CARMINA WOOD
DESIGN

ENGINEER'S REPORT

for

Uptown Apartments
2190 Wehrle Drive
Amherst, Erie County, NY

Prepared for

Young Development Inc.

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Section 1 - Location & Description

This project consists of the development of a 24.91-acre site located at 2190 Wehrle Drive in the Town of Amherst. The proposed apartment community will be constructed in two phases and, upon full build out, will consist of 270 apartment units housed within twenty-six 10-unit buildings and two 5-unit buildings.

Phase 1 will include 140 apartment units, consisting of 41 one-bedroom units, 84 two-bedroom units, and 15 three-bedroom units. This phase will also include construction of the clubhouse and associated recreational amenities, including a swimming pool, dog park, pickleball courts, and cornhole courts. Phase 2 will include the remaining 130 apartment units, consisting of 39 one-bedroom units, 78 two-bedroom units, and 13 three-bedroom units.

At full build out, the development will contain 80 one-bedroom units, 162 two-bedroom units, and 28 three-bedroom units. In addition to the residential buildings, the project will include associated utility infrastructure, internal roadways, parking areas, site lighting, landscaping, and stormwater management facilities necessary to support the development. The project site is currently undeveloped. Construction of the proposed improvements will result in approximately 22.50 acres of land disturbance.

Section 2 - Water Service

Water service for the proposed apartment complex development will be provided by a private 8-inch water main connected to the existing 12-inch ECWA water main located within the eastbound travel lane of Wehrle Drive. The proposed site water main will consist of 8-inch AWWA C900 pipe and will serve both domestic water demand and fire protection requirements. Each apartment building will be served by an individual 4-inch polyethylene combined water service connected to the proposed 8-inch water main.

The proposed 8-inch water main will extend into a dedicated insulated enclosure housing the water meter and backflow prevention equipment. This enclosure will contain a reduced pressure zone (RPZ) backflow preventer and will be heated to prevent freezing during winter conditions.

Discharge resulting from RPZ testing, maintenance, or relief valve operation will be conveyed by gravity to the nearest drainage inlet. The property owner will be responsible for maintaining the drainage conveyance system and ensuring that all drainage ports remain free of snow, ice, and debris to allow proper operation. Water service within the apartment buildings will be utilized for typical domestic purposes, including potable water supply and fire protection.

Four private hydrants will be installed on site as part of the development to ensure fire hose coverage not exceeding 400’.

Domestic Summary:	
Peak Operating Demand:	246.03 gpm
Water Main:	12” on Wherle Drive
Static Pressure:	43 psi (Per ECWA)
Friction Loss:	0.0 psi
Loss through meter/RPZ:	13 psi
Elevation Loss:	8.66 psi
Pressure after RPZ:	30.0 psi

Repairs to all devices will be made during off hours, dual backflow preventers are not required. The site is not located in a 100-year flood plain. Disinfection of the water service following installation will be continuous feed, according to AWWA C-651, latest revision.

Section 3 - Sanitary Sewer Service

Sanitary service for the proposed apartment complex development will be provided by a private sanitary sewer collection system consisting of an 8-inch sanitary sewer main with manholes installed at all changes in alignment and at appropriate intervals in accordance with Town of Amherst and Erie County standards. Each apartment building will connect to the private sanitary sewer system through an individual 6-inch SDR 35 PVC sanitary lateral installed at a minimum slope of 1.0 percent.

The proposed private sanitary sewer system will convey wastewater to a proposed on site pump station. The pump station will be designed in accordance with Town of Amherst and Erie County standards by others and submitted under separate cover. From the pump station, sanitary flows will be discharged to the existing Town of Amherst sanitary sewer system located within Bellingham Drive, east of the project site.

Design Parameters

1-bedroom townhouse: 110 gal/day/house x 80 units = 8,800 gpd
2-bedroom townhouse: 220 gal/day/house x 162 units = 35,640 gpd
3-bedroom townhouse: 330 gal/day/house x 28 units = 9,240 gpd
Total Sanitary Sewer Demand = 53,680 gpd

53,680 gpd * 3.96 = 212,474 gpd *use peaking factor of 3.96

The hydraulic loading rate is per "Design Standards for Intermediate Sized Wastewater Treatment Systems" 2014, NYSDEC.

Section 4 - Storm Sewer Service

Existing site drainage generally flows to three discharge areas: a ditch northeast of the site, a ditch west of the site, and Wehrle Drive. Runoff from each drainage area ultimately enters the Town of Amherst storm sewer system before discharging to Ellicott Creek.

Stormwater runoff generated by the proposed development will be collected and conveyed through a stormwater management system consisting of micro pool detention ponds, catch basins, yard drains, splash blocks with filter strips, manholes, and smooth interior HDPE storm sewer pipe.

The proposed rooftop disconnection system, consisting of splash blocks and dedicated filter strips, has been designed to provide 100 percent of the required Runoff Reduction Volume (RRv) for the development. Each disconnected rooftop drains to a dedicated splash block and filter strip system designed in accordance with NYSDEC requirements. These rooftop disconnection practices function as green infrastructure measures that reduce runoff volume and promote infiltration across the site.

The remaining Water Quality Volume (WQv) treatment requirements, along with peak flow attenuation, are provided by two proposed micro pool detention ponds. Discharge from each stormwater management practice is controlled through outlet structures designed to meet the stormwater management criteria of both the Town of Amherst and NYSDEC. The overall stormwater management system, including RRv treatment, WQv treatment, and peak flow control, has been designed in accordance with Chapter 4 of the NYSDEC Stormwater Management Design Manual.

