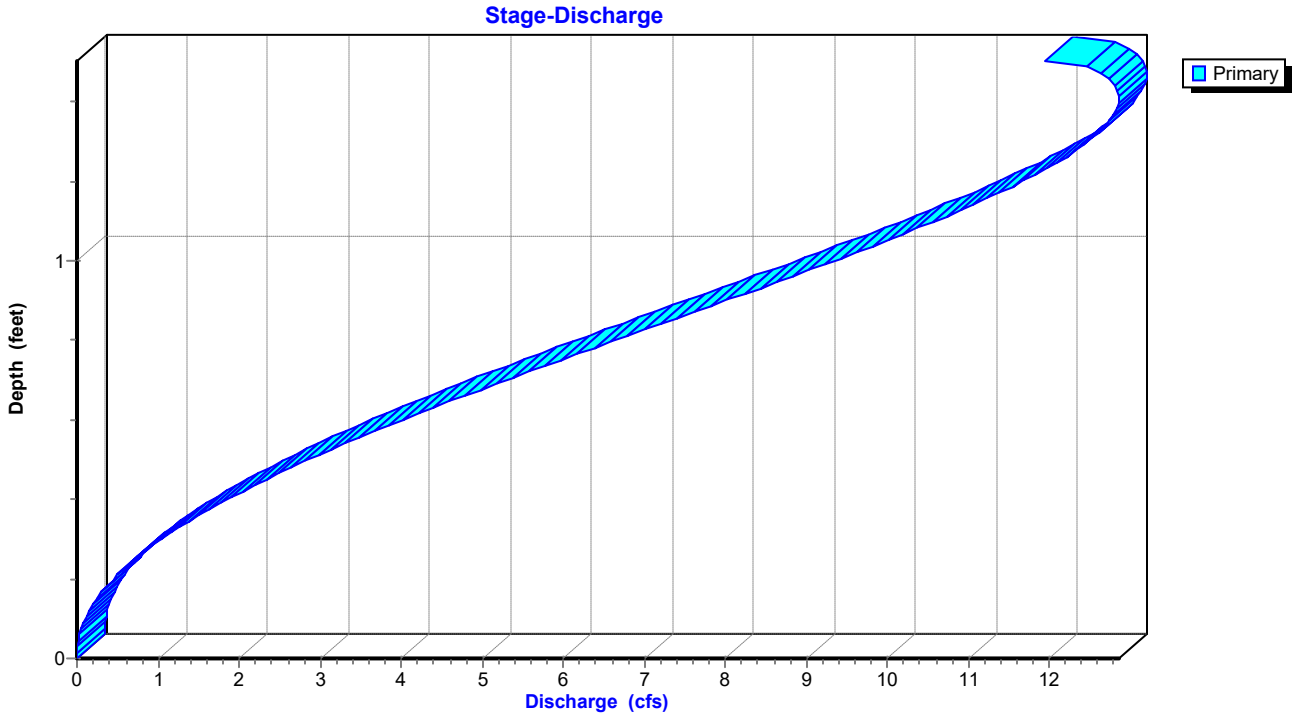
Peak Storage= 114 cf @ 0.14 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 1.47'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.95 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 177.0' Slope= 0.0129 '/'
Inlet Invert= 406.85', Outlet Invert= 404.56'





Reach P-A2: Pipe A2



Stage-Area-Storage for Reach P-A2: Pipe A2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
406.85	0.0	0
406.87	0.0	1
406.89	0.0	2
406.91	0.0	4
406.93	0.0	6
406.95	0.1	9
406.97	0.1	12
406.99	0.1	15
407.01	0.1	18
407.03	0.1	21
407.05	0.1	25
407.07	0.2	28
407.09	0.2	32
407.11	0.2	36
407.13	0.2	40
407.15	0.3	45
407.17	0.3	49
407.19	0.3	53
407.21	0.3	58
407.23	0.4	62
407.25	0.4	67
407.27	0.4	72
407.29	0.4	76
407.31	0.5	81
407.33	0.5	86
407.35	0.5	91
407.37	0.5	96
407.39	0.6	101
407.41	0.6	106
407.43	0.6	112
407.45	0.7	117
407.47	0.7	122
407.49	0.7	127
407.51	0.7	133
407.53	0.8	138
407.55	0.8	143
407.57	0.8	148
407.59	0.9	154
407.61	0.9	159
407.63	0.9	164
407.65	1.0	170
407.67	1.0	175
407.69	1.0	180
407.71	1.0	185
407.73	1.1	191
407.75	1.1	196
407.77	1.1	201
407.79	1.2	206
407.81	1.2	211
407.83	1.2	216
407.85	1.3	222
407.87	1.3	226
407.89	1.3	231
407.91	1.3	236
407.93	1.4	241
407.95	1.4	246
407.97	1.4	250
407.99	1.4	255
408.01	1.5	260
408.03	1.5	264
408.05	1.5	268
408.07	1.5	272
408.09	1.6	277
408.11	1.6	280
408.13	1.6	284
408.15	1.6	288
408.17	1.6	292
408.19	1.7	295
408.21	1.7	298
408.23	1.7	301
408.25	1.7	304
408.27	1.7	306
408.29	1.7	309
408.31	1.8	310
408.33	1.8	312
408.35	**1.8**	**313**

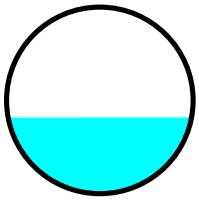
Summary for Reach P-A3: Pipe A3

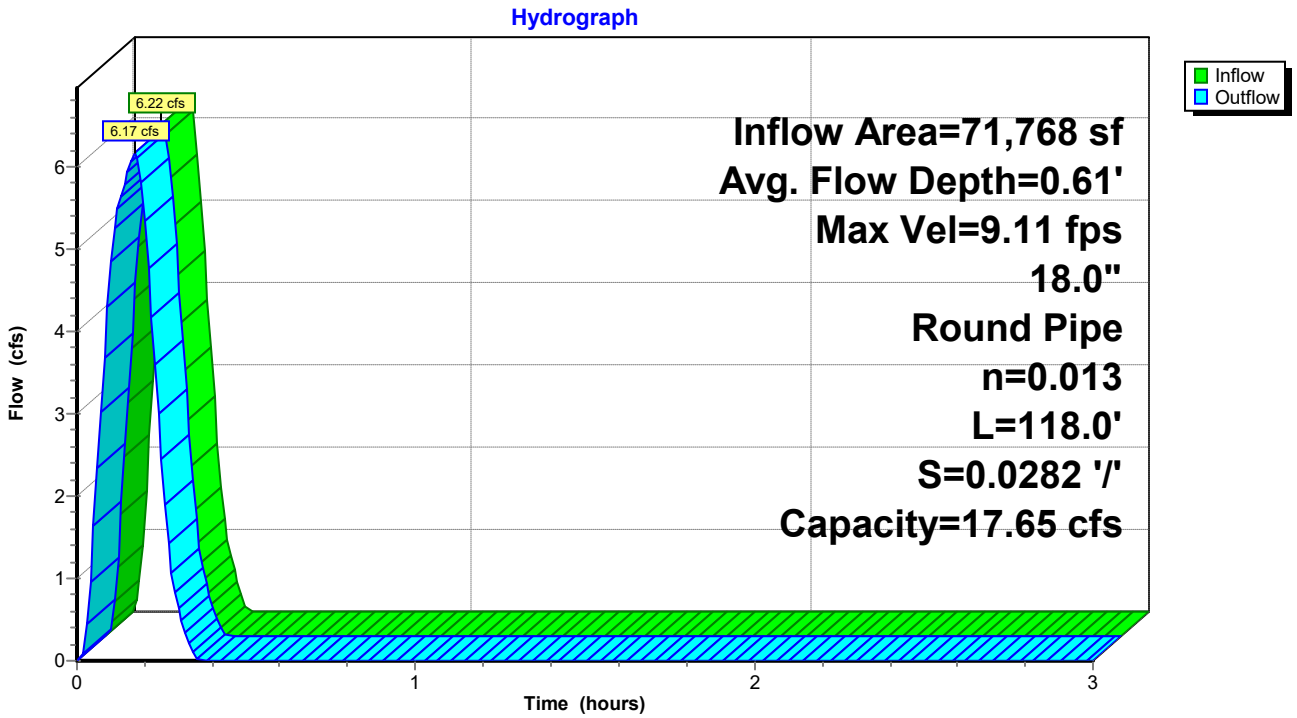
Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.63" for 5-yr event
Inflow = 6.22 cfs @ 0.17 hrs, Volume= 3,751 cf
Outflow = 6.17 cfs @ 0.17 hrs, Volume= 3,751 cf, Atten= 1%, Lag= 0.3 min
Routed to Reach P-A4 : Pipe A4

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.11 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.79 fps, Avg. Travel Time= 0.5 min

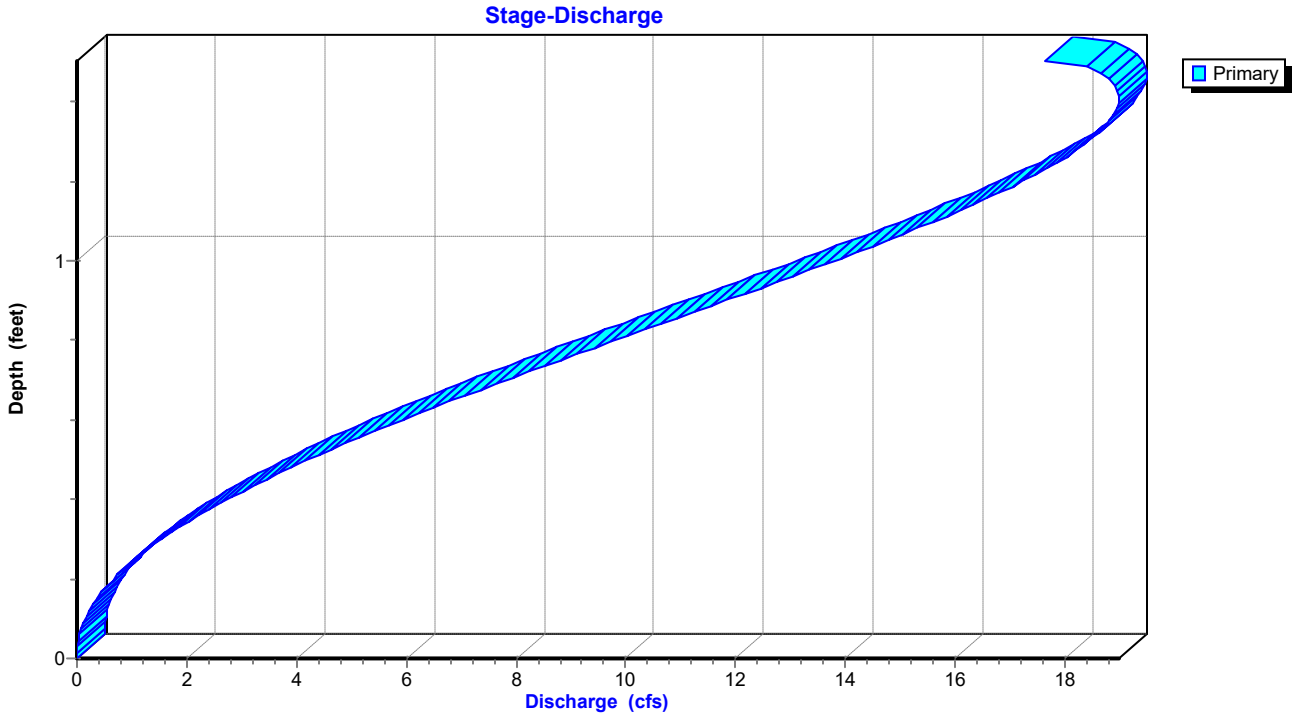
Peak Storage= 80 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.61' , Surface Width= 1.48'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.65 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 118.0' Slope= 0.0282 '/'
Inlet Invert= 404.46', Outlet Invert= 401.13'





Reach P-A3: Pipe A3



Stage-Area-Storage for Reach P-A3: Pipe A3

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
404.46	0.0	0
404.48	0.0	1
404.50	0.0	2
404.52	0.0	3
404.54	0.0	4
404.56	0.1	6
404.58	0.1	8
404.60	0.1	10
404.62	0.1	12
404.64	0.1	14
404.66	0.1	17
404.68	0.2	19
404.70	0.2	22
404.72	0.2	24
404.74	0.2	27
404.76	0.3	30
404.78	0.3	33
404.80	0.3	35
404.82	0.3	38
404.84	0.4	42
404.86	0.4	45
404.88	0.4	48
404.90	0.4	51
404.92	0.5	54
404.94	0.5	58
404.96	0.5	61
404.98	0.5	64
405.00	0.6	68
405.02	0.6	71
405.04	0.6	74
405.06	0.7	78
405.08	0.7	81
405.10	0.7	85
405.12	0.7	88
405.14	0.8	92
405.16	0.8	95
405.18	0.8	99
405.20	0.9	102
405.22	0.9	106
405.24	0.9	110
405.26	1.0	113
405.28	1.0	117
405.30	1.0	120
405.32	1.0	124
405.34	1.1	127
405.36	1.1	131
405.38	1.1	134
405.40	1.2	138
405.42	1.2	141
405.44	1.2	144
405.46	1.3	148
405.48	1.3	151
405.50	1.3	154
405.52	1.3	158
405.54	1.4	161
405.56	1.4	164
405.58	1.4	167
405.60	1.4	170
405.62	1.5	173
405.64	1.5	176
405.66	1.5	179
405.68	1.5	182
405.70	1.6	184
405.72	1.6	187
405.74	1.6	190
405.76	1.6	192
405.78	1.6	194
405.80	1.7	197
405.82	1.7	199
405.84	1.7	201
405.86	1.7	203
405.88	1.7	204
405.90	1.7	206
405.92	1.8	207
405.94	1.8	208
405.96	**1.8**	**209**

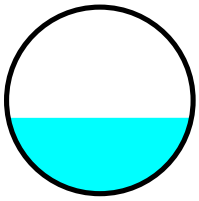
Summary for Reach P-A4: Pipe A4

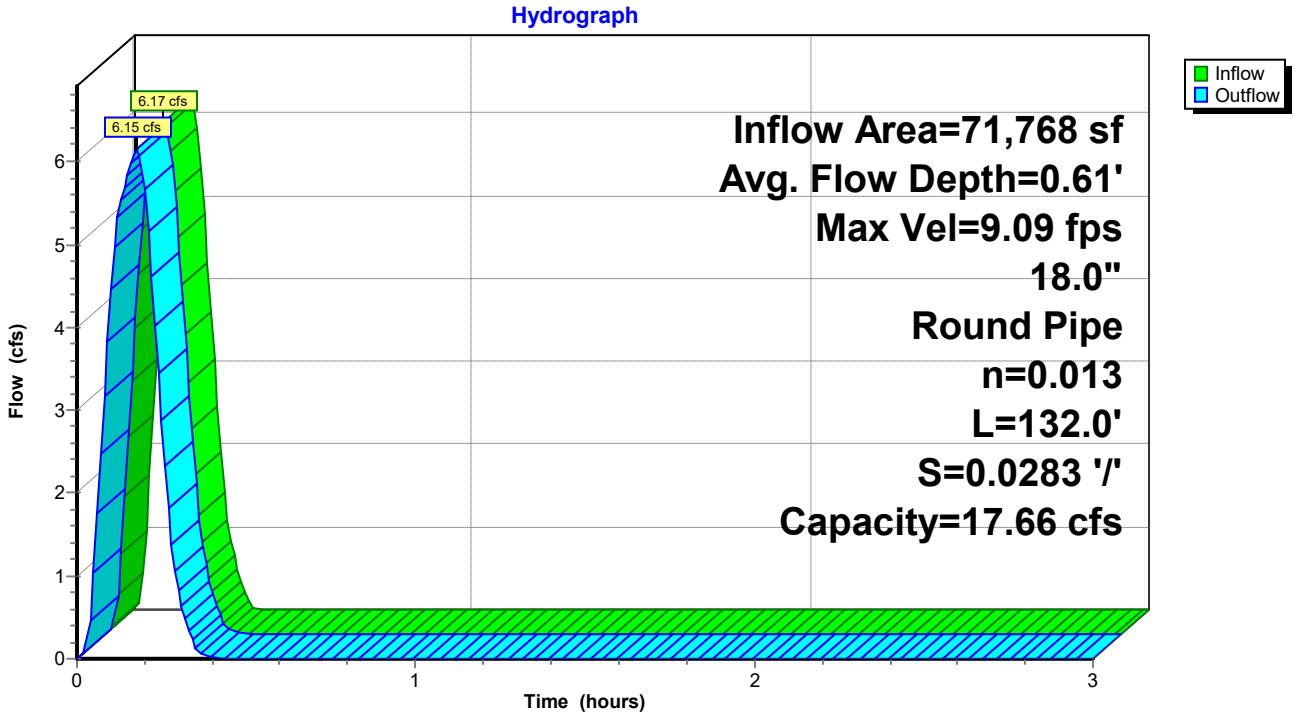
Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.63" for 5-yr event
Inflow = 6.17 cfs @ 0.17 hrs, Volume= 3,751 cf
Outflow = 6.15 cfs @ 0.18 hrs, Volume= 3,751 cf, Atten= 0%, Lag= 0.4 min
Routed to Pond DP1 : Re-Establised East Pond

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.09 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.60 fps, Avg. Travel Time= 0.6 min

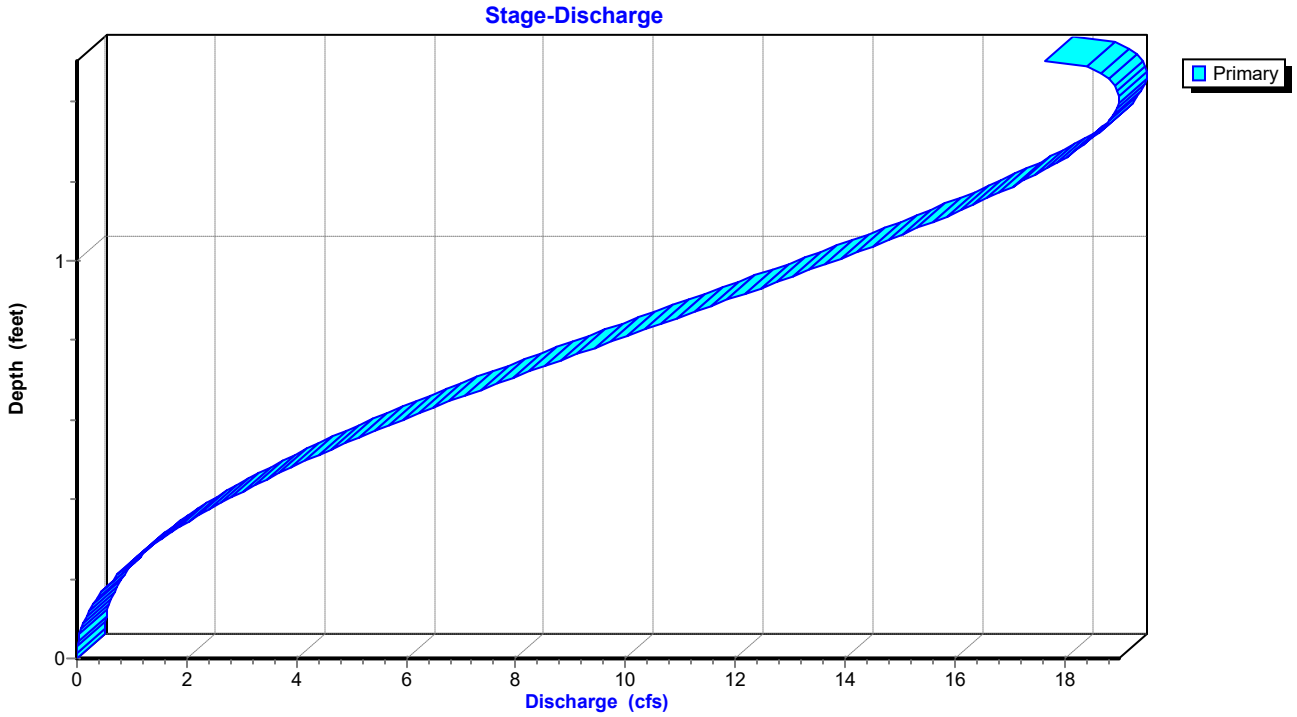
Peak Storage= 89 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.61' , Surface Width= 1.47'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.66 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 132.0' Slope= 0.0283 '/'
Inlet Invert= 401.03', Outlet Invert= 397.30'





Reach P-A4: Pipe A4



Stage-Area-Storage for Reach P-A4: Pipe A4

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
401.03	0.0	0
401.05	0.0	1
401.07	0.0	2
401.09	0.0	3
401.11	0.0	5
401.13	0.1	7
401.15	0.1	9
401.17	0.1	11
401.19	0.1	13
401.21	0.1	16
401.23	0.1	18
401.25	0.2	21
401.27	0.2	24
401.29	0.2	27
401.31	0.2	30
401.33	0.3	33
401.35	0.3	36
401.37	0.3	40
401.39	0.3	43
401.41	0.4	46
401.43	0.4	50
401.45	0.4	53
401.47	0.4	57
401.49	0.5	61
401.51	0.5	64
401.53	0.5	68
401.55	0.5	72
401.57	0.6	76
401.59	0.6	79
401.61	0.6	83
401.63	0.7	87
401.65	0.7	91
401.67	0.7	95
401.69	0.7	99
401.71	0.8	103
401.73	0.8	107
401.75	0.8	111
401.77	0.9	115
401.79	0.9	119
401.81	0.9	123
401.83	1.0	127
401.85	1.0	130
401.87	1.0	134
401.89	1.0	138
401.91	1.1	142
401.93	1.1	146
401.95	1.1	150
401.97	1.2	154
401.99	1.2	158
402.01	1.2	161
402.03	1.3	165
402.05	1.3	169
402.07	1.3	173
402.09	1.3	176
402.11	1.4	180
402.13	1.4	183
402.15	1.4	187
402.17	1.4	190
402.19	1.5	194
402.21	1.5	197
402.23	1.5	200
402.25	1.5	203
402.27	1.6	206
402.29	1.6	209
402.31	1.6	212
402.33	1.6	215
402.35	1.6	217
402.37	1.7	220
402.39	1.7	222
402.41	1.7	225
402.43	1.7	227
402.45	1.7	228
402.47	1.7	230
402.49	1.8	232
402.51	1.8	233
402.53	**1.8**	**233**

Summary for Pond DP1: Re-Establised East Pond

Inflow Area = 132,514 sf, 61.41% Impervious, Inflow Depth = 0.64" for 5-yr event
Inflow = 11.49 cfs @ 0.16 hrs, Volume= 7,053 cf
Outflow = 6.40 cfs @ 0.22 hrs, Volume= 7,053 cf, Atten= 44%, Lag= 3.6 min
Primary = 6.40 cfs @ 0.22 hrs, Volume= 7,053 cf
Routed to Link Post-Dev : APPROX DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 397.93' @ 0.22 hrs Storage= 3,558 cf

Plug-Flow detention time= 8.2 min calculated for 7,053 cf (100% of inflow)
Center-of-Mass det. time= 8.1 min (17.0 - 8.9)

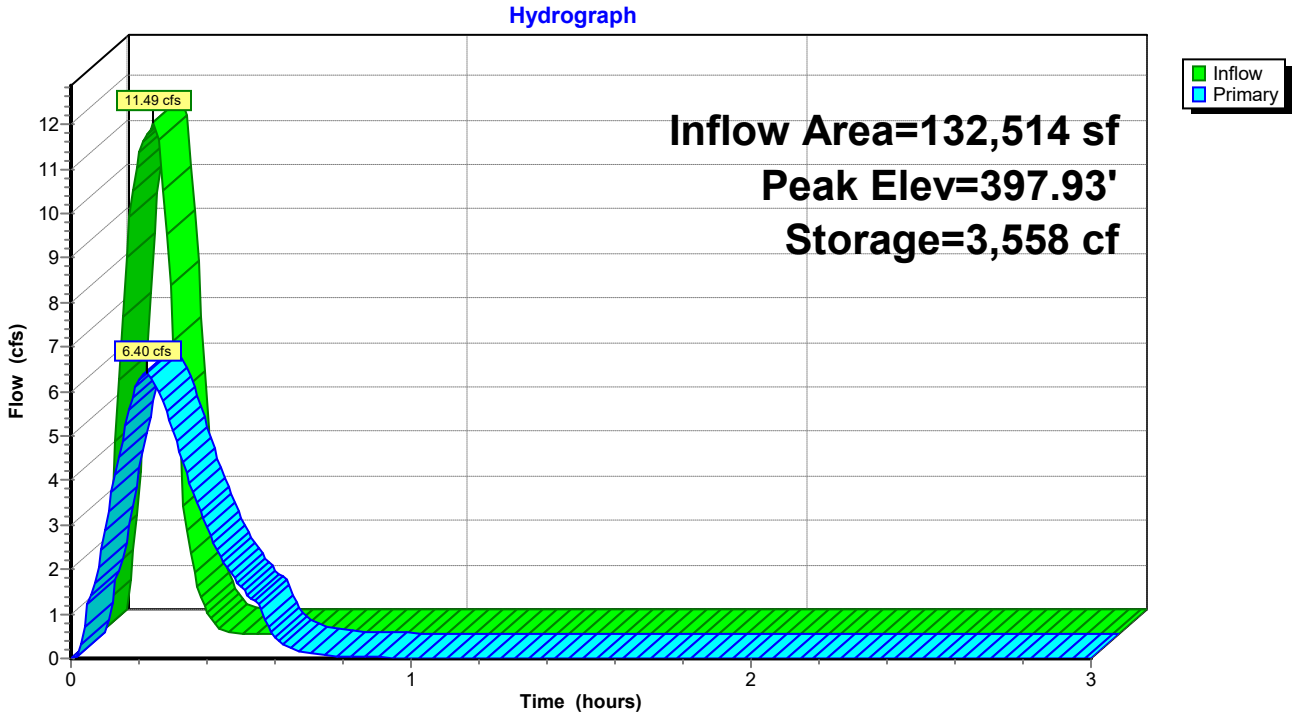
Volume	Invert	Avail.Storage	Storage Description
#1	396.00'	8,557 cf	**Custom Stage Data** Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
396.00	0	0
396.50	250	250
397.00	1,092	1,342
398.00	2,387	3,729
399.00	2,405	6,134
400.00	2,423	8,557

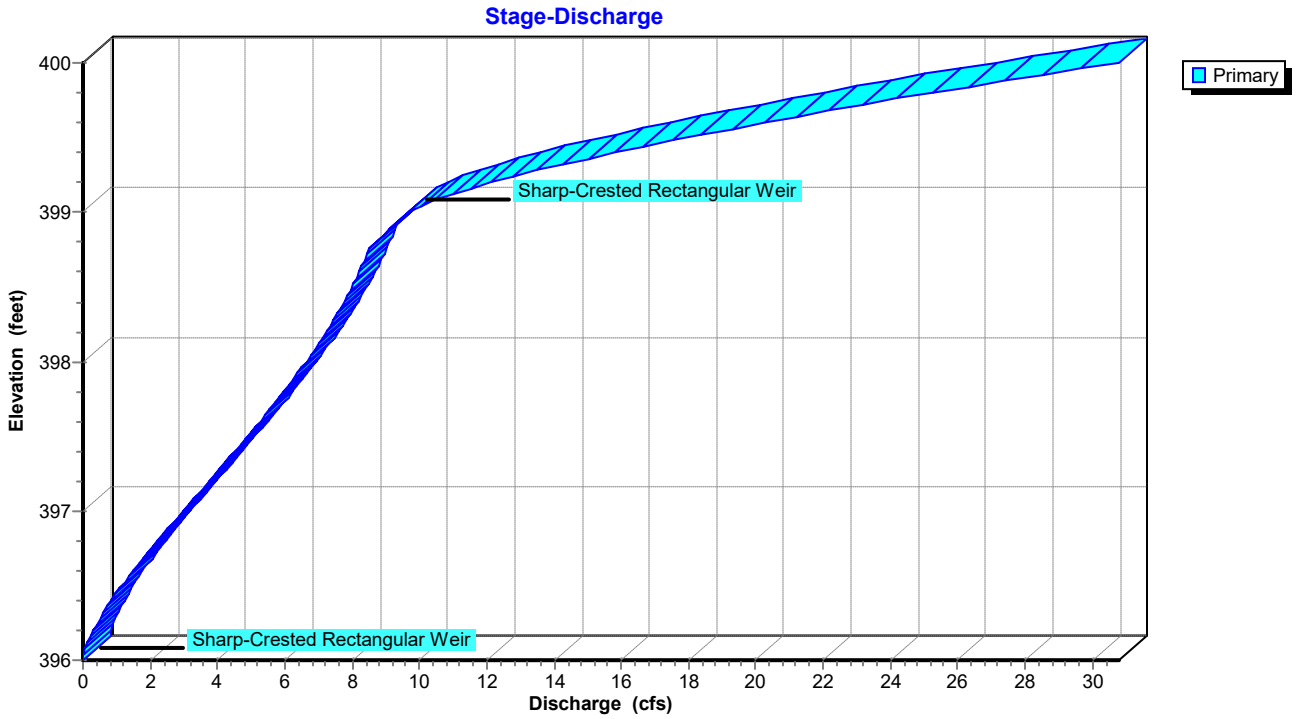
Device	Routing	Invert	Outlet Devices
#1	Primary	399.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	396.00'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 10.0' Crest Height

Primary OutFlow Max=6.40 cfs @ 0.22 hrs HW=397.93' (Free Discharge)
1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
2=Sharp-Crested Rectangular Weir (Weir Controls 6.40 cfs @ 4.65 fps)

Pond DP1: Re-Establised East Pond



Pond DP1: Re-Establised East Pond



Stage-Area-Storage for Pond DP1: Re-Establised East Pond

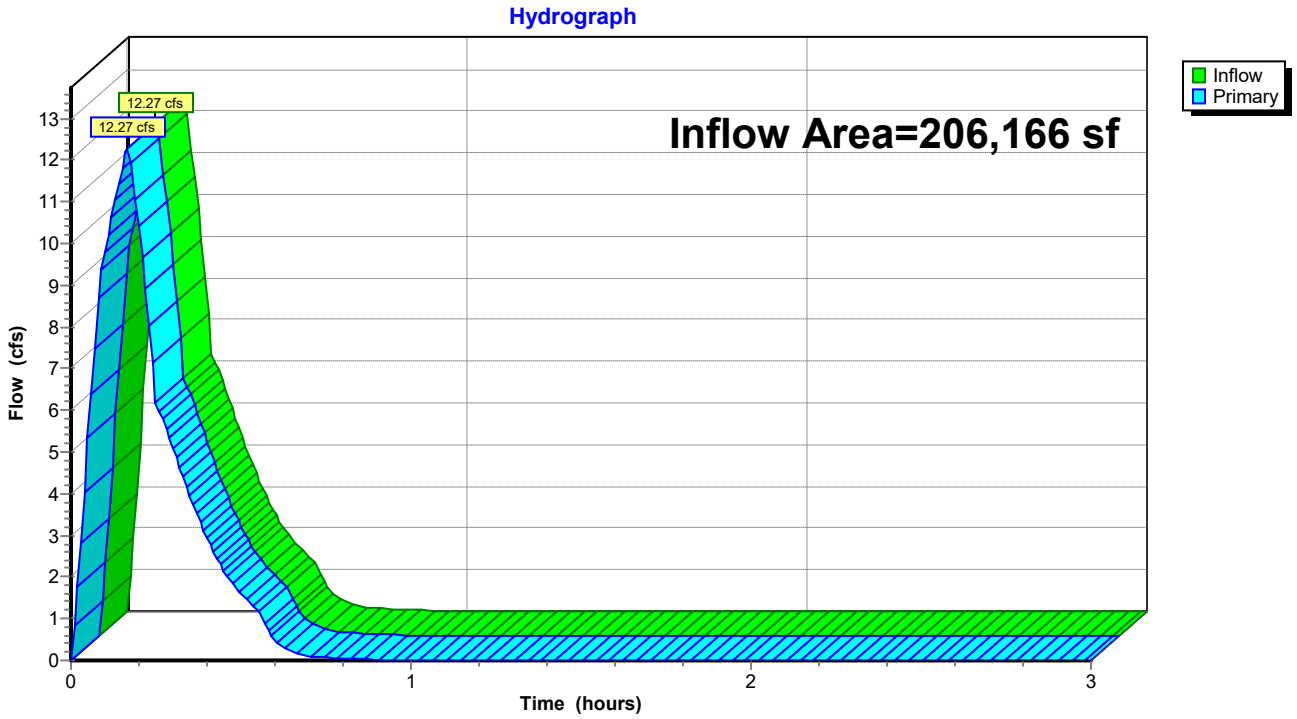
Elevation (feet)	Storage (cubic-feet)
396.00	0
396.05	25
396.10	50
396.15	75
396.20	100
396.25	125
396.30	150
396.35	175
396.40	200
396.45	225
396.50	250
396.55	359
396.60	468
396.65	578
396.70	687
396.75	796
396.80	905
396.85	1,014
396.90	1,124
396.95	1,233
397.00	1,342
397.05	1,461
397.10	1,581
397.15	1,700
397.20	1,819
397.25	1,939
397.30	2,058
397.35	2,177
397.40	2,297
397.45	2,416
397.50	2,536
397.55	2,655
397.60	2,774
397.65	2,894
397.70	3,013
397.75	3,132
397.80	3,252
397.85	3,371
397.90	3,490
397.95	3,610
398.00	3,729
398.05	3,849
398.10	3,970
398.15	4,090
398.20	4,210
398.25	4,330
398.30	4,451
398.35	4,571
398.40	4,691
398.45	4,811
398.50	4,932
398.55	5,052
398.60	5,172
398.65	5,292
398.70	5,412
398.75	5,533
398.80	5,653
398.85	5,773
398.90	5,893
398.95	6,014
399.00	6,134
399.05	6,255
399.10	6,376
399.15	6,497
399.20	6,619
399.25	6,740
399.30	6,861
399.35	6,982
399.40	7,103
399.45	7,224
399.50	7,346
399.55	7,467
399.60	7,588
399.65	7,709
399.70	7,830
399.75	7,951
399.80	8,072
399.85	8,194
399.90	8,315
399.95	8,436
400.00	**8,557**

Summary for Link Post-Dev: APPROX DISCHARGE

Inflow Area = 206,166 sf, 64.42% Impervious, Inflow Depth = 0.65" for 5-yr event
Inflow = 12.27 cfs @ 0.17 hrs, Volume= 11,197 cf
Primary = 12.27 cfs @ 0.17 hrs, Volume= 11,197 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

Link Post-Dev: APPROX DISCHARGE



Summary for Subcatchment D1: Drainage Basin D1

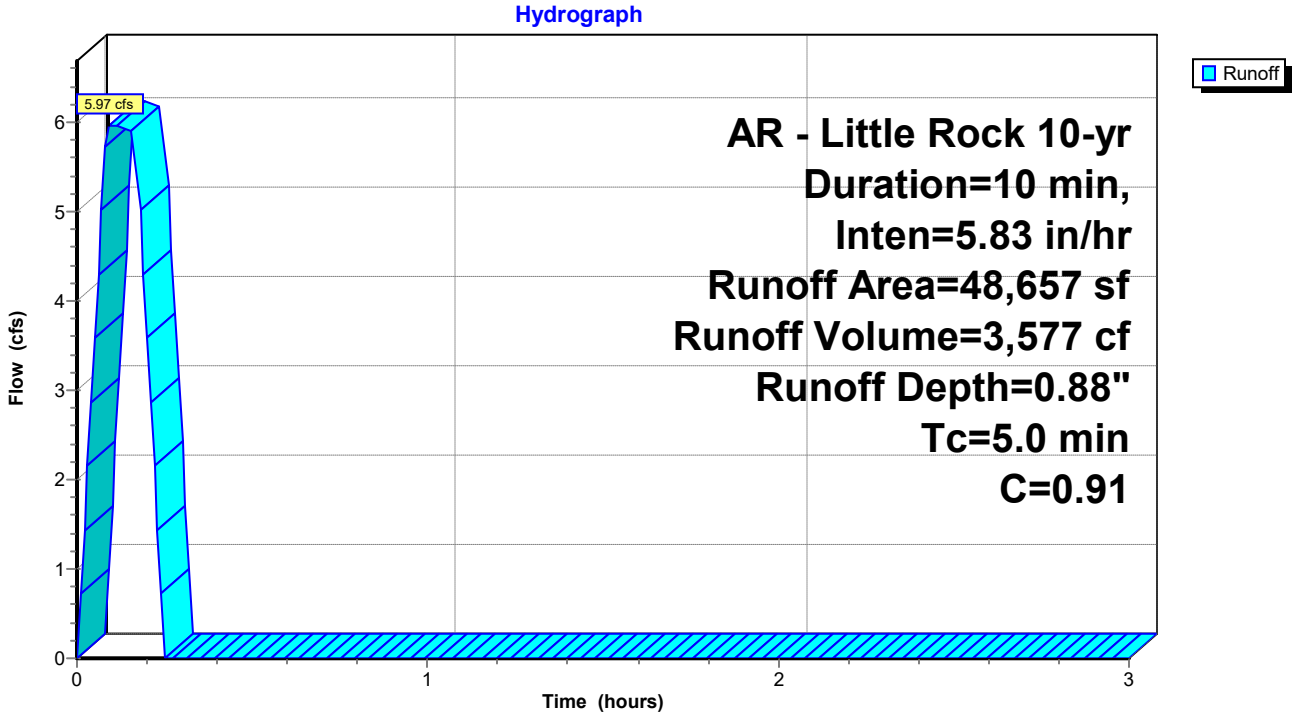
Runoff = 5.97 cfs @ 0.09 hrs, Volume= 3,577 cf, Depth= 0.88"
Routed to Link Post-Dev : APPROX DISCHARGE

