# SPRINGHILL RETAIL

# DRAINAGE NARRATIVE

***Date:*** **05-21-2024**

***Located in:*** **Bryant, Arkansas**

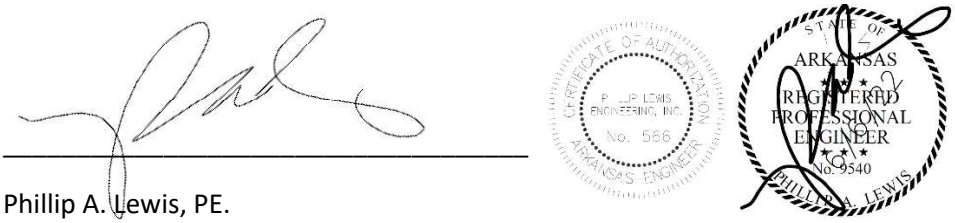
***Prepared for:***
**City of Bryant, Arkansas**

**Prepared by:**

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

# *CERTIFICATION*

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




DATE: 05-21-2024

Phillip A. Lewis, PE.

# PROJECT LOCATION MAP




Vicinity Map

SCALE 1" = 500'

# DESCRIPTION OF PROPERTY

The proposed project is for the consruction of a retail center located on Springhill Road, south of the existing Merchants & Farmers Bank. The proposed development if for a 8,000 square foot building.

The intent of this drainage analysis is to evaluate the current drainage conditions coming through the site and adequately address the drainage increase created by this development.

The existing ground coverage for the entire development drainage basin consisted of poor condition grass, less than 50% covered.

According to FEMA Flood Insurance Rate Map, Panel 05125C0360E, this property lies within Zone X, areas determined to be outside the 0.2% annual chance floodplain. A copy of the map can be found in the appendix.

# DRAINAGE OBSERVATIONS

On May 16th 2024, member of Phillip Lewis Engineering and The City of Bryant Stormwater Division met onsite to discuss current stormwater condition revolving around this site and the intended solutions going forward. The existing conditions are listed below:

- A 42” RCP culvert is located north of the proposed site, discharging stormwater from the Highway 5 storm sewer system. This discharge travels along the western edge of this project site.
- The existing Merchants & Farmers Bank has a 18” culvert discharging within this ditch flow line, located at the NW corner of this site.
- Roof and yard runoff from both wester adjacent property also discharge into this drainage ditch at various locations
- Downstream there is an existing “ponding area” throttle by (1) 24” culvert with an additional ARDOT 24” culvert to the east within the ARDOT right of way
- Existing ponding area located at the south corner of this site is approximately 8,000 to 9,000 cubic feet.
- Existing site conditions for this project is little to no grass cover, mainly clay ground cover with obvious signs of existing ground runoff.

# PROPOSED DRAINAGE SOLUTIONS

After speaking with the Bryant Stormwater team, the below listed solutions have been designed. The main intent is to create more “ponding area” along the south of this project site to increase the “regional detention” volume that is located within this area.

- A 38” x 60” elliptical RCP culvert is proposed along the west property line to relay stormwater through the site without an open ditch.
- The capture and release of this culvert will be through standard flared end sections.
- The south pond area will be excavated and incresed to 11,000 cubic feet.
- The 2,000 to 3,000 cubit feet of volume increase will account for the 1,500 cubic feet of volume increase caused by the development of this facility. This increase if shown in the attached hydrographs
- The existing 24” CMP culvert will remain as the “outlet control structure”, and the existing ARDOT 24” RCP culvert will aid as an overflow oulet.
- The existing curb cut at elevation 405.69’ will serve as an overflow spillway if water is to rise that high or if outlet clogging occures.
- The 18” culvert from M&F Bank will be tied into the new elliptical culvert with a 7’ junction box.
- The western property runoff will be captured and collected into the elliptical culvert through a 24” RCP culvert and tied in with a 7’ junction box.

The Springhill Retail pre-development hydrographs are shown in the attached, along with an overall approximate look at post-developed conditions. General assumptions were made for off-site stormwater conditions.

# PRE DEVELOPMENT HYDROGRAPHS

# POST DEVELOPMENT HYDROGRAPHS

## Summary for Subcatchment PRE: Springhill Retail Pre

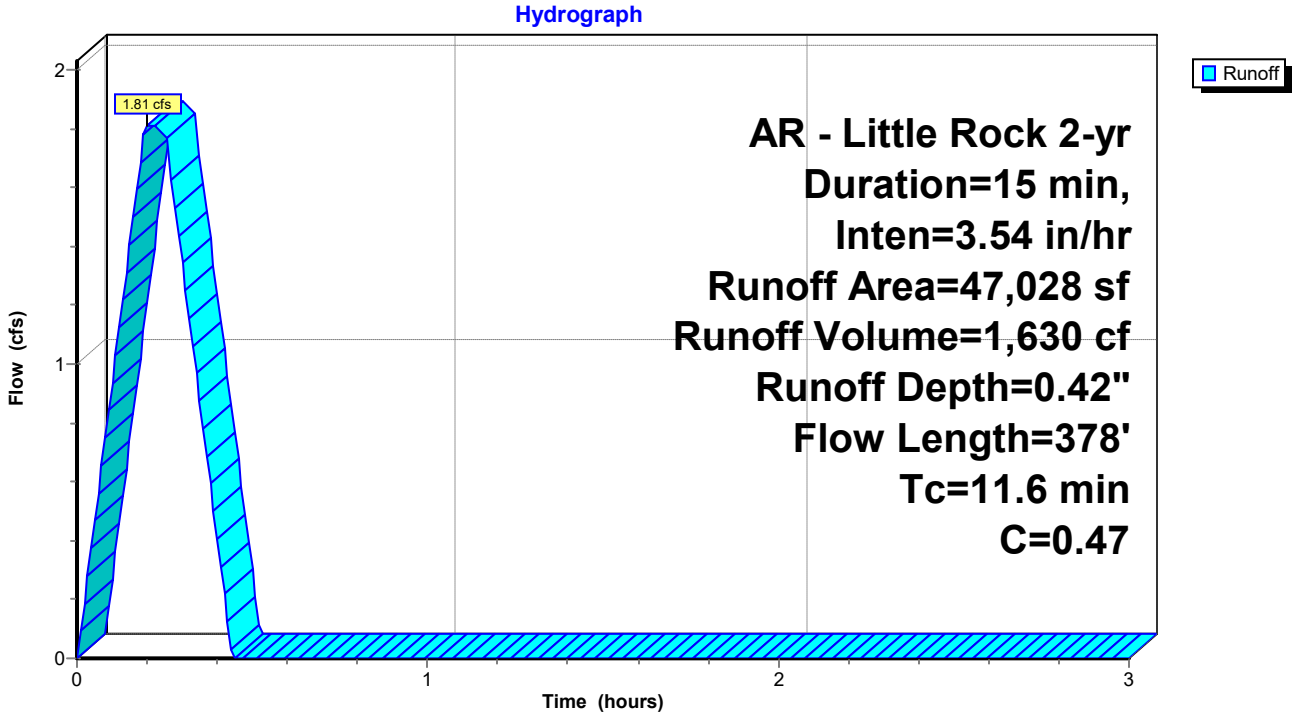
Runoff = 1.81 cfs @ 0.20 hrs, Volume= 1,630 cf, Depth= 0.42"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=15 min, Inten=3.54 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,511 | 0.86 | Existing Drive |
| 45,517 | 0.46 | Poor Condition Grass < 50% |
| 47,028 | 0.47 | Weighted Average |
| 47,028 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.6 | 185 | 0.0510 | 0.32 | | **Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 4.19" |
| 2.0 | 193 | 0.0110 | 1.57 | | **Shallow Concentrated Flow, Open Channel** Grassed Waterway Kv= 15.0 fps |
| 11.6 | 378 | Total | | | |

## Subcatchment PRE: Springhill Retail Pre



## Summary for Subcatchment PRE: Springhill Retail Pre

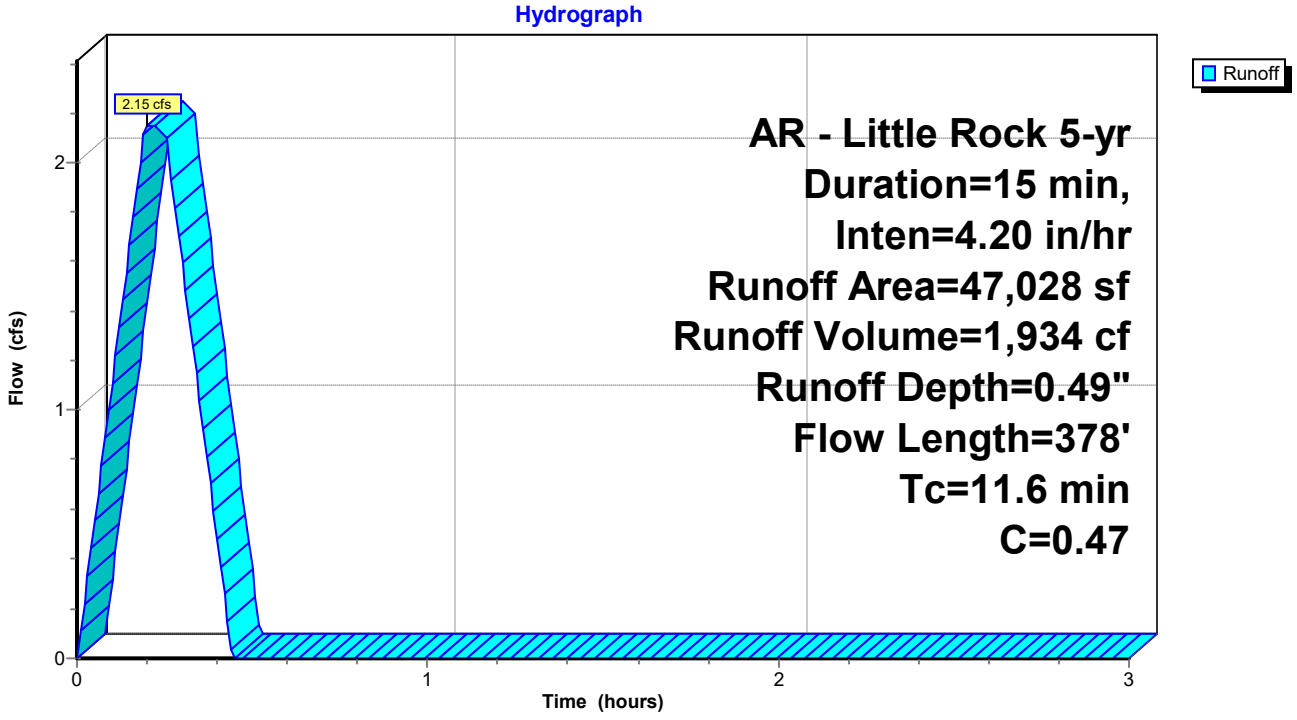
Runoff = 2.15 cfs @ 0.20 hrs, Volume= 1,934 cf, Depth= 0.49"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=15 min, Inten=4.20 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,511 | 0.86 | Existing Drive |
| 45,517 | 0.46 | Poor Condition Grass < 50% |
| 47,028 | 0.47 | Weighted Average |
| 47,028 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.6 | 185 | 0.0510 | 0.32 | | **Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 4.19" |
| 2.0 | 193 | 0.0110 | 1.57 | | **Shallow Concentrated Flow, Open Channel** Grassed Waterway Kv= 15.0 fps |
| 11.6 | 378 | Total | | | |

## Subcatchment PRE: Springhill Retail Pre



## Summary for Subcatchment PRE: Springhill Retail Pre

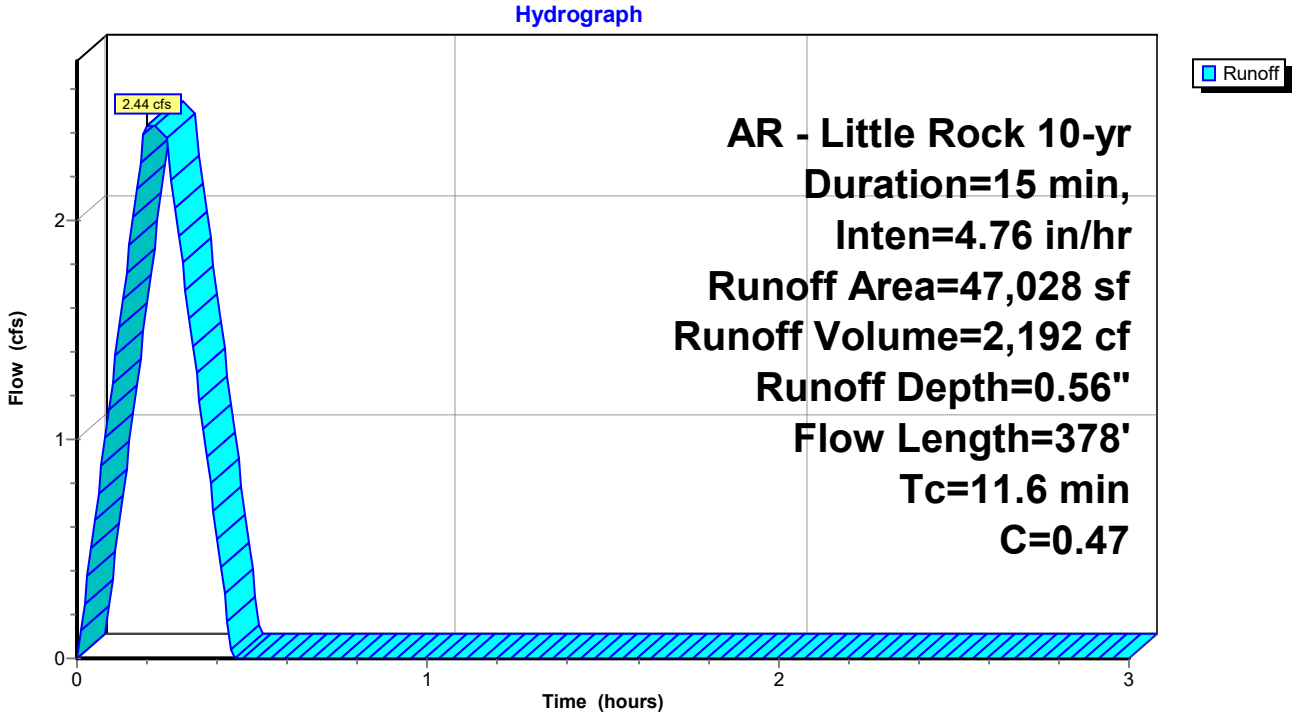
Runoff = 2.44 cfs @ 0.20 hrs, Volume= 2,192 cf, Depth= 0.56"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=15 min, Inten=4.76 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,511 | 0.86 | Existing Drive |
| 45,517 | 0.46 | Poor Condition Grass < 50% |
| 47,028 | 0.47 | Weighted Average |
| 47,028 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.6 | 185 | 0.0510 | 0.32 | | **Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 4.19" |
| 2.0 | 193 | 0.0110 | 1.57 | | **Shallow Concentrated Flow, Open Channel** Grassed Waterway Kv= 15.0 fps |
| 11.6 | 378 | Total | | | |

## Subcatchment PRE: Springhill Retail Pre



## Summary for Subcatchment PRE: Springhill Retail Pre

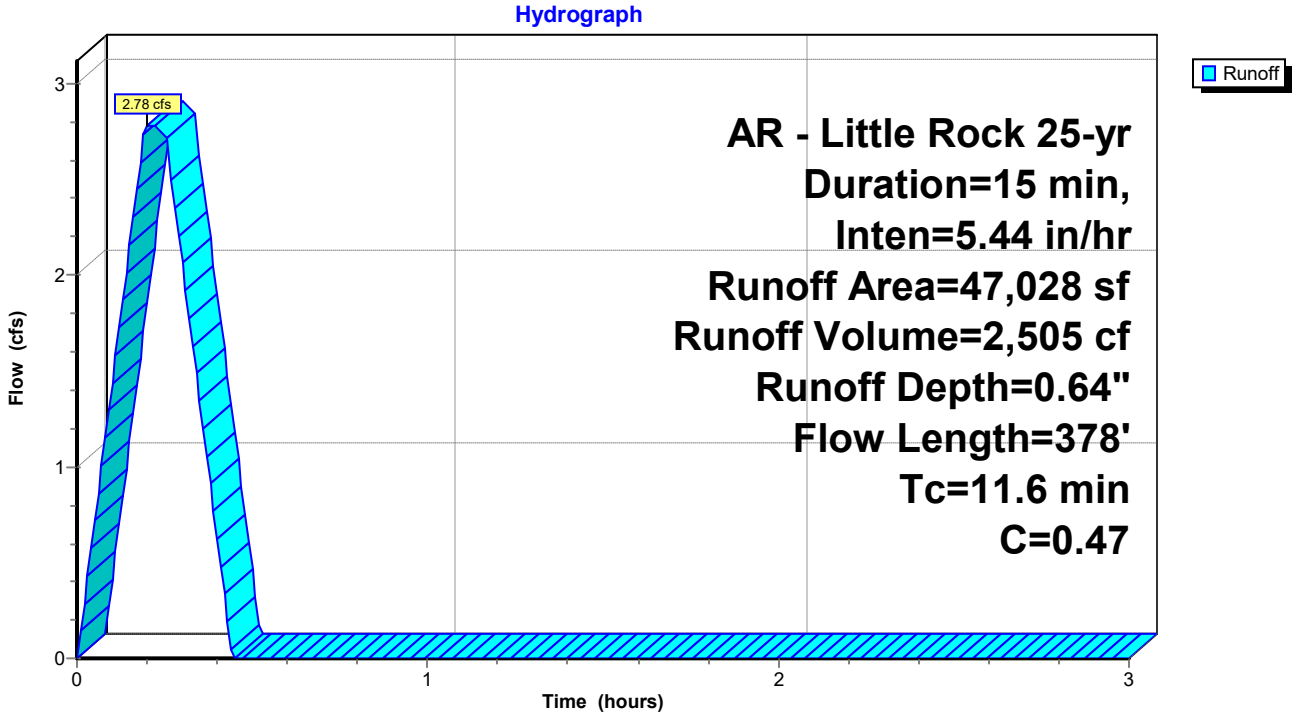
Runoff = 2.78 cfs @ 0.20 hrs, Volume= 2,505 cf, Depth= 0.64"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=15 min, Inten=5.44 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,511 | 0.86 | Existing Drive |
| 45,517 | 0.46 | Poor Condition Grass < 50% |
| 47,028 | 0.47 | Weighted Average |
| 47,028 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.6 | 185 | 0.0510 | 0.32 | | **Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 4.19" |
| 2.0 | 193 | 0.0110 | 1.57 | | **Shallow Concentrated Flow, Open Channel** Grassed Waterway Kv= 15.0 fps |
| 11.6 | 378 | Total | | | |

## Subcatchment PRE: Springhill Retail Pre



## Summary for Subcatchment PRE: Springhill Retail Pre

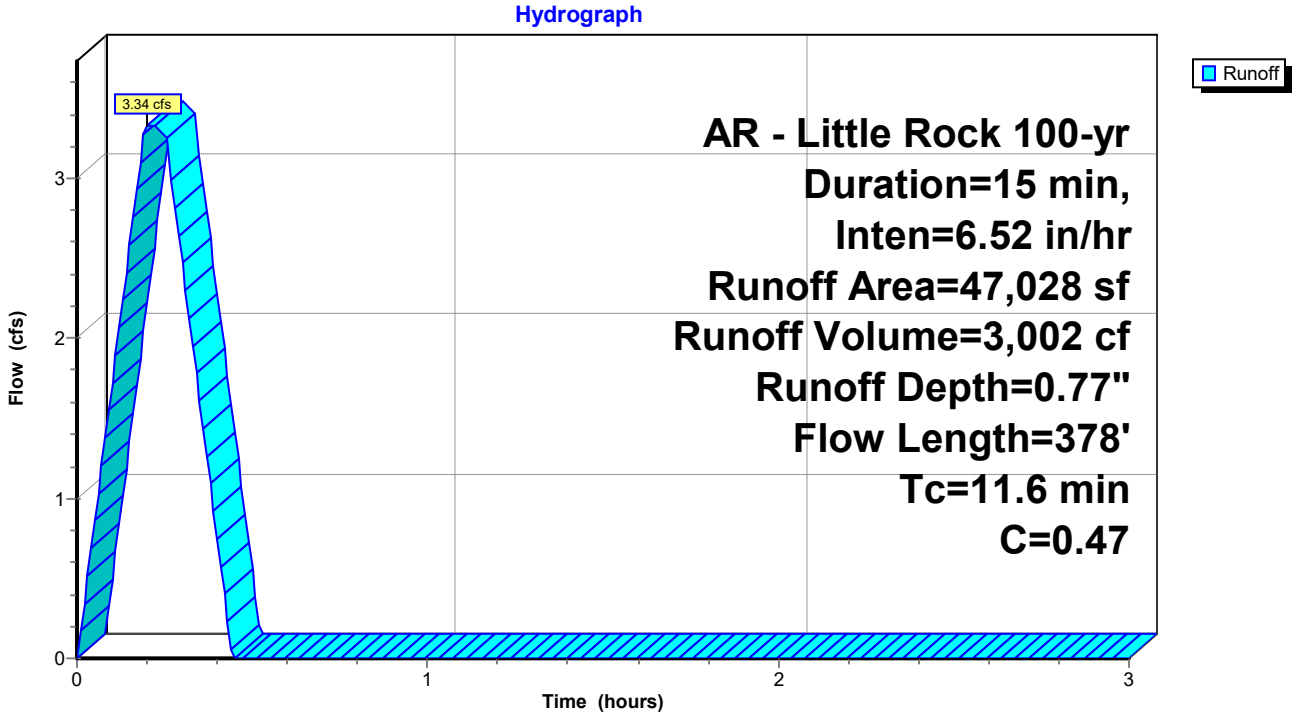
Runoff = 3.34 cfs @ 0.20 hrs, Volume= 3,002 cf, Depth= 0.77"

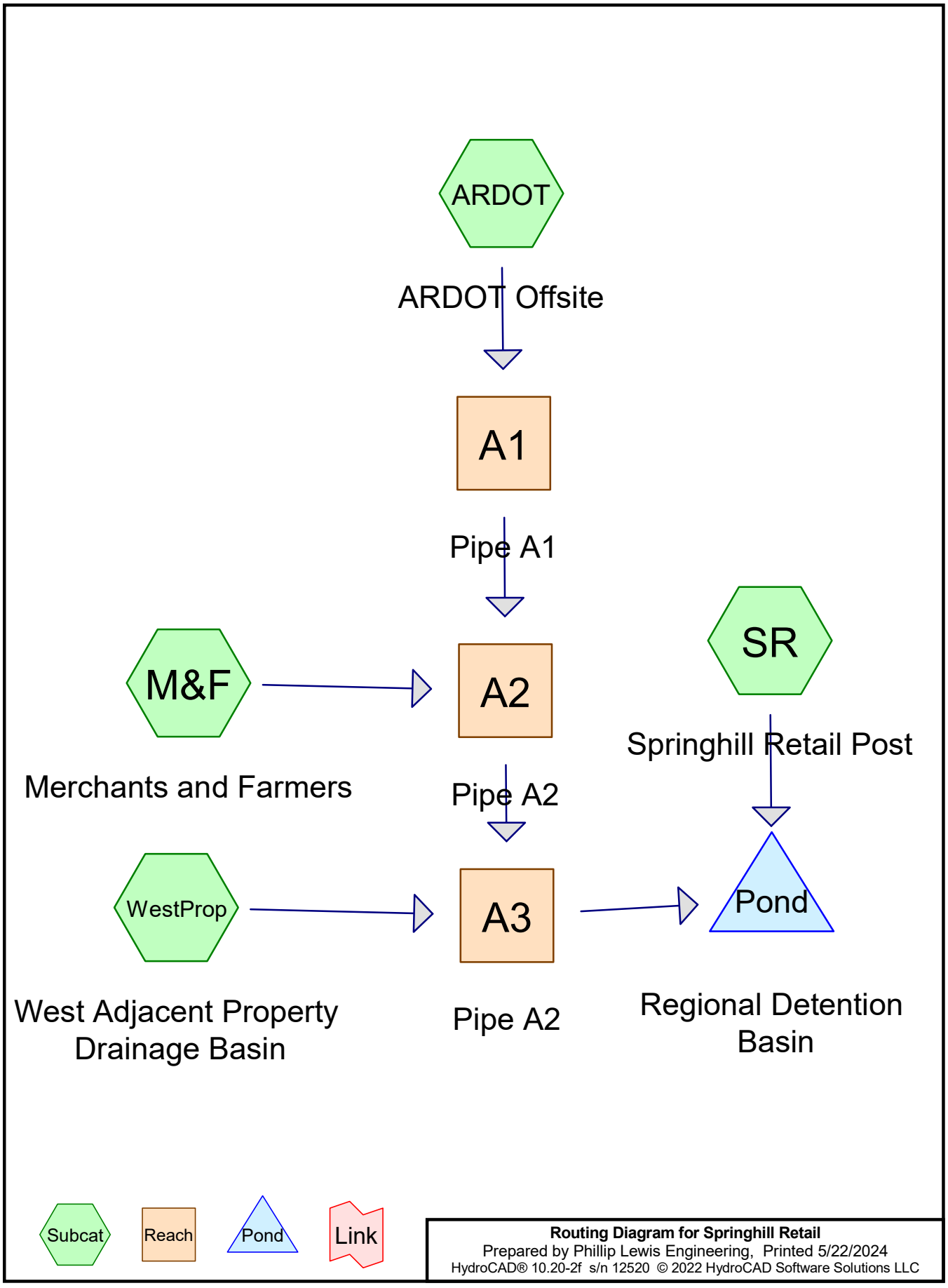
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=15 min, Inten=6.52 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,511 | 0.86 | Existing Drive |
| 45,517 | 0.46 | Poor Condition Grass < 50% |
| 47,028 | 0.47 | Weighted Average |
| 47,028 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.6 | 185 | 0.0510 | 0.32 | | **Sheet Flow, Overland Flow** Grass: Short n= 0.150 P2= 4.19" |
| 2.0 | 193 | 0.0110 | 1.57 | | **Shallow Concentrated Flow, Open Channel** Grassed Waterway Kv= 15.0 fps |
| 11.6 | 378 | Total | | | |

## Subcatchment PRE: Springhill Retail Pre






**Routing Diagram for Springhill Retail**
Prepared by Phillip Lewis Engineering, Printed 5/22/2024
HydroCAD® 10.20-2f s/n 12520 © 2022 HydroCAD Software Solutions LLC

## Summary for Subcatchment ARDOT: ARDOT Offsite

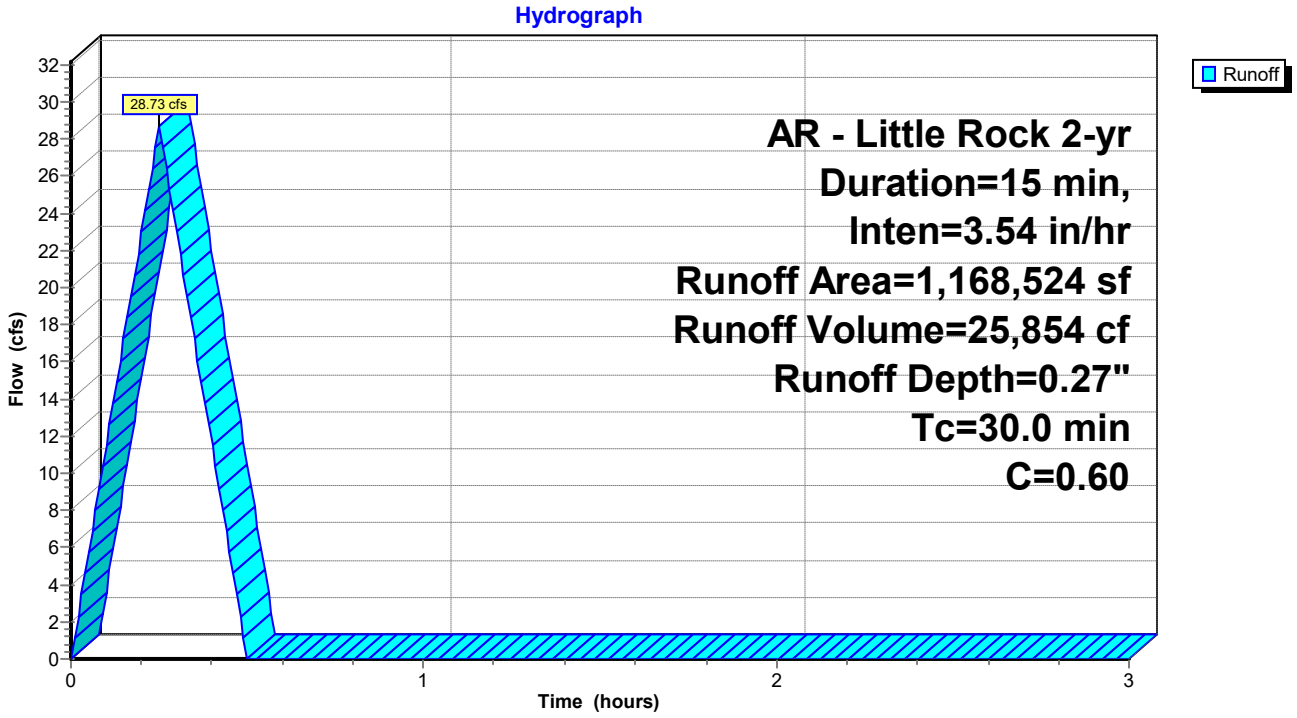
Runoff = 28.73 cfs @ 0.25 hrs, Volume= 25,854 cf, Depth= 0.27"
Routed to Reach A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=15 min, Inten=3.54 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,168,524 | 0.60 | |
| 1,168,524 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.0 | | | | | **Direct Entry,** |

## Subcatchment ARDOT: ARDOT Offsite



## Summary for Subcatchment M&F: Merchants and Farmers

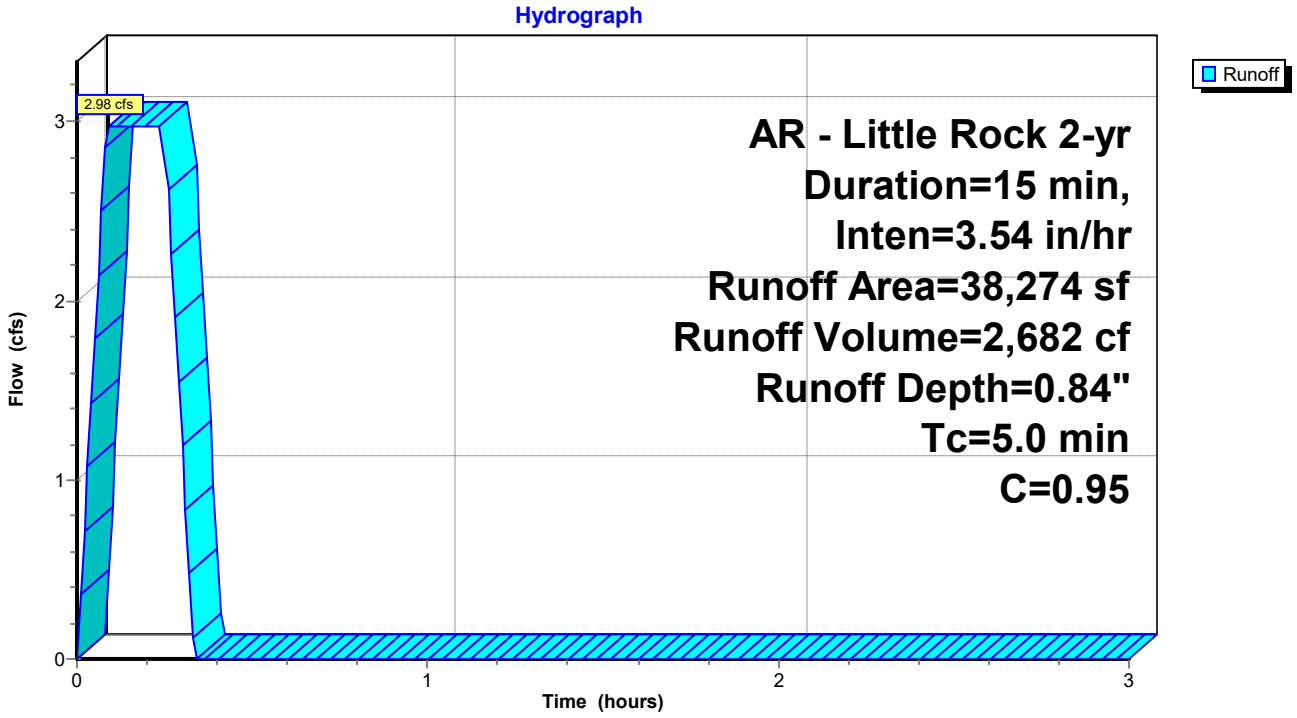
Runoff = 2.98 cfs @ 0.09 hrs, Volume= 2,682 cf, Depth= 0.84"
Routed to Reach A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=15 min, Inten=3.54 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 38,274 | 0.95 | Developed Site |
| 38,274 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | | | | | **Direct Entry,** |

## Subcatchment M&F: Merchants and Farmers



## Summary for Subcatchment SR: Springhill Retail Post

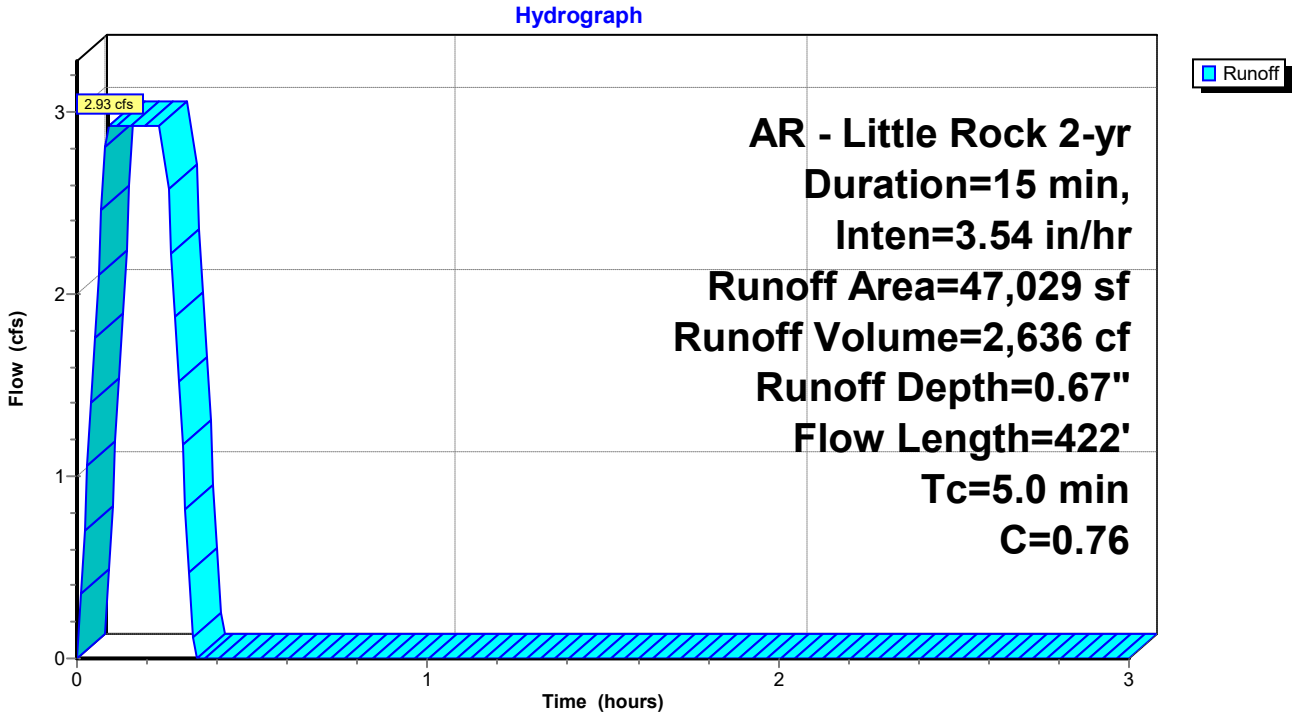
Runoff = 2.93 cfs @ 0.09 hrs, Volume= 2,636 cf, Depth= 0.67"
Routed to Pond Pond : Regional Detention Basin

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=15 min, Inten=3.54 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,511 | 0.86 | Existing Drive |
| 33,632 | 0.92 | Drives, Roof, Sidewalks |
| 11,886 | 0.30 | Landscaped Areas |
| 47,029 | 0.76 | Weighted Average |
| 47,029 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 82 | 0.0290 | 1.76 | | **Sheet Flow, Asphalt Sheet Flow** Smooth surfaces n= 0.011 P2= 4.19" |
| 0.8 | 87 | 0.0080 | 1.82 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 0.1 | 19 | 0.0210 | 2.94 | | **Shallow Concentrated Flow, Concentrated Pavement Flow** Paved Kv= 20.3 fps |
| 1.0 | 197 | 0.0250 | 3.21 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 0.3 | 37 | 0.0130 | 2.31 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 2.0 | | | | | **Direct Entry, Minimum adjustment** |
| 5.0 | 422 | Total | | | |