The proposed development will create approximately 11.08 acres of impervious area, with 6.60 acres constructed during Phase 1 and the remaining 4.48 acres constructed during Phase 2. Although the project will be developed in two phases, both micro pool detention ponds will be constructed during Phase 1 to accommodate the ultimate build out of the site. Micro Pool Detention Pond #1 has been designed to provide all required water quality treatment and runoff attenuation for the Phase 1 development area and will discharge to an existing catch basin within Wehrle Drive. Micro Pool Detention Pond #2 has been designed to provide all required water quality treatment and runoff attenuation for the Phase 2 development area and will discharge to an existing stormwater manhole within Bellingham Drive. Upon completion of both phases, the combined stormwater management system will provide the required water quality treatment, runoff reduction, and peak flow attenuation for the entire 11.08 acres of proposed impervious cover.

<u>Town of Amherst Requirement:</u>
The Town of Amherst requires the proposed 25-year storm event to be attenuated through detention, with the total outlet flow restricted to less than the existing 10-year peak runoff rate.

The required detention volume is provided by the proposed extended micropool detention ponds. The micro pool detention pond #1 provides 71,649 cubic feet of storage at elevation 694.38, and the extended micro pool detention pond #2 provides 60,844 cubic feet of storage at elevation 695.40. At these elevations,

discharge from the micro pool detention pond #1 is restricted to 11.20 cfs, and discharge from the extended micro pool detention pond #2 is restricted to 3.17 cfs. The combined proposed discharge rate is 14.37 cfs, which is less than the existing 10-year peak runoff rate of 35.28 cfs for the overall site.

Micro-Pool Detention Pond #1 Summary:
Top of basin elevation = 696.00
Permanent pool elevation = 691.90
Bottom of basin elevation = 687.90
100-year storm storage volume = 95,648 cf @ 694.97

Micro-Pool Detention Pond #2 Summary:
Top of basin elevation = 697.00
Permanent pool elevation = 692.75
Bottom of basin elevation = 688.75
100-year storm storage volume = 85,291 cf @ 696.15

Water Quality Summary:
WQv req'd = 36,494 cf (0.838 ac-ft)
RRv min. req'd = 6,882 cf (0.158 ac-ft)
RRv provided – Rooftop Disconnection = 6,984 cf (0.160 ac-ft)
WQv provided – MicroPool Extended Detention Ponds = 29,510 cf (0.677 ac-ft)
Total RRv + WQv provided = 6,984 cf + 29,510 cf = 36,494 cf (0.838 ac-ft)

DA 1 Runoff Summary:

Event	Ex. Runoff (cfs)	Pro. Runoff (cfs)	Result (cfs)
1-year	8.36	3.00	-5.36
10-year	28.47	8.59	-19.88
25-year	38.98	11.20	-27.78
100-year	55.88	15.27	-40.61

Note: This portion of the site discharges from the wet pond through an outlet control structure and ultimately outfalls to an existing catch basin located along Wehrle Drive.

DA 2 Runoff Summary:

Event	Ex. Runoff (cfs)	Pro. Runoff (cfs)	Result (cfs)
1-year	2.02	1.43	-0.59
10-year	6.81	2.73	-4.08
25-year	9.30	3.17	-6.13
100-year	13.32	3.72	-9.60

Note: This portion of the site discharges from the extended micropool detention pond through an outlet control structure and ultimately outfalls to an existing storm sewer manhole located off Bellingham Drive.

DA 3 Runoff Summary:

Event	Ex. Runoff (cfs)	Pro. Runoff (cfs)	Result (cfs)
1-year	3.88	0.85	-3.03
10-year	13.10	2.78	-10.32
25-year	17.91	3.78	-14.13
100-year	25.66	5.39	-20.27

Note: This portion of the site continues to drain off site along the western property line under both existing and proposed conditions.

Section 5 – Earthwork & Impervious Area Calculations

Refer to Attachment C of this report for an estimated summary of the proposed earthwork calculations and impervious area for the proposed project.

Appendix A

Sanitary Sewer and Water Demand Calculations

CARMINA WOOD DESIGN
80 SILO CITY ROW, SUITE 100
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 25-4006 Date: 6/12/2026
Project Name: Uptown Apartments
Project Address: 2190 Wehrle Drive Amherst, NY
Subject: Sanitary Sewer & Water Demand Calcs
Sheet: 1 of 2

Sanitary Sewage Demand Calculations:

110	gal/d/unit	x	80	unit	=	8,800	gpd	*use 110 gallons per unit per day (1 bdrm)
220	gal/d/unit	x	162	unit	=	35,640	gpd	*use 220 gallons per unit per day (2 bdrm)
330	gal/d/unit	x	28	unit	=	9,240	gpd	*use 330 gallons per unit per day (3 bdrm)

Total Site Sanitary Demand: = 53,680 gpd

Find Peak Sanitary Demand:

Peaking Factor based on Population:

Total demand: 53,680 gpd / 100 gpcd = 537 per capita

Population (P) = 537 people

Peaking Factor : $(18 + \sqrt{P}) / (4 + \sqrt{P})$ where P is in thousands

Peaking Factor = 3.96

Peak Sanitary Demand = 53,680 x 3.96 = 212,474 gpd
= 0.212 MGD
= 0.329 cfs

Required Infiltration and Inflow Mitigation:

Peak Sanitary Flow = 212,474 gpd = 147.55 gpm

4:1 offset flow per NYSDEC requirements = 147.55 x 4 = 590.21 gpm req'd

Mitigation Credit = $250 / gpm

Mitigation Agreement Amount = $147,551.53

CARMINA WOOD DESIGN
80 SILO CITY ROW, SUITE 100
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 25-4008 Date: 6/16/2026
Project Name: Uptown Apartments
Project Address: 2190 Wehrle Drive Amherst, NY
Subject: Sanitary Sewer & Water Demand Calcs
Sheet: 2 of 2

Water Demand Calculations (domestic):

Proposed Apartments

53,680 gpd x 1.1 = 59,048 gpd *use 110% of sewage demand

59,048 gpd x 1day/24hr x 1hr/60min = 41.01 gpm

41.01 gpm x 3.0 = 123.02 gpm Q_{peak} *use peaker factor 3 per ECDOH

Headlosses:

Q_{peak} = 123.02 gpm
Pipe = 8 inch Polyethylene C = 140
Length = 60 LF (approx. distance from tap to RPZ)

$$H_L = \frac{10.44\ L\ Q^{1.85}}{C^{1.85}\ D^{4.866}} = \frac{10.44(60)(27.89)^{1.85}}{(140)^{1.85}\ (6)^{4.866}} = 0.02 \text{ ft} = 0.01 \text{ psi}$$

Δ elev = 0 ft = 0.00 psi
Loss through meter = 1 psi
Loss through RPZ = 12 psi
Total Losses = 13.0 psi
Static Pressure = 43 psi (per ECWA)
Residual Pressure Following RPZ = 40 - 13.0 = 30.0 psi (available after rpz & meter)

Residual Pressure 30" above 2nd Floor
Δ elev = 20 ft = 8.66 psi
Residual Pressure 30" above 2nd Floor = 21.3 psi *

*booster pump to be installed, designed by others

Water Demand Calculations (fire):

Proposed Apartments

Q = 1,041 gpm

Headlosses:

Q_{peak} = 1041 gpm
Pipe = 8 inch C-900 PVC C = 140
Length = 1,600 LF (approx. distance from RPZ to farthest hydrant)

$$H_L = \frac{10.44\ L\ Q^{1.85}}{C^{1.85}\ D^{4.866}} = \frac{10.44(1050)(1000)^{1.85}}{(140)^{1.85}\ (8)^{4.866}} = 27.56 \text{ ft} = 11.94 \text{ psi}$$

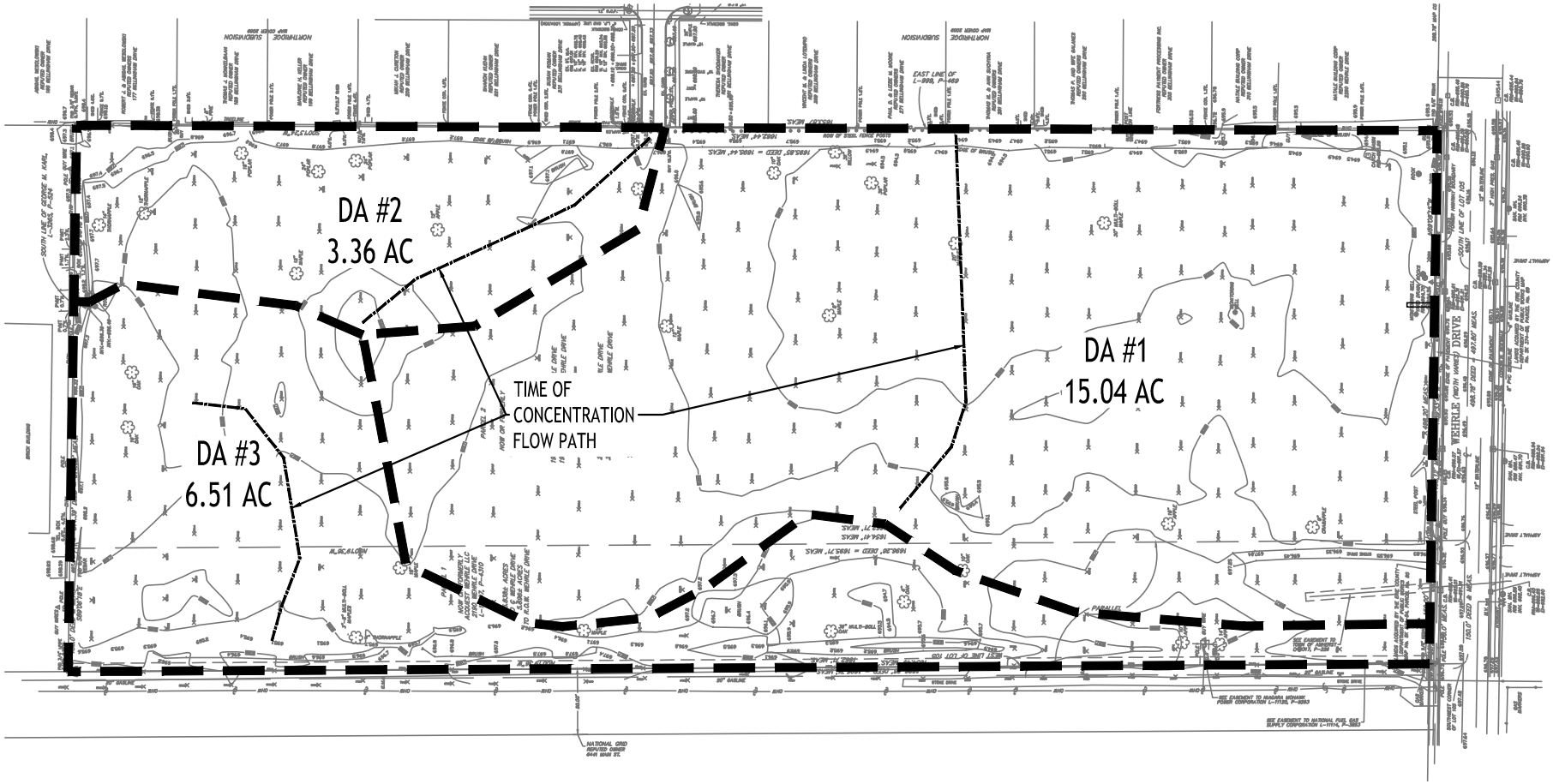
Δ elev = 2 ft = 0.87 psi

Static Pressure after RPZ = 43 psi (per ECWA)
Residual Pressure at hydrant = 43 - 9.00 = 30.2 psi