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
3,421	0.40	Sod Yard
45,236	0.95	Rood, Drives, Sidewalks
48,657	0.91	Weighted Average
3,421		7.03% Pervious Area
45,236		92.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D1: Drainage Basin D1



Summary for Subcatchment D2: Drainage Basin D2

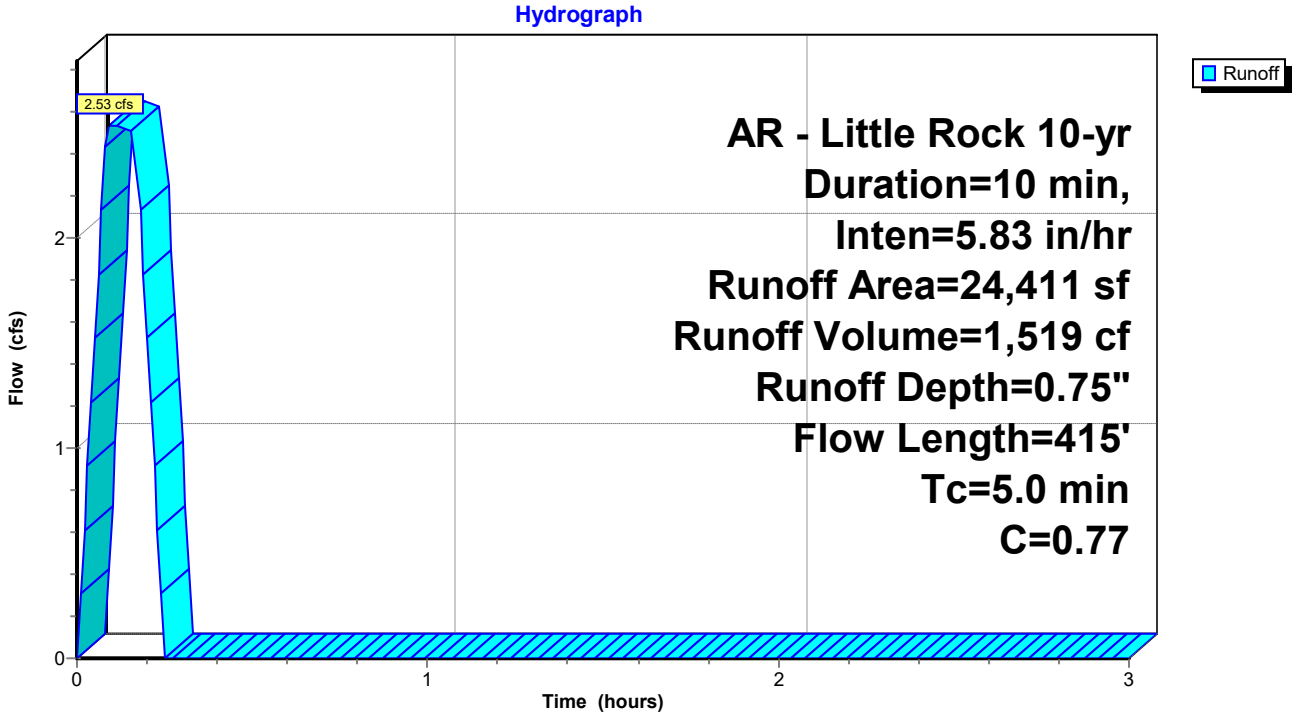
Runoff = 2.53 cfs @ 0.09 hrs, Volume= 1,519 cf, Depth= 0.75"
Routed to Reach P-A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
8,845	0.45	Rip Rap Embankment
15,566	0.95	Roof, Drives, Sidewalks
24,411	0.77	Weighted Average
8,845		36.23% Pervious Area
15,566		63.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D2: Drainage Basin D2



Summary for Subcatchment D3: Drainage Basin D3

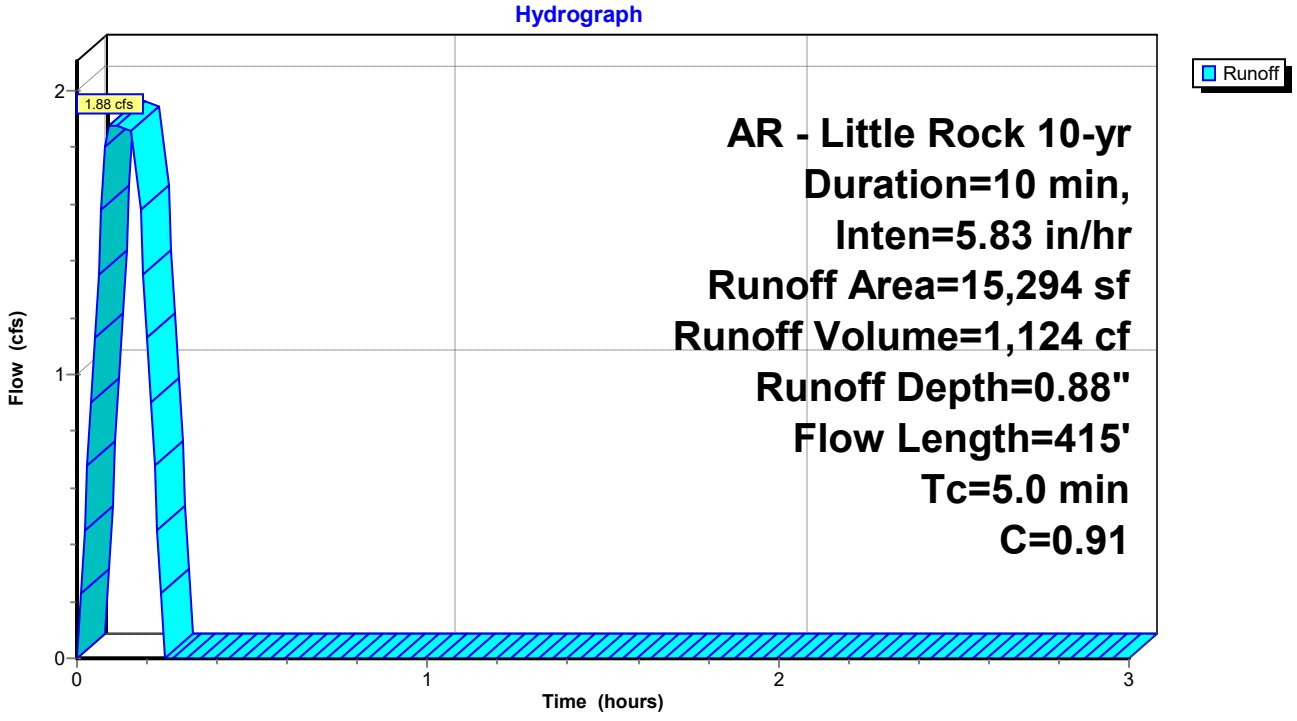
Runoff = 1.88 cfs @ 0.09 hrs, Volume= 1,124 cf, Depth= 0.88"
Routed to Reach P-A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
1,065	0.40	Sod Yard
14,229	0.95	Paving, Sidewalks
15,294	0.91	Weighted Average
1,065		6.96% Pervious Area
14,229		93.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D3: Drainage Basin D3



Summary for Subcatchment D4: Drainage Basin D4

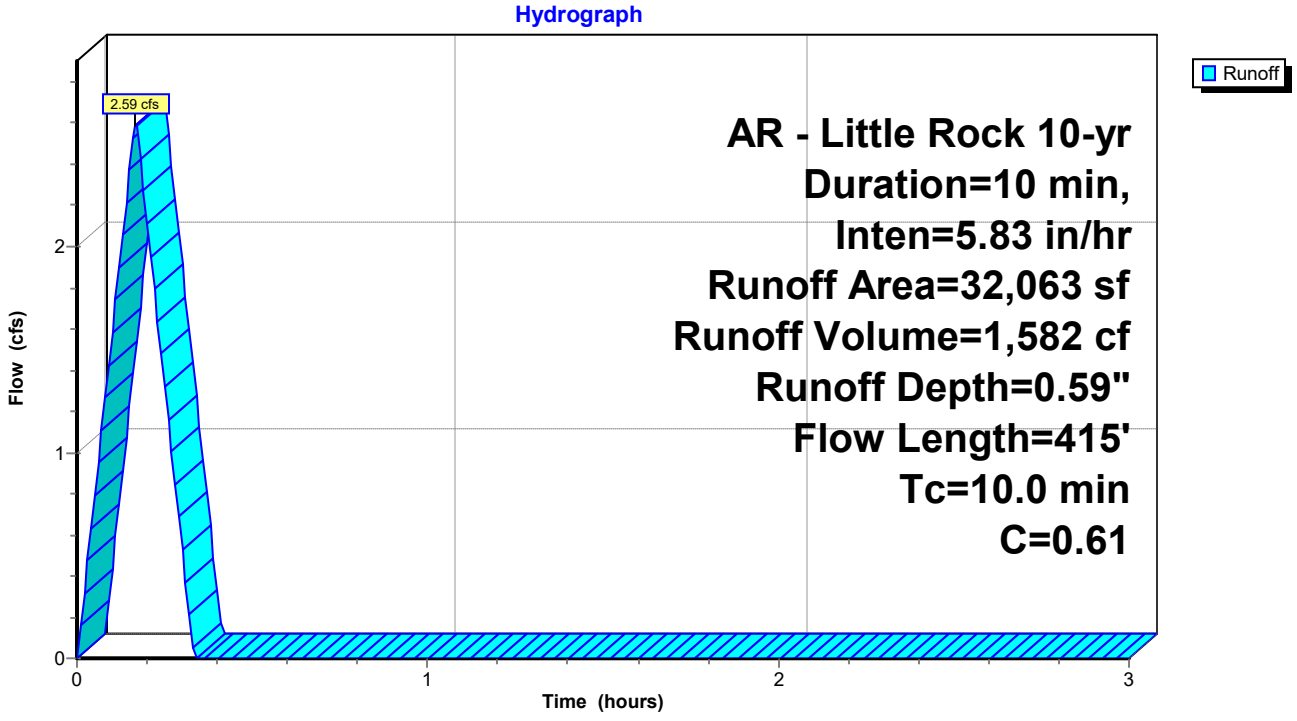
Runoff = 2.59 cfs @ 0.17 hrs, Volume= 1,582 cf, Depth= 0.59"
Routed to Reach P-A3 : Pipe A3

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
20,032	0.40	
12,031	0.95	
32,063	0.61	Weighted Average
20,032		62.48% Pervious Area
12,031		37.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D4: Drainage Basin D4



Summary for Subcatchment D5: Drainage Basin D5

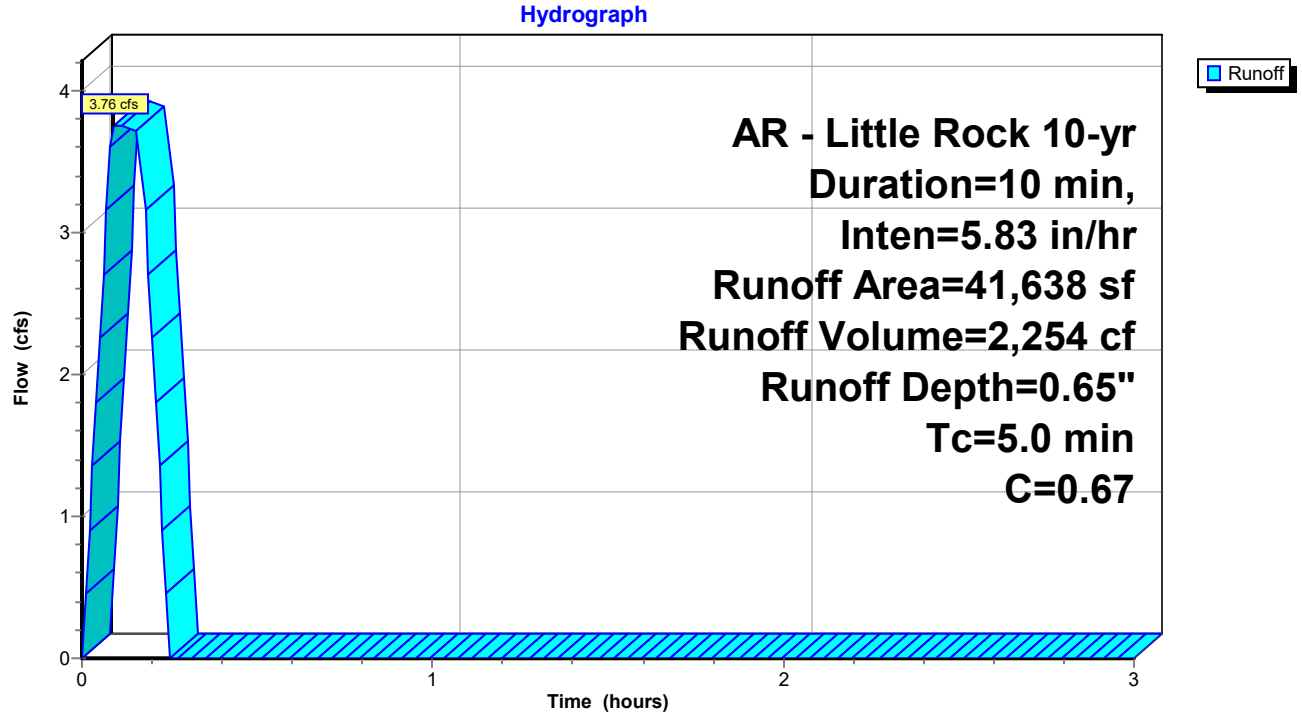
Runoff = 3.76 cfs @ 0.09 hrs, Volume= 2,254 cf, Depth= 0.65"
Routed to Pond DP1 : Re-Establised East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
21,201	0.40	Sod Yard, Natural Vegetation
20,437	0.95	Paving, Sidewalks
41,638	0.67	Weighted Average
21,201		50.92% Pervious Area
20,437		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D5: Drainage Basin D5



Summary for Subcatchment D6: Drainage Basin D6

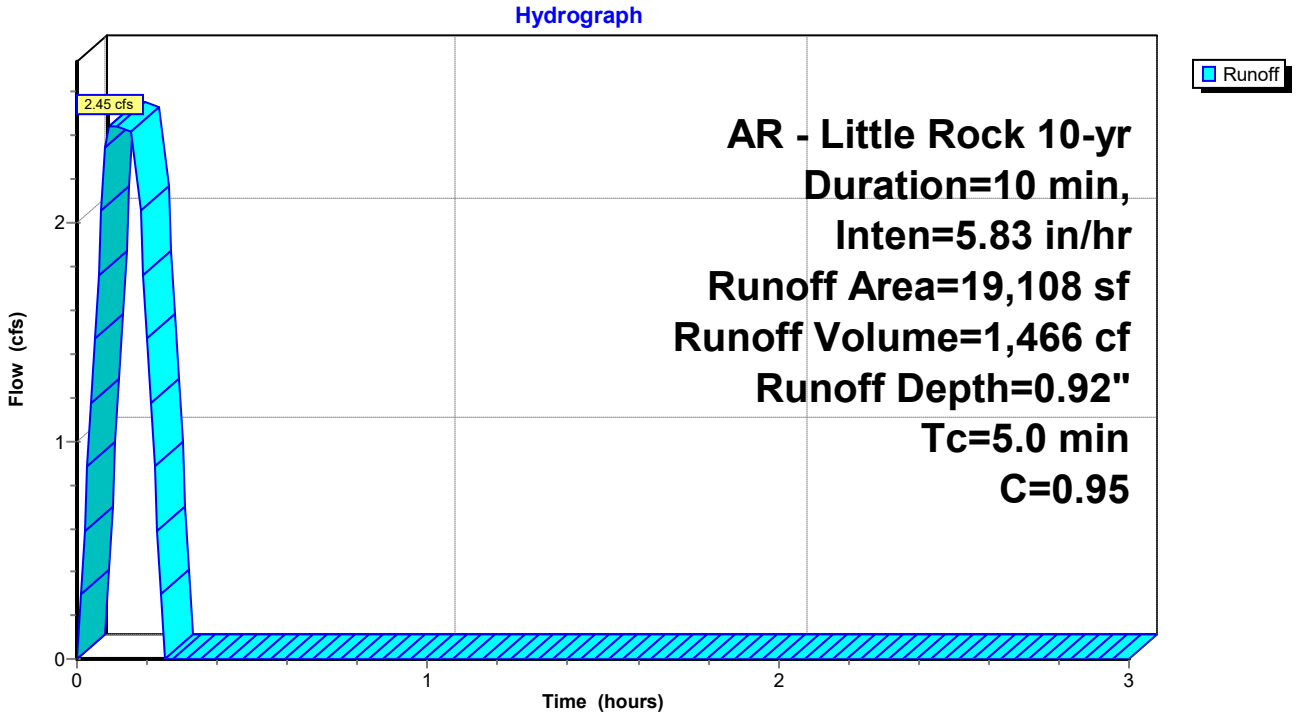
Runoff = 2.45 cfs @ 0.09 hrs, Volume= 1,466 cf, Depth= 0.92"
Routed to Pond DP1 : Re-Establised East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
19,108	0.95	Roof
19,108		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D6: Drainage Basin D6



Summary for Subcatchment D7: Drainage Basin D7

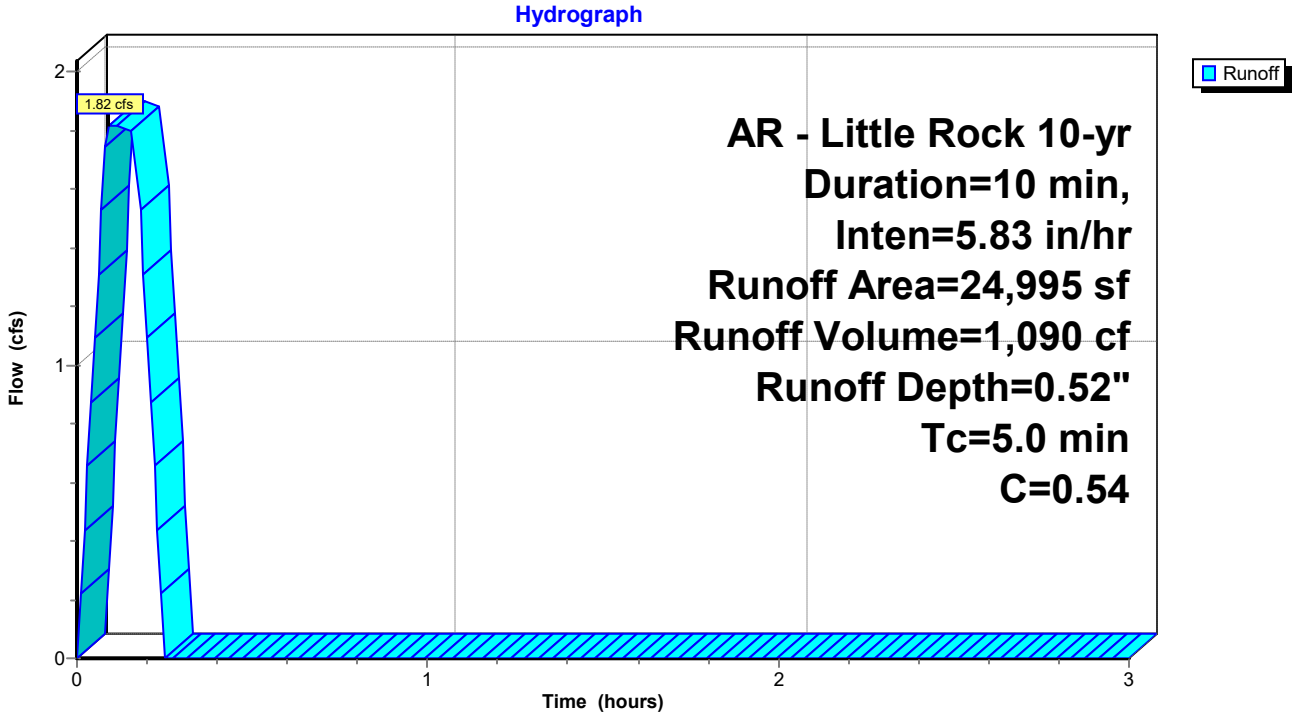
Runoff = 1.82 cfs @ 0.09 hrs, Volume= 1,090 cf, Depth= 0.52"
Routed to Link Post-Dev : APPROX DISCHARGE

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
18,798	0.40	Sod Yard, Natural Vegetation
6,197	0.95	Paving, Sidewalks
24,995	0.54	Weighted Average
18,798		75.21% Pervious Area
6,197		24.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D7: Drainage Basin D7



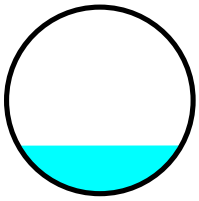
Summary for Reach P-A1: Pipe A1

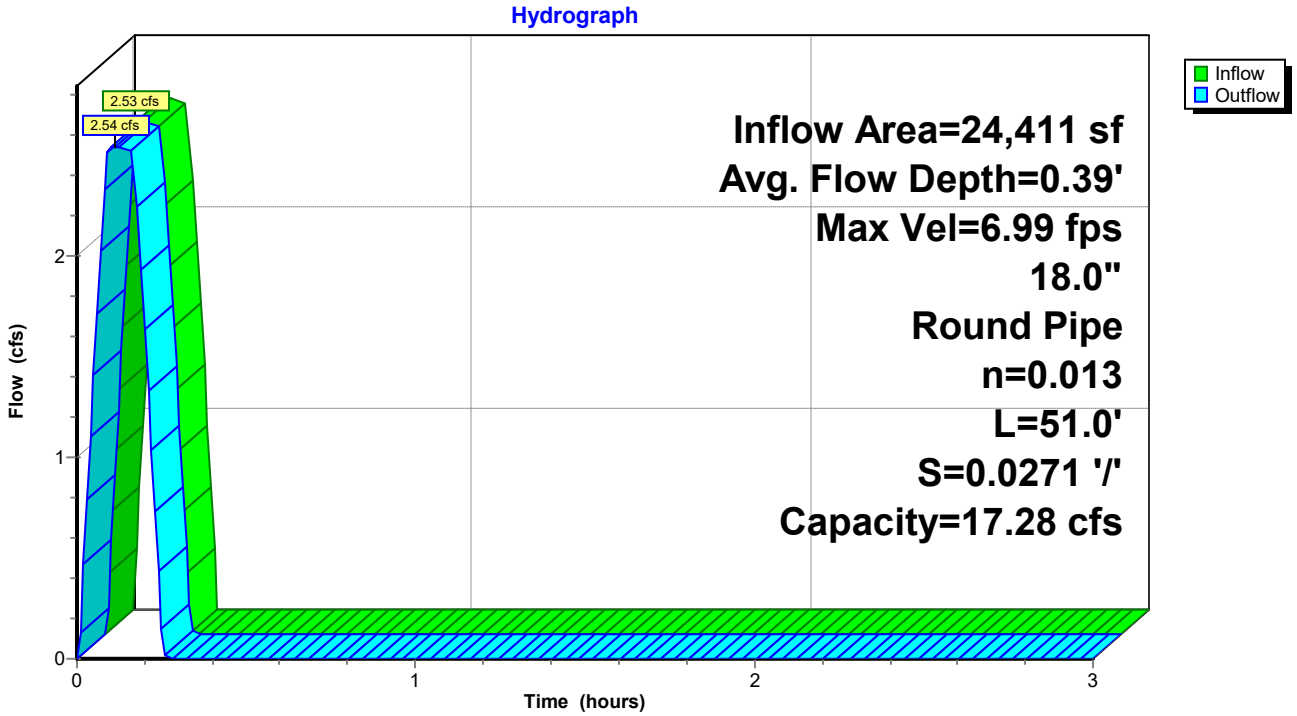
Inflow Area = 24,411 sf, 63.77% Impervious, Inflow Depth = 0.75" for 10-yr event
Inflow = 2.53 cfs @ 0.09 hrs, Volume= 1,519 cf
Outflow = 2.54 cfs @ 0.11 hrs, Volume= 1,519 cf, Atten= 0%, Lag= 1.2 min
Routed to Reach P-A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.99 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.09 fps, Avg. Travel Time= 0.2 min

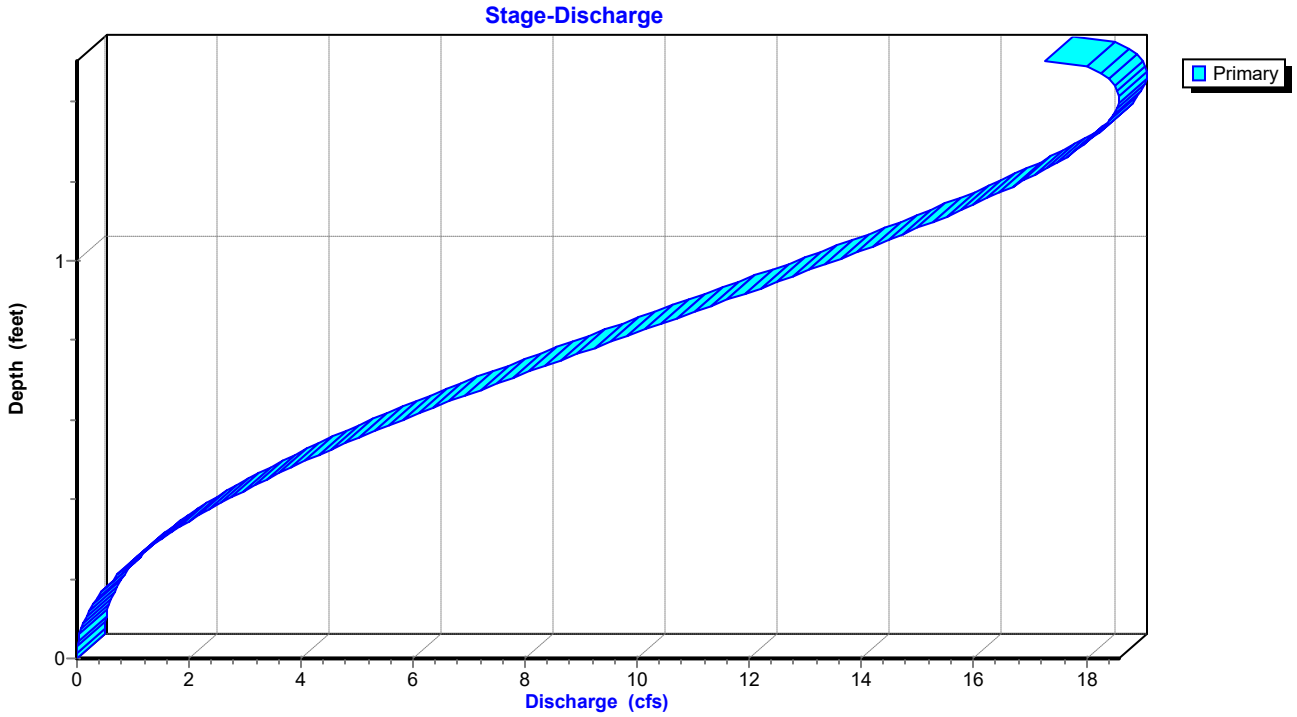
Peak Storage= 19 cf @ 0.09 hrs
Average Depth at Peak Storage= 0.39' , Surface Width= 1.31'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.28 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 51.0' Slope= 0.0271 '/'
Inlet Invert= 408.33', Outlet Invert= 406.95'





Reach P-A1: Pipe A1



Stage-Area-Storage for Reach P-A1: Pipe A1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
408.33	0.0	0
408.35	0.0	0
408.37	0.0	1
408.39	0.0	1
408.41	0.0	2
408.43	0.1	3
408.45	0.1	3
408.47	0.1	4
408.49	0.1	5
408.51	0.1	6
408.53	0.1	7
408.55	0.2	8
408.57	0.2	9
408.59	0.2	10
408.61	0.2	12
408.63	0.3	13
408.65	0.3	14
408.67	0.3	15
408.69	0.3	17
408.71	0.4	18
408.73	0.4	19
408.75	0.4	21
408.77	0.4	22
408.79	0.5	23
408.81	0.5	25
408.83	0.5	26
408.85	0.5	28
408.87	0.6	29
408.89	0.6	31
408.91	0.6	32
408.93	0.7	34
408.95	0.7	35
408.97	0.7	37
408.99	0.7	38
409.01	0.8	40
409.03	0.8	41
409.05	0.8	43
409.07	0.9	44
409.09	0.9	46
409.11	0.9	47
409.13	1.0	49
409.15	1.0	50
409.17	1.0	52
409.19	1.0	53
409.21	1.1	55
409.23	1.1	56
409.25	1.1	58
409.27	1.2	59
409.29	1.2	61
409.31	1.2	62
409.33	1.3	64
409.35	1.3	65
409.37	1.3	67
409.39	1.3	68
409.41	1.4	69
409.43	1.4	71
409.45	1.4	72
409.47	1.4	73
409.49	1.5	75
409.51	1.5	76
409.53	1.5	77
409.55	1.5	78
409.57	1.6	80
409.59	1.6	81
409.61	1.6	82
409.63	1.6	83
409.65	1.6	84
409.67	1.7	85
409.69	1.7	86
409.71	1.7	87
409.73	1.7	88
409.75	1.7	88
409.77	1.7	89
409.79	1.8	89
409.81	1.8	90
409.83	**1.8**	**90**

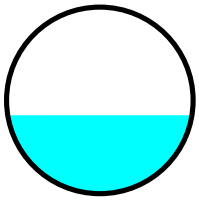
Summary for Reach P-A2: Pipe A2

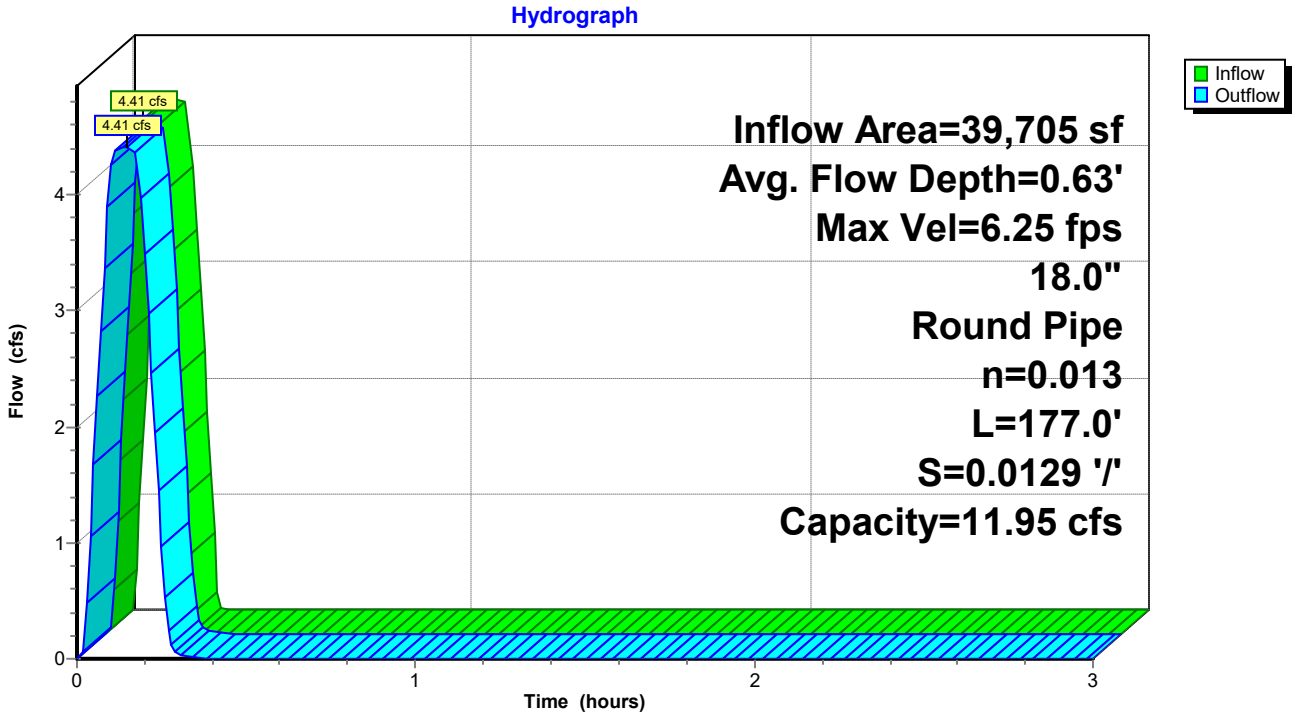
Inflow Area = 39,705 sf, 75.04% Impervious, Inflow Depth = 0.80" for 10-yr event
Inflow = 4.41 cfs @ 0.11 hrs, Volume= 2,643 cf
Outflow = 4.41 cfs @ 0.15 hrs, Volume= 2,643 cf, Atten= 0%, Lag= 2.4 min
Routed to Reach P-A3 : Pipe A3

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.25 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.50 fps, Avg. Travel Time= 1.2 min

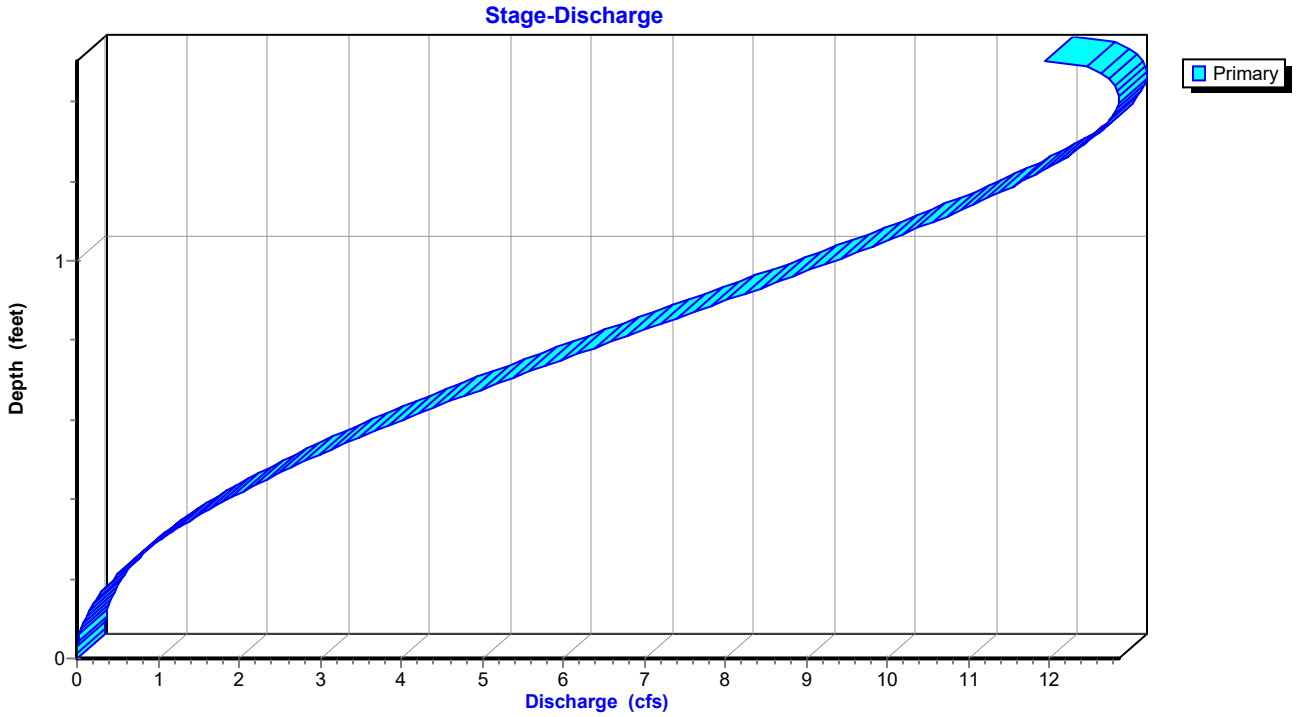
Peak Storage= 125 cf @ 0.14 hrs
Average Depth at Peak Storage= 0.63' , Surface Width= 1.48'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.95 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 177.0' Slope= 0.0129 '/'
Inlet Invert= 406.85', Outlet Invert= 404.56'