## Subcatchment SR: Springhill Retail Post



## Summary for Subcatchment WestProp: West Adjacent Property Drainage Basin

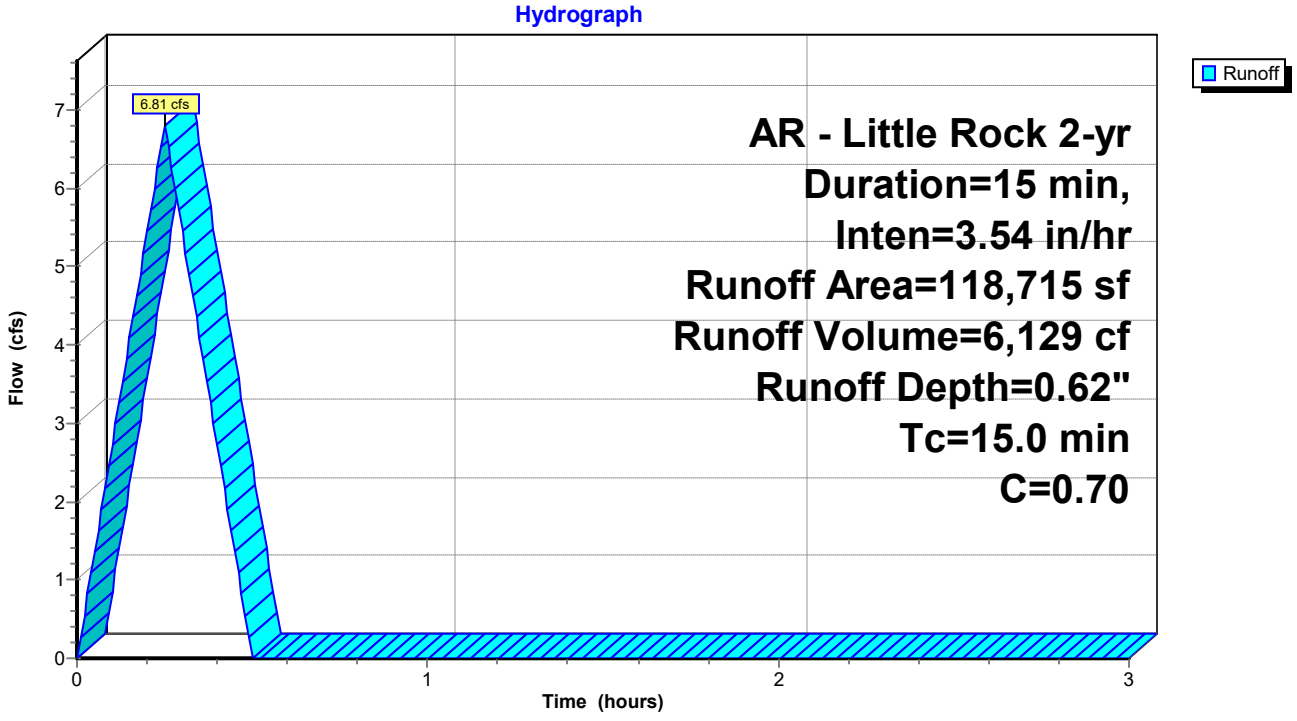
Runoff = 6.81 cfs @ 0.25 hrs, Volume= 6,129 cf, Depth= 0.62"
Routed to Reach A3 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 2-yr Duration=15 min, Inten=3.54 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 65,063 | 0.50 | Pervious Areas |
| 53,652 | 0.95 | Rooftop/Paving |
| 118,715 | 0.70 | Weighted Average |
| 65,063 | | 54.81% Pervious Area |
| 53,652 | | 45.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment WestProp: West Adjacent Property Drainage Basin



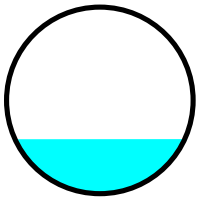
## Summary for Reach A1: Pipe A1

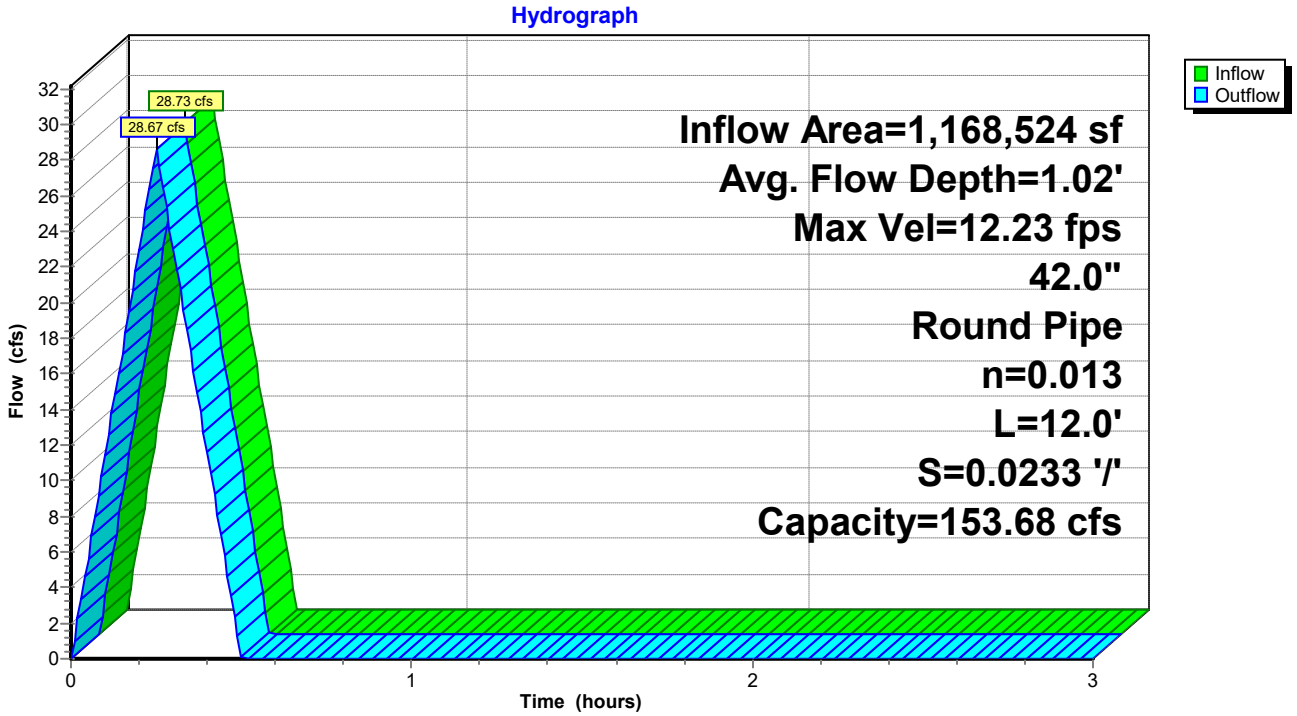
Inflow Area = 1,168,524 sf, 0.00% Impervious, Inflow Depth = 0.27" for 2-yr event
Inflow = 28.73 cfs @ 0.25 hrs, Volume= 25,854 cf
Outflow = 28.67 cfs @ 0.25 hrs, Volume= 25,855 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 12.23 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 9.46 fps, Avg. Travel Time= 0.0 min

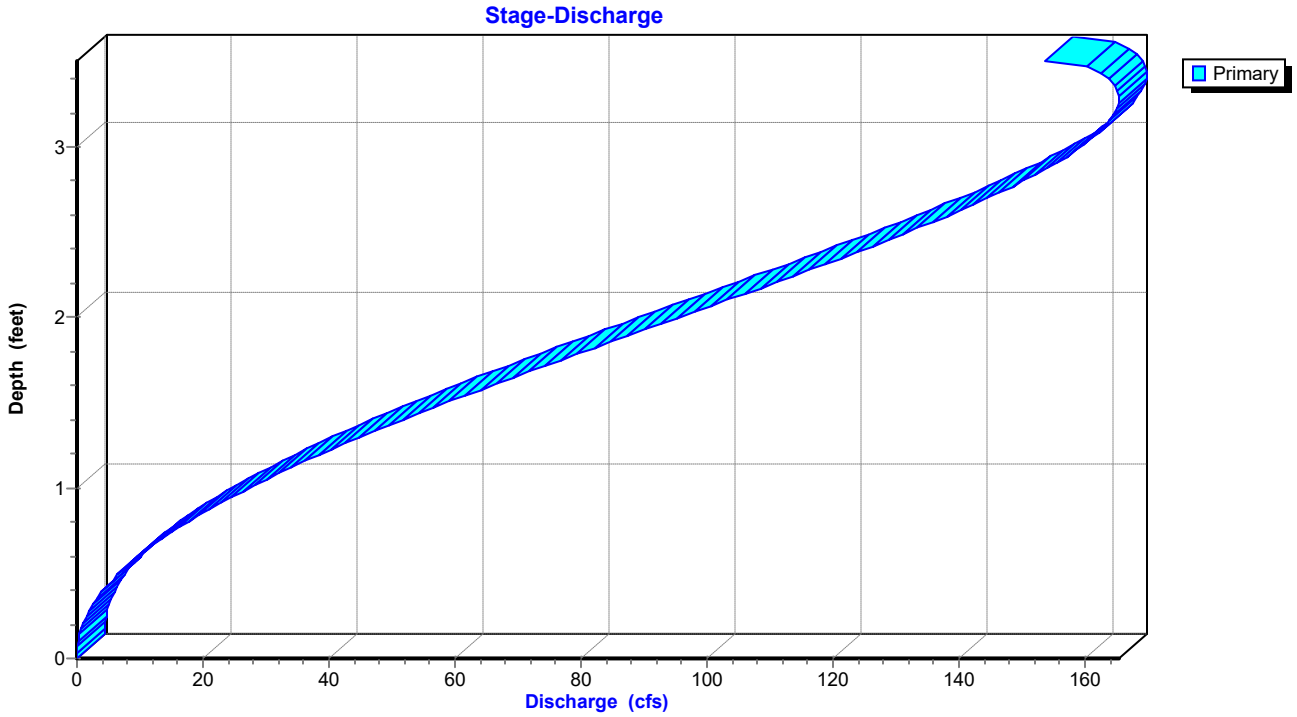
Peak Storage= 28 cf @ 0.25 hrs
Average Depth at Peak Storage= 1.02' , Surface Width= 3.18'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 153.68 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 12.0' Slope= 0.0233 '/'
Inlet Invert= 413.00', Outlet Invert= 412.72'





## Reach A1: Pipe A1



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

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 413.00 | 0.0 | 0 |
| 413.05 | 0.0 | 0 |
| 413.10 | 0.1 | 1 |
| 413.15 | 0.1 | 2 |
| 413.20 | 0.2 | 3 |
| 413.25 | 0.3 | 4 |
| 413.30 | 0.4 | 5 |
| 413.35 | 0.5 | 6 |
| 413.40 | 0.6 | 7 |
| 413.45 | 0.7 | 9 |
| 413.50 | 0.8 | 10 |
| 413.55 | 1.0 | 12 |
| 413.60 | 1.1 | 13 |
| 413.65 | 1.2 | 15 |
| 413.70 | 1.4 | 16 |
| 413.75 | 1.5 | 18 |
| 413.80 | 1.7 | 20 |
| 413.85 | 1.8 | 22 |
| 413.90 | 2.0 | 23 |
| 413.95 | 2.1 | 25 |
| 414.00 | 2.3 | 27 |
| 414.05 | 2.4 | 29 |
| 414.10 | 2.6 | 31 |
| 414.15 | 2.8 | 33 |
| 414.20 | 2.9 | 35 |
| 414.25 | 3.1 | 37 |
| 414.30 | 3.3 | 39 |
| 414.35 | 3.4 | 41 |
| 414.40 | 3.6 | 43 |
| 414.45 | 3.8 | 45 |
| 414.50 | 3.9 | 47 |
| 414.55 | 4.1 | 49 |
| 414.60 | 4.3 | 51 |
| 414.65 | 4.5 | 54 |
| 414.70 | 4.6 | 56 |
| 414.75 | 4.8 | 58 |
| 414.80 | 5.0 | 60 |
| 414.85 | 5.2 | 62 |
| 414.90 | 5.3 | 64 |
| 414.95 | 5.5 | 66 |
| 415.00 | 5.7 | 68 |
| 415.05 | 5.9 | 70 |
| 415.10 | 6.0 | 72 |
| 415.15 | 6.2 | 74 |
| 415.20 | 6.4 | 76 |
| 415.25 | 6.5 | 78 |
| 415.30 | 6.7 | 80 |
| 415.35 | 6.9 | 82 |
| 415.40 | 7.0 | 84 |
| 415.45 | 7.2 | 86 |
| 415.50 | 7.4 | 88 |
| 415.55 | 7.5 | 90 |
| 415.60 | 7.7 | 92 |
| 415.65 | 7.8 | 94 |
| 415.70 | 8.0 | 96 |
| 415.75 | 8.1 | 97 |
| 415.80 | 8.3 | 99 |
| 415.85 | 8.4 | 101 |
| 415.90 | 8.5 | 102 |
| 415.95 | 8.7 | 104 |
| 416.00 | 8.8 | 105 |
| 416.05 | 8.9 | 107 |
| 416.10 | 9.0 | 108 |
| 416.15 | 9.1 | 109 |
| 416.20 | 9.2 | 111 |
| 416.25 | 9.3 | 112 |
| 416.30 | 9.4 | 113 |
| 416.35 | 9.5 | 114 |
| 416.40 | 9.5 | 115 |
| 416.45 | 9.6 | 115 |
| 416.50 | **9.6** | **115** |

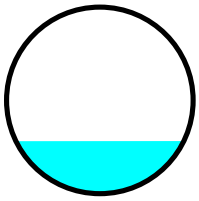
## Summary for Reach A2: Pipe A2

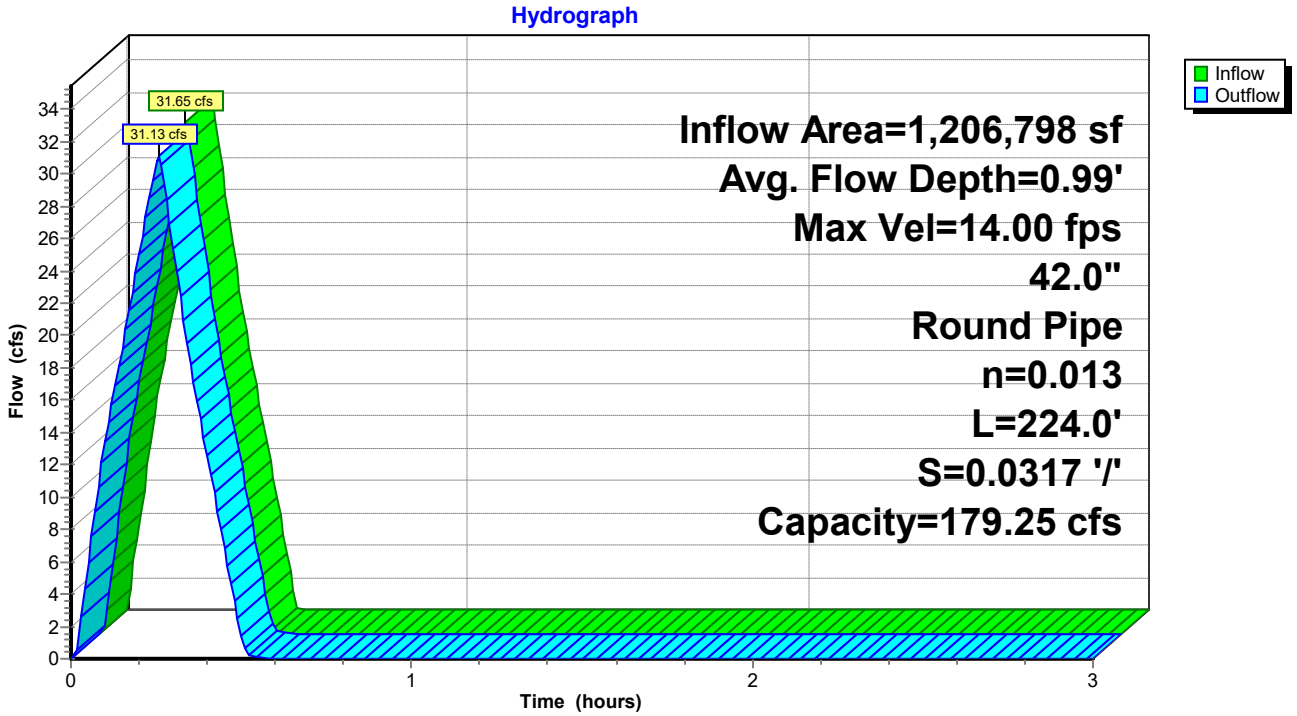
Inflow Area = 1,206,798 sf, 3.17% Impervious, Inflow Depth = 0.28" for 2-yr event
Inflow = 31.65 cfs @ 0.25 hrs, Volume= 28,536 cf
Outflow = 31.13 cfs @ 0.26 hrs, Volume= 28,536 cf, Atten= 2%, Lag= 0.5 min
Routed to Reach A3 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 14.00 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 7.95 fps, Avg. Travel Time= 0.5 min

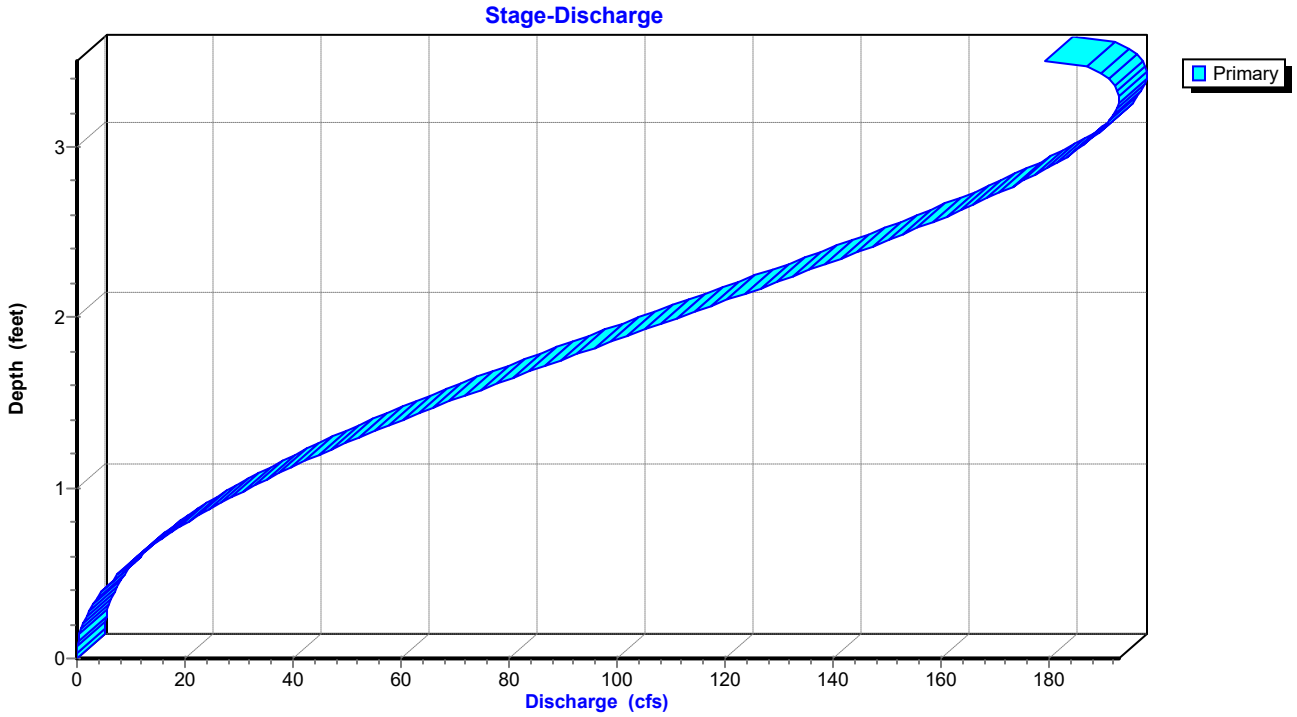
Peak Storage= 501 cf @ 0.25 hrs
Average Depth at Peak Storage= 0.99' , Surface Width= 3.15'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 179.25 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 224.0' Slope= 0.0317 '/'
Inlet Invert= 412.52', Outlet Invert= 405.41'





## Reach A2: Pipe A2



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

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 412.52 | 0.0 | 0 |
| 412.57 | 0.0 | 6 |
| 412.62 | 0.1 | 18 |
| 412.67 | 0.1 | 32 |
| 412.72 | 0.2 | 49 |
| 412.77 | 0.3 | 68 |
| 412.82 | 0.4 | 90 |
| 412.87 | 0.5 | 112 |
| 412.92 | 0.6 | 136 |
| 412.97 | 0.7 | 162 |
| 413.02 | 0.8 | 189 |
| 413.07 | 1.0 | 217 |
| 413.12 | 1.1 | 246 |
| 413.17 | 1.2 | 276 |
| 413.22 | 1.4 | 307 |
| 413.27 | 1.5 | 339 |
| 413.32 | 1.7 | 371 |
| 413.37 | 1.8 | 404 |
| 413.42 | 2.0 | 438 |
| 413.47 | 2.1 | 473 |
| 413.52 | 2.3 | 508 |
| 413.57 | 2.4 | 544 |
| 413.62 | 2.6 | 580 |
| 413.67 | 2.8 | 617 |
| 413.72 | 2.9 | 654 |
| 413.77 | 3.1 | 691 |
| 413.82 | 3.3 | 729 |
| 413.87 | 3.4 | 767 |
| 413.92 | 3.6 | 805 |
| 413.97 | 3.8 | 844 |
| 414.02 | 3.9 | 882 |
| 414.07 | 4.1 | 921 |
| 414.12 | 4.3 | 960 |
| 414.17 | 4.5 | 999 |
| 414.22 | 4.6 | 1,038 |
| 414.27 | 4.8 | 1,078 |
| 414.32 | 5.0 | 1,117 |
| 414.37 | 5.2 | 1,156 |
| 414.42 | 5.3 | 1,195 |
| 414.47 | 5.5 | 1,234 |
| 414.52 | 5.7 | 1,273 |
| 414.57 | 5.9 | 1,312 |
| 414.62 | 6.0 | 1,350 |
| 414.67 | 6.2 | 1,388 |
| 414.72 | 6.4 | 1,426 |
| 414.77 | 6.5 | 1,464 |
| 414.82 | 6.7 | 1,502 |
| 414.87 | 6.9 | 1,539 |
| 414.92 | 7.0 | 1,575 |
| 414.97 | 7.2 | 1,611 |
| 415.02 | 7.4 | 1,647 |
| 415.07 | 7.5 | 1,682 |
| 415.12 | 7.7 | 1,717 |
| 415.17 | 7.8 | 1,751 |
| 415.22 | 8.0 | 1,784 |
| 415.27 | 8.1 | 1,816 |
| 415.32 | 8.3 | 1,848 |
| 415.37 | 8.4 | 1,879 |
| 415.42 | 8.5 | 1,909 |
| 415.47 | 8.7 | 1,938 |
| 415.52 | 8.8 | 1,966 |
| 415.57 | 8.9 | 1,993 |
| 415.62 | 9.0 | 2,019 |
| 415.67 | 9.1 | 2,043 |
| 415.72 | 9.2 | 2,066 |
| 415.77 | 9.3 | 2,087 |
| 415.82 | 9.4 | 2,106 |
| 415.87 | 9.5 | 2,123 |
| 415.92 | 9.5 | 2,138 |
| 415.97 | 9.6 | 2,149 |
| 416.02 | **9.6** | **2,155** |

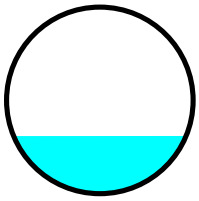
## Summary for Reach A3: Pipe A2

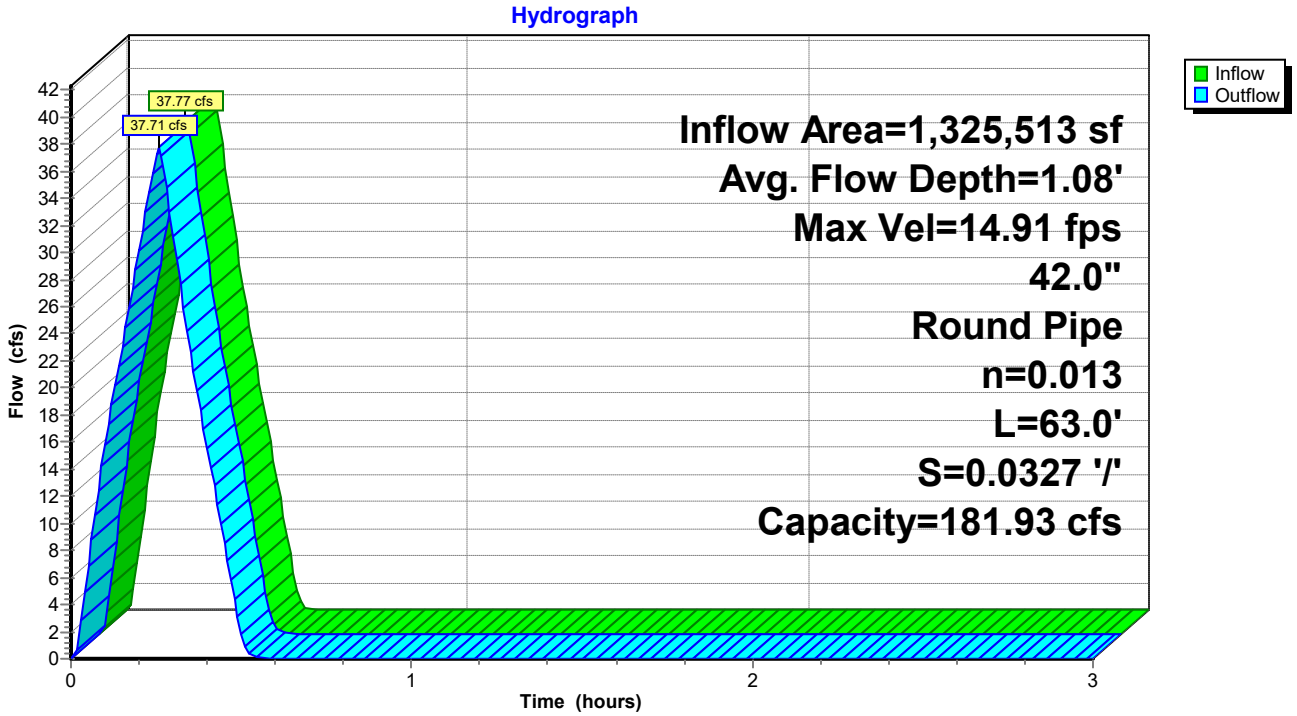
Inflow Area = 1,325,513 sf, 6.94% Impervious, Inflow Depth = 0.31" for 2-yr event
Inflow = 37.77 cfs @ 0.26 hrs, Volume= 34,665 cf
Outflow = 37.71 cfs @ 0.26 hrs, Volume= 34,665 cf, Atten= 0%, Lag= 0.1 min
Routed to Pond Pond : Regional Detention Basin

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 14.91 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 8.41 fps, Avg. Travel Time= 0.1 min

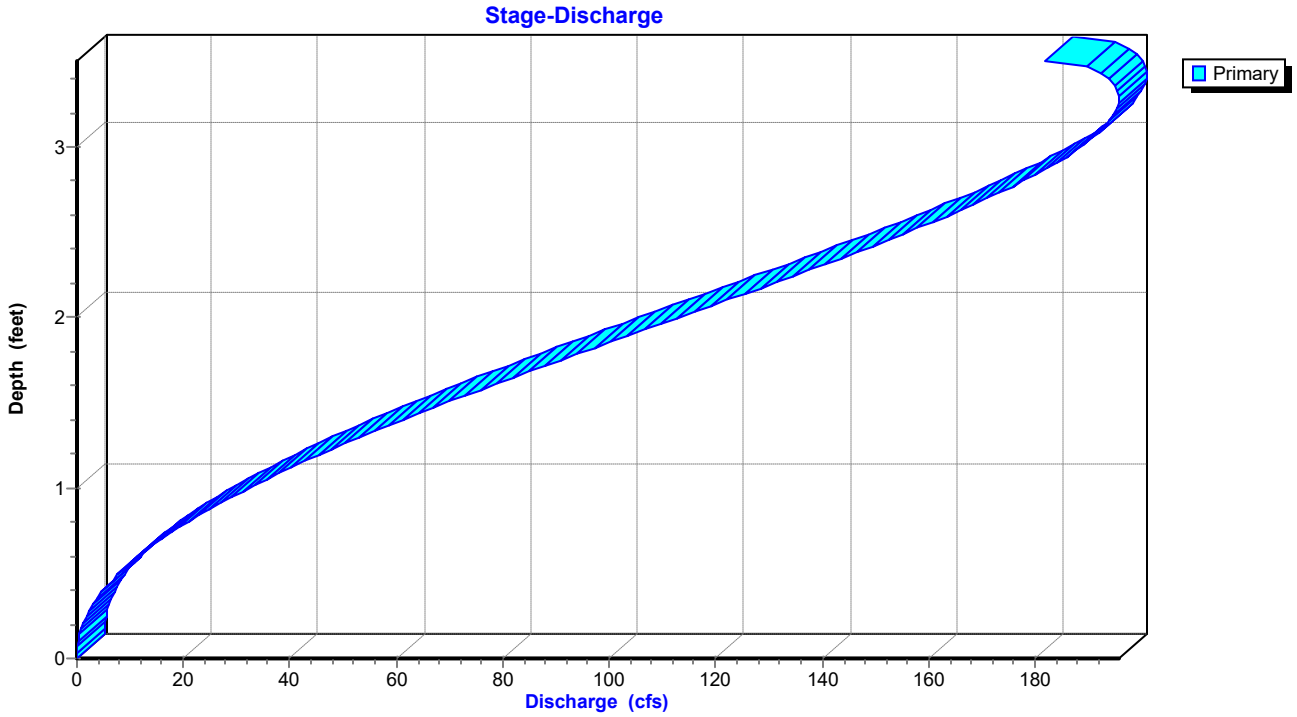
Peak Storage= 160 cf @ 0.26 hrs
Average Depth at Peak Storage= 1.08' , Surface Width= 3.24'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 181.93 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 63.0' Slope= 0.0327 '/'
Inlet Invert= 405.31', Outlet Invert= 403.25'





## Reach A3: Pipe A2



## Stage-Area-Storage for Reach A3: Pipe A2

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 405.31 | 0.0 | 0 |
| 405.36 | 0.0 | 2 |
| 405.41 | 0.1 | 5 |
| 405.46 | 0.1 | 9 |
| 405.51 | 0.2 | 14 |
| 405.56 | 0.3 | 19 |
| 405.61 | 0.4 | 25 |
| 405.66 | 0.5 | 32 |
| 405.71 | 0.6 | 38 |
| 405.76 | 0.7 | 46 |
| 405.81 | 0.8 | 53 |
| 405.86 | 1.0 | 61 |
| 405.91 | 1.1 | 69 |
| 405.96 | 1.2 | 78 |
| 406.01 | 1.4 | 86 |
| 406.06 | 1.5 | 95 |
| 406.11 | 1.7 | 104 |
| 406.16 | 1.8 | 114 |
| 406.21 | 2.0 | 123 |
| 406.26 | 2.1 | 133 |
| 406.31 | 2.3 | 143 |
| 406.36 | 2.4 | 153 |
| 406.41 | 2.6 | 163 |
| 406.46 | 2.8 | 173 |
| 406.51 | 2.9 | 184 |
| 406.56 | 3.1 | 194 |
| 406.61 | 3.3 | 205 |
| 406.66 | 3.4 | 216 |
| 406.71 | 3.6 | 226 |
| 406.76 | 3.8 | 237 |
| 406.81 | 3.9 | 248 |
| 406.86 | 4.1 | 259 |
| 406.91 | 4.3 | 270 |
| 406.96 | 4.5 | 281 |
| 407.01 | 4.6 | 292 |
| 407.06 | 4.8 | 303 |
| 407.11 | 5.0 | 314 |
| 407.16 | 5.2 | 325 |
| 407.21 | 5.3 | 336 |
| 407.26 | 5.5 | 347 |
| 407.31 | 5.7 | 358 |
| 407.36 | 5.9 | 369 |
| 407.41 | 6.0 | 380 |
| 407.46 | 6.2 | 390 |
| 407.51 | 6.4 | 401 |
| 407.56 | 6.5 | 412 |
| 407.61 | 6.7 | 422 |
| 407.66 | 6.9 | 433 |
| 407.71 | 7.0 | 443 |
| 407.76 | 7.2 | 453 |
| 407.81 | 7.4 | 463 |
| 407.86 | 7.5 | 473 |
| 407.91 | 7.7 | 483 |
| 407.96 | 7.8 | 492 |
| 408.01 | 8.0 | 502 |
| 408.06 | 8.1 | 511 |
| 408.11 | 8.3 | 520 |
| 408.16 | 8.4 | 529 |
| 408.21 | 8.5 | 537 |
| 408.26 | 8.7 | 545 |
| 408.31 | 8.8 | 553 |
| 408.36 | 8.9 | 561 |
| 408.41 | 9.0 | 568 |
| 408.46 | 9.1 | 575 |
| 408.51 | 9.2 | 581 |
| 408.56 | 9.3 | 587 |
| 408.61 | 9.4 | 592 |
| 408.66 | 9.5 | 597 |
| 408.71 | 9.5 | 601 |
| 408.76 | 9.6 | 604 |
| 408.81 | **9.6** | **606** |

## Summary for Pond Pond: Regional Detention Basin

Inflow Area = 1,372,542 sf, 6.70% Impervious, Inflow Depth = 0.33" for 2-yr event
Inflow = 40.42 cfs @ 0.26 hrs, Volume= 37,301 cf
Outflow = 34.70 cfs @ 0.29 hrs, Volume= 37,302 cf, Atten= 14%, Lag= 2.1 min
Primary = 34.70 cfs @ 0.29 hrs, Volume= 37,302 cf

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 404.26' @ 0.29 hrs Storage= 3,846 cf

Plug-Flow detention time= 1.2 min calculated for 37,178 cf (100% of inflow)
Center-of-Mass det. time= 1.2 min ( 16.1 - 14.9 )

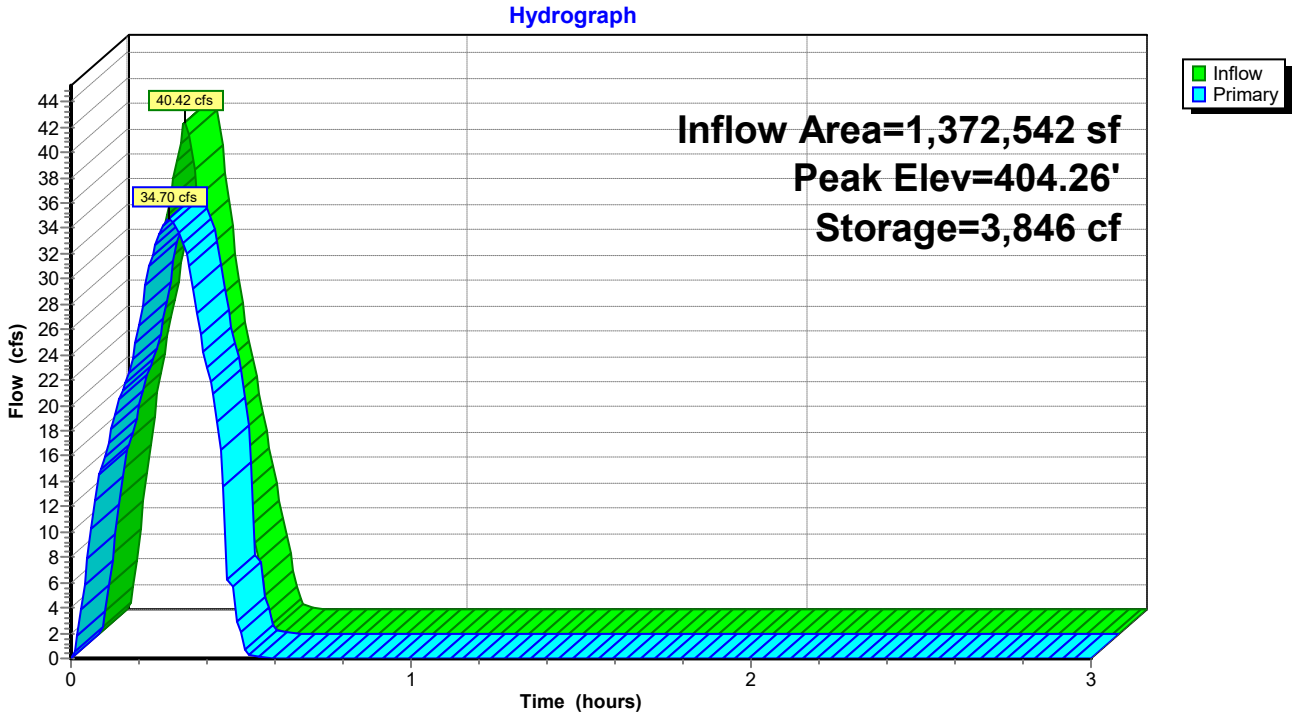
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 401.00' | 12,812 cf | **Custom Stage Data** Listed below |

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 401.00 | 0 |
| 402.00 | 103 |
| 403.00 | 803 |
| 404.00 | 2,704 |
| 405.00 | 7,038 |
| 406.00 | 12,812 |