Appendix B

Storm Sewer System Drainage Calculations

Existing Runoff



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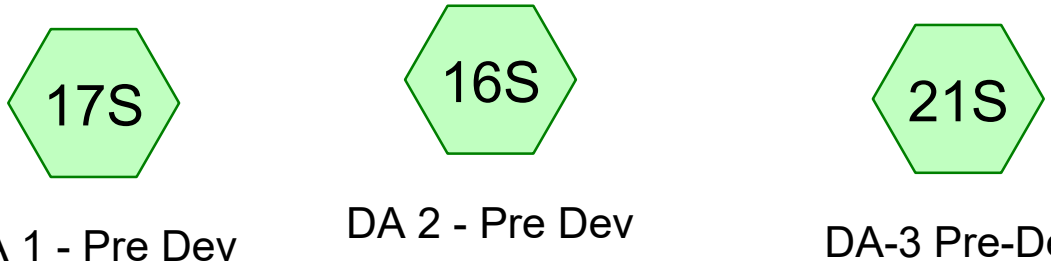
PRE-DEV DRAINAGE MAP

SCALE: 1"=200'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

200 0 200 400Ft.

200'



Subcat Reach Pond Link

Routing Diagram for 25-4008 HYDROCAD
Prepared by Carmina Wood Design, Printed 6/16/2026

Project Notes

Rainfall events imported from "NRCS2-Rain.txt" for 1421 NY Erie
Rainfall events imported from "NRCS2-Rain.txt" for 1421 NY Erie

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	NOAA10 24-hr	A	Default	24.00	1	1.91	2
2	10-Year	NOAA10 24-hr	A	Default	24.00	1	3.44	2
3	25-Year	NOAA10 24-hr	A	Default	24.00	1	4.15	2
4	100-Year	NOAA10 24-hr	A	Default	24.00	1	5.25	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
24.910	80	>75% Grass cover, Good, HSG D (16S, 17S, 21S)
24.910	**80**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
24.910	HSG D	16S, 17S, 21S
0.000	Other	
24.910		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	24.910	0.000	24.910	>75% Grass cover, Good	16S, 17S, 21S
0.000	**0.000**	**0.000**	**24.910**	**0.000**	**24.910**	**TOTAL AREA**	

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment16S: DA 2 - Pre Dev Runoff Area=3.360 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=400' Tc=14.9 min CN=80 Runoff=2.02 cfs 0.142 af

Subcatchment17S: DA 1 - Pre Dev Runoff Area=15.040 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=478' Tc=17.2 min CN=80 Runoff=8.36 cfs 0.637 af

Subcatchment21S: DA-3 Pre-Dev Runoff Area=6.510 ac 0.00% Impervious Runoff Depth=0.51"
Flow Length=350' Slope=0.0150 '/' Tc=15.3 min CN=80 Runoff=3.88 cfs 0.276 af

Total Runoff Area = 24.910 ac Runoff Volume = 1.055 af Average Runoff Depth = 0.51"
100.00% Pervious = 24.910 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 16S: DA 2 - Pre Dev

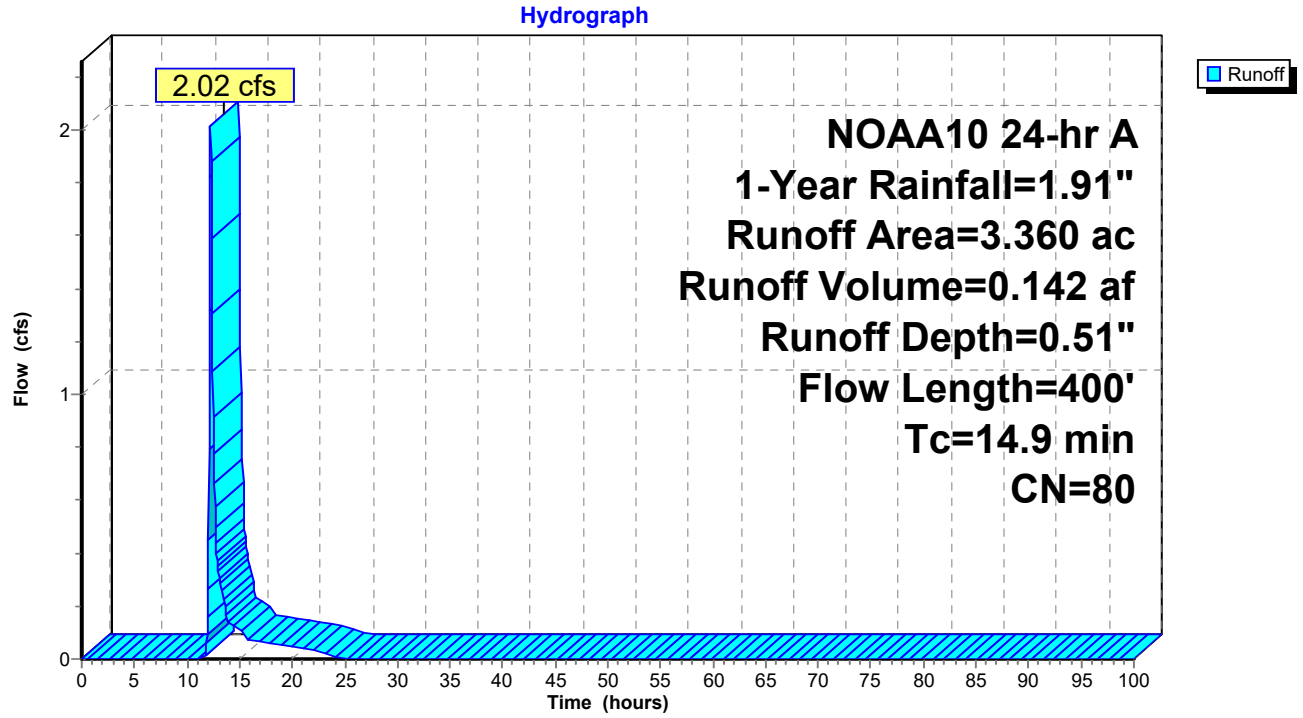
Runoff = 2.02 cfs @ 12.25 hrs, Volume= 0.142 af, Depth= 0.51"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
3.360	80	>75% Grass cover, Good, HSG D
3.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0200	0.14		**Sheet Flow, SHEET FLOW - GRASS** Grass: Short n= 0.150 P2= 2.29"
3.3	300	0.0100	1.50		**Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW** Grassed Waterway Kv= 15.0 fps
14.9	400	Total			