Reach P-A2: Pipe A2



Stage-Area-Storage for Reach P-A2: Pipe A2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
406.85	0.0	0
406.87	0.0	1
406.89	0.0	2
406.91	0.0	4
406.93	0.0	6
406.95	0.1	9
406.97	0.1	12
406.99	0.1	15
407.01	0.1	18
407.03	0.1	21
407.05	0.1	25
407.07	0.2	28
407.09	0.2	32
407.11	0.2	36
407.13	0.2	40
407.15	0.3	45
407.17	0.3	49
407.19	0.3	53
407.21	0.3	58
407.23	0.4	62
407.25	0.4	67
407.27	0.4	72
407.29	0.4	76
407.31	0.5	81
407.33	0.5	86
407.35	0.5	91
407.37	0.5	96
407.39	0.6	101
407.41	0.6	106
407.43	0.6	112
407.45	0.7	117
407.47	0.7	122
407.49	0.7	127
407.51	0.7	133
407.53	0.8	138
407.55	0.8	143
407.57	0.8	148
407.59	0.9	154
407.61	0.9	159
407.63	0.9	164
407.65	1.0	170
407.67	1.0	175
407.69	1.0	180
407.71	1.0	185
407.73	1.1	191
407.75	1.1	196
407.77	1.1	201
407.79	1.2	206
407.81	1.2	211
407.83	1.2	216
407.85	1.3	222
407.87	1.3	226
407.89	1.3	231
407.91	1.3	236
407.93	1.4	241
407.95	1.4	246
407.97	1.4	250
407.99	1.4	255
408.01	1.5	260
408.03	1.5	264
408.05	1.5	268
408.07	1.5	272
408.09	1.6	277
408.11	1.6	280
408.13	1.6	284
408.15	1.6	288
408.17	1.6	292
408.19	1.7	295
408.21	1.7	298
408.23	1.7	301
408.25	1.7	304
408.27	1.7	306
408.29	1.7	309
408.31	1.8	310
408.33	1.8	312
408.35	**1.8**	**313**

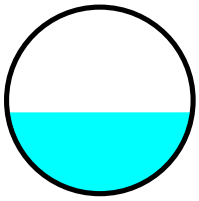
Summary for Reach P-A3: Pipe A3

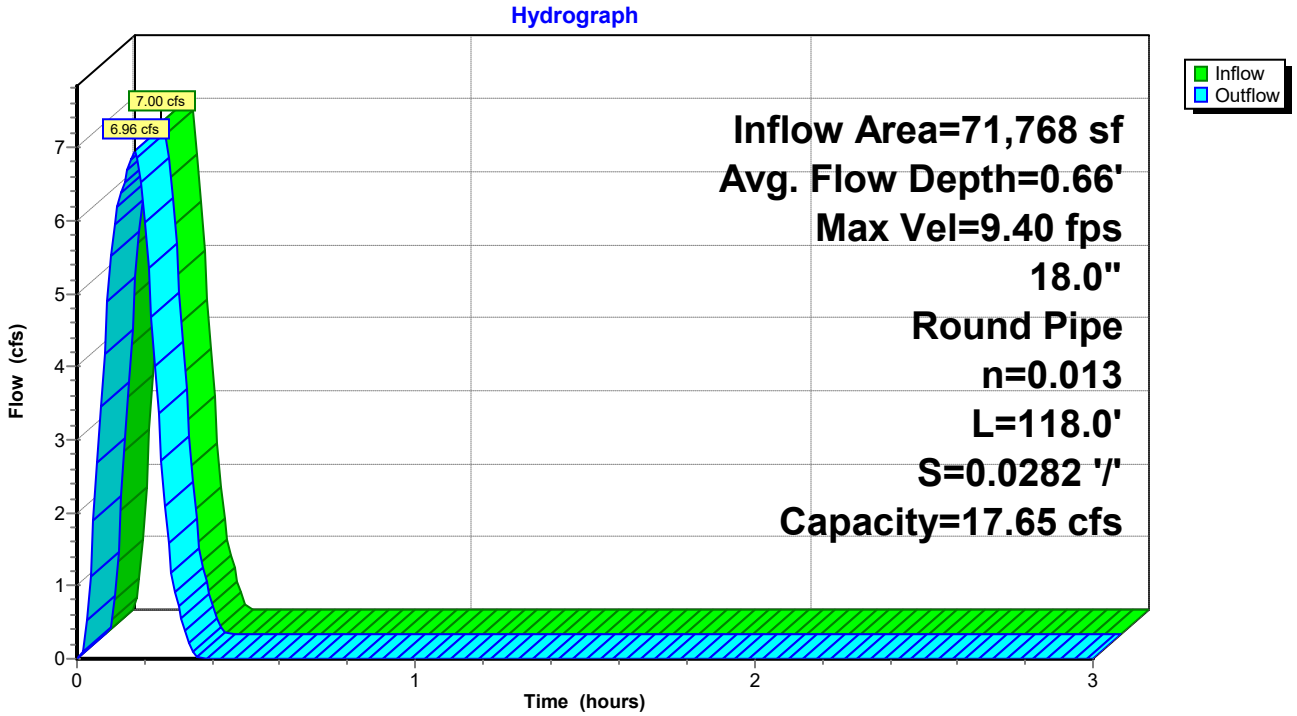
Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.71" for 10-yr event
Inflow = 7.00 cfs @ 0.17 hrs, Volume= 4,225 cf
Outflow = 6.96 cfs @ 0.17 hrs, Volume= 4,225 cf, Atten= 1%, Lag= 0.3 min
Routed to Reach P-A4 : Pipe A4

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.40 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.90 fps, Avg. Travel Time= 0.5 min

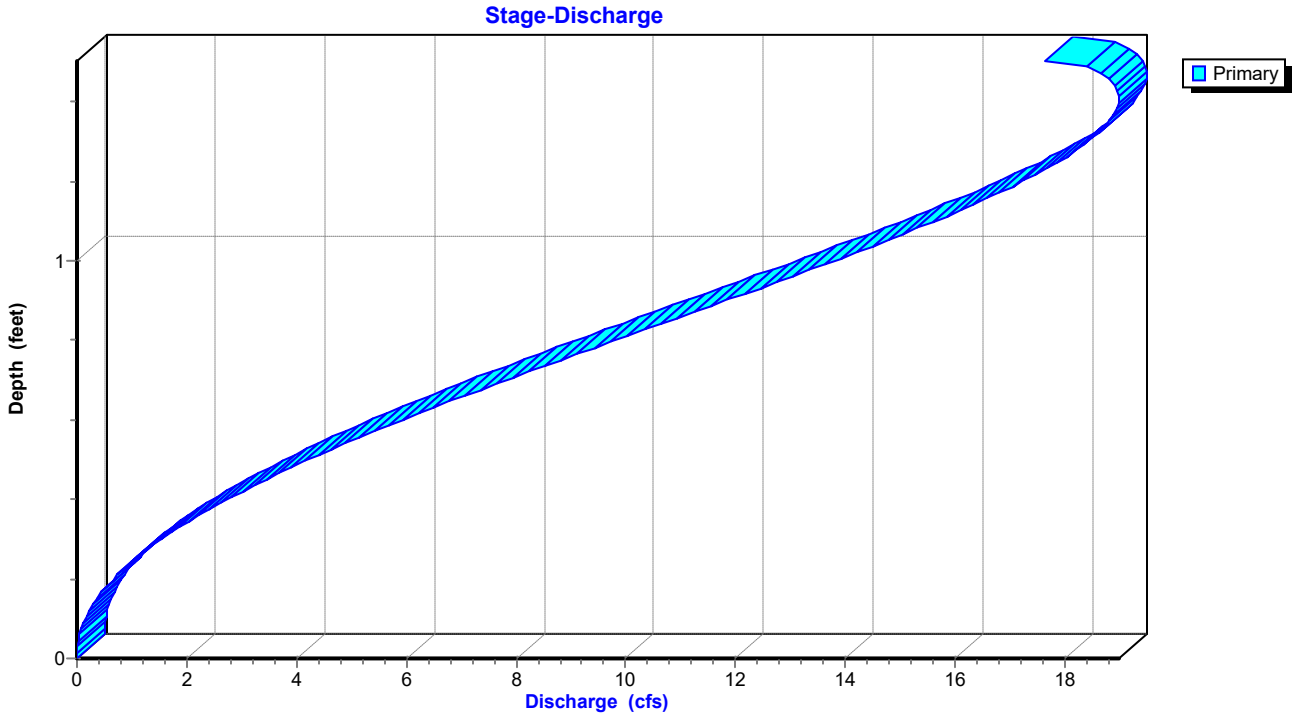
Peak Storage= 88 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.66' , Surface Width= 1.49'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.65 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 118.0' Slope= 0.0282 '/'
Inlet Invert= 404.46', Outlet Invert= 401.13'





Reach P-A3: Pipe A3



Stage-Area-Storage for Reach P-A3: Pipe A3

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
404.46	0.0	0
404.48	0.0	1
404.50	0.0	2
404.52	0.0	3
404.54	0.0	4
404.56	0.1	6
404.58	0.1	8
404.60	0.1	10
404.62	0.1	12
404.64	0.1	14
404.66	0.1	17
404.68	0.2	19
404.70	0.2	22
404.72	0.2	24
404.74	0.2	27
404.76	0.3	30
404.78	0.3	33
404.80	0.3	35
404.82	0.3	38
404.84	0.4	42
404.86	0.4	45
404.88	0.4	48
404.90	0.4	51
404.92	0.5	54
404.94	0.5	58
404.96	0.5	61
404.98	0.5	64
405.00	0.6	68
405.02	0.6	71
405.04	0.6	74
405.06	0.7	78
405.08	0.7	81
405.10	0.7	85
405.12	0.7	88
405.14	0.8	92
405.16	0.8	95
405.18	0.8	99
405.20	0.9	102
405.22	0.9	106
405.24	0.9	110
405.26	1.0	113
405.28	1.0	117
405.30	1.0	120
405.32	1.0	124
405.34	1.1	127
405.36	1.1	131
405.38	1.1	134
405.40	1.2	138
405.42	1.2	141
405.44	1.2	144
405.46	1.3	148
405.48	1.3	151
405.50	1.3	154
405.52	1.3	158
405.54	1.4	161
405.56	1.4	164
405.58	1.4	167
405.60	1.4	170
405.62	1.5	173
405.64	1.5	176
405.66	1.5	179
405.68	1.5	182
405.70	1.6	184
405.72	1.6	187
405.74	1.6	190
405.76	1.6	192
405.78	1.6	194
405.80	1.7	197
405.82	1.7	199
405.84	1.7	201
405.86	1.7	203
405.88	1.7	204
405.90	1.7	206
405.92	1.8	207
405.94	1.8	208
405.96	**1.8**	**209**

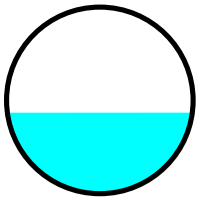
Summary for Reach P-A4: Pipe A4

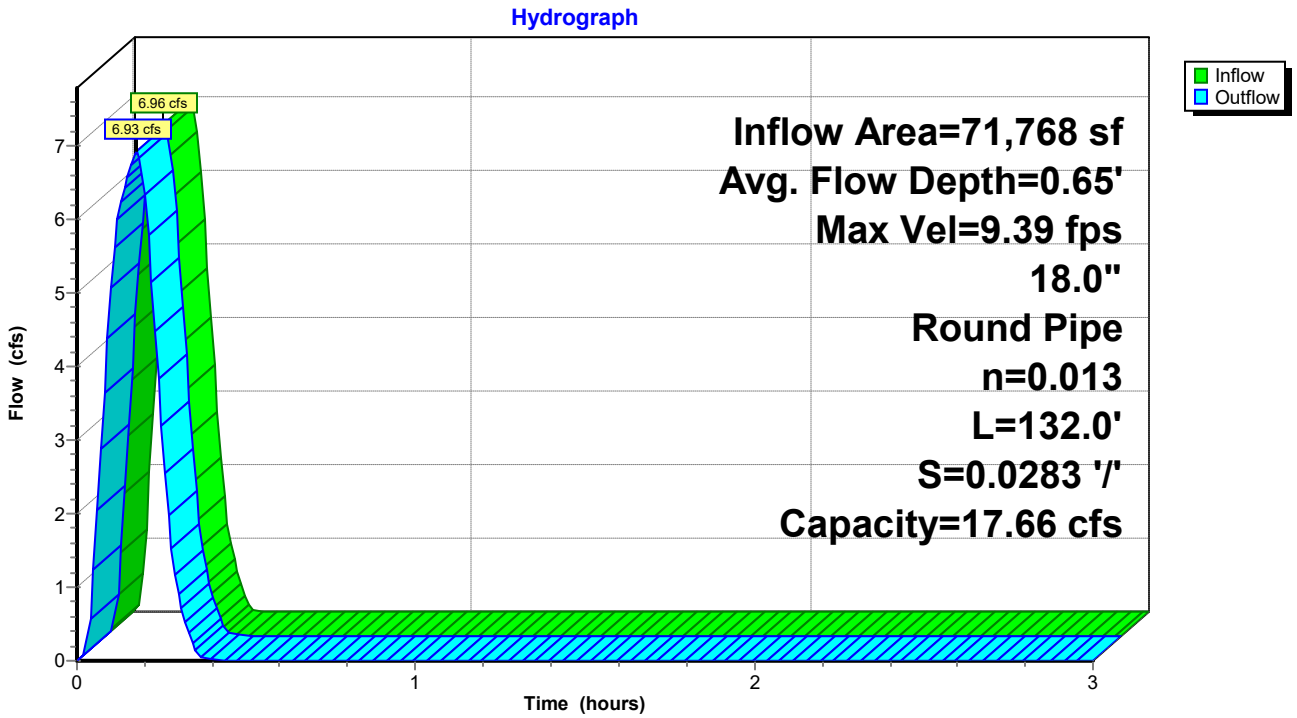
Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.71" for 10-yr event
Inflow = 6.96 cfs @ 0.17 hrs, Volume= 4,225 cf
Outflow = 6.93 cfs @ 0.18 hrs, Volume= 4,225 cf, Atten= 0%, Lag= 0.4 min
Routed to Pond DP1 : Re-Establised East Pond

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.39 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.71 fps, Avg. Travel Time= 0.6 min

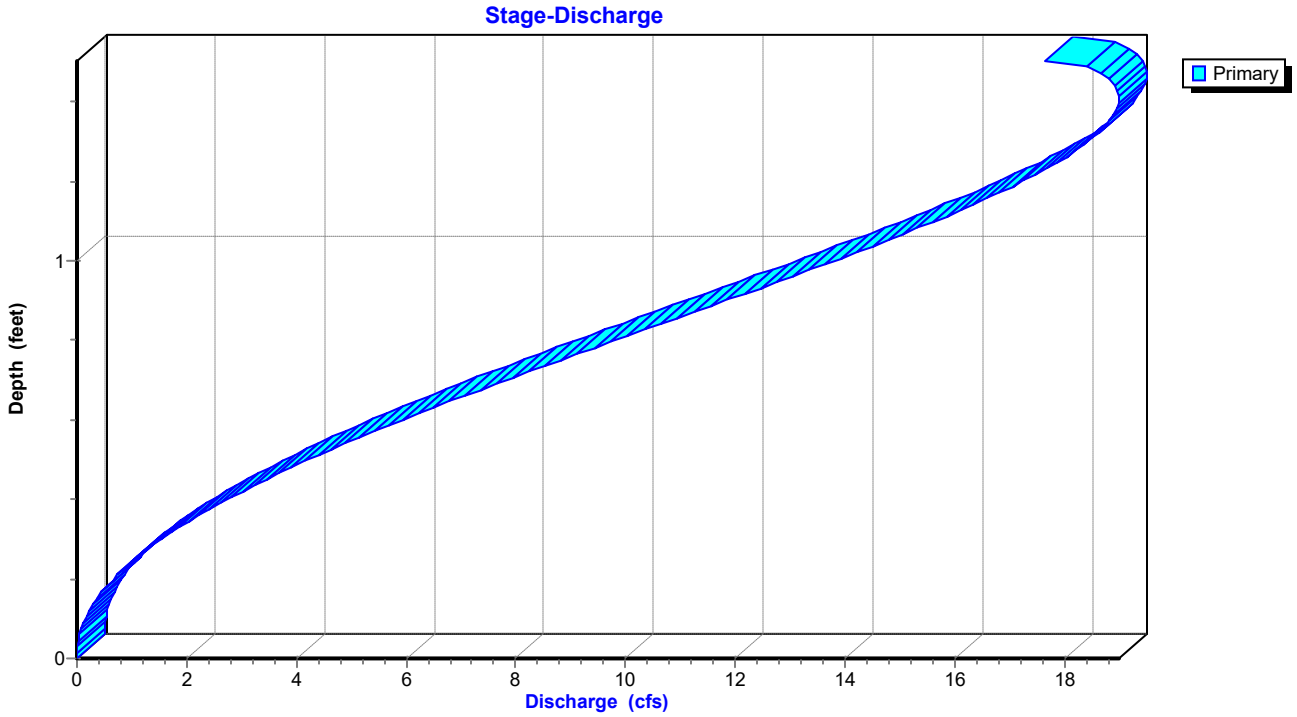
Peak Storage= 98 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.65' , Surface Width= 1.49'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.66 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 132.0' Slope= 0.0283 '/'
Inlet Invert= 401.03', Outlet Invert= 397.30'





Reach P-A4: Pipe A4



Stage-Area-Storage for Reach P-A4: Pipe A4

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
401.03	0.0	0
401.05	0.0	1
401.07	0.0	2
401.09	0.0	3
401.11	0.0	5
401.13	0.1	7
401.15	0.1	9
401.17	0.1	11
401.19	0.1	13
401.21	0.1	16
401.23	0.1	18
401.25	0.2	21
401.27	0.2	24
401.29	0.2	27
401.31	0.2	30
401.33	0.3	33
401.35	0.3	36
401.37	0.3	40
401.39	0.3	43
401.41	0.4	46
401.43	0.4	50
401.45	0.4	53
401.47	0.4	57
401.49	0.5	61
401.51	0.5	64
401.53	0.5	68
401.55	0.5	72
401.57	0.6	76
401.59	0.6	79
401.61	0.6	83
401.63	0.7	87
401.65	0.7	91
401.67	0.7	95
401.69	0.7	99
401.71	0.8	103
401.73	0.8	107
401.75	0.8	111
401.77	0.9	115
401.79	0.9	119
401.81	0.9	123
401.83	1.0	127
401.85	1.0	130
401.87	1.0	134
401.89	1.0	138
401.91	1.1	142
401.93	1.1	146
401.95	1.1	150
401.97	1.2	154
401.99	1.2	158
402.01	1.2	161
402.03	1.3	165
402.05	1.3	169
402.07	1.3	173
402.09	1.3	176
402.11	1.4	180
402.13	1.4	183
402.15	1.4	187
402.17	1.4	190
402.19	1.5	194
402.21	1.5	197
402.23	1.5	200
402.25	1.5	203
402.27	1.6	206
402.29	1.6	209
402.31	1.6	212
402.33	1.6	215
402.35	1.6	217
402.37	1.7	220
402.39	1.7	222
402.41	1.7	225
402.43	1.7	227
402.45	1.7	228
402.47	1.7	230
402.49	1.8	232
402.51	1.8	233
402.53	**1.8**	**233**

Summary for Pond DP1: Re-Establised East Pond

Inflow Area = 132,514 sf, 61.41% Impervious, Inflow Depth = 0.72" for 10-yr event
Inflow = 12.95 cfs @ 0.16 hrs, Volume= 7,945 cf
Outflow = 7.07 cfs @ 0.22 hrs, Volume= 7,945 cf, Atten= 45%, Lag= 3.7 min
Primary = 7.07 cfs @ 0.22 hrs, Volume= 7,945 cf
Routed to Link Post-Dev : APPROX DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 398.14' @ 0.22 hrs Storage= 4,074 cf

Plug-Flow detention time= 8.2 min calculated for 7,919 cf (100% of inflow)
Center-of-Mass det. time= 8.3 min (17.2 - 8.9)

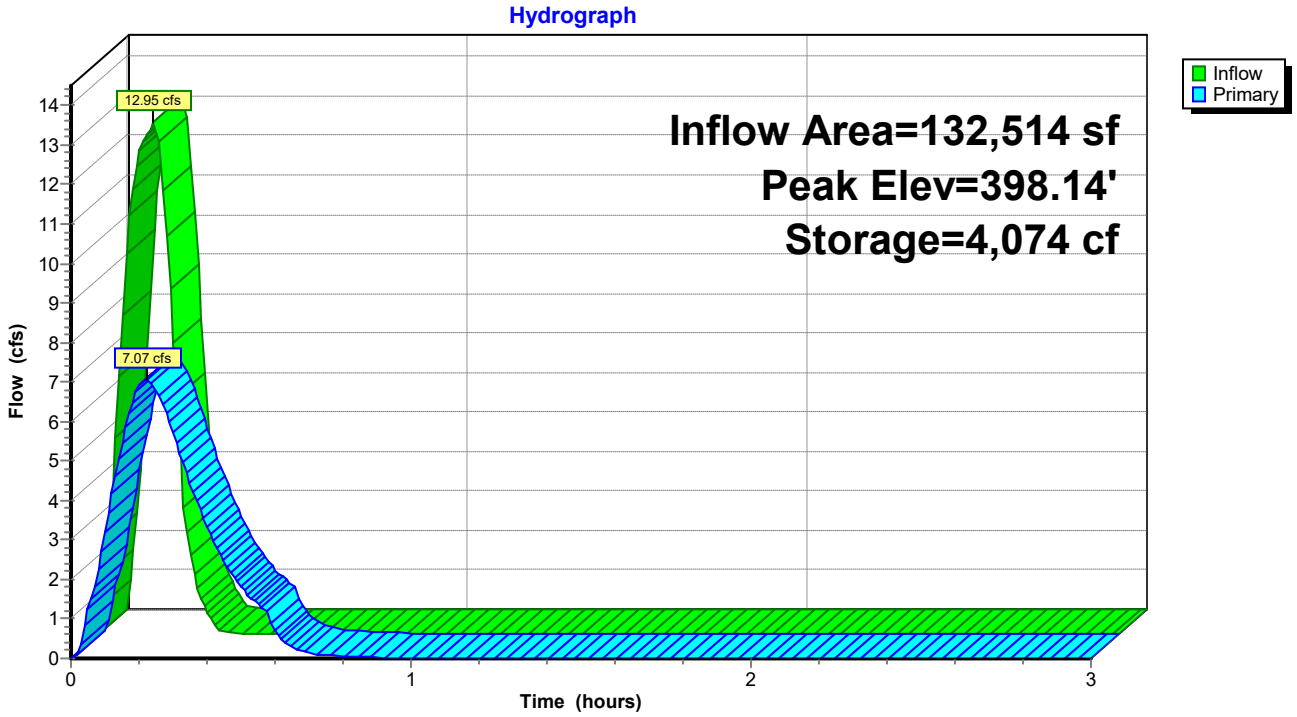
Volume	Invert	Avail.Storage	Storage Description
#1	396.00'	8,557 cf	**Custom Stage Data** Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
396.00	0	0
396.50	250	250
397.00	1,092	1,342
398.00	2,387	3,729
399.00	2,405	6,134
400.00	2,423	8,557

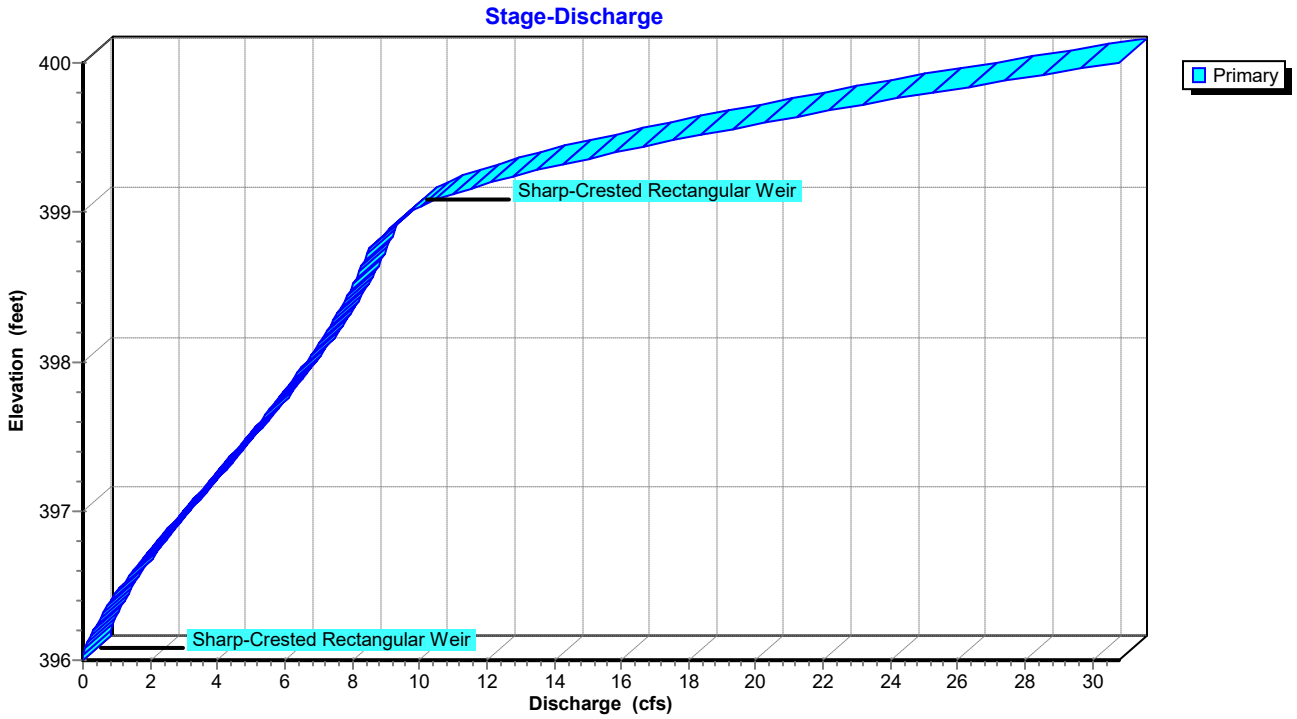
Device	Routing	Invert	Outlet Devices
#1	Primary	399.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	396.00'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 10.0' Crest Height

Primary OutFlow Max=7.06 cfs @ 0.22 hrs HW=398.14' (Free Discharge)
1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
2=Sharp-Crested Rectangular Weir (Weir Controls 7.06 cfs @ 4.91 fps)

Pond DP1: Re-Establised East Pond



Pond DP1: Re-Establised East Pond



Stage-Area-Storage for Pond DP1: Re-Establised East Pond

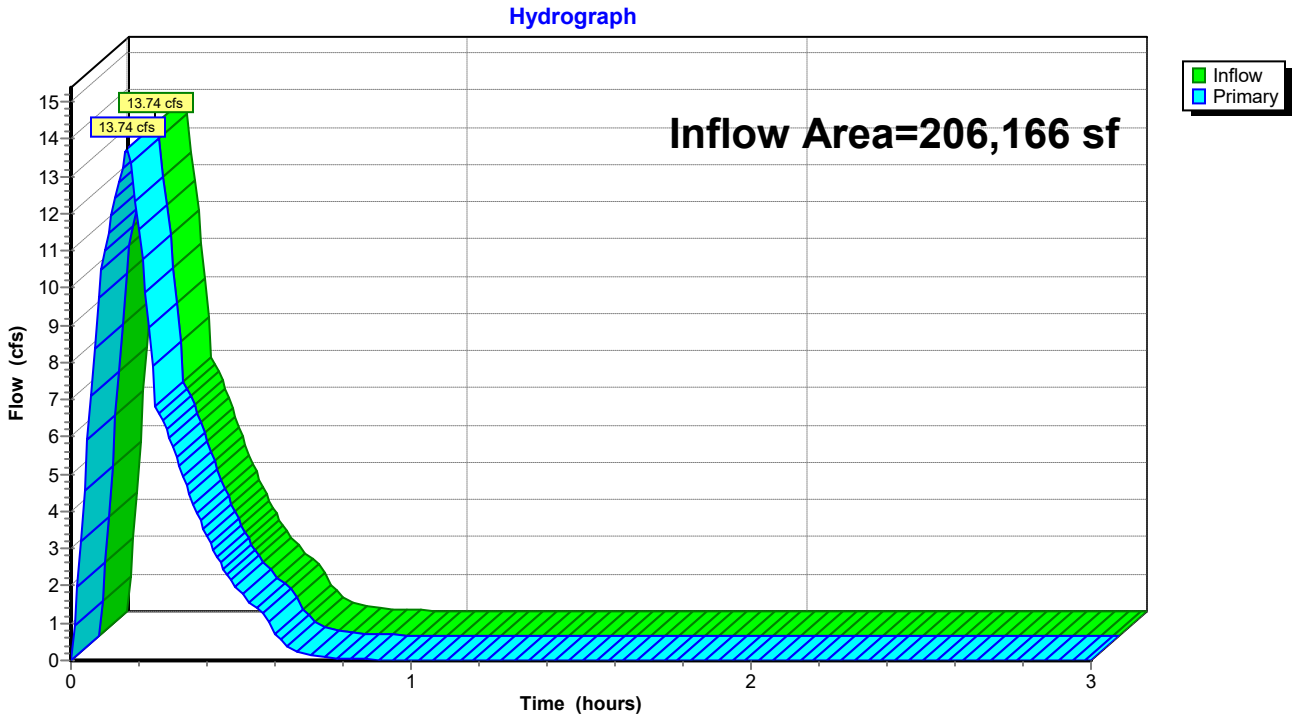
Elevation (feet)	Storage (cubic-feet)
396.00	0
396.05	25
396.10	50
396.15	75
396.20	100
396.25	125
396.30	150
396.35	175
396.40	200
396.45	225
396.50	250
396.55	359
396.60	468
396.65	578
396.70	687
396.75	796
396.80	905
396.85	1,014
396.90	1,124
396.95	1,233
397.00	1,342
397.05	1,461
397.10	1,581
397.15	1,700
397.20	1,819
397.25	1,939
397.30	2,058
397.35	2,177
397.40	2,297
397.45	2,416
397.50	2,536
397.55	2,655
397.60	2,774
397.65	2,894
397.70	3,013
397.75	3,132
397.80	3,252
397.85	3,371
397.90	3,490
397.95	3,610
398.00	3,729
398.05	3,849
398.10	3,970
398.15	4,090
398.20	4,210
398.25	4,330
398.30	4,451
398.35	4,571
398.40	4,691
398.45	4,811
398.50	4,932
398.55	5,052
398.60	5,172
398.65	5,292
398.70	5,412
398.75	5,533
398.80	5,653
398.85	5,773
398.90	5,893
398.95	6,014
399.00	6,134
399.05	6,255
399.10	6,376
399.15	6,497
399.20	6,619
399.25	6,740
399.30	6,861
399.35	6,982
399.40	7,103
399.45	7,224
399.50	7,346
399.55	7,467
399.60	7,588
399.65	7,709
399.70	7,830
399.75	7,951
399.80	8,072
399.85	8,194
399.90	8,315
399.95	8,436
400.00	**8,557**

Summary for Link Post-Dev: APPROX DISCHARGE

Inflow Area = 206,166 sf, 64.42% Impervious, Inflow Depth = 0.73" for 10-yr event
Inflow = 13.74 cfs @ 0.17 hrs, Volume= 12,613 cf
Primary = 13.74 cfs @ 0.17 hrs, Volume= 12,613 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

Link Post-Dev: APPROX DISCHARGE



Summary for Subcatchment D1: Drainage Basin D1

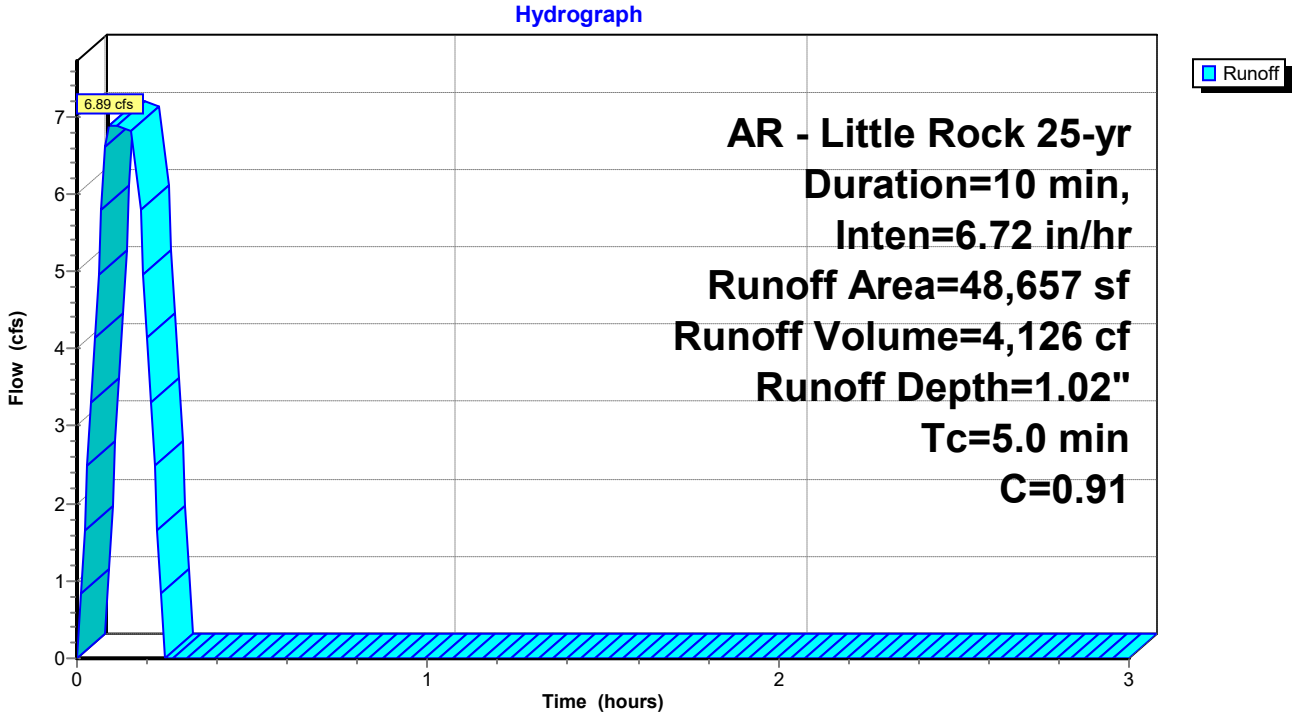
Runoff = 6.89 cfs @ 0.09 hrs, Volume= 4,126 cf, Depth= 1.02"
Routed to Link Post-Dev : APPROX DISCHARGE

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
3,421	0.40	Sod Yard
45,236	0.95	Rood, Drives, Sidewalks
48,657	0.91	Weighted Average
3,421		7.03% Pervious Area
45,236		92.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D1: Drainage Basin D1



