DRAINAGE REPORT

Splash Carwash

Date: **05-11-2022**

Located in: **Bryant, Arkansas**

Prepared for:
City of Bryant, Arkansas

Prepared by:

PHILLIP LEWIS ENGINEERING

Structural + Civil Consultants

23620 Interstate 30 | Bryant, AR
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PHILLIP LEWIS ENGINEERING, INC.
Structural/Civil Design
23620 Interstate 30 N
Bryant, Arkansas 72022

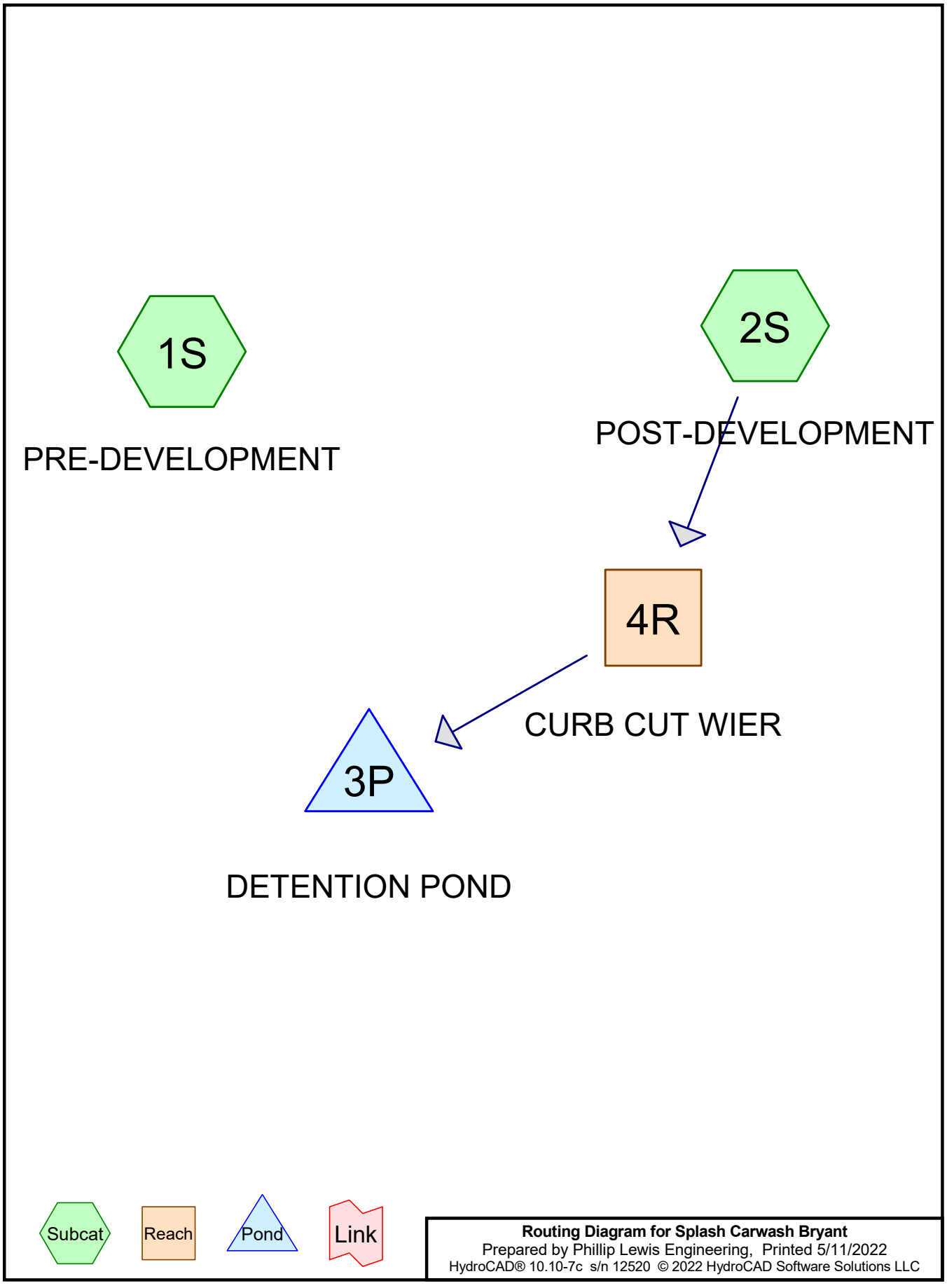
Description of Project

The proposed project is for development of Splash Carwash facility located at 2116 Reynolds Rood in Bryant, Arkansas. The 1.09 acres is located at the intersection of Reynolds Road and Evans loop (old filling station site).

The scope of the project includes the construction of a drive thru tunnel carwash with self service vacuum bays and a covered pay kiosk. In addition to the vacuum bays, new interior landscape islands will be added around the vacuum bays as well as new landscape areas at the South and West side of the property.

Post-development runoff conditions will be reduced from Pre-development runoff conditions after completion of the devlopement with a detention pond constructed in the North East Corner of the property. Post-development site conditions will have an increase in pervious areas. Detention is calculated and sized for the 100 year storm.

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Routing Diagram for Splash Carwash Bryant
Prepared by Phillip Lewis Engineering, Printed 5/11/2022
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Area Listing (all nodes)

Area (acres)	C	Description (subcatchment-numbers)
0.516	0.95	ASPHALT SURFACE (2S)
0.390	0.46	GRASS LANDSCAPING (2S)
0.712	0.65	GRAVEL PARKING (1S)
0.152	0.97	ROOF TOP (2S)
0.345	0.77	SHRUB POOR CONDITION BRUSH (1S)
2.115	**0.73**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	3P	384.50	384.00	10.0	0.0500	0.011	0.0	12.0	0.0

Time span=0.00-12.00 hrs, dt=0.01 hrs, 1201 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE-DEVELOPMENT Runoff Area=46,055 sf 0.00% Impervious Runoff Depth=0.63"
Flow Length=270' Slope=0.0250 '/' Tc=15.5 min C=0.69 Runoff=2.53 cfs 0.056 af

Subcatchment 2S: POST-DEVELOPMENT Runoff Area=46,055 sf 63.15% Impervious Runoff Depth=0.71"
Flow Length=360' Slope=0.0150 '/' Tc=8.8 min C=0.77 Runoff=2.82 cfs 0.062 af

Reach 4R: CURB CUT WIER Avg. Flow Depth=0.19' Max Vel=4.94 fps Inflow=2.82 cfs 0.062 af
n=0.013 L=4.0' S=0.0200 '/' Capacity=12.61 cfs Outflow=2.83 cfs 0.062 af

Pond 3P: DETENTION POND Peak Elev=385.57' Storage=1,038 cf Inflow=2.83 cfs 0.062 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0500 '/' Outflow=2.26 cfs 0.062 af

Total Runoff Area = 2.115 ac Runoff Volume = 0.118 af Average Runoff Depth = 0.67"
68.43% Pervious = 1.447 ac 31.57% Impervious = 0.668 ac

Summary for Subcatchment 1S: PRE-DEVELOPMENT

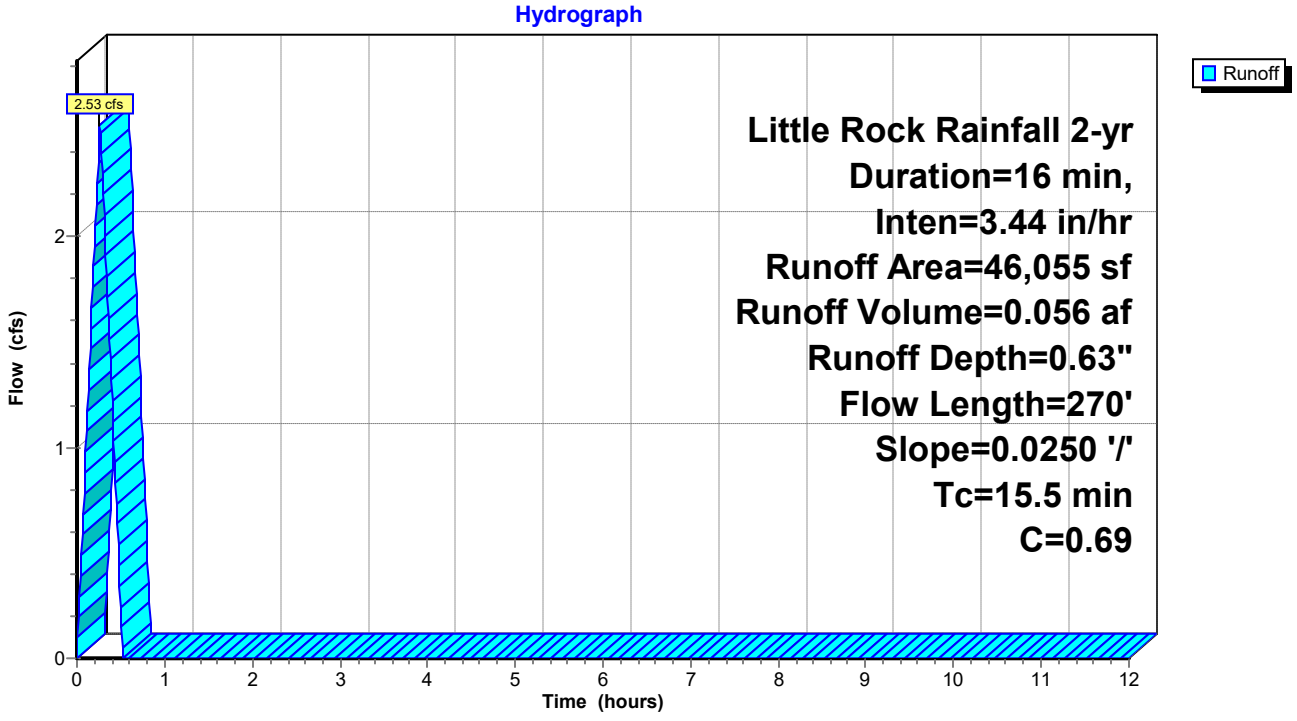
Runoff = 2.53 cfs @ 0.26 hrs, Volume= 0.056 af, Depth= 0.63"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 2-yr Duration=16 min, Inten=3.44 in/hr

Area (sf)	C	Description
31,035	0.65	GRAVEL PARKING
15,020	0.77	SHRUB POOR CONDITION BRUSH
46,055	0.69	Weighted Average
46,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	270	0.0250	0.29		**Sheet Flow, SHEET FLOW SURFACE** Range n= 0.130 P2= 4.19"

Subcatchment 1S: PRE-DEVELOPMENT



Hydrograph for Subcatchment 1S: PRE-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	0.98	5.20	0.00	10.30	0.00
0.20	**1.96**	5.30	0.00	10.40	0.00
0.30	**2.20**	5.40	0.00	10.50	0.00
0.40	1.22	5.50	0.00	10.60	0.00
0.50	0.24	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Subcatchment 2S: POST-DEVELOPMENT

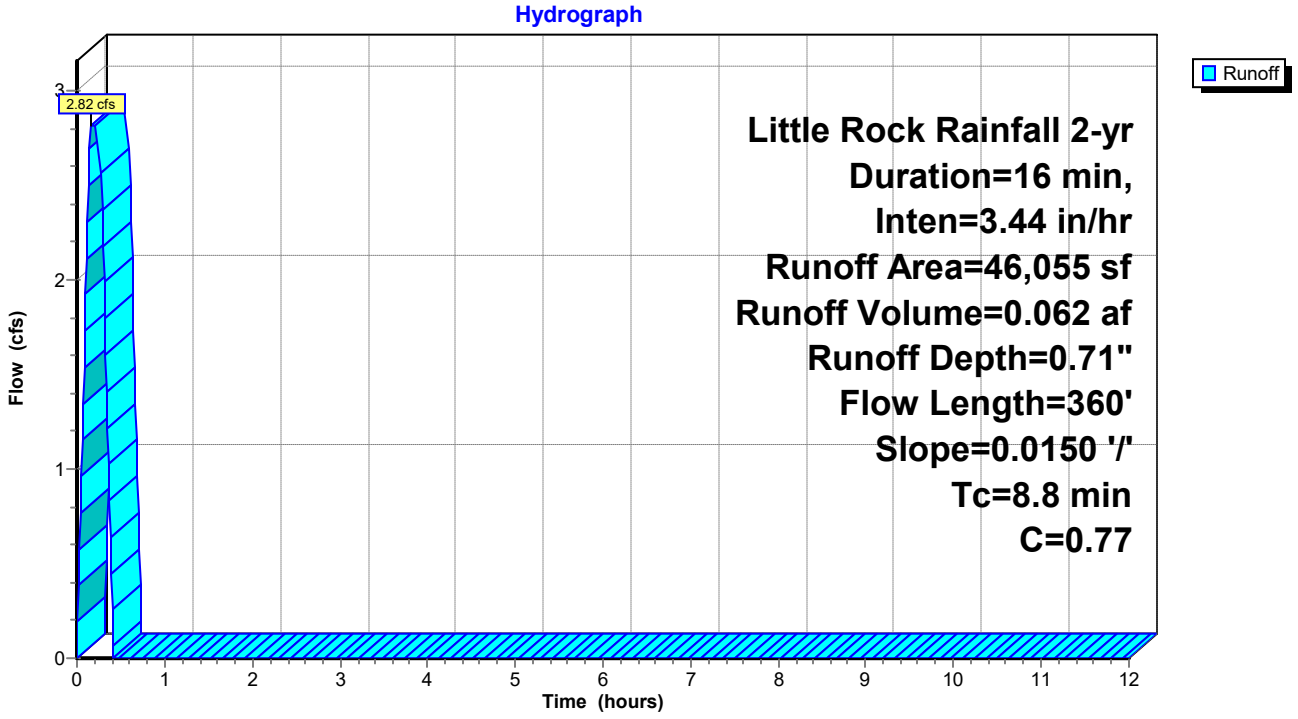
Runoff = 2.82 cfs @ 0.15 hrs, Volume= 0.062 af, Depth= 0.71"
Routed to Reach 4R : CURB CUT WIER

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 2-yr Duration=16 min, Inten=3.44 in/hr

Area (sf)	C	Description
22,479	0.95	ASPHALT SURFACE
6,603	0.97	ROOF TOP
16,973	0.46	GRASS LANDSCAPING
46,055	0.77	Weighted Average
16,973		36.85% Pervious Area
29,082		63.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	40	0.0150	0.10		**Sheet Flow, GRASS** Grass: Dense n= 0.240 P2= 4.19"
2.1	320	0.0150	2.49		**Shallow Concentrated Flow, PAVEMENT** Paved Kv= 20.3 fps
8.8	360	Total			

Subcatchment 2S: POST-DEVELOPMENT



Hydrograph for Subcatchment 2S: POST-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	**1.92**	5.20	0.00	10.30	0.00
0.20	**2.82**	5.30	0.00	10.40	0.00
0.30	2.18	5.40	0.00	10.50	0.00
0.40	0.26	5.50	0.00	10.60	0.00
0.50	0.00	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Reach 4R: CURB CUT WIER

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

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 0.71" for 2-yr event
Inflow = 2.82 cfs @ 0.15 hrs, Volume= 0.062 af
Outflow = 2.83 cfs @ 0.16 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 3P : DETENTION POND

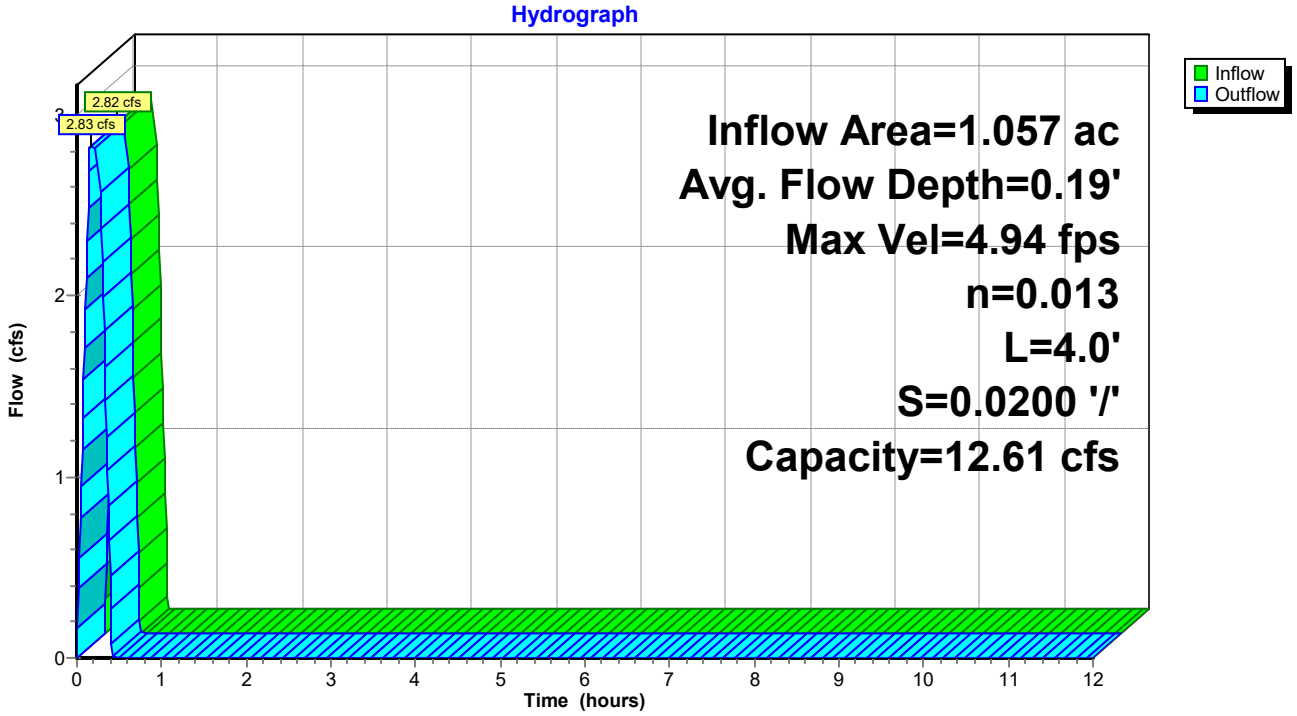
Routing by Stor-Ind+Trans method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.94 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.92 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 0.16 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 3.00'
Bank-Full Depth= 0.50' Flow Area= 1.5 sf, Capacity= 12.61 cfs

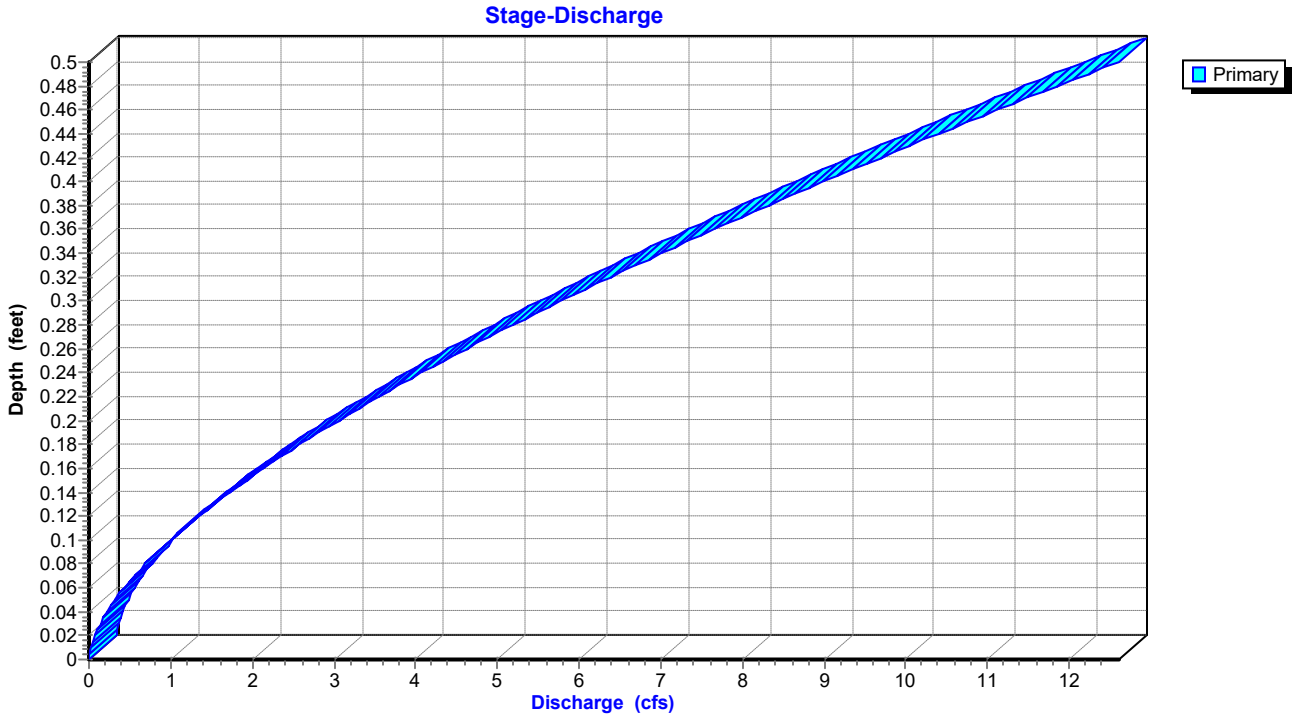
3.00' x 0.50' deep channel, n= 0.013 Concrete, trowel finish
Length= 4.0' Slope= 0.0200 '/'
Inlet Invert= 387.25', Outlet Invert= 387.17'



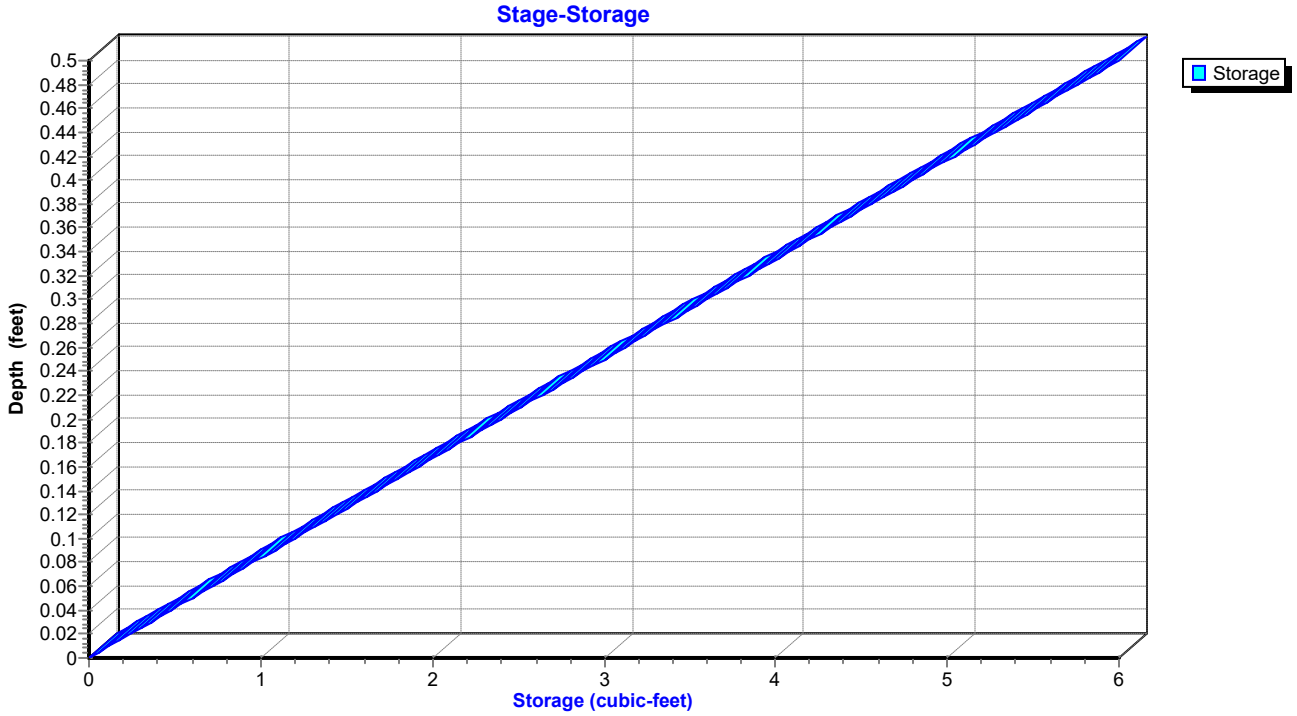
Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Hydrograph for Reach 4R: CURB CUT WIER

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	**0.00**	**0**	**387.25**	**0.00**
0.50	**0.00**	**0**	**387.25**	**0.00**
1.00	0.00	0	387.25	0.00
1.50	0.00	0	387.25	0.00
2.00	0.00	0	387.25	0.00
2.50	0.00	0	387.25	0.00
3.00	0.00	0	387.25	0.00
3.50	0.00	0	387.25	0.00
4.00	0.00	0	387.25	0.00
4.50	0.00	0	387.25	0.00
5.00	0.00	0	387.25	0.00
5.50	0.00	0	387.25	0.00
6.00	0.00	0	387.25	0.00
6.50	0.00	0	387.25	0.00
7.00	0.00	0	387.25	0.00
7.50	0.00	0	387.25	0.00
8.00	0.00	0	387.25	0.00
8.50	0.00	0	387.25	0.00
9.00	0.00	0	387.25	0.00
9.50	0.00	0	387.25	0.00
10.00	0.00	0	387.25	0.00
10.50	0.00	0	387.25	0.00
11.00	0.00	0	387.25	0.00
11.50	0.00	0	387.25	0.00
12.00	0.00	0	387.25	0.00

Stage-Discharge for Reach 4R: CURB CUT WIER

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
387.25	0.00	0.00
387.26	0.75	0.02
387.27	1.18	0.07
387.28	1.54	0.14
387.29	1.86	0.22
387.30	2.15	0.32
387.31	2.41	0.43
387.32	2.66	0.56
387.33	2.90	0.70
387.34	3.12	0.84
387.35	3.34	1.00
387.36	3.54	1.17
387.37	3.74	1.35
387.38	3.92	1.53
387.39	4.11	1.72
387.40	4.28	1.93
387.41	4.45	2.14
387.42	4.62	2.36
387.43	4.78	2.58
387.44	4.93	2.81
387.45	5.09	3.05
387.46	5.23	3.30
387.47	5.38	3.55
387.48	5.52	3.81
387.49	5.65	4.07
387.50	5.79	4.34
387.51	5.92	4.62
387.52	6.05	4.90
387.53	6.17	5.19
387.54	6.30	5.48
387.55	6.42	5.77
387.56	6.53	6.08
387.57	6.65	6.38
387.58	6.76	6.69
387.59	6.87	7.01
387.60	6.98	7.33
387.61	7.09	7.65
387.62	7.19	7.98
387.63	7.30	8.32
387.64	7.40	8.65
387.65	7.50	9.00
387.66	7.59	9.34
387.67	7.69	9.69
387.68	7.79	10.04
387.69	7.88	10.40
387.70	7.97	10.76
387.71	8.06	11.12
387.72	8.15	11.49
387.73	8.24	11.86
387.74	8.32	12.23
387.75	**8.41**	**12.61**

Stage-Area-Storage for Reach 4R: CURB CUT WIER

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
387.25	0.0	0
387.26	0.0	0
387.27	0.1	0
387.28	0.1	0
387.29	0.1	0
387.30	0.2	1
387.31	0.2	1
387.32	0.2	1
387.33	0.2	1
387.34	0.3	1
387.35	0.3	1
387.36	0.3	1
387.37	0.4	1
387.38	0.4	2
387.39	0.4	2
387.40	0.4	2
387.41	0.5	2
387.42	0.5	2
387.43	0.5	2
387.44	0.6	2
387.45	0.6	2
387.46	0.6	3
387.47	0.7	3
387.48	0.7	3
387.49	0.7	3
387.50	0.8	3
387.51	0.8	3
387.52	0.8	3
387.53	0.8	3
387.54	0.9	3
387.55	0.9	4
387.56	0.9	4
387.57	1.0	4
387.58	1.0	4
387.59	1.0	4
387.60	1.1	4
387.61	1.1	4
387.62	1.1	4
387.63	1.1	5
387.64	1.2	5
387.65	1.2	5
387.66	1.2	5
387.67	1.3	5
387.68	1.3	5
387.69	1.3	5
387.70	1.4	5
387.71	1.4	6
387.72	1.4	6
387.73	1.4	6
387.74	1.5	6
387.75	**1.5**	**6**

Summary for Pond 3P: DETENTION POND

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 0.71" for 2-yr event
Inflow = 2.83 cfs @ 0.16 hrs, Volume= 0.062 af
Outflow = 2.26 cfs @ 0.30 hrs, Volume= 0.062 af, Atten= 20%, Lag= 8.2 min
Primary = 2.26 cfs @ 0.30 hrs, Volume= 0.062 af

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 385.57' @ 0.30 hrs Surf.Area= 1,150 sf Storage= 1,038 cf

Plug-Flow detention time= 10.9 min calculated for 0.062 af (100% of inflow)
Center-of-Mass det. time= 10.8 min (23.3 - 12.4)

Volume	Invert	Avail.Storage	Storage Description
#1	384.50'	2,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