Subcatchment 16S: DA 2 - Pre Dev



Summary for Subcatchment 17S: DA 1 - Pre Dev

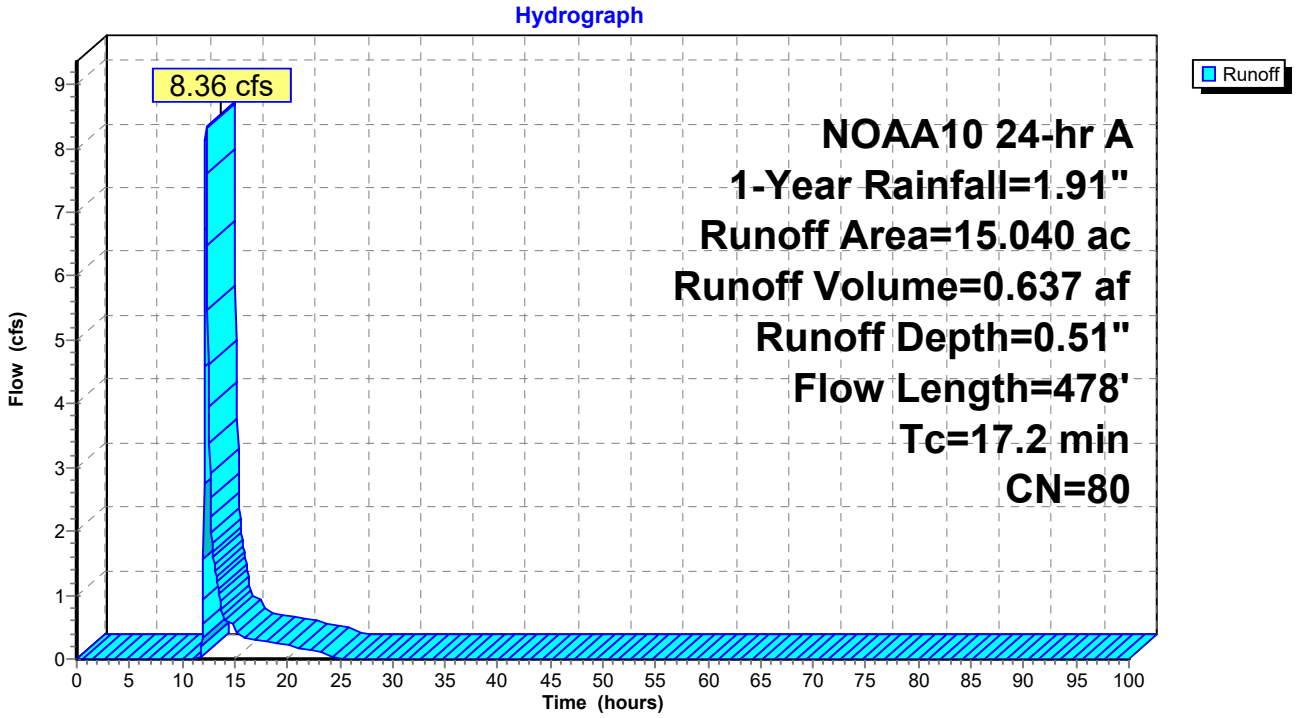
Runoff = 8.36 cfs @ 12.29 hrs, Volume= 0.637 af, Depth= 0.51"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
15.040	80	>75% Grass cover, Good, HSG D
15.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		**Sheet Flow, SHEET FLOW - GRASS** Grass: Short n= 0.150 P2= 2.29"
4.2	378	0.0100	1.50		**Shallow Concentrated Flow, SHALLOW CONCETRATED FLOW -** Grassed Waterway Kv= 15.0 fps
17.2	478	Total			

Subcatchment 17S: DA 1 - Pre Dev



Summary for Subcatchment 21S: DA-3 Pre-Dev

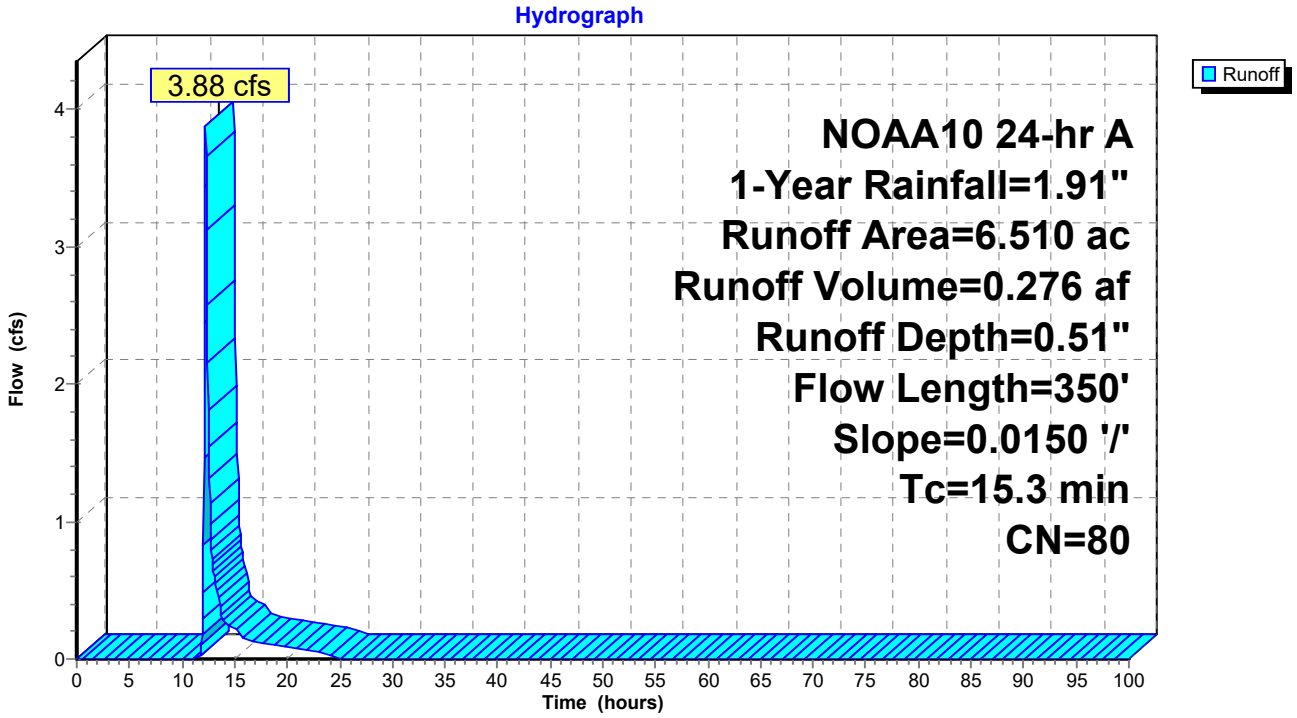
Runoff = 3.88 cfs @ 12.26 hrs, Volume= 0.276 af, Depth= 0.51"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
6.510	80	>75% Grass cover, Good, HSG D
6.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
2.3	250	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.3	350	Total			