Summary for Subcatchment D2: Drainage Basin D2

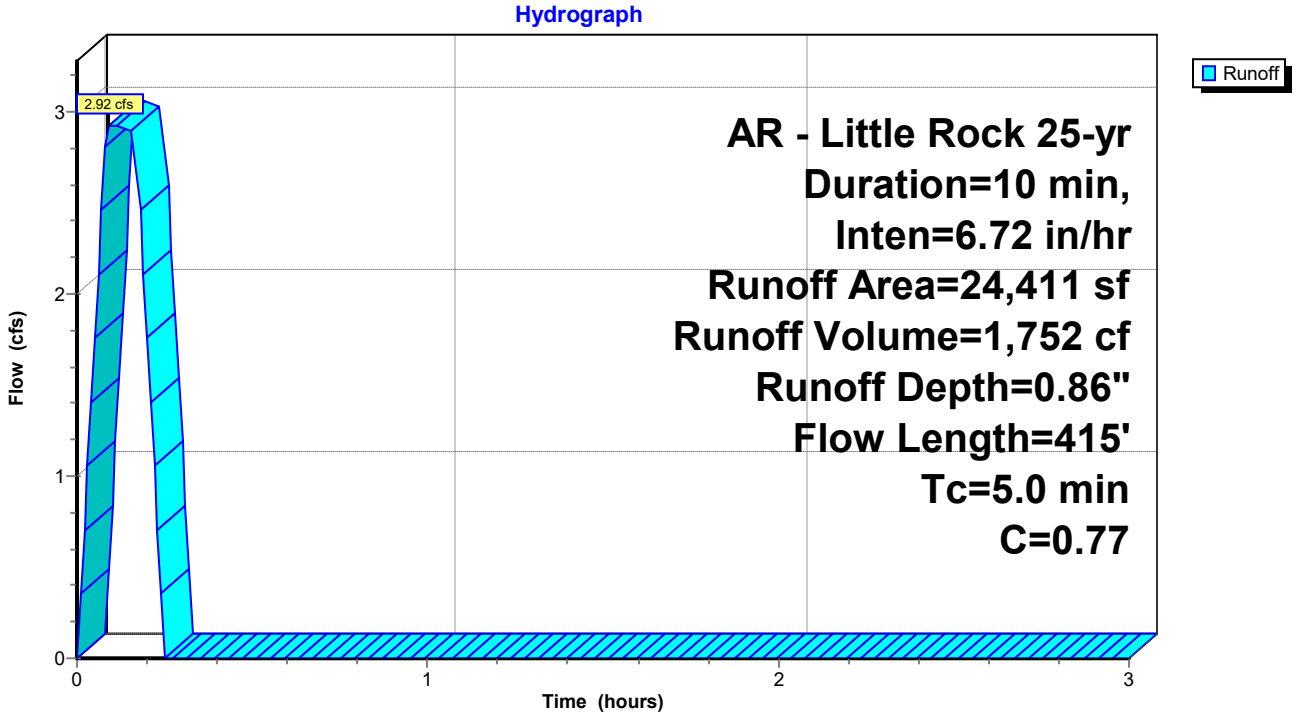
Runoff = 2.92 cfs @ 0.09 hrs, Volume= 1,752 cf, Depth= 0.86"
Routed to Reach P-A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
8,845	0.45	Rip Rap Embankment
15,566	0.95	Roof, Drives, Sidewalks
24,411	0.77	Weighted Average
8,845		36.23% Pervious Area
15,566		63.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D2: Drainage Basin D2



Summary for Subcatchment D3: Drainage Basin D3

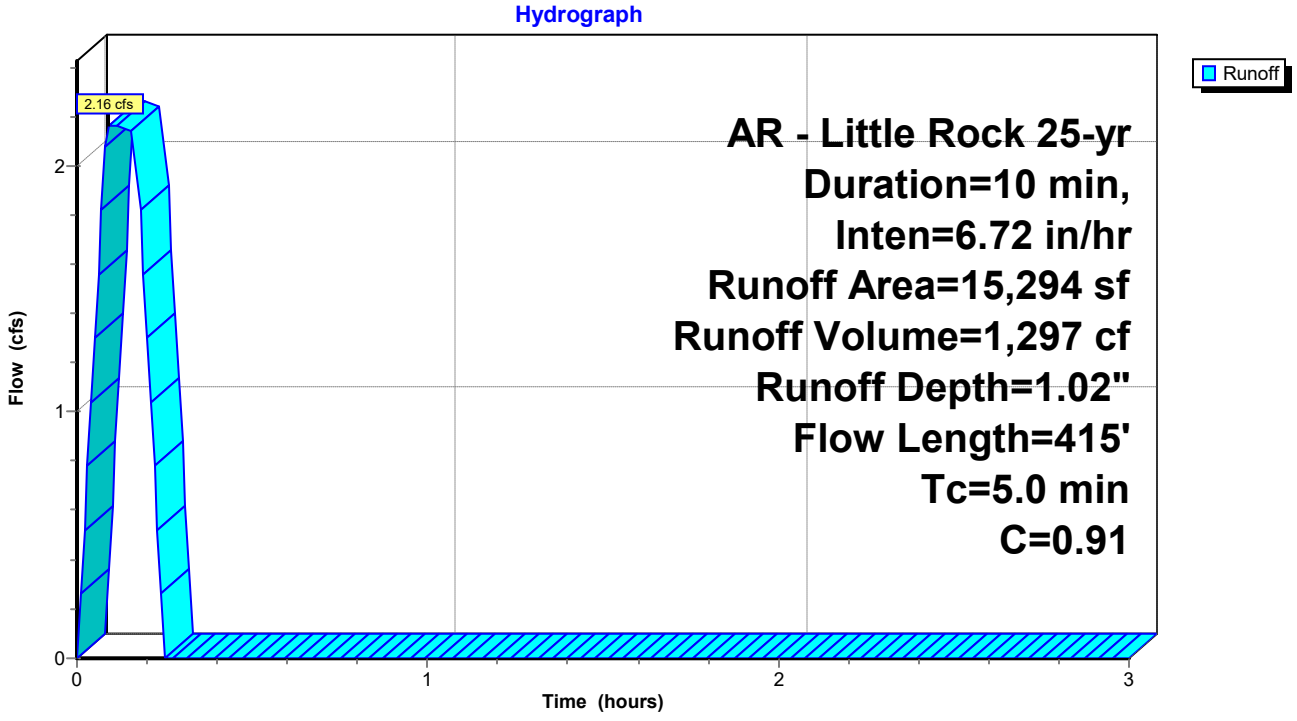
Runoff = 2.16 cfs @ 0.09 hrs, Volume= 1,297 cf, Depth= 1.02"
Routed to Reach P-A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
1,065	0.40	Sod Yard
14,229	0.95	Paving, Sidewalks
15,294	0.91	Weighted Average
1,065		6.96% Pervious Area
14,229		93.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D3: Drainage Basin D3



Summary for Subcatchment D4: Drainage Basin D4

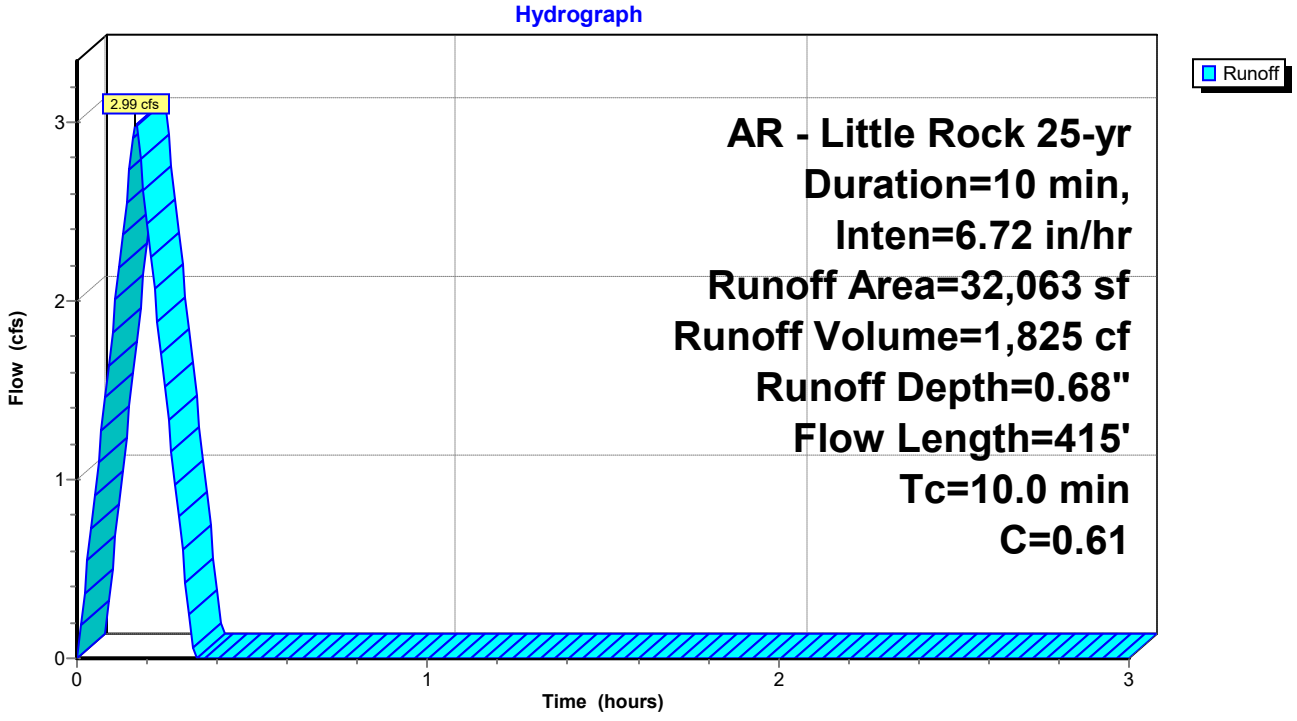
Runoff = 2.99 cfs @ 0.17 hrs, Volume= 1,825 cf, Depth= 0.68"
Routed to Reach P-A3 : Pipe A3

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
20,032	0.40	
12,031	0.95	
32,063	0.61	Weighted Average
20,032		62.48% Pervious Area
12,031		37.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D4: Drainage Basin D4



Summary for Subcatchment D5: Drainage Basin D5

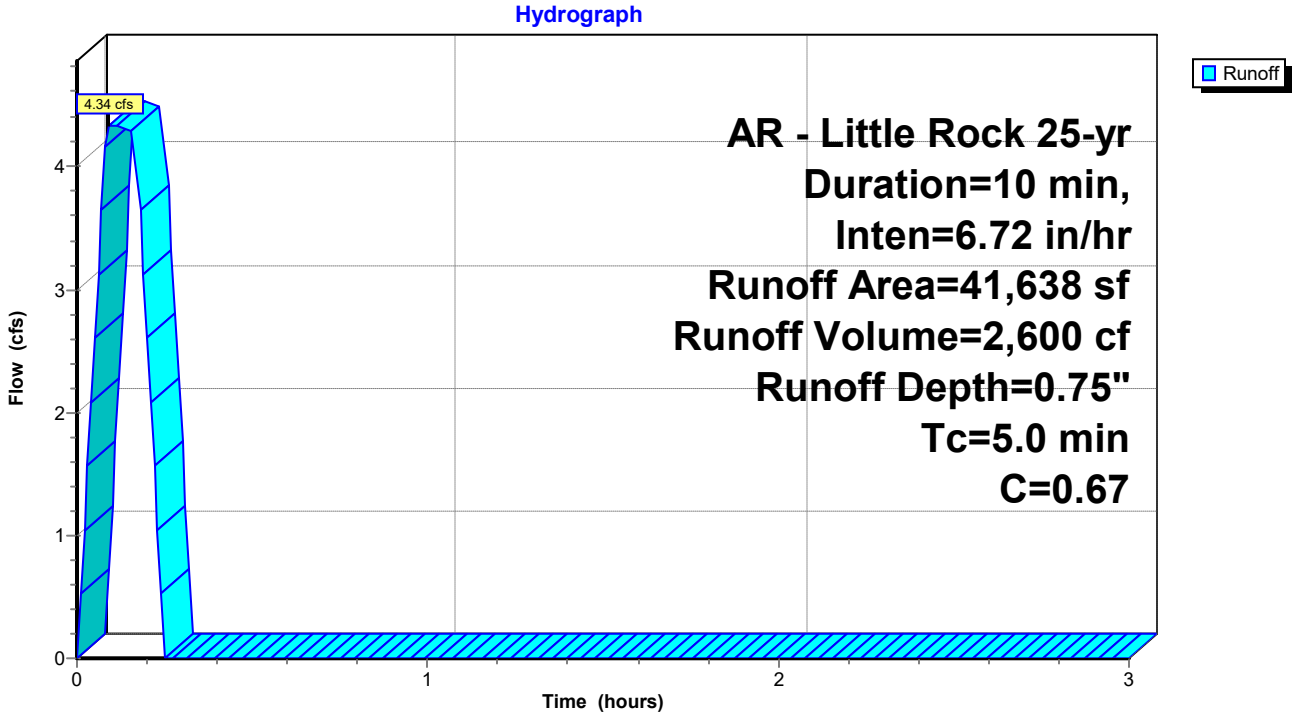
Runoff = 4.34 cfs @ 0.09 hrs, Volume= 2,600 cf, Depth= 0.75"
Routed to Pond DP1 : Re-Establised East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
21,201	0.40	Sod Yard, Natural Vegetation
20,437	0.95	Paving, Sidewalks
41,638	0.67	Weighted Average
21,201		50.92% Pervious Area
20,437		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D5: Drainage Basin D5



Summary for Subcatchment D6: Drainage Basin D6

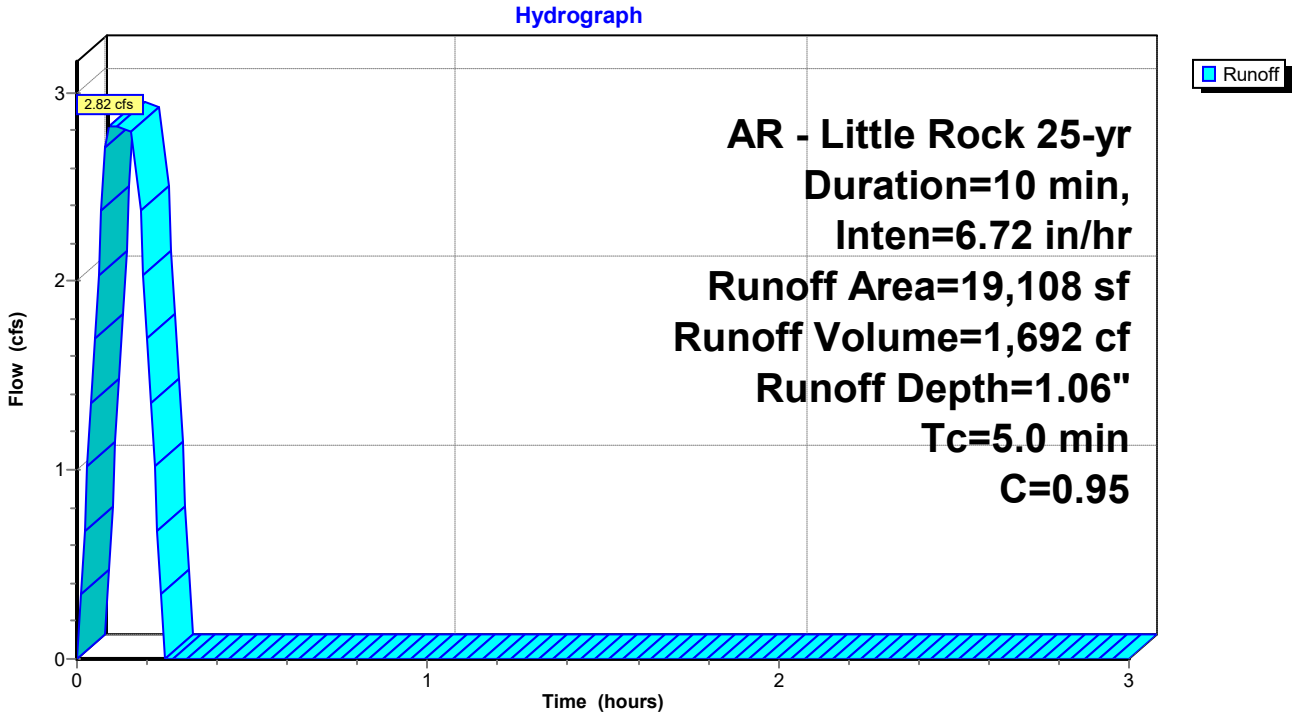
Runoff = 2.82 cfs @ 0.09 hrs, Volume= 1,692 cf, Depth= 1.06"
Routed to Pond DP1 : Re-Establised East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
19,108	0.95	Roof
19,108		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D6: Drainage Basin D6



Summary for Subcatchment D7: Drainage Basin D7

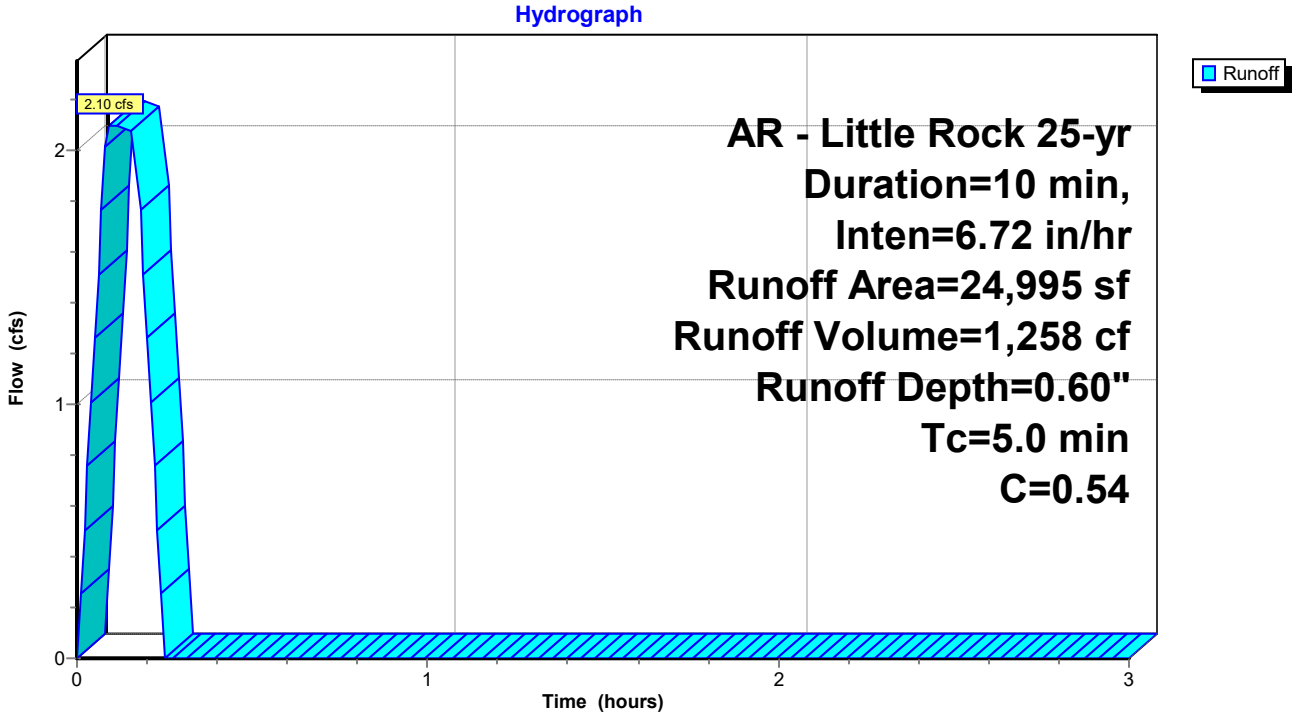
Runoff = 2.10 cfs @ 0.09 hrs, Volume= 1,258 cf, Depth= 0.60"
Routed to Link Post-Dev : APPROX DISCHARGE

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
18,798	0.40	Sod Yard, Natural Vegetation
6,197	0.95	Paving, Sidewalks
24,995	0.54	Weighted Average
18,798		75.21% Pervious Area
6,197		24.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D7: Drainage Basin D7



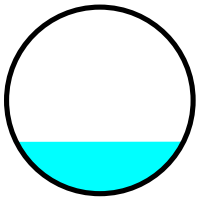
Summary for Reach P-A1: Pipe A1

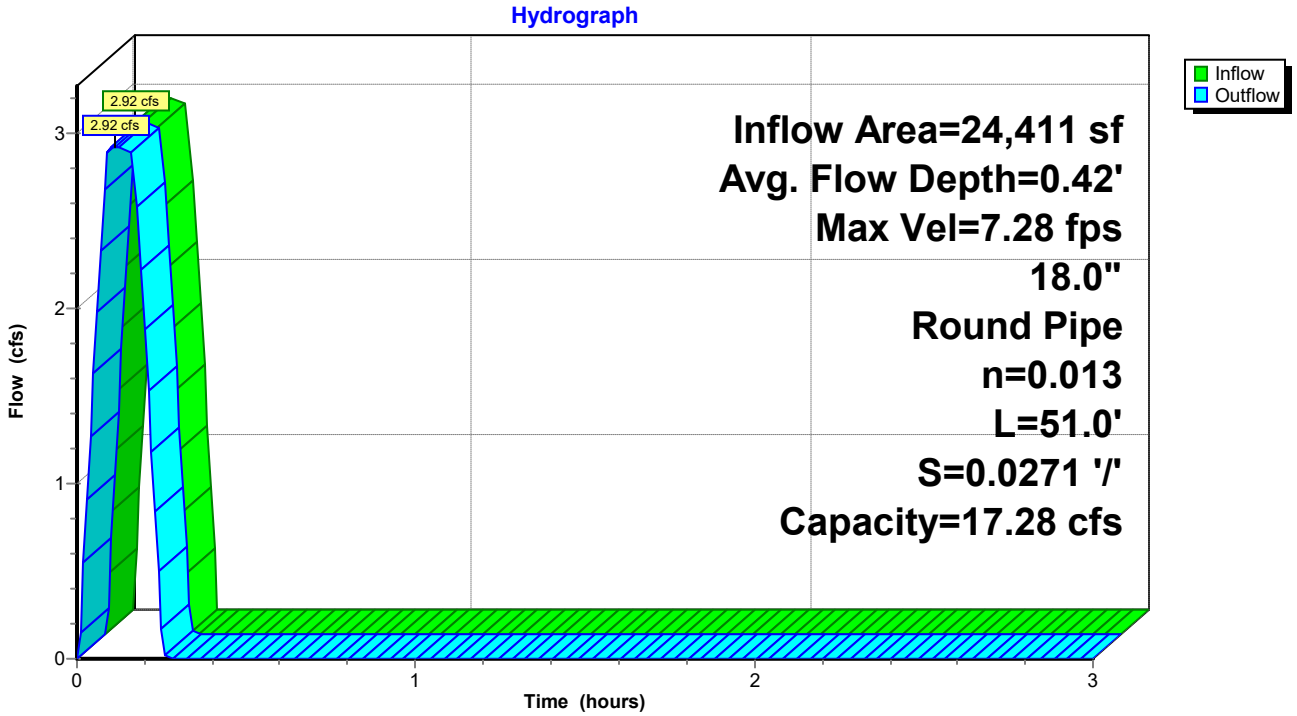
Inflow Area = 24,411 sf, 63.77% Impervious, Inflow Depth = 0.86" for 25-yr event
Inflow = 2.92 cfs @ 0.09 hrs, Volume= 1,752 cf
Outflow = 2.92 cfs @ 0.11 hrs, Volume= 1,752 cf, Atten= 0%, Lag= 1.2 min
Routed to Reach P-A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.28 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 5.29 fps, Avg. Travel Time= 0.2 min

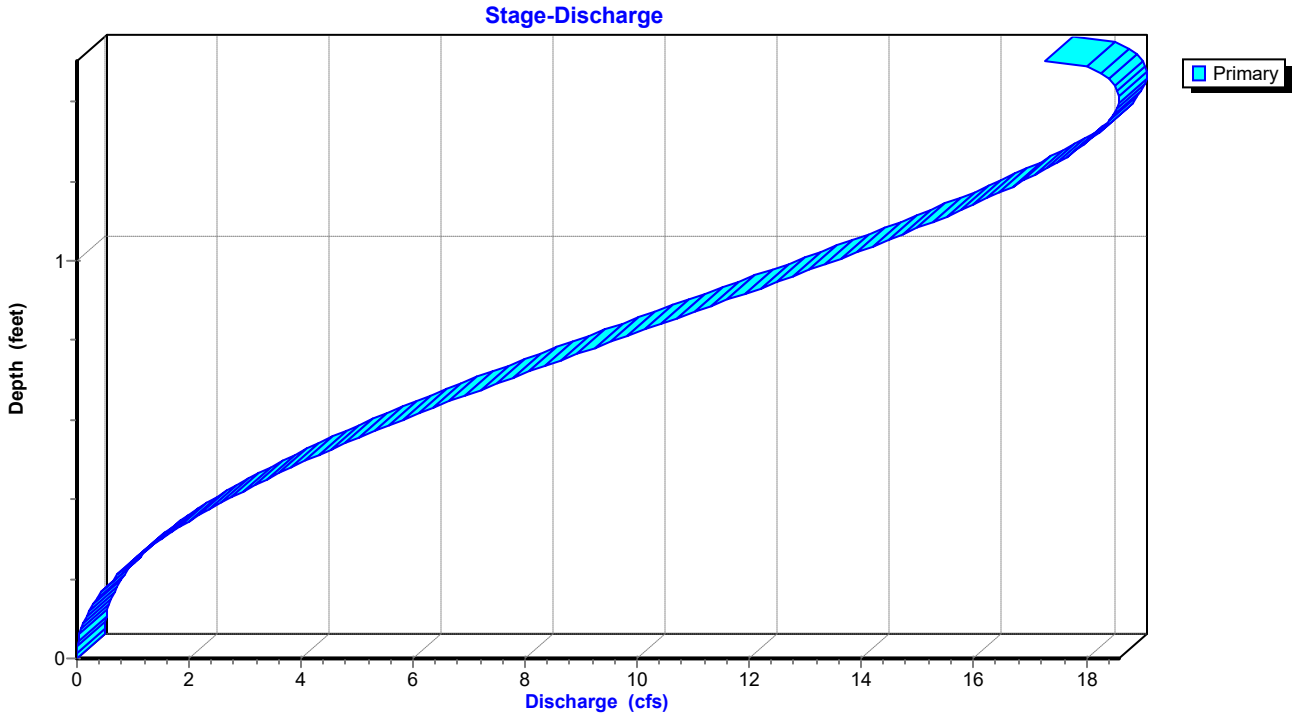
Peak Storage= 20 cf @ 0.09 hrs
Average Depth at Peak Storage= 0.42' , Surface Width= 1.34'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.28 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 51.0' Slope= 0.0271 '/'
Inlet Invert= 408.33', Outlet Invert= 406.95'





Reach P-A1: Pipe A1



Stage-Area-Storage for Reach P-A1: Pipe A1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
408.33	0.0	0
408.35	0.0	0
408.37	0.0	1
408.39	0.0	1
408.41	0.0	2
408.43	0.1	3
408.45	0.1	3
408.47	0.1	4
408.49	0.1	5
408.51	0.1	6
408.53	0.1	7
408.55	0.2	8
408.57	0.2	9
408.59	0.2	10
408.61	0.2	12
408.63	0.3	13
408.65	0.3	14
408.67	0.3	15
408.69	0.3	17
408.71	0.4	18
408.73	0.4	19
408.75	0.4	21
408.77	0.4	22
408.79	0.5	23
408.81	0.5	25
408.83	0.5	26
408.85	0.5	28
408.87	0.6	29
408.89	0.6	31
408.91	0.6	32
408.93	0.7	34
408.95	0.7	35
408.97	0.7	37
408.99	0.7	38
409.01	0.8	40
409.03	0.8	41
409.05	0.8	43
409.07	0.9	44
409.09	0.9	46
409.11	0.9	47
409.13	1.0	49
409.15	1.0	50
409.17	1.0	52
409.19	1.0	53
409.21	1.1	55
409.23	1.1	56
409.25	1.1	58
409.27	1.2	59
409.29	1.2	61
409.31	1.2	62
409.33	1.3	64
409.35	1.3	65
409.37	1.3	67
409.39	1.3	68
409.41	1.4	69
409.43	1.4	71
409.45	1.4	72
409.47	1.4	73
409.49	1.5	75
409.51	1.5	76
409.53	1.5	77
409.55	1.5	78
409.57	1.6	80
409.59	1.6	81
409.61	1.6	82
409.63	1.6	83
409.65	1.6	84
409.67	1.7	85
409.69	1.7	86
409.71	1.7	87
409.73	1.7	88
409.75	1.7	88
409.77	1.7	89
409.79	1.8	89
409.81	1.8	90
409.83	**1.8**	**90**

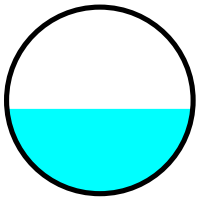
Summary for Reach P-A2: Pipe A2

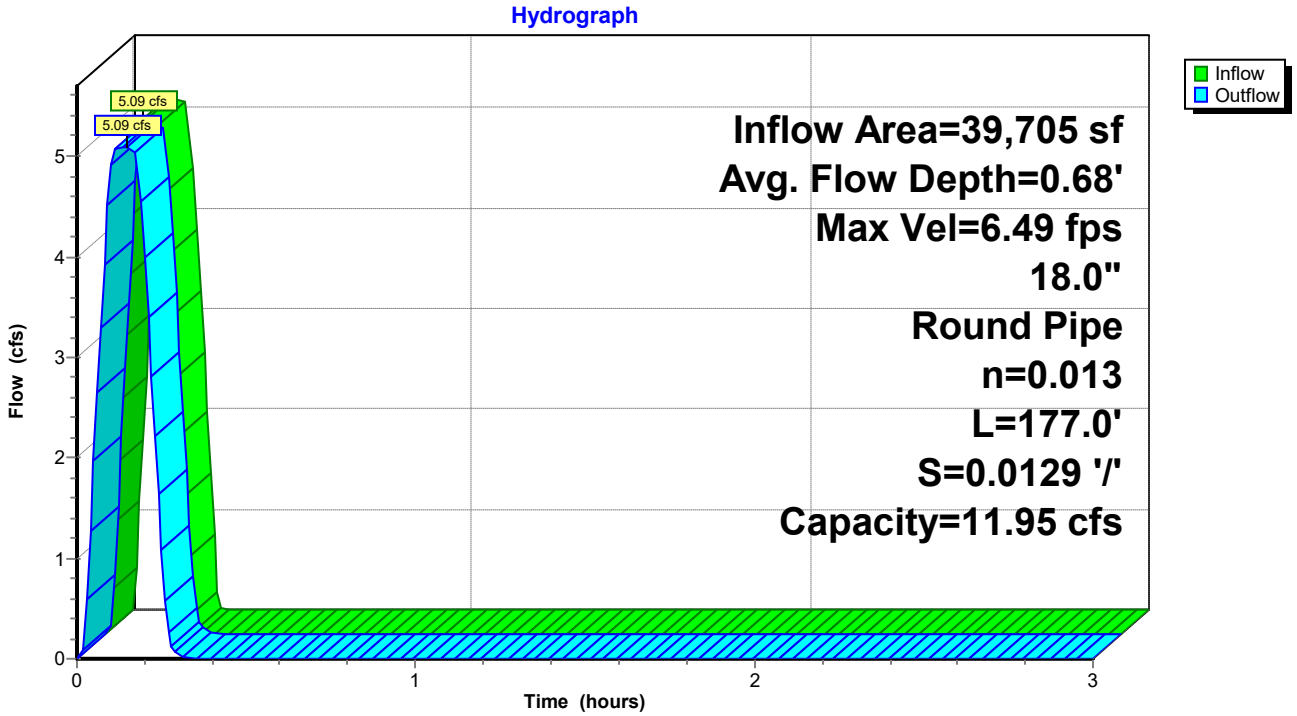
Inflow Area = 39,705 sf, 75.04% Impervious, Inflow Depth = 0.92" for 25-yr event
Inflow = 5.09 cfs @ 0.11 hrs, Volume= 3,048 cf
Outflow = 5.09 cfs @ 0.15 hrs, Volume= 3,048 cf, Atten= 0%, Lag= 2.4 min
Routed to Reach P-A3 : Pipe A3

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.49 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.58 fps, Avg. Travel Time= 1.1 min

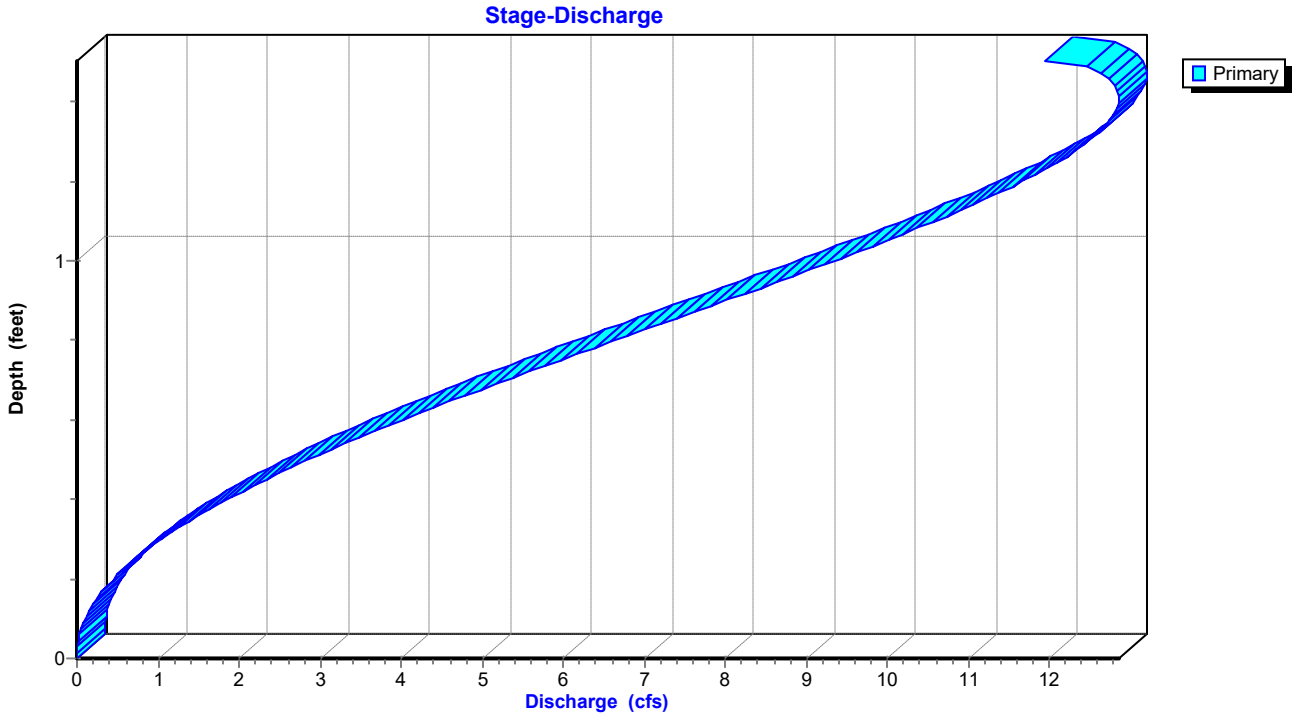
Peak Storage= 139 cf @ 0.14 hrs
Average Depth at Peak Storage= 0.68' , Surface Width= 1.49'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.95 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 177.0' Slope= 0.0129 '/'
Inlet Invert= 406.85', Outlet Invert= 404.56'





Reach P-A2: Pipe A2



Stage-Area-Storage for Reach P-A2: Pipe A2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
406.85	0.0	0
406.87	0.0	1
406.89	0.0	2
406.91	0.0	4
406.93	0.0	6
406.95	0.1	9
406.97	0.1	12
406.99	0.1	15
407.01	0.1	18
407.03	0.1	21
407.05	0.1	25
407.07	0.2	28
407.09	0.2	32
407.11	0.2	36
407.13	0.2	40
407.15	0.3	45
407.17	0.3	49
407.19	0.3	53
407.21	0.3	58
407.23	0.4	62
407.25	0.4	67
407.27	0.4	72
407.29	0.4	76
407.31	0.5	81
407.33	0.5	86
407.35	0.5	91
407.37	0.5	96
407.39	0.6	101
407.41	0.6	106
407.43	0.6	112
407.45	0.7	117
407.47	0.7	122
407.49	0.7	127
407.51	0.7	133
407.53	0.8	138
407.55	0.8	143
407.57	0.8	148
407.59	0.9	154
407.61	0.9	159
407.63	0.9	164
407.65	1.0	170
407.67	1.0	175
407.69	1.0	180
407.71	1.0	185
407.73	1.1	191
407.75	1.1	196
407.77	1.1	201
407.79	1.2	206
407.81	1.2	211
407.83	1.2	216
407.85	1.3	222
407.87	1.3	226
407.89	1.3	231
407.91	1.3	236
407.93	1.4	241
407.95	1.4	246
407.97	1.4	250
407.99	1.4	255
408.01	1.5	260
408.03	1.5	264
408.05	1.5	268
408.07	1.5	272
408.09	1.6	277
408.11	1.6	280
408.13	1.6	284
408.15	1.6	288
408.17	1.6	292
408.19	1.7	295
408.21	1.7	298
408.23	1.7	301
408.25	1.7	304
408.27	1.7	306
408.29	1.7	309
408.31	1.8	310
408.33	1.8	312
408.35	**1.8**	**313**