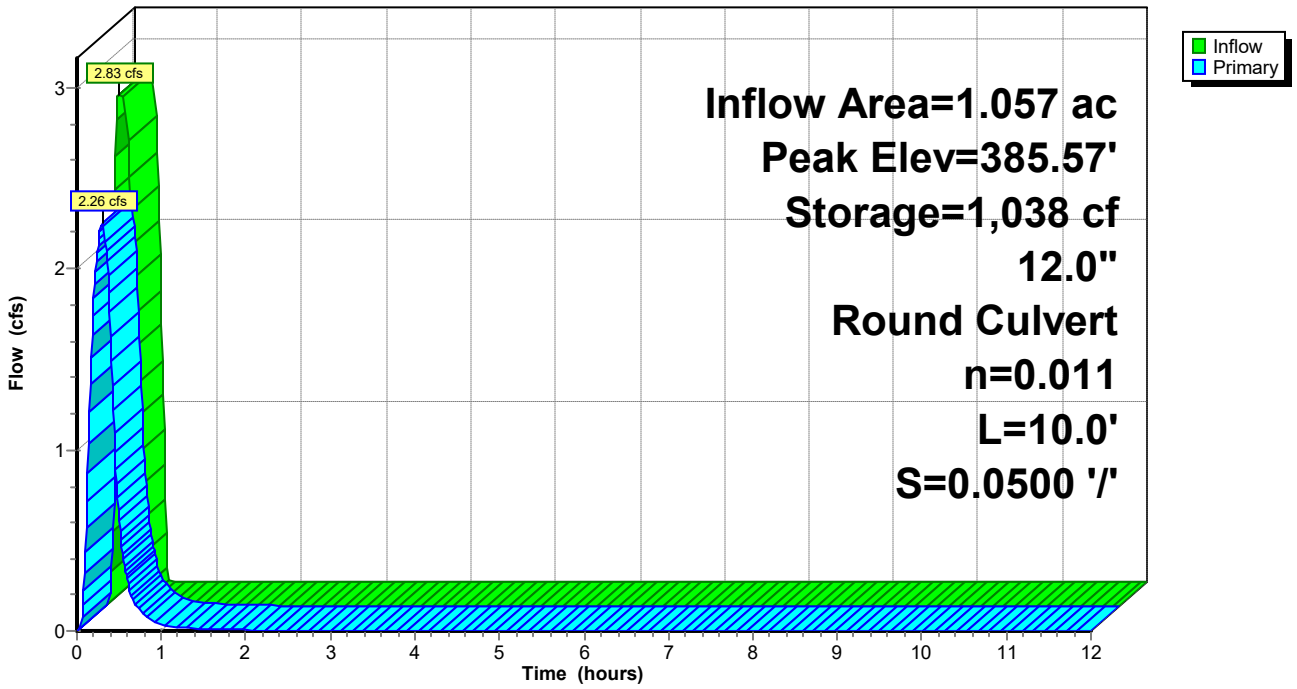
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	724	0	0
385.00	986	428	428
386.00	1,273	1,130	1,557
387.00	1,585	1,429	2,986

Device	Routing	Invert	Outlet Devices
#1	Primary	384.50'	**12.0" Round 12" RCP** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.50' / 384.00' S= 0.0500 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=2.26 cfs @ 0.30 hrs HW=385.57' (Free Discharge)
↑**1=12" RCP** (Inlet Controls 2.26 cfs @ 2.87 fps)

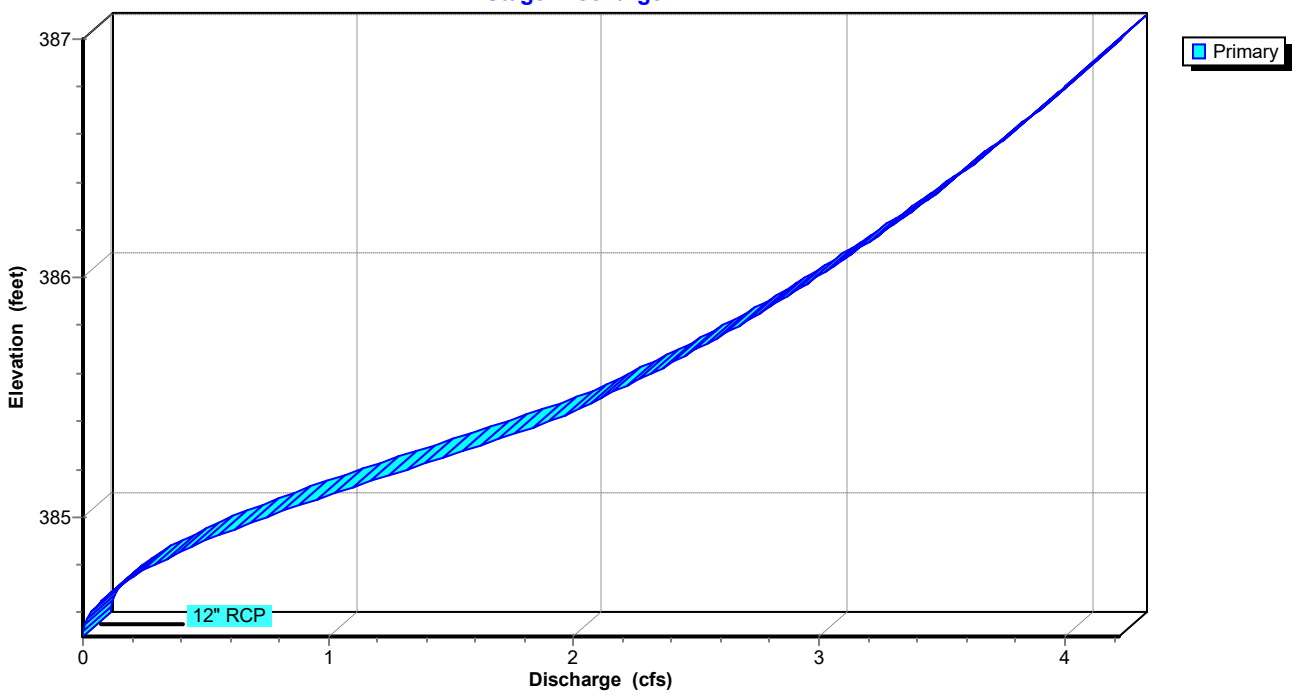
Pond 3P: DETENTION POND

Hydrograph

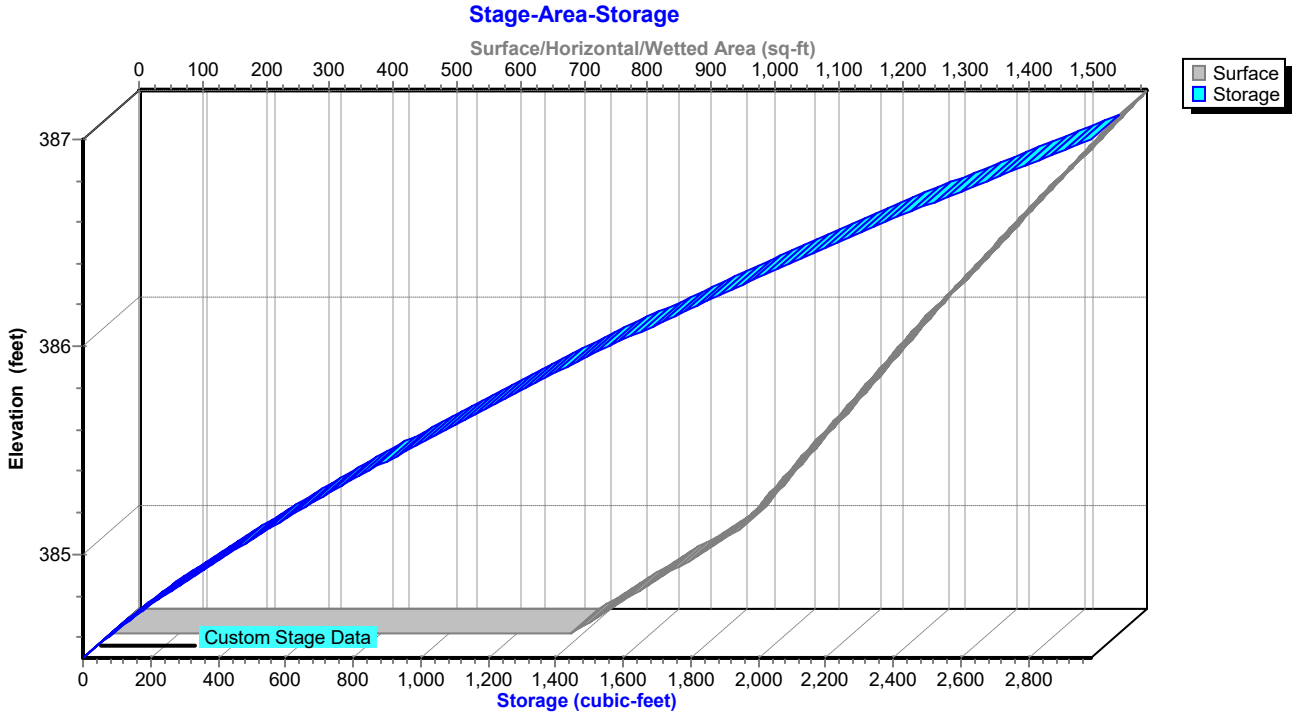


Pond 3P: DETENTION POND

Stage-Discharge



Pond 3P: DETENTION POND



Hydrograph for Pond 3P: DETENTION POND

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0**	**384.50**	**0.00**
0.50	**0.00**	**375**	**384.95**	**0.61**
1.00	0.00	79	384.60	0.04
1.50	0.00	41	384.56	0.01
2.00	0.00	27	384.54	0.01
2.50	0.00	20	384.53	0.00
3.00	0.00	16	384.52	0.00
3.50	0.00	13	384.52	0.00
4.00	0.00	10	384.51	0.00
4.50	0.00	8	384.51	0.00
5.00	0.00	7	384.51	0.00
5.50	0.00	5	384.51	0.00
6.00	0.00	4	384.51	0.00
6.50	0.00	3	384.50	0.00
7.00	0.00	3	384.50	0.00
7.50	0.00	2	384.50	0.00
8.00	0.00	2	384.50	0.00
8.50	0.00	1	384.50	0.00
9.00	0.00	1	384.50	0.00
9.50	0.00	1	384.50	0.00
10.00	0.00	1	384.50	0.00
10.50	0.00	1	384.50	0.00
11.00	0.00	0	384.50	0.00
11.50	0.00	0	384.50	0.00
12.00	0.00	0	384.50	0.00

Stage-Discharge for Pond 3P: DETENTION POND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
384.50	0.00	385.52	2.15	386.54	3.70
384.52	0.00	385.54	2.19	386.56	3.73
384.54	0.01	385.56	2.23	386.58	3.75
384.56	0.01	385.58	2.27	386.60	3.78
384.58	0.02	385.60	2.31	386.62	3.80
384.60	0.03	385.62	2.35	386.64	3.82
384.62	0.05	385.64	2.39	386.66	3.85
384.64	0.07	385.66	2.43	386.68	3.87
384.66	0.09	385.68	2.46	386.70	3.89
384.68	0.11	385.70	2.50	386.72	3.92
384.70	0.13	385.72	2.53	386.74	3.94
384.72	0.16	385.74	2.57	386.76	3.96
384.74	0.19	385.76	2.60	386.78	3.98
384.76	0.22	385.78	2.64	386.80	4.01
384.78	0.26	385.80	2.67	386.82	4.03
384.80	0.29	385.82	2.70	386.84	4.05
384.82	0.33	385.84	2.74	386.86	4.07
384.84	0.37	385.86	2.77	386.88	4.09
384.86	0.41	385.88	2.80	386.90	4.12
384.88	0.45	385.90	2.83	386.92	4.14
384.90	0.50	385.92	2.86	386.94	4.16
384.92	0.55	385.94	2.89	386.96	4.18
384.94	0.59	385.96	2.93	386.98	4.20
384.96	0.64	385.98	2.96	387.00	**4.22**
384.98	0.69	386.00	2.99		
385.00	0.75	386.02	3.02		
385.02	0.80	386.04	3.04		
385.04	0.85	386.06	3.07		
385.06	0.91	386.08	3.10		
385.08	0.97	386.10	3.13		
385.10	1.02	386.12	3.16		
385.12	1.08	386.14	3.19		
385.14	1.14	386.16	3.22		
385.16	1.20	386.18	3.24		
385.18	1.26	386.20	3.27		
385.20	1.32	386.22	3.30		
385.22	1.38	386.24	3.32		
385.24	1.44	386.26	3.35		
385.26	1.50	386.28	3.38		
385.28	1.56	386.30	3.40		
385.30	1.62	386.32	3.43		
385.32	1.68	386.34	3.46		
385.34	1.74	386.36	3.48		
385.36	1.79	386.38	3.51		
385.38	1.85	386.40	3.53		
385.40	1.90	386.42	3.56		
385.42	1.95	386.44	3.58		
385.44	2.00	386.46	3.61		
385.46	2.04	386.48	3.63		
385.48	2.08	386.50	3.66		
385.50	2.11	386.52	3.68		

Stage-Area-Storage for Pond 3P: DETENTION POND

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.50	724	0
384.55	750	37
384.60	776	75
384.65	803	114
384.70	829	155
384.75	855	197
384.80	881	241
384.85	907	285
384.90	934	332
384.95	960	379
385.00	986	428
385.05	1,000	477
385.10	1,015	528
385.15	1,029	579
385.20	1,043	630
385.25	1,058	683
385.30	1,072	736
385.35	1,086	790
385.40	1,101	845
385.45	1,115	900
385.50	1,130	956
385.55	1,144	1,013
385.60	1,158	1,071
385.65	1,173	1,129
385.70	1,187	1,188
385.75	1,201	1,248
385.80	1,216	1,308
385.85	1,230	1,369
385.90	1,244	1,431
385.95	1,259	1,494
386.00	1,273	1,557
386.05	1,289	1,621
386.10	1,304	1,686
386.15	1,320	1,751
386.20	1,335	1,818
386.25	1,351	1,885
386.30	1,367	1,953
386.35	1,382	2,022
386.40	1,398	2,091
386.45	1,413	2,161
386.50	1,429	2,233
386.55	1,445	2,304
386.60	1,460	2,377
386.65	1,476	2,450
386.70	1,491	2,525
386.75	1,507	2,600
386.80	1,523	2,675
386.85	1,538	2,752
386.90	1,554	2,829
386.95	1,569	2,907
387.00	**1,585**	**2,986**

Time span=0.00-12.00 hrs, dt=0.01 hrs, 1201 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE-DEVELOPMENT Runoff Area=46,055 sf 0.00% Impervious Runoff Depth=0.75"
Flow Length=270' Slope=0.0250 '/' Tc=15.5 min C=0.69 Runoff=3.01 cfs 0.066 af

Subcatchment 2S: POST-DEVELOPMENT Runoff Area=46,055 sf 63.15% Impervious Runoff Depth=0.84"
Flow Length=360' Slope=0.0150 '/' Tc=8.8 min C=0.77 Runoff=3.36 cfs 0.074 af

Reach 4R: CURB CUT WIER Avg. Flow Depth=0.21' Max Vel=5.27 fps Inflow=3.36 cfs 0.074 af
n=0.013 L=4.0' S=0.0200 '/' Capacity=12.61 cfs Outflow=3.36 cfs 0.074 af

Pond 3P: DETENTION POND Peak Elev=385.75' Storage=1,253 cf Inflow=3.36 cfs 0.074 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0500 '/' Outflow=2.59 cfs 0.074 af

Total Runoff Area = 2.115 ac Runoff Volume = 0.140 af Average Runoff Depth = 0.80"
68.43% Pervious = 1.447 ac 31.57% Impervious = 0.668 ac

Summary for Subcatchment 1S: PRE-DEVELOPMENT

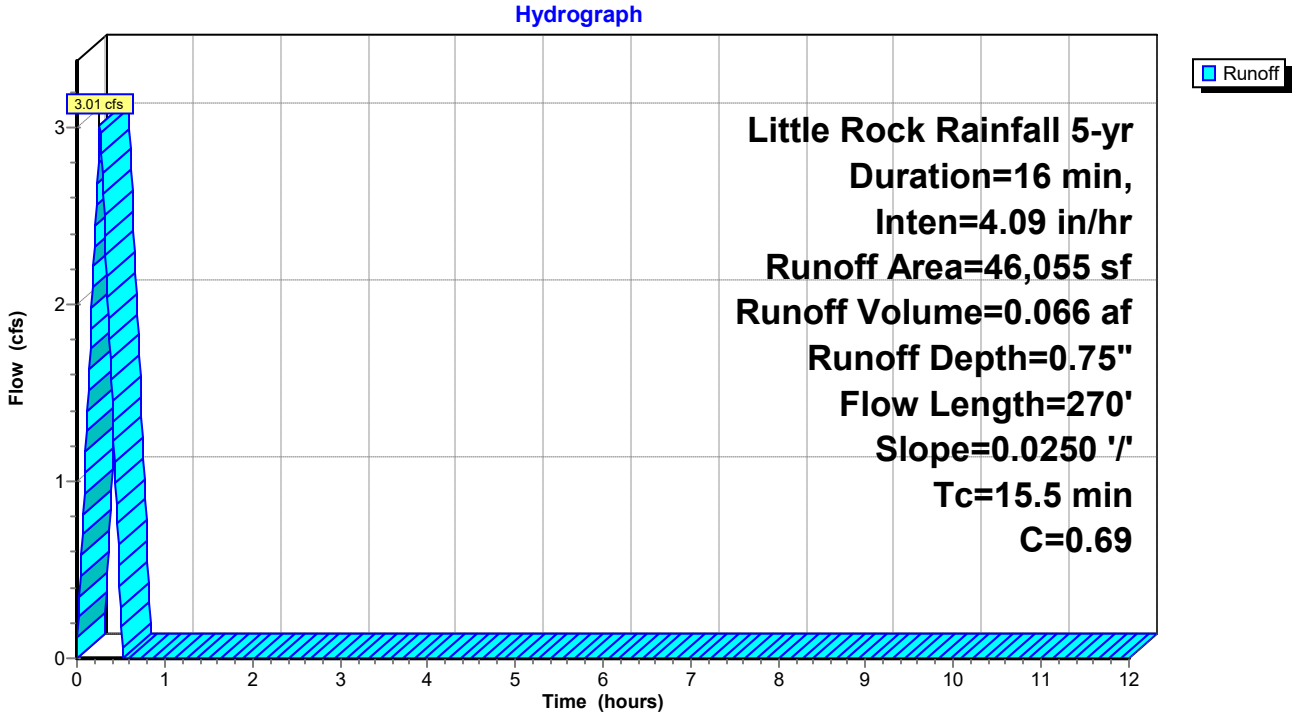
Runoff = 3.01 cfs @ 0.26 hrs, Volume= 0.066 af, Depth= 0.75"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 5-yr Duration=16 min, Inten=4.09 in/hr

Area (sf)	C	Description
31,035	0.65	GRAVEL PARKING
15,020	0.77	SHRUB POOR CONDITION BRUSH
46,055	0.69	Weighted Average
46,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	270	0.0250	0.29		**Sheet Flow, SHEET FLOW SURFACE** Range n= 0.130 P2= 4.19"

Subcatchment 1S: PRE-DEVELOPMENT



Hydrograph for Subcatchment 1S: PRE-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	1.16	5.20	0.00	10.30	0.00
0.20	**2.33**	5.30	0.00	10.40	0.00
0.30	**2.62**	5.40	0.00	10.50	0.00
0.40	1.46	5.50	0.00	10.60	0.00
0.50	0.29	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Subcatchment 2S: POST-DEVELOPMENT

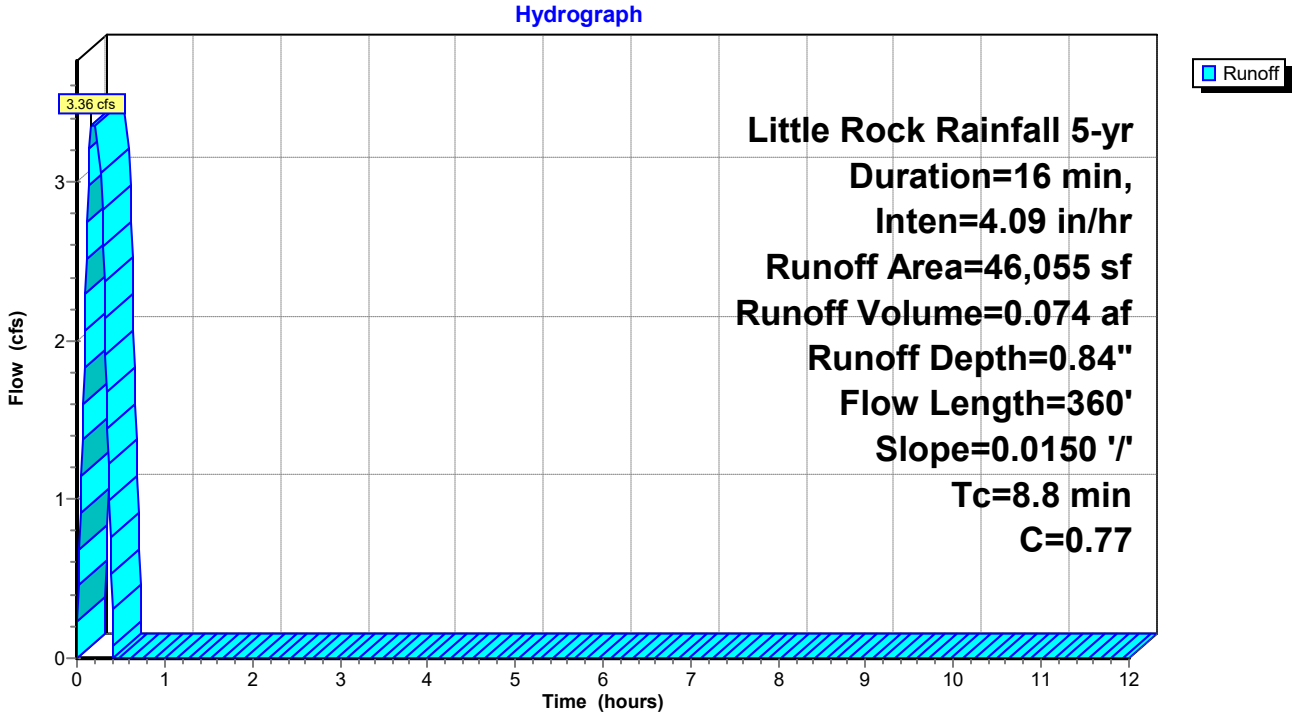
Runoff = 3.36 cfs @ 0.15 hrs, Volume= 0.074 af, Depth= 0.84"
Routed to Reach 4R : CURB CUT WIER

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 5-yr Duration=16 min, Inten=4.09 in/hr

Area (sf)	C	Description
22,479	0.95	ASPHALT SURFACE
6,603	0.97	ROOF TOP
16,973	0.46	GRASS LANDSCAPING
46,055	0.77	Weighted Average
16,973		36.85% Pervious Area
29,082		63.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	40	0.0150	0.10		**Sheet Flow, GRASS** Grass: Dense n= 0.240 P2= 4.19"
2.1	320	0.0150	2.49		**Shallow Concentrated Flow, PAVEMENT** Paved Kv= 20.3 fps
8.8	360	Total			

Subcatchment 2S: POST-DEVELOPMENT



Hydrograph for Subcatchment 2S: POST-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	**2.29**	5.20	0.00	10.30	0.00
0.20	**3.36**	5.30	0.00	10.40	0.00
0.30	2.59	5.40	0.00	10.50	0.00
0.40	0.31	5.50	0.00	10.60	0.00
0.50	0.00	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Reach 4R: CURB CUT WIER

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

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 0.84" for 5-yr event
Inflow = 3.36 cfs @ 0.15 hrs, Volume= 0.074 af
Outflow = 3.36 cfs @ 0.16 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 3P : DETENTION POND

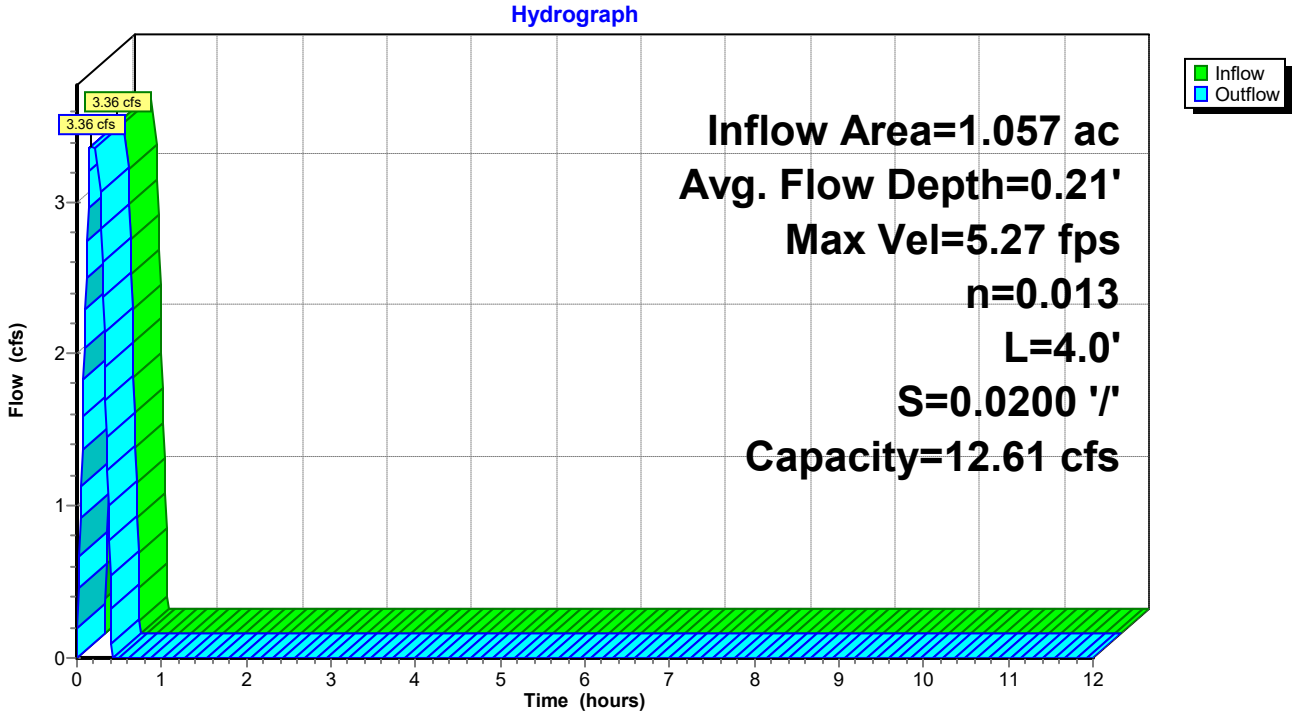
Routing by Stor-Ind+Trans method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.27 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.18 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 0.16 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 3.00'
Bank-Full Depth= 0.50' Flow Area= 1.5 sf, Capacity= 12.61 cfs

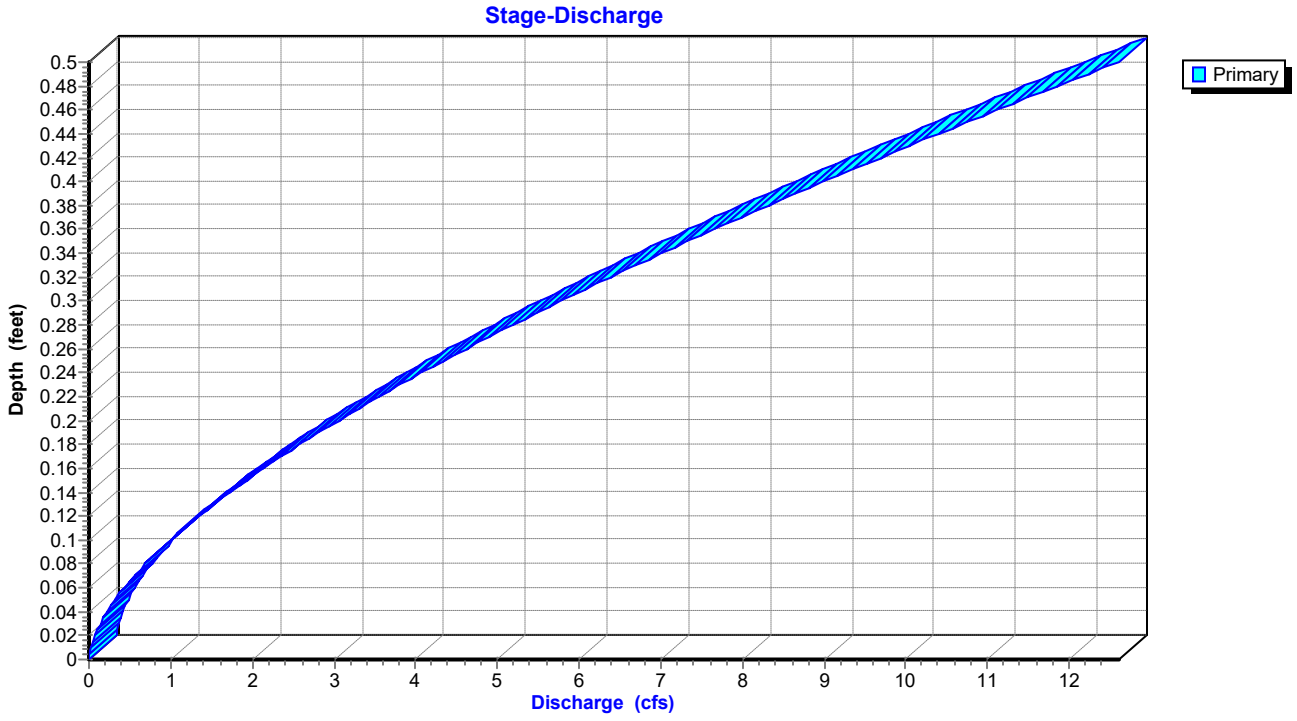
3.00' x 0.50' deep channel, n= 0.013 Concrete, trowel finish
Length= 4.0' Slope= 0.0200 '/'
Inlet Invert= 387.25', Outlet Invert= 387.17'