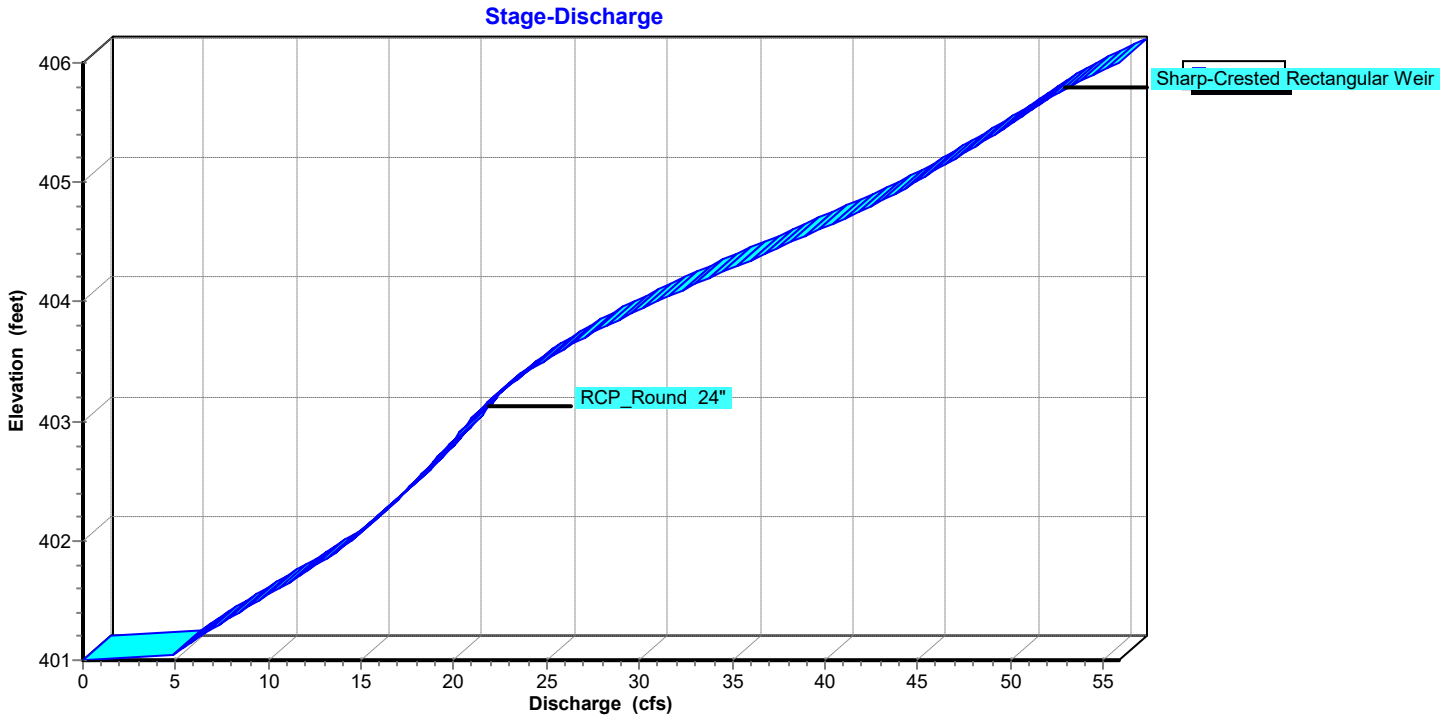
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 400.10' | **24.0" Round RCP_Round 24"**<br>L= 100.0' RCP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 400.10' / 397.97' S= 0.0213 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf |
| #2 | Primary | 403.02' | **24.0" Round RCP_Round 24"**<br>L= 35.0' RCP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 403.02' / 401.73' S= 0.0369 '/' Cc= 0.900<br>n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf |
| #3 | Primary | 405.69' | **2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) |

**Primary OutFlow** Max=34.69 cfs @ 0.29 hrs HW=404.26' (Free Discharge)
- **1=RCP_Round 24"** (Inlet Controls 26.90 cfs @ 8.56 fps)
- **2=RCP_Round 24"** (Inlet Controls 7.79 cfs @ 3.80 fps)
- **3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond Pond: Regional Detention Basin




## Pond Pond: Regional Detention Basin



## Stage-Area-Storage for Pond Pond: Regional Detention Basin

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 401.00 | 0 | 403.60 | 1,944 |
| 401.05 | 5 | 403.65 | 2,039 |
| 401.10 | 10 | 403.70 | 2,134 |
| 401.15 | 15 | 403.75 | 2,229 |
| 401.20 | 21 | 403.80 | 2,324 |
| 401.25 | 26 | 403.85 | 2,419 |
| 401.30 | 31 | 403.90 | 2,514 |
| 401.35 | 36 | 403.95 | 2,609 |
| 401.40 | 41 | 404.00 | 2,704 |
| 401.45 | 46 | 404.05 | 2,921 |
| 401.50 | 52 | 404.10 | 3,137 |
| 401.55 | 57 | 404.15 | 3,354 |
| 401.60 | 62 | 404.20 | 3,571 |
| 401.65 | 67 | 404.25 | 3,788 |
| 401.70 | 72 | 404.30 | 4,004 |
| 401.75 | 77 | 404.35 | 4,221 |
| 401.80 | 82 | 404.40 | 4,438 |
| 401.85 | 88 | 404.45 | 4,654 |
| 401.90 | 93 | 404.50 | 4,871 |
| 401.95 | 98 | 404.55 | 5,088 |
| 402.00 | 103 | 404.60 | 5,304 |
| 402.05 | 138 | 404.65 | 5,521 |
| 402.10 | 173 | 404.70 | 5,738 |
| 402.15 | 208 | 404.75 | 5,955 |
| 402.20 | 243 | 404.80 | 6,171 |
| 402.25 | 278 | 404.85 | 6,388 |
| 402.30 | 313 | 404.90 | 6,605 |
| 402.35 | 348 | 404.95 | 6,821 |
| 402.40 | 383 | 405.00 | 7,038 |
| 402.45 | 418 | 405.05 | 7,327 |
| 402.50 | 453 | 405.10 | 7,615 |
| 402.55 | 488 | 405.15 | 7,904 |
| 402.60 | 523 | 405.20 | 8,193 |
| 402.65 | 558 | 405.25 | 8,482 |
| 402.70 | 593 | 405.30 | 8,770 |
| 402.75 | 628 | 405.35 | 9,059 |
| 402.80 | 663 | 405.40 | 9,348 |
| 402.85 | 698 | 405.45 | 9,636 |
| 402.90 | 733 | 405.50 | 9,925 |
| 402.95 | 768 | 405.55 | 10,214 |
| 403.00 | 803 | 405.60 | 10,502 |
| 403.05 | 898 | 405.65 | 10,791 |
| 403.10 | 993 | 405.70 | 11,080 |
| 403.15 | 1,088 | 405.75 | 11,369 |
| 403.20 | 1,183 | 405.80 | 11,657 |
| 403.25 | 1,278 | 405.85 | 11,946 |
| 403.30 | 1,373 | 405.90 | 12,235 |
| 403.35 | 1,468 | 405.95 | 12,523 |
| 403.40 | 1,563 | 406.00 | **12,812** |
| 403.45 | 1,658 | | |
| 403.50 | 1,754 | | |
| 403.55 | 1,849 | | |

## Summary for Subcatchment ARDOT: ARDOT Offsite

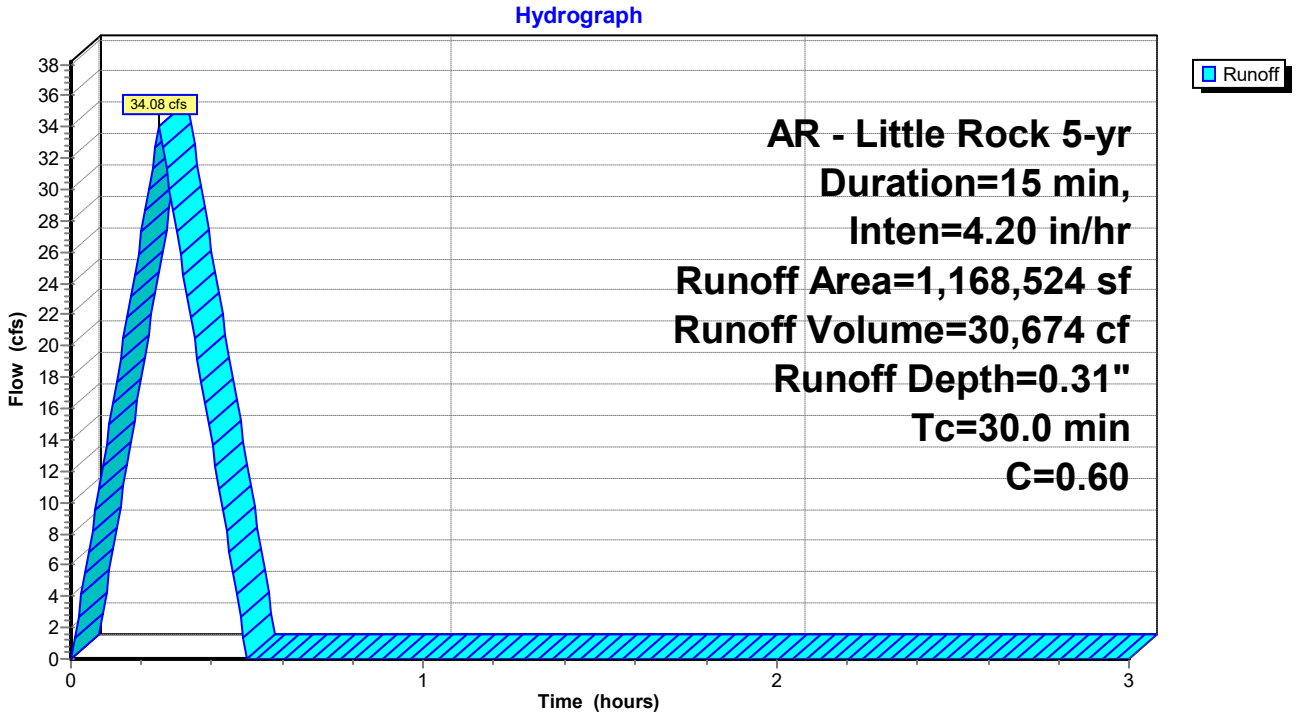
Runoff = 34.08 cfs @ 0.25 hrs, Volume= 30,674 cf, Depth= 0.31"
Routed to Reach A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=15 min, Inten=4.20 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,168,524 | 0.60 | |
| 1,168,524 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.0 | | | | | **Direct Entry,** |

## Subcatchment ARDOT: ARDOT Offsite



## Summary for Subcatchment M&F: Merchants and Farmers

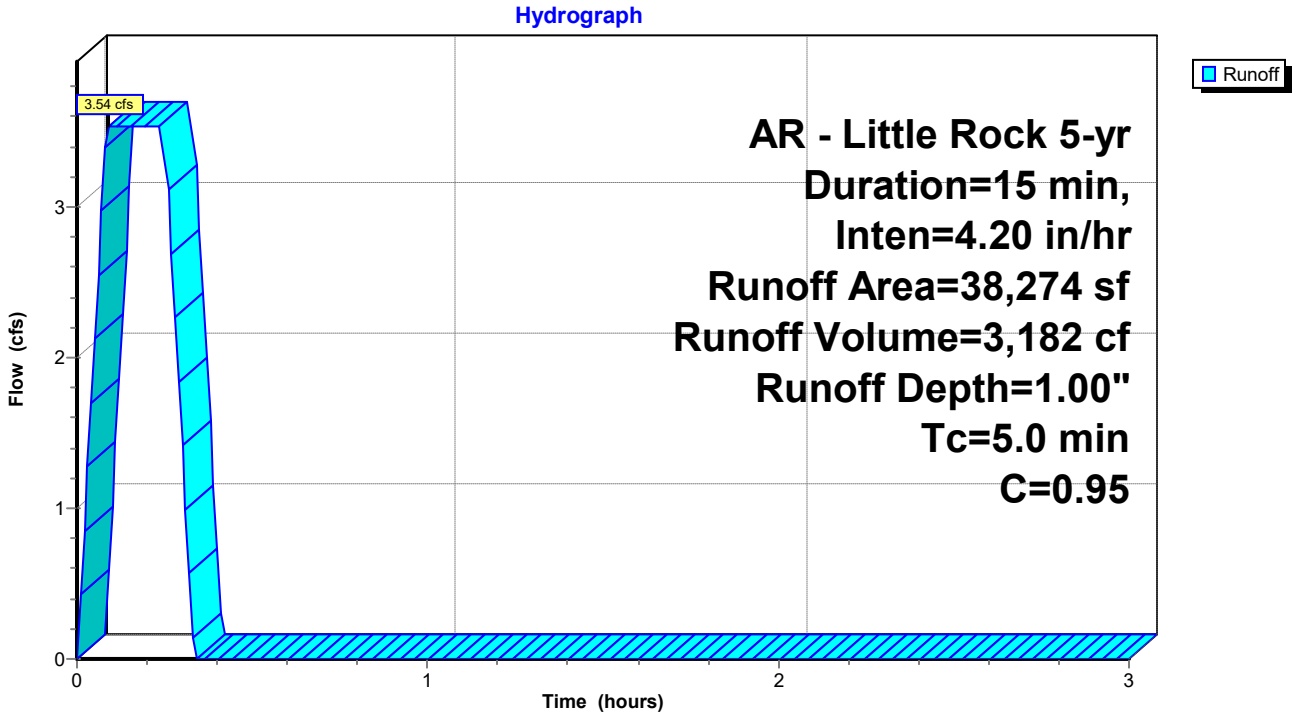
Runoff = 3.54 cfs @ 0.09 hrs, Volume= 3,182 cf, Depth= 1.00"
Routed to Reach A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=15 min, Inten=4.20 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 38,274 | 0.95 | Developed Site |
| 38,274 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | | | | | **Direct Entry,** |

### Subcatchment M&F: Merchants and Farmers



## Summary for Subcatchment SR: Springhill Retail Post

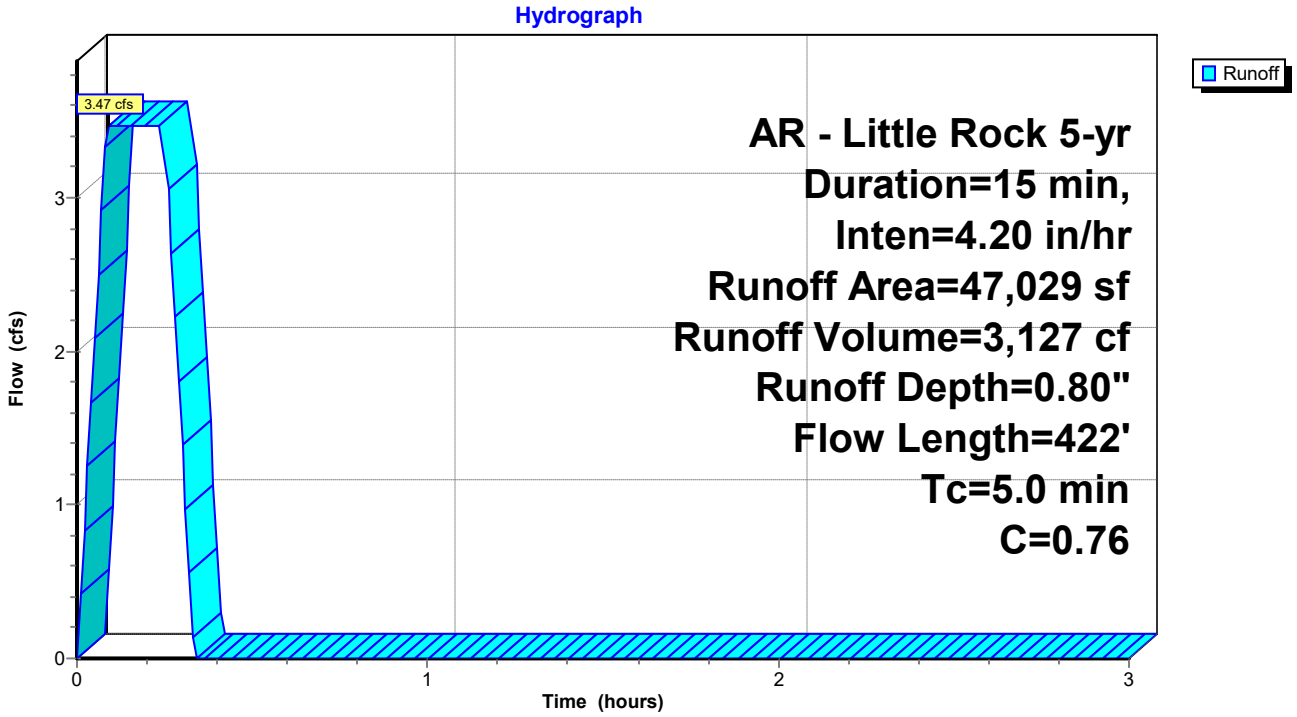
Runoff = 3.47 cfs @ 0.09 hrs, Volume= 3,127 cf, Depth= 0.80"
Routed to Pond Pond : Regional Detention Basin

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=15 min, Inten=4.20 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,511 | 0.86 | Existing Drive |
| 33,632 | 0.92 | Drives, Roof, Sidewalks |
| 11,886 | 0.30 | Landscaped Areas |
| 47,029 | 0.76 | Weighted Average |
| 47,029 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 82 | 0.0290 | 1.76 | | **Sheet Flow, Asphalt Sheet Flow** Smooth surfaces n= 0.011 P2= 4.19" |
| 0.8 | 87 | 0.0080 | 1.82 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 0.1 | 19 | 0.0210 | 2.94 | | **Shallow Concentrated Flow, Concentrated Pavement Flow** Paved Kv= 20.3 fps |
| 1.0 | 197 | 0.0250 | 3.21 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 0.3 | 37 | 0.0130 | 2.31 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 2.0 | | | | | **Direct Entry, Minimum adjustment** |
| 5.0 | 422 | Total | | | |

## Subcatchment SR: Springhill Retail Post



## Summary for Subcatchment WestProp: West Adjacent Property Drainage Basin

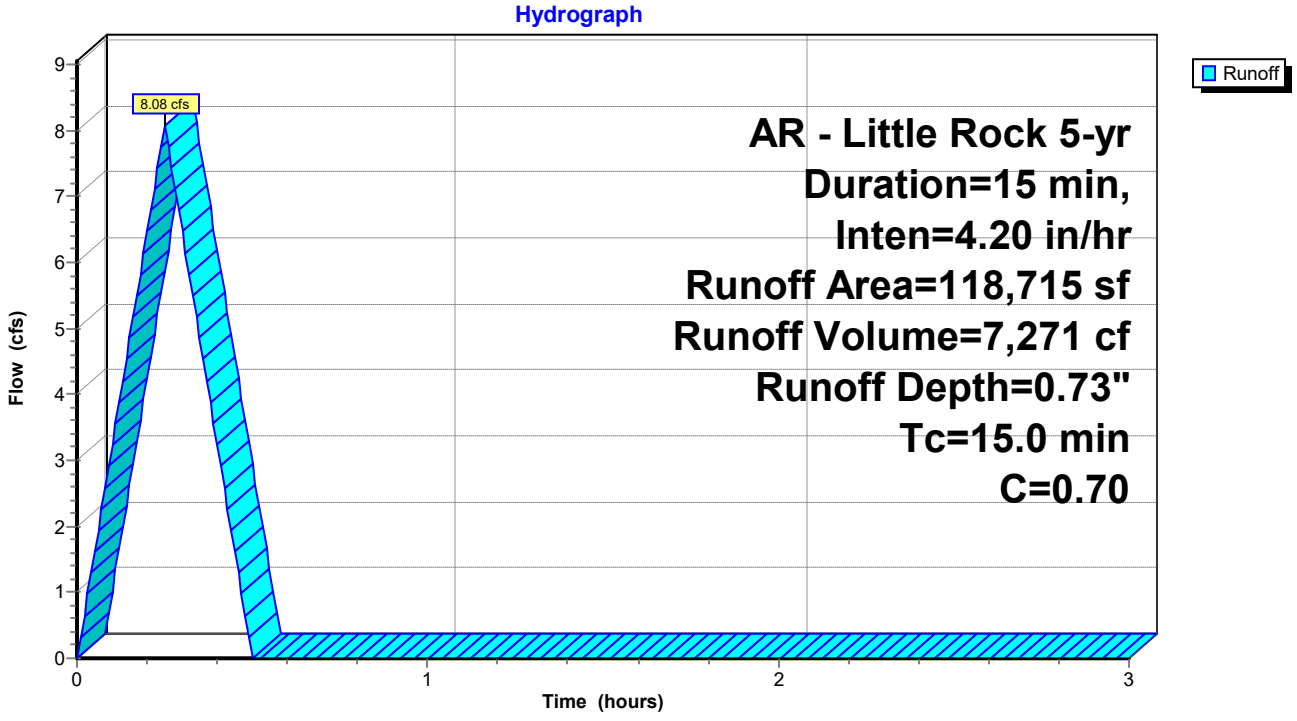
Runoff = 8.08 cfs @ 0.25 hrs, Volume= 7,271 cf, Depth= 0.73"
Routed to Reach A3 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 5-yr Duration=15 min, Inten=4.20 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 65,063 | 0.50 | Pervious Areas |
| 53,652 | 0.95 | Rooftop/Paving |
| 118,715 | 0.70 | Weighted Average |
| 65,063 | | 54.81% Pervious Area |
| 53,652 | | 45.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment WestProp: West Adjacent Property Drainage Basin



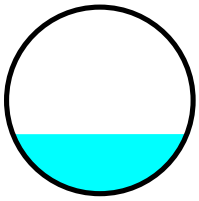
## Summary for Reach A1: Pipe A1

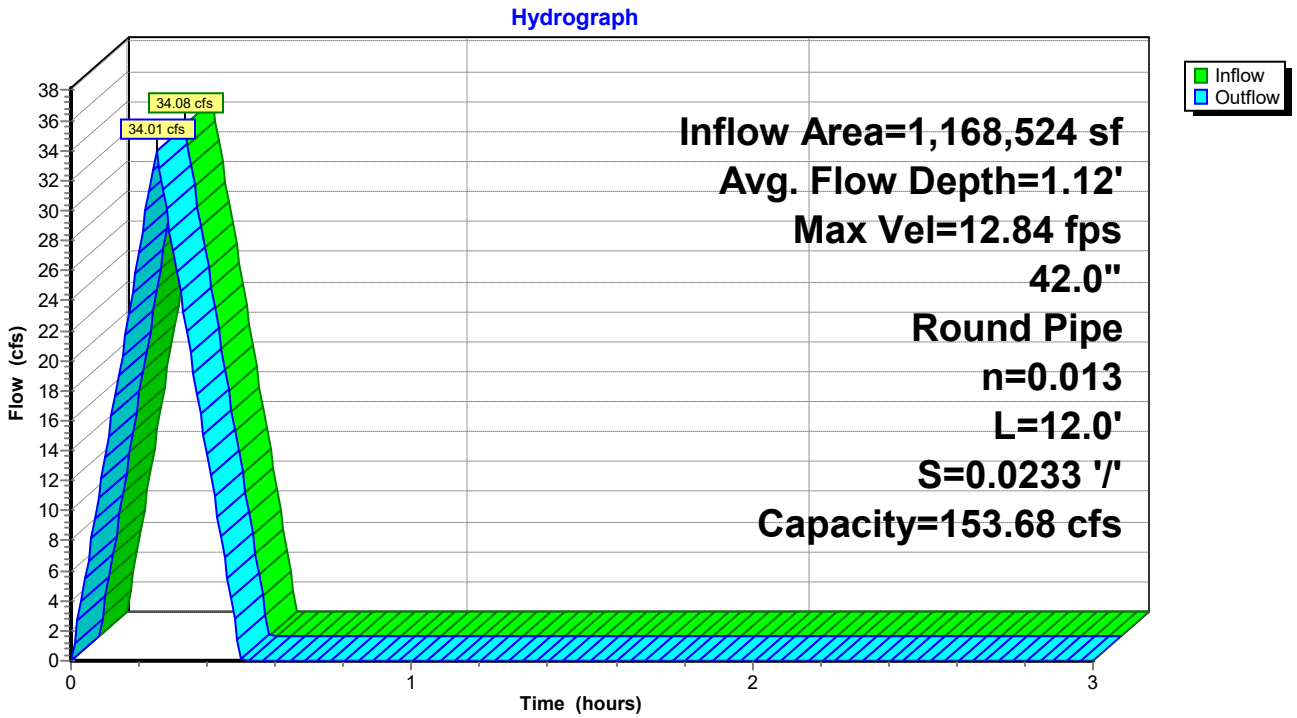
Inflow Area = 1,168,524 sf, 0.00% Impervious, Inflow Depth = 0.31" for 5-yr event
Inflow = 34.08 cfs @ 0.25 hrs, Volume= 30,674 cf
Outflow = 34.01 cfs @ 0.25 hrs, Volume= 30,675 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 12.84 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 9.94 fps, Avg. Travel Time= 0.0 min

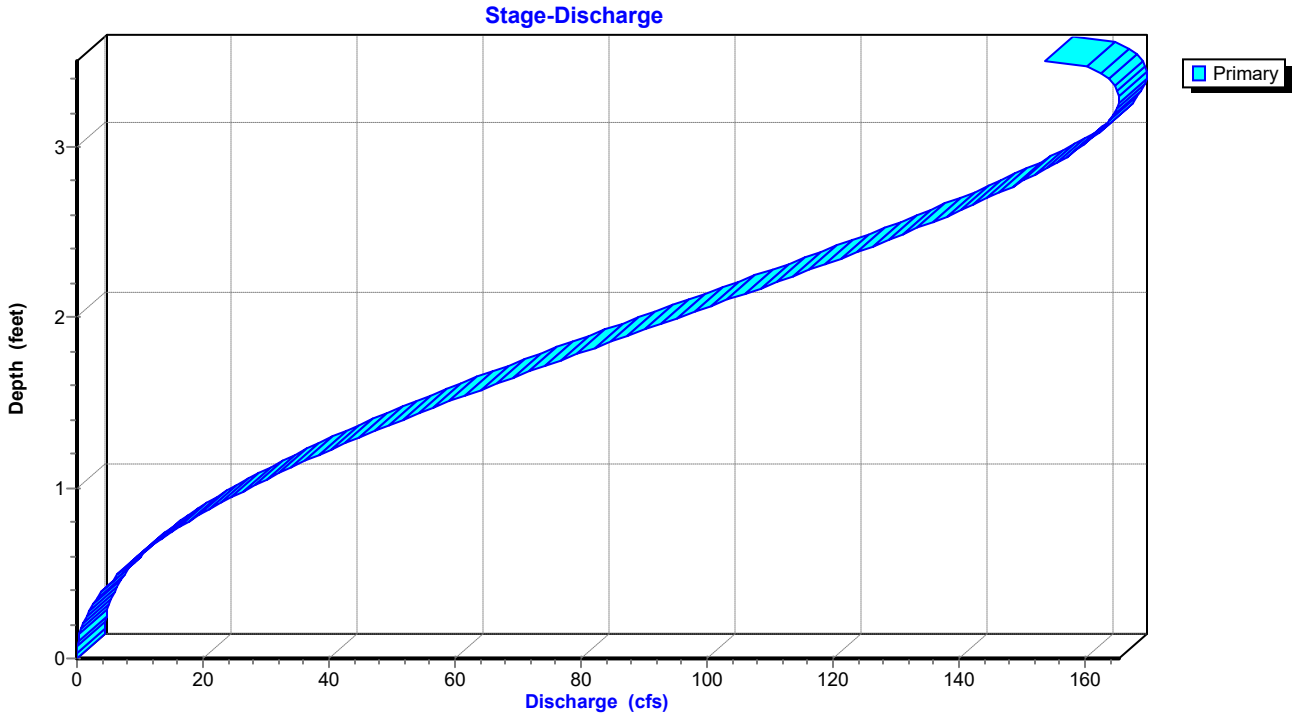
Peak Storage= 32 cf @ 0.25 hrs
Average Depth at Peak Storage= 1.12' , Surface Width= 3.26'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 153.68 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 12.0' Slope= 0.0233 '/'
Inlet Invert= 413.00', Outlet Invert= 412.72'





## Reach A1: Pipe A1



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

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 413.00 | 0.0 | 0 |
| 413.05 | 0.0 | 0 |
| 413.10 | 0.1 | 1 |
| 413.15 | 0.1 | 2 |
| 413.20 | 0.2 | 3 |
| 413.25 | 0.3 | 4 |
| 413.30 | 0.4 | 5 |
| 413.35 | 0.5 | 6 |
| 413.40 | 0.6 | 7 |
| 413.45 | 0.7 | 9 |
| 413.50 | 0.8 | 10 |
| 413.55 | 1.0 | 12 |
| 413.60 | 1.1 | 13 |
| 413.65 | 1.2 | 15 |
| 413.70 | 1.4 | 16 |
| 413.75 | 1.5 | 18 |
| 413.80 | 1.7 | 20 |
| 413.85 | 1.8 | 22 |
| 413.90 | 2.0 | 23 |
| 413.95 | 2.1 | 25 |
| 414.00 | 2.3 | 27 |
| 414.05 | 2.4 | 29 |
| 414.10 | 2.6 | 31 |
| 414.15 | 2.8 | 33 |
| 414.20 | 2.9 | 35 |
| 414.25 | 3.1 | 37 |
| 414.30 | 3.3 | 39 |
| 414.35 | 3.4 | 41 |
| 414.40 | 3.6 | 43 |
| 414.45 | 3.8 | 45 |
| 414.50 | 3.9 | 47 |
| 414.55 | 4.1 | 49 |
| 414.60 | 4.3 | 51 |
| 414.65 | 4.5 | 54 |
| 414.70 | 4.6 | 56 |
| 414.75 | 4.8 | 58 |
| 414.80 | 5.0 | 60 |
| 414.85 | 5.2 | 62 |
| 414.90 | 5.3 | 64 |
| 414.95 | 5.5 | 66 |
| 415.00 | 5.7 | 68 |
| 415.05 | 5.9 | 70 |
| 415.10 | 6.0 | 72 |
| 415.15 | 6.2 | 74 |
| 415.20 | 6.4 | 76 |
| 415.25 | 6.5 | 78 |
| 415.30 | 6.7 | 80 |
| 415.35 | 6.9 | 82 |
| 415.40 | 7.0 | 84 |
| 415.45 | 7.2 | 86 |
| 415.50 | 7.4 | 88 |
| 415.55 | 7.5 | 90 |
| 415.60 | 7.7 | 92 |
| 415.65 | 7.8 | 94 |
| 415.70 | 8.0 | 96 |
| 415.75 | 8.1 | 97 |
| 415.80 | 8.3 | 99 |
| 415.85 | 8.4 | 101 |
| 415.90 | 8.5 | 102 |
| 415.95 | 8.7 | 104 |
| 416.00 | 8.8 | 105 |
| 416.05 | 8.9 | 107 |
| 416.10 | 9.0 | 108 |
| 416.15 | 9.1 | 109 |
| 416.20 | 9.2 | 111 |
| 416.25 | 9.3 | 112 |
| 416.30 | 9.4 | 113 |
| 416.35 | 9.5 | 114 |
| 416.40 | 9.5 | 115 |
| 416.45 | 9.6 | 115 |
| 416.50 | **9.6** | **115** |

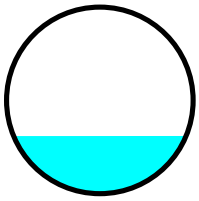
## Summary for Reach A2: Pipe A2

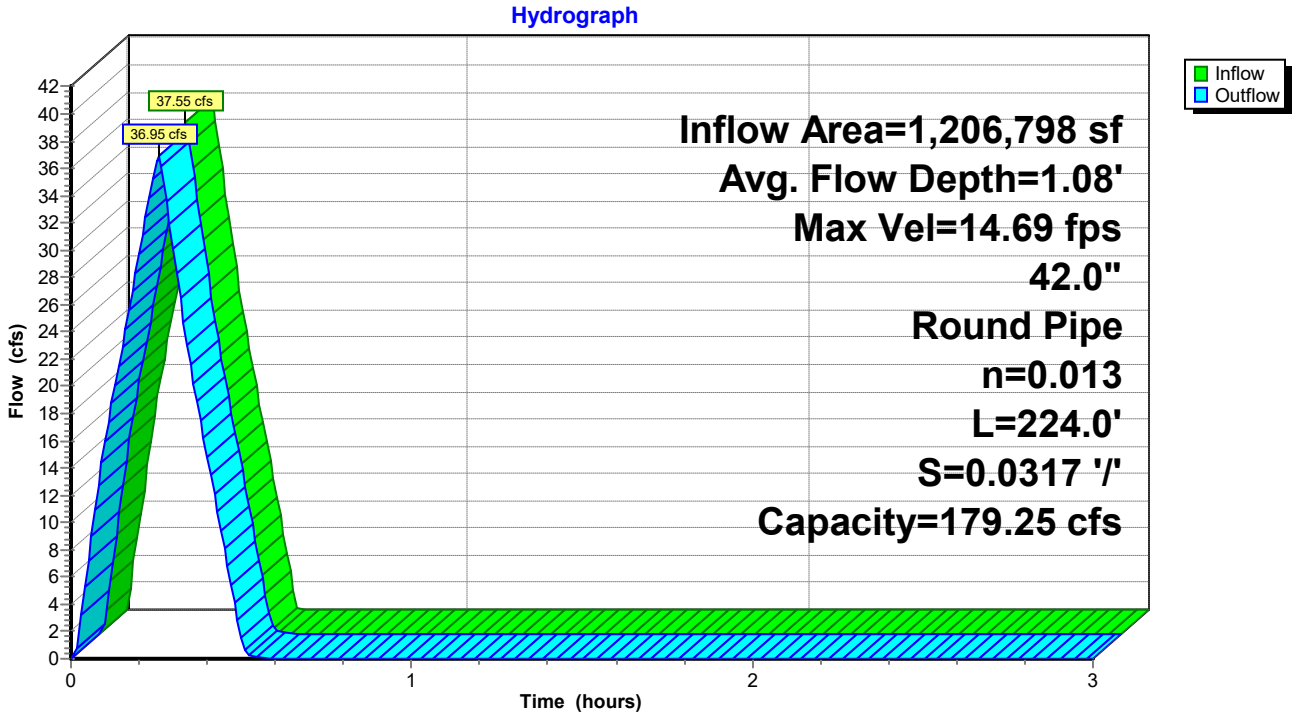
Inflow Area = 1,206,798 sf, 3.17% Impervious, Inflow Depth = 0.34" for 5-yr event
Inflow = 37.55 cfs @ 0.25 hrs, Volume= 33,857 cf
Outflow = 36.95 cfs @ 0.26 hrs, Volume= 33,857 cf, Atten= 2%, Lag= 0.4 min
Routed to Reach A3 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 14.69 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 8.33 fps, Avg. Travel Time= 0.4 min

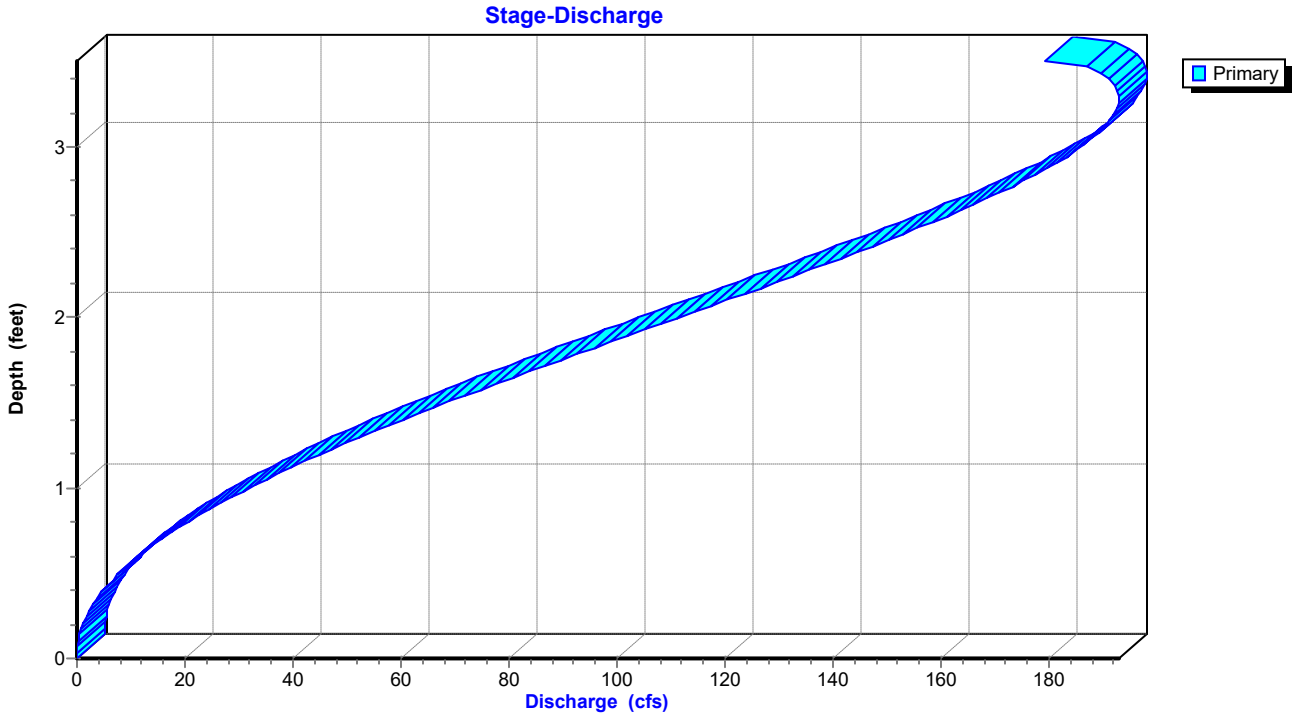
Peak Storage= 567 cf @ 0.25 hrs
Average Depth at Peak Storage= 1.08' , Surface Width= 3.23'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 179.25 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 224.0' Slope= 0.0317 '/'
Inlet Invert= 412.52', Outlet Invert= 405.41'