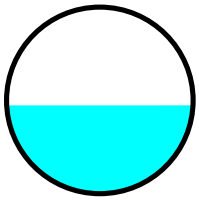
Summary for Reach P-A3: Pipe A3

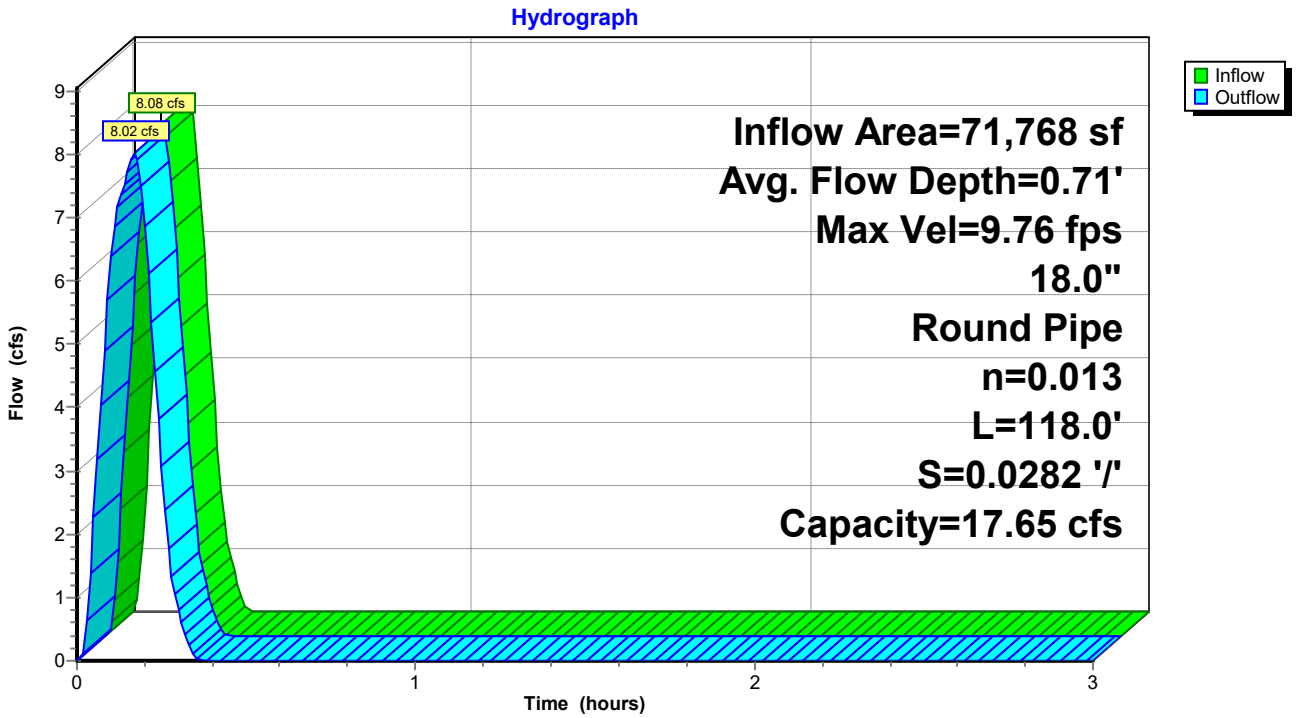
Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.81" for 25-yr event
Inflow = 8.08 cfs @ 0.17 hrs, Volume= 4,873 cf
Outflow = 8.02 cfs @ 0.17 hrs, Volume= 4,873 cf, Atten= 1%, Lag= 0.2 min
Routed to Reach P-A4 : Pipe A4

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.76 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.04 fps, Avg. Travel Time= 0.5 min

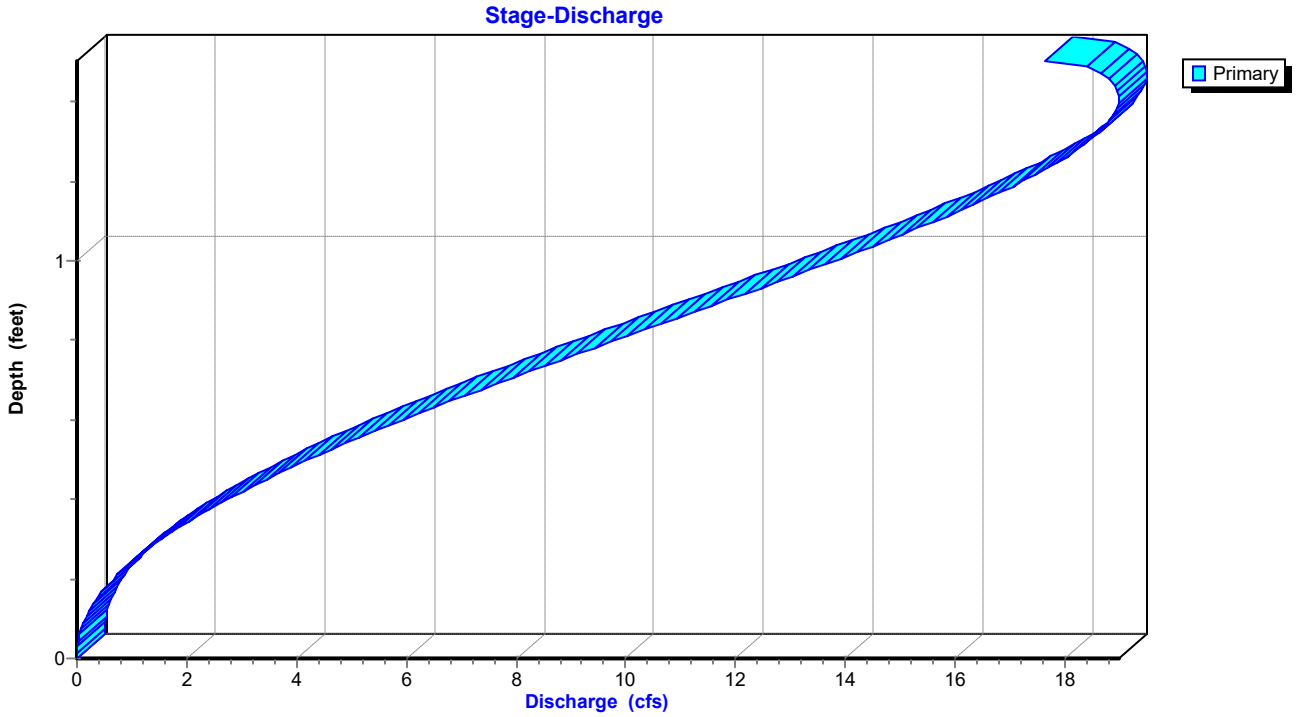
Peak Storage= 97 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.71' , Surface Width= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.65 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 118.0' Slope= 0.0282 '/'
Inlet Invert= 404.46', Outlet Invert= 401.13'





Reach P-A3: Pipe A3



Stage-Area-Storage for Reach P-A3: Pipe A3

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
404.46	0.0	0
404.48	0.0	1
404.50	0.0	2
404.52	0.0	3
404.54	0.0	4
404.56	0.1	6
404.58	0.1	8
404.60	0.1	10
404.62	0.1	12
404.64	0.1	14
404.66	0.1	17
404.68	0.2	19
404.70	0.2	22
404.72	0.2	24
404.74	0.2	27
404.76	0.3	30
404.78	0.3	33
404.80	0.3	35
404.82	0.3	38
404.84	0.4	42
404.86	0.4	45
404.88	0.4	48
404.90	0.4	51
404.92	0.5	54
404.94	0.5	58
404.96	0.5	61
404.98	0.5	64
405.00	0.6	68
405.02	0.6	71
405.04	0.6	74
405.06	0.7	78
405.08	0.7	81
405.10	0.7	85
405.12	0.7	88
405.14	0.8	92
405.16	0.8	95
405.18	0.8	99
405.20	0.9	102
405.22	0.9	106
405.24	0.9	110
405.26	1.0	113
405.28	1.0	117
405.30	1.0	120
405.32	1.0	124
405.34	1.1	127
405.36	1.1	131
405.38	1.1	134
405.40	1.2	138
405.42	1.2	141
405.44	1.2	144
405.46	1.3	148
405.48	1.3	151
405.50	1.3	154
405.52	1.3	158
405.54	1.4	161
405.56	1.4	164
405.58	1.4	167
405.60	1.4	170
405.62	1.5	173
405.64	1.5	176
405.66	1.5	179
405.68	1.5	182
405.70	1.6	184
405.72	1.6	187
405.74	1.6	190
405.76	1.6	192
405.78	1.6	194
405.80	1.7	197
405.82	1.7	199
405.84	1.7	201
405.86	1.7	203
405.88	1.7	204
405.90	1.7	206
405.92	1.8	207
405.94	1.8	208
405.96	**1.8**	**209**

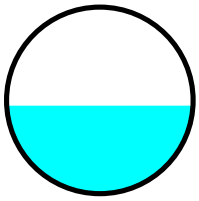
Summary for Reach P-A4: Pipe A4

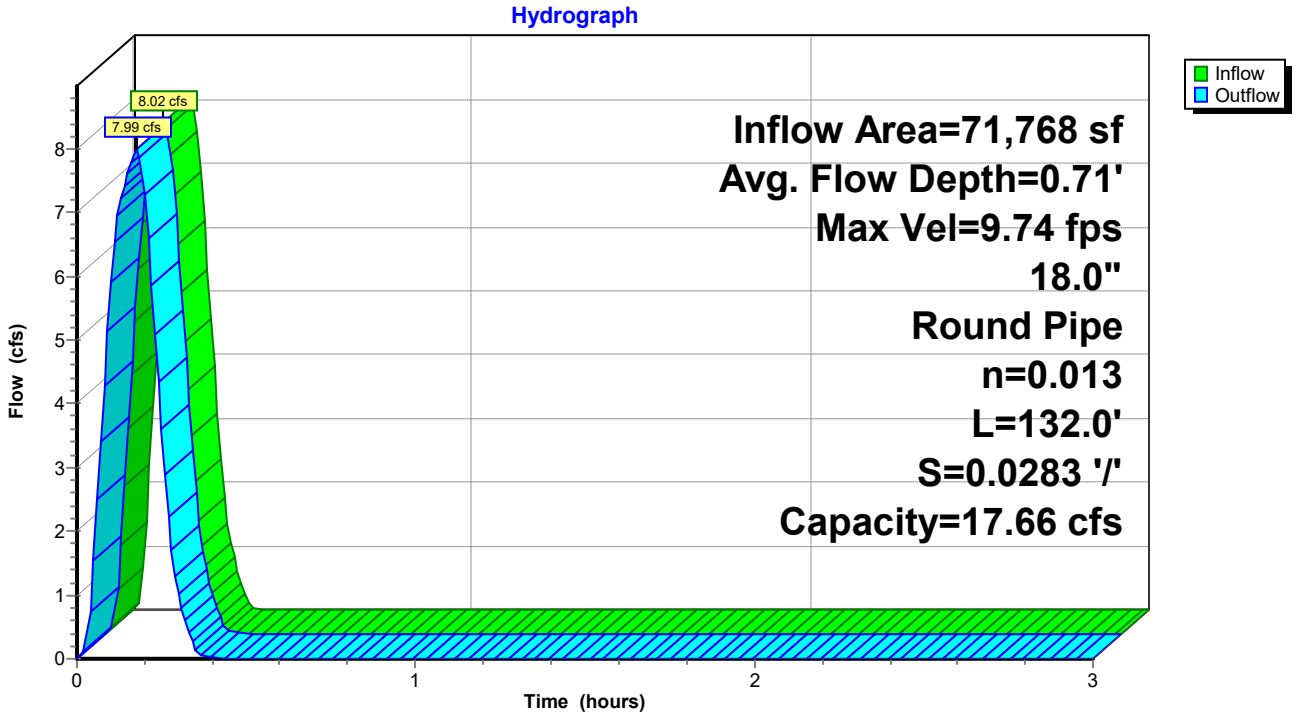
Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.81" for 25-yr event
Inflow = 8.02 cfs @ 0.17 hrs, Volume= 4,873 cf
Outflow = 7.99 cfs @ 0.18 hrs, Volume= 4,873 cf, Atten= 0%, Lag= 0.4 min
Routed to Pond DP1 : Re-Establised East Pond

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.74 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.84 fps, Avg. Travel Time= 0.6 min

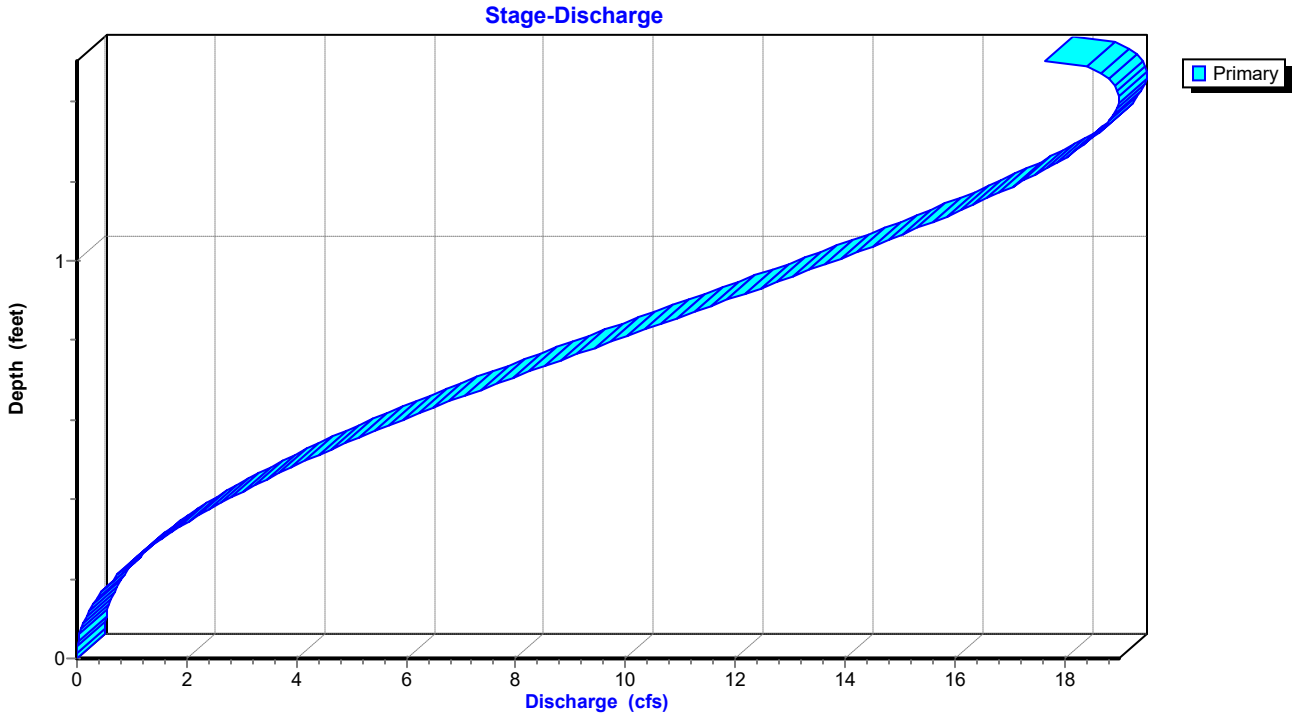
Peak Storage= 108 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.71' , Surface Width= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.66 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 132.0' Slope= 0.0283 '/'
Inlet Invert= 401.03', Outlet Invert= 397.30'





Reach P-A4: Pipe A4



Stage-Area-Storage for Reach P-A4: Pipe A4

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
401.03	0.0	0
401.05	0.0	1
401.07	0.0	2
401.09	0.0	3
401.11	0.0	5
401.13	0.1	7
401.15	0.1	9
401.17	0.1	11
401.19	0.1	13
401.21	0.1	16
401.23	0.1	18
401.25	0.2	21
401.27	0.2	24
401.29	0.2	27
401.31	0.2	30
401.33	0.3	33
401.35	0.3	36
401.37	0.3	40
401.39	0.3	43
401.41	0.4	46
401.43	0.4	50
401.45	0.4	53
401.47	0.4	57
401.49	0.5	61
401.51	0.5	64
401.53	0.5	68
401.55	0.5	72
401.57	0.6	76
401.59	0.6	79
401.61	0.6	83
401.63	0.7	87
401.65	0.7	91
401.67	0.7	95
401.69	0.7	99
401.71	0.8	103
401.73	0.8	107
401.75	0.8	111
401.77	0.9	115
401.79	0.9	119
401.81	0.9	123
401.83	1.0	127
401.85	1.0	130
401.87	1.0	134
401.89	1.0	138
401.91	1.1	142
401.93	1.1	146
401.95	1.1	150
401.97	1.2	154
401.99	1.2	158
402.01	1.2	161
402.03	1.3	165
402.05	1.3	169
402.07	1.3	173
402.09	1.3	176
402.11	1.4	180
402.13	1.4	183
402.15	1.4	187
402.17	1.4	190
402.19	1.5	194
402.21	1.5	197
402.23	1.5	200
402.25	1.5	203
402.27	1.6	206
402.29	1.6	209
402.31	1.6	212
402.33	1.6	215
402.35	1.6	217
402.37	1.7	220
402.39	1.7	222
402.41	1.7	225
402.43	1.7	227
402.45	1.7	228
402.47	1.7	230
402.49	1.8	232
402.51	1.8	233
402.53	**1.8**	**233**

Summary for Pond DP1: Re-Establised East Pond

Inflow Area = 132,514 sf, 61.41% Impervious, Inflow Depth = 0.83" for 25-yr event
Inflow = 14.95 cfs @ 0.16 hrs, Volume= 9,164 cf
Outflow = 7.87 cfs @ 0.22 hrs, Volume= 9,164 cf, Atten= 47%, Lag= 3.8 min
Primary = 7.87 cfs @ 0.22 hrs, Volume= 9,164 cf
Routed to Link Post-Dev : APPROX DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 398.45' @ 0.22 hrs Storage= 4,803 cf

Plug-Flow detention time= 8.8 min calculated for 9,164 cf (100% of inflow)
Center-of-Mass det. time= 8.7 min (17.5 - 8.8)

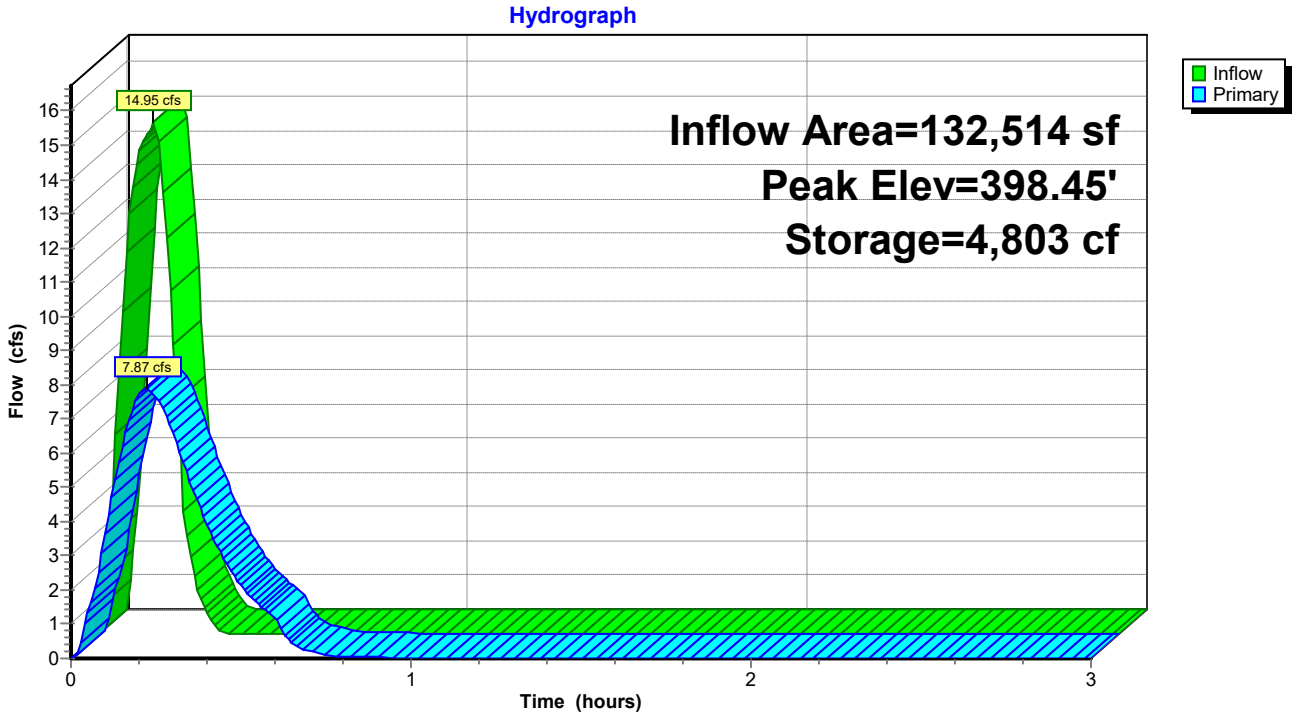
Volume	Invert	Avail.Storage	Storage Description
#1	396.00'	8,557 cf	**Custom Stage Data** Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
396.00	0	0
396.50	250	250
397.00	1,092	1,342
398.00	2,387	3,729
399.00	2,405	6,134
400.00	2,423	8,557

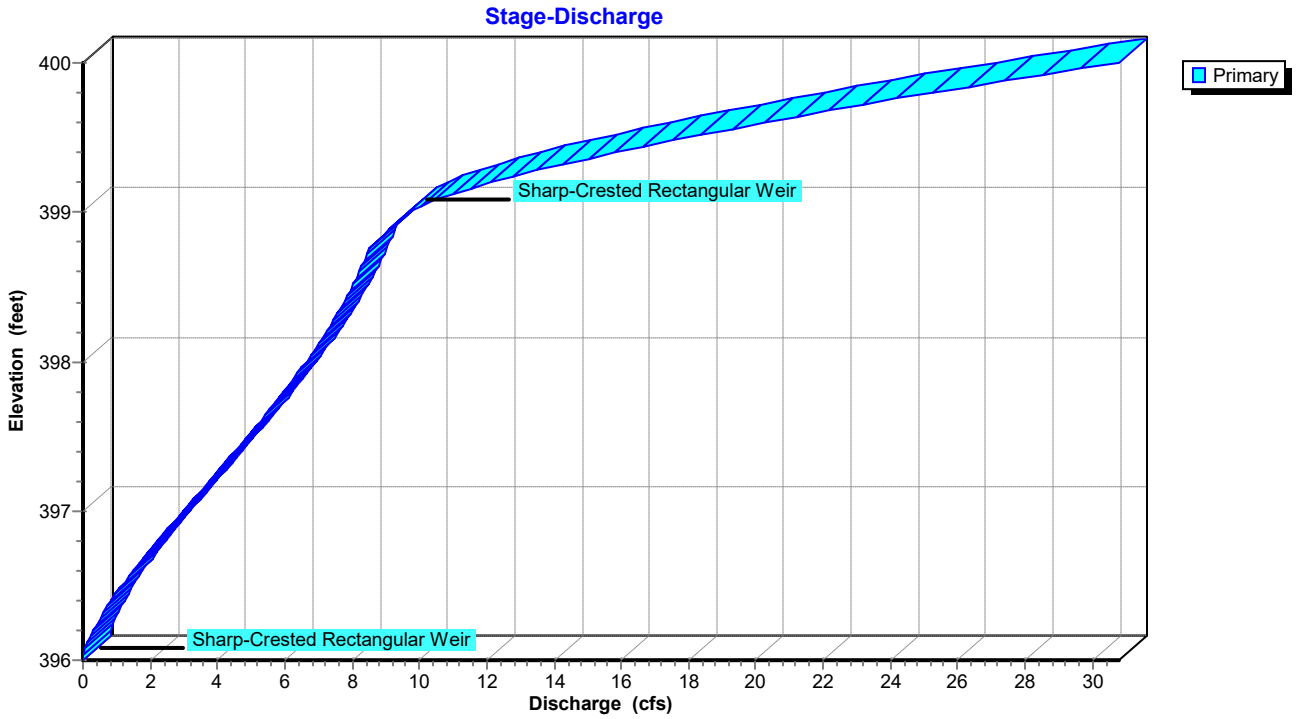
Device	Routing	Invert	Outlet Devices
#1	Primary	399.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	396.00'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 10.0' Crest Height

Primary OutFlow Max=7.86 cfs @ 0.22 hrs HW=398.44' (Free Discharge)
1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
2=Sharp-Crested Rectangular Weir (Weir Controls 7.86 cfs @ 5.26 fps)

Pond DP1: Re-Establised East Pond



Pond DP1: Re-Establised East Pond



Stage-Area-Storage for Pond DP1: Re-Establised East Pond

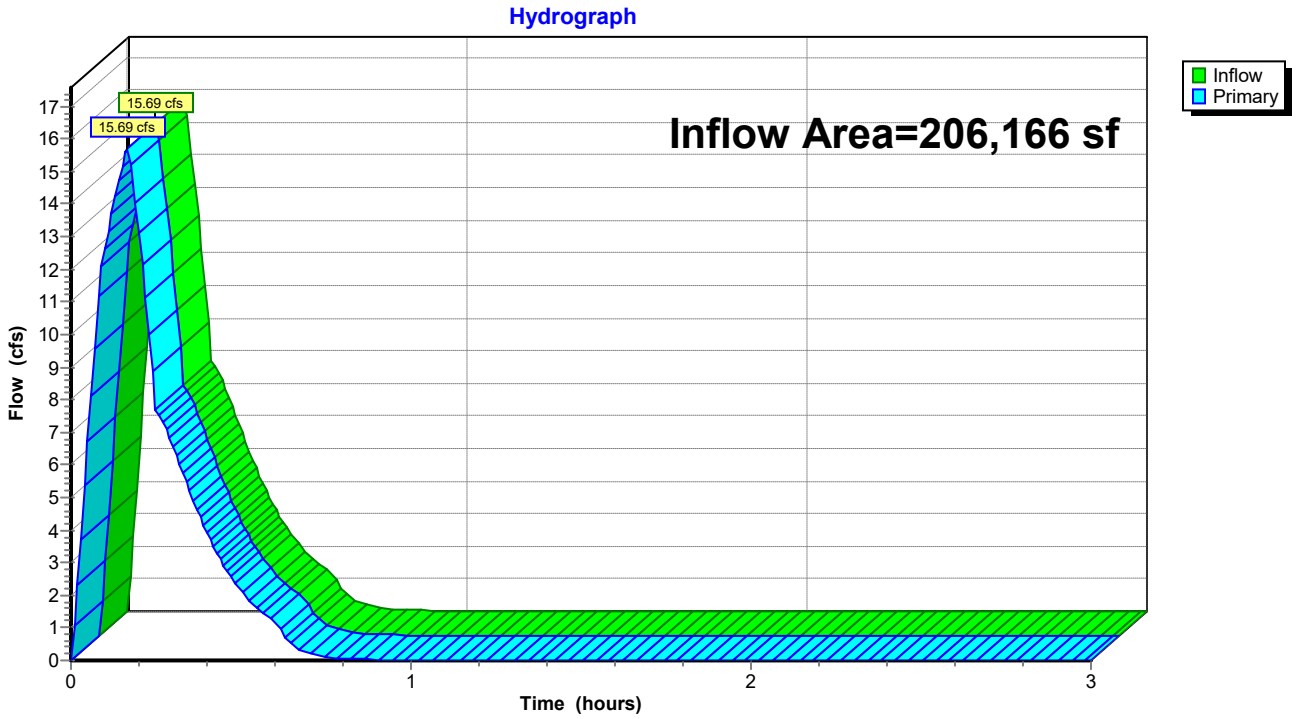
Elevation (feet)	Storage (cubic-feet)
396.00	0
396.05	25
396.10	50
396.15	75
396.20	100
396.25	125
396.30	150
396.35	175
396.40	200
396.45	225
396.50	250
396.55	359
396.60	468
396.65	578
396.70	687
396.75	796
396.80	905
396.85	1,014
396.90	1,124
396.95	1,233
397.00	1,342
397.05	1,461
397.10	1,581
397.15	1,700
397.20	1,819
397.25	1,939
397.30	2,058
397.35	2,177
397.40	2,297
397.45	2,416
397.50	2,536
397.55	2,655
397.60	2,774
397.65	2,894
397.70	3,013
397.75	3,132
397.80	3,252
397.85	3,371
397.90	3,490
397.95	3,610
398.00	3,729
398.05	3,849
398.10	3,970
398.15	4,090
398.20	4,210
398.25	4,330
398.30	4,451
398.35	4,571
398.40	4,691
398.45	4,811
398.50	4,932
398.55	5,052
398.60	5,172
398.65	5,292
398.70	5,412
398.75	5,533
398.80	5,653
398.85	5,773
398.90	5,893
398.95	6,014
399.00	6,134
399.05	6,255
399.10	6,376
399.15	6,497
399.20	6,619
399.25	6,740
399.30	6,861
399.35	6,982
399.40	7,103
399.45	7,224
399.50	7,346
399.55	7,467
399.60	7,588
399.65	7,709
399.70	7,830
399.75	7,951
399.80	8,072
399.85	8,194
399.90	8,315
399.95	8,436
400.00	**8,557**

Summary for Link Post-Dev: APPROX DISCHARGE

Inflow Area = 206,166 sf, 64.42% Impervious, Inflow Depth = 0.85" for 25-yr event
Inflow = 15.69 cfs @ 0.17 hrs, Volume= 14,548 cf
Primary = 15.69 cfs @ 0.17 hrs, Volume= 14,548 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

Link Post-Dev: APPROX DISCHARGE



Summary for Subcatchment D1: Drainage Basin D1

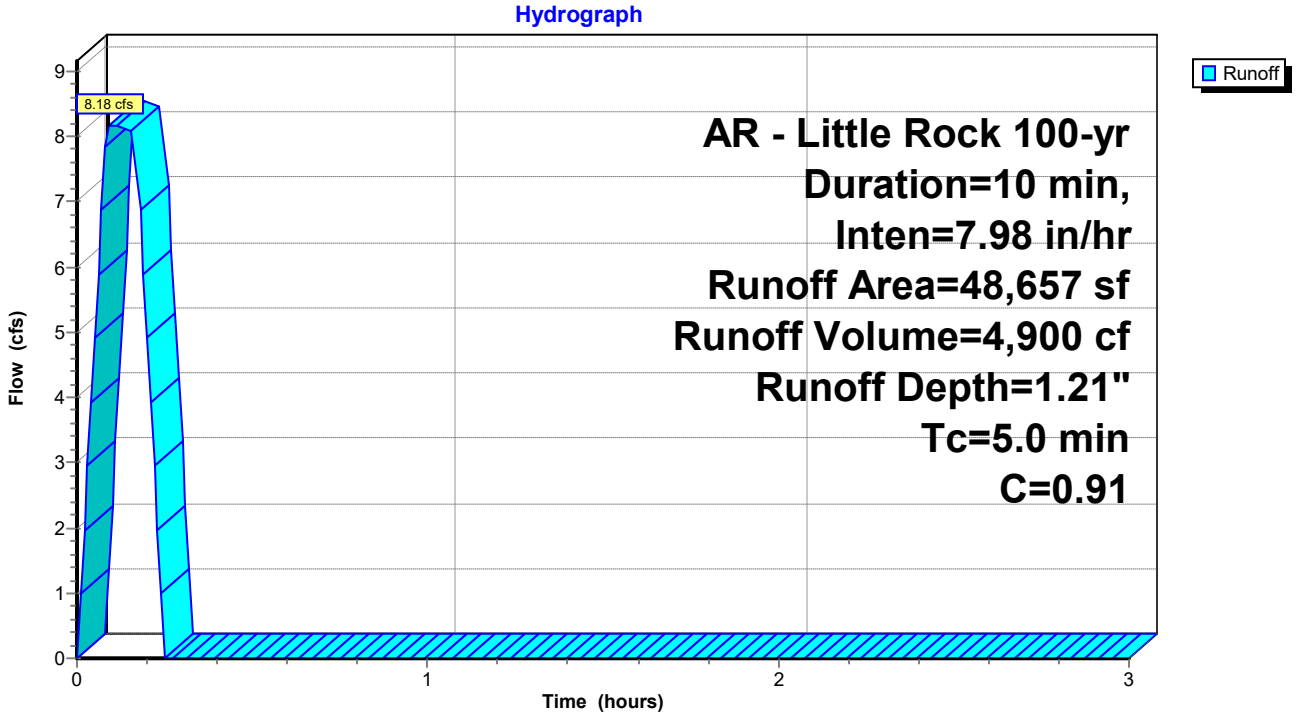
Runoff = 8.18 cfs @ 0.09 hrs, Volume= 4,900 cf, Depth= 1.21"
Routed to Link Post-Dev : APPROX DISCHARGE

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
3,421	0.40	Sod Yard
45,236	0.95	Rood, Drives, Sidewalks
48,657	0.91	Weighted Average
3,421		7.03% Pervious Area
45,236		92.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D1: Drainage Basin D1



Summary for Subcatchment D2: Drainage Basin D2

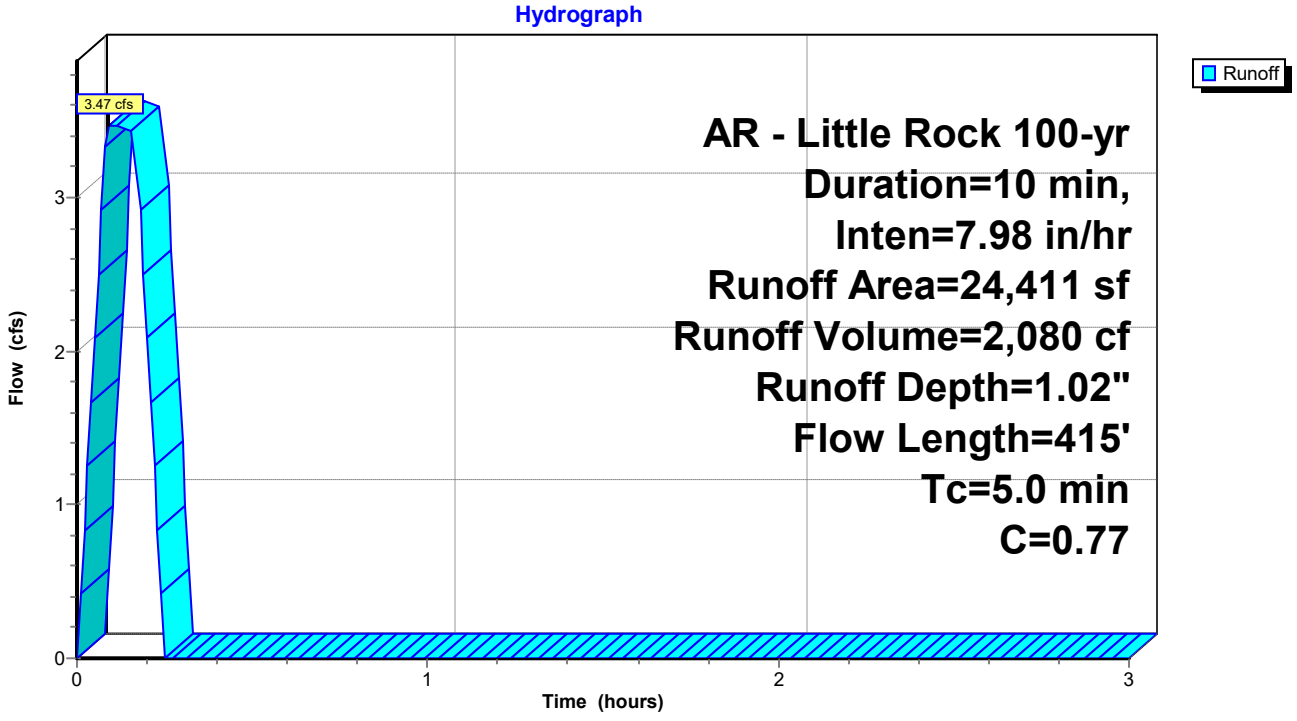
Runoff = 3.47 cfs @ 0.09 hrs, Volume= 2,080 cf, Depth= 1.02"
Routed to Reach P-A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
8,845	0.45	Rip Rap Embankment
15,566	0.95	Roof, Drives, Sidewalks
24,411	0.77	Weighted Average
8,845		36.23% Pervious Area
15,566		63.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D2: Drainage Basin D2