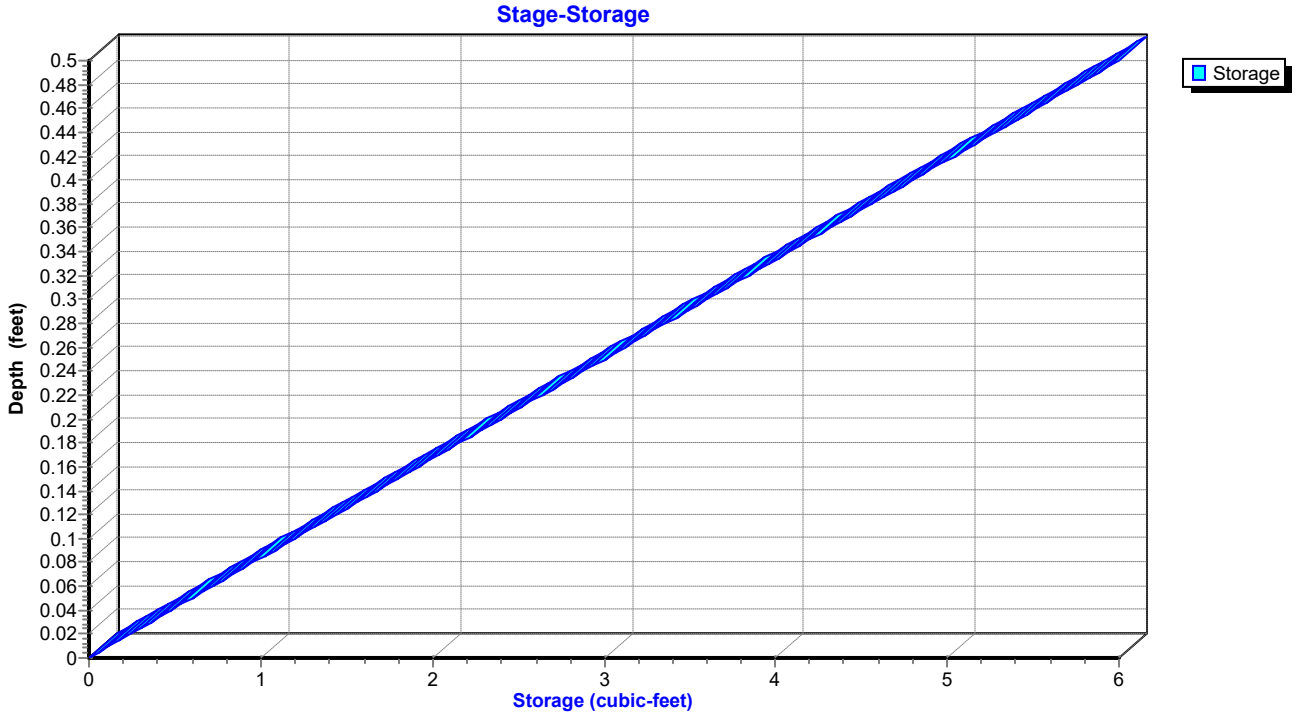
Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Hydrograph for Reach 4R: CURB CUT WIER

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	**0.00**	**0**	**387.25**	**0.00**
0.50	**0.00**	**0**	**387.25**	**0.00**
1.00	0.00	0	387.25	0.00
1.50	0.00	0	387.25	0.00
2.00	0.00	0	387.25	0.00
2.50	0.00	0	387.25	0.00
3.00	0.00	0	387.25	0.00
3.50	0.00	0	387.25	0.00
4.00	0.00	0	387.25	0.00
4.50	0.00	0	387.25	0.00
5.00	0.00	0	387.25	0.00
5.50	0.00	0	387.25	0.00
6.00	0.00	0	387.25	0.00
6.50	0.00	0	387.25	0.00
7.00	0.00	0	387.25	0.00
7.50	0.00	0	387.25	0.00
8.00	0.00	0	387.25	0.00
8.50	0.00	0	387.25	0.00
9.00	0.00	0	387.25	0.00
9.50	0.00	0	387.25	0.00
10.00	0.00	0	387.25	0.00
10.50	0.00	0	387.25	0.00
11.00	0.00	0	387.25	0.00
11.50	0.00	0	387.25	0.00
12.00	0.00	0	387.25	0.00

Stage-Discharge for Reach 4R: CURB CUT WIER

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
387.25	0.00	0.00
387.26	0.75	0.02
387.27	1.18	0.07
387.28	1.54	0.14
387.29	1.86	0.22
387.30	2.15	0.32
387.31	2.41	0.43
387.32	2.66	0.56
387.33	2.90	0.70
387.34	3.12	0.84
387.35	3.34	1.00
387.36	3.54	1.17
387.37	3.74	1.35
387.38	3.92	1.53
387.39	4.11	1.72
387.40	4.28	1.93
387.41	4.45	2.14
387.42	4.62	2.36
387.43	4.78	2.58
387.44	4.93	2.81
387.45	5.09	3.05
387.46	5.23	3.30
387.47	5.38	3.55
387.48	5.52	3.81
387.49	5.65	4.07
387.50	5.79	4.34
387.51	5.92	4.62
387.52	6.05	4.90
387.53	6.17	5.19
387.54	6.30	5.48
387.55	6.42	5.77
387.56	6.53	6.08
387.57	6.65	6.38
387.58	6.76	6.69
387.59	6.87	7.01
387.60	6.98	7.33
387.61	7.09	7.65
387.62	7.19	7.98
387.63	7.30	8.32
387.64	7.40	8.65
387.65	7.50	9.00
387.66	7.59	9.34
387.67	7.69	9.69
387.68	7.79	10.04
387.69	7.88	10.40
387.70	7.97	10.76
387.71	8.06	11.12
387.72	8.15	11.49
387.73	8.24	11.86
387.74	8.32	12.23
387.75	**8.41**	**12.61**

Stage-Area-Storage for Reach 4R: CURB CUT WIER

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
387.25	0.0	0
387.26	0.0	0
387.27	0.1	0
387.28	0.1	0
387.29	0.1	0
387.30	0.2	1
387.31	0.2	1
387.32	0.2	1
387.33	0.2	1
387.34	0.3	1
387.35	0.3	1
387.36	0.3	1
387.37	0.4	1
387.38	0.4	2
387.39	0.4	2
387.40	0.4	2
387.41	0.5	2
387.42	0.5	2
387.43	0.5	2
387.44	0.6	2
387.45	0.6	2
387.46	0.6	3
387.47	0.7	3
387.48	0.7	3
387.49	0.7	3
387.50	0.8	3
387.51	0.8	3
387.52	0.8	3
387.53	0.8	3
387.54	0.9	3
387.55	0.9	4
387.56	0.9	4
387.57	1.0	4
387.58	1.0	4
387.59	1.0	4
387.60	1.1	4
387.61	1.1	4
387.62	1.1	4
387.63	1.1	5
387.64	1.2	5
387.65	1.2	5
387.66	1.2	5
387.67	1.3	5
387.68	1.3	5
387.69	1.3	5
387.70	1.4	5
387.71	1.4	6
387.72	1.4	6
387.73	1.4	6
387.74	1.5	6
387.75	**1.5**	**6**

Summary for Pond 3P: DETENTION POND

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 0.84" for 5-yr event
Inflow = 3.36 cfs @ 0.16 hrs, Volume= 0.074 af
Outflow = 2.59 cfs @ 0.30 hrs, Volume= 0.074 af, Atten= 23%, Lag= 8.4 min
Primary = 2.59 cfs @ 0.30 hrs, Volume= 0.074 af

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 385.75' @ 0.30 hrs Surf.Area= 1,202 sf Storage= 1,253 cf

Plug-Flow detention time= 10.0 min calculated for 0.074 af (100% of inflow)
Center-of-Mass det. time= 10.4 min (22.9 - 12.4)

Volume	Invert	Avail.Storage	Storage Description
#1	384.50'	2,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

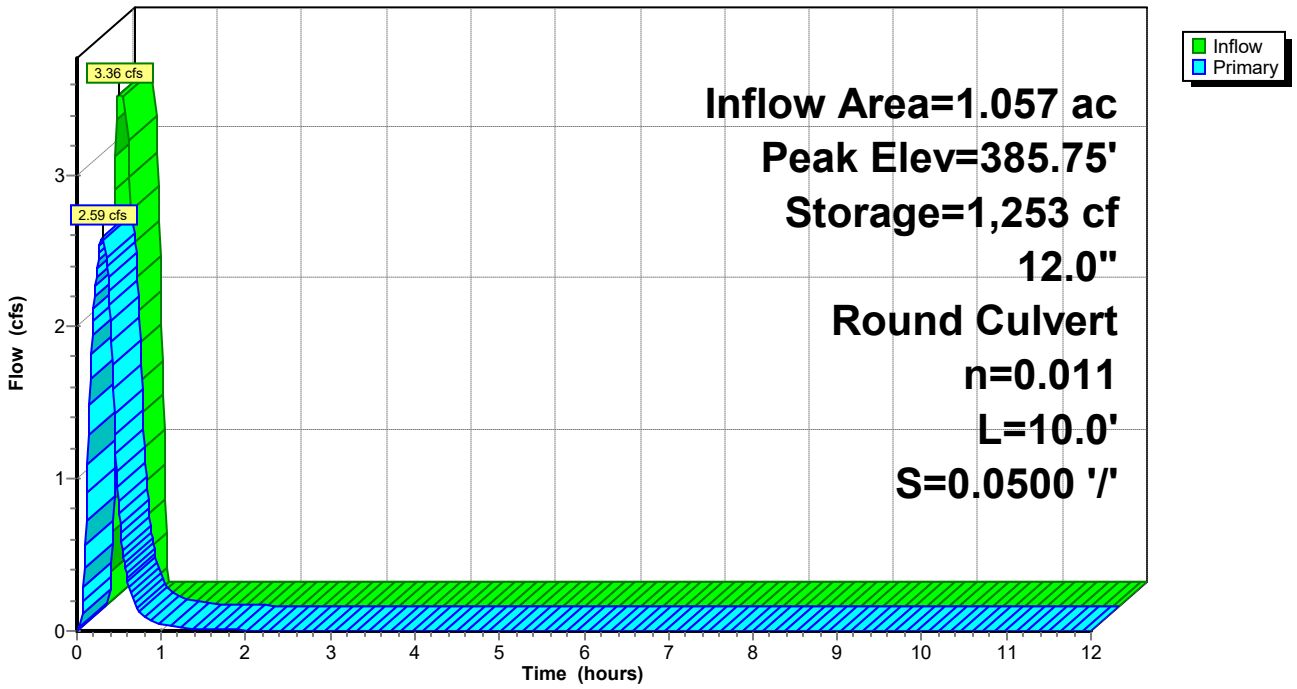
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	724	0	0
385.00	986	428	428
386.00	1,273	1,130	1,557
387.00	1,585	1,429	2,986

Device	Routing	Invert	Outlet Devices
#1	Primary	384.50'	**12.0" Round 12" RCP** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.50' / 384.00' S= 0.0500 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=2.59 cfs @ 0.30 hrs HW=385.75' (Free Discharge)
↑**1=12" RCP** (Inlet Controls 2.59 cfs @ 3.30 fps)

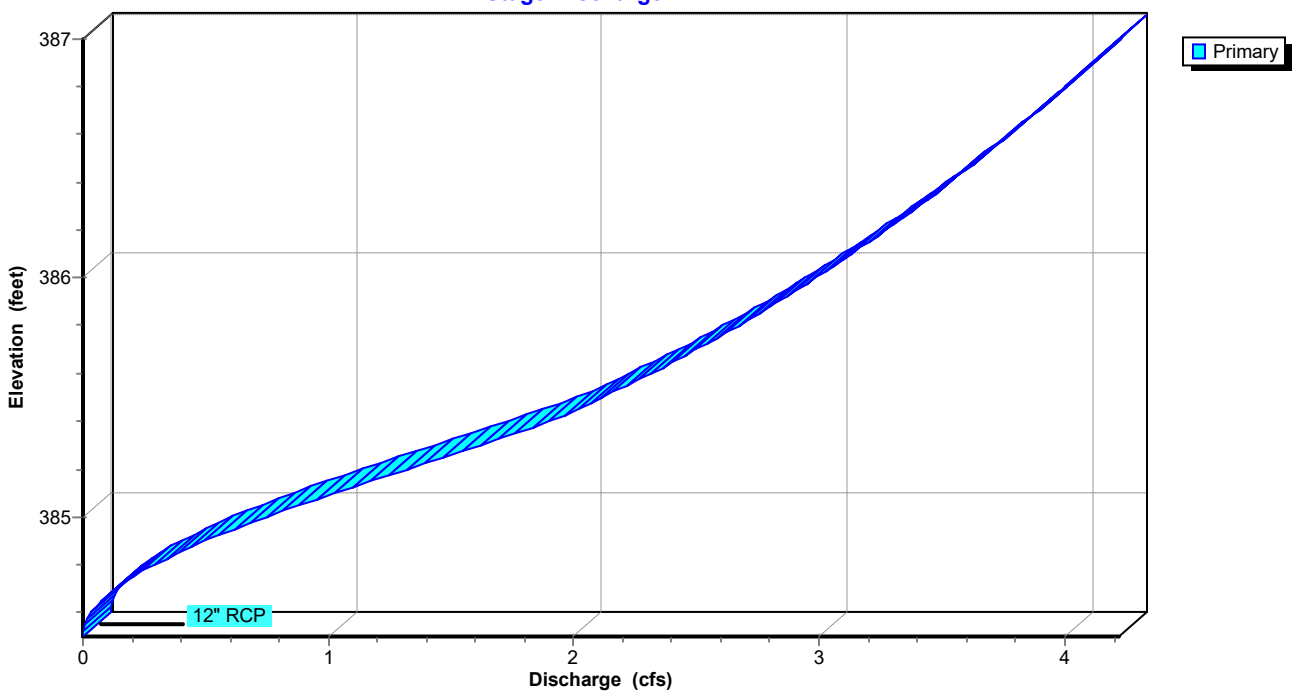
Pond 3P: DETENTION POND

Hydrograph

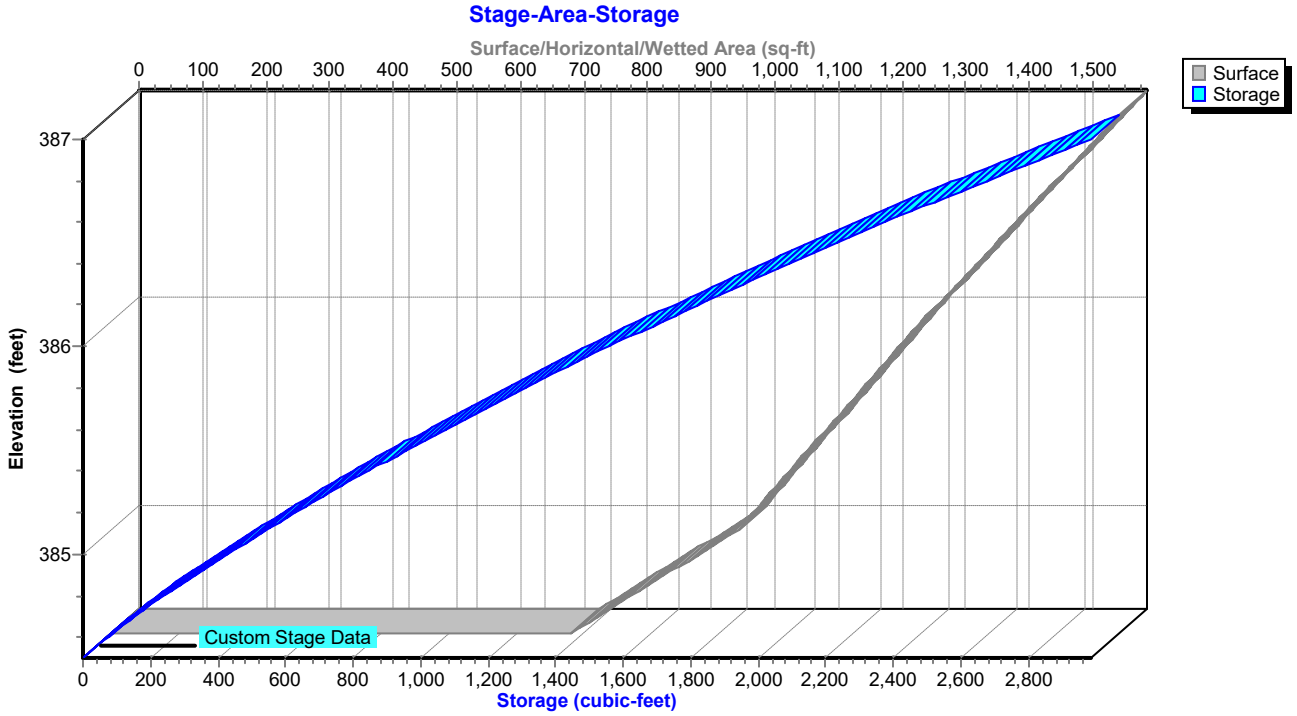


Pond 3P: DETENTION POND

Stage-Discharge



Pond 3P: DETENTION POND



Hydrograph for Pond 3P: DETENTION POND

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0**	**384.50**	**0.00**
0.50	**0.00**	**439**	**385.01**	**0.78**
1.00	0.00	82	384.61	0.04
1.50	0.00	42	384.56	0.01
2.00	0.00	28	384.54	0.01
2.50	0.00	20	384.53	0.00
3.00	0.00	16	384.52	0.00
3.50	0.00	13	384.52	0.00
4.00	0.00	10	384.51	0.00
4.50	0.00	8	384.51	0.00
5.00	0.00	7	384.51	0.00
5.50	0.00	5	384.51	0.00
6.00	0.00	4	384.51	0.00
6.50	0.00	3	384.50	0.00
7.00	0.00	3	384.50	0.00
7.50	0.00	2	384.50	0.00
8.00	0.00	2	384.50	0.00
8.50	0.00	1	384.50	0.00
9.00	0.00	1	384.50	0.00
9.50	0.00	1	384.50	0.00
10.00	0.00	1	384.50	0.00
10.50	0.00	1	384.50	0.00
11.00	0.00	0	384.50	0.00
11.50	0.00	0	384.50	0.00
12.00	0.00	0	384.50	0.00

Stage-Discharge for Pond 3P: DETENTION POND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
384.50	0.00	385.52	2.15	386.54	3.70
384.52	0.00	385.54	2.19	386.56	3.73
384.54	0.01	385.56	2.23	386.58	3.75
384.56	0.01	385.58	2.27	386.60	3.78
384.58	0.02	385.60	2.31	386.62	3.80
384.60	0.03	385.62	2.35	386.64	3.82
384.62	0.05	385.64	2.39	386.66	3.85
384.64	0.07	385.66	2.43	386.68	3.87
384.66	0.09	385.68	2.46	386.70	3.89
384.68	0.11	385.70	2.50	386.72	3.92
384.70	0.13	385.72	2.53	386.74	3.94
384.72	0.16	385.74	2.57	386.76	3.96
384.74	0.19	385.76	2.60	386.78	3.98
384.76	0.22	385.78	2.64	386.80	4.01
384.78	0.26	385.80	2.67	386.82	4.03
384.80	0.29	385.82	2.70	386.84	4.05
384.82	0.33	385.84	2.74	386.86	4.07
384.84	0.37	385.86	2.77	386.88	4.09
384.86	0.41	385.88	2.80	386.90	4.12
384.88	0.45	385.90	2.83	386.92	4.14
384.90	0.50	385.92	2.86	386.94	4.16
384.92	0.55	385.94	2.89	386.96	4.18
384.94	0.59	385.96	2.93	386.98	4.20
384.96	0.64	385.98	2.96	387.00	**4.22**
384.98	0.69	386.00	2.99		
385.00	0.75	386.02	3.02		
385.02	0.80	386.04	3.04		
385.04	0.85	386.06	3.07		
385.06	0.91	386.08	3.10		
385.08	0.97	386.10	3.13		
385.10	1.02	386.12	3.16		
385.12	1.08	386.14	3.19		
385.14	1.14	386.16	3.22		
385.16	1.20	386.18	3.24		
385.18	1.26	386.20	3.27		
385.20	1.32	386.22	3.30		
385.22	1.38	386.24	3.32		
385.24	1.44	386.26	3.35		
385.26	1.50	386.28	3.38		
385.28	1.56	386.30	3.40		
385.30	1.62	386.32	3.43		
385.32	1.68	386.34	3.46		
385.34	1.74	386.36	3.48		
385.36	1.79	386.38	3.51		
385.38	1.85	386.40	3.53		
385.40	1.90	386.42	3.56		
385.42	1.95	386.44	3.58		
385.44	2.00	386.46	3.61		
385.46	2.04	386.48	3.63		
385.48	2.08	386.50	3.66		
385.50	2.11	386.52	3.68		

Stage-Area-Storage for Pond 3P: DETENTION POND

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.50	724	0
384.55	750	37
384.60	776	75
384.65	803	114
384.70	829	155
384.75	855	197
384.80	881	241
384.85	907	285
384.90	934	332
384.95	960	379
385.00	986	428
385.05	1,000	477
385.10	1,015	528
385.15	1,029	579
385.20	1,043	630
385.25	1,058	683
385.30	1,072	736
385.35	1,086	790
385.40	1,101	845
385.45	1,115	900
385.50	1,130	956
385.55	1,144	1,013
385.60	1,158	1,071
385.65	1,173	1,129
385.70	1,187	1,188
385.75	1,201	1,248
385.80	1,216	1,308
385.85	1,230	1,369
385.90	1,244	1,431
385.95	1,259	1,494
386.00	1,273	1,557
386.05	1,289	1,621
386.10	1,304	1,686
386.15	1,320	1,751
386.20	1,335	1,818
386.25	1,351	1,885
386.30	1,367	1,953
386.35	1,382	2,022
386.40	1,398	2,091
386.45	1,413	2,161
386.50	1,429	2,233
386.55	1,445	2,304
386.60	1,460	2,377
386.65	1,476	2,450
386.70	1,491	2,525
386.75	1,507	2,600
386.80	1,523	2,675
386.85	1,538	2,752
386.90	1,554	2,829
386.95	1,569	2,907
387.00	**1,585**	**2,986**

Time span=0.00-12.00 hrs, dt=0.01 hrs, 1201 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE-DEVELOPMENT Runoff Area=46,055 sf 0.00% Impervious Runoff Depth=0.85"
Flow Length=270' Slope=0.0250 '/' Tc=15.5 min C=0.69 Runoff=3.39 cfs 0.075 af

Subcatchment 2S: POST-DEVELOPMENT Runoff Area=46,055 sf 63.15% Impervious Runoff Depth=0.94"
Flow Length=360' Slope=0.0150 '/' Tc=8.8 min C=0.77 Runoff=3.77 cfs 0.083 af

Reach 4R: CURB CUT WIER Avg. Flow Depth=0.23' Max Vel=5.50 fps Inflow=3.77 cfs 0.083 af
n=0.013 L=4.0' S=0.0200 '/' Capacity=12.61 cfs Outflow=3.78 cfs 0.083 af

Pond 3P: DETENTION POND Peak Elev=385.90' Storage=1,433 cf Inflow=3.78 cfs 0.083 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0500 '/' Outflow=2.83 cfs 0.083 af

Total Runoff Area = 2.115 ac Runoff Volume = 0.158 af Average Runoff Depth = 0.89"
68.43% Pervious = 1.447 ac 31.57% Impervious = 0.668 ac

Summary for Subcatchment 1S: PRE-DEVELOPMENT

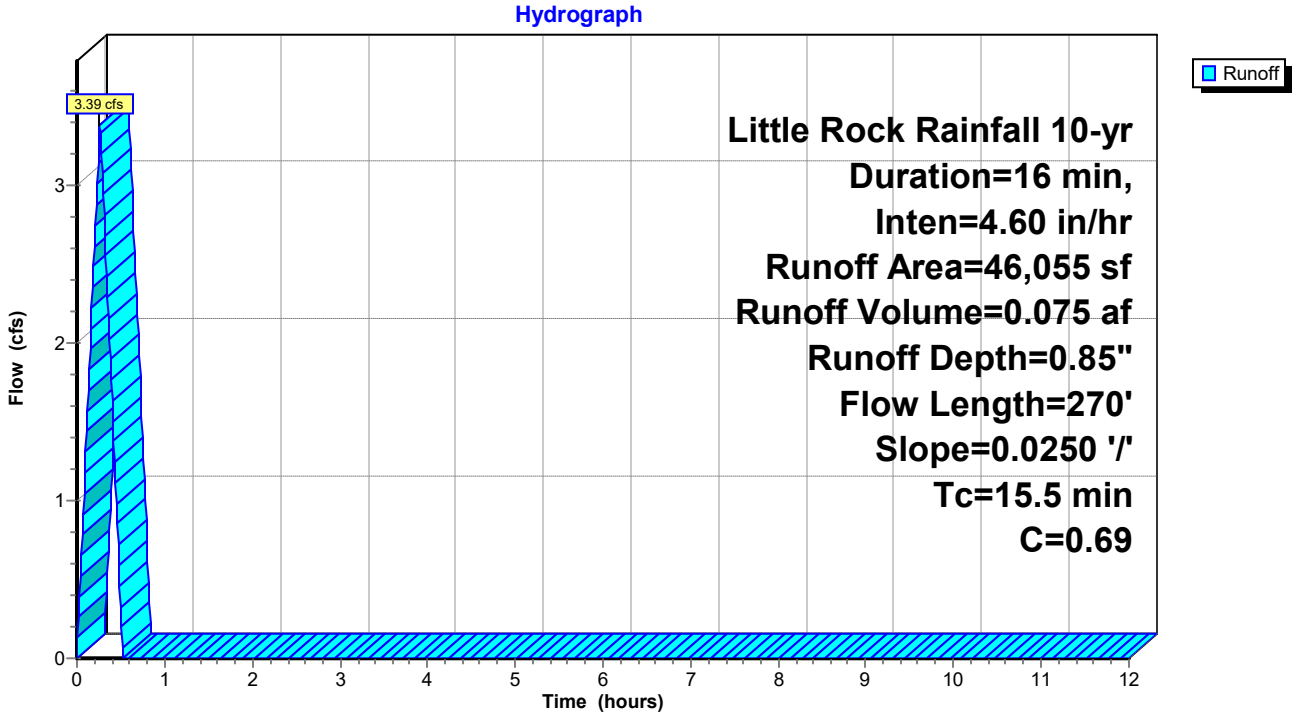
Runoff = 3.39 cfs @ 0.26 hrs, Volume= 0.075 af, Depth= 0.85"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 10-yr Duration=16 min, Inten=4.60 in/hr

Area (sf)	C	Description
31,035	0.65	GRAVEL PARKING
15,020	0.77	SHRUB POOR CONDITION BRUSH
46,055	0.69	Weighted Average
46,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	270	0.0250	0.29		**Sheet Flow, SHEET FLOW SURFACE** Range n= 0.130 P2= 4.19"

Subcatchment 1S: PRE-DEVELOPMENT



Hydrograph for Subcatchment 1S: PRE-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	1.31	5.20	0.00	10.30	0.00
0.20	**2.62**	5.30	0.00	10.40	0.00
0.30	**2.95**	5.40	0.00	10.50	0.00
0.40	1.64	5.50	0.00	10.60	0.00
0.50	0.33	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Subcatchment 2S: POST-DEVELOPMENT

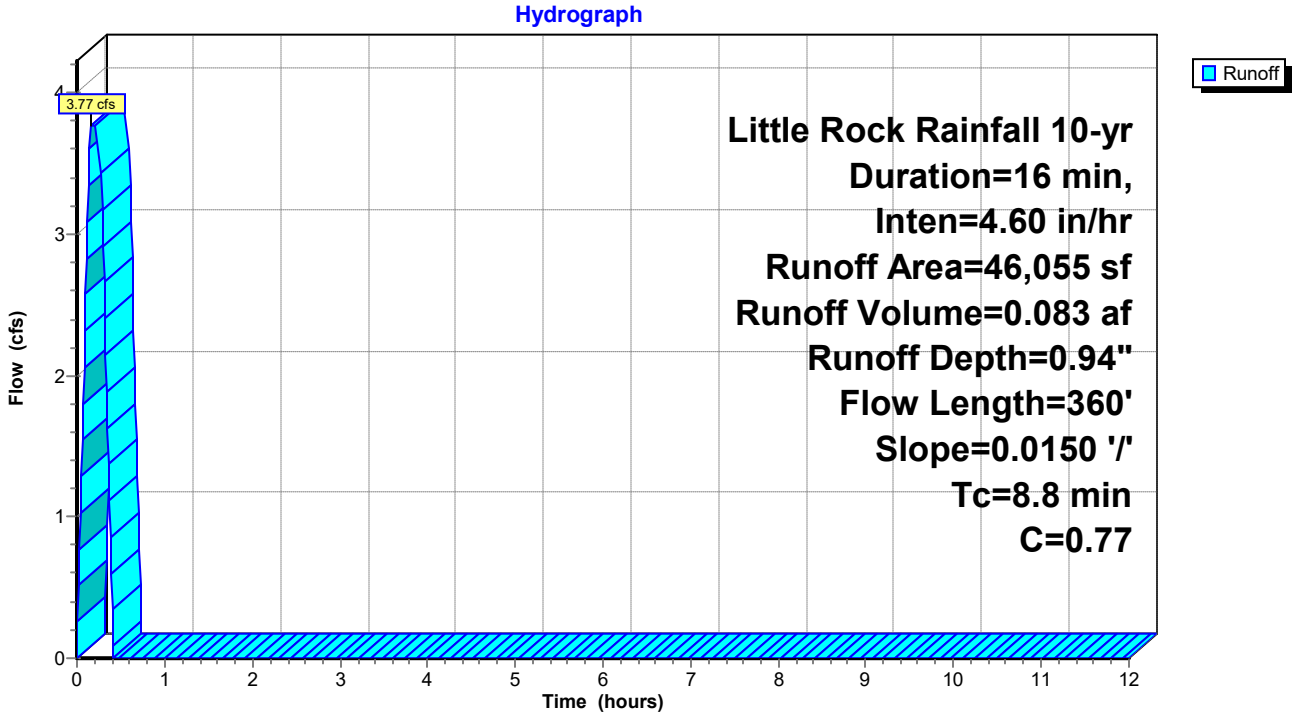
Runoff = 3.77 cfs @ 0.15 hrs, Volume= 0.083 af, Depth= 0.94"
Routed to Reach 4R : CURB CUT WIER