## Reach A2: Pipe A2



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

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 412.52 | 0.0 | 0 |
| 412.57 | 0.0 | 6 |
| 412.62 | 0.1 | 18 |
| 412.67 | 0.1 | 32 |
| 412.72 | 0.2 | 49 |
| 412.77 | 0.3 | 68 |
| 412.82 | 0.4 | 90 |
| 412.87 | 0.5 | 112 |
| 412.92 | 0.6 | 136 |
| 412.97 | 0.7 | 162 |
| 413.02 | 0.8 | 189 |
| 413.07 | 1.0 | 217 |
| 413.12 | 1.1 | 246 |
| 413.17 | 1.2 | 276 |
| 413.22 | 1.4 | 307 |
| 413.27 | 1.5 | 339 |
| 413.32 | 1.7 | 371 |
| 413.37 | 1.8 | 404 |
| 413.42 | 2.0 | 438 |
| 413.47 | 2.1 | 473 |
| 413.52 | 2.3 | 508 |
| 413.57 | 2.4 | 544 |
| 413.62 | 2.6 | 580 |
| 413.67 | 2.8 | 617 |
| 413.72 | 2.9 | 654 |
| 413.77 | 3.1 | 691 |
| 413.82 | 3.3 | 729 |
| 413.87 | 3.4 | 767 |
| 413.92 | 3.6 | 805 |
| 413.97 | 3.8 | 844 |
| 414.02 | 3.9 | 882 |
| 414.07 | 4.1 | 921 |
| 414.12 | 4.3 | 960 |
| 414.17 | 4.5 | 999 |
| 414.22 | 4.6 | 1,038 |
| 414.27 | 4.8 | 1,078 |
| 414.32 | 5.0 | 1,117 |
| 414.37 | 5.2 | 1,156 |
| 414.42 | 5.3 | 1,195 |
| 414.47 | 5.5 | 1,234 |
| 414.52 | 5.7 | 1,273 |
| 414.57 | 5.9 | 1,312 |
| 414.62 | 6.0 | 1,350 |
| 414.67 | 6.2 | 1,388 |
| 414.72 | 6.4 | 1,426 |
| 414.77 | 6.5 | 1,464 |
| 414.82 | 6.7 | 1,502 |
| 414.87 | 6.9 | 1,539 |
| 414.92 | 7.0 | 1,575 |
| 414.97 | 7.2 | 1,611 |
| 415.02 | 7.4 | 1,647 |
| 415.07 | 7.5 | 1,682 |
| 415.12 | 7.7 | 1,717 |
| 415.17 | 7.8 | 1,751 |
| 415.22 | 8.0 | 1,784 |
| 415.27 | 8.1 | 1,816 |
| 415.32 | 8.3 | 1,848 |
| 415.37 | 8.4 | 1,879 |
| 415.42 | 8.5 | 1,909 |
| 415.47 | 8.7 | 1,938 |
| 415.52 | 8.8 | 1,966 |
| 415.57 | 8.9 | 1,993 |
| 415.62 | 9.0 | 2,019 |
| 415.67 | 9.1 | 2,043 |
| 415.72 | 9.2 | 2,066 |
| 415.77 | 9.3 | 2,087 |
| 415.82 | 9.4 | 2,106 |
| 415.87 | 9.5 | 2,123 |
| 415.92 | 9.5 | 2,138 |
| 415.97 | 9.6 | 2,149 |
| 416.02 | **9.6** | **2,155** |

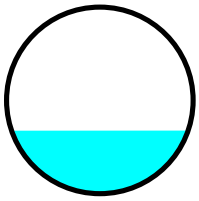
## Summary for Reach A3: Pipe A2

Inflow Area = 1,325,513 sf, 6.94% Impervious, Inflow Depth = 0.37" for 5-yr event
Inflow = 44.84 cfs @ 0.25 hrs, Volume= 41,128 cf
Outflow = 44.77 cfs @ 0.26 hrs, Volume= 41,128 cf, Atten= 0%, Lag= 0.1 min
Routed to Pond Pond : Regional Detention Basin

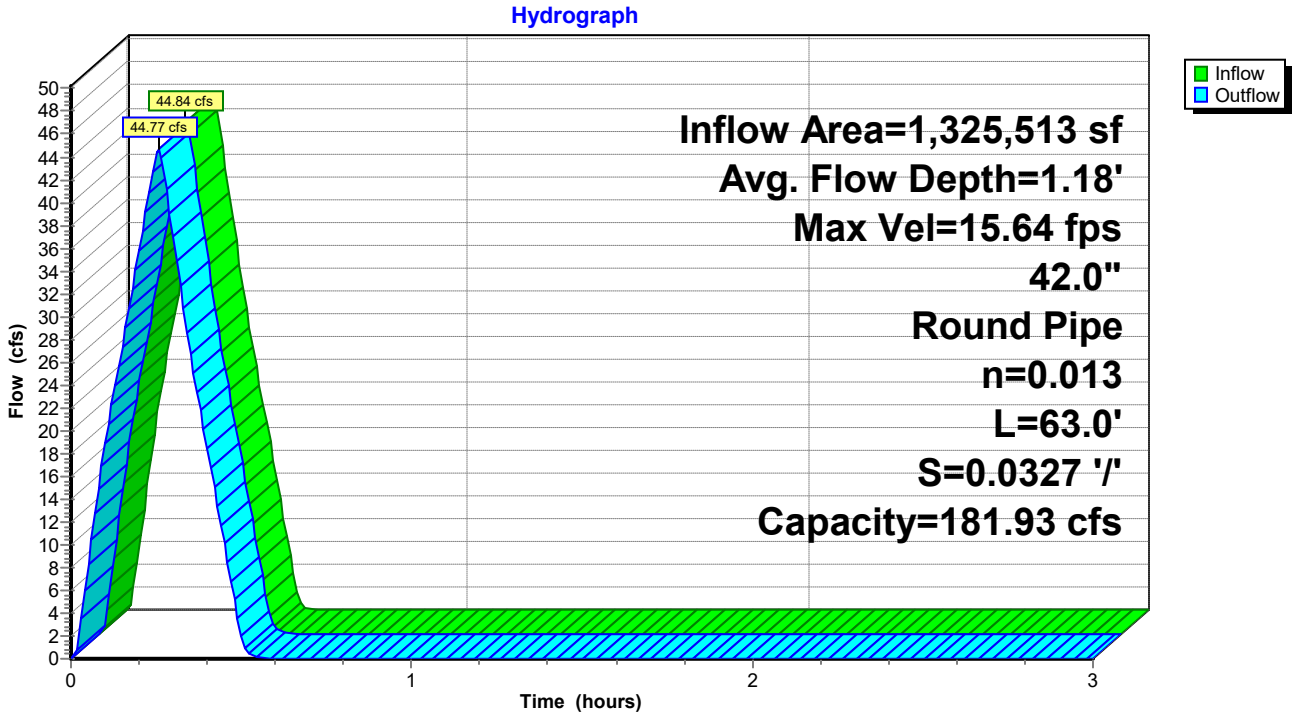
Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 15.64 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 8.81 fps, Avg. Travel Time= 0.1 min

Peak Storage= 180 cf @ 0.26 hrs
Average Depth at Peak Storage= 1.18' , Surface Width= 3.31'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 181.93 cfs

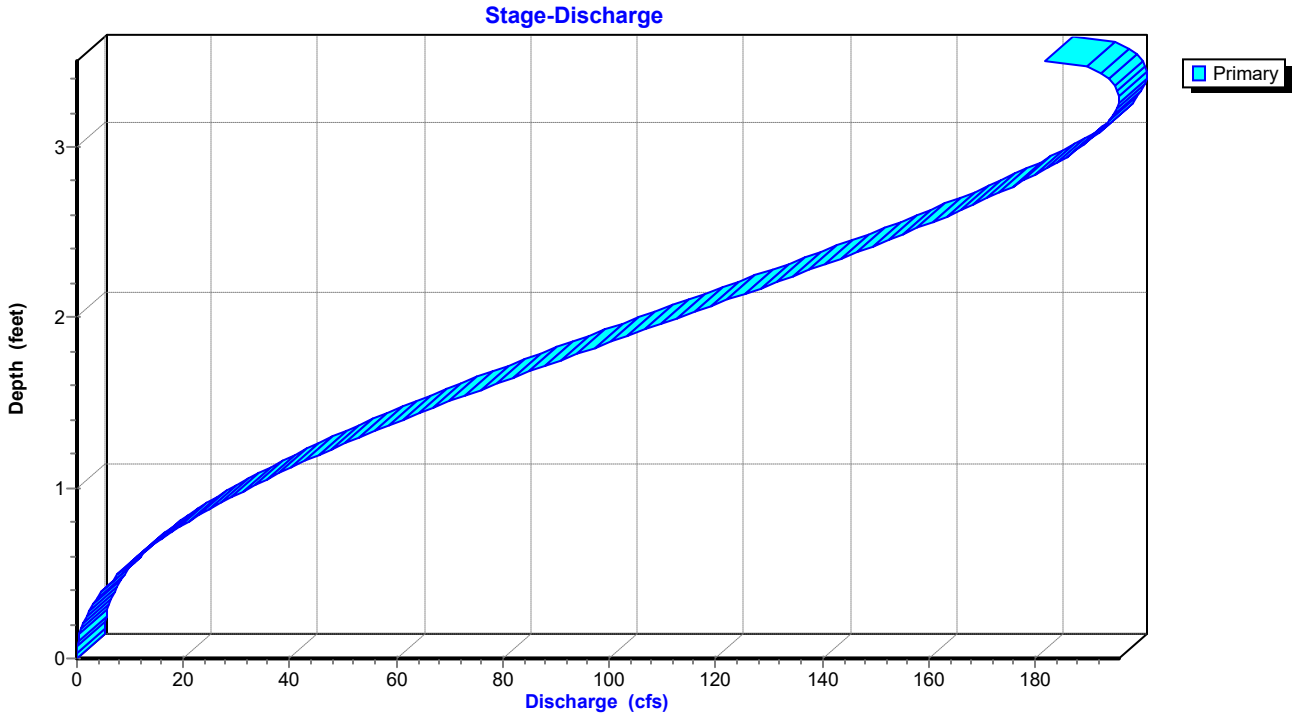
42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 63.0' Slope= 0.0327 '/'
Inlet Invert= 405.31', Outlet Invert= 403.25'



### Reach A3: Pipe A2



## Reach A3: Pipe A2



## Stage-Area-Storage for Reach A3: Pipe A2

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 405.31 | 0.0 | 0 |
| 405.36 | 0.0 | 2 |
| 405.41 | 0.1 | 5 |
| 405.46 | 0.1 | 9 |
| 405.51 | 0.2 | 14 |
| 405.56 | 0.3 | 19 |
| 405.61 | 0.4 | 25 |
| 405.66 | 0.5 | 32 |
| 405.71 | 0.6 | 38 |
| 405.76 | 0.7 | 46 |
| 405.81 | 0.8 | 53 |
| 405.86 | 1.0 | 61 |
| 405.91 | 1.1 | 69 |
| 405.96 | 1.2 | 78 |
| 406.01 | 1.4 | 86 |
| 406.06 | 1.5 | 95 |
| 406.11 | 1.7 | 104 |
| 406.16 | 1.8 | 114 |
| 406.21 | 2.0 | 123 |
| 406.26 | 2.1 | 133 |
| 406.31 | 2.3 | 143 |
| 406.36 | 2.4 | 153 |
| 406.41 | 2.6 | 163 |
| 406.46 | 2.8 | 173 |
| 406.51 | 2.9 | 184 |
| 406.56 | 3.1 | 194 |
| 406.61 | 3.3 | 205 |
| 406.66 | 3.4 | 216 |
| 406.71 | 3.6 | 226 |
| 406.76 | 3.8 | 237 |
| 406.81 | 3.9 | 248 |
| 406.86 | 4.1 | 259 |
| 406.91 | 4.3 | 270 |
| 406.96 | 4.5 | 281 |
| 407.01 | 4.6 | 292 |
| 407.06 | 4.8 | 303 |
| 407.11 | 5.0 | 314 |
| 407.16 | 5.2 | 325 |
| 407.21 | 5.3 | 336 |
| 407.26 | 5.5 | 347 |
| 407.31 | 5.7 | 358 |
| 407.36 | 5.9 | 369 |
| 407.41 | 6.0 | 380 |
| 407.46 | 6.2 | 390 |
| 407.51 | 6.4 | 401 |
| 407.56 | 6.5 | 412 |
| 407.61 | 6.7 | 422 |
| 407.66 | 6.9 | 433 |
| 407.71 | 7.0 | 443 |
| 407.76 | 7.2 | 453 |
| 407.81 | 7.4 | 463 |
| 407.86 | 7.5 | 473 |
| 407.91 | 7.7 | 483 |
| 407.96 | 7.8 | 492 |
| 408.01 | 8.0 | 502 |
| 408.06 | 8.1 | 511 |
| 408.11 | 8.3 | 520 |
| 408.16 | 8.4 | 529 |
| 408.21 | 8.5 | 537 |
| 408.26 | 8.7 | 545 |
| 408.31 | 8.8 | 553 |
| 408.36 | 8.9 | 561 |
| 408.41 | 9.0 | 568 |
| 408.46 | 9.1 | 575 |
| 408.51 | 9.2 | 581 |
| 408.56 | 9.3 | 587 |
| 408.61 | 9.4 | 592 |
| 408.66 | 9.5 | 597 |
| 408.71 | 9.5 | 601 |
| 408.76 | 9.6 | 604 |
| 408.81 | **9.6** | **606** |

## Summary for Pond Pond: Regional Detention Basin

Inflow Area = 1,372,542 sf, 6.70% Impervious, Inflow Depth = 0.39" for 5-yr event
Inflow = 47.99 cfs @ 0.25 hrs, Volume= 44,255 cf
Outflow = 40.22 cfs @ 0.29 hrs, Volume= 44,270 cf, Atten= 16%, Lag= 2.3 min
Primary = 40.22 cfs @ 0.29 hrs, Volume= 44,270 cf

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 404.64' @ 0.29 hrs Storage= 5,463 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.5 min ( 16.4 - 14.9 )

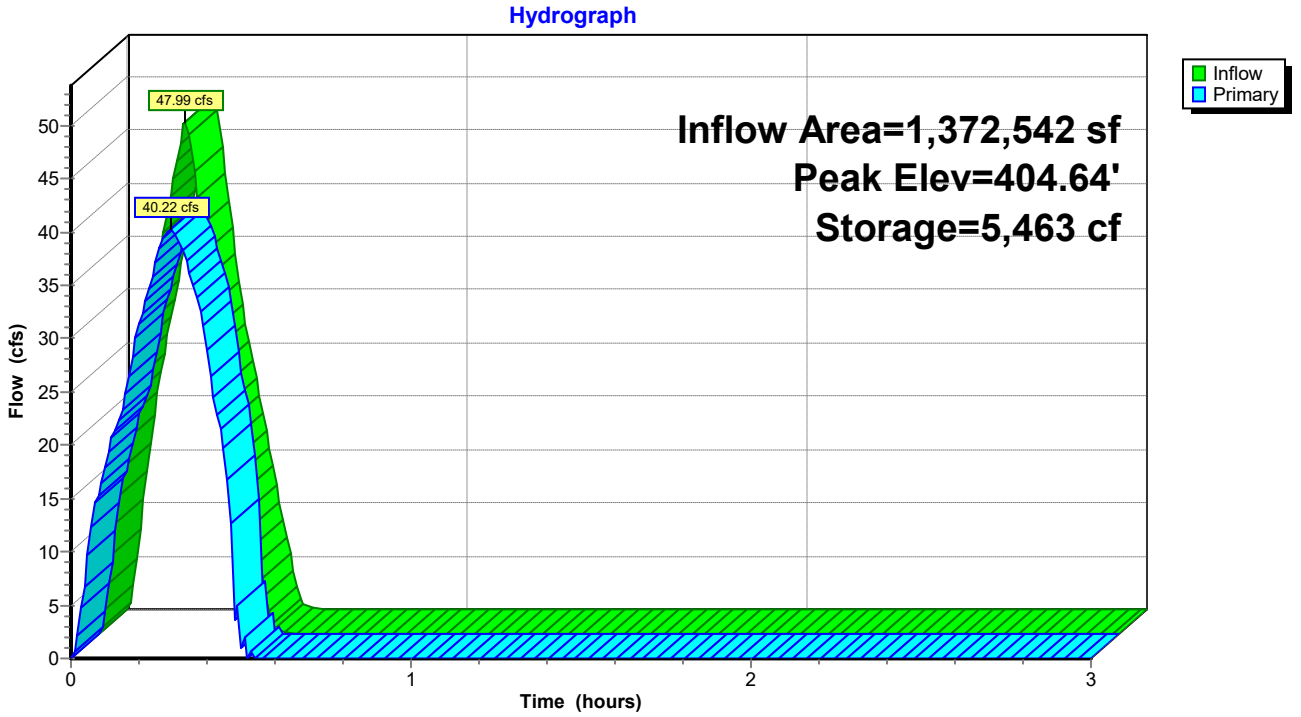
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 401.00' | 12,812 cf | **Custom Stage Data** Listed below |

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 401.00 | 0 |
| 402.00 | 103 |
| 403.00 | 803 |
| 404.00 | 2,704 |
| 405.00 | 7,038 |
| 406.00 | 12,812 |

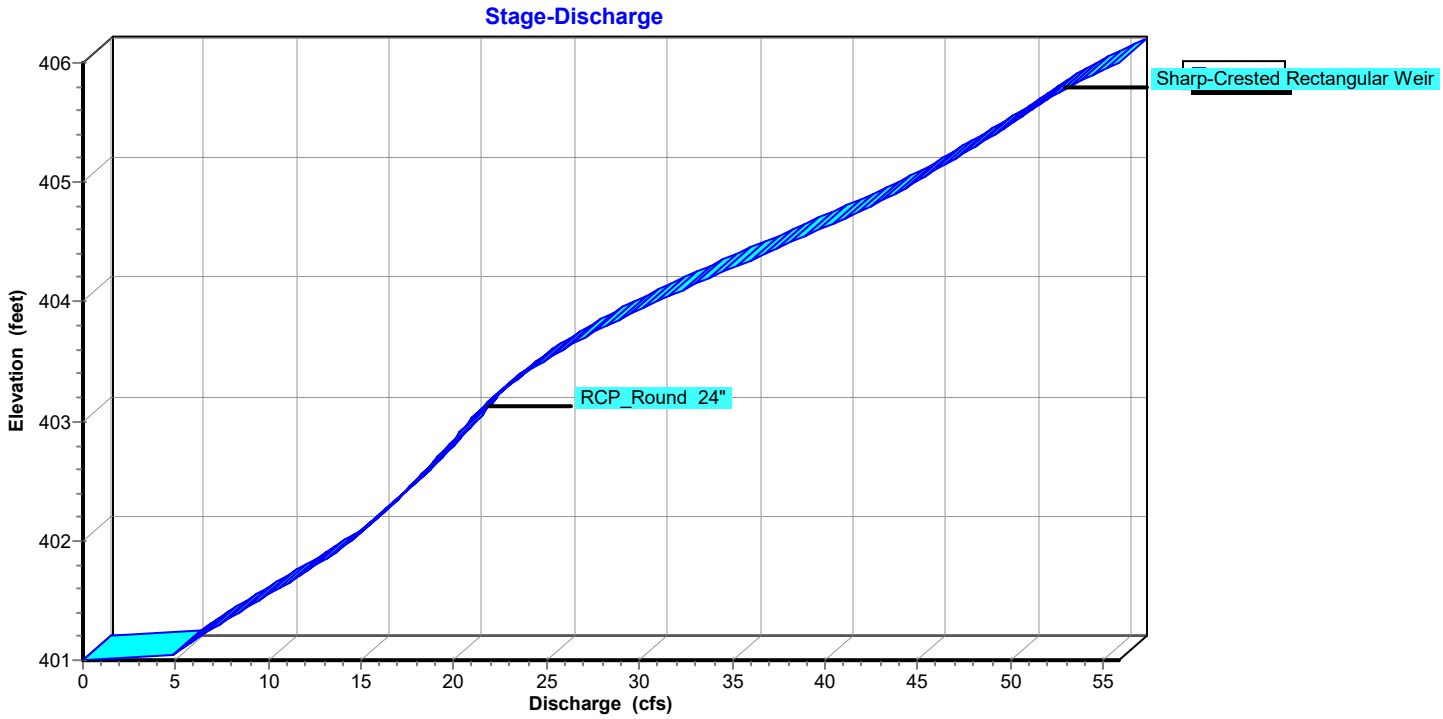
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 400.10' | **24.0" Round RCP_Round 24"**<br>L= 100.0' RCP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 400.10' / 397.97' S= 0.0213 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf |
| #2 | Primary | 403.02' | **24.0" Round RCP_Round 24"**<br>L= 35.0' RCP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 403.02' / 401.73' S= 0.0369 '/' Cc= 0.900<br>n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf |
| #3 | Primary | 405.69' | **2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) |

**Primary OutFlow** Max=40.19 cfs @ 0.29 hrs HW=404.63' (Free Discharge)
- **1=RCP_Round 24"** (Inlet Controls 28.44 cfs @ 9.05 fps)
- **2=RCP_Round 24"** (Inlet Controls 11.75 cfs @ 4.33 fps)
- **3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond Pond: Regional Detention Basin




## Pond Pond: Regional Detention Basin



## Stage-Area-Storage for Pond Pond: Regional Detention Basin

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 401.00 | 0 | 403.60 | 1,944 |
| 401.05 | 5 | 403.65 | 2,039 |
| 401.10 | 10 | 403.70 | 2,134 |
| 401.15 | 15 | 403.75 | 2,229 |
| 401.20 | 21 | 403.80 | 2,324 |
| 401.25 | 26 | 403.85 | 2,419 |
| 401.30 | 31 | 403.90 | 2,514 |
| 401.35 | 36 | 403.95 | 2,609 |
| 401.40 | 41 | 404.00 | 2,704 |
| 401.45 | 46 | 404.05 | 2,921 |
| 401.50 | 52 | 404.10 | 3,137 |
| 401.55 | 57 | 404.15 | 3,354 |
| 401.60 | 62 | 404.20 | 3,571 |
| 401.65 | 67 | 404.25 | 3,788 |
| 401.70 | 72 | 404.30 | 4,004 |
| 401.75 | 77 | 404.35 | 4,221 |
| 401.80 | 82 | 404.40 | 4,438 |
| 401.85 | 88 | 404.45 | 4,654 |
| 401.90 | 93 | 404.50 | 4,871 |
| 401.95 | 98 | 404.55 | 5,088 |
| 402.00 | 103 | 404.60 | 5,304 |
| 402.05 | 138 | 404.65 | 5,521 |
| 402.10 | 173 | 404.70 | 5,738 |
| 402.15 | 208 | 404.75 | 5,955 |
| 402.20 | 243 | 404.80 | 6,171 |
| 402.25 | 278 | 404.85 | 6,388 |
| 402.30 | 313 | 404.90 | 6,605 |
| 402.35 | 348 | 404.95 | 6,821 |
| 402.40 | 383 | 405.00 | 7,038 |
| 402.45 | 418 | 405.05 | 7,327 |
| 402.50 | 453 | 405.10 | 7,615 |
| 402.55 | 488 | 405.15 | 7,904 |
| 402.60 | 523 | 405.20 | 8,193 |
| 402.65 | 558 | 405.25 | 8,482 |
| 402.70 | 593 | 405.30 | 8,770 |
| 402.75 | 628 | 405.35 | 9,059 |
| 402.80 | 663 | 405.40 | 9,348 |
| 402.85 | 698 | 405.45 | 9,636 |
| 402.90 | 733 | 405.50 | 9,925 |
| 402.95 | 768 | 405.55 | 10,214 |
| 403.00 | 803 | 405.60 | 10,502 |
| 403.05 | 898 | 405.65 | 10,791 |
| 403.10 | 993 | 405.70 | 11,080 |
| 403.15 | 1,088 | 405.75 | 11,369 |
| 403.20 | 1,183 | 405.80 | 11,657 |
| 403.25 | 1,278 | 405.85 | 11,946 |
| 403.30 | 1,373 | 405.90 | 12,235 |
| 403.35 | 1,468 | 405.95 | 12,523 |
| 403.40 | 1,563 | 406.00 | **12,812** |
| 403.45 | 1,658 | | |
| 403.50 | 1,754 | | |
| 403.55 | 1,849 | | |

## Summary for Subcatchment ARDOT: ARDOT Offsite

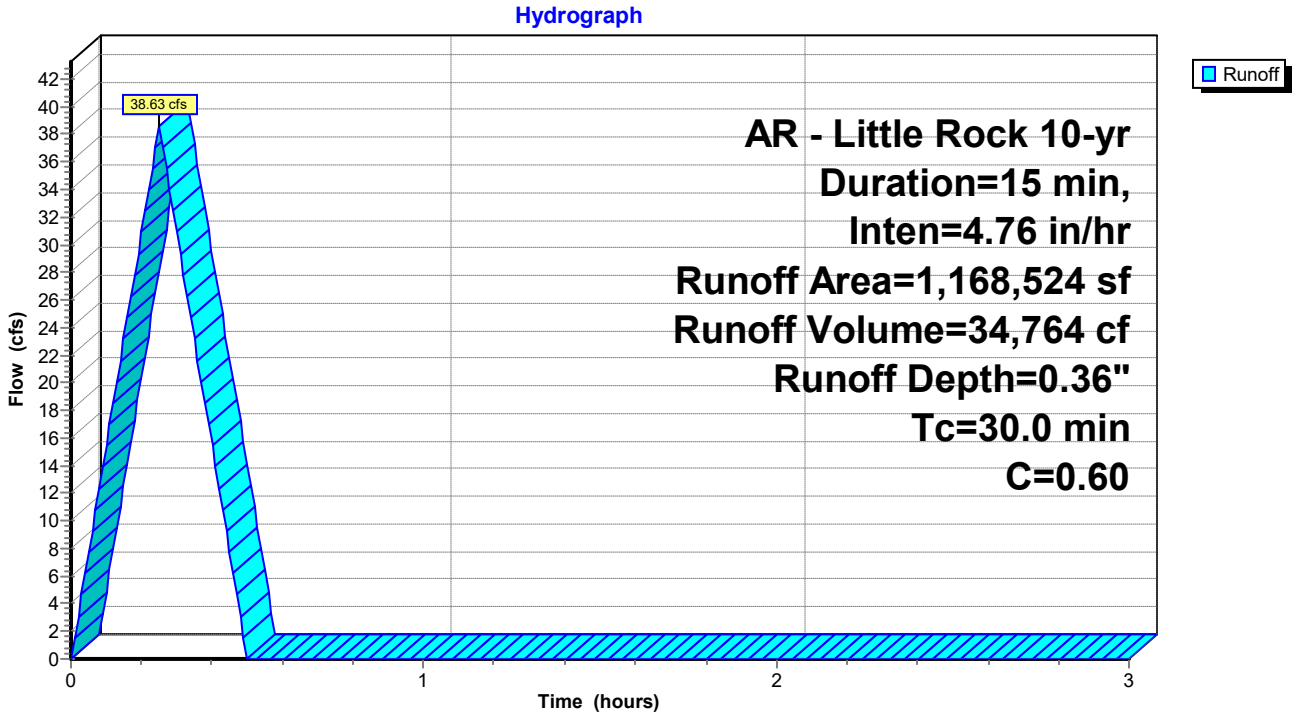
Runoff = 38.63 cfs @ 0.25 hrs, Volume= 34,764 cf, Depth= 0.36"
Routed to Reach A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=15 min, Inten=4.76 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,168,524 | 0.60 | |
| 1,168,524 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.0 | | | | | **Direct Entry,** |

## Subcatchment ARDOT: ARDOT Offsite



## Summary for Subcatchment M&F: Merchants and Farmers

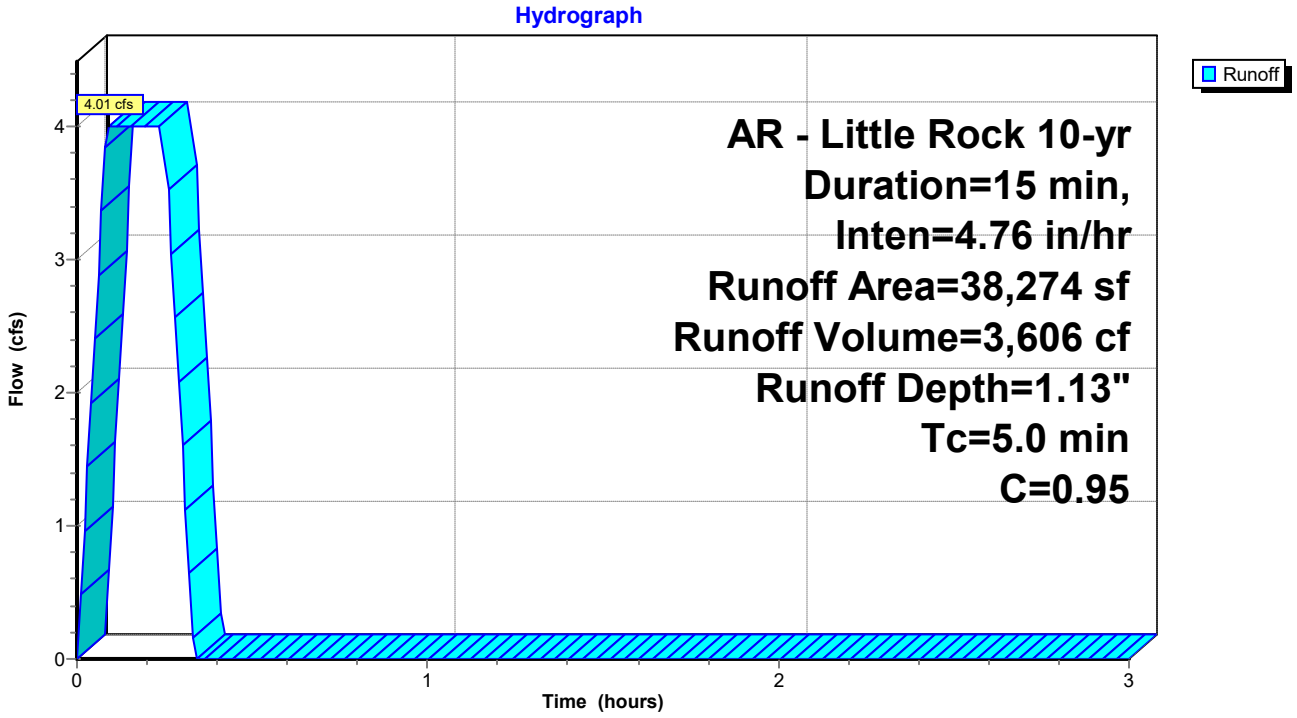
Runoff = 4.01 cfs @ 0.09 hrs, Volume= 3,606 cf, Depth= 1.13"
Routed to Reach A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=15 min, Inten=4.76 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 38,274 | 0.95 | Developed Site |
| 38,274 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | | | | | **Direct Entry,** |

## Subcatchment M&F: Merchants and Farmers



## Summary for Subcatchment SR: Springhill Retail Post

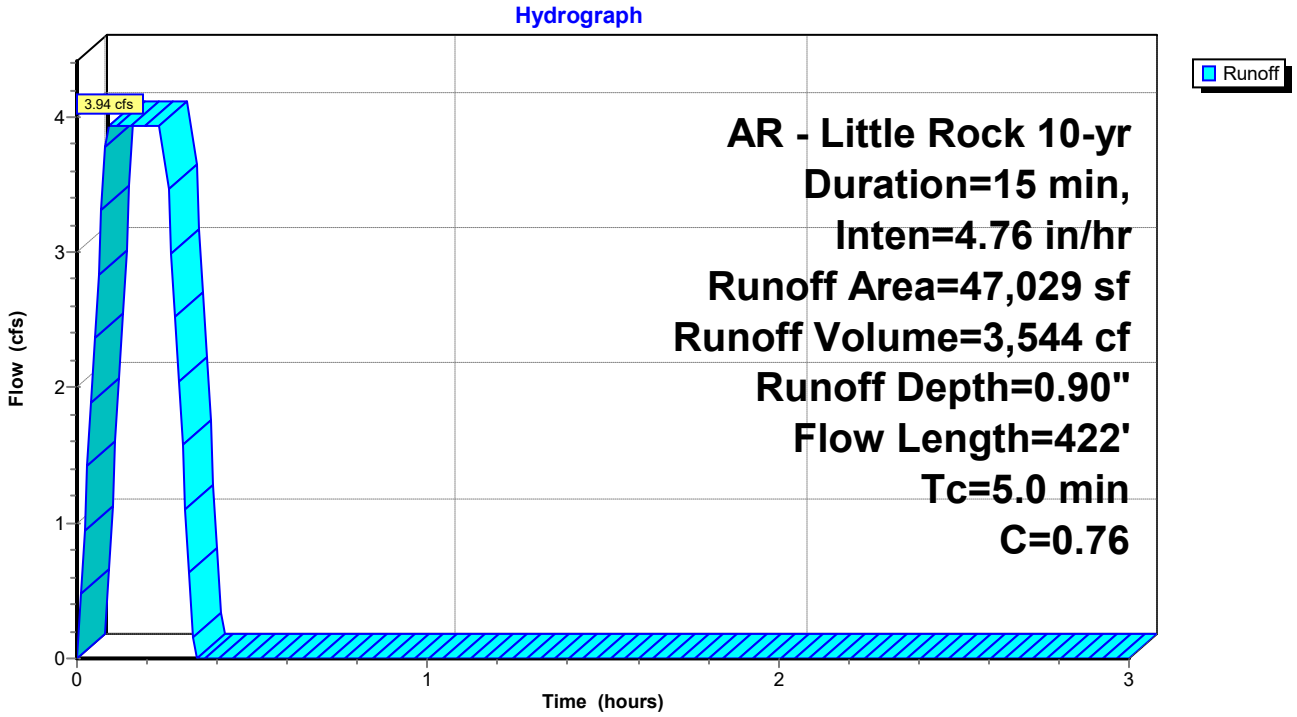
Runoff = 3.94 cfs @ 0.09 hrs, Volume= 3,544 cf, Depth= 0.90"
Routed to Pond Pond : Regional Detention Basin

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=15 min, Inten=4.76 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,511 | 0.86 | Existing Drive |
| 33,632 | 0.92 | Drives, Roof, Sidewalks |
| 11,886 | 0.30 | Landscaped Areas |
| 47,029 | 0.76 | Weighted Average |
| 47,029 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 82 | 0.0290 | 1.76 | | **Sheet Flow, Asphalt Sheet Flow** Smooth surfaces n= 0.011 P2= 4.19" |
| 0.8 | 87 | 0.0080 | 1.82 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 0.1 | 19 | 0.0210 | 2.94 | | **Shallow Concentrated Flow, Concentrated Pavement Flow** Paved Kv= 20.3 fps |
| 1.0 | 197 | 0.0250 | 3.21 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 0.3 | 37 | 0.0130 | 2.31 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 2.0 | | | | | **Direct Entry, Minimum adjustment** |
| 5.0 | 422 | Total | | | |

## Subcatchment SR: Springhill Retail Post



## Summary for Subcatchment WestProp: West Adjacent Property Drainage Basin

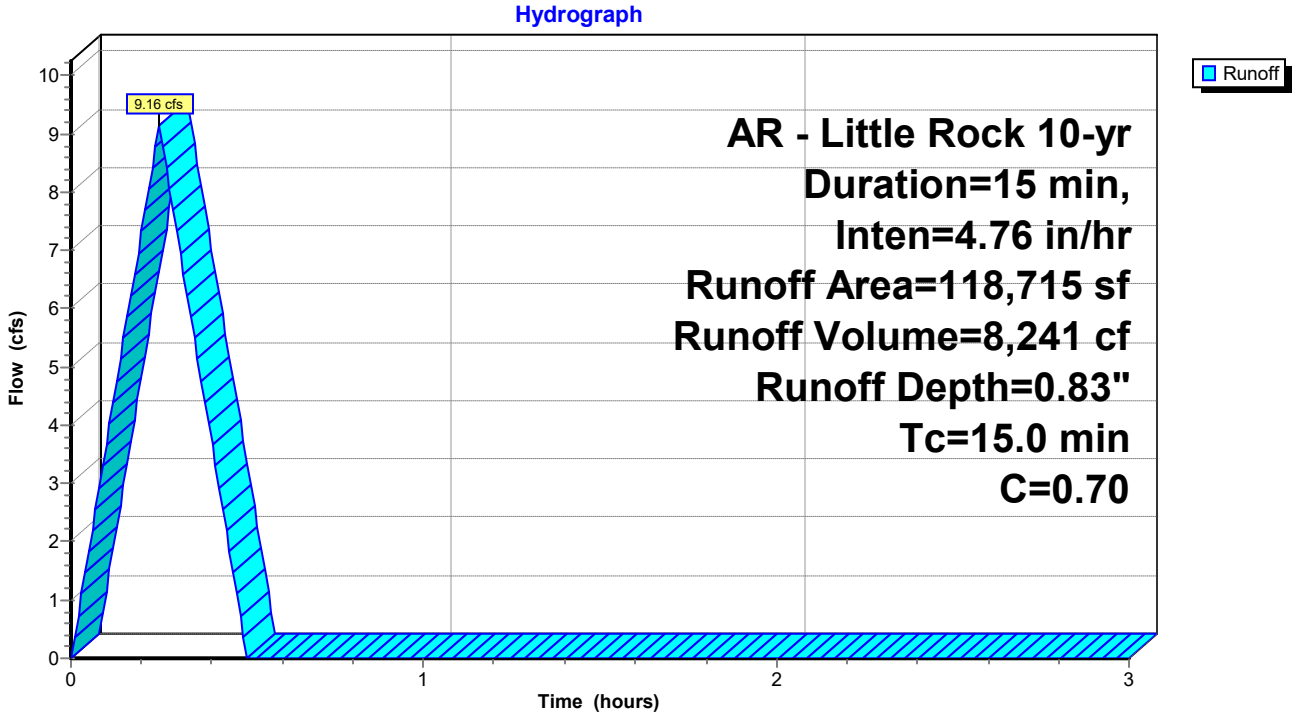
Runoff = 9.16 cfs @ 0.25 hrs, Volume= 8,241 cf, Depth= 0.83"
Routed to Reach A3 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 10-yr Duration=15 min, Inten=4.76 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 65,063 | 0.50 | Pervious Areas |
| 53,652 | 0.95 | Rooftop/Paving |
| 118,715 | 0.70 | Weighted Average |
| 65,063 | | 54.81% Pervious Area |
| 53,652 | | 45.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment WestProp: West Adjacent Property Drainage Basin