Summary for Subcatchment D3: Drainage Basin D3

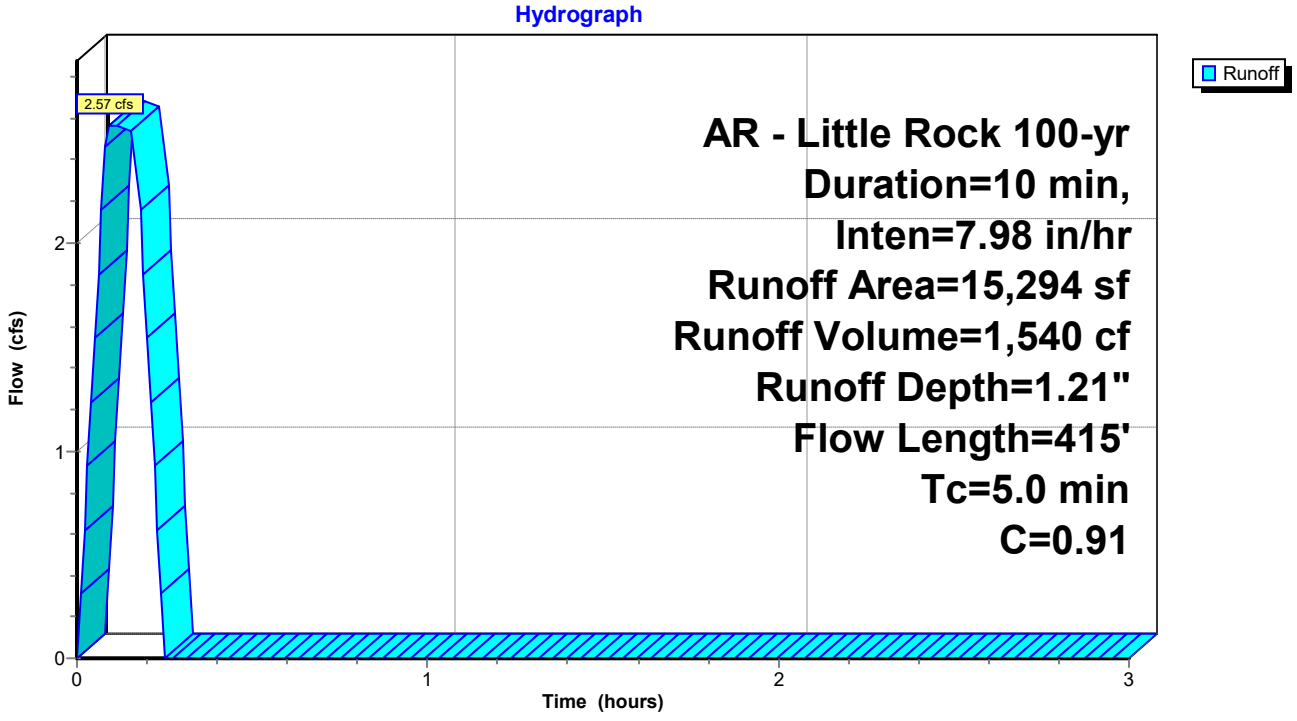
Runoff = 2.57 cfs @ 0.09 hrs, Volume= 1,540 cf, Depth= 1.21"
Routed to Reach P-A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
1,065	0.40	Sod Yard
14,229	0.95	Paving, Sidewalks
15,294	0.91	Weighted Average
1,065		6.96% Pervious Area
14,229		93.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D3: Drainage Basin D3



Summary for Subcatchment D4: Drainage Basin D4

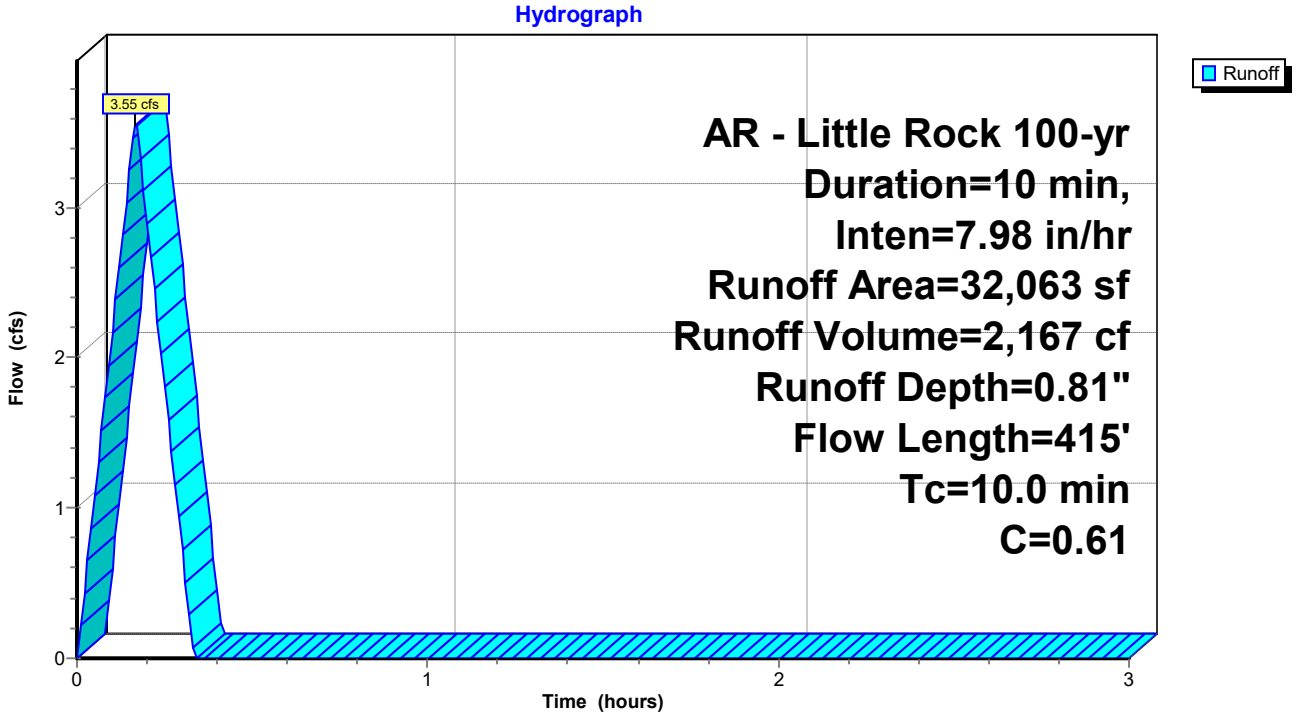
Runoff = 3.55 cfs @ 0.17 hrs, Volume= 2,167 cf, Depth= 0.81"
Routed to Reach P-A3 : Pipe A3

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
20,032	0.40	
12,031	0.95	
32,063	0.61	Weighted Average
20,032		62.48% Pervious Area
12,031		37.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D4: Drainage Basin D4



Summary for Subcatchment D5: Drainage Basin D5

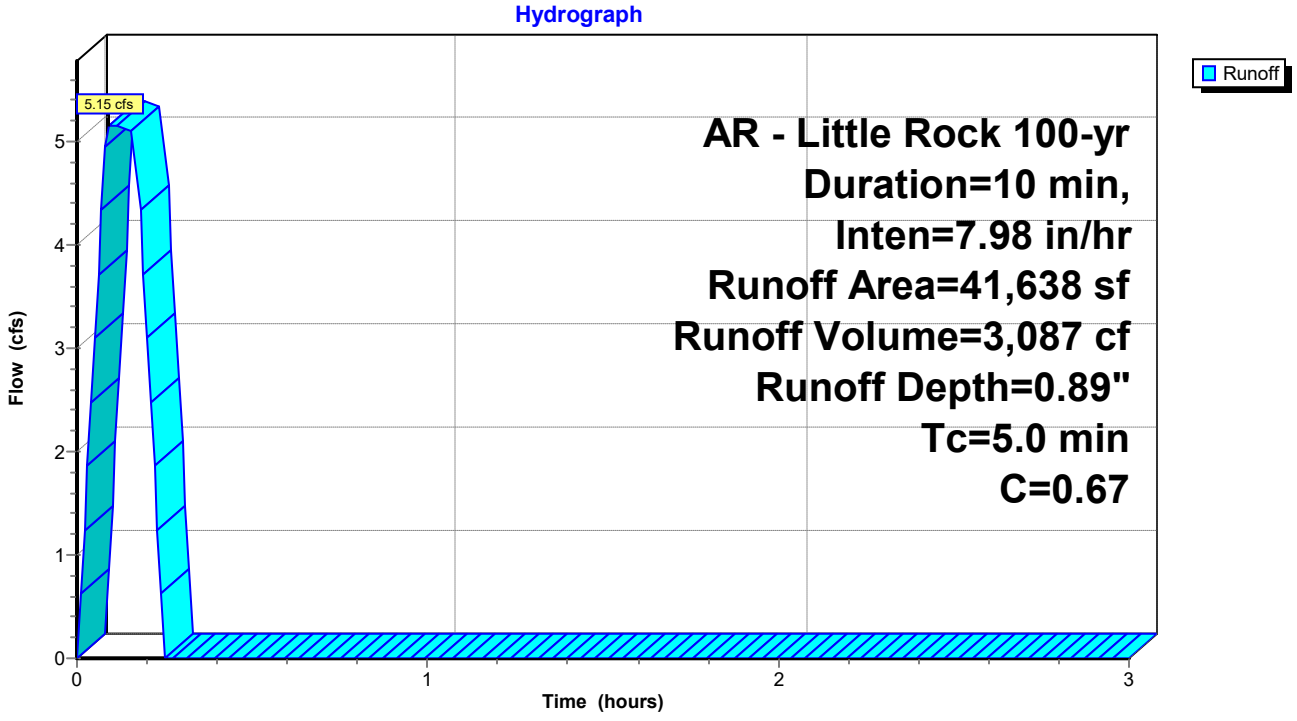
Runoff = 5.15 cfs @ 0.09 hrs, Volume= 3,087 cf, Depth= 0.89"
Routed to Pond DP1 : Re-Establised East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
21,201	0.40	Sod Yard, Natural Vegetation
20,437	0.95	Paving, Sidewalks
41,638	0.67	Weighted Average
21,201		50.92% Pervious Area
20,437		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D5: Drainage Basin D5



Summary for Subcatchment D6: Drainage Basin D6

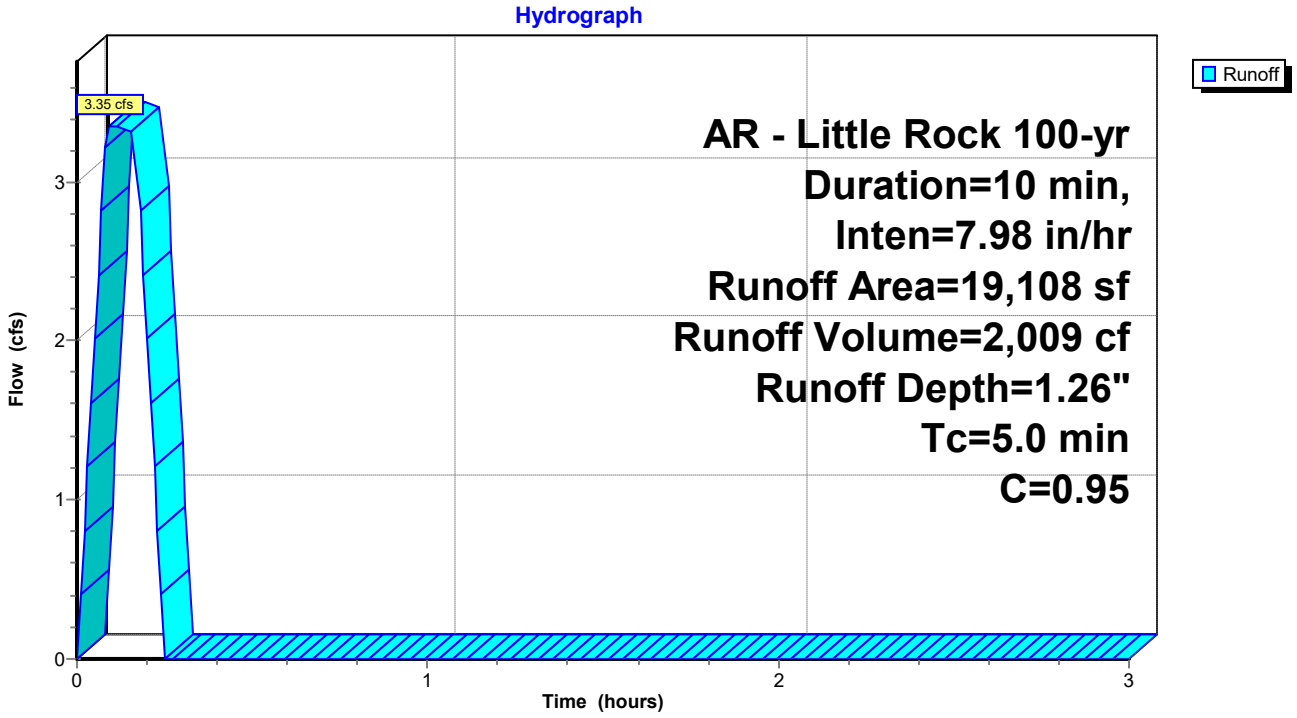
Runoff = 3.35 cfs @ 0.09 hrs, Volume= 2,009 cf, Depth= 1.26"
Routed to Pond DP1 : Re-Establised East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
19,108	0.95	Roof
19,108		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D6: Drainage Basin D6



Summary for Subcatchment D7: Drainage Basin D7

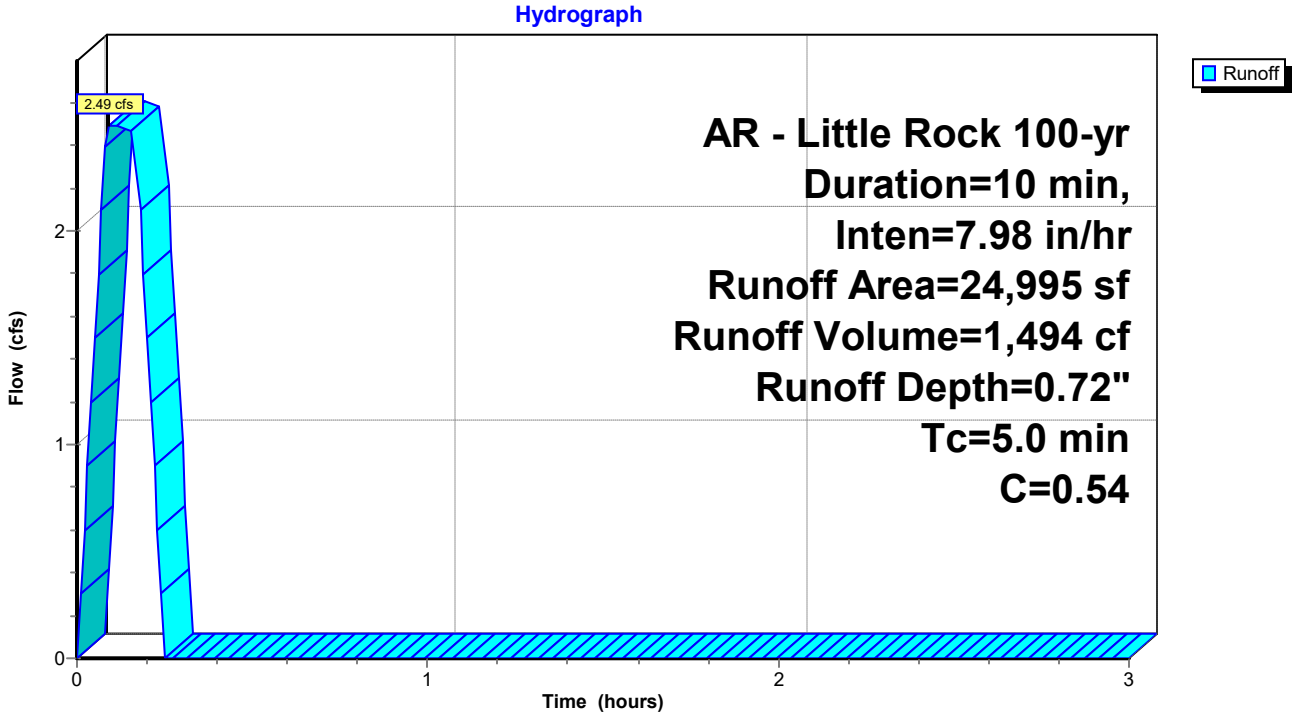
Runoff = 2.49 cfs @ 0.09 hrs, Volume= 1,494 cf, Depth= 0.72"
Routed to Link Post-Dev : APPROX DISCHARGE

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
18,798	0.40	Sod Yard, Natural Vegetation
6,197	0.95	Paving, Sidewalks
24,995	0.54	Weighted Average
18,798		75.21% Pervious Area
6,197		24.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Overland Concentrated Flow (Min)**

Subcatchment D7: Drainage Basin D7



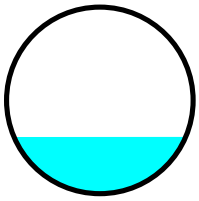
Summary for Reach P-A1: Pipe A1

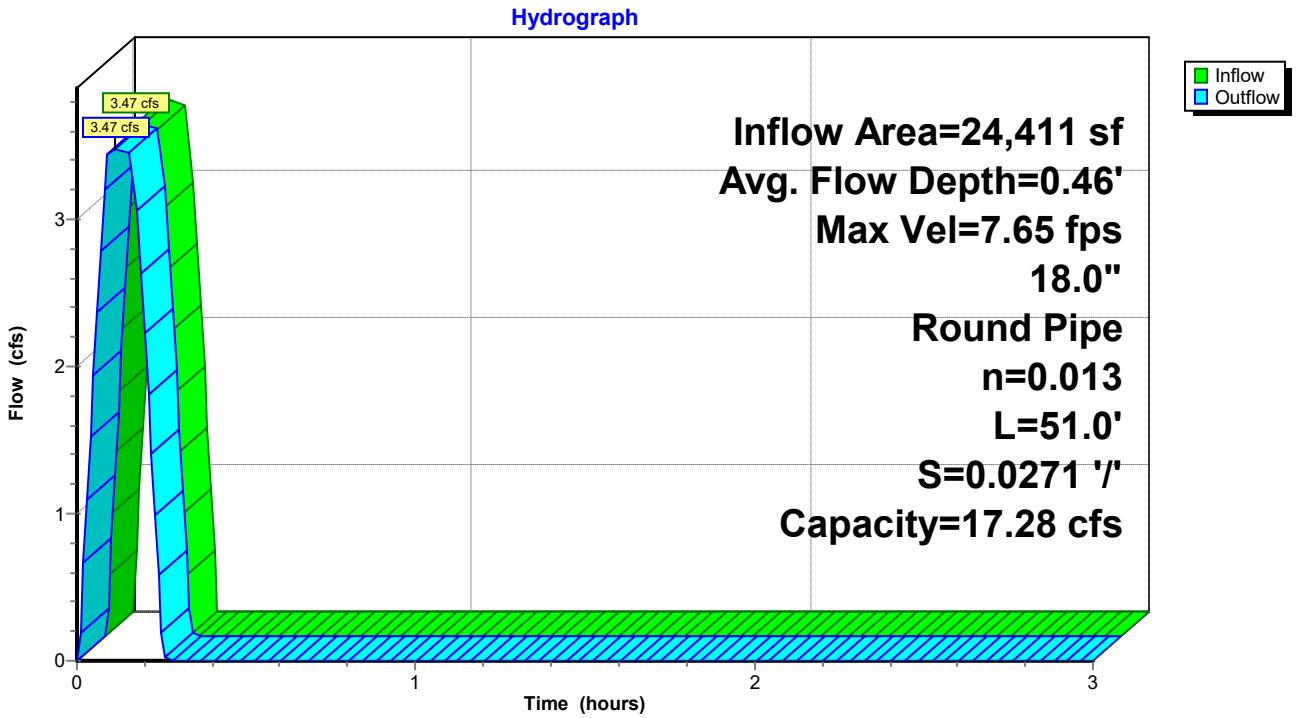
Inflow Area = 24,411 sf, 63.77% Impervious, Inflow Depth = 1.02" for 100-yr event
Inflow = 3.47 cfs @ 0.09 hrs, Volume= 2,080 cf
Outflow = 3.47 cfs @ 0.11 hrs, Volume= 2,080 cf, Atten= 0%, Lag= 1.2 min
Routed to Reach P-A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.65 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.08 fps, Avg. Travel Time= 0.1 min

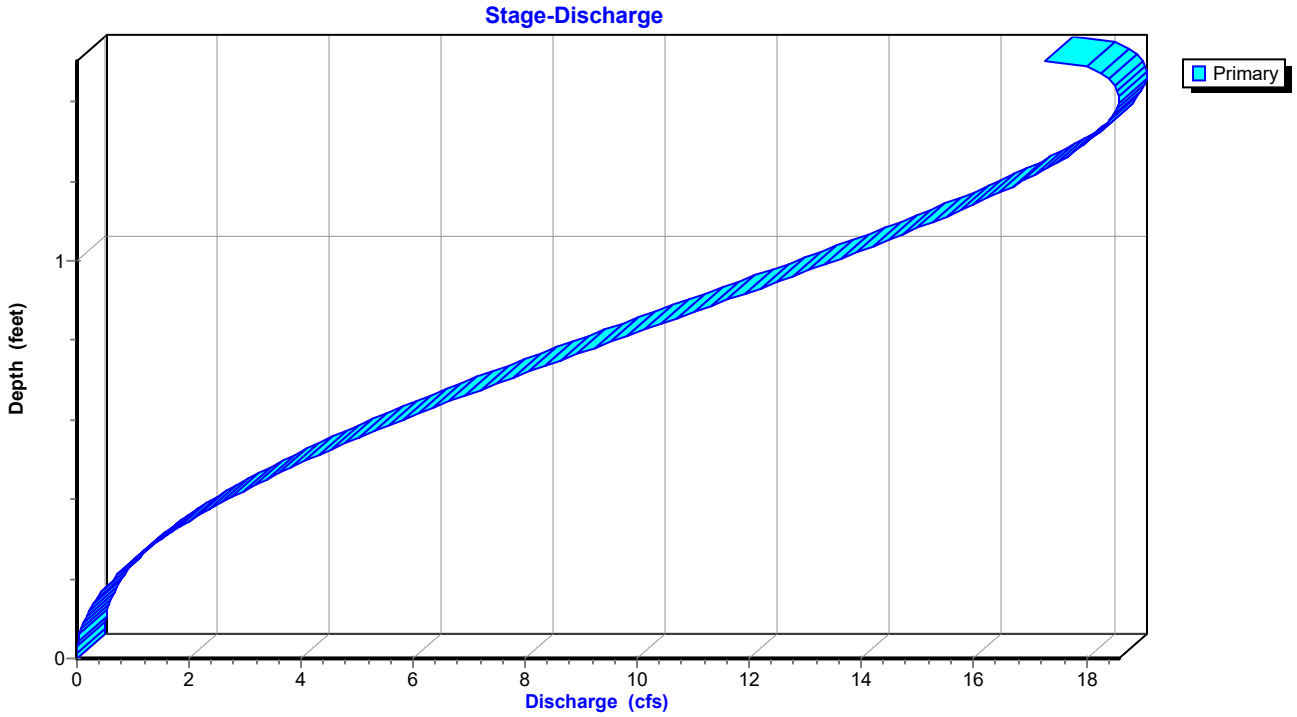
Peak Storage= 23 cf @ 0.09 hrs
Average Depth at Peak Storage= 0.46' , Surface Width= 1.38'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.28 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 51.0' Slope= 0.0271 '/'
Inlet Invert= 408.33', Outlet Invert= 406.95'





Reach P-A1: Pipe A1



Stage-Area-Storage for Reach P-A1: Pipe A1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
408.33	0.0	0
408.35	0.0	0
408.37	0.0	1
408.39	0.0	1
408.41	0.0	2
408.43	0.1	3
408.45	0.1	3
408.47	0.1	4
408.49	0.1	5
408.51	0.1	6
408.53	0.1	7
408.55	0.2	8
408.57	0.2	9
408.59	0.2	10
408.61	0.2	12
408.63	0.3	13
408.65	0.3	14
408.67	0.3	15
408.69	0.3	17
408.71	0.4	18
408.73	0.4	19
408.75	0.4	21
408.77	0.4	22
408.79	0.5	23
408.81	0.5	25
408.83	0.5	26
408.85	0.5	28
408.87	0.6	29
408.89	0.6	31
408.91	0.6	32
408.93	0.7	34
408.95	0.7	35
408.97	0.7	37
408.99	0.7	38
409.01	0.8	40
409.03	0.8	41
409.05	0.8	43
409.07	0.9	44
409.09	0.9	46
409.11	0.9	47
409.13	1.0	49
409.15	1.0	50
409.17	1.0	52
409.19	1.0	53
409.21	1.1	55
409.23	1.1	56
409.25	1.1	58
409.27	1.2	59
409.29	1.2	61
409.31	1.2	62
409.33	1.3	64
409.35	1.3	65
409.37	1.3	67
409.39	1.3	68
409.41	1.4	69
409.43	1.4	71
409.45	1.4	72
409.47	1.4	73
409.49	1.5	75
409.51	1.5	76
409.53	1.5	77
409.55	1.5	78
409.57	1.6	80
409.59	1.6	81
409.61	1.6	82
409.63	1.6	83
409.65	1.6	84
409.67	1.7	85
409.69	1.7	86
409.71	1.7	87
409.73	1.7	88
409.75	1.7	88
409.77	1.7	89
409.79	1.8	89
409.81	1.8	90
409.83	**1.8**	**90**

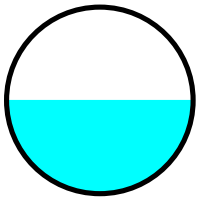
Summary for Reach P-A2: Pipe A2

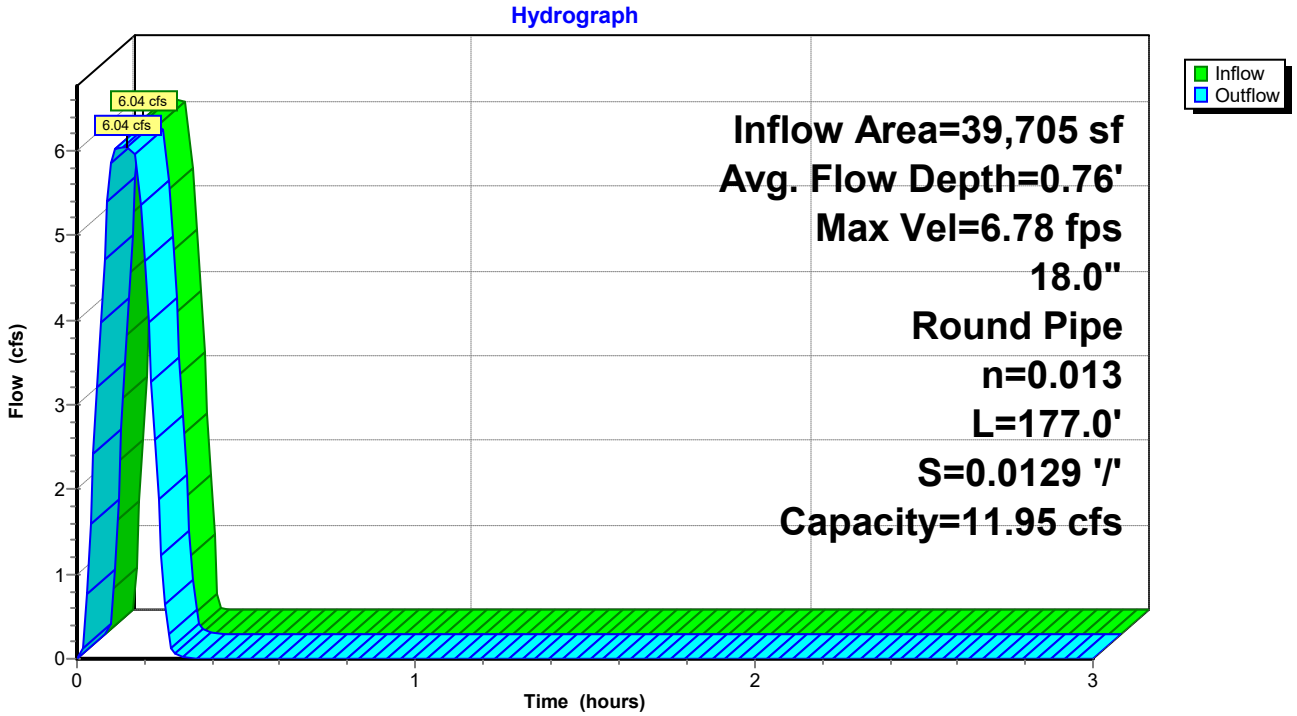
Inflow Area = 39,705 sf, 75.04% Impervious, Inflow Depth = 1.09" for 100-yr event
Inflow = 6.04 cfs @ 0.11 hrs, Volume= 3,620 cf
Outflow = 6.04 cfs @ 0.15 hrs, Volume= 3,620 cf, Atten= 0%, Lag= 2.4 min
Routed to Reach P-A3 : Pipe A3

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.78 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.68 fps, Avg. Travel Time= 1.1 min

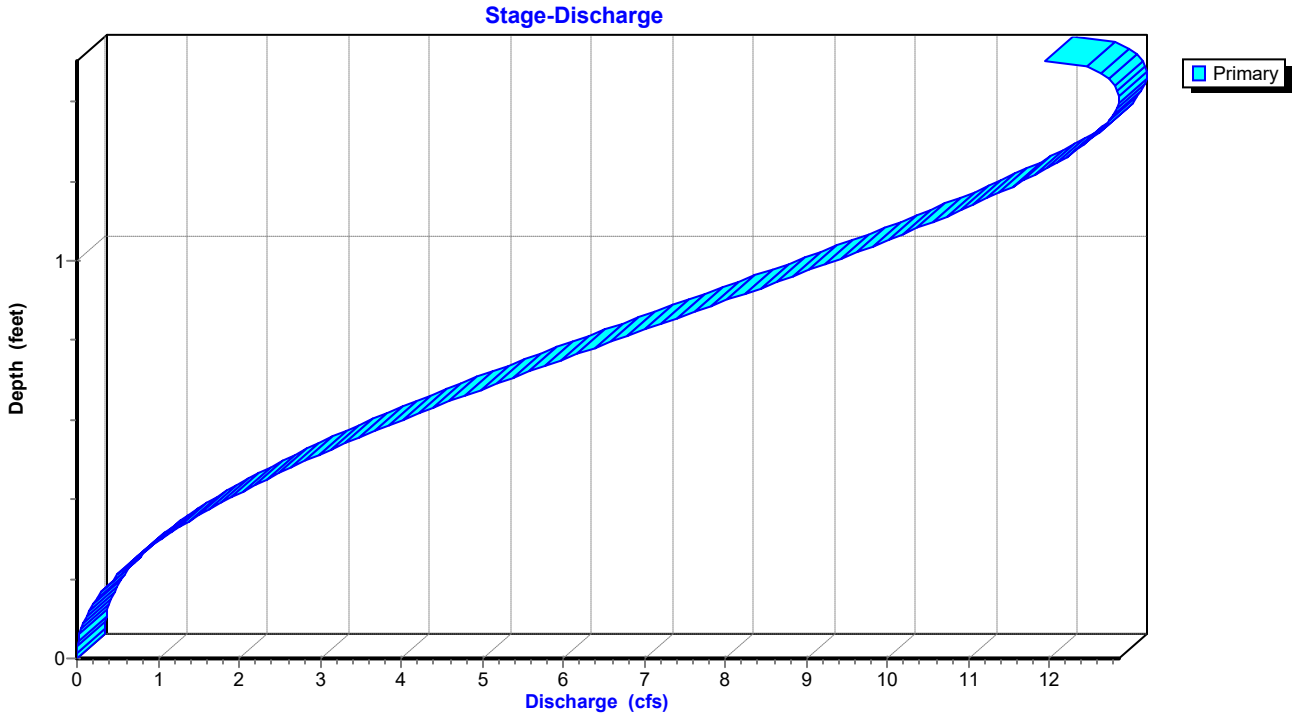
Peak Storage= 158 cf @ 0.12 hrs
Average Depth at Peak Storage= 0.76' , Surface Width= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.95 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 177.0' Slope= 0.0129 '/'
Inlet Invert= 406.85', Outlet Invert= 404.56'





Reach P-A2: Pipe A2



Stage-Area-Storage for Reach P-A2: Pipe A2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
406.85	0.0	0
406.87	0.0	1
406.89	0.0	2
406.91	0.0	4
406.93	0.0	6
406.95	0.1	9
406.97	0.1	12
406.99	0.1	15
407.01	0.1	18
407.03	0.1	21
407.05	0.1	25
407.07	0.2	28
407.09	0.2	32
407.11	0.2	36
407.13	0.2	40
407.15	0.3	45
407.17	0.3	49
407.19	0.3	53
407.21	0.3	58
407.23	0.4	62
407.25	0.4	67
407.27	0.4	72
407.29	0.4	76
407.31	0.5	81
407.33	0.5	86
407.35	0.5	91
407.37	0.5	96
407.39	0.6	101
407.41	0.6	106
407.43	0.6	112
407.45	0.7	117
407.47	0.7	122
407.49	0.7	127
407.51	0.7	133
407.53	0.8	138
407.55	0.8	143
407.57	0.8	148
407.59	0.9	154
407.61	0.9	159
407.63	0.9	164
407.65	1.0	170
407.67	1.0	175
407.69	1.0	180
407.71	1.0	185
407.73	1.1	191
407.75	1.1	196
407.77	1.1	201
407.79	1.2	206
407.81	1.2	211
407.83	1.2	216
407.85	1.3	222
407.87	1.3	226
407.89	1.3	231
407.91	1.3	236
407.93	1.4	241
407.95	1.4	246
407.97	1.4	250
407.99	1.4	255
408.01	1.5	260
408.03	1.5	264
408.05	1.5	268
408.07	1.5	272
408.09	1.6	277
408.11	1.6	280
408.13	1.6	284
408.15	1.6	288
408.17	1.6	292
408.19	1.7	295
408.21	1.7	298
408.23	1.7	301
408.25	1.7	304
408.27	1.7	306
408.29	1.7	309
408.31	1.8	310
408.33	1.8	312
408.35	**1.8**	**313**