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 10-yr Duration=16 min, Inten=4.60 in/hr

Area (sf)	C	Description
22,479	0.95	ASPHALT SURFACE
6,603	0.97	ROOF TOP
16,973	0.46	GRASS LANDSCAPING
46,055	0.77	Weighted Average
16,973		36.85% Pervious Area
29,082		63.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	40	0.0150	0.10		**Sheet Flow, GRASS** Grass: Dense n= 0.240 P2= 4.19"
2.1	320	0.0150	2.49		**Shallow Concentrated Flow, PAVEMENT** Paved Kv= 20.3 fps
8.8	360	Total			

Subcatchment 2S: POST-DEVELOPMENT



Hydrograph for Subcatchment 2S: POST-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	**2.57**	5.20	0.00	10.30	0.00
0.20	**3.77**	5.30	0.00	10.40	0.00
0.30	2.92	5.40	0.00	10.50	0.00
0.40	0.34	5.50	0.00	10.60	0.00
0.50	0.00	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Reach 4R: CURB CUT WIER

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

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 0.94" for 10-yr event
Inflow = 3.77 cfs @ 0.15 hrs, Volume= 0.083 af
Outflow = 3.78 cfs @ 0.16 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 3P : DETENTION POND

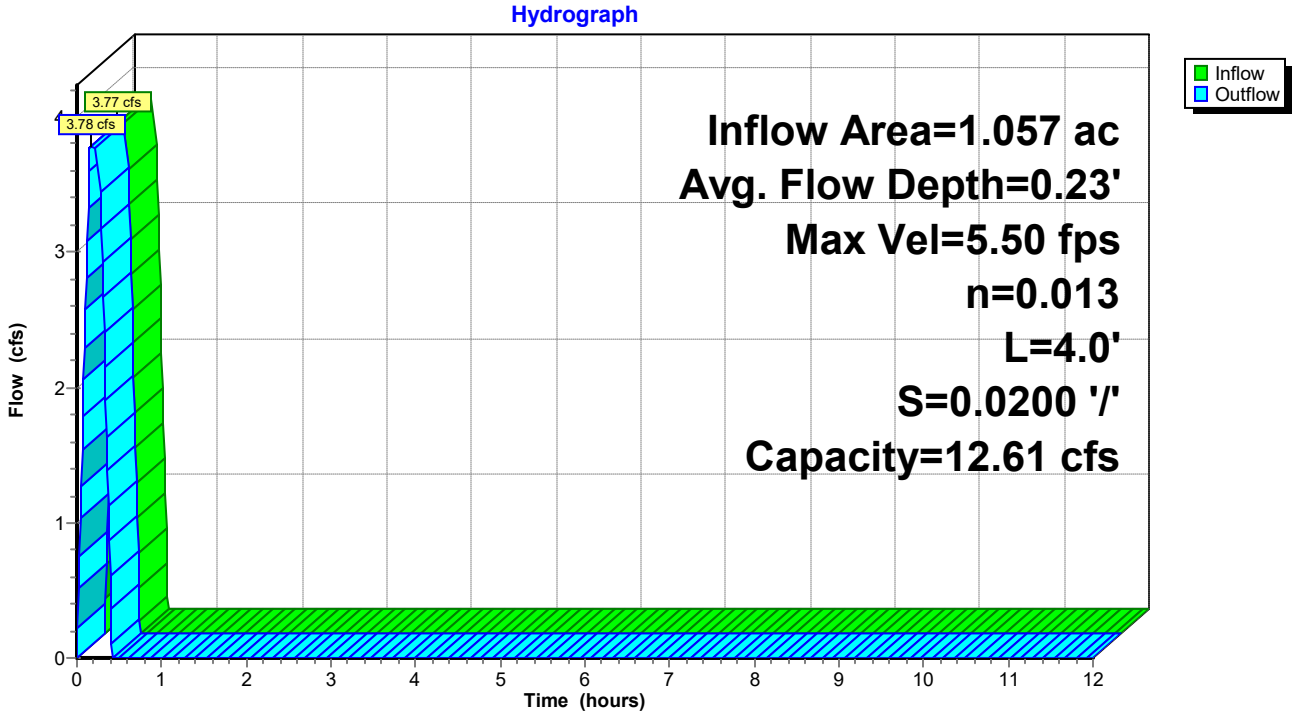
Routing by Stor-Ind+Trans method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.50 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.37 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 0.16 hrs
Average Depth at Peak Storage= 0.23' , Surface Width= 3.00'
Bank-Full Depth= 0.50' Flow Area= 1.5 sf, Capacity= 12.61 cfs

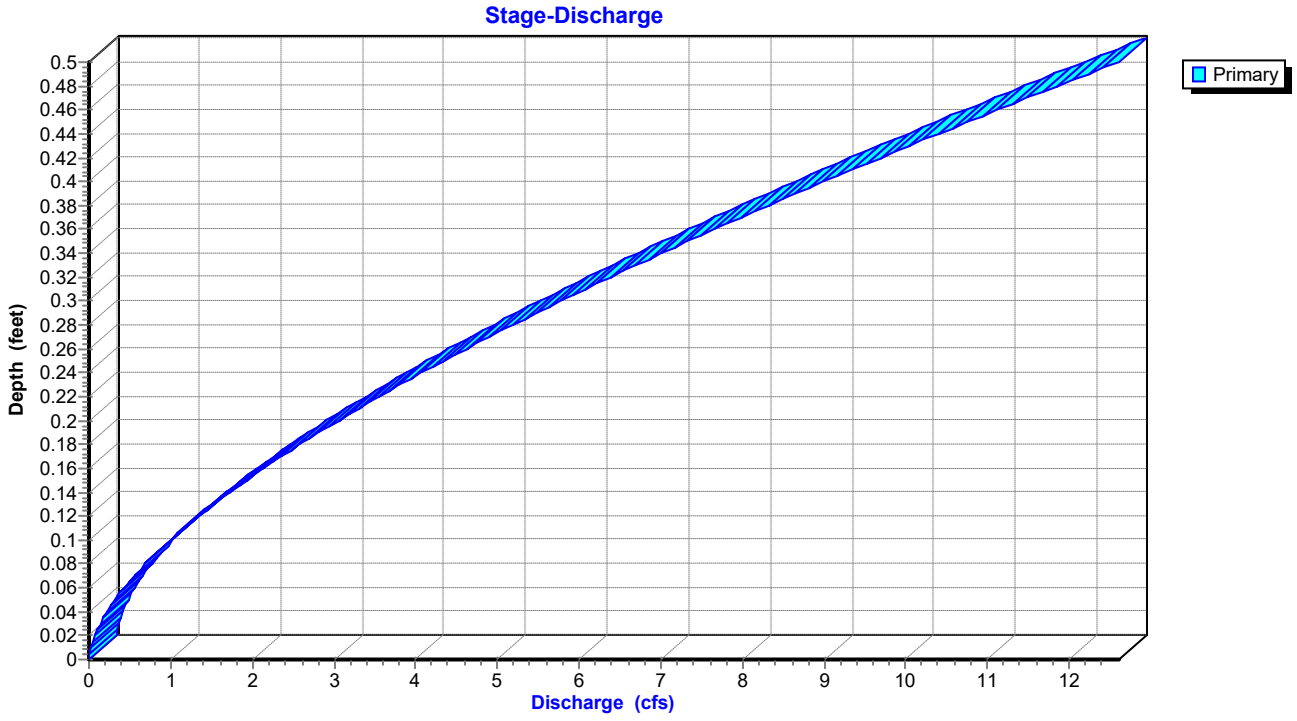
3.00' x 0.50' deep channel, n= 0.013 Concrete, trowel finish
Length= 4.0' Slope= 0.0200 '/'
Inlet Invert= 387.25', Outlet Invert= 387.17'



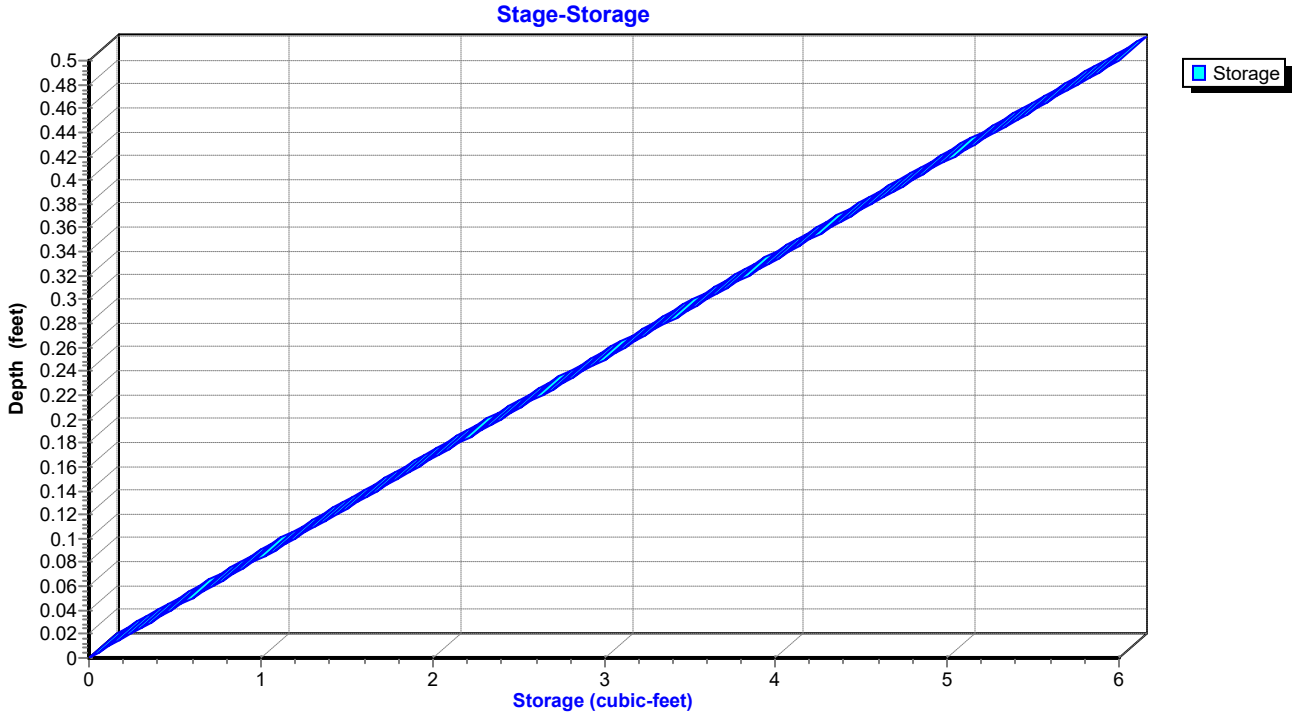
Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Hydrograph for Reach 4R: CURB CUT WIER

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	**0.00**	**0**	**387.25**	**0.00**
0.50	**0.00**	**0**	**387.25**	**0.00**
1.00	0.00	0	387.25	0.00
1.50	0.00	0	387.25	0.00
2.00	0.00	0	387.25	0.00
2.50	0.00	0	387.25	0.00
3.00	0.00	0	387.25	0.00
3.50	0.00	0	387.25	0.00
4.00	0.00	0	387.25	0.00
4.50	0.00	0	387.25	0.00
5.00	0.00	0	387.25	0.00
5.50	0.00	0	387.25	0.00
6.00	0.00	0	387.25	0.00
6.50	0.00	0	387.25	0.00
7.00	0.00	0	387.25	0.00
7.50	0.00	0	387.25	0.00
8.00	0.00	0	387.25	0.00
8.50	0.00	0	387.25	0.00
9.00	0.00	0	387.25	0.00
9.50	0.00	0	387.25	0.00
10.00	0.00	0	387.25	0.00
10.50	0.00	0	387.25	0.00
11.00	0.00	0	387.25	0.00
11.50	0.00	0	387.25	0.00
12.00	0.00	0	387.25	0.00

Stage-Discharge for Reach 4R: CURB CUT WIER

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
387.25	0.00	0.00
387.26	0.75	0.02
387.27	1.18	0.07
387.28	1.54	0.14
387.29	1.86	0.22
387.30	2.15	0.32
387.31	2.41	0.43
387.32	2.66	0.56
387.33	2.90	0.70
387.34	3.12	0.84
387.35	3.34	1.00
387.36	3.54	1.17
387.37	3.74	1.35
387.38	3.92	1.53
387.39	4.11	1.72
387.40	4.28	1.93
387.41	4.45	2.14
387.42	4.62	2.36
387.43	4.78	2.58
387.44	4.93	2.81
387.45	5.09	3.05
387.46	5.23	3.30
387.47	5.38	3.55
387.48	5.52	3.81
387.49	5.65	4.07
387.50	5.79	4.34
387.51	5.92	4.62
387.52	6.05	4.90
387.53	6.17	5.19
387.54	6.30	5.48
387.55	6.42	5.77
387.56	6.53	6.08
387.57	6.65	6.38
387.58	6.76	6.69
387.59	6.87	7.01
387.60	6.98	7.33
387.61	7.09	7.65
387.62	7.19	7.98
387.63	7.30	8.32
387.64	7.40	8.65
387.65	7.50	9.00
387.66	7.59	9.34
387.67	7.69	9.69
387.68	7.79	10.04
387.69	7.88	10.40
387.70	7.97	10.76
387.71	8.06	11.12
387.72	8.15	11.49
387.73	8.24	11.86
387.74	8.32	12.23
387.75	**8.41**	**12.61**

Stage-Area-Storage for Reach 4R: CURB CUT WIER

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
387.25	0.0	0
387.26	0.0	0
387.27	0.1	0
387.28	0.1	0
387.29	0.1	0
387.30	0.2	1
387.31	0.2	1
387.32	0.2	1
387.33	0.2	1
387.34	0.3	1
387.35	0.3	1
387.36	0.3	1
387.37	0.4	1
387.38	0.4	2
387.39	0.4	2
387.40	0.4	2
387.41	0.5	2
387.42	0.5	2
387.43	0.5	2
387.44	0.6	2
387.45	0.6	2
387.46	0.6	3
387.47	0.7	3
387.48	0.7	3
387.49	0.7	3
387.50	0.8	3
387.51	0.8	3
387.52	0.8	3
387.53	0.8	3
387.54	0.9	3
387.55	0.9	4
387.56	0.9	4
387.57	1.0	4
387.58	1.0	4
387.59	1.0	4
387.60	1.1	4
387.61	1.1	4
387.62	1.1	4
387.63	1.1	5
387.64	1.2	5
387.65	1.2	5
387.66	1.2	5
387.67	1.3	5
387.68	1.3	5
387.69	1.3	5
387.70	1.4	5
387.71	1.4	6
387.72	1.4	6
387.73	1.4	6
387.74	1.5	6
387.75	**1.5**	**6**

Summary for Pond 3P: DETENTION POND

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 0.94" for 10-yr event
Inflow = 3.78 cfs @ 0.16 hrs, Volume= 0.083 af
Outflow = 2.83 cfs @ 0.30 hrs, Volume= 0.083 af, Atten= 25%, Lag= 8.6 min
Primary = 2.83 cfs @ 0.30 hrs, Volume= 0.083 af

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 385.90' @ 0.30 hrs Surf.Area= 1,245 sf Storage= 1,433 cf

Plug-Flow detention time= 9.9 min calculated for 0.083 af (100% of inflow)
Center-of-Mass det. time= 10.3 min (22.7 - 12.4)

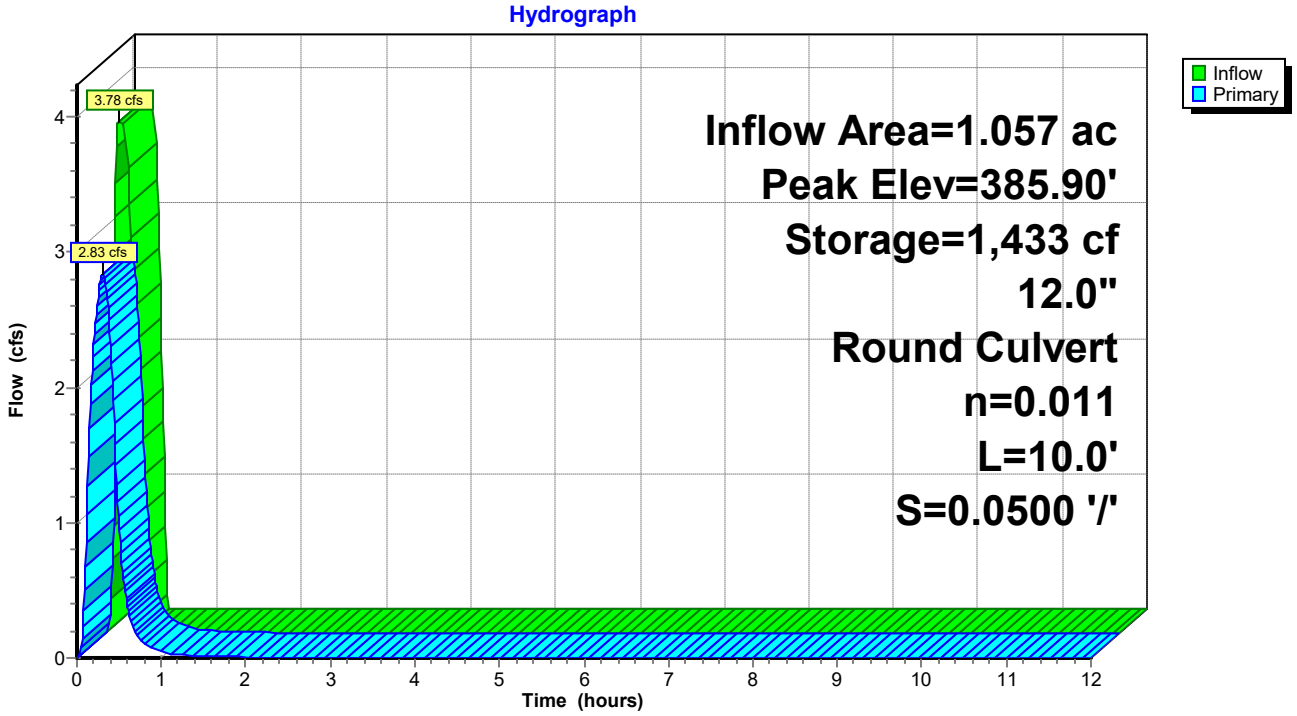
Volume	Invert	Avail.Storage	Storage Description
#1	384.50'	2,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	724	0	0
385.00	986	428	428
386.00	1,273	1,130	1,557
387.00	1,585	1,429	2,986

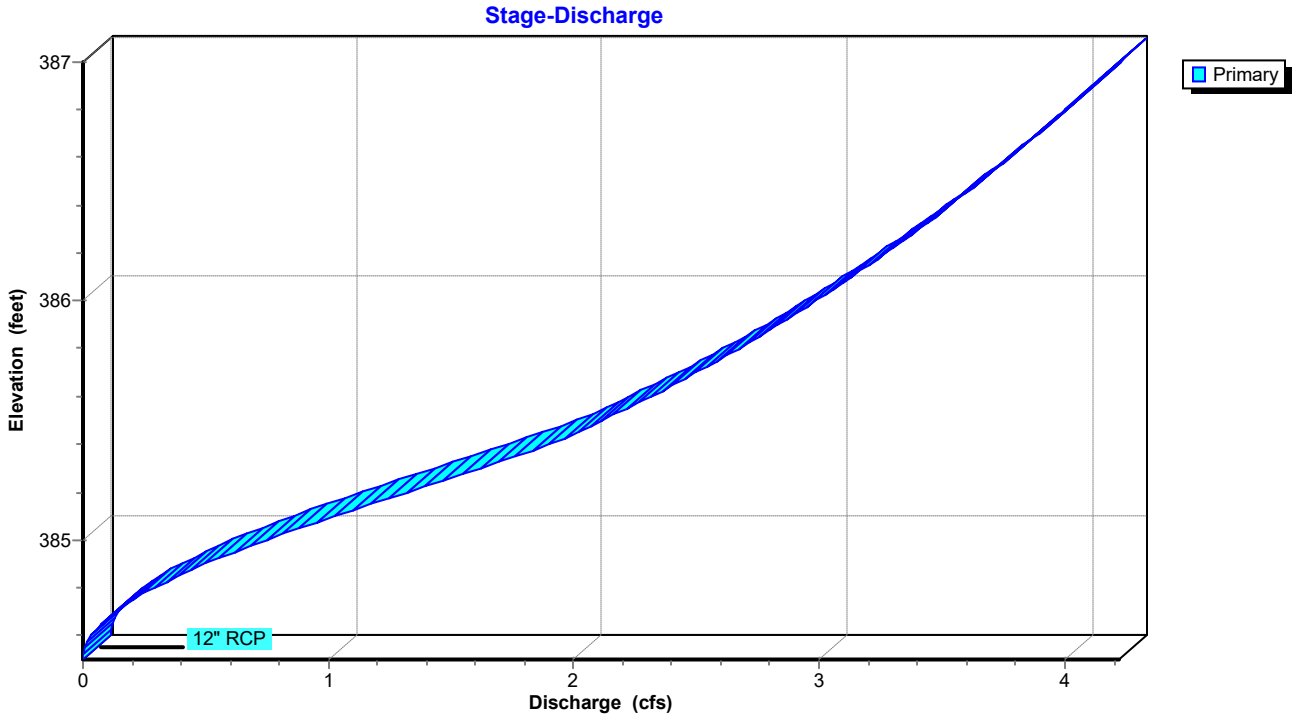
Device	Routing	Invert	Outlet Devices
#1	Primary	384.50'	**12.0" Round 12" RCP** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.50' / 384.00' S= 0.0500 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=2.83 cfs @ 0.30 hrs HW=385.90' (Free Discharge)
↑**1=12" RCP** (Inlet Controls 2.83 cfs @ 3.61 fps)

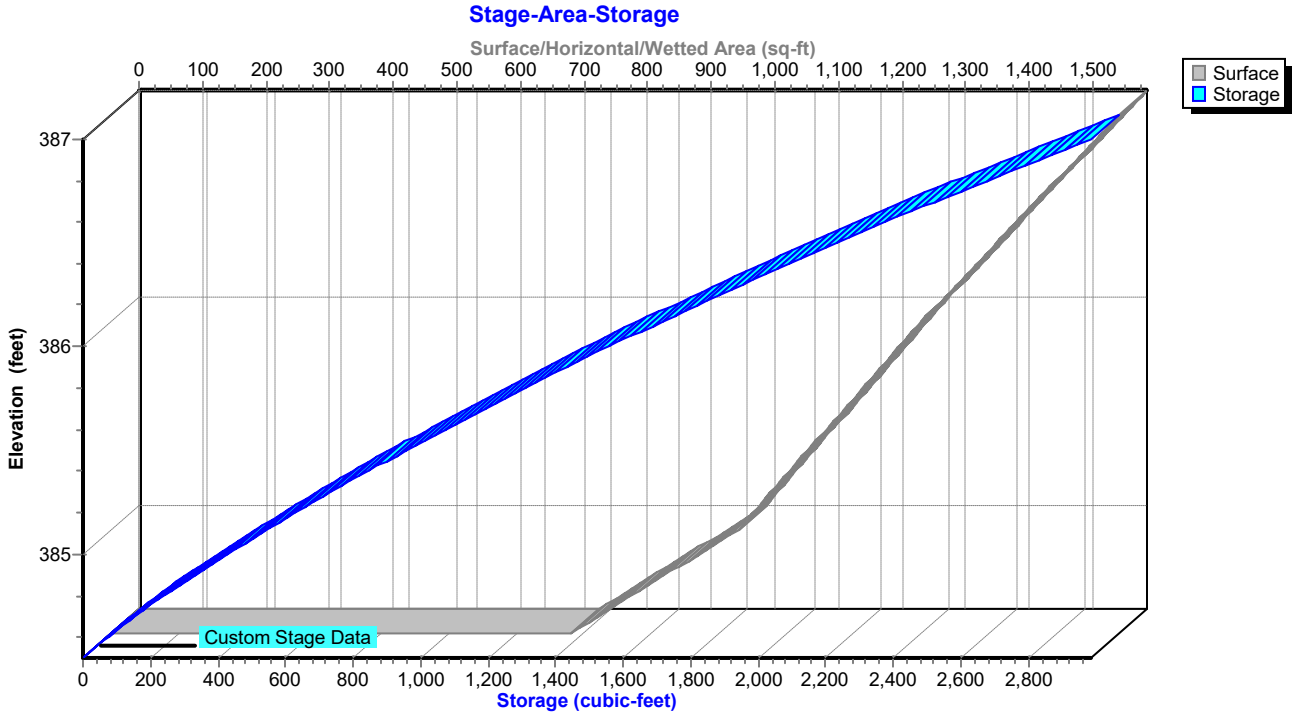
Pond 3P: DETENTION POND



Pond 3P: DETENTION POND



Pond 3P: DETENTION POND



Hydrograph for Pond 3P: DETENTION POND

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0**	**384.50**	**0.00**
0.50	**0.00**	**499**	**385.07**	**0.94**
1.00	0.00	85	384.61	0.04
1.50	0.00	43	384.56	0.01
2.00	0.00	28	384.54	0.01
2.50	0.00	21	384.53	0.00
3.00	0.00	16	384.52	0.00
3.50	0.00	13	384.52	0.00
4.00	0.00	11	384.51	0.00
4.50	0.00	8	384.51	0.00
5.00	0.00	7	384.51	0.00
5.50	0.00	5	384.51	0.00
6.00	0.00	4	384.51	0.00
6.50	0.00	4	384.50	0.00
7.00	0.00	3	384.50	0.00
7.50	0.00	2	384.50	0.00
8.00	0.00	2	384.50	0.00
8.50	0.00	1	384.50	0.00
9.00	0.00	1	384.50	0.00
9.50	0.00	1	384.50	0.00
10.00	0.00	1	384.50	0.00
10.50	0.00	1	384.50	0.00
11.00	0.00	0	384.50	0.00
11.50	0.00	0	384.50	0.00
12.00	0.00	0	384.50	0.00

Stage-Discharge for Pond 3P: DETENTION POND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
384.50	0.00	385.52	2.15	386.54	3.70
384.52	0.00	385.54	2.19	386.56	3.73
384.54	0.01	385.56	2.23	386.58	3.75
384.56	0.01	385.58	2.27	386.60	3.78
384.58	0.02	385.60	2.31	386.62	3.80
384.60	0.03	385.62	2.35	386.64	3.82
384.62	0.05	385.64	2.39	386.66	3.85
384.64	0.07	385.66	2.43	386.68	3.87
384.66	0.09	385.68	2.46	386.70	3.89
384.68	0.11	385.70	2.50	386.72	3.92
384.70	0.13	385.72	2.53	386.74	3.94
384.72	0.16	385.74	2.57	386.76	3.96
384.74	0.19	385.76	2.60	386.78	3.98
384.76	0.22	385.78	2.64	386.80	4.01
384.78	0.26	385.80	2.67	386.82	4.03
384.80	0.29	385.82	2.70	386.84	4.05
384.82	0.33	385.84	2.74	386.86	4.07
384.84	0.37	385.86	2.77	386.88	4.09
384.86	0.41	385.88	2.80	386.90	4.12
384.88	0.45	385.90	2.83	386.92	4.14
384.90	0.50	385.92	2.86	386.94	4.16
384.92	0.55	385.94	2.89	386.96	4.18
384.94	0.59	385.96	2.93	386.98	4.20
384.96	0.64	385.98	2.96	387.00	**4.22**
384.98	0.69	386.00	2.99		
385.00	0.75	386.02	3.02		
385.02	0.80	386.04	3.04		
385.04	0.85	386.06	3.07		
385.06	0.91	386.08	3.10		
385.08	0.97	386.10	3.13		
385.10	1.02	386.12	3.16		
385.12	1.08	386.14	3.19		
385.14	1.14	386.16	3.22		
385.16	1.20	386.18	3.24		
385.18	1.26	386.20	3.27		
385.20	1.32	386.22	3.30		
385.22	1.38	386.24	3.32		
385.24	1.44	386.26	3.35		
385.26	1.50	386.28	3.38		
385.28	1.56	386.30	3.40		
385.30	1.62	386.32	3.43		
385.32	1.68	386.34	3.46		
385.34	1.74	386.36	3.48		
385.36	1.79	386.38	3.51		
385.38	1.85	386.40	3.53		
385.40	1.90	386.42	3.56		
385.42	1.95	386.44	3.58		
385.44	2.00	386.46	3.61		
385.46	2.04	386.48	3.63		
385.48	2.08	386.50	3.66		
385.50	2.11	386.52	3.68		