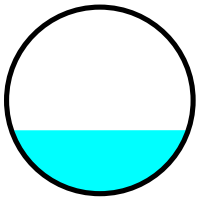
## Summary for Reach A1: Pipe A1

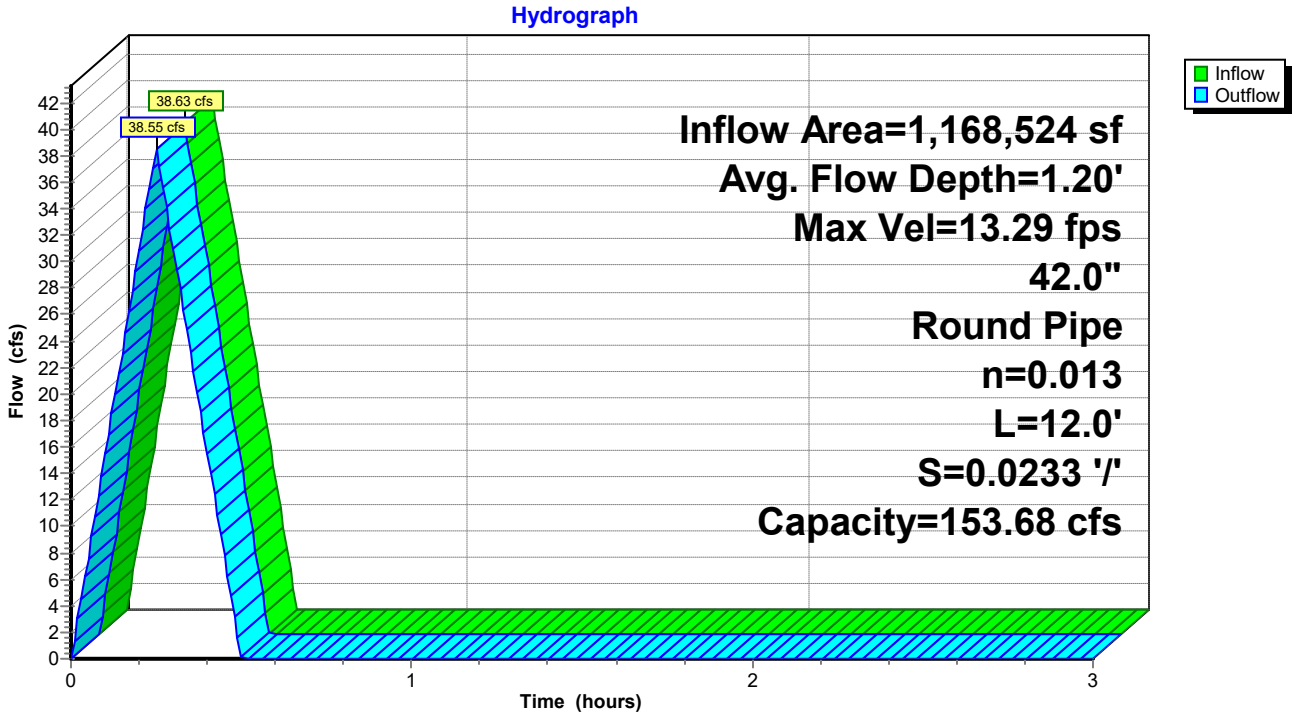
Inflow Area = 1,168,524 sf, 0.00% Impervious, Inflow Depth = 0.36" for 10-yr event
Inflow = 38.63 cfs @ 0.25 hrs, Volume= 34,764 cf
Outflow = 38.55 cfs @ 0.25 hrs, Volume= 34,765 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 13.29 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 10.31 fps, Avg. Travel Time= 0.0 min

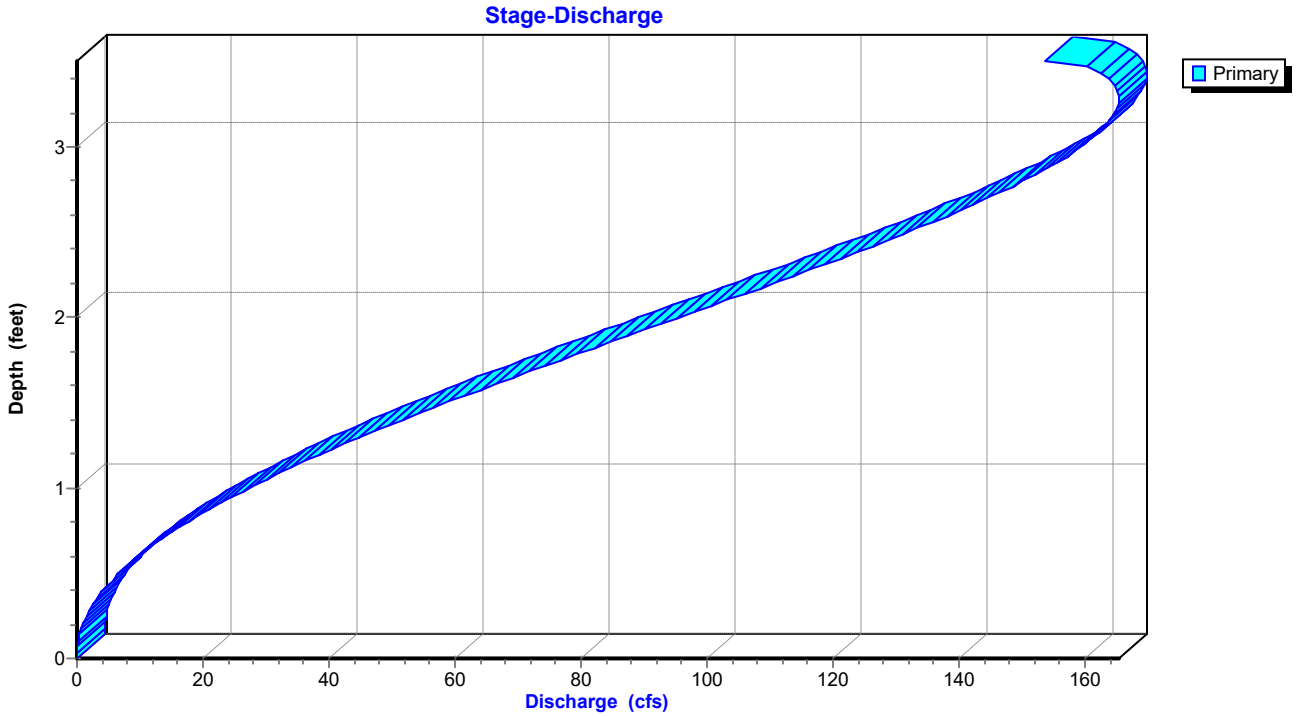
Peak Storage= 35 cf @ 0.25 hrs
Average Depth at Peak Storage= 1.20' , Surface Width= 3.32'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 153.68 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 12.0' Slope= 0.0233 '/'
Inlet Invert= 413.00', Outlet Invert= 412.72'





## Reach A1: Pipe A1



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

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 413.00 | 0.0 | 0 |
| 413.05 | 0.0 | 0 |
| 413.10 | 0.1 | 1 |
| 413.15 | 0.1 | 2 |
| 413.20 | 0.2 | 3 |
| 413.25 | 0.3 | 4 |
| 413.30 | 0.4 | 5 |
| 413.35 | 0.5 | 6 |
| 413.40 | 0.6 | 7 |
| 413.45 | 0.7 | 9 |
| 413.50 | 0.8 | 10 |
| 413.55 | 1.0 | 12 |
| 413.60 | 1.1 | 13 |
| 413.65 | 1.2 | 15 |
| 413.70 | 1.4 | 16 |
| 413.75 | 1.5 | 18 |
| 413.80 | 1.7 | 20 |
| 413.85 | 1.8 | 22 |
| 413.90 | 2.0 | 23 |
| 413.95 | 2.1 | 25 |
| 414.00 | 2.3 | 27 |
| 414.05 | 2.4 | 29 |
| 414.10 | 2.6 | 31 |
| 414.15 | 2.8 | 33 |
| 414.20 | 2.9 | 35 |
| 414.25 | 3.1 | 37 |
| 414.30 | 3.3 | 39 |
| 414.35 | 3.4 | 41 |
| 414.40 | 3.6 | 43 |
| 414.45 | 3.8 | 45 |
| 414.50 | 3.9 | 47 |
| 414.55 | 4.1 | 49 |
| 414.60 | 4.3 | 51 |
| 414.65 | 4.5 | 54 |
| 414.70 | 4.6 | 56 |
| 414.75 | 4.8 | 58 |
| 414.80 | 5.0 | 60 |
| 414.85 | 5.2 | 62 |
| 414.90 | 5.3 | 64 |
| 414.95 | 5.5 | 66 |
| 415.00 | 5.7 | 68 |
| 415.05 | 5.9 | 70 |
| 415.10 | 6.0 | 72 |
| 415.15 | 6.2 | 74 |
| 415.20 | 6.4 | 76 |
| 415.25 | 6.5 | 78 |
| 415.30 | 6.7 | 80 |
| 415.35 | 6.9 | 82 |
| 415.40 | 7.0 | 84 |
| 415.45 | 7.2 | 86 |
| 415.50 | 7.4 | 88 |
| 415.55 | 7.5 | 90 |
| 415.60 | 7.7 | 92 |
| 415.65 | 7.8 | 94 |
| 415.70 | 8.0 | 96 |
| 415.75 | 8.1 | 97 |
| 415.80 | 8.3 | 99 |
| 415.85 | 8.4 | 101 |
| 415.90 | 8.5 | 102 |
| 415.95 | 8.7 | 104 |
| 416.00 | 8.8 | 105 |
| 416.05 | 8.9 | 107 |
| 416.10 | 9.0 | 108 |
| 416.15 | 9.1 | 109 |
| 416.20 | 9.2 | 111 |
| 416.25 | 9.3 | 112 |
| 416.30 | 9.4 | 113 |
| 416.35 | 9.5 | 114 |
| 416.40 | 9.5 | 115 |
| 416.45 | 9.6 | 115 |
| 416.50 | **9.6** | **115** |

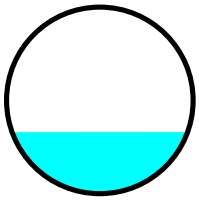
## Summary for Reach A2: Pipe A2

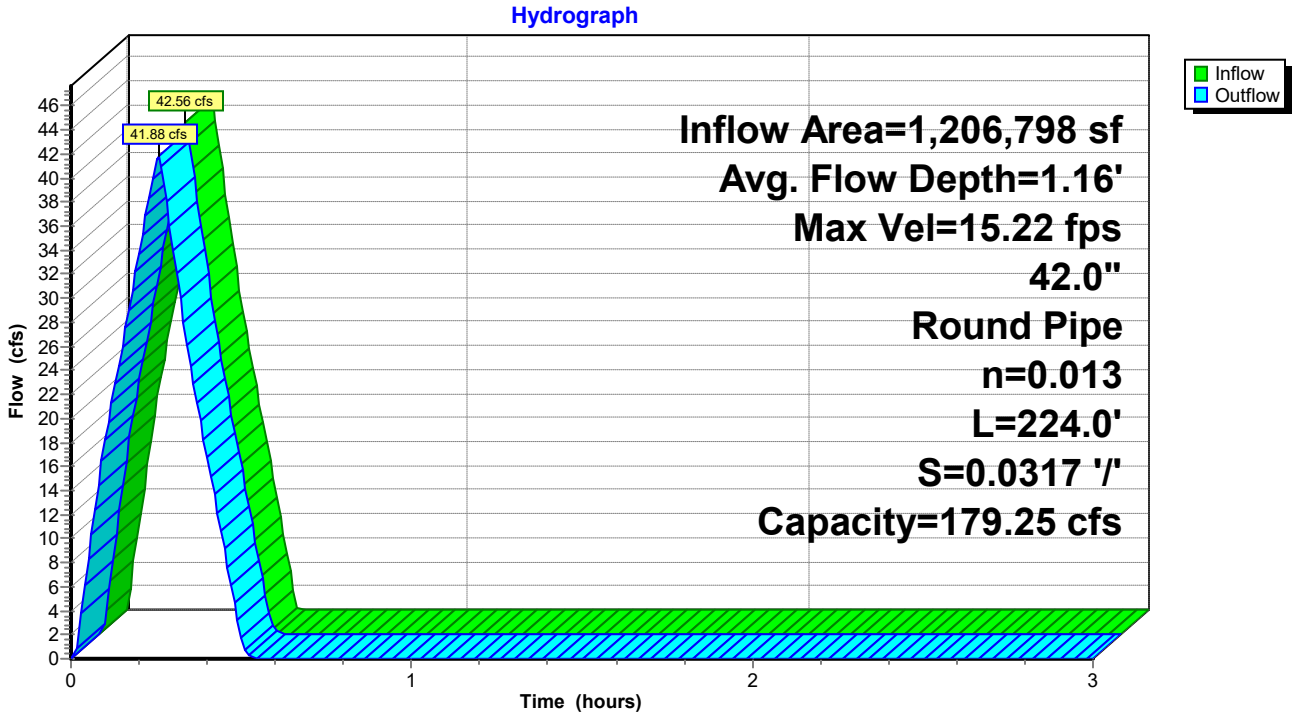
Inflow Area = 1,206,798 sf, 3.17% Impervious, Inflow Depth = 0.38" for 10-yr event
Inflow = 42.56 cfs @ 0.25 hrs, Volume= 38,371 cf
Outflow = 41.88 cfs @ 0.26 hrs, Volume= 38,371 cf, Atten= 2%, Lag= 0.4 min
Routed to Reach A3 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 15.22 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 8.62 fps, Avg. Travel Time= 0.4 min

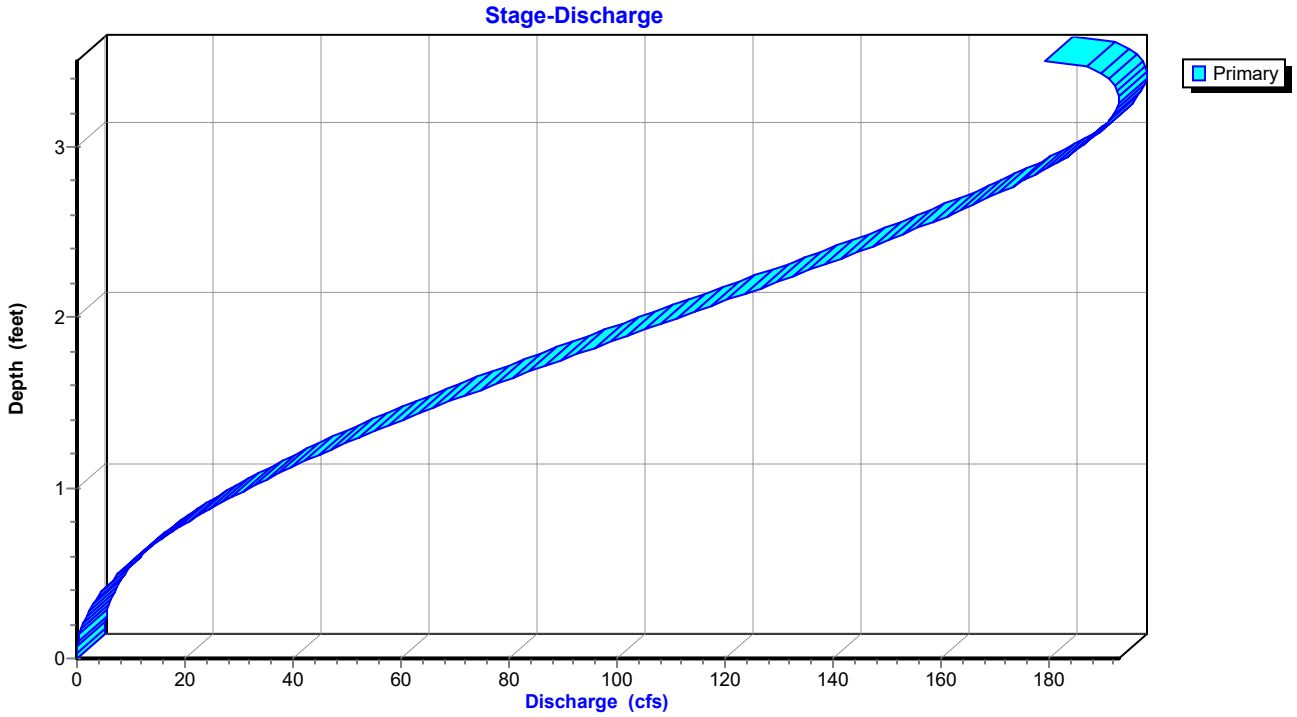
Peak Storage= 620 cf @ 0.25 hrs
Average Depth at Peak Storage= 1.16' , Surface Width= 3.29'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 179.25 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 224.0' Slope= 0.0317 '/'
Inlet Invert= 412.52', Outlet Invert= 405.41'





## Reach A2: Pipe A2



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

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 412.52 | 0.0 | 0 |
| 412.57 | 0.0 | 6 |
| 412.62 | 0.1 | 18 |
| 412.67 | 0.1 | 32 |
| 412.72 | 0.2 | 49 |
| 412.77 | 0.3 | 68 |
| 412.82 | 0.4 | 90 |
| 412.87 | 0.5 | 112 |
| 412.92 | 0.6 | 136 |
| 412.97 | 0.7 | 162 |
| 413.02 | 0.8 | 189 |
| 413.07 | 1.0 | 217 |
| 413.12 | 1.1 | 246 |
| 413.17 | 1.2 | 276 |
| 413.22 | 1.4 | 307 |
| 413.27 | 1.5 | 339 |
| 413.32 | 1.7 | 371 |
| 413.37 | 1.8 | 404 |
| 413.42 | 2.0 | 438 |
| 413.47 | 2.1 | 473 |
| 413.52 | 2.3 | 508 |
| 413.57 | 2.4 | 544 |
| 413.62 | 2.6 | 580 |
| 413.67 | 2.8 | 617 |
| 413.72 | 2.9 | 654 |
| 413.77 | 3.1 | 691 |
| 413.82 | 3.3 | 729 |
| 413.87 | 3.4 | 767 |
| 413.92 | 3.6 | 805 |
| 413.97 | 3.8 | 844 |
| 414.02 | 3.9 | 882 |
| 414.07 | 4.1 | 921 |
| 414.12 | 4.3 | 960 |
| 414.17 | 4.5 | 999 |
| 414.22 | 4.6 | 1,038 |
| 414.27 | 4.8 | 1,078 |
| 414.32 | 5.0 | 1,117 |
| 414.37 | 5.2 | 1,156 |
| 414.42 | 5.3 | 1,195 |
| 414.47 | 5.5 | 1,234 |
| 414.52 | 5.7 | 1,273 |
| 414.57 | 5.9 | 1,312 |
| 414.62 | 6.0 | 1,350 |
| 414.67 | 6.2 | 1,388 |
| 414.72 | 6.4 | 1,426 |
| 414.77 | 6.5 | 1,464 |
| 414.82 | 6.7 | 1,502 |
| 414.87 | 6.9 | 1,539 |
| 414.92 | 7.0 | 1,575 |
| 414.97 | 7.2 | 1,611 |
| 415.02 | 7.4 | 1,647 |
| 415.07 | 7.5 | 1,682 |
| 415.12 | 7.7 | 1,717 |
| 415.17 | 7.8 | 1,751 |
| 415.22 | 8.0 | 1,784 |
| 415.27 | 8.1 | 1,816 |
| 415.32 | 8.3 | 1,848 |
| 415.37 | 8.4 | 1,879 |
| 415.42 | 8.5 | 1,909 |
| 415.47 | 8.7 | 1,938 |
| 415.52 | 8.8 | 1,966 |
| 415.57 | 8.9 | 1,993 |
| 415.62 | 9.0 | 2,019 |
| 415.67 | 9.1 | 2,043 |
| 415.72 | 9.2 | 2,066 |
| 415.77 | 9.3 | 2,087 |
| 415.82 | 9.4 | 2,106 |
| 415.87 | 9.5 | 2,123 |
| 415.92 | 9.5 | 2,138 |
| 415.97 | 9.6 | 2,149 |
| 416.02 | **9.6** | **2,155** |

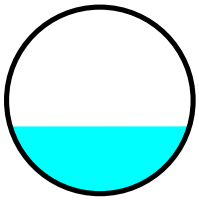
## Summary for Reach A3: Pipe A2

Inflow Area = 1,325,513 sf, 6.94% Impervious, Inflow Depth = 0.42" for 10-yr event
Inflow = 50.84 cfs @ 0.25 hrs, Volume= 46,612 cf
Outflow = 50.76 cfs @ 0.26 hrs, Volume= 46,612 cf, Atten= 0%, Lag= 0.1 min
Routed to Pond Pond : Regional Detention Basin

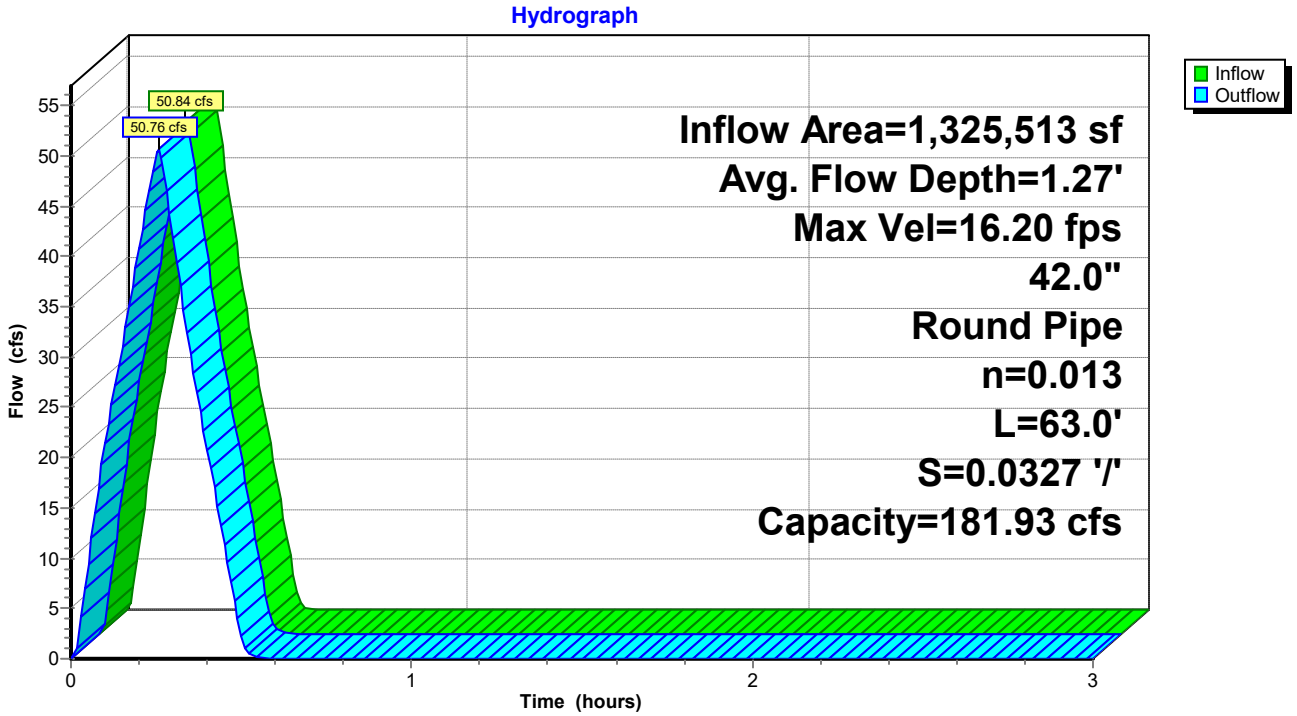
Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 16.20 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 9.11 fps, Avg. Travel Time= 0.1 min

Peak Storage= 198 cf @ 0.26 hrs
Average Depth at Peak Storage= 1.27' , Surface Width= 3.36'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 181.93 cfs

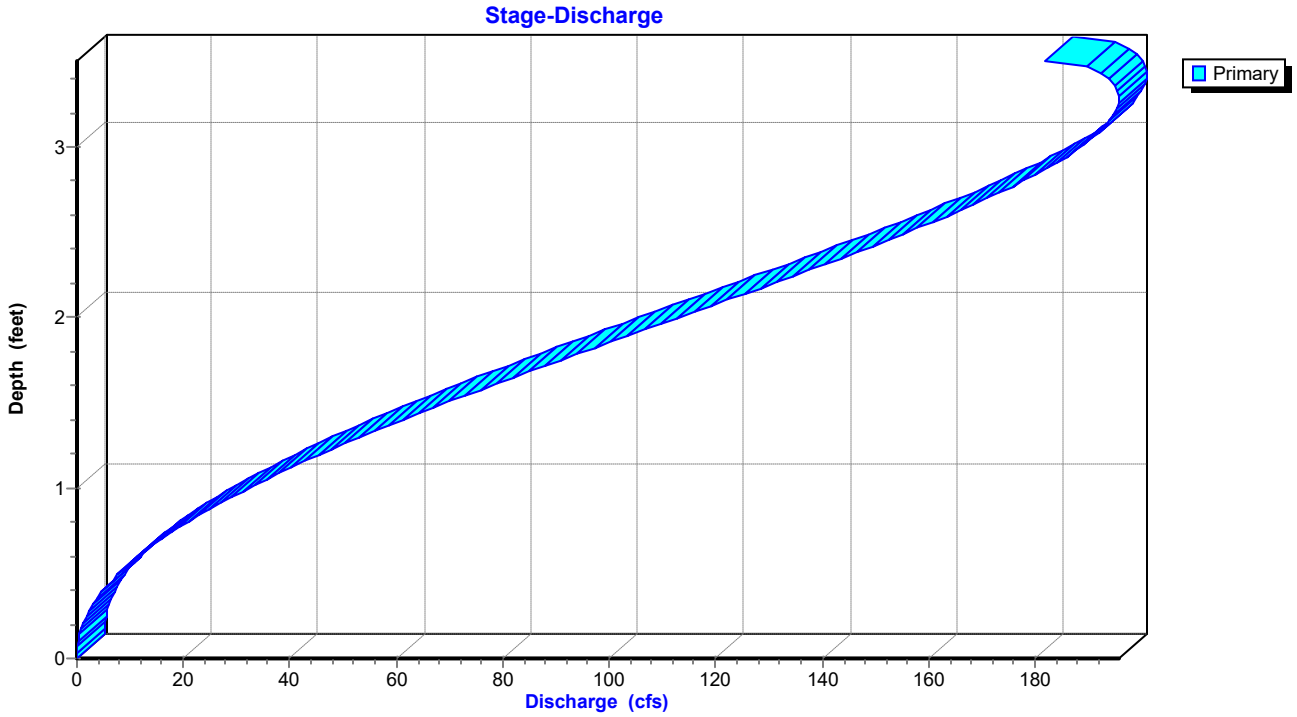
42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 63.0' Slope= 0.0327 '/'
Inlet Invert= 405.31', Outlet Invert= 403.25'



### Reach A3: Pipe A2



## Reach A3: Pipe A2



## Stage-Area-Storage for Reach A3: Pipe A2

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 405.31 | 0.0 | 0 |
| 405.36 | 0.0 | 2 |
| 405.41 | 0.1 | 5 |
| 405.46 | 0.1 | 9 |
| 405.51 | 0.2 | 14 |
| 405.56 | 0.3 | 19 |
| 405.61 | 0.4 | 25 |
| 405.66 | 0.5 | 32 |
| 405.71 | 0.6 | 38 |
| 405.76 | 0.7 | 46 |
| 405.81 | 0.8 | 53 |
| 405.86 | 1.0 | 61 |
| 405.91 | 1.1 | 69 |
| 405.96 | 1.2 | 78 |
| 406.01 | 1.4 | 86 |
| 406.06 | 1.5 | 95 |
| 406.11 | 1.7 | 104 |
| 406.16 | 1.8 | 114 |
| 406.21 | 2.0 | 123 |
| 406.26 | 2.1 | 133 |
| 406.31 | 2.3 | 143 |
| 406.36 | 2.4 | 153 |
| 406.41 | 2.6 | 163 |
| 406.46 | 2.8 | 173 |
| 406.51 | 2.9 | 184 |
| 406.56 | 3.1 | 194 |
| 406.61 | 3.3 | 205 |
| 406.66 | 3.4 | 216 |
| 406.71 | 3.6 | 226 |
| 406.76 | 3.8 | 237 |
| 406.81 | 3.9 | 248 |
| 406.86 | 4.1 | 259 |
| 406.91 | 4.3 | 270 |
| 406.96 | 4.5 | 281 |
| 407.01 | 4.6 | 292 |
| 407.06 | 4.8 | 303 |
| 407.11 | 5.0 | 314 |
| 407.16 | 5.2 | 325 |
| 407.21 | 5.3 | 336 |
| 407.26 | 5.5 | 347 |
| 407.31 | 5.7 | 358 |
| 407.36 | 5.9 | 369 |
| 407.41 | 6.0 | 380 |
| 407.46 | 6.2 | 390 |
| 407.51 | 6.4 | 401 |
| 407.56 | 6.5 | 412 |
| 407.61 | 6.7 | 422 |
| 407.66 | 6.9 | 433 |
| 407.71 | 7.0 | 443 |
| 407.76 | 7.2 | 453 |
| 407.81 | 7.4 | 463 |
| 407.86 | 7.5 | 473 |
| 407.91 | 7.7 | 483 |
| 407.96 | 7.8 | 492 |
| 408.01 | 8.0 | 502 |
| 408.06 | 8.1 | 511 |
| 408.11 | 8.3 | 520 |
| 408.16 | 8.4 | 529 |
| 408.21 | 8.5 | 537 |
| 408.26 | 8.7 | 545 |
| 408.31 | 8.8 | 553 |
| 408.36 | 8.9 | 561 |
| 408.41 | 9.0 | 568 |
| 408.46 | 9.1 | 575 |
| 408.51 | 9.2 | 581 |
| 408.56 | 9.3 | 587 |
| 408.61 | 9.4 | 592 |
| 408.66 | 9.5 | 597 |
| 408.71 | 9.5 | 601 |
| 408.76 | 9.6 | 604 |
| 408.81 | **9.6** | **606** |

## Summary for Pond Pond: Regional Detention Basin

Inflow Area = 1,372,542 sf, 6.70% Impervious, Inflow Depth = 0.44" for 10-yr event
Inflow = 54.42 cfs @ 0.25 hrs, Volume= 50,156 cf
Outflow = 44.67 cfs @ 0.30 hrs, Volume= 50,169 cf, Atten= 18%, Lag= 2.5 min
Primary = 44.67 cfs @ 0.30 hrs, Volume= 50,169 cf

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 404.98' @ 0.30 hrs Storage= 6,943 cf

Plug-Flow detention time= 1.8 min calculated for 50,002 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min ( 16.6 - 14.8 )

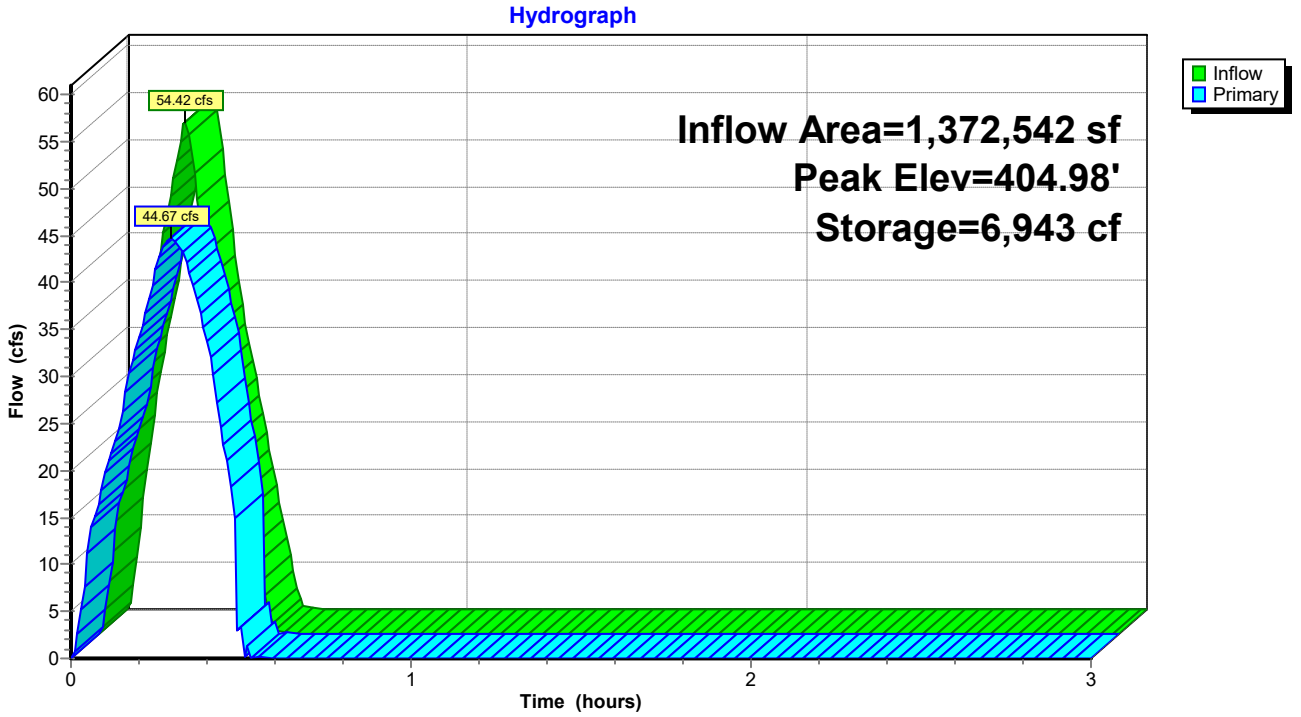
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 401.00' | 12,812 cf | **Custom Stage Data** Listed below |

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 401.00 | 0 |
| 402.00 | 103 |
| 403.00 | 803 |
| 404.00 | 2,704 |
| 405.00 | 7,038 |
| 406.00 | 12,812 |

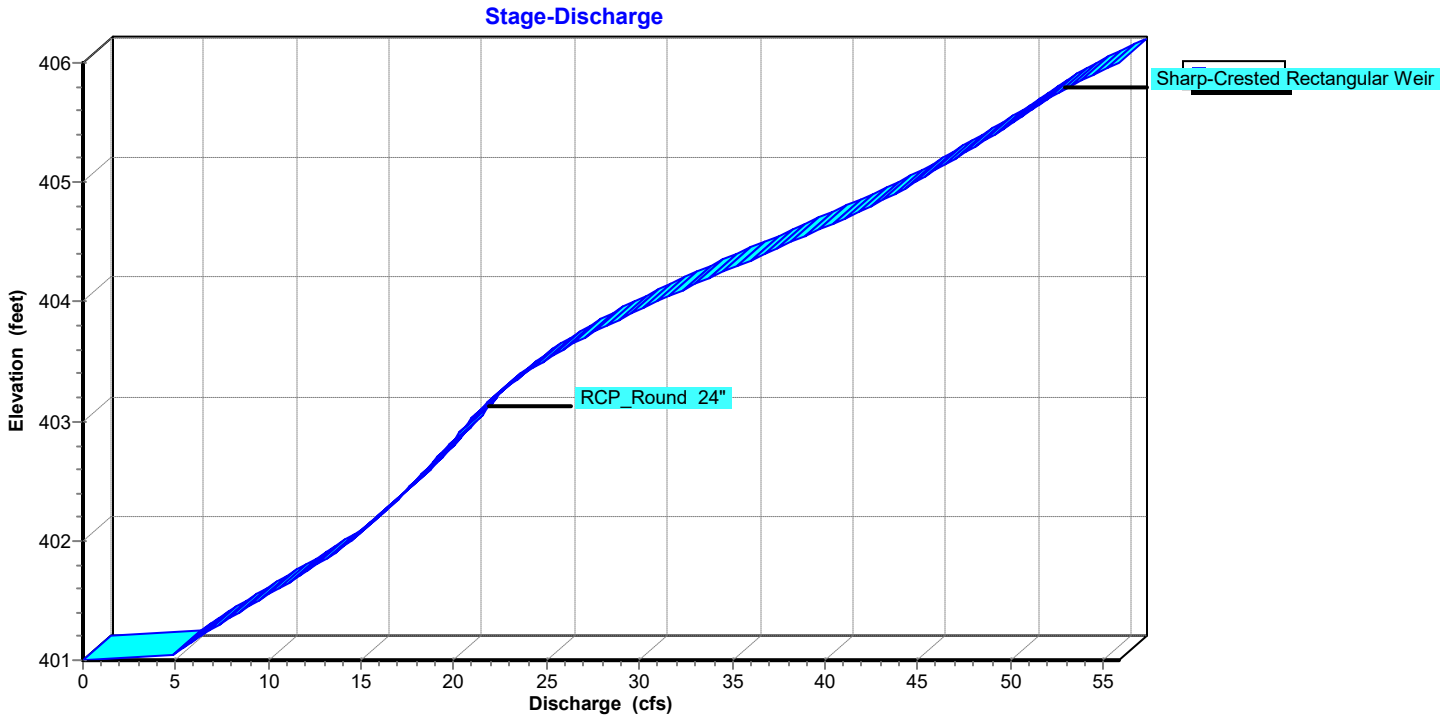
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 400.10' | **24.0" Round RCP_Round 24"**<br>L= 100.0' RCP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 400.10' / 397.97' S= 0.0213 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf |
| #2 | Primary | 403.02' | **24.0" Round RCP_Round 24"**<br>L= 35.0' RCP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 403.02' / 401.73' S= 0.0369 '/' Cc= 0.900<br>n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf |
| #3 | Primary | 405.69' | **2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) |

**Primary OutFlow** Max=44.65 cfs @ 0.30 hrs HW=404.98' (Free Discharge)
- **1=RCP_Round 24"** (Inlet Controls 29.78 cfs @ 9.48 fps)
- **2=RCP_Round 24"** (Inlet Controls 14.87 cfs @ 4.76 fps)
- **3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond Pond: Regional Detention Basin