Subcatchment 21S: DA-3 Pre-Dev



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment16S: DA 2 - Pre Dev Runoff Area=3.360 ac 0.00% Impervious Runoff Depth=1.59"
Flow Length=400' Tc=14.9 min CN=80 Runoff=6.81 cfs 0.445 af

Subcatchment17S: DA 1 - Pre Dev Runoff Area=15.040 ac 0.00% Impervious Runoff Depth=1.59"
Flow Length=478' Tc=17.2 min CN=80 Runoff=28.47 cfs 1.991 af

Subcatchment21S: DA-3 Pre-Dev Runoff Area=6.510 ac 0.00% Impervious Runoff Depth=1.59"
Flow Length=350' Slope=0.0150 '/' Tc=15.3 min CN=80 Runoff=13.10 cfs 0.862 af

Total Runoff Area = 24.910 ac Runoff Volume = 3.298 af Average Runoff Depth = 1.59"
100.00% Pervious = 24.910 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 16S: DA 2 - Pre Dev

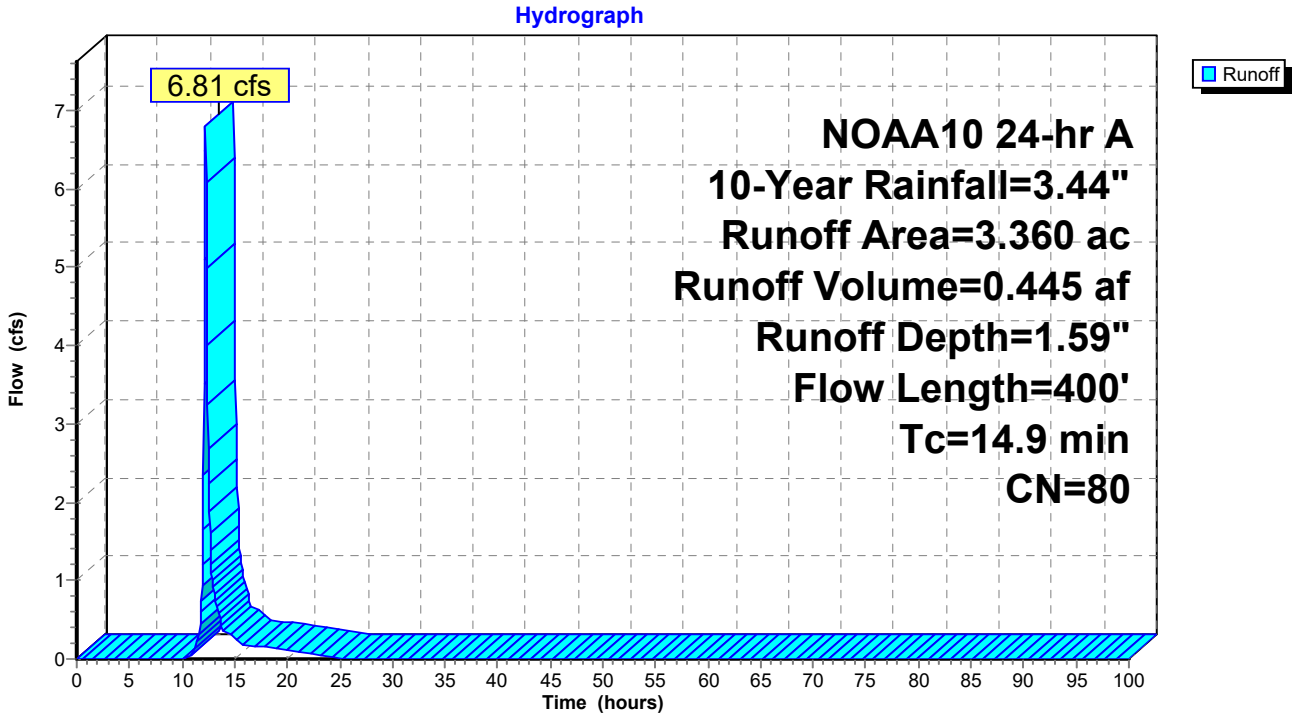
Runoff = 6.81 cfs @ 12.24 hrs, Volume= 0.445 af, Depth= 1.59"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
3.360	80	>75% Grass cover, Good, HSG D
3.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0200	0.14		**Sheet Flow, SHEET FLOW - GRASS** Grass: Short n= 0.150 P2= 2.29"
3.3	300	0.0100	1.50		**Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW** Grassed Waterway Kv= 15.0 fps
14.9	400	Total			