Stage-Area-Storage for Pond 3P: DETENTION POND

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.50	724	0
384.55	750	37
384.60	776	75
384.65	803	114
384.70	829	155
384.75	855	197
384.80	881	241
384.85	907	285
384.90	934	332
384.95	960	379
385.00	986	428
385.05	1,000	477
385.10	1,015	528
385.15	1,029	579
385.20	1,043	630
385.25	1,058	683
385.30	1,072	736
385.35	1,086	790
385.40	1,101	845
385.45	1,115	900
385.50	1,130	956
385.55	1,144	1,013
385.60	1,158	1,071
385.65	1,173	1,129
385.70	1,187	1,188
385.75	1,201	1,248
385.80	1,216	1,308
385.85	1,230	1,369
385.90	1,244	1,431
385.95	1,259	1,494
386.00	1,273	1,557
386.05	1,289	1,621
386.10	1,304	1,686
386.15	1,320	1,751
386.20	1,335	1,818
386.25	1,351	1,885
386.30	1,367	1,953
386.35	1,382	2,022
386.40	1,398	2,091
386.45	1,413	2,161
386.50	1,429	2,233
386.55	1,445	2,304
386.60	1,460	2,377
386.65	1,476	2,450
386.70	1,491	2,525
386.75	1,507	2,600
386.80	1,523	2,675
386.85	1,538	2,752
386.90	1,554	2,829
386.95	1,569	2,907
387.00	**1,585**	**2,986**

Time span=0.00-12.00 hrs, dt=0.01 hrs, 1201 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE-DEVELOPMENT Runoff Area=46,055 sf 0.00% Impervious Runoff Depth=0.97"
Flow Length=270' Slope=0.0250 '/' Tc=15.5 min C=0.69 Runoff=3.90 cfs 0.086 af

Subcatchment 2S: POST-DEVELOPMENT Runoff Area=46,055 sf 63.15% Impervious Runoff Depth=1.09"
Flow Length=360' Slope=0.0150 '/' Tc=8.8 min C=0.77 Runoff=4.35 cfs 0.096 af

Reach 4R: CURB CUT WIER Avg. Flow Depth=0.25' Max Vel=5.80 fps Inflow=4.35 cfs 0.096 af
n=0.013 L=4.0' S=0.0200 '/' Capacity=12.61 cfs Outflow=4.36 cfs 0.096 af

Pond 3P: DETENTION POND Peak Elev=386.11' Storage=1,698 cf Inflow=4.36 cfs 0.096 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0500 '/' Outflow=3.14 cfs 0.096 af

Total Runoff Area = 2.115 ac Runoff Volume = 0.182 af Average Runoff Depth = 1.03"
68.43% Pervious = 1.447 ac 31.57% Impervious = 0.668 ac

Summary for Subcatchment 1S: PRE-DEVELOPMENT

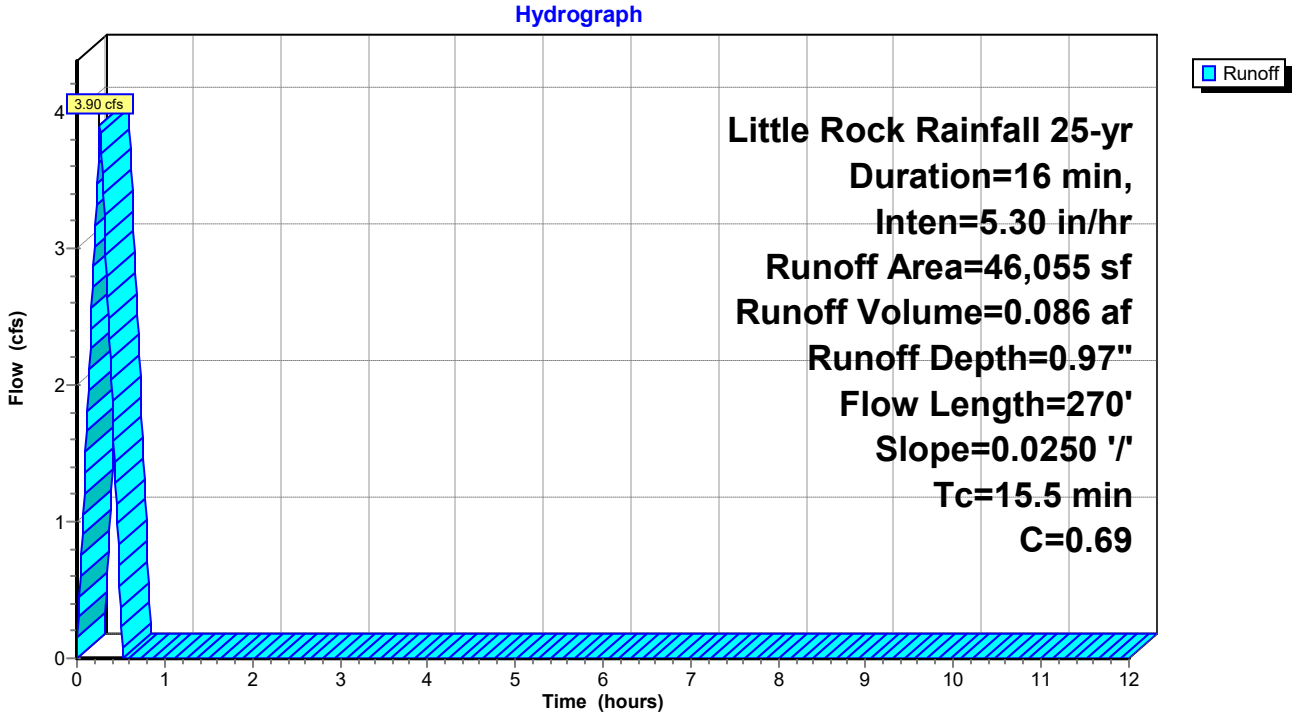
Runoff = 3.90 cfs @ 0.26 hrs, Volume= 0.086 af, Depth= 0.97"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 25-yr Duration=16 min, Inten=5.30 in/hr

Area (sf)	C	Description
31,035	0.65	GRAVEL PARKING
15,020	0.77	SHRUB POOR CONDITION BRUSH
46,055	0.69	Weighted Average
46,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	270	0.0250	0.29		**Sheet Flow, SHEET FLOW SURFACE** Range n= 0.130 P2= 4.19"

Subcatchment 1S: PRE-DEVELOPMENT



Hydrograph for Subcatchment 1S: PRE-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	1.51	5.20	0.00	10.30	0.00
0.20	**3.02**	5.30	0.00	10.40	0.00
0.30	**3.39**	5.40	0.00	10.50	0.00
0.40	1.89	5.50	0.00	10.60	0.00
0.50	0.38	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Subcatchment 2S: POST-DEVELOPMENT

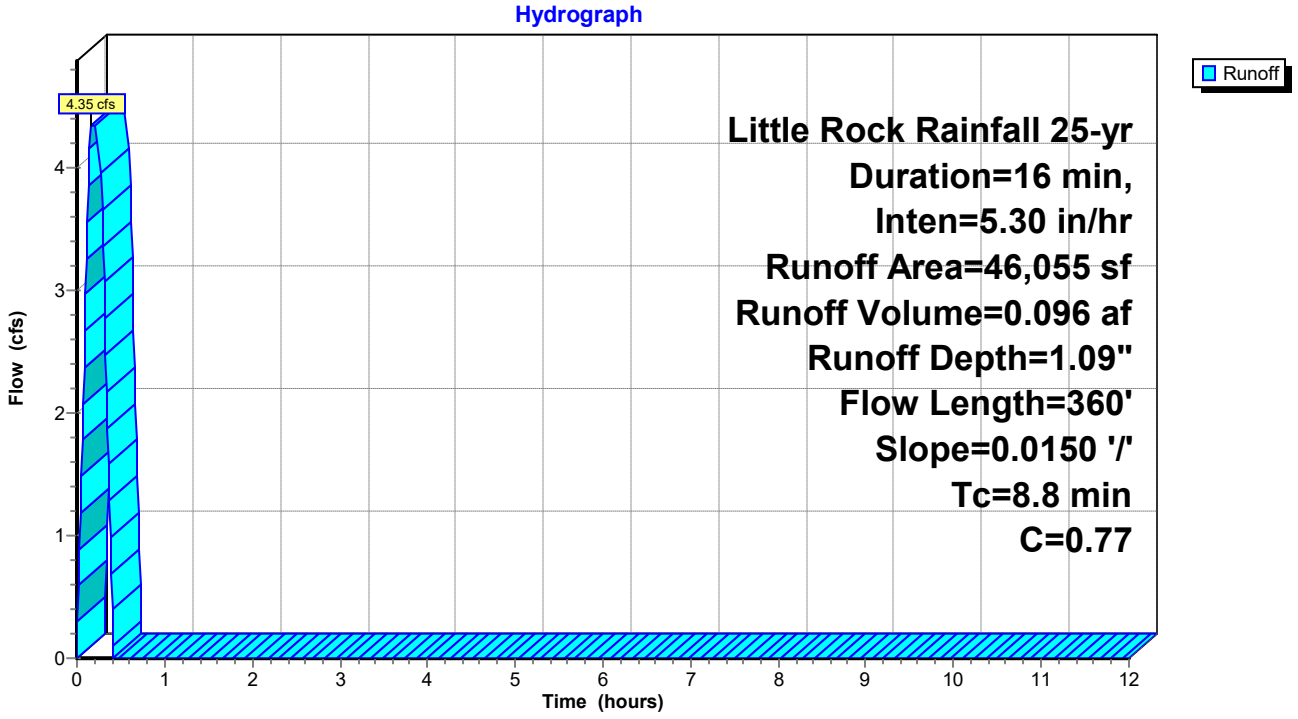
Runoff = 4.35 cfs @ 0.15 hrs, Volume= 0.096 af, Depth= 1.09"
Routed to Reach 4R : CURB CUT WIER

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 25-yr Duration=16 min, Inten=5.30 in/hr

Area (sf)	C	Description
22,479	0.95	ASPHALT SURFACE
6,603	0.97	ROOF TOP
16,973	0.46	GRASS LANDSCAPING
46,055	0.77	Weighted Average
16,973		36.85% Pervious Area
29,082		63.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	40	0.0150	0.10		**Sheet Flow, GRASS** Grass: Dense n= 0.240 P2= 4.19"
2.1	320	0.0150	2.49		**Shallow Concentrated Flow, PAVEMENT** Paved Kv= 20.3 fps
8.8	360	Total			

Subcatchment 2S: POST-DEVELOPMENT



Hydrograph for Subcatchment 2S: POST-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	**2.97**	5.20	0.00	10.30	0.00
0.20	**4.35**	5.30	0.00	10.40	0.00
0.30	3.36	5.40	0.00	10.50	0.00
0.40	0.40	5.50	0.00	10.60	0.00
0.50	0.00	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Reach 4R: CURB CUT WIER

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

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 1.09" for 25-yr event
Inflow = 4.35 cfs @ 0.15 hrs, Volume= 0.096 af
Outflow = 4.36 cfs @ 0.16 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 3P : DETENTION POND

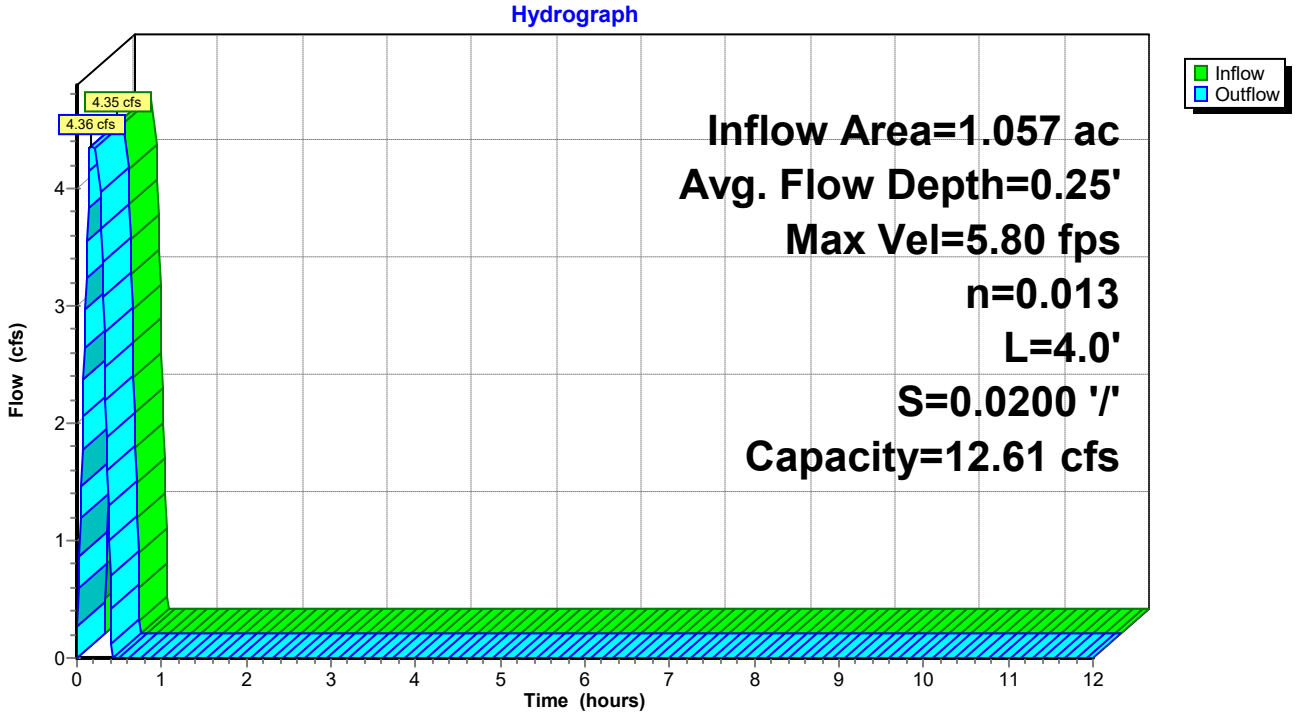
Routing by Stor-Ind+Trans method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.80 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.60 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 0.16 hrs
Average Depth at Peak Storage= 0.25' , Surface Width= 3.00'
Bank-Full Depth= 0.50' Flow Area= 1.5 sf, Capacity= 12.61 cfs

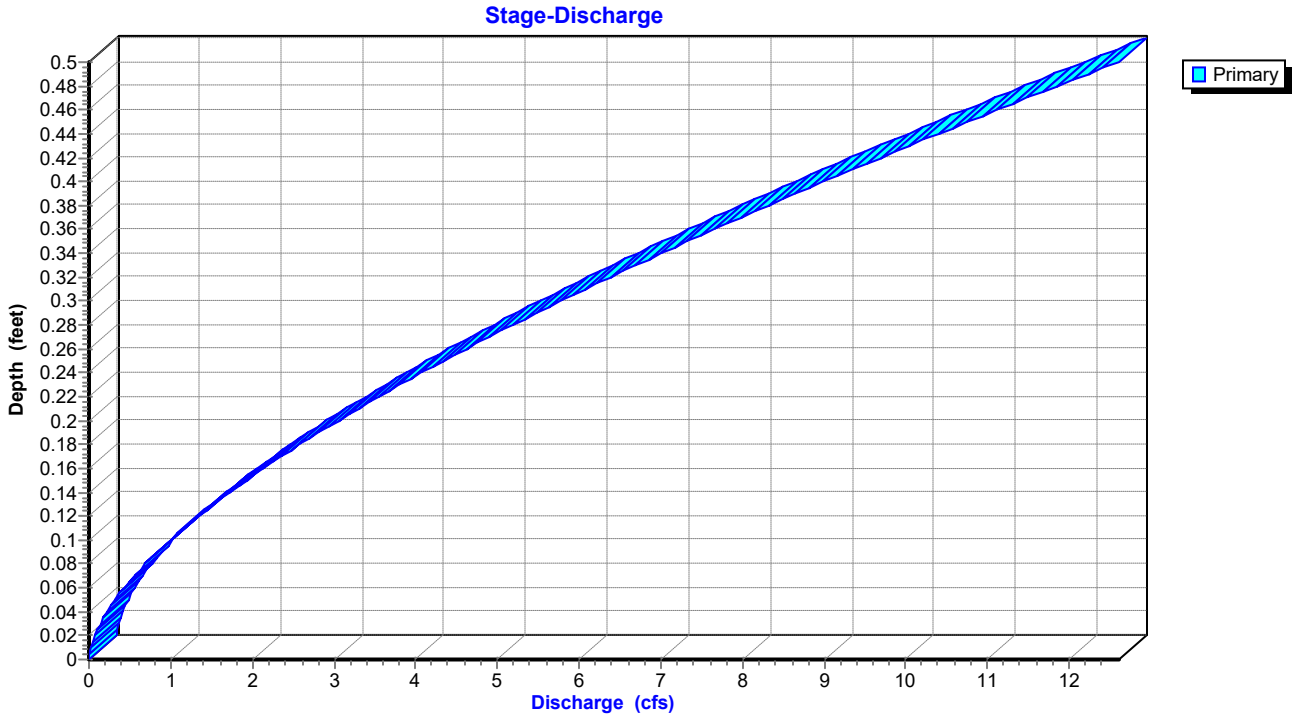
3.00' x 0.50' deep channel, n= 0.013 Concrete, trowel finish
Length= 4.0' Slope= 0.0200 '/'
Inlet Invert= 387.25', Outlet Invert= 387.17'



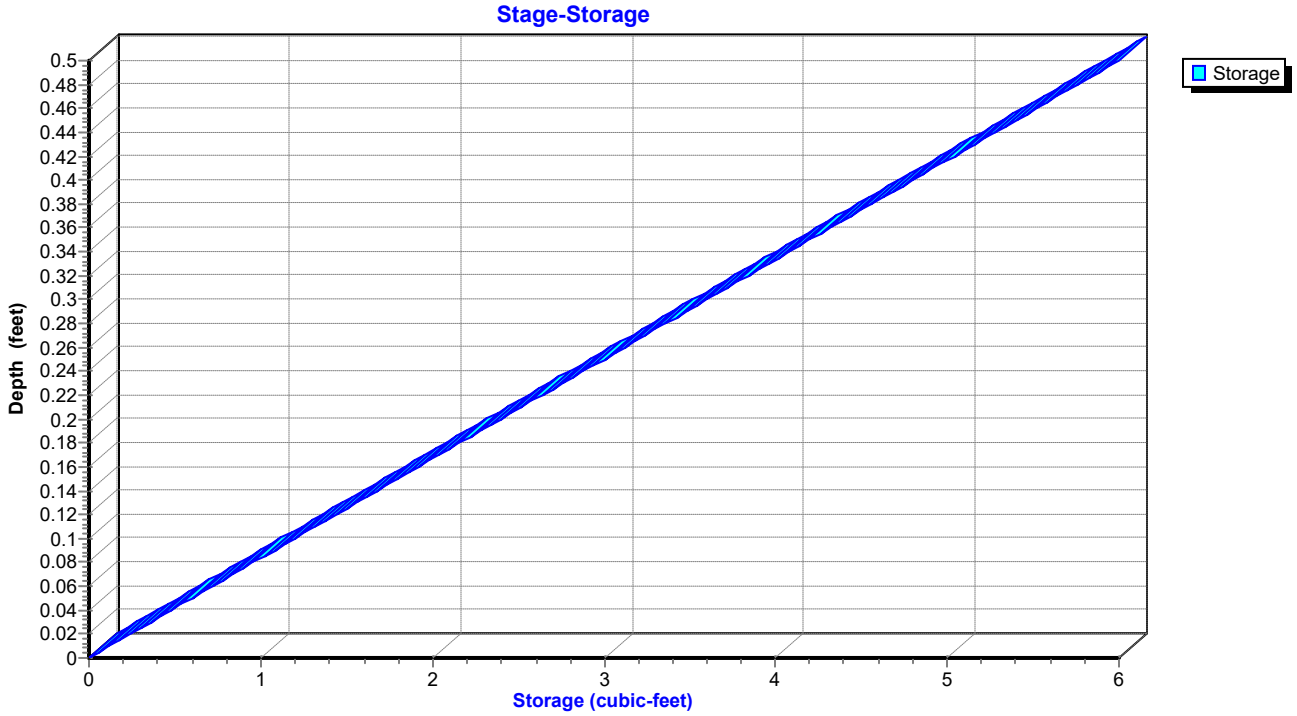
Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Hydrograph for Reach 4R: CURB CUT WIER

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	**0.00**	**0**	**387.25**	**0.00**
0.50	**0.00**	**0**	**387.25**	**0.00**
1.00	0.00	0	387.25	0.00
1.50	0.00	0	387.25	0.00
2.00	0.00	0	387.25	0.00
2.50	0.00	0	387.25	0.00
3.00	0.00	0	387.25	0.00
3.50	0.00	0	387.25	0.00
4.00	0.00	0	387.25	0.00
4.50	0.00	0	387.25	0.00
5.00	0.00	0	387.25	0.00
5.50	0.00	0	387.25	0.00
6.00	0.00	0	387.25	0.00
6.50	0.00	0	387.25	0.00
7.00	0.00	0	387.25	0.00
7.50	0.00	0	387.25	0.00
8.00	0.00	0	387.25	0.00
8.50	0.00	0	387.25	0.00
9.00	0.00	0	387.25	0.00
9.50	0.00	0	387.25	0.00
10.00	0.00	0	387.25	0.00
10.50	0.00	0	387.25	0.00
11.00	0.00	0	387.25	0.00
11.50	0.00	0	387.25	0.00
12.00	0.00	0	387.25	0.00

Stage-Discharge for Reach 4R: CURB CUT WIER

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
387.25	0.00	0.00
387.26	0.75	0.02
387.27	1.18	0.07
387.28	1.54	0.14
387.29	1.86	0.22
387.30	2.15	0.32
387.31	2.41	0.43
387.32	2.66	0.56
387.33	2.90	0.70
387.34	3.12	0.84
387.35	3.34	1.00
387.36	3.54	1.17
387.37	3.74	1.35
387.38	3.92	1.53
387.39	4.11	1.72
387.40	4.28	1.93
387.41	4.45	2.14
387.42	4.62	2.36
387.43	4.78	2.58
387.44	4.93	2.81
387.45	5.09	3.05
387.46	5.23	3.30
387.47	5.38	3.55
387.48	5.52	3.81
387.49	5.65	4.07
387.50	5.79	4.34
387.51	5.92	4.62
387.52	6.05	4.90
387.53	6.17	5.19
387.54	6.30	5.48
387.55	6.42	5.77
387.56	6.53	6.08
387.57	6.65	6.38
387.58	6.76	6.69
387.59	6.87	7.01
387.60	6.98	7.33
387.61	7.09	7.65
387.62	7.19	7.98
387.63	7.30	8.32
387.64	7.40	8.65
387.65	7.50	9.00
387.66	7.59	9.34
387.67	7.69	9.69
387.68	7.79	10.04
387.69	7.88	10.40
387.70	7.97	10.76
387.71	8.06	11.12
387.72	8.15	11.49
387.73	8.24	11.86
387.74	8.32	12.23
387.75	**8.41**	**12.61**

Stage-Area-Storage for Reach 4R: CURB CUT WIER

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
387.25	0.0	0
387.26	0.0	0
387.27	0.1	0
387.28	0.1	0
387.29	0.1	0
387.30	0.2	1
387.31	0.2	1
387.32	0.2	1
387.33	0.2	1
387.34	0.3	1
387.35	0.3	1
387.36	0.3	1
387.37	0.4	1
387.38	0.4	2
387.39	0.4	2
387.40	0.4	2
387.41	0.5	2
387.42	0.5	2
387.43	0.5	2
387.44	0.6	2
387.45	0.6	2
387.46	0.6	3
387.47	0.7	3
387.48	0.7	3
387.49	0.7	3
387.50	0.8	3
387.51	0.8	3
387.52	0.8	3
387.53	0.8	3
387.54	0.9	3
387.55	0.9	4
387.56	0.9	4
387.57	1.0	4
387.58	1.0	4
387.59	1.0	4
387.60	1.1	4
387.61	1.1	4
387.62	1.1	4
387.63	1.1	5
387.64	1.2	5
387.65	1.2	5
387.66	1.2	5
387.67	1.3	5
387.68	1.3	5
387.69	1.3	5
387.70	1.4	5
387.71	1.4	6
387.72	1.4	6
387.73	1.4	6
387.74	1.5	6
387.75	**1.5**	**6**

Summary for Pond 3P: DETENTION POND

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 1.09" for 25-yr event
Inflow = 4.36 cfs @ 0.16 hrs, Volume= 0.096 af
Outflow = 3.14 cfs @ 0.31 hrs, Volume= 0.096 af, Atten= 28%, Lag= 8.9 min
Primary = 3.14 cfs @ 0.31 hrs, Volume= 0.096 af

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 386.11' @ 0.31 hrs Surf.Area= 1,307 sf Storage= 1,698 cf

Plug-Flow detention time= 9.9 min calculated for 0.096 af (100% of inflow)
Center-of-Mass det. time= 10.2 min (22.7 - 12.4)

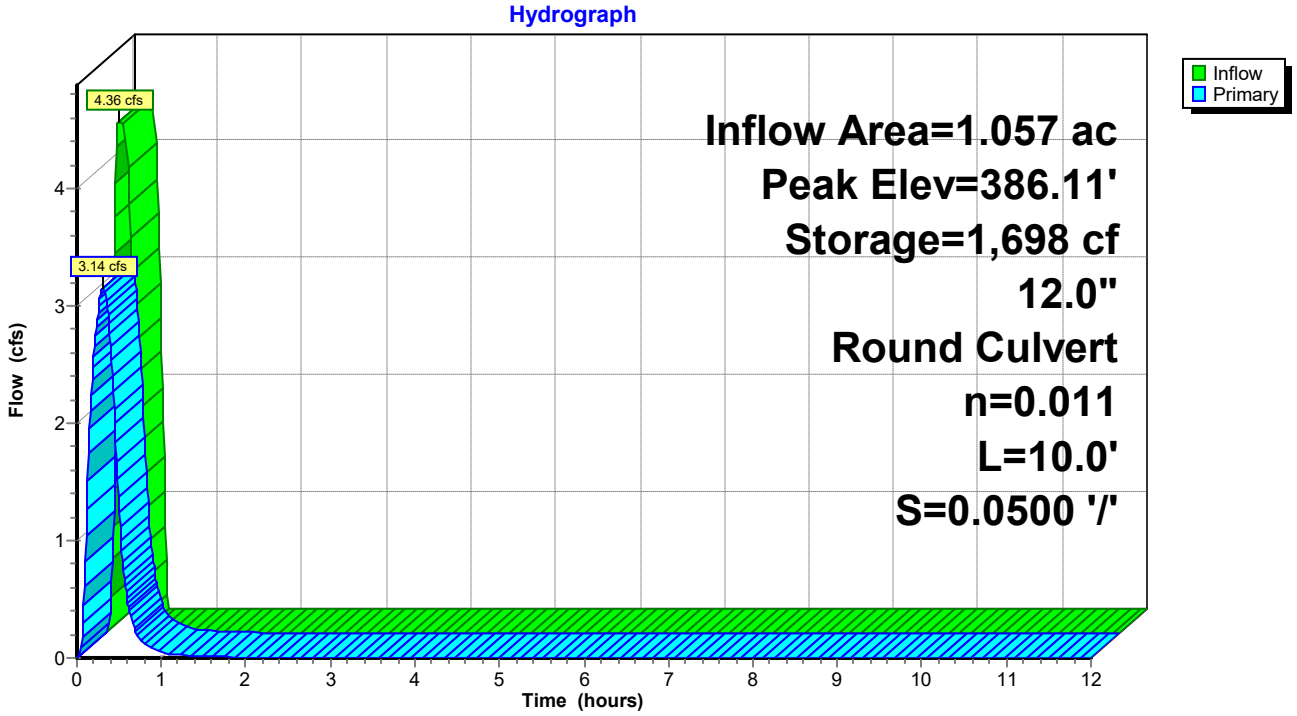
Volume	Invert	Avail.Storage	Storage Description
#1	384.50'	2,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	724	0	0
385.00	986	428	428
386.00	1,273	1,130	1,557
387.00	1,585	1,429	2,986