## Pond Pond: Regional Detention Basin



## Stage-Area-Storage for Pond Pond: Regional Detention Basin

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 401.00 | 0 | 403.60 | 1,944 |
| 401.05 | 5 | 403.65 | 2,039 |
| 401.10 | 10 | 403.70 | 2,134 |
| 401.15 | 15 | 403.75 | 2,229 |
| 401.20 | 21 | 403.80 | 2,324 |
| 401.25 | 26 | 403.85 | 2,419 |
| 401.30 | 31 | 403.90 | 2,514 |
| 401.35 | 36 | 403.95 | 2,609 |
| 401.40 | 41 | 404.00 | 2,704 |
| 401.45 | 46 | 404.05 | 2,921 |
| 401.50 | 52 | 404.10 | 3,137 |
| 401.55 | 57 | 404.15 | 3,354 |
| 401.60 | 62 | 404.20 | 3,571 |
| 401.65 | 67 | 404.25 | 3,788 |
| 401.70 | 72 | 404.30 | 4,004 |
| 401.75 | 77 | 404.35 | 4,221 |
| 401.80 | 82 | 404.40 | 4,438 |
| 401.85 | 88 | 404.45 | 4,654 |
| 401.90 | 93 | 404.50 | 4,871 |
| 401.95 | 98 | 404.55 | 5,088 |
| 402.00 | 103 | 404.60 | 5,304 |
| 402.05 | 138 | 404.65 | 5,521 |
| 402.10 | 173 | 404.70 | 5,738 |
| 402.15 | 208 | 404.75 | 5,955 |
| 402.20 | 243 | 404.80 | 6,171 |
| 402.25 | 278 | 404.85 | 6,388 |
| 402.30 | 313 | 404.90 | 6,605 |
| 402.35 | 348 | 404.95 | 6,821 |
| 402.40 | 383 | 405.00 | 7,038 |
| 402.45 | 418 | 405.05 | 7,327 |
| 402.50 | 453 | 405.10 | 7,615 |
| 402.55 | 488 | 405.15 | 7,904 |
| 402.60 | 523 | 405.20 | 8,193 |
| 402.65 | 558 | 405.25 | 8,482 |
| 402.70 | 593 | 405.30 | 8,770 |
| 402.75 | 628 | 405.35 | 9,059 |
| 402.80 | 663 | 405.40 | 9,348 |
| 402.85 | 698 | 405.45 | 9,636 |
| 402.90 | 733 | 405.50 | 9,925 |
| 402.95 | 768 | 405.55 | 10,214 |
| 403.00 | 803 | 405.60 | 10,502 |
| 403.05 | 898 | 405.65 | 10,791 |
| 403.10 | 993 | 405.70 | 11,080 |
| 403.15 | 1,088 | 405.75 | 11,369 |
| 403.20 | 1,183 | 405.80 | 11,657 |
| 403.25 | 1,278 | 405.85 | 11,946 |
| 403.30 | 1,373 | 405.90 | 12,235 |
| 403.35 | 1,468 | 405.95 | 12,523 |
| 403.40 | 1,563 | 406.00 | **12,812** |
| 403.45 | 1,658 | | |
| 403.50 | 1,754 | | |
| 403.55 | 1,849 | | |

## Summary for Subcatchment ARDOT: ARDOT Offsite

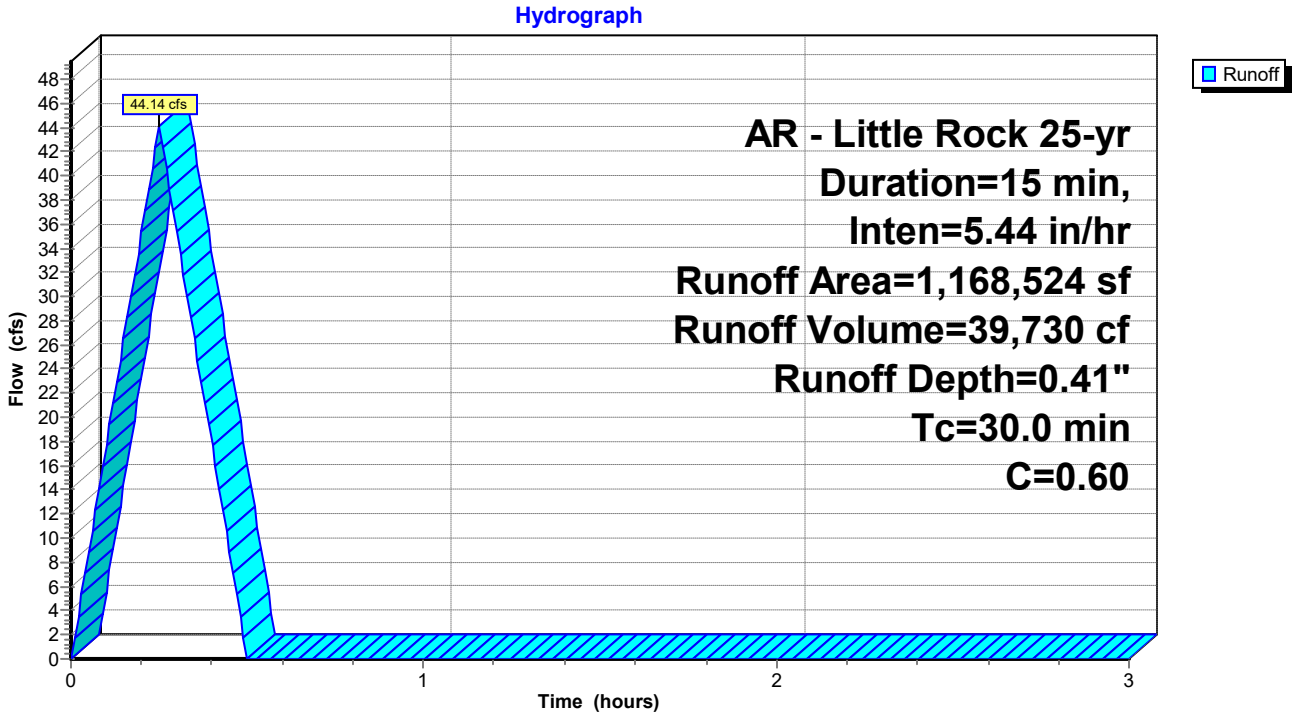
Runoff = 44.14 cfs @ 0.25 hrs, Volume= 39,730 cf, Depth= 0.41"
Routed to Reach A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=15 min, Inten=5.44 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,168,524 | 0.60 | |
| 1,168,524 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.0 | | | | | **Direct Entry,** |

## Subcatchment ARDOT: ARDOT Offsite



## Summary for Subcatchment M&F: Merchants and Farmers

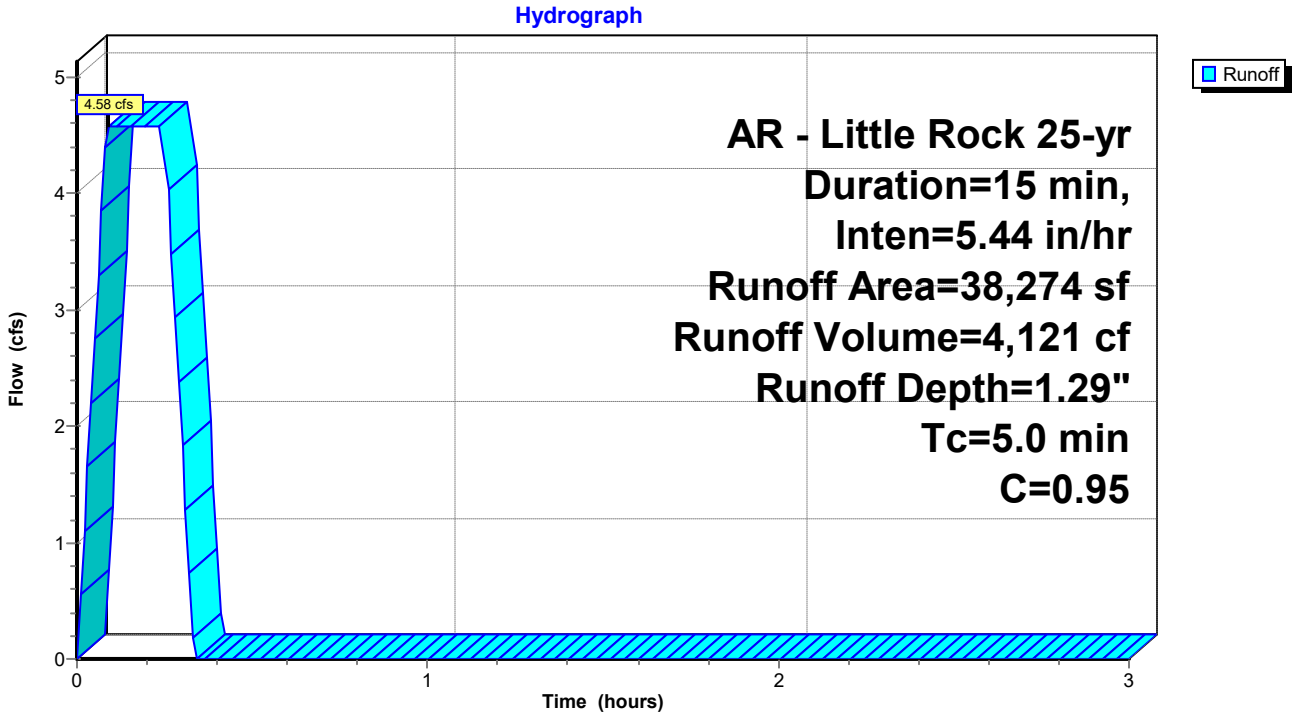
Runoff = 4.58 cfs @ 0.09 hrs, Volume= 4,121 cf, Depth= 1.29"
Routed to Reach A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=15 min, Inten=5.44 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 38,274 | 0.95 | Developed Site |
| 38,274 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | | | | | **Direct Entry,** |

## Subcatchment M&F: Merchants and Farmers



## Summary for Subcatchment SR: Springhill Retail Post

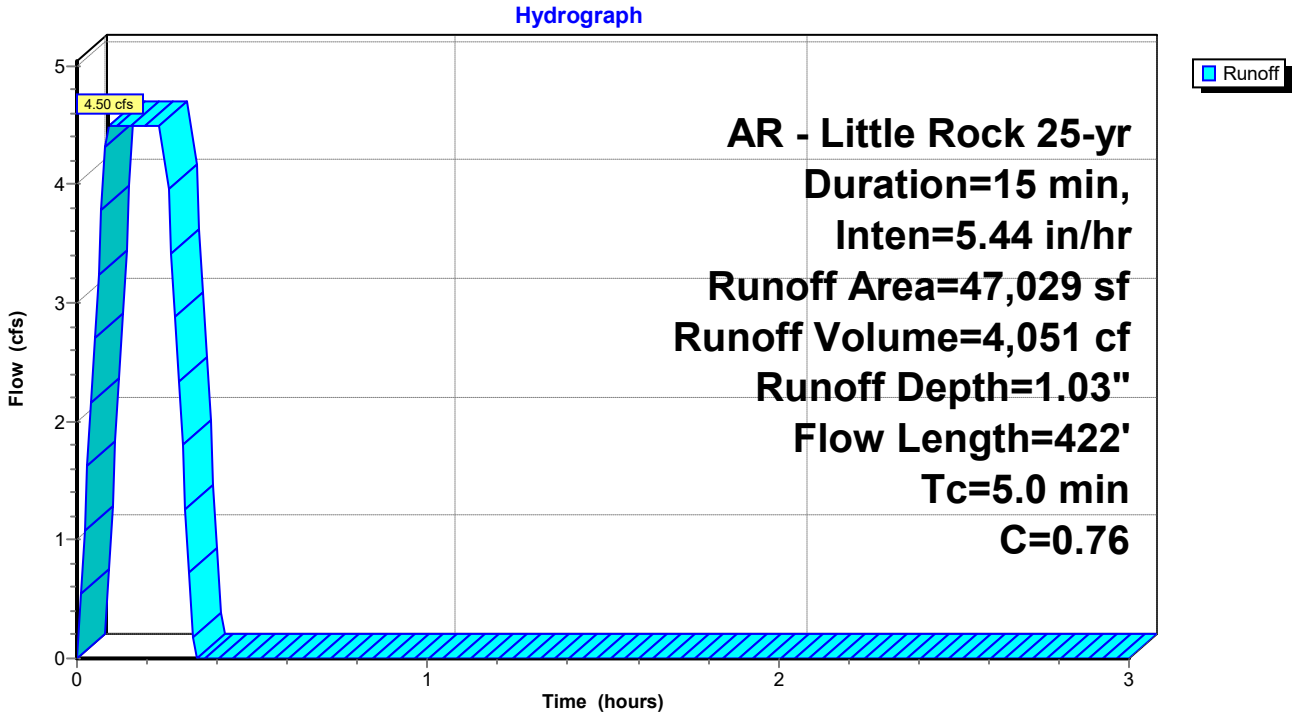
Runoff = 4.50 cfs @ 0.09 hrs, Volume= 4,051 cf, Depth= 1.03"
Routed to Pond Pond : Regional Detention Basin

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=15 min, Inten=5.44 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,511 | 0.86 | Existing Drive |
| 33,632 | 0.92 | Drives, Roof, Sidewalks |
| 11,886 | 0.30 | Landscaped Areas |
| 47,029 | 0.76 | Weighted Average |
| 47,029 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 82 | 0.0290 | 1.76 | | **Sheet Flow, Asphalt Sheet Flow** Smooth surfaces n= 0.011 P2= 4.19" |
| 0.8 | 87 | 0.0080 | 1.82 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 0.1 | 19 | 0.0210 | 2.94 | | **Shallow Concentrated Flow, Concentrated Pavement Flow** Paved Kv= 20.3 fps |
| 1.0 | 197 | 0.0250 | 3.21 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 0.3 | 37 | 0.0130 | 2.31 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 2.0 | | | | | **Direct Entry, Minimum adjustment** |
| 5.0 | 422 | Total | | | |

## Subcatchment SR: Springhill Retail Post



## Summary for Subcatchment WestProp: West Adjacent Property Drainage Basin

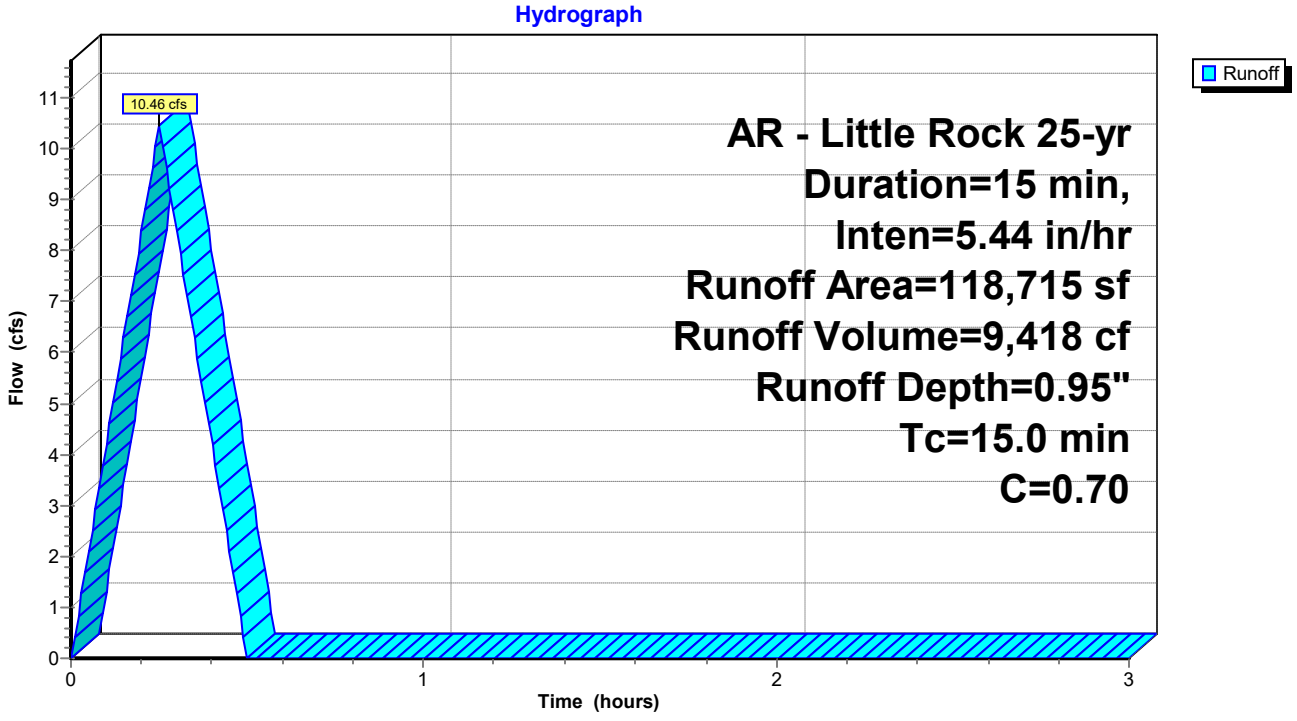
Runoff = 10.46 cfs @ 0.25 hrs, Volume= 9,418 cf, Depth= 0.95"
Routed to Reach A3 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 25-yr Duration=15 min, Inten=5.44 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 65,063 | 0.50 | Pervious Areas |
| 53,652 | 0.95 | Rooftop/Paving |
| 118,715 | 0.70 | Weighted Average |
| 65,063 | | 54.81% Pervious Area |
| 53,652 | | 45.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment WestProp: West Adjacent Property Drainage Basin



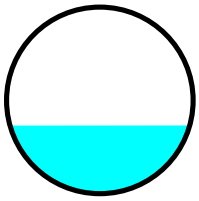
## Summary for Reach A1: Pipe A1

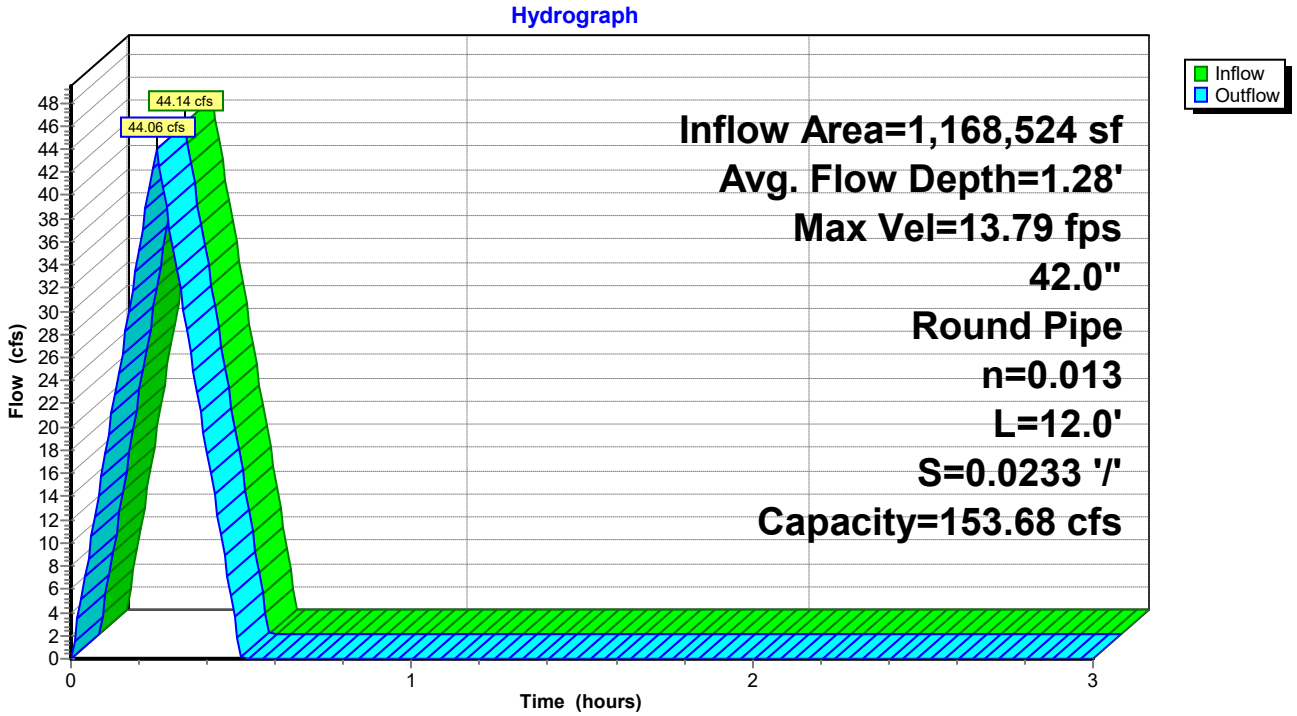
Inflow Area = 1,168,524 sf, 0.00% Impervious, Inflow Depth = 0.41" for 25-yr event
Inflow = 44.14 cfs @ 0.25 hrs, Volume= 39,730 cf
Outflow = 44.06 cfs @ 0.25 hrs, Volume= 39,731 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 13.79 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 10.71 fps, Avg. Travel Time= 0.0 min

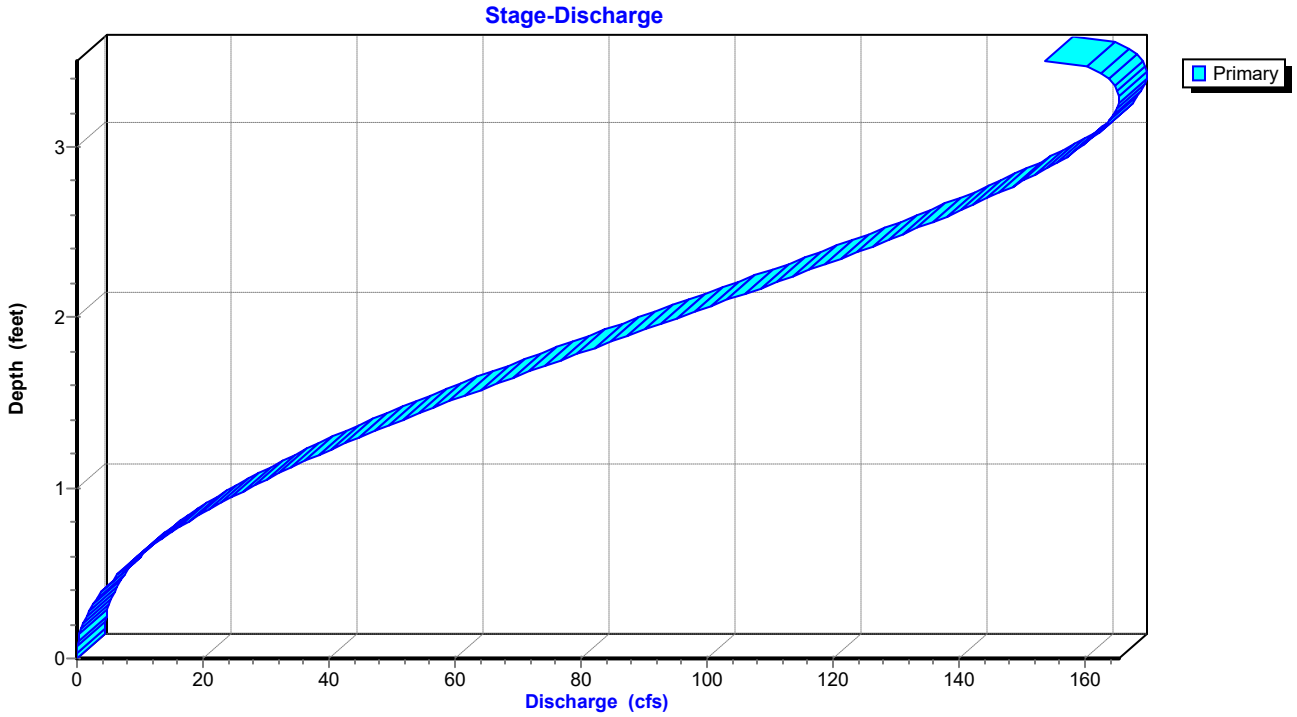
Peak Storage= 38 cf @ 0.25 hrs
Average Depth at Peak Storage= 1.28' , Surface Width= 3.37'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 153.68 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 12.0' Slope= 0.0233 '/'
Inlet Invert= 413.00', Outlet Invert= 412.72'





## Reach A1: Pipe A1



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

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 413.00 | 0.0 | 0 |
| 413.05 | 0.0 | 0 |
| 413.10 | 0.1 | 1 |
| 413.15 | 0.1 | 2 |
| 413.20 | 0.2 | 3 |
| 413.25 | 0.3 | 4 |
| 413.30 | 0.4 | 5 |
| 413.35 | 0.5 | 6 |
| 413.40 | 0.6 | 7 |
| 413.45 | 0.7 | 9 |
| 413.50 | 0.8 | 10 |
| 413.55 | 1.0 | 12 |
| 413.60 | 1.1 | 13 |
| 413.65 | 1.2 | 15 |
| 413.70 | 1.4 | 16 |
| 413.75 | 1.5 | 18 |
| 413.80 | 1.7 | 20 |
| 413.85 | 1.8 | 22 |
| 413.90 | 2.0 | 23 |
| 413.95 | 2.1 | 25 |
| 414.00 | 2.3 | 27 |
| 414.05 | 2.4 | 29 |
| 414.10 | 2.6 | 31 |
| 414.15 | 2.8 | 33 |
| 414.20 | 2.9 | 35 |
| 414.25 | 3.1 | 37 |
| 414.30 | 3.3 | 39 |
| 414.35 | 3.4 | 41 |
| 414.40 | 3.6 | 43 |
| 414.45 | 3.8 | 45 |
| 414.50 | 3.9 | 47 |
| 414.55 | 4.1 | 49 |
| 414.60 | 4.3 | 51 |
| 414.65 | 4.5 | 54 |
| 414.70 | 4.6 | 56 |
| 414.75 | 4.8 | 58 |
| 414.80 | 5.0 | 60 |
| 414.85 | 5.2 | 62 |
| 414.90 | 5.3 | 64 |
| 414.95 | 5.5 | 66 |
| 415.00 | 5.7 | 68 |
| 415.05 | 5.9 | 70 |
| 415.10 | 6.0 | 72 |
| 415.15 | 6.2 | 74 |
| 415.20 | 6.4 | 76 |
| 415.25 | 6.5 | 78 |
| 415.30 | 6.7 | 80 |
| 415.35 | 6.9 | 82 |
| 415.40 | 7.0 | 84 |
| 415.45 | 7.2 | 86 |
| 415.50 | 7.4 | 88 |
| 415.55 | 7.5 | 90 |
| 415.60 | 7.7 | 92 |
| 415.65 | 7.8 | 94 |
| 415.70 | 8.0 | 96 |
| 415.75 | 8.1 | 97 |
| 415.80 | 8.3 | 99 |
| 415.85 | 8.4 | 101 |
| 415.90 | 8.5 | 102 |
| 415.95 | 8.7 | 104 |
| 416.00 | 8.8 | 105 |
| 416.05 | 8.9 | 107 |
| 416.10 | 9.0 | 108 |
| 416.15 | 9.1 | 109 |
| 416.20 | 9.2 | 111 |
| 416.25 | 9.3 | 112 |
| 416.30 | 9.4 | 113 |
| 416.35 | 9.5 | 114 |
| 416.40 | 9.5 | 115 |
| 416.45 | 9.6 | 115 |
| 416.50 | **9.6** | **115** |

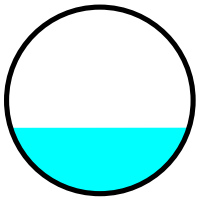
## Summary for Reach A2: Pipe A2

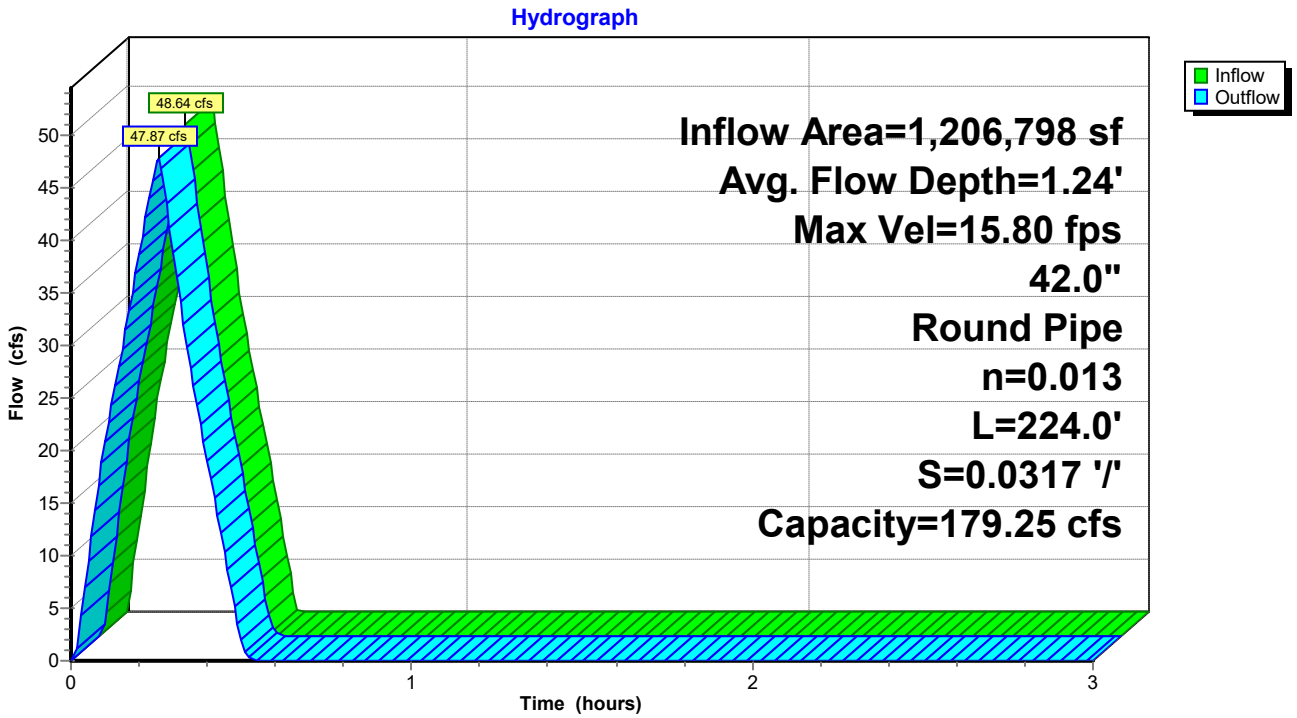
Inflow Area = 1,206,798 sf, 3.17% Impervious, Inflow Depth = 0.44" for 25-yr event
Inflow = 48.64 cfs @ 0.25 hrs, Volume= 43,852 cf
Outflow = 47.87 cfs @ 0.26 hrs, Volume= 43,852 cf, Atten= 2%, Lag= 0.4 min
Routed to Reach A3 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 15.80 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 8.94 fps, Avg. Travel Time= 0.4 min

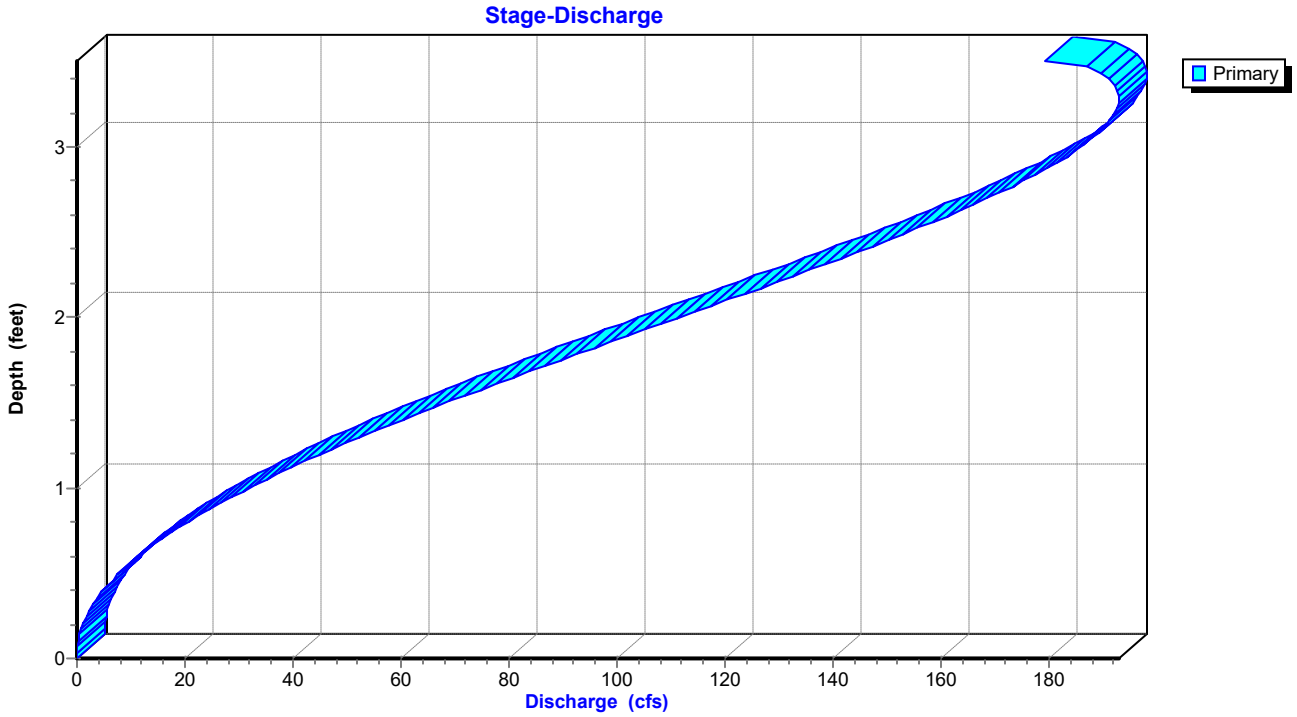
Peak Storage= 683 cf @ 0.25 hrs
Average Depth at Peak Storage= 1.24' , Surface Width= 3.35'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 179.25 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 224.0' Slope= 0.0317 '/'
Inlet Invert= 412.52', Outlet Invert= 405.41'





## Reach A2: Pipe A2



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

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 412.52 | 0.0 | 0 |
| 412.57 | 0.0 | 6 |
| 412.62 | 0.1 | 18 |
| 412.67 | 0.1 | 32 |
| 412.72 | 0.2 | 49 |
| 412.77 | 0.3 | 68 |
| 412.82 | 0.4 | 90 |
| 412.87 | 0.5 | 112 |
| 412.92 | 0.6 | 136 |
| 412.97 | 0.7 | 162 |
| 413.02 | 0.8 | 189 |
| 413.07 | 1.0 | 217 |
| 413.12 | 1.1 | 246 |
| 413.17 | 1.2 | 276 |
| 413.22 | 1.4 | 307 |
| 413.27 | 1.5 | 339 |
| 413.32 | 1.7 | 371 |
| 413.37 | 1.8 | 404 |
| 413.42 | 2.0 | 438 |
| 413.47 | 2.1 | 473 |
| 413.52 | 2.3 | 508 |
| 413.57 | 2.4 | 544 |
| 413.62 | 2.6 | 580 |
| 413.67 | 2.8 | 617 |
| 413.72 | 2.9 | 654 |
| 413.77 | 3.1 | 691 |
| 413.82 | 3.3 | 729 |
| 413.87 | 3.4 | 767 |
| 413.92 | 3.6 | 805 |
| 413.97 | 3.8 | 844 |
| 414.02 | 3.9 | 882 |
| 414.07 | 4.1 | 921 |
| 414.12 | 4.3 | 960 |
| 414.17 | 4.5 | 999 |
| 414.22 | 4.6 | 1,038 |
| 414.27 | 4.8 | 1,078 |
| 414.32 | 5.0 | 1,117 |
| 414.37 | 5.2 | 1,156 |
| 414.42 | 5.3 | 1,195 |
| 414.47 | 5.5 | 1,234 |
| 414.52 | 5.7 | 1,273 |
| 414.57 | 5.9 | 1,312 |
| 414.62 | 6.0 | 1,350 |
| 414.67 | 6.2 | 1,388 |
| 414.72 | 6.4 | 1,426 |
| 414.77 | 6.5 | 1,464 |
| 414.82 | 6.7 | 1,502 |
| 414.87 | 6.9 | 1,539 |
| 414.92 | 7.0 | 1,575 |
| 414.97 | 7.2 | 1,611 |
| 415.02 | 7.4 | 1,647 |
| 415.07 | 7.5 | 1,682 |
| 415.12 | 7.7 | 1,717 |
| 415.17 | 7.8 | 1,751 |
| 415.22 | 8.0 | 1,784 |
| 415.27 | 8.1 | 1,816 |
| 415.32 | 8.3 | 1,848 |
| 415.37 | 8.4 | 1,879 |
| 415.42 | 8.5 | 1,909 |
| 415.47 | 8.7 | 1,938 |
| 415.52 | 8.8 | 1,966 |
| 415.57 | 8.9 | 1,993 |
| 415.62 | 9.0 | 2,019 |
| 415.67 | 9.1 | 2,043 |
| 415.72 | 9.2 | 2,066 |
| 415.77 | 9.3 | 2,087 |
| 415.82 | 9.4 | 2,106 |
| 415.87 | 9.5 | 2,123 |
| 415.92 | 9.5 | 2,138 |
| 415.97 | 9.6 | 2,149 |
| 416.02 | **9.6** | **2,155** |

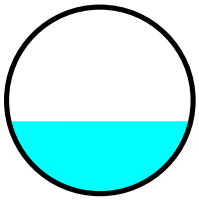
## Summary for Reach A3: Pipe A2

Inflow Area = 1,325,513 sf, 6.94% Impervious, Inflow Depth = 0.48" for 25-yr event
Inflow = 58.14 cfs @ 0.25 hrs, Volume= 53,270 cf
Outflow = 58.03 cfs @ 0.26 hrs, Volume= 53,270 cf, Atten= 0%, Lag= 0.1 min
Routed to Pond Pond : Regional Detention Basin