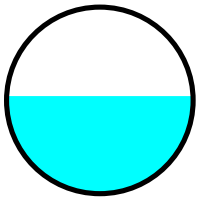
Summary for Reach P-A3: Pipe A3

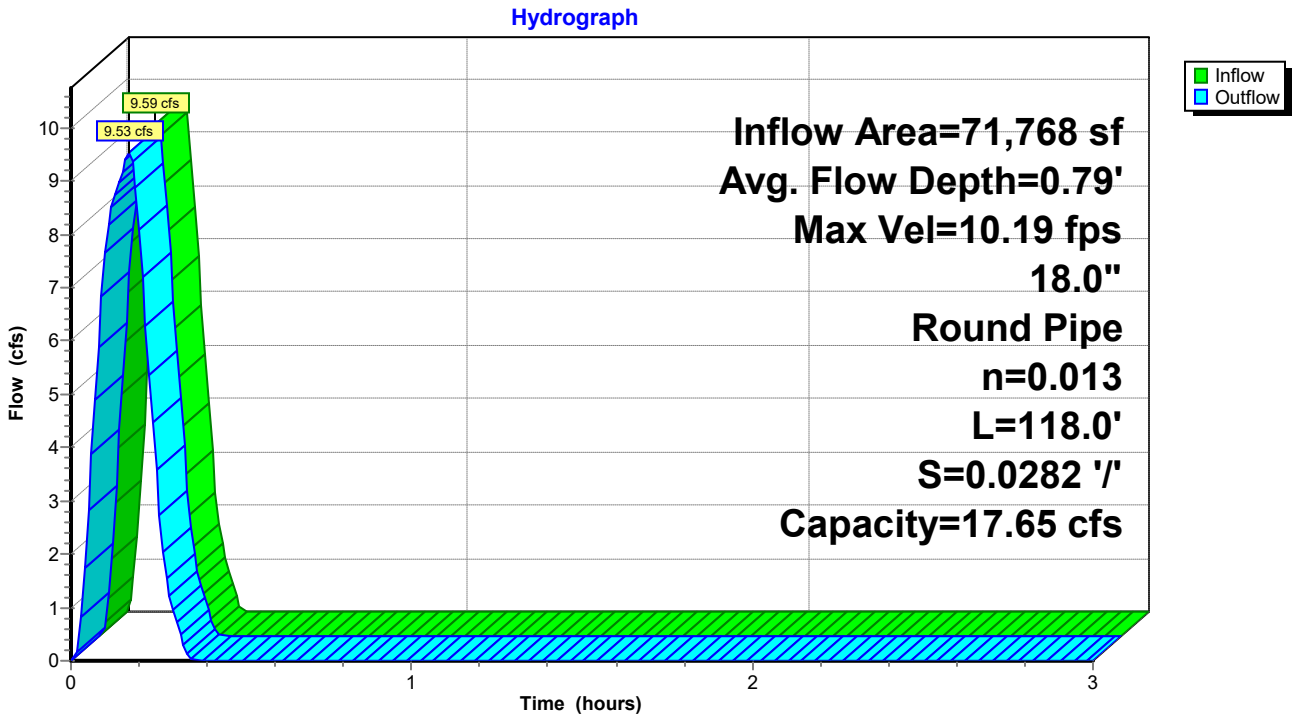
Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.97" for 100-yr event
Inflow = 9.59 cfs @ 0.17 hrs, Volume= 5,787 cf
Outflow = 9.53 cfs @ 0.17 hrs, Volume= 5,787 cf, Atten= 1%, Lag= 0.2 min
Routed to Reach P-A4 : Pipe A4

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.19 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.21 fps, Avg. Travel Time= 0.5 min

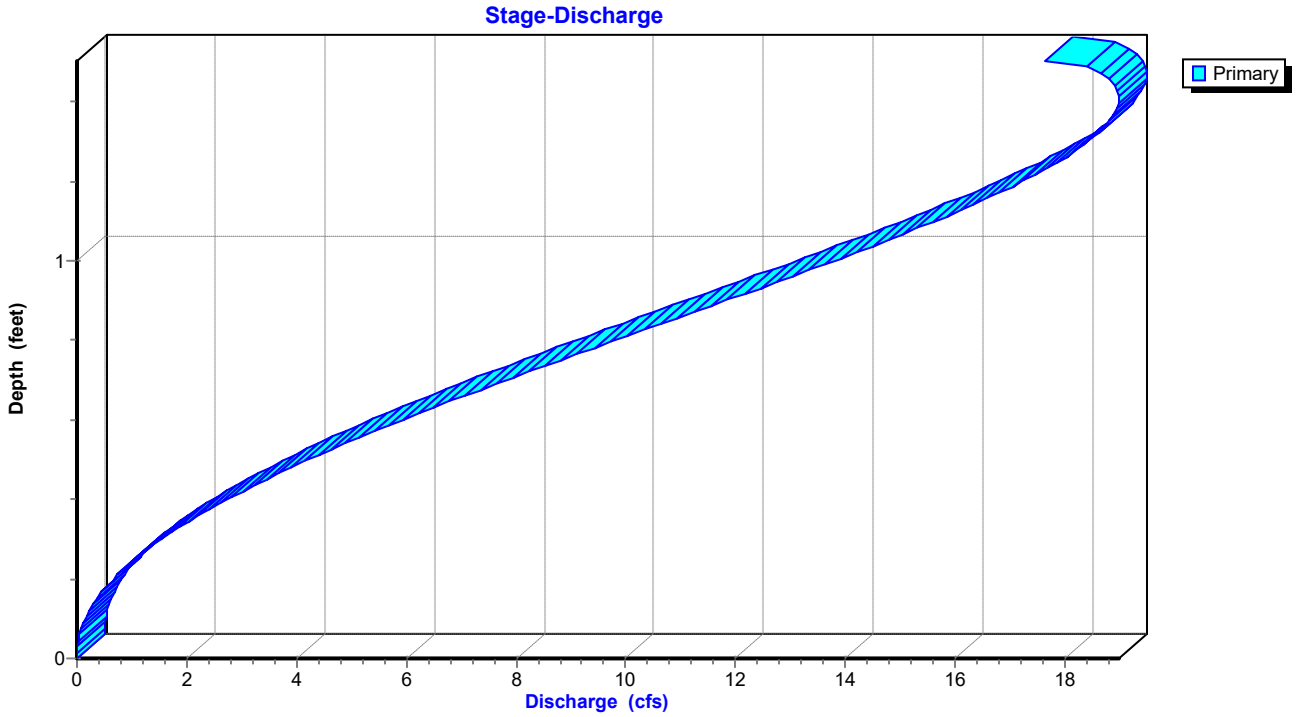
Peak Storage= 111 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.79' , Surface Width= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.65 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 118.0' Slope= 0.0282 '/'
Inlet Invert= 404.46', Outlet Invert= 401.13'





Reach P-A3: Pipe A3



Stage-Area-Storage for Reach P-A3: Pipe A3

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
404.46	0.0	0
404.48	0.0	1
404.50	0.0	2
404.52	0.0	3
404.54	0.0	4
404.56	0.1	6
404.58	0.1	8
404.60	0.1	10
404.62	0.1	12
404.64	0.1	14
404.66	0.1	17
404.68	0.2	19
404.70	0.2	22
404.72	0.2	24
404.74	0.2	27
404.76	0.3	30
404.78	0.3	33
404.80	0.3	35
404.82	0.3	38
404.84	0.4	42
404.86	0.4	45
404.88	0.4	48
404.90	0.4	51
404.92	0.5	54
404.94	0.5	58
404.96	0.5	61
404.98	0.5	64
405.00	0.6	68
405.02	0.6	71
405.04	0.6	74
405.06	0.7	78
405.08	0.7	81
405.10	0.7	85
405.12	0.7	88
405.14	0.8	92
405.16	0.8	95
405.18	0.8	99
405.20	0.9	102
405.22	0.9	106
405.24	0.9	110
405.26	1.0	113
405.28	1.0	117
405.30	1.0	120
405.32	1.0	124
405.34	1.1	127
405.36	1.1	131
405.38	1.1	134
405.40	1.2	138
405.42	1.2	141
405.44	1.2	144
405.46	1.3	148
405.48	1.3	151
405.50	1.3	154
405.52	1.3	158
405.54	1.4	161
405.56	1.4	164
405.58	1.4	167
405.60	1.4	170
405.62	1.5	173
405.64	1.5	176
405.66	1.5	179
405.68	1.5	182
405.70	1.6	184
405.72	1.6	187
405.74	1.6	190
405.76	1.6	192
405.78	1.6	194
405.80	1.7	197
405.82	1.7	199
405.84	1.7	201
405.86	1.7	203
405.88	1.7	204
405.90	1.7	206
405.92	1.8	207
405.94	1.8	208
405.96	**1.8**	**209**

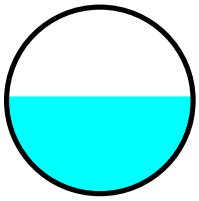
Summary for Reach P-A4: Pipe A4

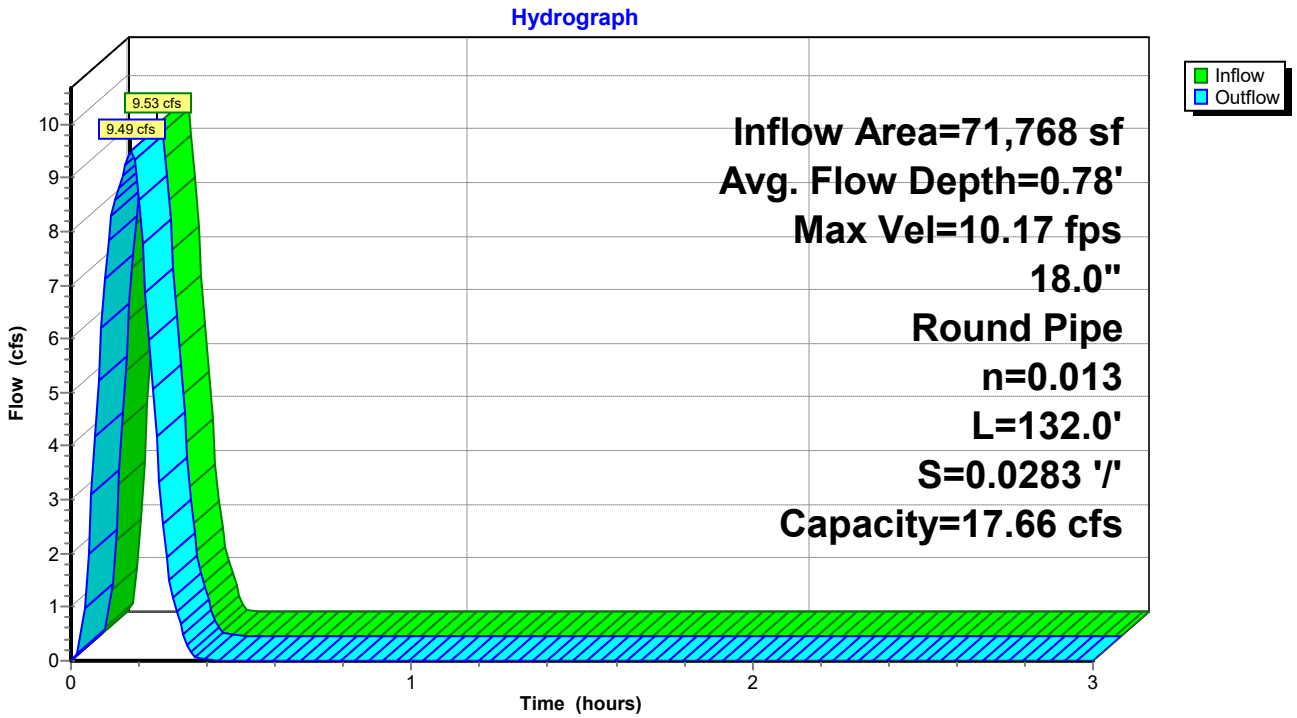
Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.97" for 100-yr event
Inflow = 9.53 cfs @ 0.17 hrs, Volume= 5,787 cf
Outflow = 9.49 cfs @ 0.18 hrs, Volume= 5,787 cf, Atten= 0%, Lag= 0.4 min
Routed to Pond DP1 : Re-Establised East Pond

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.17 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.00 fps, Avg. Travel Time= 0.6 min

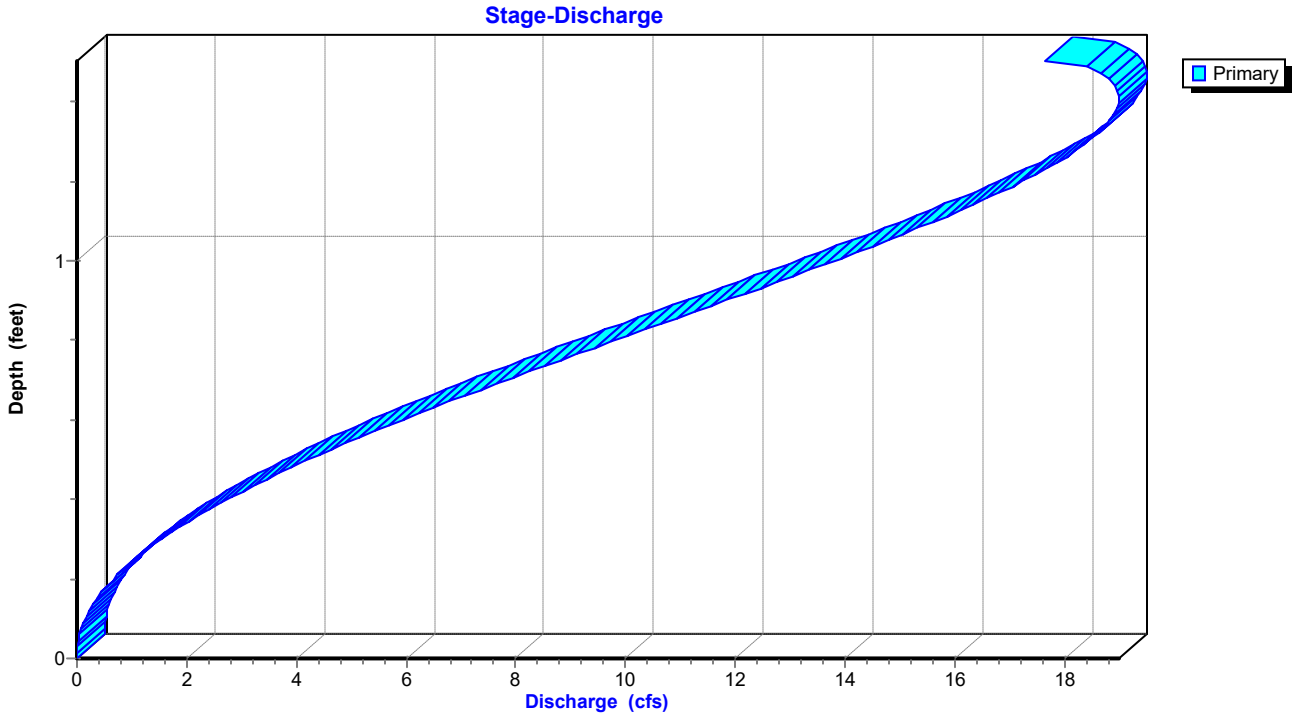
Peak Storage= 123 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.78' , Surface Width= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.66 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 132.0' Slope= 0.0283 '/'
Inlet Invert= 401.03', Outlet Invert= 397.30'





Reach P-A4: Pipe A4



Stage-Area-Storage for Reach P-A4: Pipe A4

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
401.03	0.0	0
401.05	0.0	1
401.07	0.0	2
401.09	0.0	3
401.11	0.0	5
401.13	0.1	7
401.15	0.1	9
401.17	0.1	11
401.19	0.1	13
401.21	0.1	16
401.23	0.1	18
401.25	0.2	21
401.27	0.2	24
401.29	0.2	27
401.31	0.2	30
401.33	0.3	33
401.35	0.3	36
401.37	0.3	40
401.39	0.3	43
401.41	0.4	46
401.43	0.4	50
401.45	0.4	53
401.47	0.4	57
401.49	0.5	61
401.51	0.5	64
401.53	0.5	68
401.55	0.5	72
401.57	0.6	76
401.59	0.6	79
401.61	0.6	83
401.63	0.7	87
401.65	0.7	91
401.67	0.7	95
401.69	0.7	99
401.71	0.8	103
401.73	0.8	107
401.75	0.8	111
401.77	0.9	115
401.79	0.9	119
401.81	0.9	123
401.83	1.0	127
401.85	1.0	130
401.87	1.0	134
401.89	1.0	138
401.91	1.1	142
401.93	1.1	146
401.95	1.1	150
401.97	1.2	154
401.99	1.2	158
402.01	1.2	161
402.03	1.3	165
402.05	1.3	169
402.07	1.3	173
402.09	1.3	176
402.11	1.4	180
402.13	1.4	183
402.15	1.4	187
402.17	1.4	190
402.19	1.5	194
402.21	1.5	197
402.23	1.5	200
402.25	1.5	203
402.27	1.6	206
402.29	1.6	209
402.31	1.6	212
402.33	1.6	215
402.35	1.6	217
402.37	1.7	220
402.39	1.7	222
402.41	1.7	225
402.43	1.7	227
402.45	1.7	228
402.47	1.7	230
402.49	1.8	232
402.51	1.8	233
402.53	**1.8**	**233**

Summary for Pond DP1: Re-Establised East Pond

Inflow Area = 132,514 sf, 61.41% Impervious, Inflow Depth = 0.99" for 100-yr event
Inflow = 17.76 cfs @ 0.16 hrs, Volume= 10,883 cf
Outflow = 9.14 cfs @ 0.22 hrs, Volume= 10,883 cf, Atten= 49%, Lag= 3.8 min
Primary = 9.14 cfs @ 0.22 hrs, Volume= 10,883 cf
Routed to Link Post-Dev : APPROX DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 398.89' @ 0.22 hrs Storage= 5,867 cf

Plug-Flow detention time= 9.3 min calculated for 10,883 cf (100% of inflow)
Center-of-Mass det. time= 9.1 min (18.0 - 8.8)

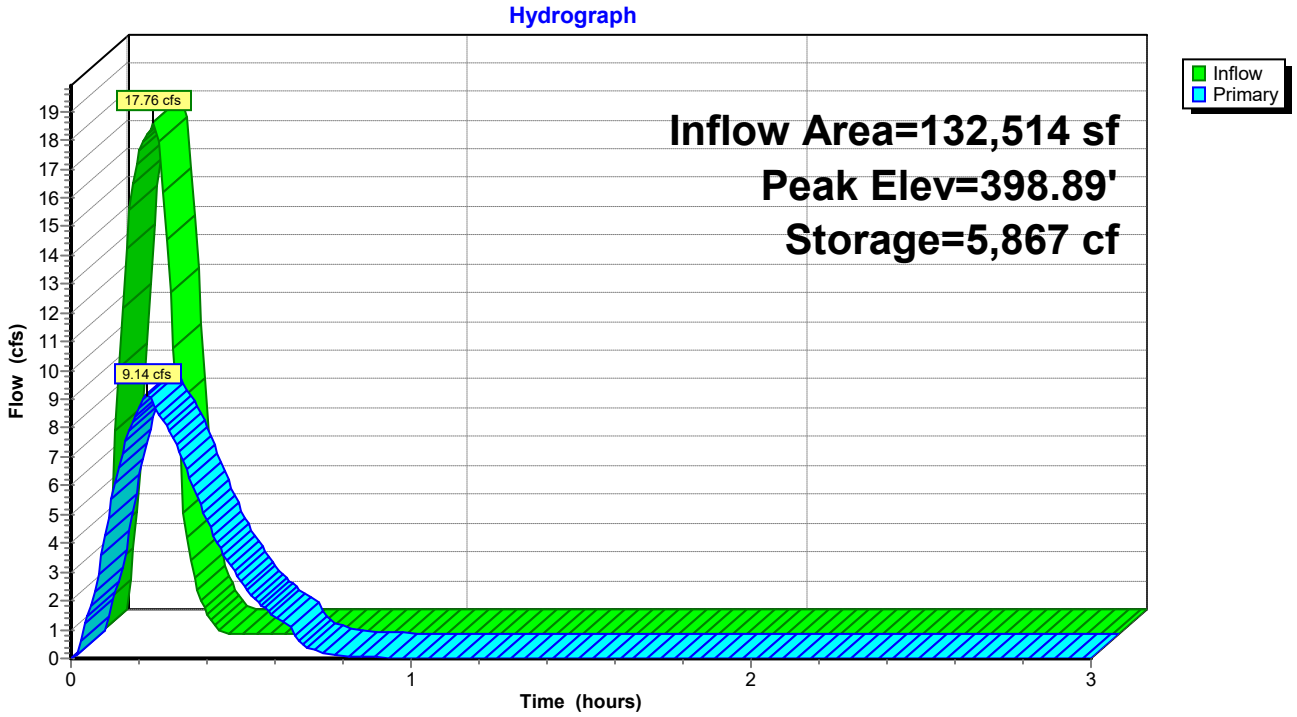
Volume	Invert	Avail.Storage	Storage Description
#1	396.00'	8,557 cf	**Custom Stage Data** Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
396.00	0	0
396.50	250	250
397.00	1,092	1,342
398.00	2,387	3,729
399.00	2,405	6,134
400.00	2,423	8,557

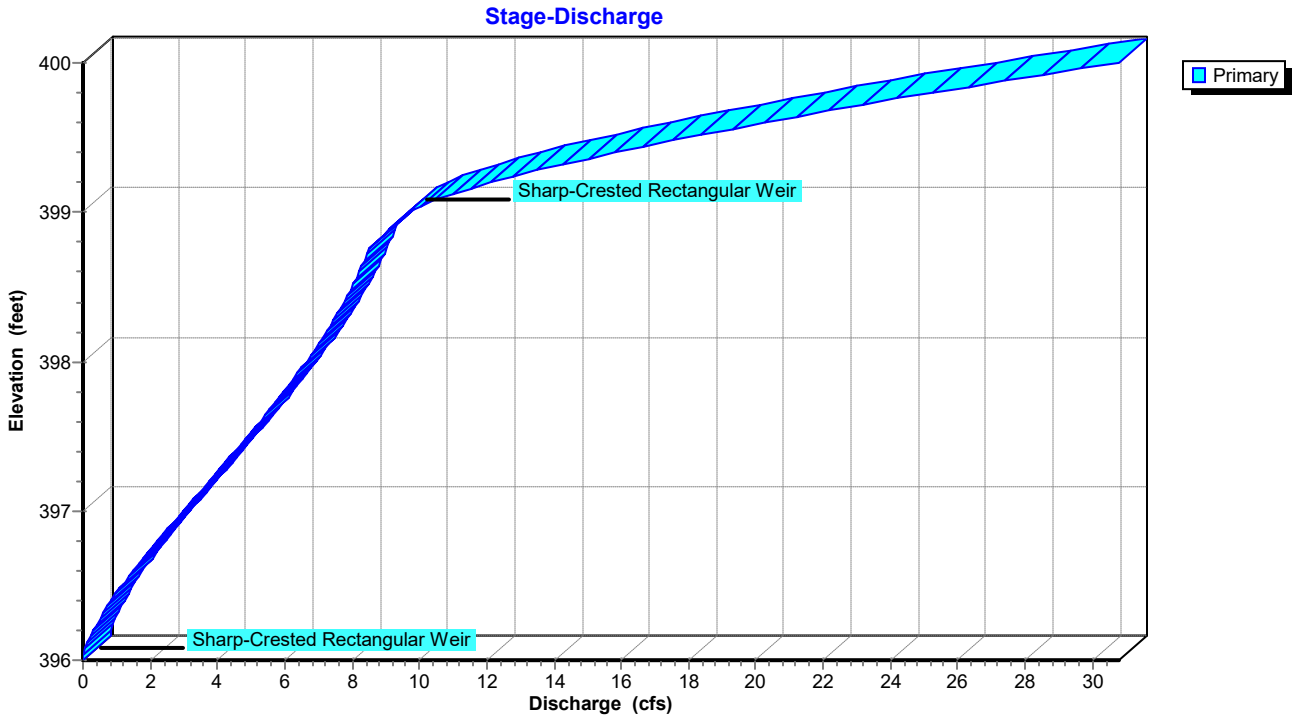
Device	Routing	Invert	Outlet Devices
#1	Primary	399.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	396.00'	**1.1' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 10.0' Crest Height

Primary OutFlow Max=9.13 cfs @ 0.22 hrs HW=398.89' (Free Discharge)
1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
2=Sharp-Crested Rectangular Weir (Weir Controls 9.13 cfs @ 5.75 fps)

Pond DP1: Re-Establised East Pond



Pond DP1: Re-Establised East Pond



Stage-Area-Storage for Pond DP1: Re-Establised East Pond

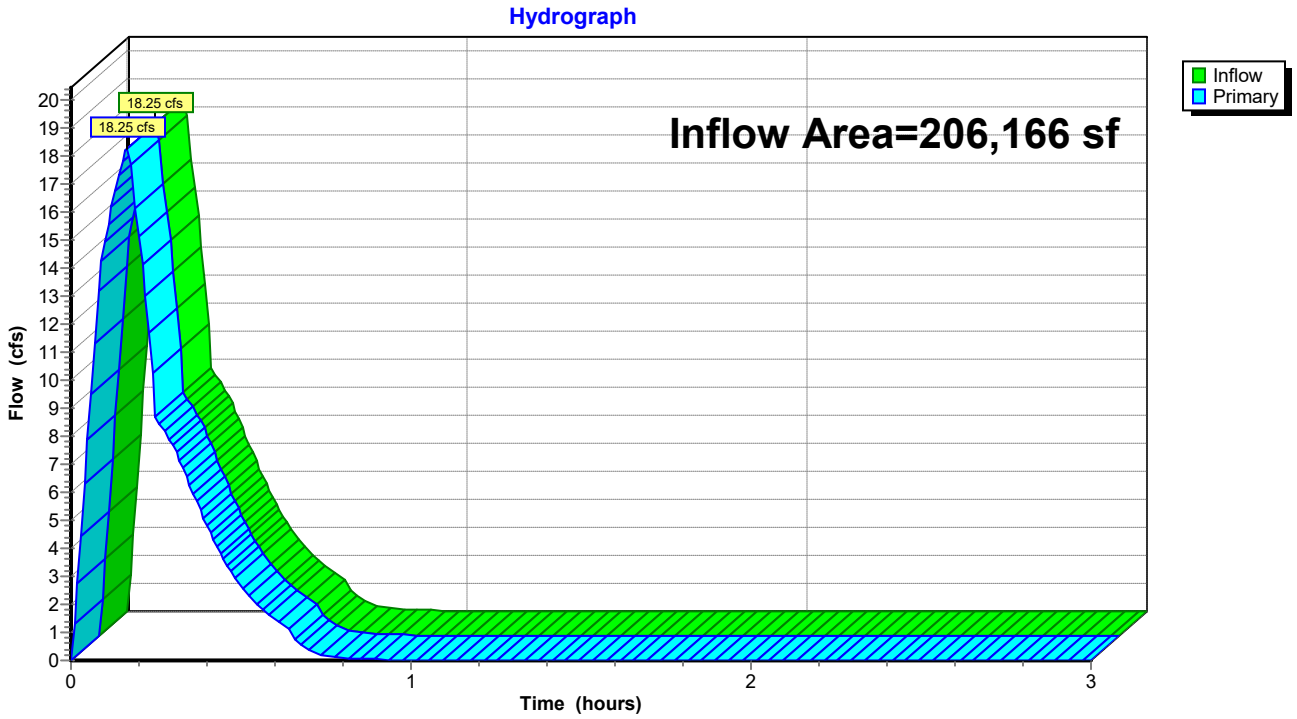
Elevation (feet)	Storage (cubic-feet)
396.00	0
396.05	25
396.10	50
396.15	75
396.20	100
396.25	125
396.30	150
396.35	175
396.40	200
396.45	225
396.50	250
396.55	359
396.60	468
396.65	578
396.70	687
396.75	796
396.80	905
396.85	1,014
396.90	1,124
396.95	1,233
397.00	1,342
397.05	1,461
397.10	1,581
397.15	1,700
397.20	1,819
397.25	1,939
397.30	2,058
397.35	2,177
397.40	2,297
397.45	2,416
397.50	2,536
397.55	2,655
397.60	2,774
397.65	2,894
397.70	3,013
397.75	3,132
397.80	3,252
397.85	3,371
397.90	3,490
397.95	3,610
398.00	3,729
398.05	3,849
398.10	3,970
398.15	4,090
398.20	4,210
398.25	4,330
398.30	4,451
398.35	4,571
398.40	4,691
398.45	4,811
398.50	4,932
398.55	5,052
398.60	5,172
398.65	5,292
398.70	5,412
398.75	5,533
398.80	5,653
398.85	5,773
398.90	5,893
398.95	6,014
399.00	6,134
399.05	6,255
399.10	6,376
399.15	6,497
399.20	6,619
399.25	6,740
399.30	6,861
399.35	6,982
399.40	7,103
399.45	7,224
399.50	7,346
399.55	7,467
399.60	7,588
399.65	7,709
399.70	7,830
399.75	7,951
399.80	8,072
399.85	8,194
399.90	8,315
399.95	8,436
400.00	**8,557**

Summary for Link Post-Dev: APPROX DISCHARGE

Inflow Area = 206,166 sf, 64.42% Impervious, Inflow Depth = 1.01" for 100-yr event
Inflow = 18.25 cfs @ 0.16 hrs, Volume= 17,276 cf
Primary = 18.25 cfs @ 0.16 hrs, Volume= 17,276 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

Link Post-Dev: APPROX DISCHARGE



STROM SEWER SIZING

Inlet Report

AI-A2

Drop Grate Inlet

Location	= Sag
Curb Length (ft)	= -0-
Throat Height (in)	= -0-
Grate Area (sqft)	= 2.00
Grate Width (ft)	= 2.00
Grate Length (ft)	= 2.00

Gutter

Slope, Sw (ft/ft)	= 0.050
Slope, Sx (ft/ft)	= 0.050
Local Depr (in)	= -0-
Gutter Width (ft)	= 2.00
Gutter Slope (%)	= -0-
Gutter n-value	= -0-

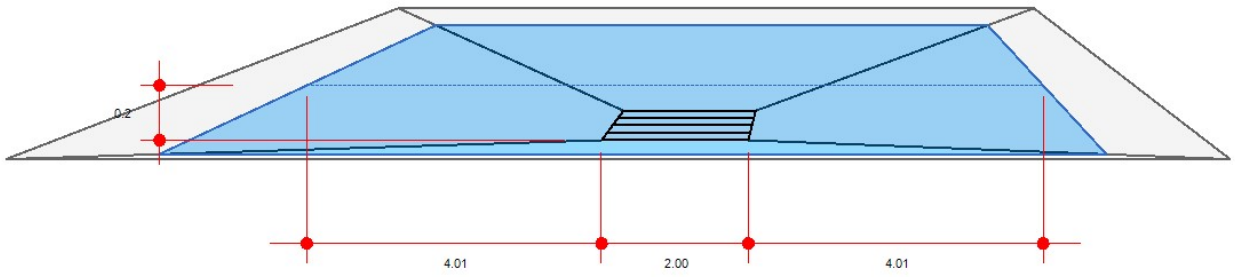
Calculations

Compute by:	Known Q
Q (cfs)	= 2.16

Highlighted

Q Total (cfs)	= 2.16
Q Capt (cfs)	= 2.16
Q Bypass (cfs)	= -0-
Depth at Inlet (in)	= 2.41
Efficiency (%)	= 100
Gutter Spread (ft)	= 10.03
Gutter Vel (ft/s)	= -0-
Bypass Spread (ft)	= -0-
Bypass Depth (in)	= -0-

All dimensions in feet



Inlet Report

AI-A3

Drop Grate Inlet

Location	= Sag
Curb Length (ft)	= -0-
Throat Height (in)	= -0-
Grate Area (sqft)	= 2.00
Grate Width (ft)	= 2.00
Grate Length (ft)	= 2.00

Gutter

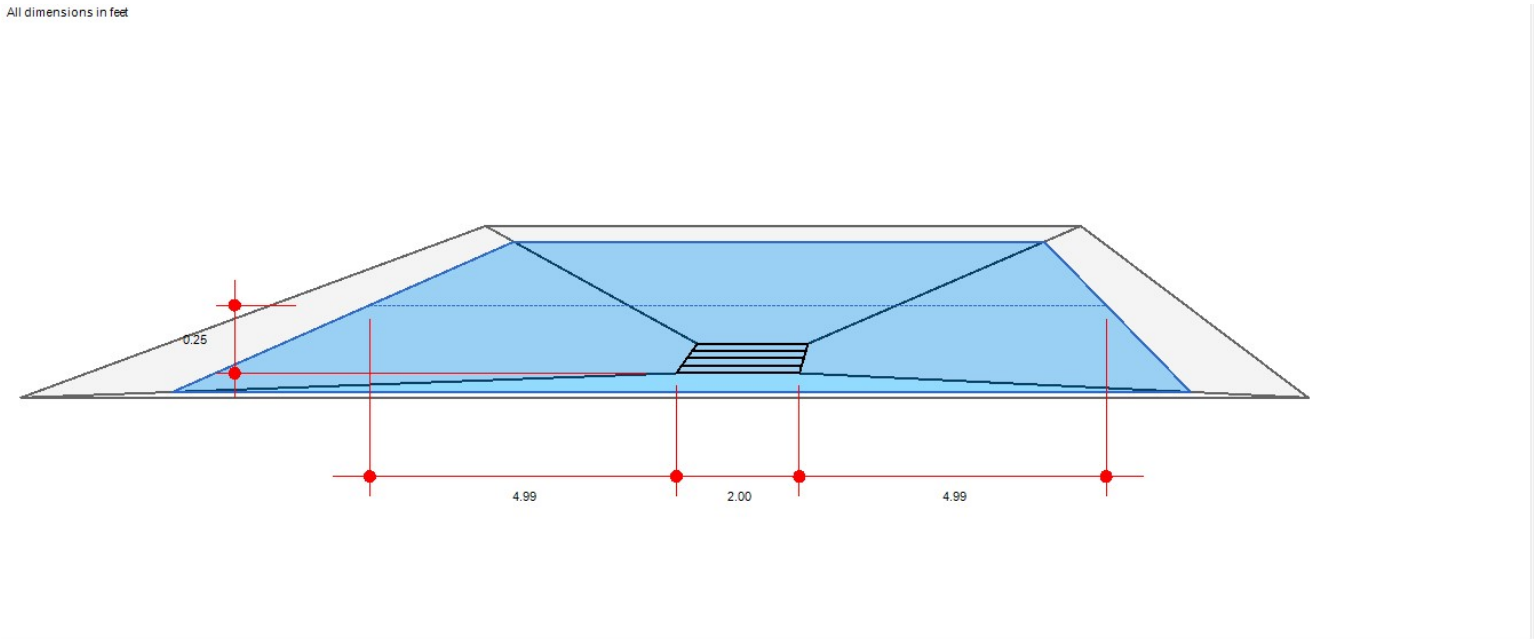
Slope, Sw (ft/ft)	= 0.050
Slope, Sx (ft/ft)	= 0.050
Local Depr (in)	= -0-
Gutter Width (ft)	= 2.00
Gutter Slope (%)	= -0-
Gutter n-value	= -0-

Calculations

Compute by:	Known Q
Q (cfs)	= 2.99

Highlighted

Q Total (cfs)	= 2.99
Q Capt (cfs)	= 2.99
Q Bypass (cfs)	= -0-
Depth at Inlet (in)	= 2.99
Efficiency (%)	= 100
Gutter Spread (ft)	= 11.97
Gutter Vel (ft/s)	= -0-
Bypass Spread (ft)	= -0-
Bypass Depth (in)	= -0-



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Jan 11 2024

Pipe A1

Circular

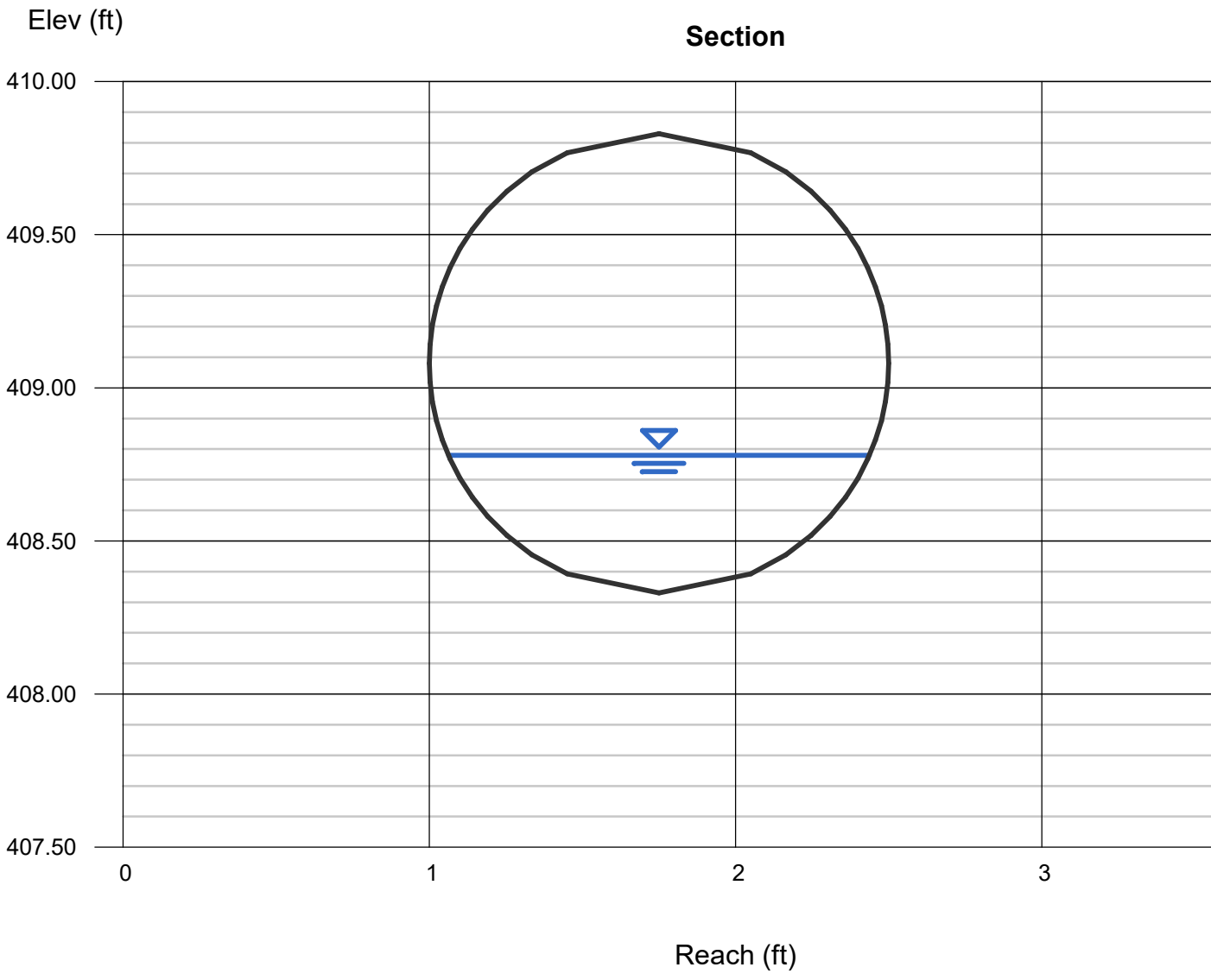
Diameter (ft)	= 1.50
Invert Elev (ft)	= 408.33
Slope (%)	= 2.70
N-Value	= 0.015