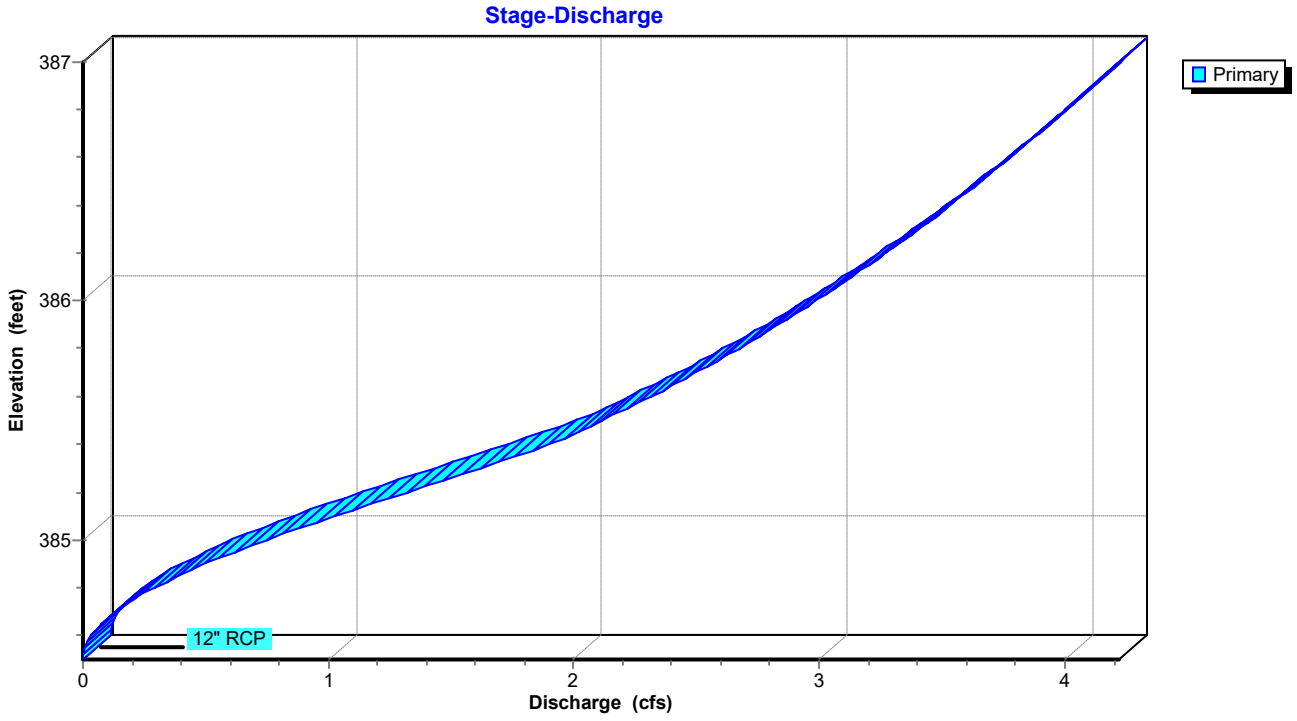
Device	Routing	Invert	Outlet Devices
#1	Primary	384.50'	**12.0" Round 12" RCP** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.50' / 384.00' S= 0.0500 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=3.14 cfs @ 0.31 hrs HW=386.11' (Free Discharge)
↑**1=12" RCP** (Inlet Controls 3.14 cfs @ 4.00 fps)

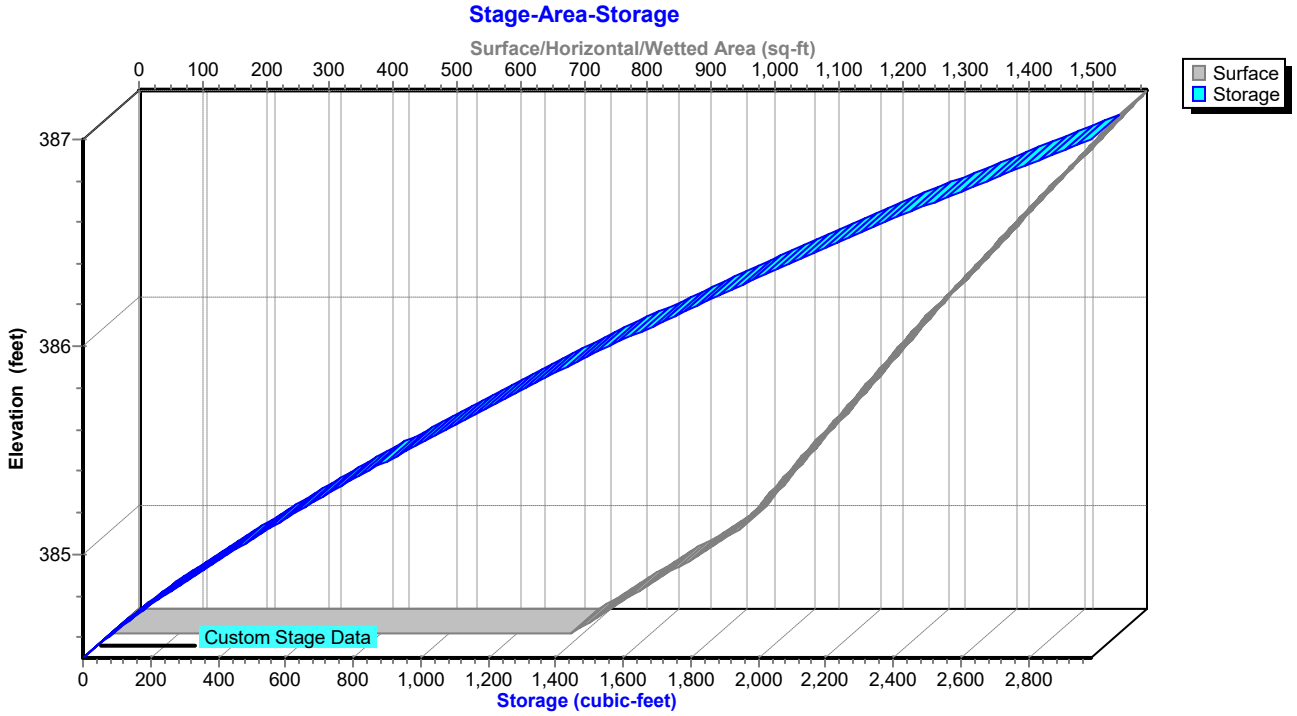
Pond 3P: DETENTION POND



Pond 3P: DETENTION POND



Pond 3P: DETENTION POND



Hydrograph for Pond 3P: DETENTION POND

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0**	**384.50**	**0.00**
0.50	**0.00**	**600**	**385.17**	**1.23**
1.00	0.00	90	384.62	0.05
1.50	0.00	44	384.56	0.01
2.00	0.00	29	384.54	0.01
2.50	0.00	21	384.53	0.00
3.00	0.00	16	384.52	0.00
3.50	0.00	13	384.52	0.00
4.00	0.00	11	384.51	0.00
4.50	0.00	9	384.51	0.00
5.00	0.00	7	384.51	0.00
5.50	0.00	6	384.51	0.00
6.00	0.00	4	384.51	0.00
6.50	0.00	4	384.50	0.00
7.00	0.00	3	384.50	0.00
7.50	0.00	2	384.50	0.00
8.00	0.00	2	384.50	0.00
8.50	0.00	1	384.50	0.00
9.00	0.00	1	384.50	0.00
9.50	0.00	1	384.50	0.00
10.00	0.00	1	384.50	0.00
10.50	0.00	1	384.50	0.00
11.00	0.00	0	384.50	0.00
11.50	0.00	0	384.50	0.00
12.00	0.00	0	384.50	0.00

Stage-Discharge for Pond 3P: DETENTION POND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
384.50	0.00	385.52	2.15	386.54	3.70
384.52	0.00	385.54	2.19	386.56	3.73
384.54	0.01	385.56	2.23	386.58	3.75
384.56	0.01	385.58	2.27	386.60	3.78
384.58	0.02	385.60	2.31	386.62	3.80
384.60	0.03	385.62	2.35	386.64	3.82
384.62	0.05	385.64	2.39	386.66	3.85
384.64	0.07	385.66	2.43	386.68	3.87
384.66	0.09	385.68	2.46	386.70	3.89
384.68	0.11	385.70	2.50	386.72	3.92
384.70	0.13	385.72	2.53	386.74	3.94
384.72	0.16	385.74	2.57	386.76	3.96
384.74	0.19	385.76	2.60	386.78	3.98
384.76	0.22	385.78	2.64	386.80	4.01
384.78	0.26	385.80	2.67	386.82	4.03
384.80	0.29	385.82	2.70	386.84	4.05
384.82	0.33	385.84	2.74	386.86	4.07
384.84	0.37	385.86	2.77	386.88	4.09
384.86	0.41	385.88	2.80	386.90	4.12
384.88	0.45	385.90	2.83	386.92	4.14
384.90	0.50	385.92	2.86	386.94	4.16
384.92	0.55	385.94	2.89	386.96	4.18
384.94	0.59	385.96	2.93	386.98	4.20
384.96	0.64	385.98	2.96	387.00	**4.22**
384.98	0.69	386.00	2.99		
385.00	0.75	386.02	3.02		
385.02	0.80	386.04	3.04		
385.04	0.85	386.06	3.07		
385.06	0.91	386.08	3.10		
385.08	0.97	386.10	3.13		
385.10	1.02	386.12	3.16		
385.12	1.08	386.14	3.19		
385.14	1.14	386.16	3.22		
385.16	1.20	386.18	3.24		
385.18	1.26	386.20	3.27		
385.20	1.32	386.22	3.30		
385.22	1.38	386.24	3.32		
385.24	1.44	386.26	3.35		
385.26	1.50	386.28	3.38		
385.28	1.56	386.30	3.40		
385.30	1.62	386.32	3.43		
385.32	1.68	386.34	3.46		
385.34	1.74	386.36	3.48		
385.36	1.79	386.38	3.51		
385.38	1.85	386.40	3.53		
385.40	1.90	386.42	3.56		
385.42	1.95	386.44	3.58		
385.44	2.00	386.46	3.61		
385.46	2.04	386.48	3.63		
385.48	2.08	386.50	3.66		
385.50	2.11	386.52	3.68		

Stage-Area-Storage for Pond 3P: DETENTION POND

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.50	724	0
384.55	750	37
384.60	776	75
384.65	803	114
384.70	829	155
384.75	855	197
384.80	881	241
384.85	907	285
384.90	934	332
384.95	960	379
385.00	986	428
385.05	1,000	477
385.10	1,015	528
385.15	1,029	579
385.20	1,043	630
385.25	1,058	683
385.30	1,072	736
385.35	1,086	790
385.40	1,101	845
385.45	1,115	900
385.50	1,130	956
385.55	1,144	1,013
385.60	1,158	1,071
385.65	1,173	1,129
385.70	1,187	1,188
385.75	1,201	1,248
385.80	1,216	1,308
385.85	1,230	1,369
385.90	1,244	1,431
385.95	1,259	1,494
386.00	1,273	1,557
386.05	1,289	1,621
386.10	1,304	1,686
386.15	1,320	1,751
386.20	1,335	1,818
386.25	1,351	1,885
386.30	1,367	1,953
386.35	1,382	2,022
386.40	1,398	2,091
386.45	1,413	2,161
386.50	1,429	2,233
386.55	1,445	2,304
386.60	1,460	2,377
386.65	1,476	2,450
386.70	1,491	2,525
386.75	1,507	2,600
386.80	1,523	2,675
386.85	1,538	2,752
386.90	1,554	2,829
386.95	1,569	2,907
387.00	**1,585**	**2,986**

Time span=0.00-12.00 hrs, dt=0.01 hrs, 1201 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE-DEVELOPMENT Runoff Area=46,055 sf 0.00% Impervious Runoff Depth=1.07"
Flow Length=270' Slope=0.0250 '/' Tc=15.5 min C=0.69 Runoff=4.30 cfs 0.095 af

Subcatchment 2S: POST-DEVELOPMENT Runoff Area=46,055 sf 63.15% Impervious Runoff Depth=1.20"
Flow Length=360' Slope=0.0150 '/' Tc=8.8 min C=0.77 Runoff=4.79 cfs 0.106 af

Reach 4R: CURB CUT WIER Avg. Flow Depth=0.27' Max Vel=6.00 fps Inflow=4.79 cfs 0.106 af
n=0.013 L=4.0' S=0.0200 '/' Capacity=12.61 cfs Outflow=4.80 cfs 0.106 af

Pond 3P: DETENTION POND Peak Elev=386.27' Storage=1,914 cf Inflow=4.80 cfs 0.106 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0500 '/' Outflow=3.37 cfs 0.106 af

Total Runoff Area = 2.115 ac Runoff Volume = 0.200 af Average Runoff Depth = 1.14"
68.43% Pervious = 1.447 ac 31.57% Impervious = 0.668 ac

Summary for Subcatchment 1S: PRE-DEVELOPMENT

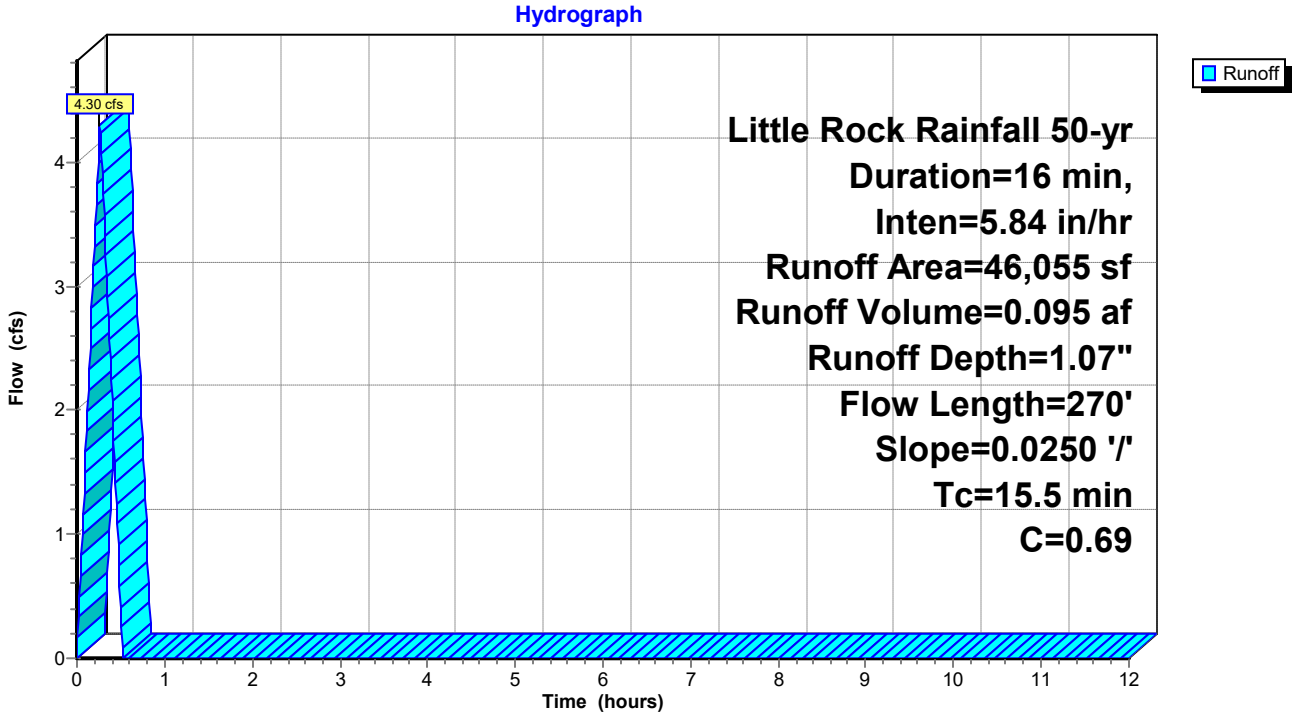
Runoff = 4.30 cfs @ 0.26 hrs, Volume= 0.095 af, Depth= 1.07"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 50-yr Duration=16 min, Inten=5.84 in/hr

Area (sf)	C	Description
31,035	0.65	GRAVEL PARKING
15,020	0.77	SHRUB POOR CONDITION BRUSH
46,055	0.69	Weighted Average
46,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	270	0.0250	0.29		**Sheet Flow, SHEET FLOW SURFACE** Range n= 0.130 P2= 4.19"

Subcatchment 1S: PRE-DEVELOPMENT



Hydrograph for Subcatchment 1S: PRE-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	1.66	5.20	0.00	10.30	0.00
0.20	**3.33**	5.30	0.00	10.40	0.00
0.30	**3.74**	5.40	0.00	10.50	0.00
0.40	2.08	5.50	0.00	10.60	0.00
0.50	0.42	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Subcatchment 2S: POST-DEVELOPMENT

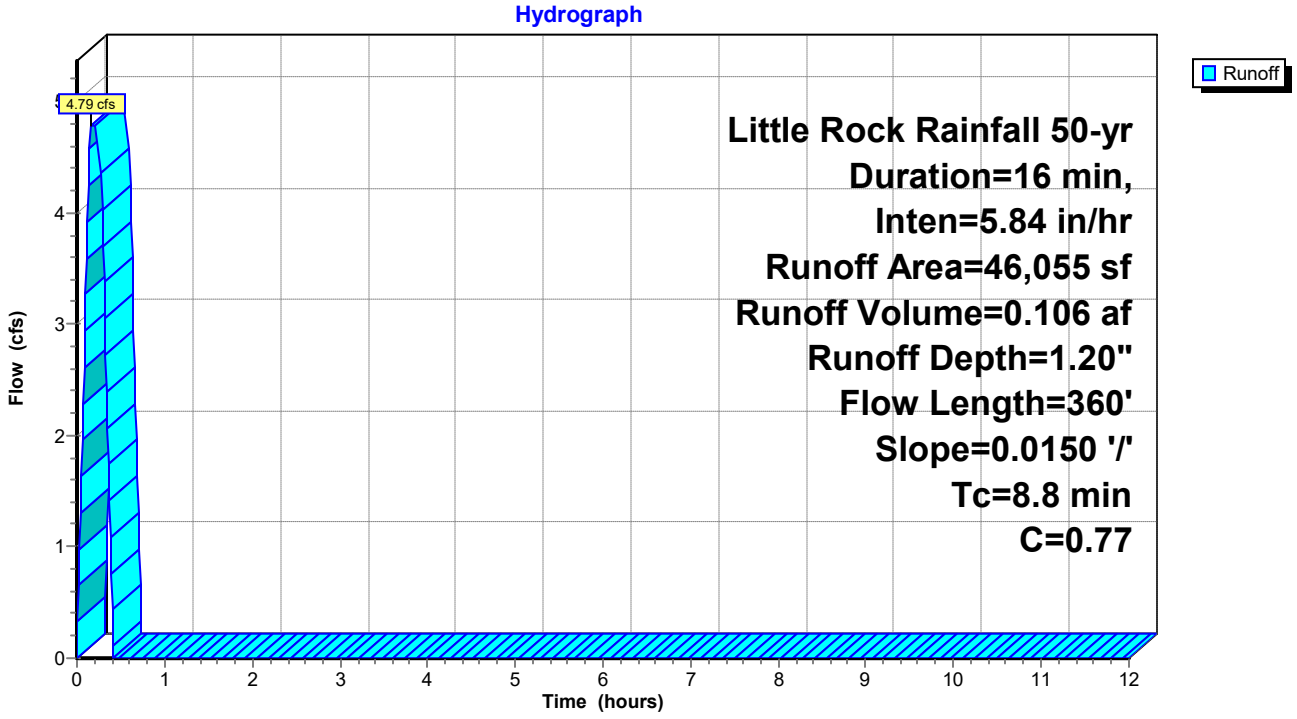
Runoff = 4.79 cfs @ 0.15 hrs, Volume= 0.106 af, Depth= 1.20"
Routed to Reach 4R : CURB CUT WIER

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 50-yr Duration=16 min, Inten=5.84 in/hr

Area (sf)	C	Description
22,479	0.95	ASPHALT SURFACE
6,603	0.97	ROOF TOP
16,973	0.46	GRASS LANDSCAPING
46,055	0.77	Weighted Average
16,973		36.85% Pervious Area
29,082		63.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	40	0.0150	0.10		**Sheet Flow, GRASS** Grass: Dense n= 0.240 P2= 4.19"
2.1	320	0.0150	2.49		**Shallow Concentrated Flow, PAVEMENT** Paved Kv= 20.3 fps
8.8	360	Total			

Subcatchment 2S: POST-DEVELOPMENT



Hydrograph for Subcatchment 2S: POST-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	**3.27**	5.20	0.00	10.30	0.00
0.20	**4.79**	5.30	0.00	10.40	0.00
0.30	3.70	5.40	0.00	10.50	0.00
0.40	0.44	5.50	0.00	10.60	0.00
0.50	0.00	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Reach 4R: CURB CUT WIER

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

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 1.20" for 50-yr event
Inflow = 4.79 cfs @ 0.15 hrs, Volume= 0.106 af
Outflow = 4.80 cfs @ 0.16 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 3P : DETENTION POND

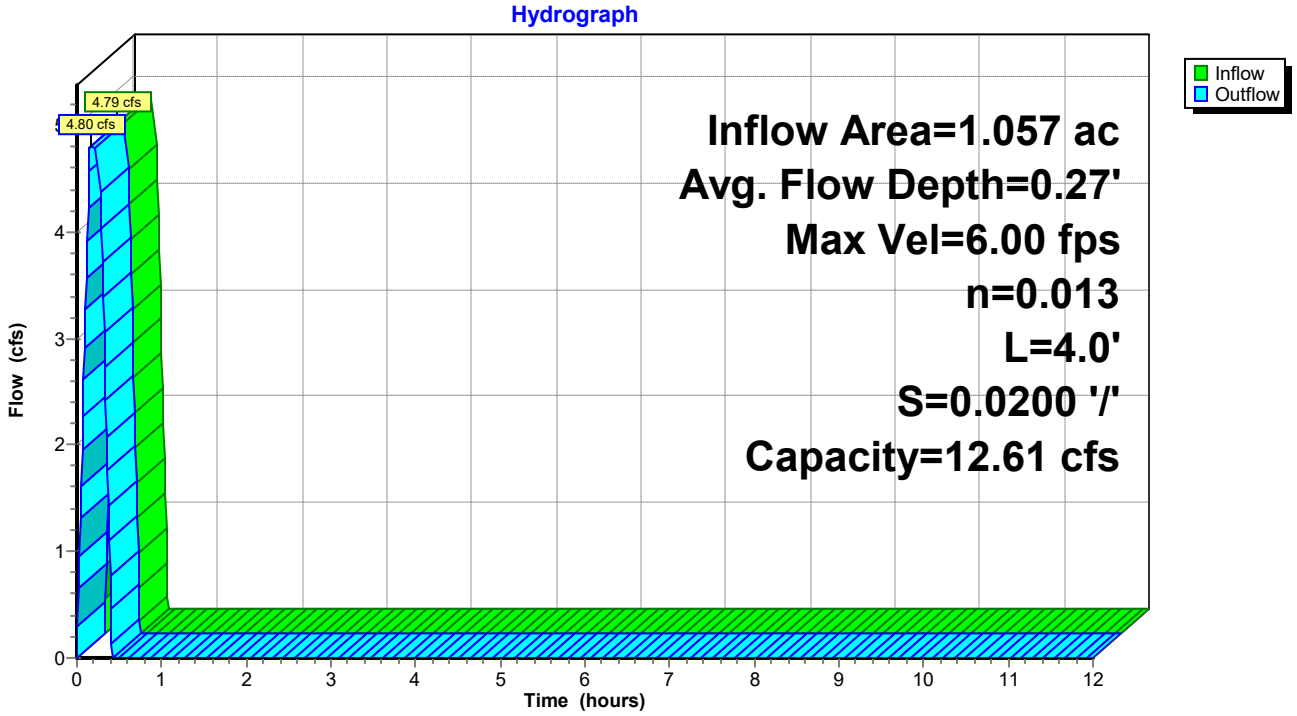
Routing by Stor-Ind+Trans method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.77 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 0.16 hrs
Average Depth at Peak Storage= 0.27' , Surface Width= 3.00'
Bank-Full Depth= 0.50' Flow Area= 1.5 sf, Capacity= 12.61 cfs

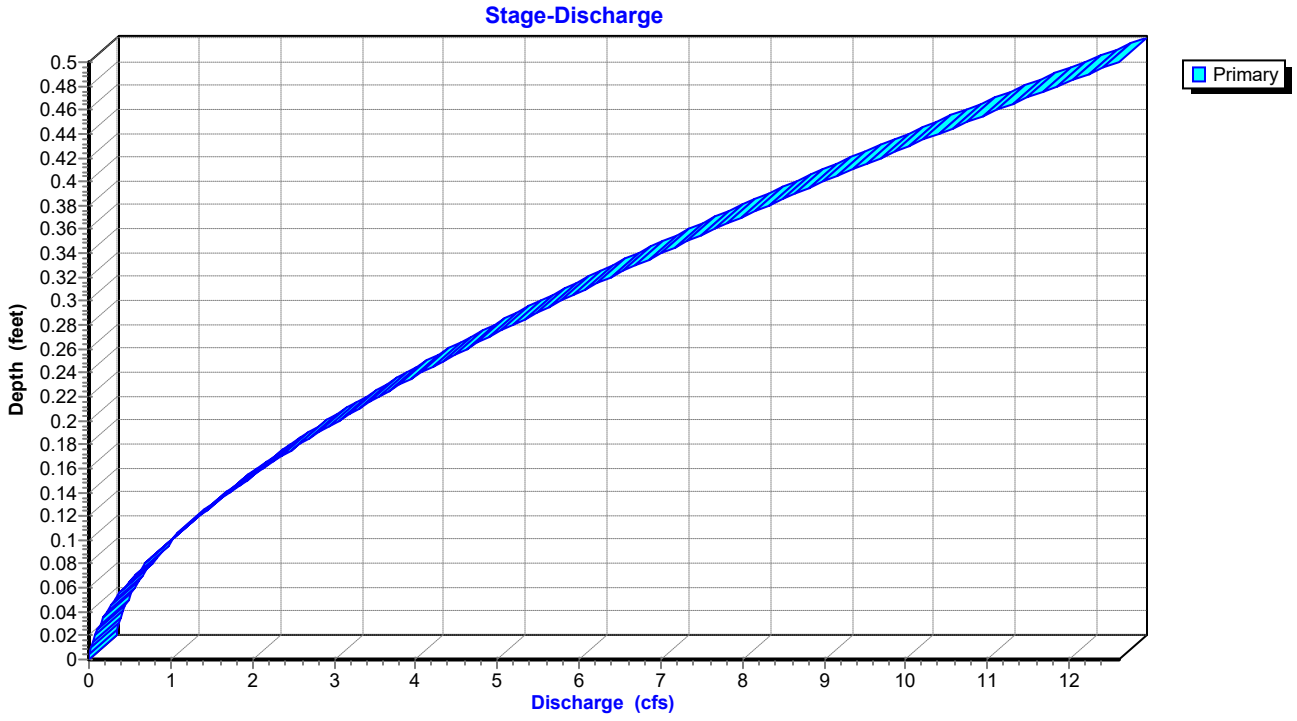
3.00' x 0.50' deep channel, n= 0.013 Concrete, trowel finish
Length= 4.0' Slope= 0.0200 '/'
Inlet Invert= 387.25', Outlet Invert= 387.17'



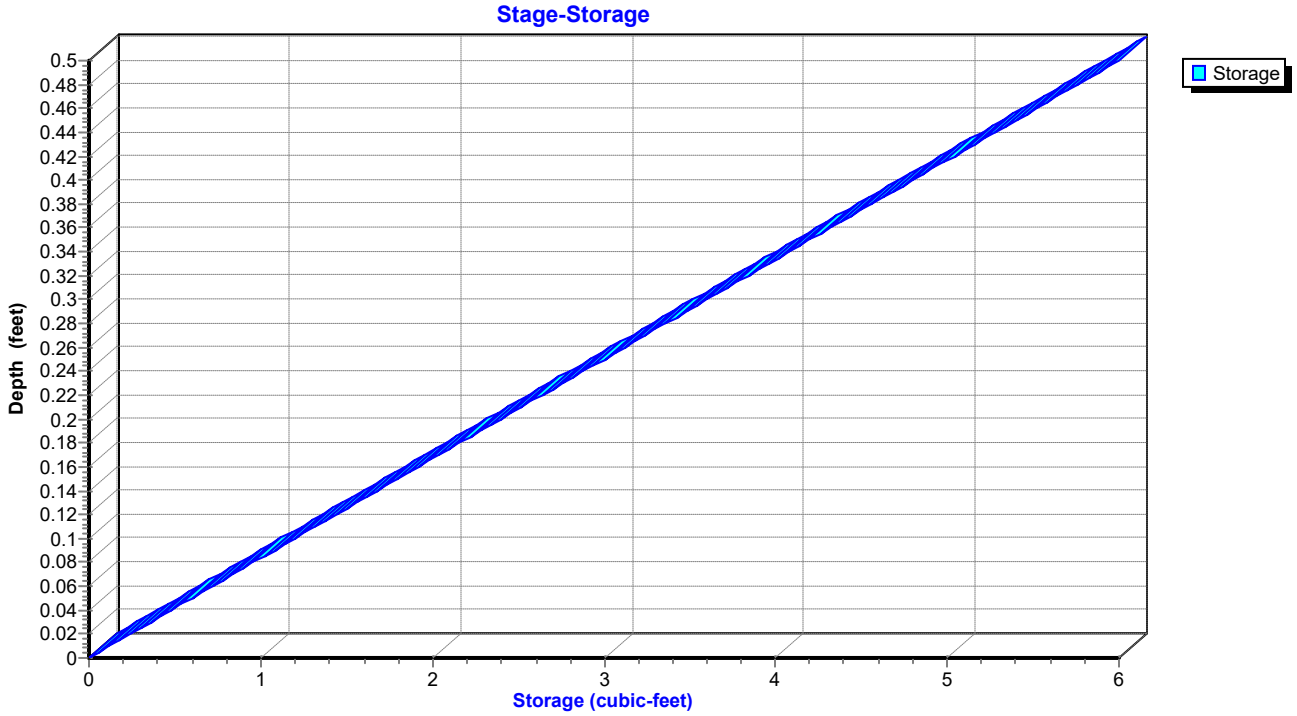
Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Hydrograph for Reach 4R: CURB CUT WIER

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	**0.00**	**0**	**387.25**	**0.00**
0.50	**0.00**	**0**	**387.25**	**0.00**
1.00	0.00	0	387.25	0.00
1.50	0.00	0	387.25	0.00
2.00	0.00	0	387.25	0.00
2.50	0.00	0	387.25	0.00
3.00	0.00	0	387.25	0.00
3.50	0.00	0	387.25	0.00
4.00	0.00	0	387.25	0.00
4.50	0.00	0	387.25	0.00
5.00	0.00	0	387.25	0.00
5.50	0.00	0	387.25	0.00
6.00	0.00	0	387.25	0.00
6.50	0.00	0	387.25	0.00
7.00	0.00	0	387.25	0.00
7.50	0.00	0	387.25	0.00
8.00	0.00	0	387.25	0.00
8.50	0.00	0	387.25	0.00
9.00	0.00	0	387.25	0.00
9.50	0.00	0	387.25	0.00
10.00	0.00	0	387.25	0.00
10.50	0.00	0	387.25	0.00
11.00	0.00	0	387.25	0.00
11.50	0.00	0	387.25	0.00
12.00	0.00	0	387.25	0.00