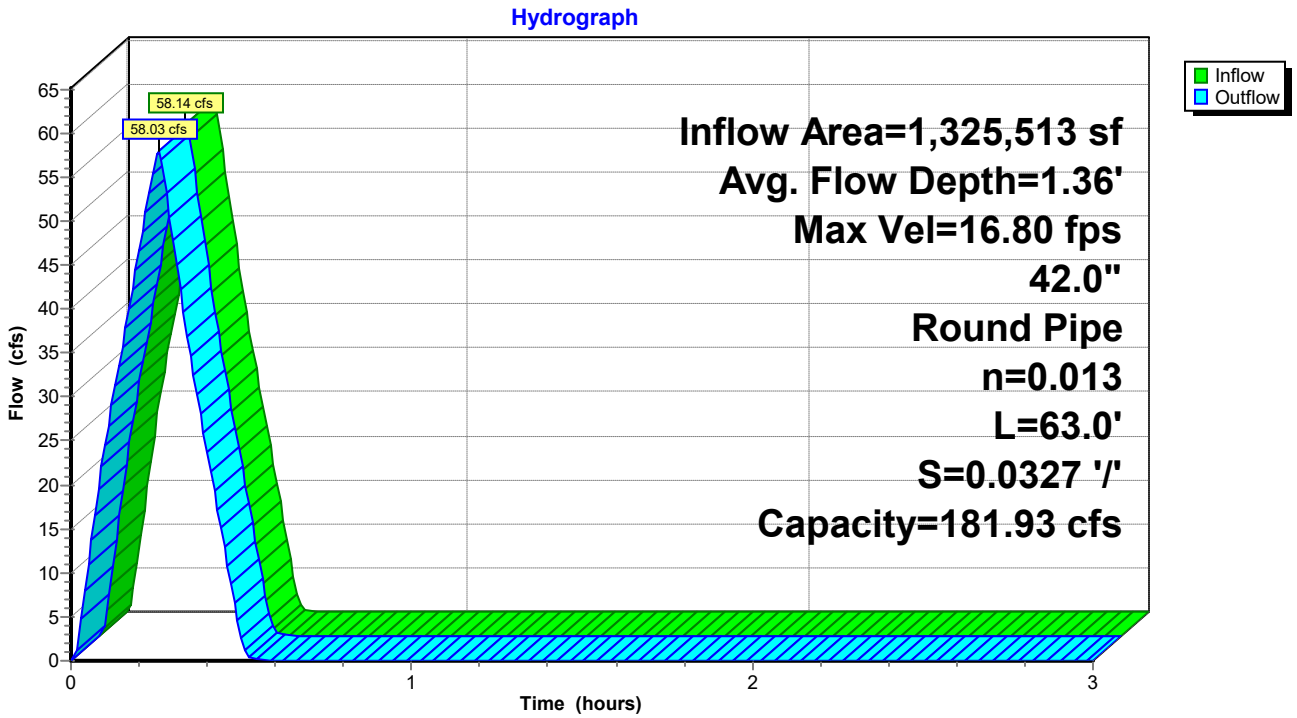
Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 16.80 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 9.35 fps, Avg. Travel Time= 0.1 min

Peak Storage= 218 cf @ 0.26 hrs
Average Depth at Peak Storage= 1.36' , Surface Width= 3.41'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 181.93 cfs

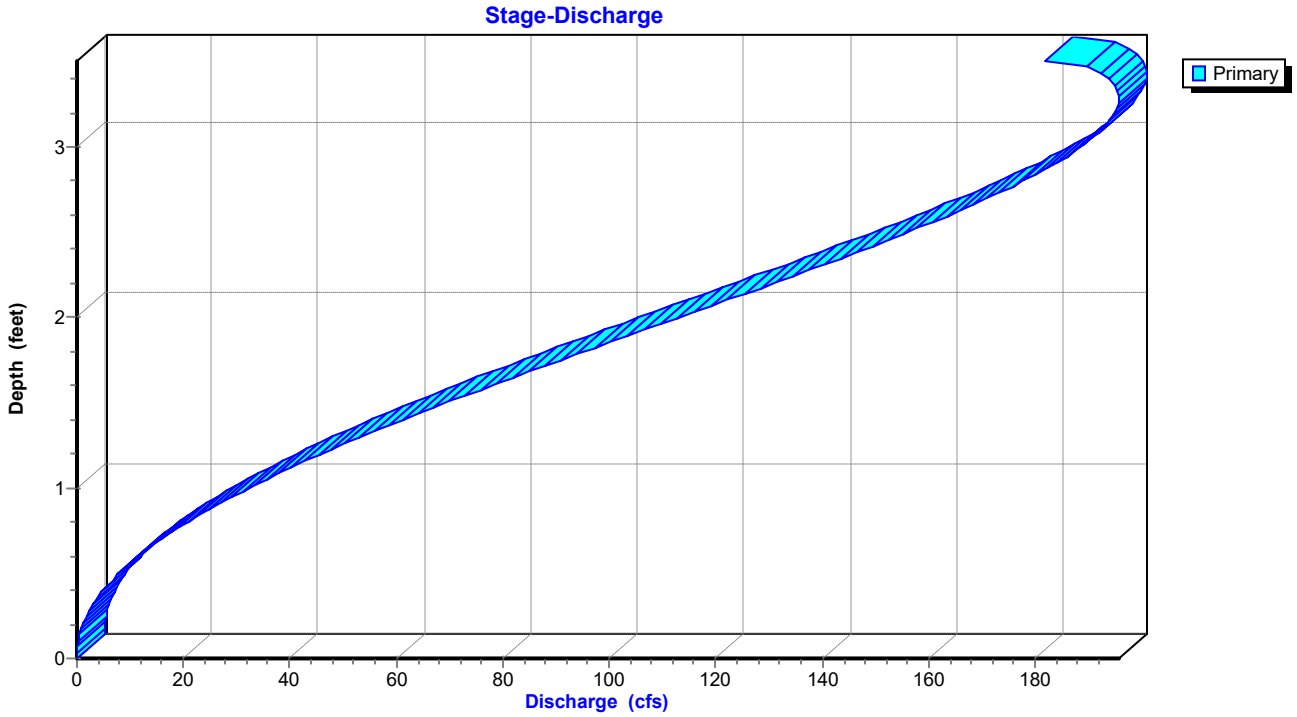
42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 63.0' Slope= 0.0327 '/'
Inlet Invert= 405.31', Outlet Invert= 403.25'



### Reach A3: Pipe A2



## Reach A3: Pipe A2



## Stage-Area-Storage for Reach A3: Pipe A2

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 405.31 | 0.0 | 0 |
| 405.36 | 0.0 | 2 |
| 405.41 | 0.1 | 5 |
| 405.46 | 0.1 | 9 |
| 405.51 | 0.2 | 14 |
| 405.56 | 0.3 | 19 |
| 405.61 | 0.4 | 25 |
| 405.66 | 0.5 | 32 |
| 405.71 | 0.6 | 38 |
| 405.76 | 0.7 | 46 |
| 405.81 | 0.8 | 53 |
| 405.86 | 1.0 | 61 |
| 405.91 | 1.1 | 69 |
| 405.96 | 1.2 | 78 |
| 406.01 | 1.4 | 86 |
| 406.06 | 1.5 | 95 |
| 406.11 | 1.7 | 104 |
| 406.16 | 1.8 | 114 |
| 406.21 | 2.0 | 123 |
| 406.26 | 2.1 | 133 |
| 406.31 | 2.3 | 143 |
| 406.36 | 2.4 | 153 |
| 406.41 | 2.6 | 163 |
| 406.46 | 2.8 | 173 |
| 406.51 | 2.9 | 184 |
| 406.56 | 3.1 | 194 |
| 406.61 | 3.3 | 205 |
| 406.66 | 3.4 | 216 |
| 406.71 | 3.6 | 226 |
| 406.76 | 3.8 | 237 |
| 406.81 | 3.9 | 248 |
| 406.86 | 4.1 | 259 |
| 406.91 | 4.3 | 270 |
| 406.96 | 4.5 | 281 |
| 407.01 | 4.6 | 292 |
| 407.06 | 4.8 | 303 |
| 407.11 | 5.0 | 314 |
| 407.16 | 5.2 | 325 |
| 407.21 | 5.3 | 336 |
| 407.26 | 5.5 | 347 |
| 407.31 | 5.7 | 358 |
| 407.36 | 5.9 | 369 |
| 407.41 | 6.0 | 380 |
| 407.46 | 6.2 | 390 |
| 407.51 | 6.4 | 401 |
| 407.56 | 6.5 | 412 |
| 407.61 | 6.7 | 422 |
| 407.66 | 6.9 | 433 |
| 407.71 | 7.0 | 443 |
| 407.76 | 7.2 | 453 |
| 407.81 | 7.4 | 463 |
| 407.86 | 7.5 | 473 |
| 407.91 | 7.7 | 483 |
| 407.96 | 7.8 | 492 |
| 408.01 | 8.0 | 502 |
| 408.06 | 8.1 | 511 |
| 408.11 | 8.3 | 520 |
| 408.16 | 8.4 | 529 |
| 408.21 | 8.5 | 537 |
| 408.26 | 8.7 | 545 |
| 408.31 | 8.8 | 553 |
| 408.36 | 8.9 | 561 |
| 408.41 | 9.0 | 568 |
| 408.46 | 9.1 | 575 |
| 408.51 | 9.2 | 581 |
| 408.56 | 9.3 | 587 |
| 408.61 | 9.4 | 592 |
| 408.66 | 9.5 | 597 |
| 408.71 | 9.5 | 601 |
| 408.76 | 9.6 | 604 |
| 408.81 | **9.6** | **606** |

## Summary for Pond Pond: Regional Detention Basin

Inflow Area = 1,372,542 sf, 6.70% Impervious, Inflow Depth = 0.50" for 25-yr event
Inflow = 62.24 cfs @ 0.25 hrs, Volume= 57,321 cf
Outflow = 48.70 cfs @ 0.30 hrs, Volume= 57,371 cf, Atten= 22%, Lag= 2.9 min
Primary = 48.70 cfs @ 0.30 hrs, Volume= 57,371 cf

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 405.36' @ 0.30 hrs Storage= 9,099 cf

Plug-Flow detention time= 2.1 min calculated for 57,180 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min ( 17.0 - 14.8 )

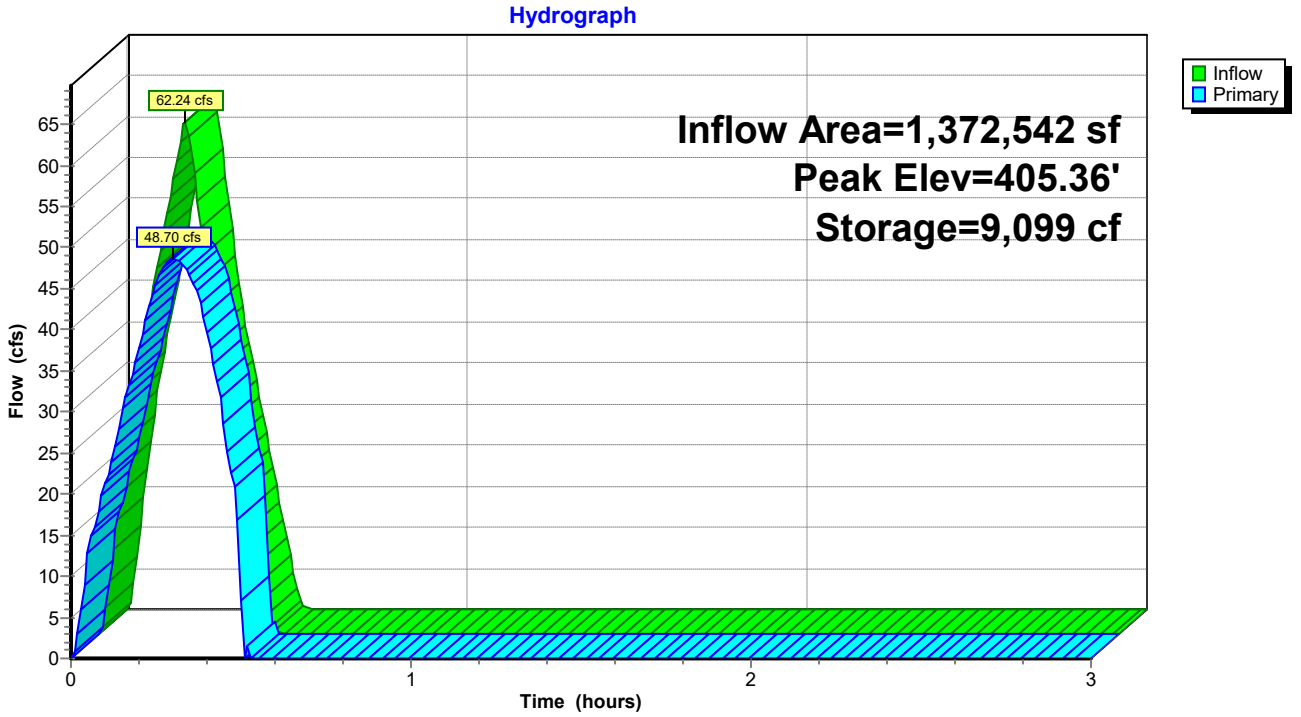
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 401.00' | 12,812 cf | **Custom Stage Data** Listed below |

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 401.00 | 0 |
| 402.00 | 103 |
| 403.00 | 803 |
| 404.00 | 2,704 |
| 405.00 | 7,038 |
| 406.00 | 12,812 |

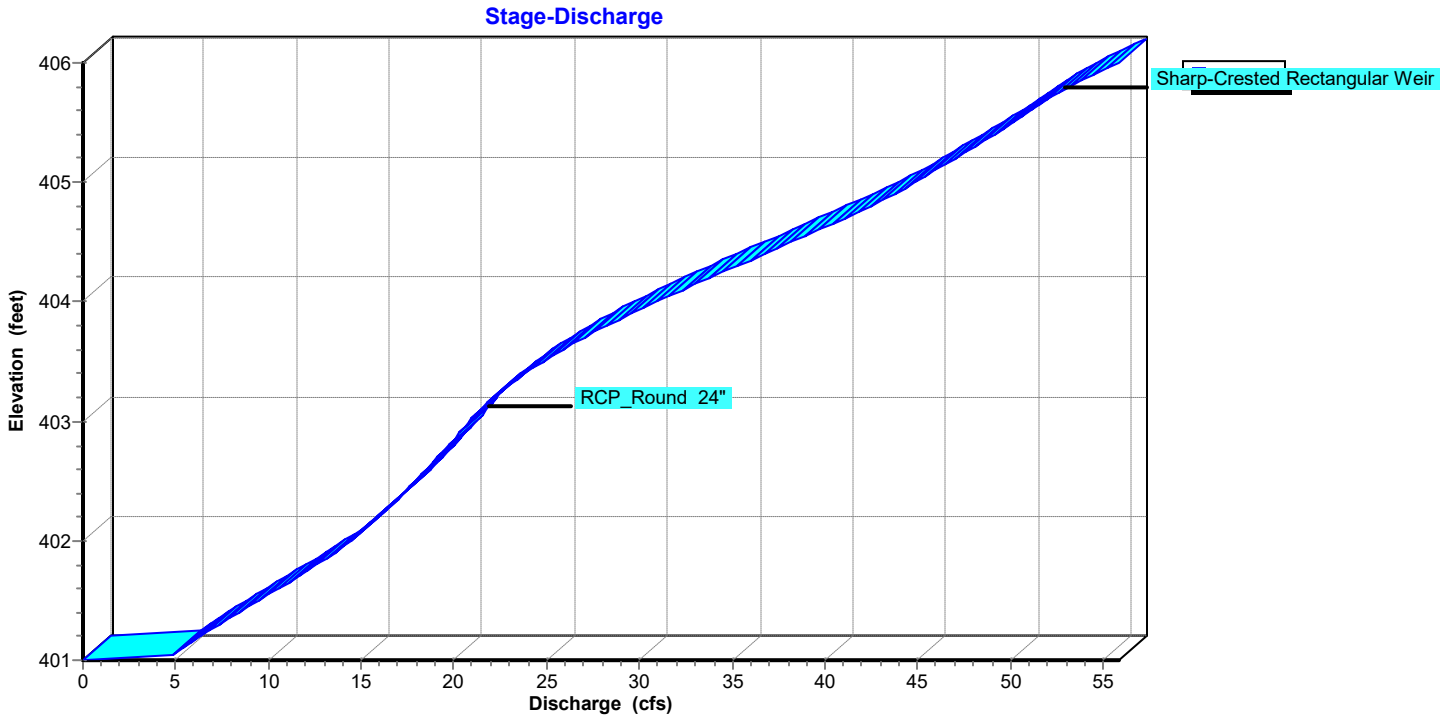
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 400.10' | **24.0" Round RCP_Round 24"**<br>L= 100.0' RCP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 400.10' / 397.97' S= 0.0213 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf |
| #2 | Primary | 403.02' | **24.0" Round RCP_Round 24"**<br>L= 35.0' RCP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 403.02' / 401.73' S= 0.0369 '/' Cc= 0.900<br>n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf |
| #3 | Primary | 405.69' | **2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) |

**Primary OutFlow** Max=48.68 cfs @ 0.30 hrs HW=405.35' (Free Discharge)
- **1=RCP_Round 24"** (Inlet Controls 31.20 cfs @ 9.93 fps)
- **2=RCP_Round 24"** (Inlet Controls 17.48 cfs @ 5.56 fps)
- **3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond Pond: Regional Detention Basin




## Pond Pond: Regional Detention Basin



## Stage-Area-Storage for Pond Pond: Regional Detention Basin

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 401.00 | 0 | 403.60 | 1,944 |
| 401.05 | 5 | 403.65 | 2,039 |
| 401.10 | 10 | 403.70 | 2,134 |
| 401.15 | 15 | 403.75 | 2,229 |
| 401.20 | 21 | 403.80 | 2,324 |
| 401.25 | 26 | 403.85 | 2,419 |
| 401.30 | 31 | 403.90 | 2,514 |
| 401.35 | 36 | 403.95 | 2,609 |
| 401.40 | 41 | 404.00 | 2,704 |
| 401.45 | 46 | 404.05 | 2,921 |
| 401.50 | 52 | 404.10 | 3,137 |
| 401.55 | 57 | 404.15 | 3,354 |
| 401.60 | 62 | 404.20 | 3,571 |
| 401.65 | 67 | 404.25 | 3,788 |
| 401.70 | 72 | 404.30 | 4,004 |
| 401.75 | 77 | 404.35 | 4,221 |
| 401.80 | 82 | 404.40 | 4,438 |
| 401.85 | 88 | 404.45 | 4,654 |
| 401.90 | 93 | 404.50 | 4,871 |
| 401.95 | 98 | 404.55 | 5,088 |
| 402.00 | 103 | 404.60 | 5,304 |
| 402.05 | 138 | 404.65 | 5,521 |
| 402.10 | 173 | 404.70 | 5,738 |
| 402.15 | 208 | 404.75 | 5,955 |
| 402.20 | 243 | 404.80 | 6,171 |
| 402.25 | 278 | 404.85 | 6,388 |
| 402.30 | 313 | 404.90 | 6,605 |
| 402.35 | 348 | 404.95 | 6,821 |
| 402.40 | 383 | 405.00 | 7,038 |
| 402.45 | 418 | 405.05 | 7,327 |
| 402.50 | 453 | 405.10 | 7,615 |
| 402.55 | 488 | 405.15 | 7,904 |
| 402.60 | 523 | 405.20 | 8,193 |
| 402.65 | 558 | 405.25 | 8,482 |
| 402.70 | 593 | 405.30 | 8,770 |
| 402.75 | 628 | 405.35 | 9,059 |
| 402.80 | 663 | 405.40 | 9,348 |
| 402.85 | 698 | 405.45 | 9,636 |
| 402.90 | 733 | 405.50 | 9,925 |
| 402.95 | 768 | 405.55 | 10,214 |
| 403.00 | 803 | 405.60 | 10,502 |
| 403.05 | 898 | 405.65 | 10,791 |
| 403.10 | 993 | 405.70 | 11,080 |
| 403.15 | 1,088 | 405.75 | 11,369 |
| 403.20 | 1,183 | 405.80 | 11,657 |
| 403.25 | 1,278 | 405.85 | 11,946 |
| 403.30 | 1,373 | 405.90 | 12,235 |
| 403.35 | 1,468 | 405.95 | 12,523 |
| 403.40 | 1,563 | 406.00 | **12,812** |
| 403.45 | 1,658 | | |
| 403.50 | 1,754 | | |
| 403.55 | 1,849 | | |

## Summary for Subcatchment ARDOT: ARDOT Offsite

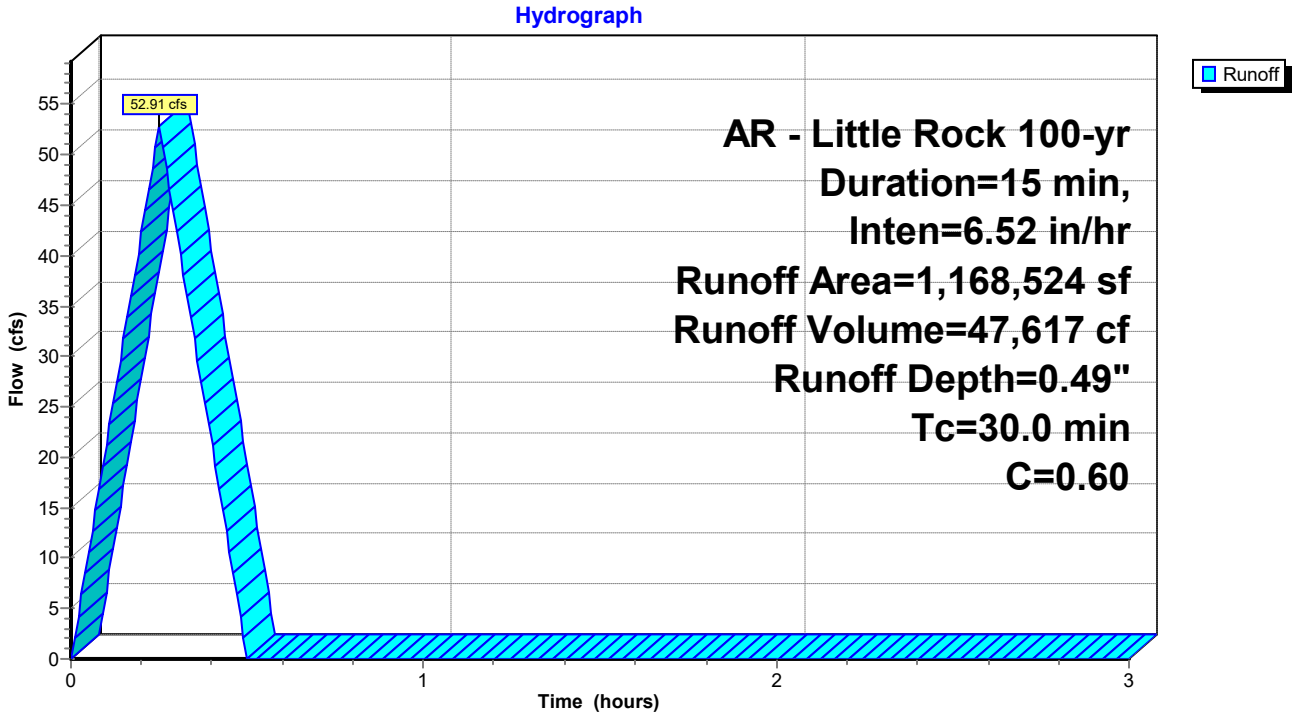
Runoff = 52.91 cfs @ 0.25 hrs, Volume= 47,617 cf, Depth= 0.49"
Routed to Reach A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=15 min, Inten=6.52 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,168,524 | 0.60 | |
| 1,168,524 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.0 | | | | | **Direct Entry,** |

## Subcatchment ARDOT: ARDOT Offsite



## Summary for Subcatchment M&F: Merchants and Farmers

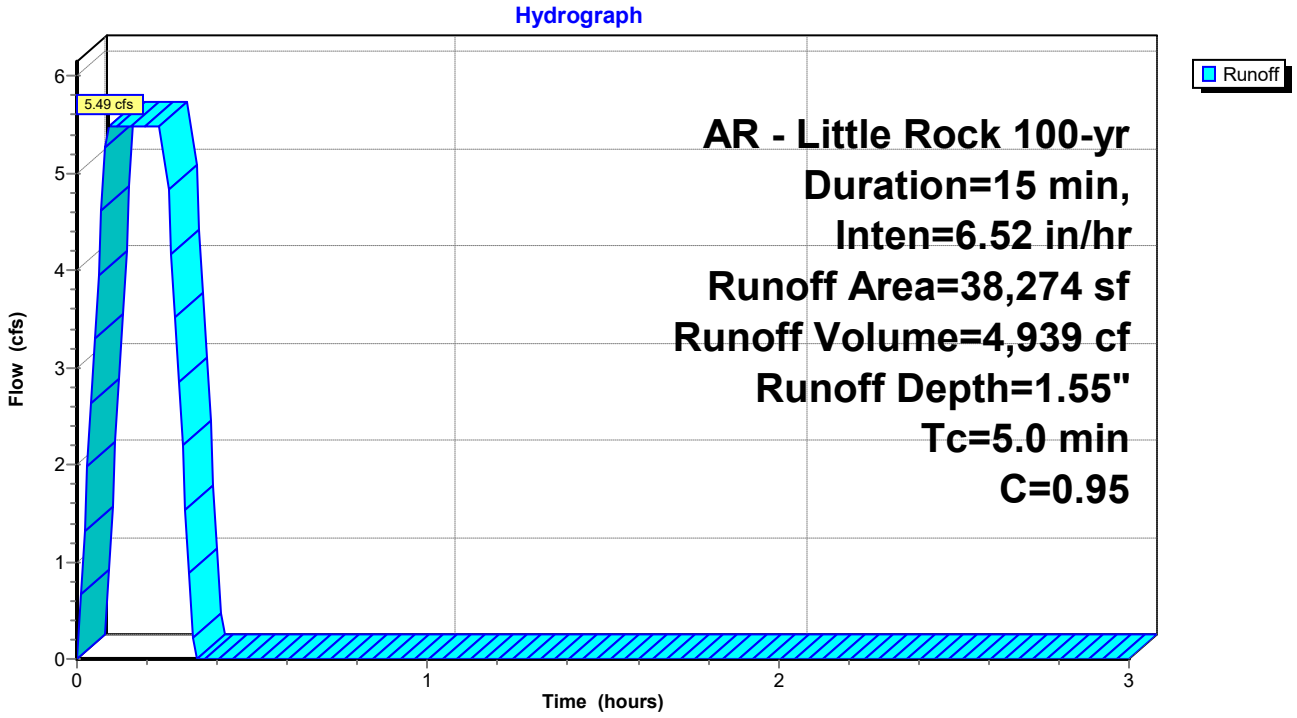
Runoff = 5.49 cfs @ 0.09 hrs, Volume= 4,939 cf, Depth= 1.55"
Routed to Reach A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=15 min, Inten=6.52 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 38,274 | 0.95 | Developed Site |
| 38,274 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | | | | | **Direct Entry,** |

### Subcatchment M&F: Merchants and Farmers



## Summary for Subcatchment SR: Springhill Retail Post

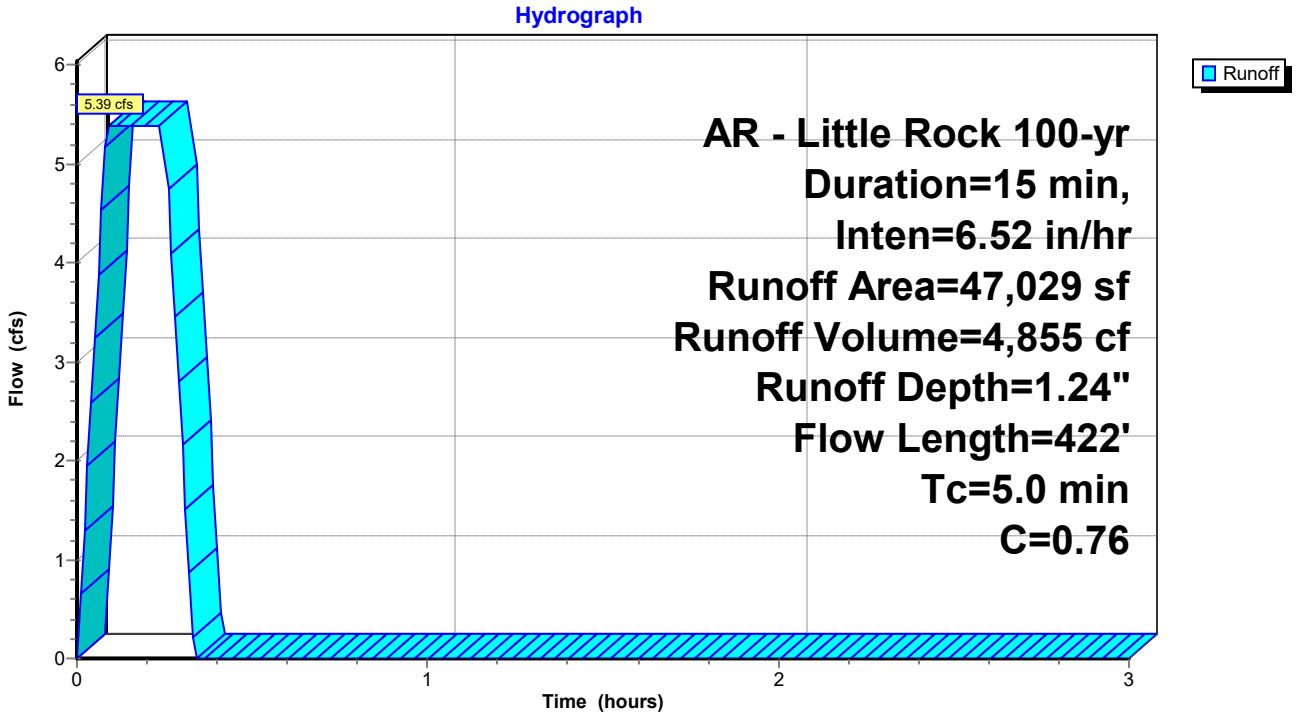
Runoff = 5.39 cfs @ 0.09 hrs, Volume= 4,855 cf, Depth= 1.24"
Routed to Pond Pond : Regional Detention Basin

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=15 min, Inten=6.52 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 1,511 | 0.86 | Existing Drive |
| 33,632 | 0.92 | Drives, Roof, Sidewalks |
| 11,886 | 0.30 | Landscaped Areas |
| 47,029 | 0.76 | Weighted Average |
| 47,029 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 0.8 | 82 | 0.0290 | 1.76 | | **Sheet Flow, Asphalt Sheet Flow** Smooth surfaces n= 0.011 P2= 4.19" |
| 0.8 | 87 | 0.0080 | 1.82 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 0.1 | 19 | 0.0210 | 2.94 | | **Shallow Concentrated Flow, Concentrated Pavement Flow** Paved Kv= 20.3 fps |
| 1.0 | 197 | 0.0250 | 3.21 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 0.3 | 37 | 0.0130 | 2.31 | | **Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps |
| 2.0 | | | | | **Direct Entry, Minimum adjustment** |
| 5.0 | 422 | Total | | | |

## Subcatchment SR: Springhill Retail Post



## Summary for Subcatchment WestProp: West Adjacent Property Drainage Basin

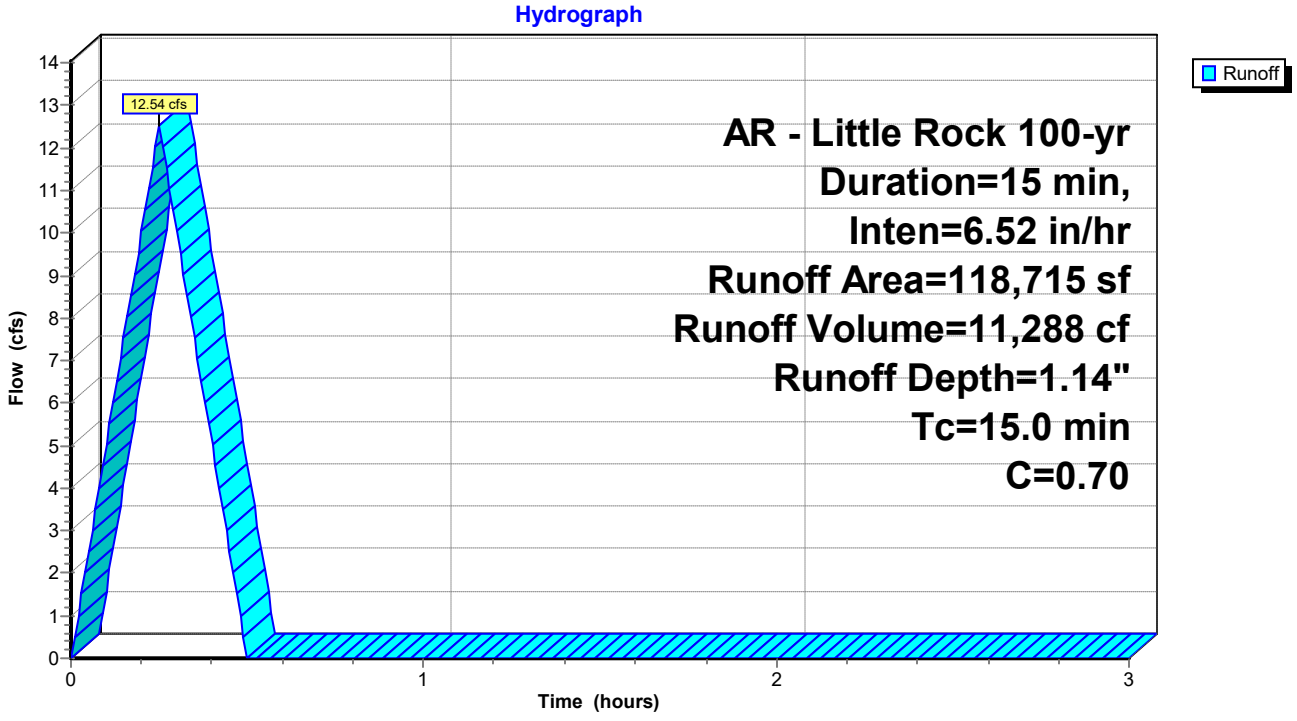
Runoff = 12.54 cfs @ 0.25 hrs, Volume= 11,288 cf, Depth= 1.14"
Routed to Reach A3 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
AR - Little Rock 100-yr Duration=15 min, Inten=6.52 in/hr

| Area (sf) | C | Description |
|---|---|---|
| 65,063 | 0.50 | Pervious Areas |
| 53,652 | 0.95 | Rooftop/Paving |
| 118,715 | 0.70 | Weighted Average |
| 65,063 | | 54.81% Pervious Area |
| 53,652 | | 45.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment WestProp: West Adjacent Property Drainage Basin



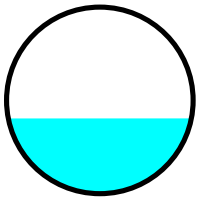
## Summary for Reach A1: Pipe A1

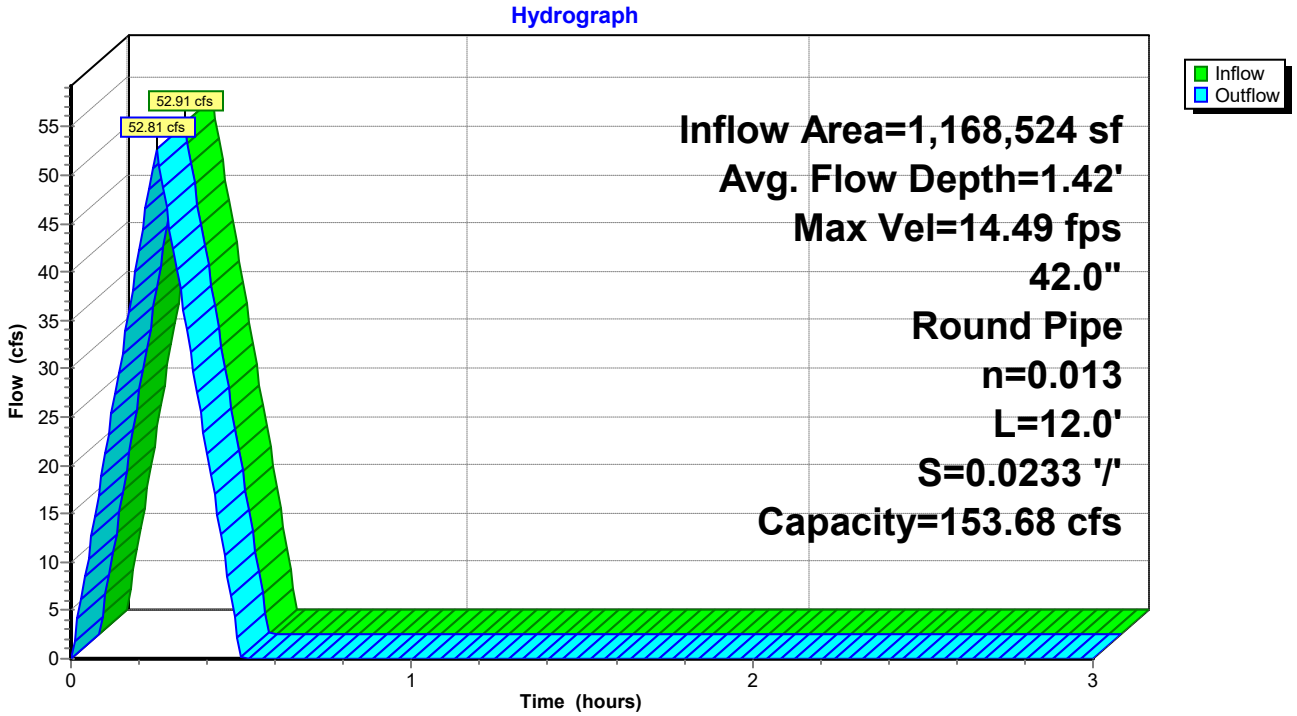
Inflow Area = 1,168,524 sf, 0.00% Impervious, Inflow Depth = 0.49" for 100-yr event
Inflow = 52.91 cfs @ 0.25 hrs, Volume= 47,617 cf
Outflow = 52.81 cfs @ 0.25 hrs, Volume= 47,619 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 14.49 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 11.28 fps, Avg. Travel Time= 0.0 min