Calculations

Compute by:	Known Q
Known Q (cfs)	= 2.92

Highlighted

Depth (ft)	= 0.45
Q (cfs)	= 2.920
Area (sqft)	= 0.45
Velocity (ft/s)	= 6.54
Wetted Perim (ft)	= 1.74
Crit Depth, Yc (ft)	= 0.65
Top Width (ft)	= 1.38
EGL (ft)	= 1.11



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Jan 11 2024

Pipe A2

Circular

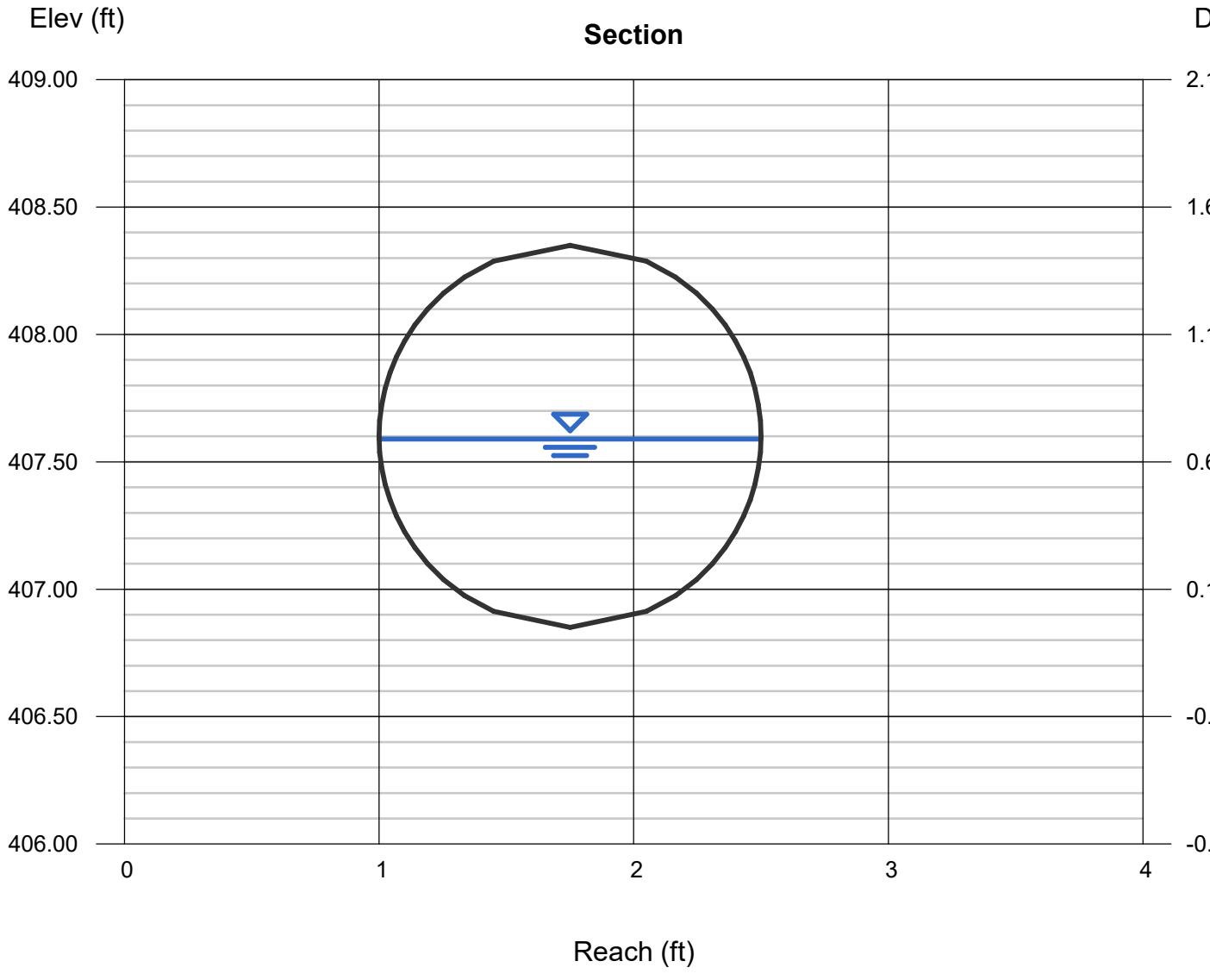
Diameter (ft)	= 1.50
Invert Elev (ft)	= 406.85
Slope (%)	= 1.30
N-Value	= 0.015

Calculations

Compute by:	Known Q
Known Q (cfs)	= 5.09

Highlighted

Depth (ft)	= 0.74
Q (cfs)	= 5.090
Area (sqft)	= 0.87
Velocity (ft/s)	= 5.84
Wetted Perim (ft)	= 2.34
Crit Depth, Yc (ft)	= 0.87
Top Width (ft)	= 1.50
EGL (ft)	= 1.27



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Jan 11 2024

Pipe A3

Circular

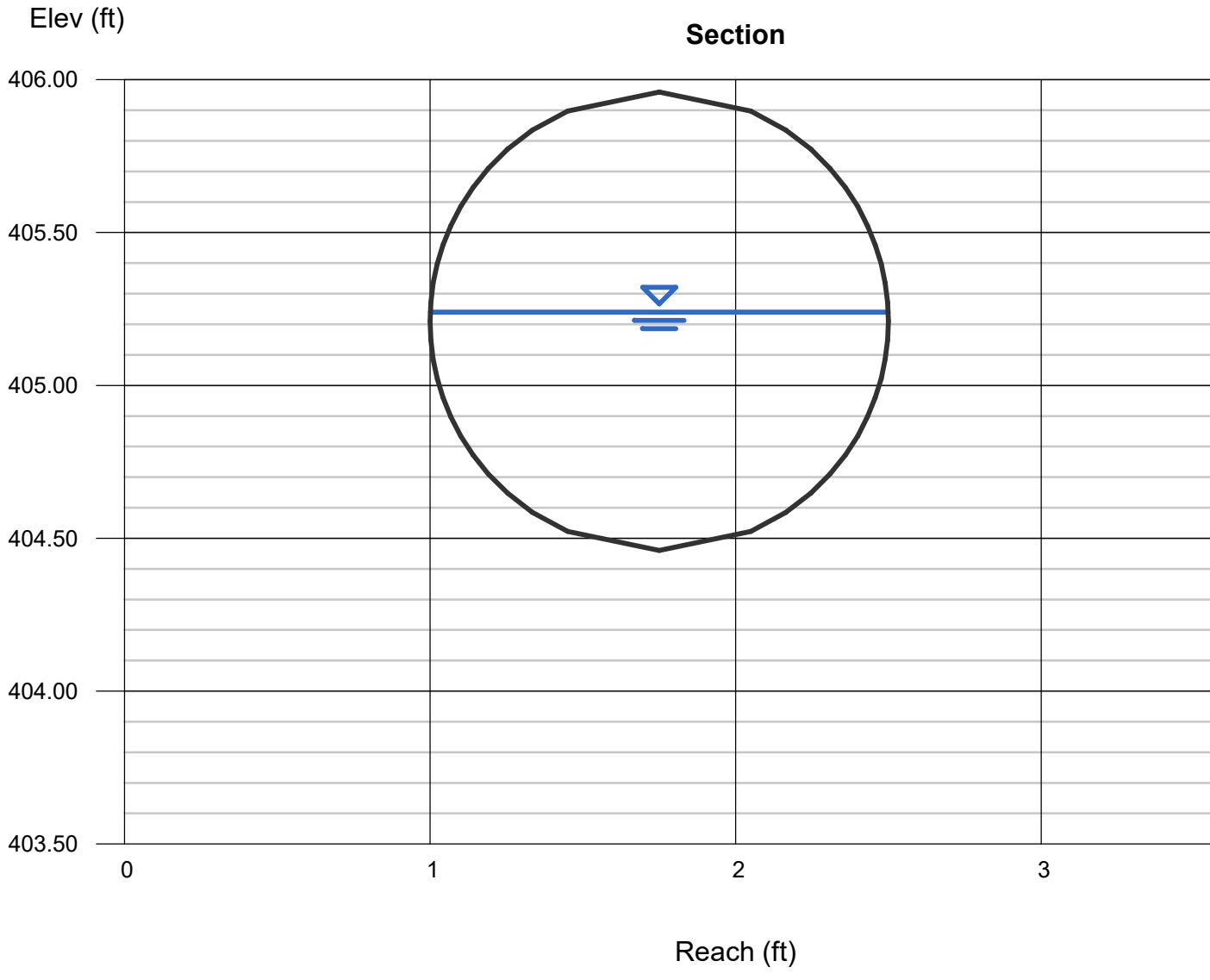
Diameter (ft)	= 1.50
Invert Elev (ft)	= 404.46
Slope (%)	= 2.80
N-Value	= 0.015

Calculations

Compute by:	Known Q
Known Q (cfs)	= 8.02

Highlighted

Depth (ft)	= 0.78
Q (cfs)	= 8.020
Area (sqft)	= 0.93
Velocity (ft/s)	= 8.59
Wetted Perim (ft)	= 2.42
Crit Depth, Yc (ft)	= 1.10
Top Width (ft)	= 1.50
EGL (ft)	= 1.93



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Jan 10 2024

Pipe A4

Circular

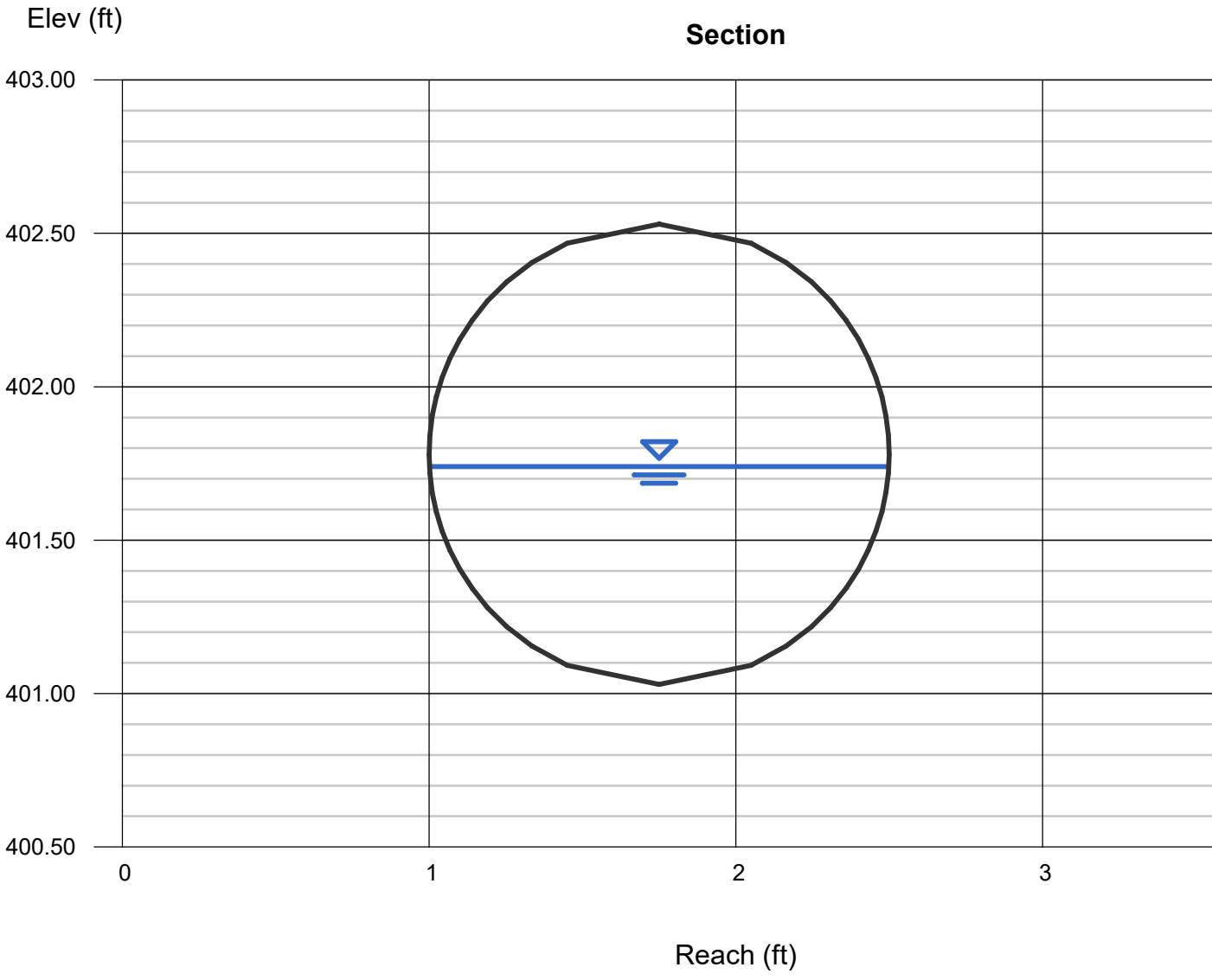
Diameter (ft)	= 1.50
Invert Elev (ft)	= 401.03
Slope (%)	= 2.83
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 8.02

Highlighted

Depth (ft)	= 0.71
Q (cfs)	= 8.020
Area (sqft)	= 0.83
Velocity (ft/s)	= 9.70
Wetted Perim (ft)	= 2.28
Crit Depth, Yc (ft)	= 1.10
Top Width (ft)	= 1.50
EGL (ft)	= 2.17



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Jan 10 2024

5' Curb Cut & Flume to Pond

Rectangular

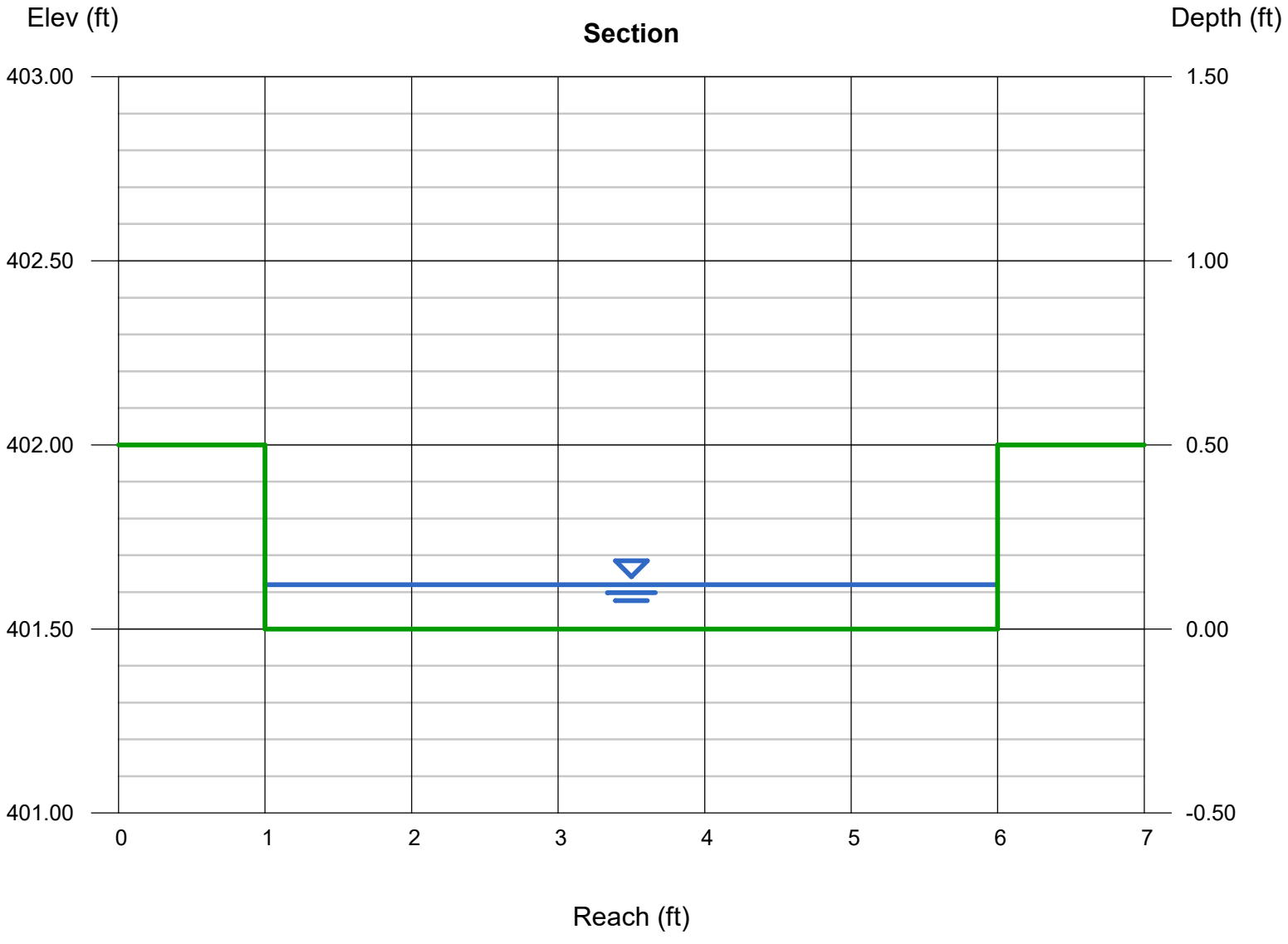
Bottom Width (ft)	= 5.00
Total Depth (ft)	= 0.50
Invert Elev (ft)	= 401.50
Slope (%)	= 15.00
N-Value	= 0.015

Calculations

Compute by:	Known Q
Known Q (cfs)	= 5.15

Highlighted

Depth (ft)	= 0.12
Q (cfs)	= 5.150
Area (sqft)	= 0.60
Velocity (ft/s)	= 8.58
Wetted Perim (ft)	= 5.24
Crit Depth, Yc (ft)	= 0.33
Top Width (ft)	= 5.00
EGL (ft)	= 1.27



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Jan 10 2024

Curb Cut by Dumpster Pad

Rectangular

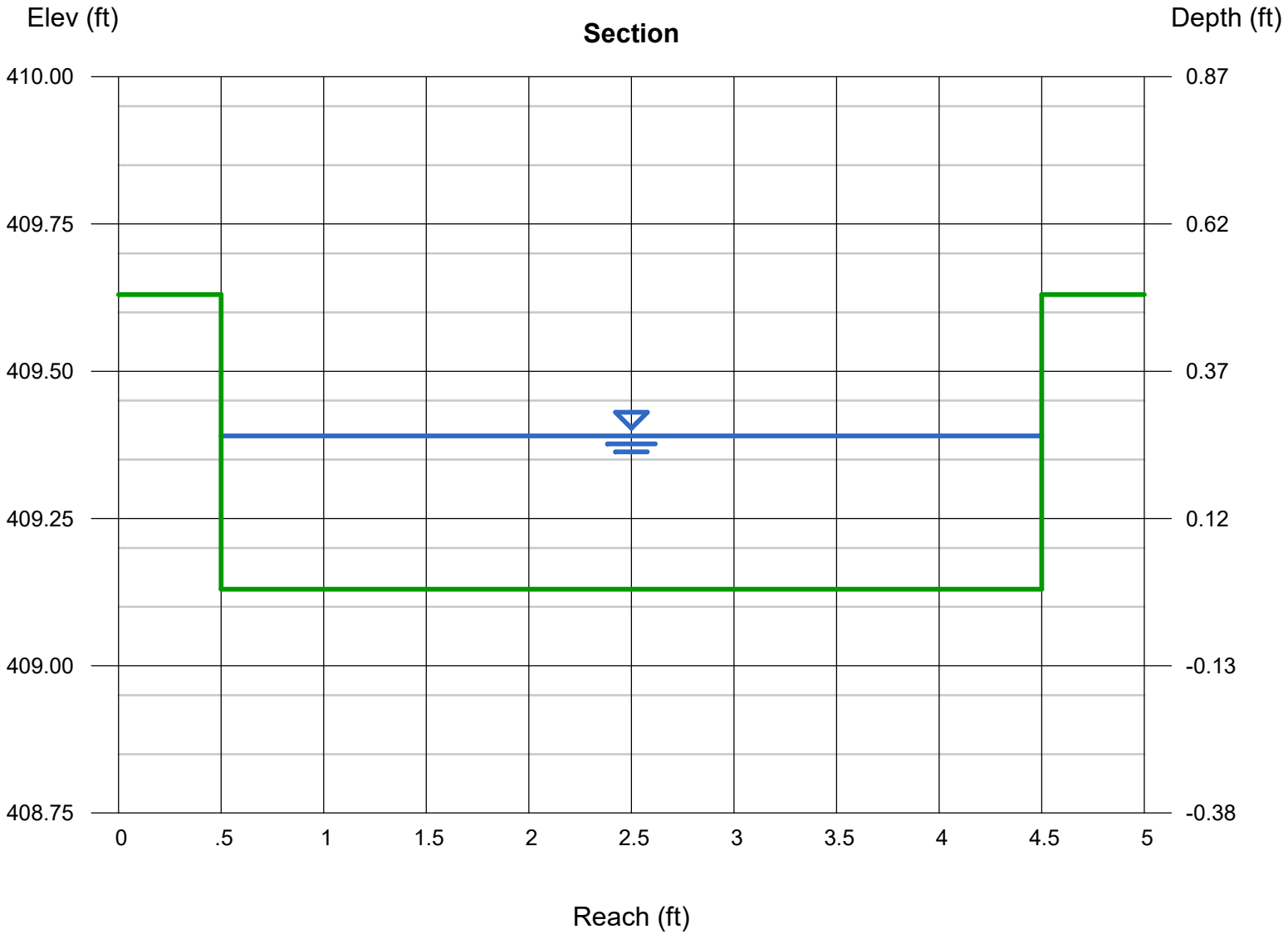
Bottom Width (ft)	= 4.00
Total Depth (ft)	= 0.50
Invert Elev (ft)	= 409.13
Slope (%)	= 5.00
N-Value	= 0.015

Calculations

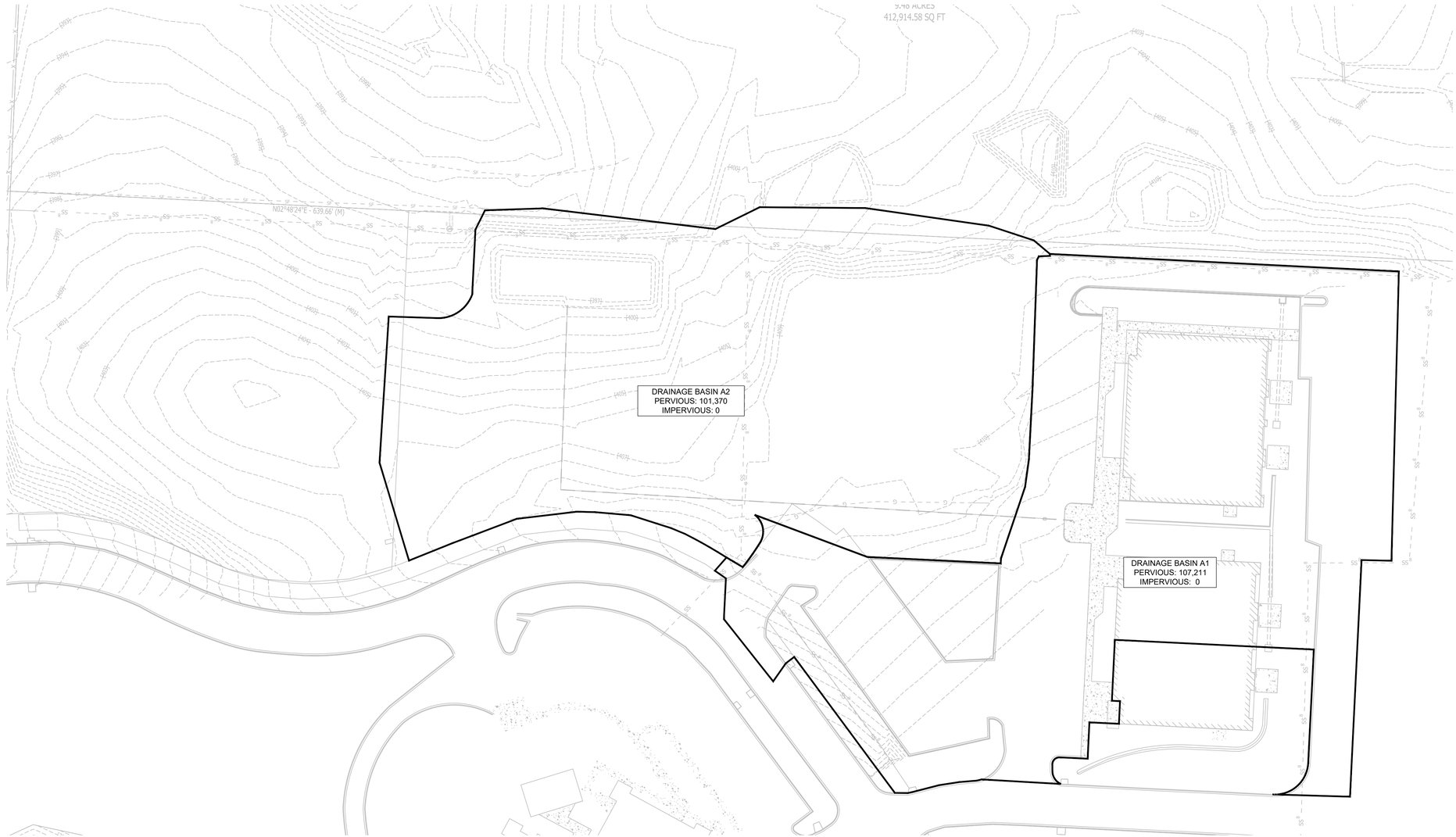
Compute by:	Known Q
Known Q (cfs)	= 8.18

Highlighted

Depth (ft)	= 0.26
Q (cfs)	= 8.180
Area (sqft)	= 1.04
Velocity (ft/s)	= 7.87
Wetted Perim (ft)	= 4.52
Crit Depth, Yc (ft)	= 0.50
Top Width (ft)	= 4.00
EGL (ft)	= 1.22



DRAINAGE BASIN MAPS



PRE DRAINAGE MAP

SCALE 1" = 40'

PHILLIP LEWIS ENGINEERING, INC.
Structural + Civil Consultants
23620 Interstate 30 | Bryant, Arkansas
PH: 501-350-9840

REVISION:

SUMMERWOOD SPORTS GYMNASIUM #3
7817 Hwy 5 N
Bryant, Arkansas

CERTIFICATE OF AUTHORIZATION
PHILLIP LEWIS ENGINEERING, INC.
ARKANSAS-ENGINEERS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9540
PHILLIP A. LEWIS

PROJECT NUMBER:

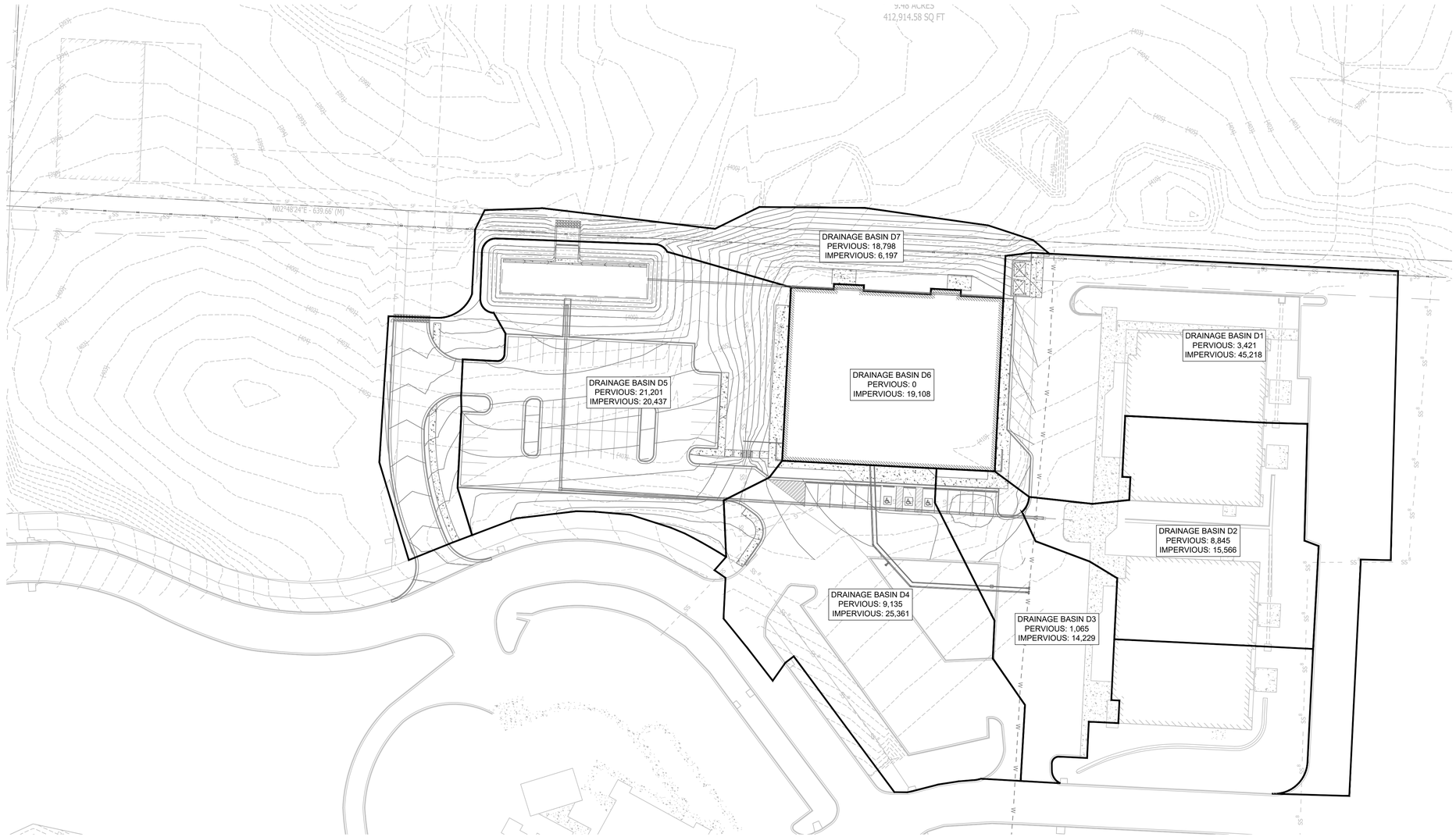
SHEET ISSUE DATE:
1/10/2024

PAGE TITLE:
PRE DRAINAGE MAP

SHEET NUMBER:
C1.5

N

0 40'
1" = 40'-0"



POST DRAINAGE MAP

SCALE 1" = 40'

PHILLIP LEWIS ENGINEERING, INC.
Structural + Civil Consultants
23620 Interstate 30 | Bryant, Arkansas
PH: 501-350-9840

REVISION:

SUMMERWOOD SPORTS GYMNASIUM #3
7817 Hwy 5 N
Bryant, Arkansas

CERTIFICATE OF AUTHORIZATION
PHILLIP LEWIS ENGINEERING, INC.
No. 566
ARKANSAS ENGINEERING

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9540
PHILLIP A. LEWIS

PROJECT NUMBER:

SHEET ISSUE DATE:
1/10/2024

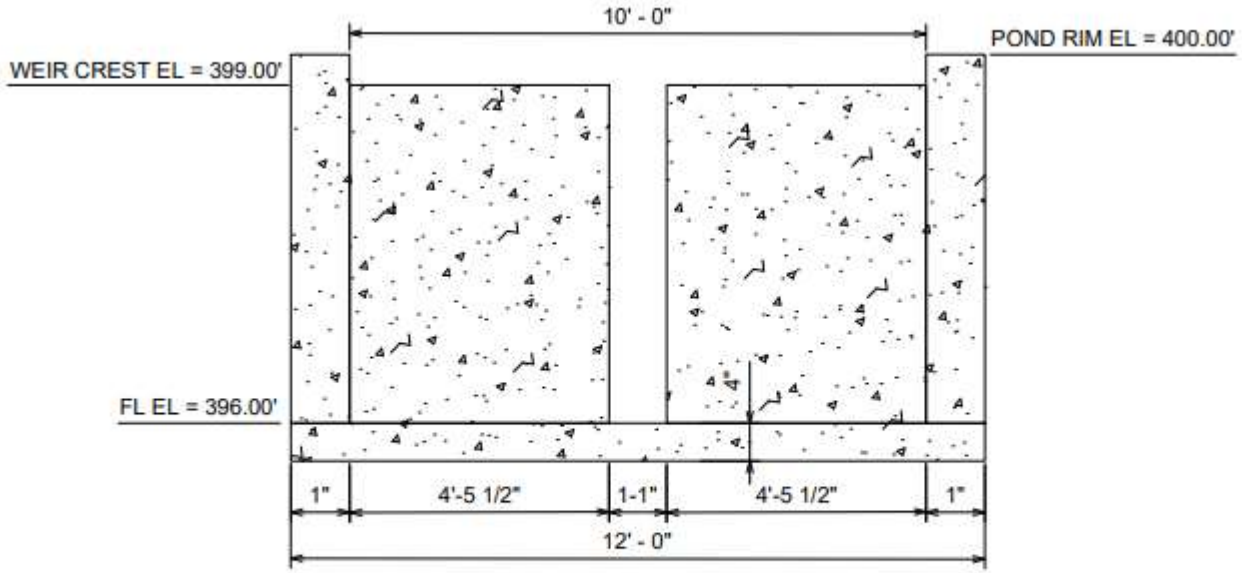
PAGE TITLE:
POST DRAINAGE MAP

SHEET NUMBER:
C1.6

N

0 40'
1" = 40'-0"

DETENTION BASIN OUTLET STRUCTURES



EXISTING DETENTION POND OUTLET STRUCTURE DETAIL NOT TO SCALE

SOIL CLASSIFICATION MAPS



Map Scale: 1:2,250 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Saline County, Arkansas

29—Tiak silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: m06q
Elevation: 70 to 570 feet
Mean annual precipitation: 44 to 61 inches
Mean annual air temperature: 49 to 74 degrees F
Frost-free period: 185 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Tiak and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tiak

Setting

Landform: Interfluves
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy and clayey marine deposits

Typical profile

A - 0 to 7 inches: silt loam
E - 7 to 9 inches: loam
Bt1 - 9 to 32 inches: clay
Bt2 - 32 to 72 inches: clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F133BY002TX - Seasonally Wet Upland
Hydric soil rating: No

FEMA FLOOD INSURANCE RATE MAP

National Flood Hazard Layer FIRMette

FEMA

92°28'37"W 34°38'34"N



92°28'W 34°38'4"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/10/2024 at 5:31 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.