Stage-Discharge for Reach 4R: CURB CUT WIER

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
387.25	0.00	0.00
387.26	0.75	0.02
387.27	1.18	0.07
387.28	1.54	0.14
387.29	1.86	0.22
387.30	2.15	0.32
387.31	2.41	0.43
387.32	2.66	0.56
387.33	2.90	0.70
387.34	3.12	0.84
387.35	3.34	1.00
387.36	3.54	1.17
387.37	3.74	1.35
387.38	3.92	1.53
387.39	4.11	1.72
387.40	4.28	1.93
387.41	4.45	2.14
387.42	4.62	2.36
387.43	4.78	2.58
387.44	4.93	2.81
387.45	5.09	3.05
387.46	5.23	3.30
387.47	5.38	3.55
387.48	5.52	3.81
387.49	5.65	4.07
387.50	5.79	4.34
387.51	5.92	4.62
387.52	6.05	4.90
387.53	6.17	5.19
387.54	6.30	5.48
387.55	6.42	5.77
387.56	6.53	6.08
387.57	6.65	6.38
387.58	6.76	6.69
387.59	6.87	7.01
387.60	6.98	7.33
387.61	7.09	7.65
387.62	7.19	7.98
387.63	7.30	8.32
387.64	7.40	8.65
387.65	7.50	9.00
387.66	7.59	9.34
387.67	7.69	9.69
387.68	7.79	10.04
387.69	7.88	10.40
387.70	7.97	10.76
387.71	8.06	11.12
387.72	8.15	11.49
387.73	8.24	11.86
387.74	8.32	12.23
387.75	**8.41**	**12.61**

Stage-Area-Storage for Reach 4R: CURB CUT WIER

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
387.25	0.0	0
387.26	0.0	0
387.27	0.1	0
387.28	0.1	0
387.29	0.1	0
387.30	0.2	1
387.31	0.2	1
387.32	0.2	1
387.33	0.2	1
387.34	0.3	1
387.35	0.3	1
387.36	0.3	1
387.37	0.4	1
387.38	0.4	2
387.39	0.4	2
387.40	0.4	2
387.41	0.5	2
387.42	0.5	2
387.43	0.5	2
387.44	0.6	2
387.45	0.6	2
387.46	0.6	3
387.47	0.7	3
387.48	0.7	3
387.49	0.7	3
387.50	0.8	3
387.51	0.8	3
387.52	0.8	3
387.53	0.8	3
387.54	0.9	3
387.55	0.9	4
387.56	0.9	4
387.57	1.0	4
387.58	1.0	4
387.59	1.0	4
387.60	1.1	4
387.61	1.1	4
387.62	1.1	4
387.63	1.1	5
387.64	1.2	5
387.65	1.2	5
387.66	1.2	5
387.67	1.3	5
387.68	1.3	5
387.69	1.3	5
387.70	1.4	5
387.71	1.4	6
387.72	1.4	6
387.73	1.4	6
387.74	1.5	6
387.75	**1.5**	**6**

Summary for Pond 3P: DETENTION POND

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 1.20" for 50-yr event
Inflow = 4.80 cfs @ 0.16 hrs, Volume= 0.106 af
Outflow = 3.37 cfs @ 0.31 hrs, Volume= 0.106 af, Atten= 30%, Lag= 9.0 min
Primary = 3.37 cfs @ 0.31 hrs, Volume= 0.106 af

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 386.27' @ 0.31 hrs Surf.Area= 1,358 sf Storage= 1,914 cf

Plug-Flow detention time= 9.9 min calculated for 0.106 af (100% of inflow)
Center-of-Mass det. time= 10.3 min (22.7 - 12.4)

Volume	Invert	Avail.Storage	Storage Description
#1	384.50'	2,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

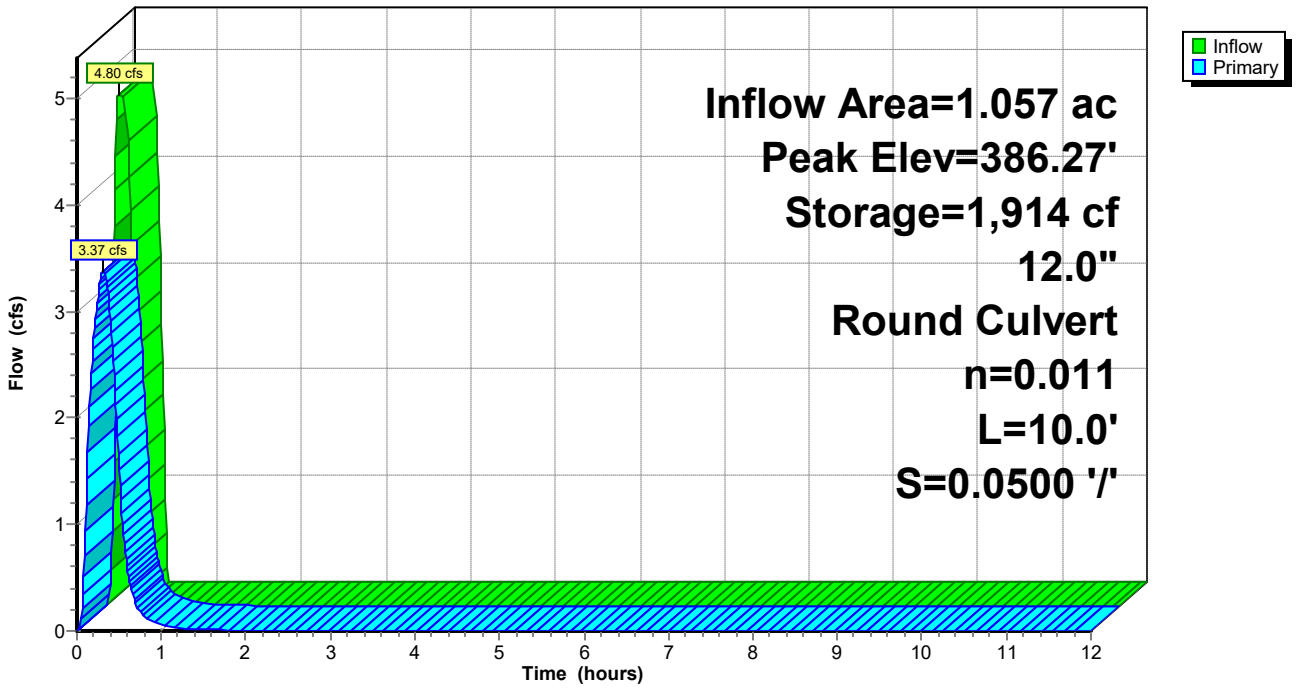
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	724	0	0
385.00	986	428	428
386.00	1,273	1,130	1,557
387.00	1,585	1,429	2,986

Device	Routing	Invert	Outlet Devices
#1	Primary	384.50'	**12.0" Round 12" RCP** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.50' / 384.00' S= 0.0500 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=3.37 cfs @ 0.31 hrs HW=386.27' (Free Discharge)
↑**1=12" RCP** (Inlet Controls 3.37 cfs @ 4.29 fps)

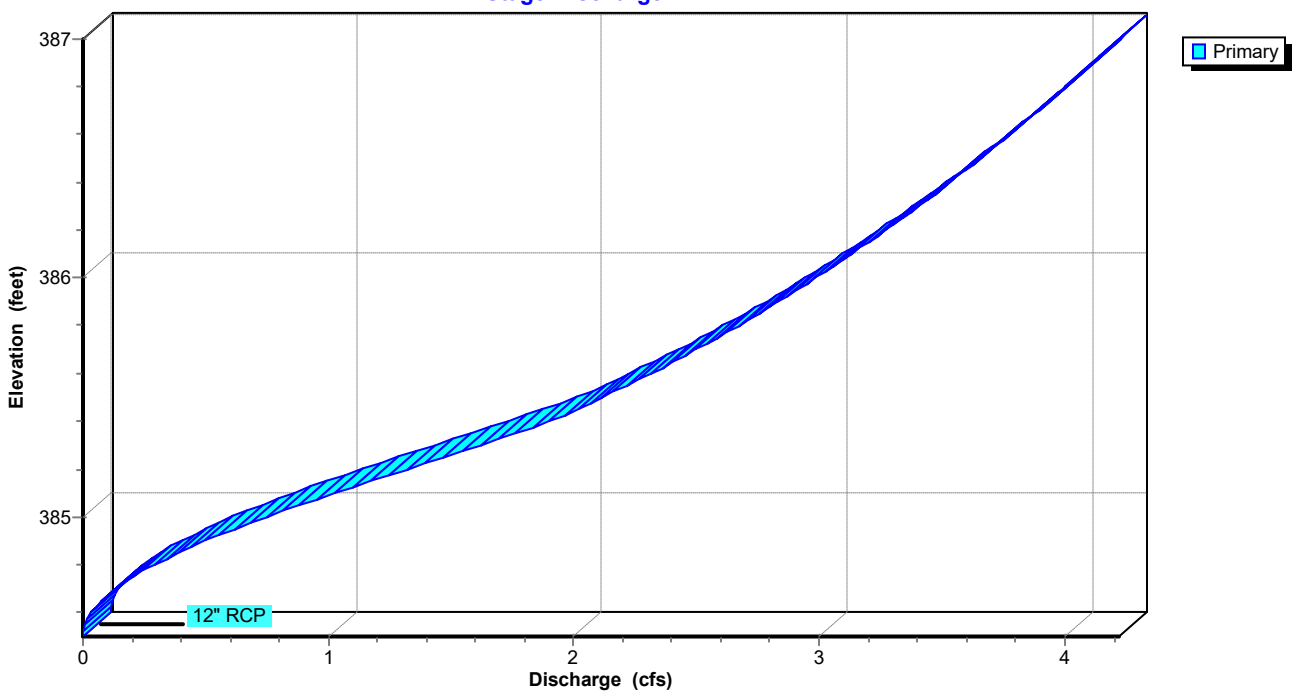
Pond 3P: DETENTION POND

Hydrograph

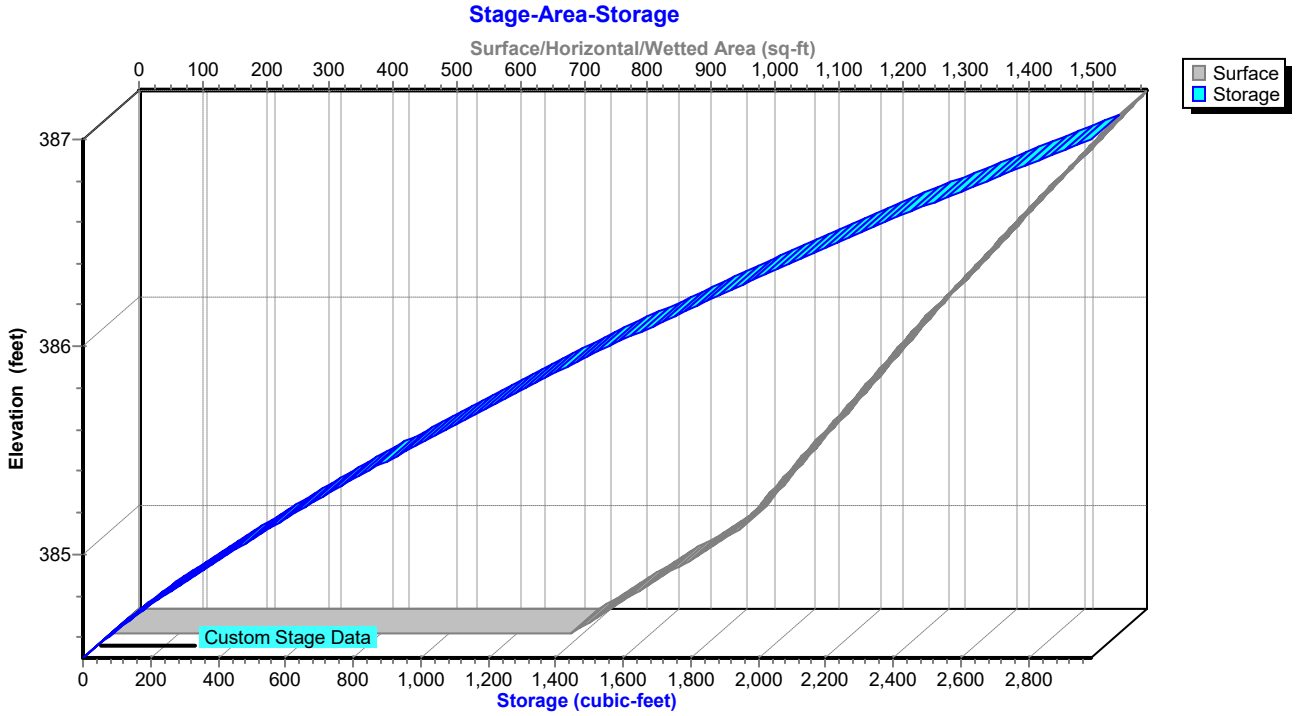


Pond 3P: DETENTION POND

Stage-Discharge



Pond 3P: DETENTION POND



Hydrograph for Pond 3P: DETENTION POND

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0**	**384.50**	**0.00**
0.50	**0.00**	**697**	**385.26**	**1.51**
1.00	0.00	93	384.62	0.05
1.50	0.00	45	384.56	0.01
2.00	0.00	29	384.54	0.01
2.50	0.00	21	384.53	0.00
3.00	0.00	17	384.52	0.00
3.50	0.00	13	384.52	0.00
4.00	0.00	11	384.51	0.00
4.50	0.00	9	384.51	0.00
5.00	0.00	7	384.51	0.00
5.50	0.00	6	384.51	0.00
6.00	0.00	4	384.51	0.00
6.50	0.00	4	384.50	0.00
7.00	0.00	3	384.50	0.00
7.50	0.00	2	384.50	0.00
8.00	0.00	2	384.50	0.00
8.50	0.00	1	384.50	0.00
9.00	0.00	1	384.50	0.00
9.50	0.00	1	384.50	0.00
10.00	0.00	1	384.50	0.00
10.50	0.00	1	384.50	0.00
11.00	0.00	0	384.50	0.00
11.50	0.00	0	384.50	0.00
12.00	0.00	0	384.50	0.00

Stage-Discharge for Pond 3P: DETENTION POND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
384.50	0.00	385.52	2.15	386.54	3.70
384.52	0.00	385.54	2.19	386.56	3.73
384.54	0.01	385.56	2.23	386.58	3.75
384.56	0.01	385.58	2.27	386.60	3.78
384.58	0.02	385.60	2.31	386.62	3.80
384.60	0.03	385.62	2.35	386.64	3.82
384.62	0.05	385.64	2.39	386.66	3.85
384.64	0.07	385.66	2.43	386.68	3.87
384.66	0.09	385.68	2.46	386.70	3.89
384.68	0.11	385.70	2.50	386.72	3.92
384.70	0.13	385.72	2.53	386.74	3.94
384.72	0.16	385.74	2.57	386.76	3.96
384.74	0.19	385.76	2.60	386.78	3.98
384.76	0.22	385.78	2.64	386.80	4.01
384.78	0.26	385.80	2.67	386.82	4.03
384.80	0.29	385.82	2.70	386.84	4.05
384.82	0.33	385.84	2.74	386.86	4.07
384.84	0.37	385.86	2.77	386.88	4.09
384.86	0.41	385.88	2.80	386.90	4.12
384.88	0.45	385.90	2.83	386.92	4.14
384.90	0.50	385.92	2.86	386.94	4.16
384.92	0.55	385.94	2.89	386.96	4.18
384.94	0.59	385.96	2.93	386.98	4.20
384.96	0.64	385.98	2.96	387.00	**4.22**
384.98	0.69	386.00	2.99		
385.00	0.75	386.02	3.02		
385.02	0.80	386.04	3.04		
385.04	0.85	386.06	3.07		
385.06	0.91	386.08	3.10		
385.08	0.97	386.10	3.13		
385.10	1.02	386.12	3.16		
385.12	1.08	386.14	3.19		
385.14	1.14	386.16	3.22		
385.16	1.20	386.18	3.24		
385.18	1.26	386.20	3.27		
385.20	1.32	386.22	3.30		
385.22	1.38	386.24	3.32		
385.24	1.44	386.26	3.35		
385.26	1.50	386.28	3.38		
385.28	1.56	386.30	3.40		
385.30	1.62	386.32	3.43		
385.32	1.68	386.34	3.46		
385.34	1.74	386.36	3.48		
385.36	1.79	386.38	3.51		
385.38	1.85	386.40	3.53		
385.40	1.90	386.42	3.56		
385.42	1.95	386.44	3.58		
385.44	2.00	386.46	3.61		
385.46	2.04	386.48	3.63		
385.48	2.08	386.50	3.66		
385.50	2.11	386.52	3.68		

Stage-Area-Storage for Pond 3P: DETENTION POND

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.50	724	0
384.55	750	37
384.60	776	75
384.65	803	114
384.70	829	155
384.75	855	197
384.80	881	241
384.85	907	285
384.90	934	332
384.95	960	379
385.00	986	428
385.05	1,000	477
385.10	1,015	528
385.15	1,029	579
385.20	1,043	630
385.25	1,058	683
385.30	1,072	736
385.35	1,086	790
385.40	1,101	845
385.45	1,115	900
385.50	1,130	956
385.55	1,144	1,013
385.60	1,158	1,071
385.65	1,173	1,129
385.70	1,187	1,188
385.75	1,201	1,248
385.80	1,216	1,308
385.85	1,230	1,369
385.90	1,244	1,431
385.95	1,259	1,494
386.00	1,273	1,557
386.05	1,289	1,621
386.10	1,304	1,686
386.15	1,320	1,751
386.20	1,335	1,818
386.25	1,351	1,885
386.30	1,367	1,953
386.35	1,382	2,022
386.40	1,398	2,091
386.45	1,413	2,161
386.50	1,429	2,233
386.55	1,445	2,304
386.60	1,460	2,377
386.65	1,476	2,450
386.70	1,491	2,525
386.75	1,507	2,600
386.80	1,523	2,675
386.85	1,538	2,752
386.90	1,554	2,829
386.95	1,569	2,907
387.00	**1,585**	**2,986**

Time span=0.00-12.00 hrs, dt=0.01 hrs, 1201 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: PRE-DEVELOPMENT Runoff Area=46,055 sf 0.00% Impervious Runoff Depth=1.16"
Flow Length=270' Slope=0.0250 '/' Tc=15.5 min C=0.69 Runoff=4.65 cfs 0.102 af

Subcatchment 2S: POST-DEVELOPMENT Runoff Area=46,055 sf 63.15% Impervious Runoff Depth=1.30"
Flow Length=360' Slope=0.0150 '/' Tc=8.8 min C=0.77 Runoff=5.18 cfs 0.114 af

Reach 4R: CURB CUT WIER Avg. Flow Depth=0.28' Max Vel=6.18 fps Inflow=5.18 cfs 0.114 af
n=0.013 L=4.0' S=0.0200 '/' Capacity=12.61 cfs Outflow=5.19 cfs 0.114 af

Pond 3P: DETENTION POND Peak Elev=386.41' Storage=2,110 cf Inflow=5.19 cfs 0.114 af
12.0" Round Culvert n=0.011 L=10.0' S=0.0500 '/' Outflow=3.55 cfs 0.114 af

Total Runoff Area = 2.115 ac Runoff Volume = 0.216 af Average Runoff Depth = 1.23"
68.43% Pervious = 1.447 ac 31.57% Impervious = 0.668 ac

Summary for Subcatchment 1S: PRE-DEVELOPMENT

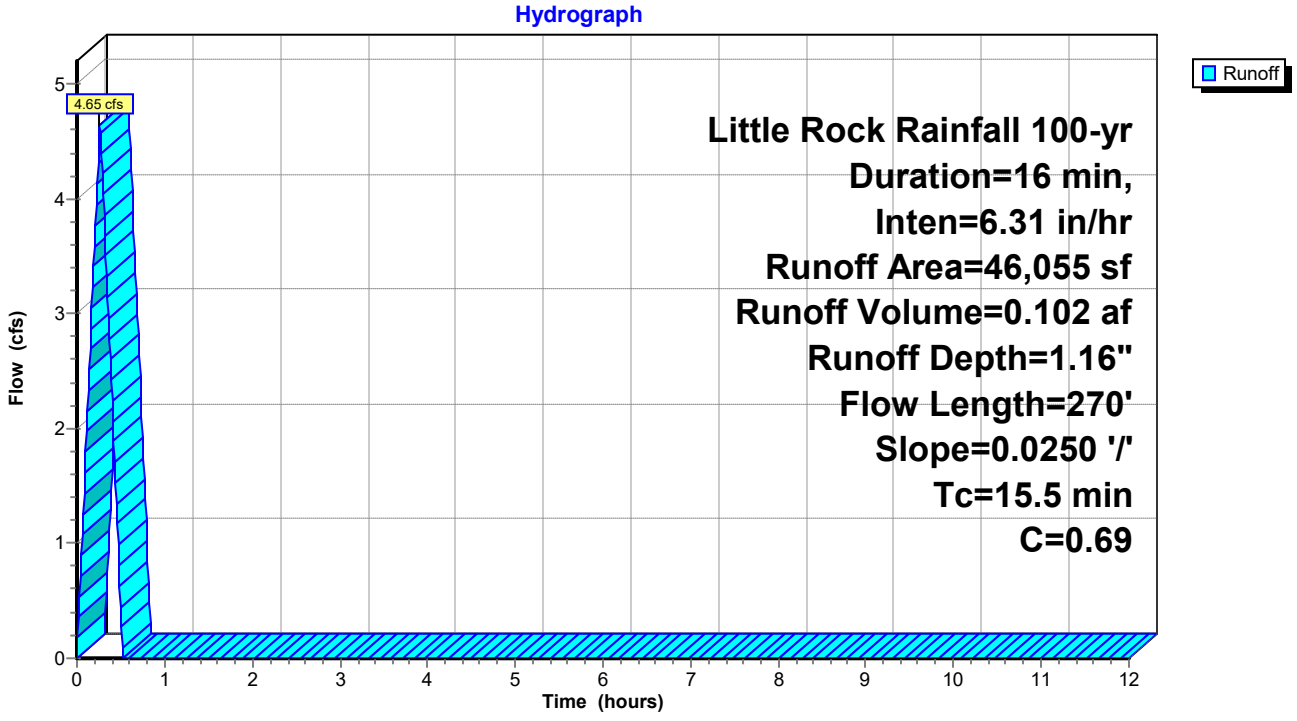
Runoff = 4.65 cfs @ 0.26 hrs, Volume= 0.102 af, Depth= 1.16"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 100-yr Duration=16 min, Inten=6.31 in/hr

Area (sf)	C	Description
31,035	0.65	GRAVEL PARKING
15,020	0.77	SHRUB POOR CONDITION BRUSH
46,055	0.69	Weighted Average
46,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	270	0.0250	0.29		**Sheet Flow, SHEET FLOW SURFACE** Range n= 0.130 P2= 4.19"

Subcatchment 1S: PRE-DEVELOPMENT



Hydrograph for Subcatchment 1S: PRE-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	1.80	5.20	0.00	10.30	0.00
0.20	**3.59**	5.30	0.00	10.40	0.00
0.30	**4.04**	5.40	0.00	10.50	0.00
0.40	2.25	5.50	0.00	10.60	0.00
0.50	0.45	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Subcatchment 2S: POST-DEVELOPMENT

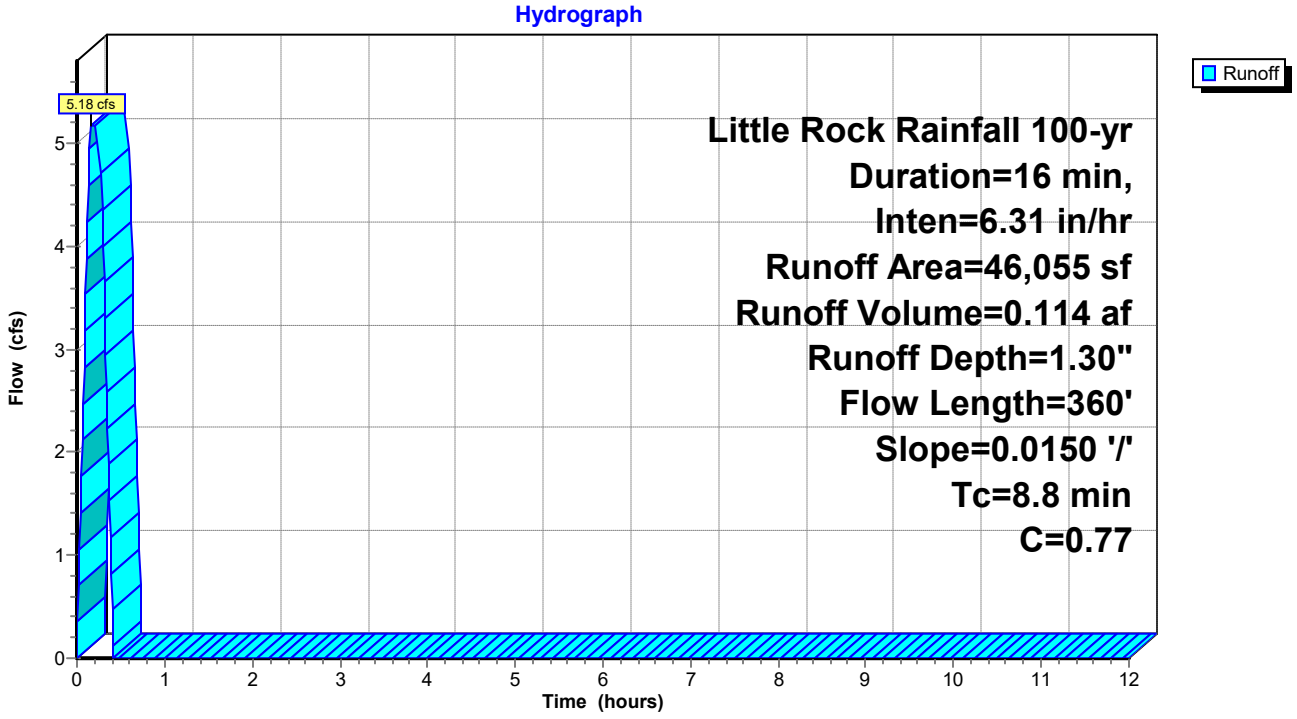
Runoff = 5.18 cfs @ 0.15 hrs, Volume= 0.114 af, Depth= 1.30"
Routed to Reach 4R : CURB CUT WIER

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Little Rock Rainfall 100-yr Duration=16 min, Inten=6.31 in/hr

Area (sf)	C	Description
22,479	0.95	ASPHALT SURFACE
6,603	0.97	ROOF TOP
16,973	0.46	GRASS LANDSCAPING
46,055	0.77	Weighted Average
16,973		36.85% Pervious Area
29,082		63.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	40	0.0150	0.10		**Sheet Flow, GRASS** Grass: Dense n= 0.240 P2= 4.19"
2.1	320	0.0150	2.49		**Shallow Concentrated Flow, PAVEMENT** Paved Kv= 20.3 fps
8.8	360	Total			

Subcatchment 2S: POST-DEVELOPMENT



Hydrograph for Subcatchment 2S: POST-DEVELOPMENT

Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)	Time (hours)	Runoff (cfs)
0.00	0.00	5.10	0.00	10.20	0.00
0.10	**3.53**	5.20	0.00	10.30	0.00
0.20	**5.18**	5.30	0.00	10.40	0.00
0.30	4.00	5.40	0.00	10.50	0.00
0.40	0.47	5.50	0.00	10.60	0.00
0.50	0.00	5.60	0.00	10.70	0.00
0.60	0.00	5.70	0.00	10.80	0.00
0.70	0.00	5.80	0.00	10.90	0.00
0.80	0.00	5.90	0.00	11.00	0.00
0.90	0.00	6.00	0.00	11.10	0.00
1.00	0.00	6.10	0.00	11.20	0.00
1.10	0.00	6.20	0.00	11.30	0.00
1.20	0.00	6.30	0.00	11.40	0.00
1.30	0.00	6.40	0.00	11.50	0.00
1.40	0.00	6.50	0.00	11.60	0.00
1.50	0.00	6.60	0.00	11.70	0.00
1.60	0.00	6.70	0.00	11.80	0.00
1.70	0.00	6.80	0.00	11.90	0.00
1.80	0.00	6.90	0.00	12.00	0.00
1.90	0.00	7.00	0.00		
2.00	0.00	7.10	0.00		
2.10	0.00	7.20	0.00		
2.20	0.00	7.30	0.00		
2.30	0.00	7.40	0.00		
2.40	0.00	7.50	0.00		
2.50	0.00	7.60	0.00		
2.60	0.00	7.70	0.00		
2.70	0.00	7.80	0.00		
2.80	0.00	7.90	0.00		
2.90	0.00	8.00	0.00		
3.00	0.00	8.10	0.00		
3.10	0.00	8.20	0.00		
3.20	0.00	8.30	0.00		
3.30	0.00	8.40	0.00		
3.40	0.00	8.50	0.00		
3.50	0.00	8.60	0.00		
3.60	0.00	8.70	0.00		
3.70	0.00	8.80	0.00		
3.80	0.00	8.90	0.00		
3.90	0.00	9.00	0.00		
4.00	0.00	9.10	0.00		
4.10	0.00	9.20	0.00		
4.20	0.00	9.30	0.00		
4.30	0.00	9.40	0.00		
4.40	0.00	9.50	0.00		
4.50	0.00	9.60	0.00		
4.60	0.00	9.70	0.00		
4.70	0.00	9.80	0.00		
4.80	0.00	9.90	0.00		
4.90	0.00	10.00	0.00		
5.00	0.00	10.10	0.00		