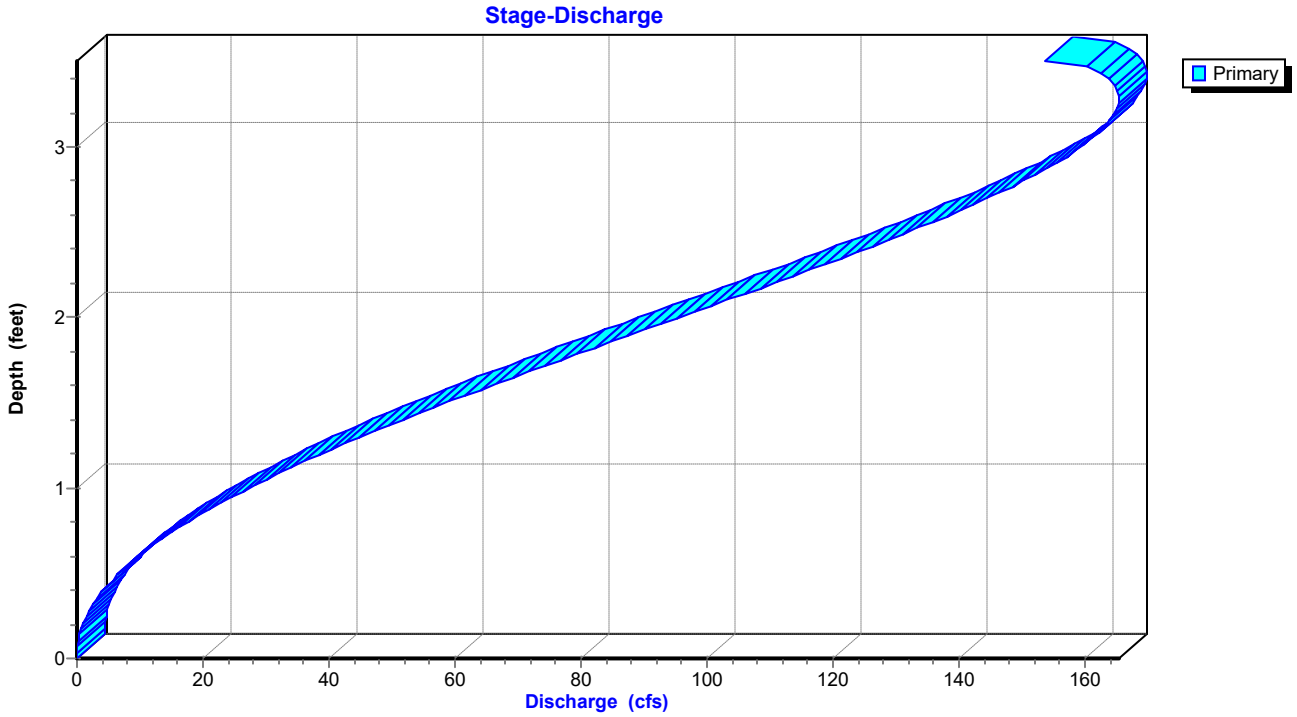
Peak Storage= 44 cf @ 0.25 hrs
Average Depth at Peak Storage= 1.42' , Surface Width= 3.44'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 153.68 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 12.0' Slope= 0.0233 '/'
Inlet Invert= 413.00', Outlet Invert= 412.72'





## Reach A1: Pipe A1



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

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 413.00 | 0.0 | 0 |
| 413.05 | 0.0 | 0 |
| 413.10 | 0.1 | 1 |
| 413.15 | 0.1 | 2 |
| 413.20 | 0.2 | 3 |
| 413.25 | 0.3 | 4 |
| 413.30 | 0.4 | 5 |
| 413.35 | 0.5 | 6 |
| 413.40 | 0.6 | 7 |
| 413.45 | 0.7 | 9 |
| 413.50 | 0.8 | 10 |
| 413.55 | 1.0 | 12 |
| 413.60 | 1.1 | 13 |
| 413.65 | 1.2 | 15 |
| 413.70 | 1.4 | 16 |
| 413.75 | 1.5 | 18 |
| 413.80 | 1.7 | 20 |
| 413.85 | 1.8 | 22 |
| 413.90 | 2.0 | 23 |
| 413.95 | 2.1 | 25 |
| 414.00 | 2.3 | 27 |
| 414.05 | 2.4 | 29 |
| 414.10 | 2.6 | 31 |
| 414.15 | 2.8 | 33 |
| 414.20 | 2.9 | 35 |
| 414.25 | 3.1 | 37 |
| 414.30 | 3.3 | 39 |
| 414.35 | 3.4 | 41 |
| 414.40 | 3.6 | 43 |
| 414.45 | 3.8 | 45 |
| 414.50 | 3.9 | 47 |
| 414.55 | 4.1 | 49 |
| 414.60 | 4.3 | 51 |
| 414.65 | 4.5 | 54 |
| 414.70 | 4.6 | 56 |
| 414.75 | 4.8 | 58 |
| 414.80 | 5.0 | 60 |
| 414.85 | 5.2 | 62 |
| 414.90 | 5.3 | 64 |
| 414.95 | 5.5 | 66 |
| 415.00 | 5.7 | 68 |
| 415.05 | 5.9 | 70 |
| 415.10 | 6.0 | 72 |
| 415.15 | 6.2 | 74 |
| 415.20 | 6.4 | 76 |
| 415.25 | 6.5 | 78 |
| 415.30 | 6.7 | 80 |
| 415.35 | 6.9 | 82 |
| 415.40 | 7.0 | 84 |
| 415.45 | 7.2 | 86 |
| 415.50 | 7.4 | 88 |
| 415.55 | 7.5 | 90 |
| 415.60 | 7.7 | 92 |
| 415.65 | 7.8 | 94 |
| 415.70 | 8.0 | 96 |
| 415.75 | 8.1 | 97 |
| 415.80 | 8.3 | 99 |
| 415.85 | 8.4 | 101 |
| 415.90 | 8.5 | 102 |
| 415.95 | 8.7 | 104 |
| 416.00 | 8.8 | 105 |
| 416.05 | 8.9 | 107 |
| 416.10 | 9.0 | 108 |
| 416.15 | 9.1 | 109 |
| 416.20 | 9.2 | 111 |
| 416.25 | 9.3 | 112 |
| 416.30 | 9.4 | 113 |
| 416.35 | 9.5 | 114 |
| 416.40 | 9.5 | 115 |
| 416.45 | 9.6 | 115 |
| 416.50 | **9.6** | **115** |

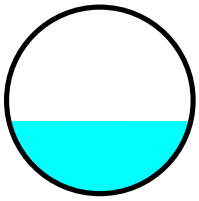
## Summary for Reach A2: Pipe A2

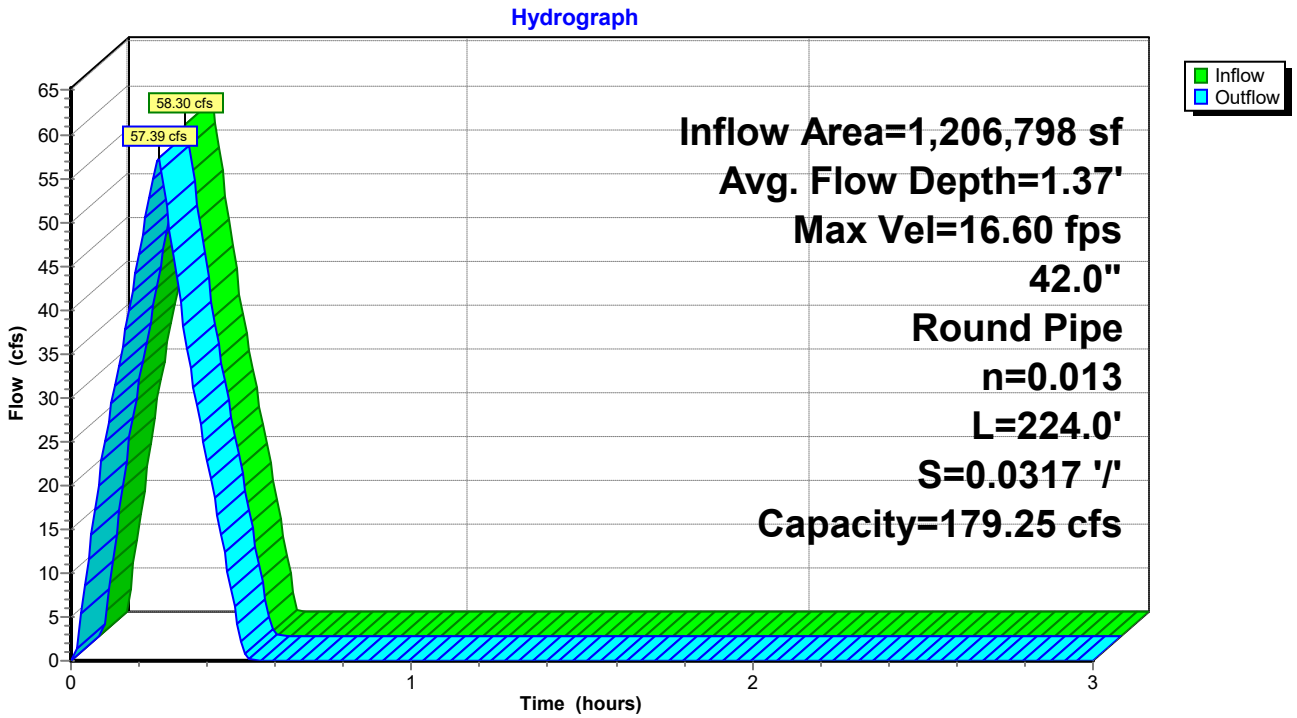
Inflow Area = 1,206,798 sf, 3.17% Impervious, Inflow Depth = 0.52" for 100-yr event
Inflow = 58.30 cfs @ 0.25 hrs, Volume= 52,558 cf
Outflow = 57.39 cfs @ 0.26 hrs, Volume= 52,558 cf, Atten= 2%, Lag= 0.4 min
Routed to Reach A3 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 16.60 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 9.39 fps, Avg. Travel Time= 0.4 min

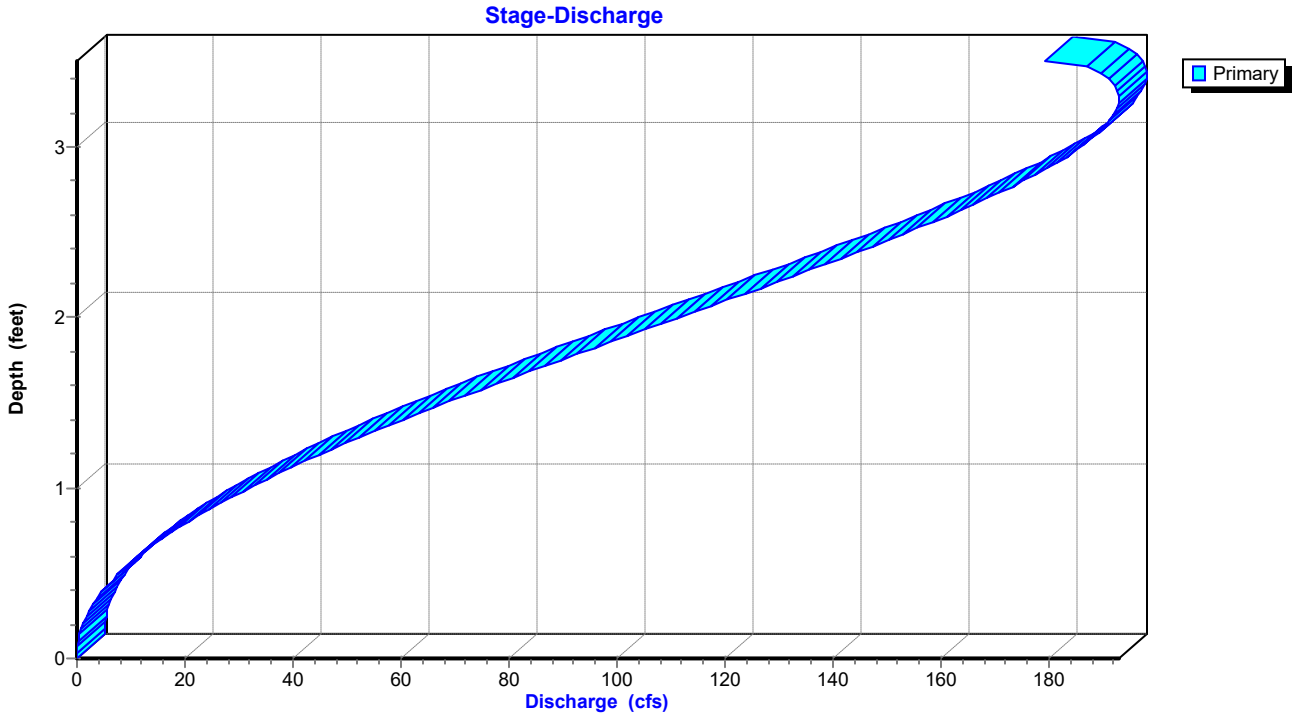
Peak Storage= 779 cf @ 0.25 hrs
Average Depth at Peak Storage= 1.37' , Surface Width= 3.42'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 179.25 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 224.0' Slope= 0.0317 '/'
Inlet Invert= 412.52', Outlet Invert= 405.41'





## Reach A2: Pipe A2



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

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 412.52 | 0.0 | 0 |
| 412.57 | 0.0 | 6 |
| 412.62 | 0.1 | 18 |
| 412.67 | 0.1 | 32 |
| 412.72 | 0.2 | 49 |
| 412.77 | 0.3 | 68 |
| 412.82 | 0.4 | 90 |
| 412.87 | 0.5 | 112 |
| 412.92 | 0.6 | 136 |
| 412.97 | 0.7 | 162 |
| 413.02 | 0.8 | 189 |
| 413.07 | 1.0 | 217 |
| 413.12 | 1.1 | 246 |
| 413.17 | 1.2 | 276 |
| 413.22 | 1.4 | 307 |
| 413.27 | 1.5 | 339 |
| 413.32 | 1.7 | 371 |
| 413.37 | 1.8 | 404 |
| 413.42 | 2.0 | 438 |
| 413.47 | 2.1 | 473 |
| 413.52 | 2.3 | 508 |
| 413.57 | 2.4 | 544 |
| 413.62 | 2.6 | 580 |
| 413.67 | 2.8 | 617 |
| 413.72 | 2.9 | 654 |
| 413.77 | 3.1 | 691 |
| 413.82 | 3.3 | 729 |
| 413.87 | 3.4 | 767 |
| 413.92 | 3.6 | 805 |
| 413.97 | 3.8 | 844 |
| 414.02 | 3.9 | 882 |
| 414.07 | 4.1 | 921 |
| 414.12 | 4.3 | 960 |
| 414.17 | 4.5 | 999 |
| 414.22 | 4.6 | 1,038 |
| 414.27 | 4.8 | 1,078 |
| 414.32 | 5.0 | 1,117 |
| 414.37 | 5.2 | 1,156 |
| 414.42 | 5.3 | 1,195 |
| 414.47 | 5.5 | 1,234 |
| 414.52 | 5.7 | 1,273 |
| 414.57 | 5.9 | 1,312 |
| 414.62 | 6.0 | 1,350 |
| 414.67 | 6.2 | 1,388 |
| 414.72 | 6.4 | 1,426 |
| 414.77 | 6.5 | 1,464 |
| 414.82 | 6.7 | 1,502 |
| 414.87 | 6.9 | 1,539 |
| 414.92 | 7.0 | 1,575 |
| 414.97 | 7.2 | 1,611 |
| 415.02 | 7.4 | 1,647 |
| 415.07 | 7.5 | 1,682 |
| 415.12 | 7.7 | 1,717 |
| 415.17 | 7.8 | 1,751 |
| 415.22 | 8.0 | 1,784 |
| 415.27 | 8.1 | 1,816 |
| 415.32 | 8.3 | 1,848 |
| 415.37 | 8.4 | 1,879 |
| 415.42 | 8.5 | 1,909 |
| 415.47 | 8.7 | 1,938 |
| 415.52 | 8.8 | 1,966 |
| 415.57 | 8.9 | 1,993 |
| 415.62 | 9.0 | 2,019 |
| 415.67 | 9.1 | 2,043 |
| 415.72 | 9.2 | 2,066 |
| 415.77 | 9.3 | 2,087 |
| 415.82 | 9.4 | 2,106 |
| 415.87 | 9.5 | 2,123 |
| 415.92 | 9.5 | 2,138 |
| 415.97 | 9.6 | 2,149 |
| 416.02 | **9.6** | **2,155** |

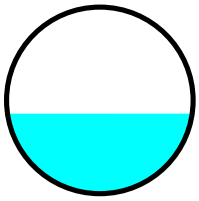
## Summary for Reach A3: Pipe A2

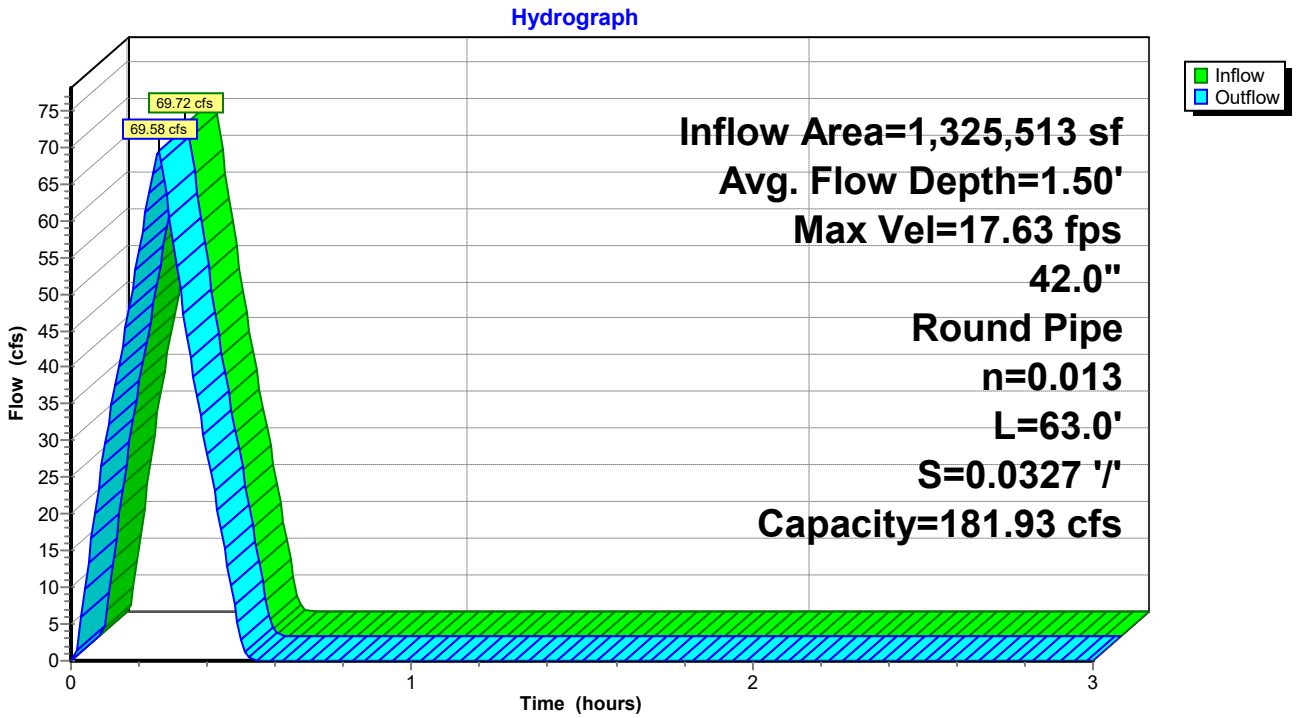
Inflow Area = 1,325,513 sf, 6.94% Impervious, Inflow Depth = 0.58" for 100-yr event
Inflow = 69.72 cfs @ 0.25 hrs, Volume= 63,846 cf
Outflow = 69.58 cfs @ 0.26 hrs, Volume= 63,846 cf, Atten= 0%, Lag= 0.1 min
Routed to Pond Pond : Regional Detention Basin

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 17.63 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 9.81 fps, Avg. Travel Time= 0.1 min

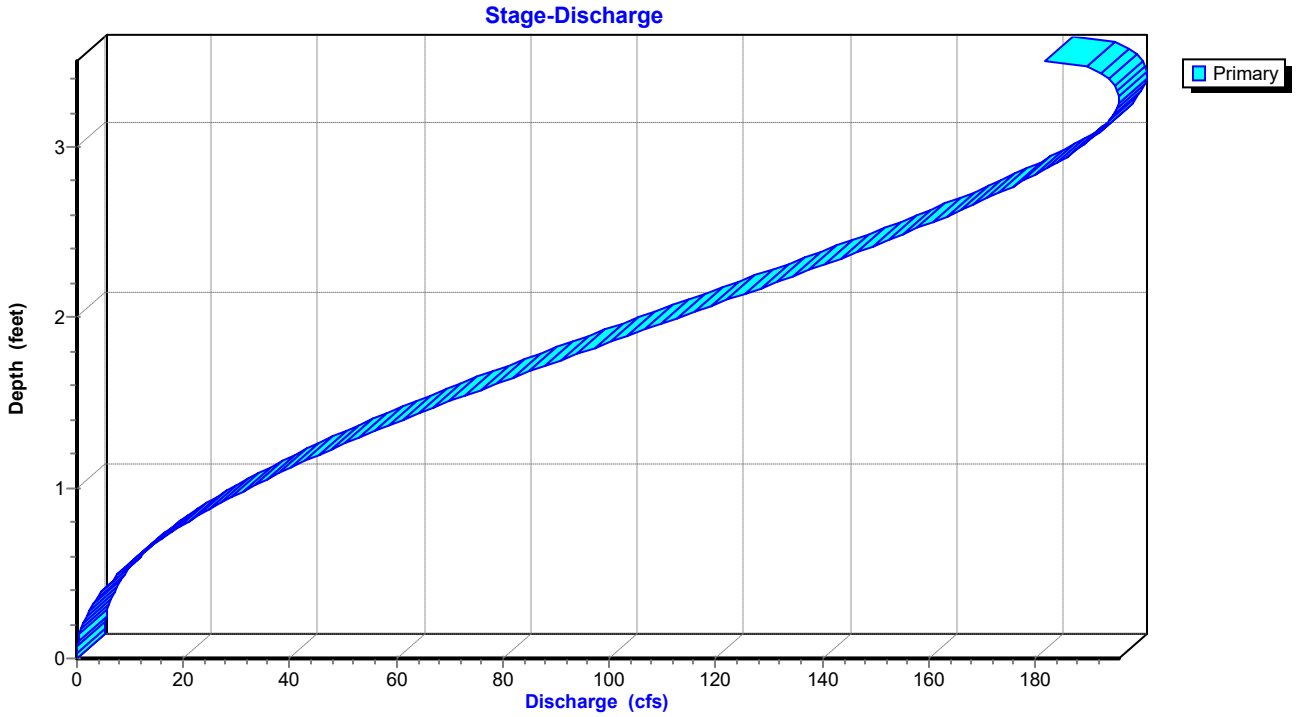
Peak Storage= 249 cf @ 0.26 hrs
Average Depth at Peak Storage= 1.50' , Surface Width= 3.46'
Bank-Full Depth= 3.50' Flow Area= 9.6 sf, Capacity= 181.93 cfs

42.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 63.0' Slope= 0.0327 '/'
Inlet Invert= 405.31', Outlet Invert= 403.25'





## Reach A3: Pipe A2



## Stage-Area-Storage for Reach A3: Pipe A2

| Elevation (feet) | End-Area (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 405.31 | 0.0 | 0 |
| 405.36 | 0.0 | 2 |
| 405.41 | 0.1 | 5 |
| 405.46 | 0.1 | 9 |
| 405.51 | 0.2 | 14 |
| 405.56 | 0.3 | 19 |
| 405.61 | 0.4 | 25 |
| 405.66 | 0.5 | 32 |
| 405.71 | 0.6 | 38 |
| 405.76 | 0.7 | 46 |
| 405.81 | 0.8 | 53 |
| 405.86 | 1.0 | 61 |
| 405.91 | 1.1 | 69 |
| 405.96 | 1.2 | 78 |
| 406.01 | 1.4 | 86 |
| 406.06 | 1.5 | 95 |
| 406.11 | 1.7 | 104 |
| 406.16 | 1.8 | 114 |
| 406.21 | 2.0 | 123 |
| 406.26 | 2.1 | 133 |
| 406.31 | 2.3 | 143 |
| 406.36 | 2.4 | 153 |
| 406.41 | 2.6 | 163 |
| 406.46 | 2.8 | 173 |
| 406.51 | 2.9 | 184 |
| 406.56 | 3.1 | 194 |
| 406.61 | 3.3 | 205 |
| 406.66 | 3.4 | 216 |
| 406.71 | 3.6 | 226 |
| 406.76 | 3.8 | 237 |
| 406.81 | 3.9 | 248 |
| 406.86 | 4.1 | 259 |
| 406.91 | 4.3 | 270 |
| 406.96 | 4.5 | 281 |
| 407.01 | 4.6 | 292 |
| 407.06 | 4.8 | 303 |
| 407.11 | 5.0 | 314 |
| 407.16 | 5.2 | 325 |
| 407.21 | 5.3 | 336 |
| 407.26 | 5.5 | 347 |
| 407.31 | 5.7 | 358 |
| 407.36 | 5.9 | 369 |
| 407.41 | 6.0 | 380 |
| 407.46 | 6.2 | 390 |
| 407.51 | 6.4 | 401 |
| 407.56 | 6.5 | 412 |
| 407.61 | 6.7 | 422 |
| 407.66 | 6.9 | 433 |
| 407.71 | 7.0 | 443 |
| 407.76 | 7.2 | 453 |
| 407.81 | 7.4 | 463 |
| 407.86 | 7.5 | 473 |
| 407.91 | 7.7 | 483 |
| 407.96 | 7.8 | 492 |
| 408.01 | 8.0 | 502 |
| 408.06 | 8.1 | 511 |
| 408.11 | 8.3 | 520 |
| 408.16 | 8.4 | 529 |
| 408.21 | 8.5 | 537 |
| 408.26 | 8.7 | 545 |
| 408.31 | 8.8 | 553 |
| 408.36 | 8.9 | 561 |
| 408.41 | 9.0 | 568 |
| 408.46 | 9.1 | 575 |
| 408.51 | 9.2 | 581 |
| 408.56 | 9.3 | 587 |
| 408.61 | 9.4 | 592 |
| 408.66 | 9.5 | 597 |
| 408.71 | 9.5 | 601 |
| 408.76 | 9.6 | 604 |
| 408.81 | **9.6** | **606** |

## Summary for Pond Pond: Regional Detention Basin

Inflow Area = 1,372,542 sf, 6.70% Impervious, Inflow Depth = 0.60" for 100-yr event
Inflow = 74.65 cfs @ 0.25 hrs, Volume= 68,701 cf
Outflow = 59.88 cfs @ 0.30 hrs, Volume= 68,780 cf, Atten= 20%, Lag= 2.8 min
Primary = 59.88 cfs @ 0.30 hrs, Volume= 68,780 cf

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 406.27' @ 0.30 hrs Storage= 12,812 cf

Plug-Flow detention time= 2.7 min calculated for 68,552 cf (100% of inflow)
Center-of-Mass det. time= 2.7 min ( 17.5 - 14.8 )

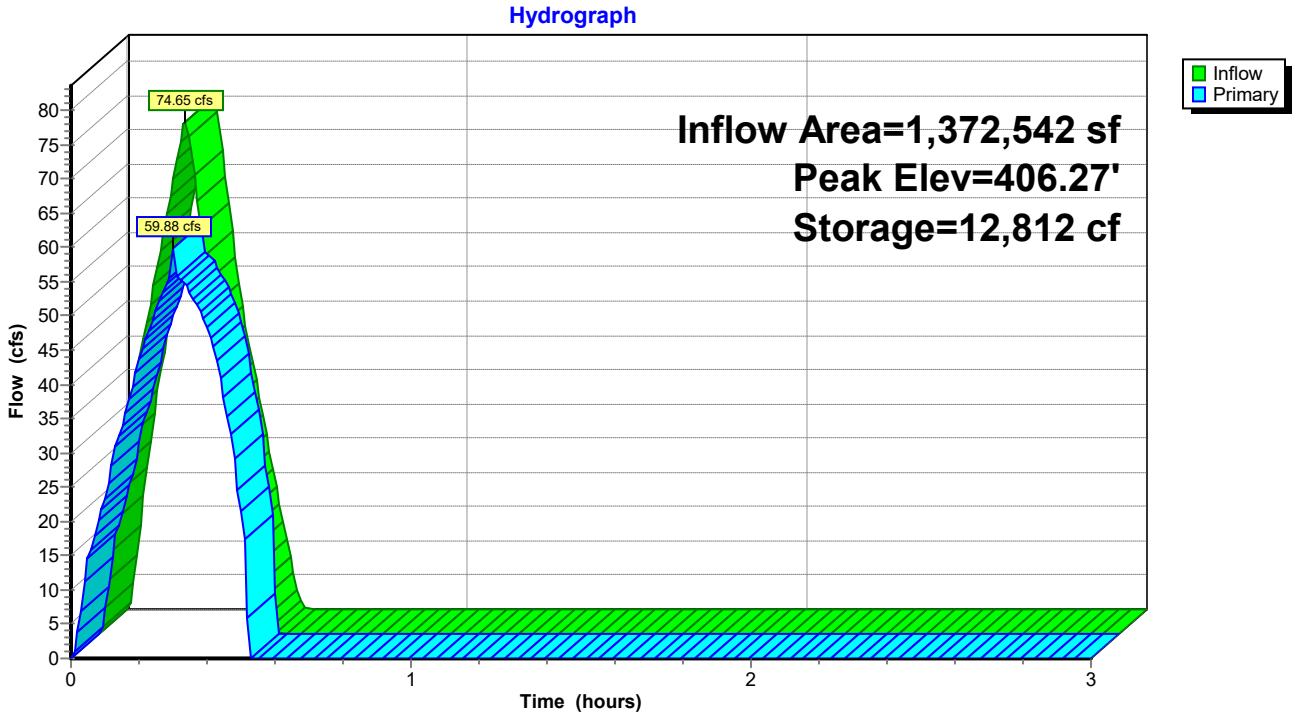
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 401.00' | 12,812 cf | **Custom Stage Data** Listed below |

| Elevation (feet) | Cum.Store (cubic-feet) |
|---|---|
| 401.00 | 0 |
| 402.00 | 103 |
| 403.00 | 803 |
| 404.00 | 2,704 |
| 405.00 | 7,038 |
| 406.00 | 12,812 |

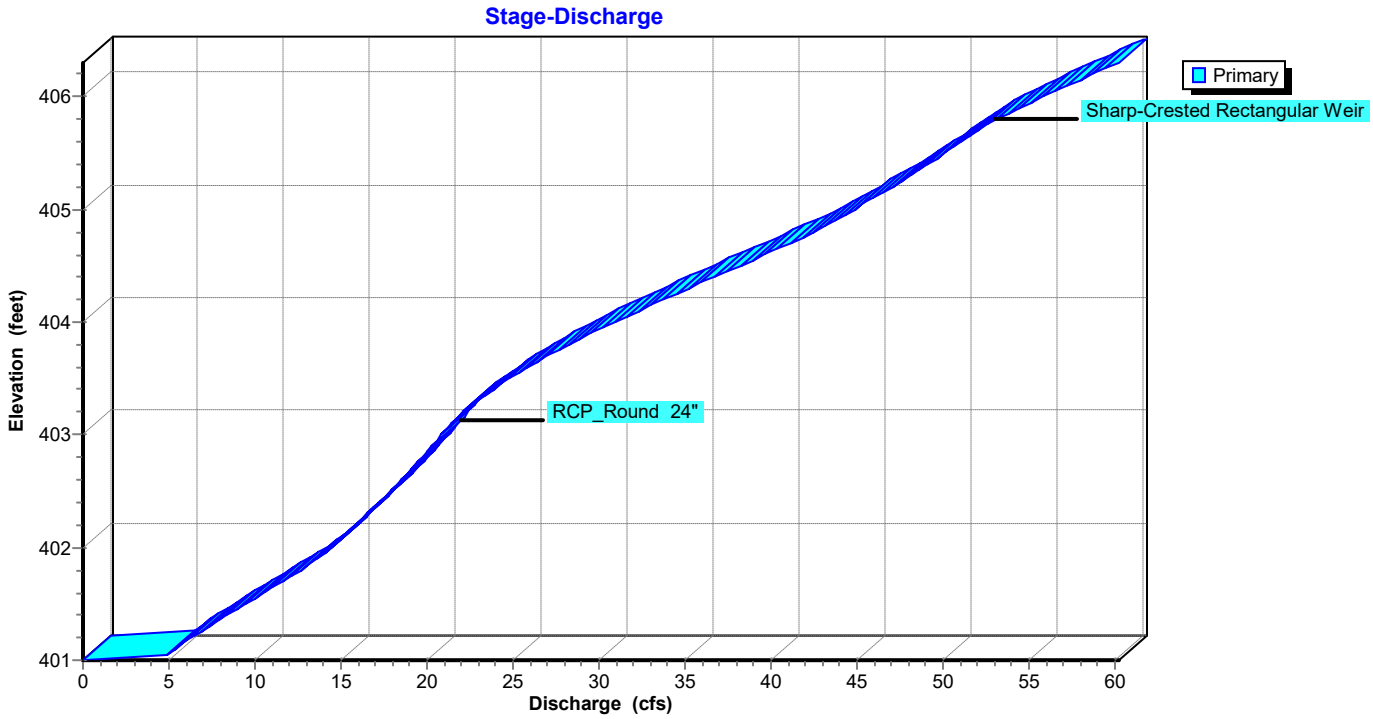
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 400.10' | **24.0" Round RCP_Round 24"**<br>L= 100.0' RCP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 400.10' / 397.97' S= 0.0213 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf |
| #2 | Primary | 403.02' | **24.0" Round RCP_Round 24"**<br>L= 35.0' RCP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 403.02' / 401.73' S= 0.0369 '/' Cc= 0.900<br>n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf |
| #3 | Primary | 405.69' | **2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) |

**Primary OutFlow** Max=59.82 cfs @ 0.30 hrs HW=406.27' (Free Discharge)
- **1=RCP_Round 24"** (Inlet Controls 34.40 cfs @ 10.95 fps)
- **2=RCP_Round 24"** (Inlet Controls 22.69 cfs @ 7.22 fps)
- **3=Sharp-Crested Rectangular Weir** (Weir Controls 2.73 cfs @ 2.49 fps)

## Pond Pond: Regional Detention Basin




## Pond Pond: Regional Detention Basin



## Stage-Area-Storage for Pond Pond: Regional Detention Basin

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|---|---|
| 401.00 | 0 | 403.60 | 1,944 | 406.20 | 12,812 |
| 401.05 | 5 | 403.65 | 2,039 | 406.25 | 12,812 |
| 401.10 | 10 | 403.70 | 2,134 | 406.30 | 12,812 |
| 401.15 | 15 | 403.75 | 2,229 | | |
| 401.20 | 21 | 403.80 | 2,324 | | |
| 401.25 | 26 | 403.85 | 2,419 | | |
| 401.30 | 31 | 403.90 | 2,514 | | |
| 401.35 | 36 | 403.95 | 2,609 | | |
| 401.40 | 41 | 404.00 | 2,704 | | |
| 401.45 | 46 | 404.05 | 2,921 | | |
| 401.50 | 52 | 404.10 | 3,137 | | |
| 401.55 | 57 | 404.15 | 3,354 | | |
| 401.60 | 62 | 404.20 | 3,571 | | |
| 401.65 | 67 | 404.25 | 3,788 | | |
| 401.70 | 72 | 404.30 | 4,004 | | |
| 401.75 | 77 | 404.35 | 4,221 | | |
| 401.80 | 82 | 404.40 | 4,438 | | |
| 401.85 | 88 | 404.45 | 4,654 | | |
| 401.90 | 93 | 404.50 | 4,871 | | |
| 401.95 | 98 | 404.55 | 5,088 | | |
| 402.00 | 103 | 404.60 | 5,304 | | |
| 402.05 | 138 | 404.65 | 5,521 | | |
| 402.10 | 173 | 404.70 | 5,738 | | |
| 402.15 | 208 | 404.75 | 5,955 | | |
| 402.20 | 243 | 404.80 | 6,171 | | |
| 402.25 | 278 | 404.85 | 6,388 | | |
| 402.30 | 313 | 404.90 | 6,605 | | |
| 402.35 | 348 | 404.95 | 6,821 | | |
| 402.40 | 383 | 405.00 | 7,038 | | |
| 402.45 | 418 | 405.05 | 7,327 | | |
| 402.50 | 453 | 405.10 | 7,615 | | |
| 402.55 | 488 | 405.15 | 7,904 | | |
| 402.60 | 523 | 405.20 | 8,193 | | |
| 402.65 | 558 | 405.25 | 8,482 | | |
| 402.70 | 593 | 405.30 | 8,770 | | |
| 402.75 | 628 | 405.35 | 9,059 | | |
| 402.80 | 663 | 405.40 | 9,348 | | |
| 402.85 | 698 | 405.45 | 9,636 | | |
| 402.90 | 733 | 405.50 | 9,925 | | |
| 402.95 | 768 | 405.55 | 10,214 | | |
| 403.00 | 803 | 405.60 | 10,502 | | |
| 403.05 | 898 | 405.65 | 10,791 | | |
| 403.10 | 993 | 405.70 | 11,080 | | |
| 403.15 | 1,088 | 405.75 | 11,369 | | |
| 403.20 | 1,183 | 405.80 | 11,657 | | |
| 403.25 | 1,278 | 405.85 | 11,946 | | |
| 403.30 | 1,373 | 405.90 | 12,235 | | |
| 403.35 | 1,468 | 405.95 | 12,523 | | |
| 403.40 | 1,563 | 406.00 | **12,812** | | |
| 403.45 | 1,658 | 406.05 | 12,812 | | |
| 403.50 | 1,754 | 406.10 | 12,812 | | |
| 403.55 | 1,849 | 406.15 | 12,812 | | |