Subcatchment 16S: DA 2 - Pre Dev



Summary for Subcatchment 17S: DA 1 - Pre Dev

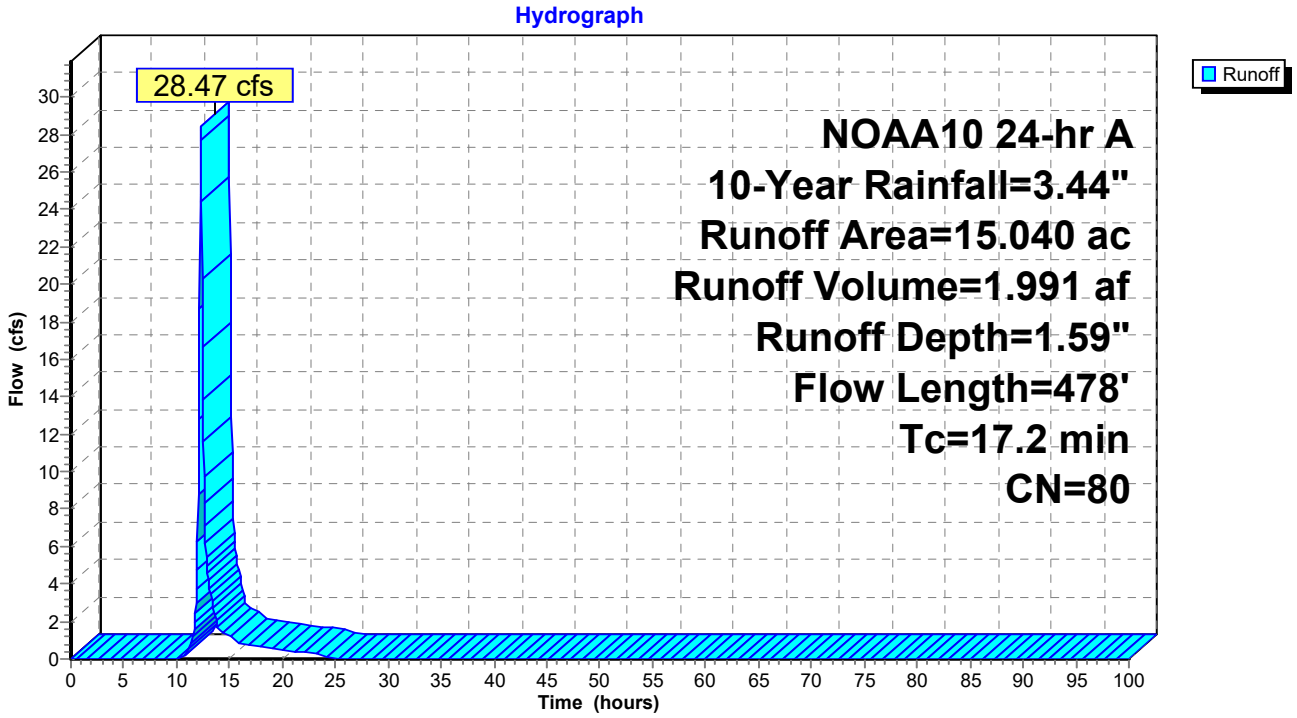
Runoff = 28.47 cfs @ 12.27 hrs, Volume= 1.991 af, Depth= 1.59"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
15.040	80	>75% Grass cover, Good, HSG D
15.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		**Sheet Flow, SHEET FLOW - GRASS** Grass: Short n= 0.150 P2= 2.29"
4.2	378	0.0100	1.50		**Shallow Concentrated Flow, SHALLOW CONCETRATED FLOW -** Grassed Waterway Kv= 15.0 fps
17.2	478	Total			

Subcatchment 17S: DA 1 - Pre Dev



Summary for Subcatchment 21S: DA-3 Pre-Dev

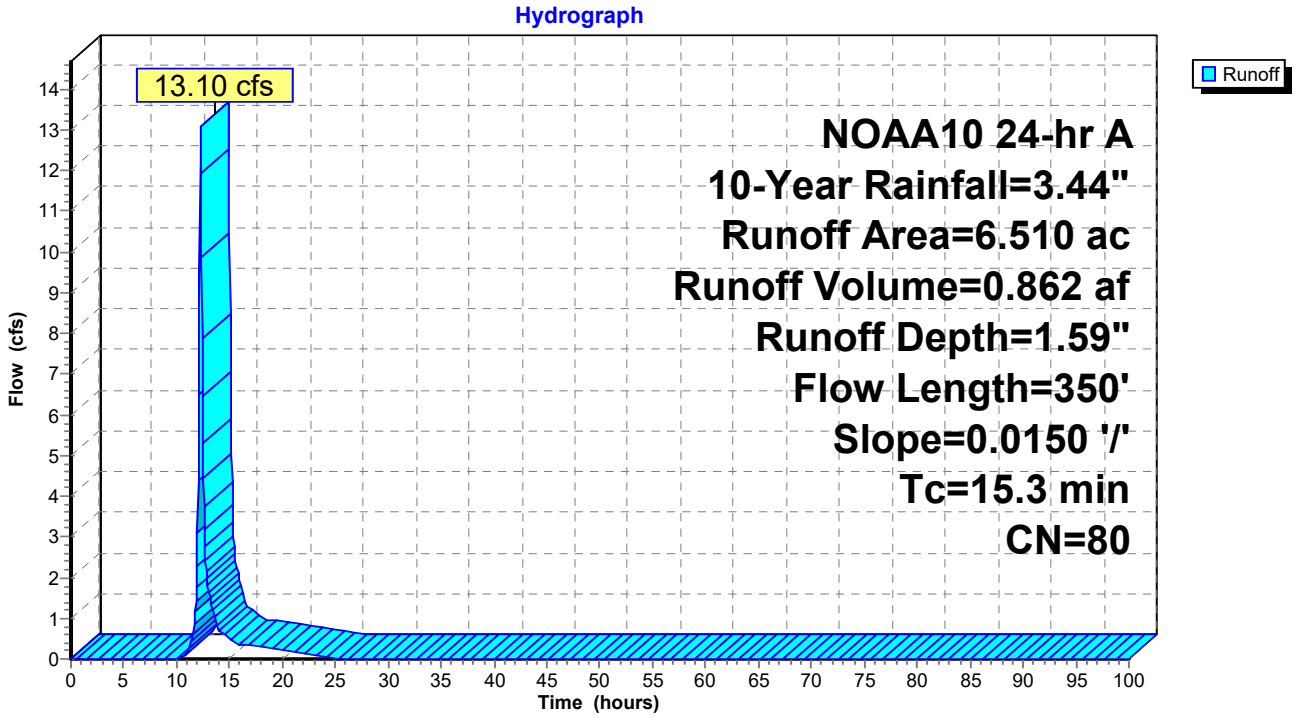
Runoff = 13.10 cfs @ 12.24 hrs, Volume= 0.862 af, Depth= 1.59"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
6.510	80	>75% Grass cover, Good, HSG D
6.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
2.3	250	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.3	350	Total			