Summary for Reach 4R: CURB CUT WIER

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

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 1.30" for 100-yr event
Inflow = 5.18 cfs @ 0.15 hrs, Volume= 0.114 af
Outflow = 5.19 cfs @ 0.16 hrs, Volume= 0.114 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 3P : DETENTION POND

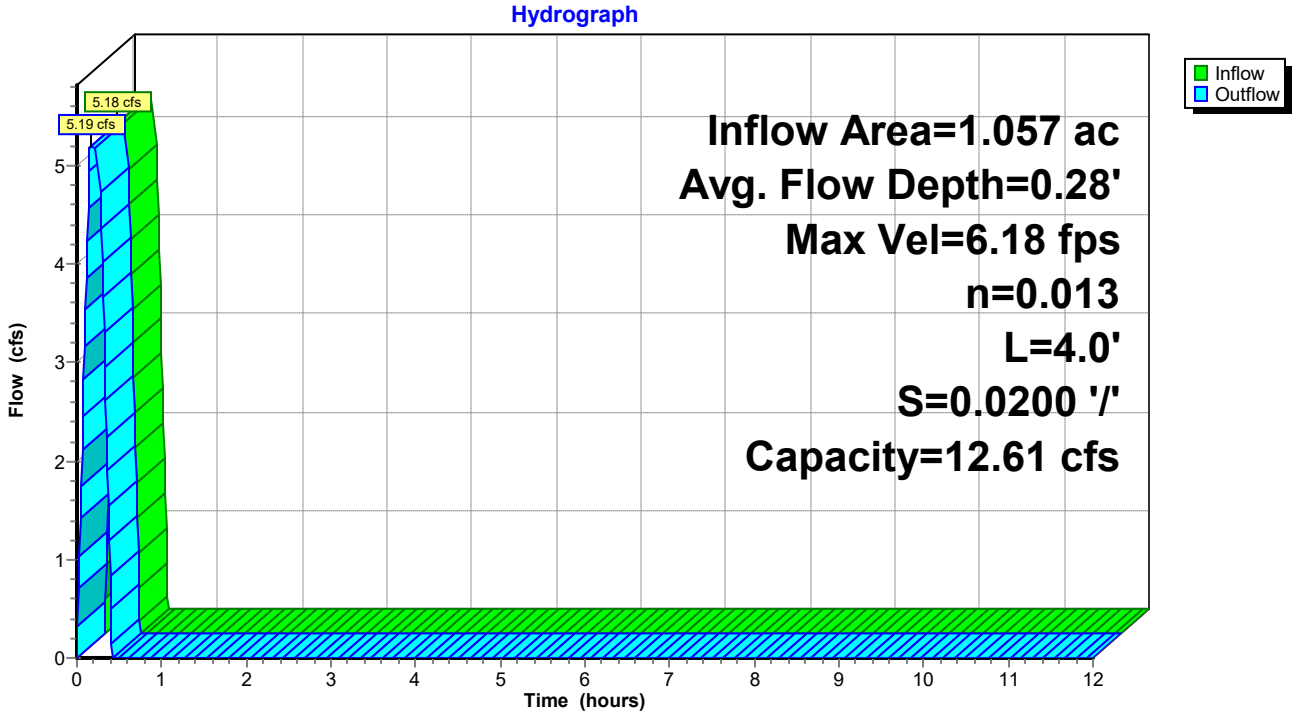
Routing by Stor-Ind+Trans method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.18 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.91 fps, Avg. Travel Time= 0.0 min

Peak Storage= 3 cf @ 0.16 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 3.00'
Bank-Full Depth= 0.50' Flow Area= 1.5 sf, Capacity= 12.61 cfs

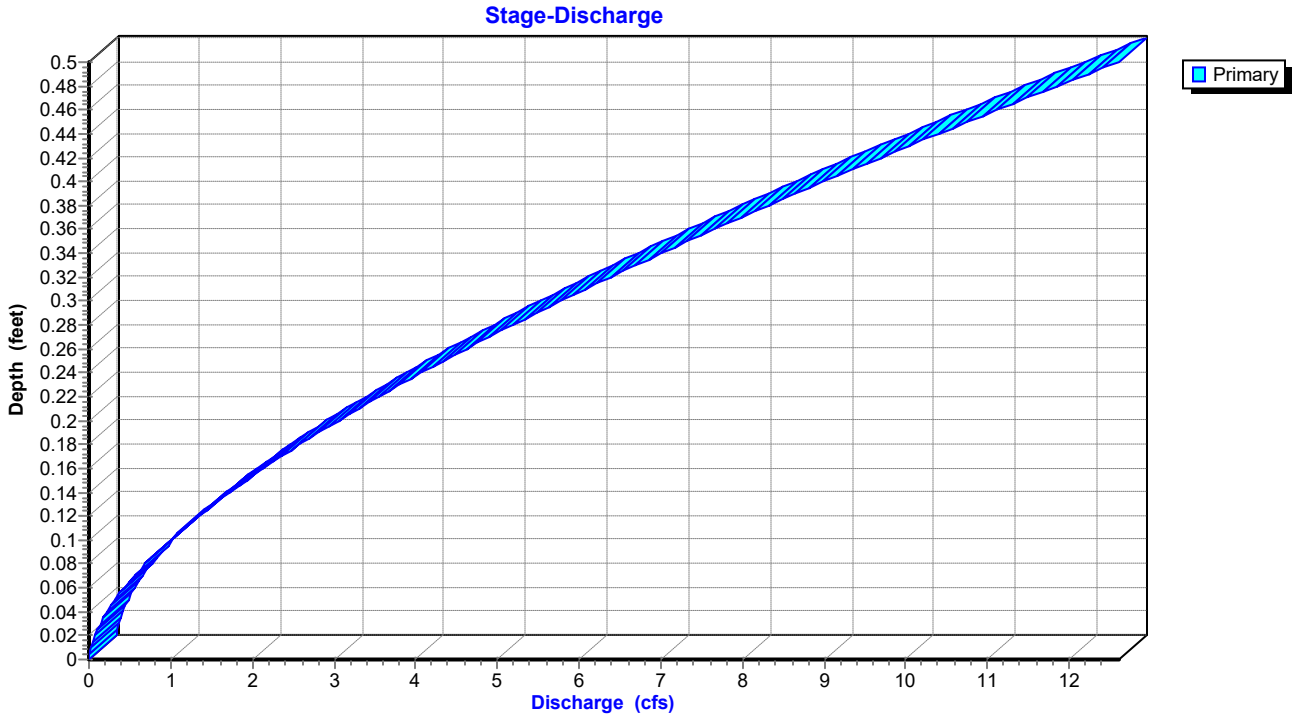
3.00' x 0.50' deep channel, n= 0.013 Concrete, trowel finish
Length= 4.0' Slope= 0.0200 '/'
Inlet Invert= 387.25', Outlet Invert= 387.17'



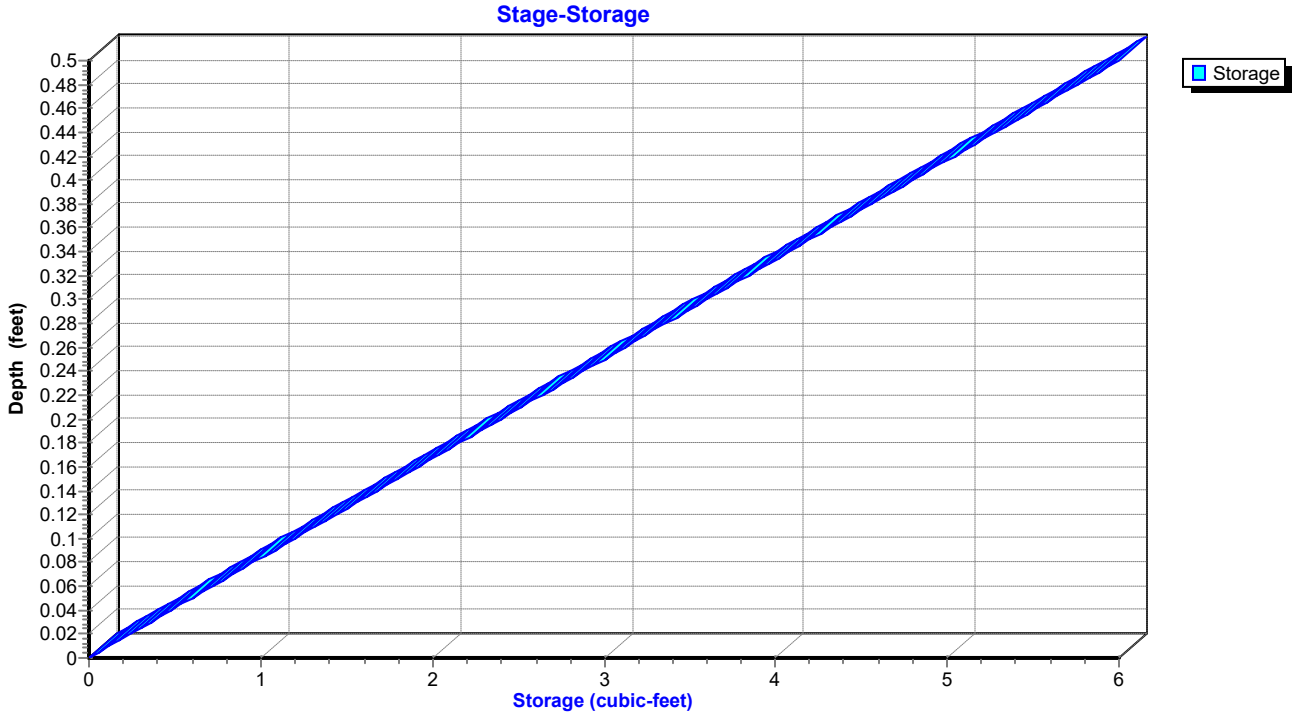
Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Reach 4R: CURB CUT WIER



Hydrograph for Reach 4R: CURB CUT WIER

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	**0.00**	**0**	**387.25**	**0.00**
0.50	**0.00**	**0**	**387.25**	**0.00**
1.00	0.00	0	387.25	0.00
1.50	0.00	0	387.25	0.00
2.00	0.00	0	387.25	0.00
2.50	0.00	0	387.25	0.00
3.00	0.00	0	387.25	0.00
3.50	0.00	0	387.25	0.00
4.00	0.00	0	387.25	0.00
4.50	0.00	0	387.25	0.00
5.00	0.00	0	387.25	0.00
5.50	0.00	0	387.25	0.00
6.00	0.00	0	387.25	0.00
6.50	0.00	0	387.25	0.00
7.00	0.00	0	387.25	0.00
7.50	0.00	0	387.25	0.00
8.00	0.00	0	387.25	0.00
8.50	0.00	0	387.25	0.00
9.00	0.00	0	387.25	0.00
9.50	0.00	0	387.25	0.00
10.00	0.00	0	387.25	0.00
10.50	0.00	0	387.25	0.00
11.00	0.00	0	387.25	0.00
11.50	0.00	0	387.25	0.00
12.00	0.00	0	387.25	0.00

Stage-Discharge for Reach 4R: CURB CUT WIER

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
387.25	0.00	0.00
387.26	0.75	0.02
387.27	1.18	0.07
387.28	1.54	0.14
387.29	1.86	0.22
387.30	2.15	0.32
387.31	2.41	0.43
387.32	2.66	0.56
387.33	2.90	0.70
387.34	3.12	0.84
387.35	3.34	1.00
387.36	3.54	1.17
387.37	3.74	1.35
387.38	3.92	1.53
387.39	4.11	1.72
387.40	4.28	1.93
387.41	4.45	2.14
387.42	4.62	2.36
387.43	4.78	2.58
387.44	4.93	2.81
387.45	5.09	3.05
387.46	5.23	3.30
387.47	5.38	3.55
387.48	5.52	3.81
387.49	5.65	4.07
387.50	5.79	4.34
387.51	5.92	4.62
387.52	6.05	4.90
387.53	6.17	5.19
387.54	6.30	5.48
387.55	6.42	5.77
387.56	6.53	6.08
387.57	6.65	6.38
387.58	6.76	6.69
387.59	6.87	7.01
387.60	6.98	7.33
387.61	7.09	7.65
387.62	7.19	7.98
387.63	7.30	8.32
387.64	7.40	8.65
387.65	7.50	9.00
387.66	7.59	9.34
387.67	7.69	9.69
387.68	7.79	10.04
387.69	7.88	10.40
387.70	7.97	10.76
387.71	8.06	11.12
387.72	8.15	11.49
387.73	8.24	11.86
387.74	8.32	12.23
387.75	**8.41**	**12.61**

Stage-Area-Storage for Reach 4R: CURB CUT WIER

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
387.25	0.0	0
387.26	0.0	0
387.27	0.1	0
387.28	0.1	0
387.29	0.1	0
387.30	0.2	1
387.31	0.2	1
387.32	0.2	1
387.33	0.2	1
387.34	0.3	1
387.35	0.3	1
387.36	0.3	1
387.37	0.4	1
387.38	0.4	2
387.39	0.4	2
387.40	0.4	2
387.41	0.5	2
387.42	0.5	2
387.43	0.5	2
387.44	0.6	2
387.45	0.6	2
387.46	0.6	3
387.47	0.7	3
387.48	0.7	3
387.49	0.7	3
387.50	0.8	3
387.51	0.8	3
387.52	0.8	3
387.53	0.8	3
387.54	0.9	3
387.55	0.9	4
387.56	0.9	4
387.57	1.0	4
387.58	1.0	4
387.59	1.0	4
387.60	1.1	4
387.61	1.1	4
387.62	1.1	4
387.63	1.1	5
387.64	1.2	5
387.65	1.2	5
387.66	1.2	5
387.67	1.3	5
387.68	1.3	5
387.69	1.3	5
387.70	1.4	5
387.71	1.4	6
387.72	1.4	6
387.73	1.4	6
387.74	1.5	6
387.75	**1.5**	**6**

Summary for Pond 3P: DETENTION POND

Inflow Area = 1.057 ac, 63.15% Impervious, Inflow Depth = 1.30" for 100-yr event
Inflow = 5.19 cfs @ 0.16 hrs, Volume= 0.114 af
Outflow = 3.55 cfs @ 0.31 hrs, Volume= 0.114 af, Atten= 32%, Lag= 9.2 min
Primary = 3.55 cfs @ 0.31 hrs, Volume= 0.114 af

Routing by Stor-Ind method, Time Span= 0.00-12.00 hrs, dt= 0.01 hrs
Peak Elev= 386.41' @ 0.31 hrs Surf.Area= 1,402 sf Storage= 2,110 cf

Plug-Flow detention time= 10.4 min calculated for 0.114 af (100% of inflow)
Center-of-Mass det. time= 10.4 min (22.8 - 12.4)

Volume	Invert	Avail.Storage	Storage Description
#1	384.50'	2,986 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

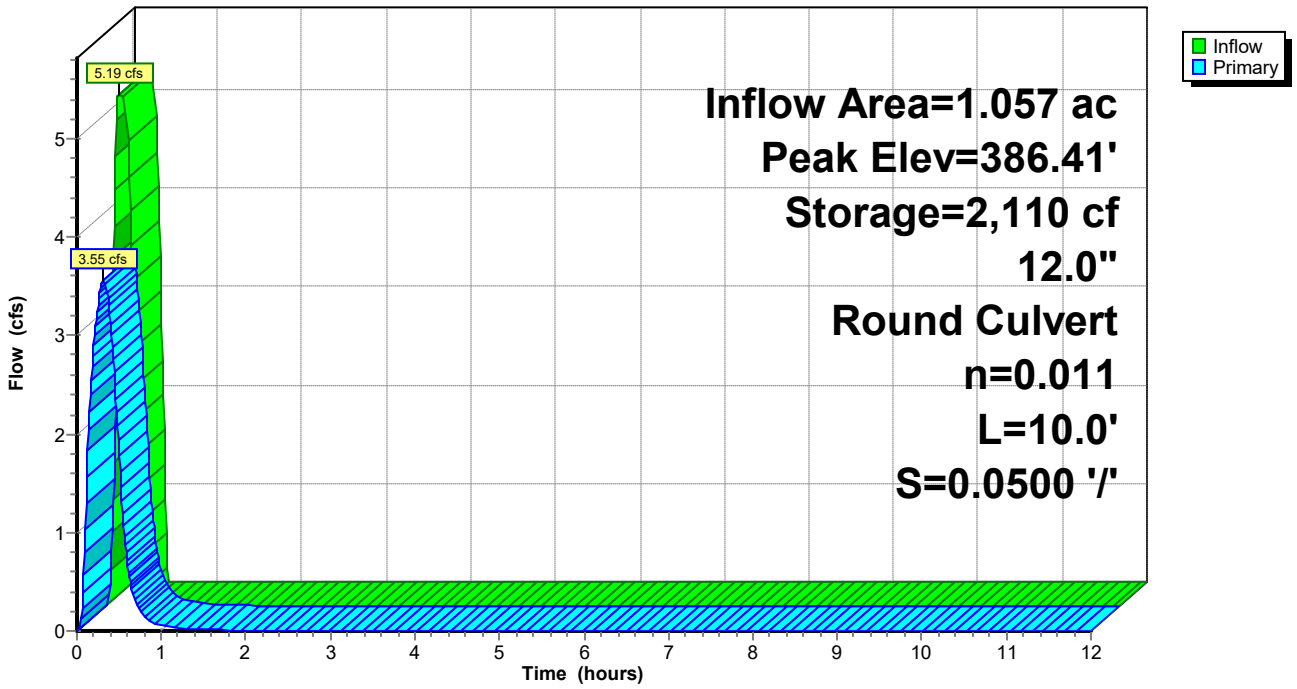
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.50	724	0	0
385.00	986	428	428
386.00	1,273	1,130	1,557
387.00	1,585	1,429	2,986

Device	Routing	Invert	Outlet Devices
#1	Primary	384.50'	**12.0" Round 12" RCP** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.50' / 384.00' S= 0.0500 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=3.55 cfs @ 0.31 hrs HW=386.41' (Free Discharge)
↑**1=12" RCP** (Inlet Controls 3.55 cfs @ 4.52 fps)

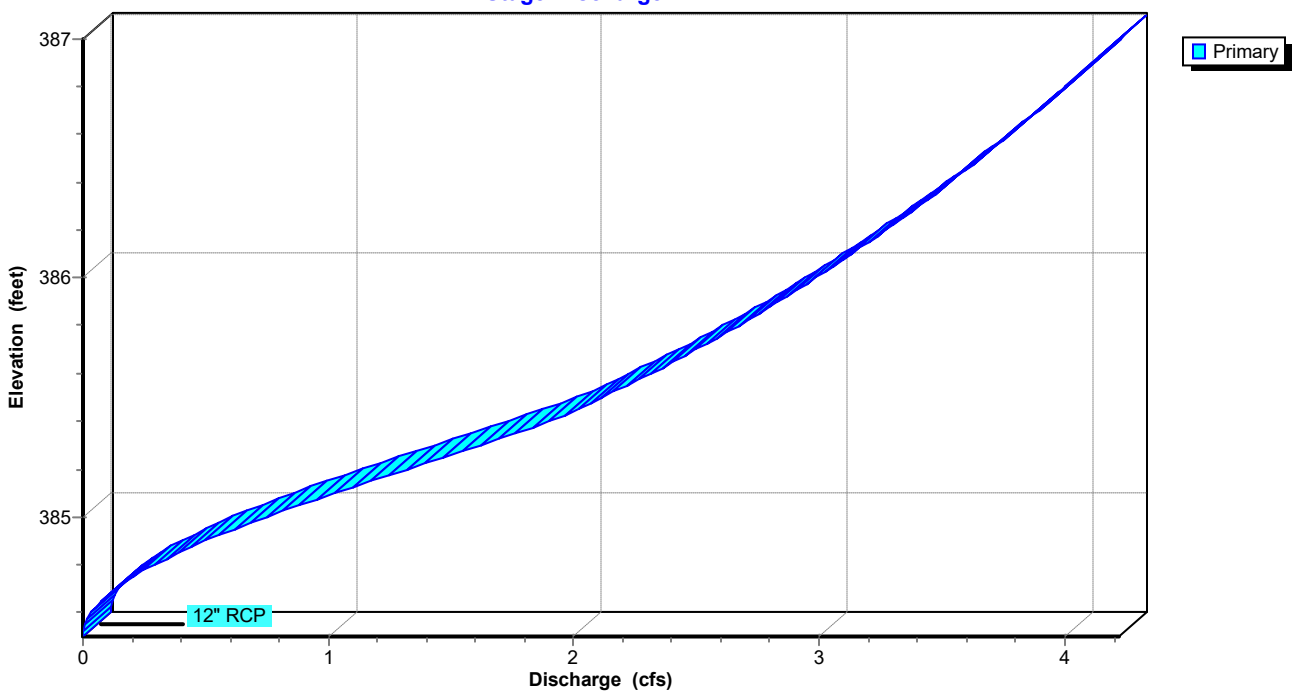
Pond 3P: DETENTION POND

Hydrograph

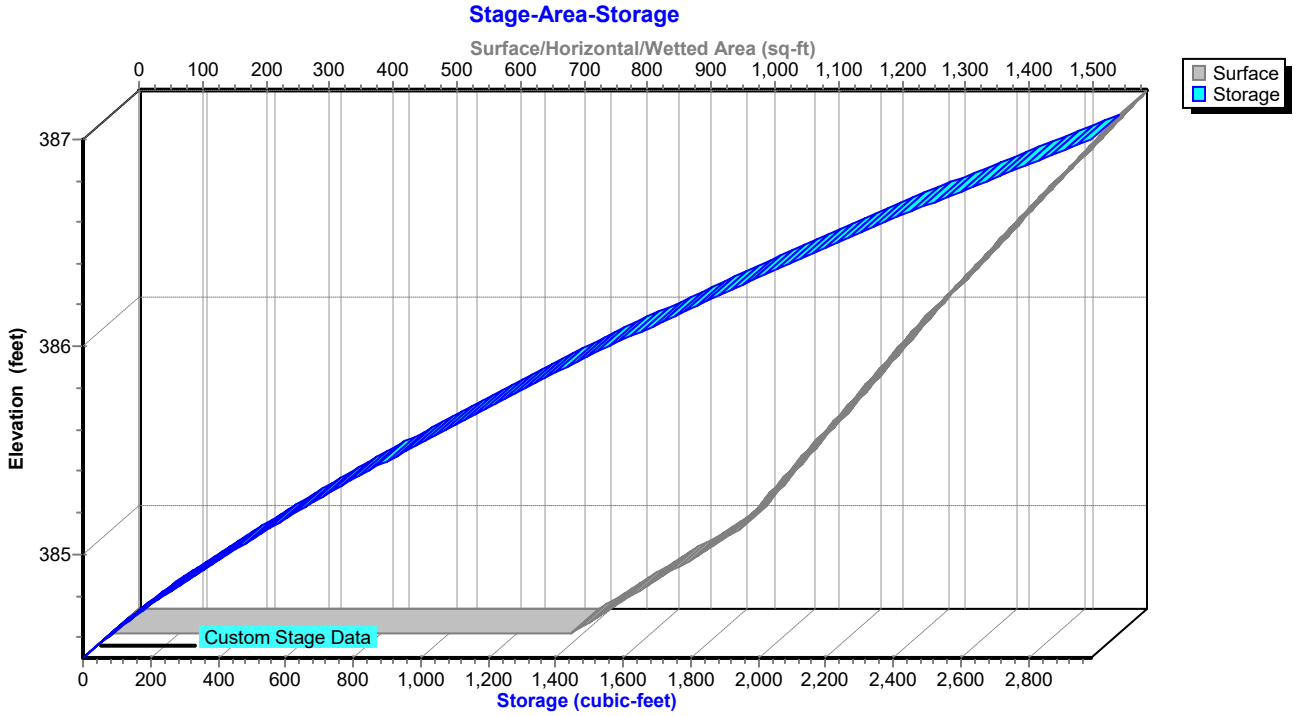


Pond 3P: DETENTION POND

Stage-Discharge



Pond 3P: DETENTION POND



Hydrograph for Pond 3P: DETENTION POND

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0**	**384.50**	**0.00**
0.50	**0.00**	**797**	**385.36**	**1.78**
1.00	0.00	97	384.63	0.06
1.50	0.00	46	384.56	0.01
2.00	0.00	29	384.54	0.01
2.50	0.00	21	384.53	0.00
3.00	0.00	17	384.52	0.00
3.50	0.00	13	384.52	0.00
4.00	0.00	11	384.51	0.00
4.50	0.00	9	384.51	0.00
5.00	0.00	7	384.51	0.00
5.50	0.00	6	384.51	0.00
6.00	0.00	5	384.51	0.00
6.50	0.00	4	384.50	0.00
7.00	0.00	3	384.50	0.00
7.50	0.00	2	384.50	0.00
8.00	0.00	2	384.50	0.00
8.50	0.00	2	384.50	0.00
9.00	0.00	1	384.50	0.00
9.50	0.00	1	384.50	0.00
10.00	0.00	1	384.50	0.00
10.50	0.00	1	384.50	0.00
11.00	0.00	1	384.50	0.00
11.50	0.00	0	384.50	0.00
12.00	0.00	0	384.50	0.00

Stage-Discharge for Pond 3P: DETENTION POND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
384.50	0.00	385.52	2.15	386.54	3.70
384.52	0.00	385.54	2.19	386.56	3.73
384.54	0.01	385.56	2.23	386.58	3.75
384.56	0.01	385.58	2.27	386.60	3.78
384.58	0.02	385.60	2.31	386.62	3.80
384.60	0.03	385.62	2.35	386.64	3.82
384.62	0.05	385.64	2.39	386.66	3.85
384.64	0.07	385.66	2.43	386.68	3.87
384.66	0.09	385.68	2.46	386.70	3.89
384.68	0.11	385.70	2.50	386.72	3.92
384.70	0.13	385.72	2.53	386.74	3.94
384.72	0.16	385.74	2.57	386.76	3.96
384.74	0.19	385.76	2.60	386.78	3.98
384.76	0.22	385.78	2.64	386.80	4.01
384.78	0.26	385.80	2.67	386.82	4.03
384.80	0.29	385.82	2.70	386.84	4.05
384.82	0.33	385.84	2.74	386.86	4.07
384.84	0.37	385.86	2.77	386.88	4.09
384.86	0.41	385.88	2.80	386.90	4.12
384.88	0.45	385.90	2.83	386.92	4.14
384.90	0.50	385.92	2.86	386.94	4.16
384.92	0.55	385.94	2.89	386.96	4.18
384.94	0.59	385.96	2.93	386.98	4.20
384.96	0.64	385.98	2.96	387.00	**4.22**
384.98	0.69	386.00	2.99		
385.00	0.75	386.02	3.02		
385.02	0.80	386.04	3.04		
385.04	0.85	386.06	3.07		
385.06	0.91	386.08	3.10		
385.08	0.97	386.10	3.13		
385.10	1.02	386.12	3.16		
385.12	1.08	386.14	3.19		
385.14	1.14	386.16	3.22		
385.16	1.20	386.18	3.24		
385.18	1.26	386.20	3.27		
385.20	1.32	386.22	3.30		
385.22	1.38	386.24	3.32		
385.24	1.44	386.26	3.35		
385.26	1.50	386.28	3.38		
385.28	1.56	386.30	3.40		
385.30	1.62	386.32	3.43		
385.32	1.68	386.34	3.46		
385.34	1.74	386.36	3.48		
385.36	1.79	386.38	3.51		
385.38	1.85	386.40	3.53		
385.40	1.90	386.42	3.56		
385.42	1.95	386.44	3.58		
385.44	2.00	386.46	3.61		
385.46	2.04	386.48	3.63		
385.48	2.08	386.50	3.66		
385.50	2.11	386.52	3.68		

Stage-Area-Storage for Pond 3P: DETENTION POND

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.50	724	0
384.55	750	37
384.60	776	75
384.65	803	114
384.70	829	155
384.75	855	197
384.80	881	241
384.85	907	285
384.90	934	332
384.95	960	379
385.00	986	428
385.05	1,000	477
385.10	1,015	528
385.15	1,029	579
385.20	1,043	630
385.25	1,058	683
385.30	1,072	736
385.35	1,086	790
385.40	1,101	845
385.45	1,115	900
385.50	1,130	956
385.55	1,144	1,013
385.60	1,158	1,071
385.65	1,173	1,129
385.70	1,187	1,188
385.75	1,201	1,248
385.80	1,216	1,308
385.85	1,230	1,369
385.90	1,244	1,431
385.95	1,259	1,494
386.00	1,273	1,557
386.05	1,289	1,621
386.10	1,304	1,686
386.15	1,320	1,751
386.20	1,335	1,818
386.25	1,351	1,885
386.30	1,367	1,953
386.35	1,382	2,022
386.40	1,398	2,091
386.45	1,413	2,161
386.50	1,429	2,233
386.55	1,445	2,304
386.60	1,460	2,377
386.65	1,476	2,450
386.70	1,491	2,525
386.75	1,507	2,600
386.80	1,523	2,675
386.85	1,538	2,752
386.90	1,554	2,829
386.95	1,569	2,907
387.00	**1,585**	**2,986**

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