Subcatchment 21S: DA-3 Pre-Dev



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment16S: DA 2 - Pre Dev Runoff Area=3.360 ac 0.00% Impervious Runoff Depth=2.17"
Flow Length=400' Tc=14.9 min CN=80 Runoff=9.30 cfs 0.607 af

Subcatchment17S: DA 1 - Pre Dev Runoff Area=15.040 ac 0.00% Impervious Runoff Depth=2.17"
Flow Length=478' Tc=17.2 min CN=80 Runoff=38.98 cfs 2.715 af

Subcatchment21S: DA-3 Pre-Dev Runoff Area=6.510 ac 0.00% Impervious Runoff Depth=2.17"
Flow Length=350' Slope=0.0150 '/' Tc=15.3 min CN=80 Runoff=17.91 cfs 1.175 af

Total Runoff Area = 24.910 ac Runoff Volume = 4.497 af Average Runoff Depth = 2.17"
100.00% Pervious = 24.910 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 16S: DA 2 - Pre Dev

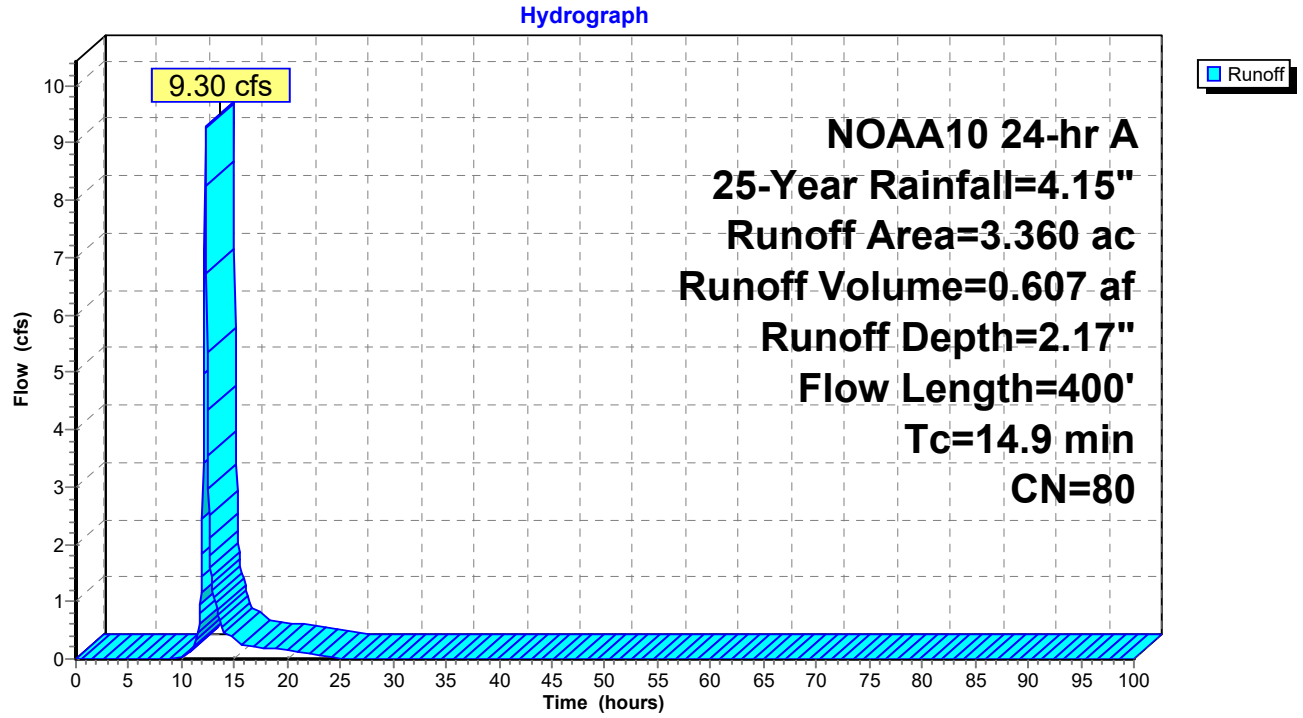
Runoff = 9.30 cfs @ 12.24 hrs, Volume= 0.607 af, Depth= 2.17"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
3.360	80	>75% Grass cover, Good, HSG D
3.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0200	0.14		**Sheet Flow, SHEET FLOW - GRASS** Grass: Short n= 0.150 P2= 2.29"
3.3	300	0.0100	1.50		**Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW** Grassed Waterway Kv= 15.0 fps
14.9	400	Total			

Subcatchment 16S: DA 2 - Pre Dev



Summary for Subcatchment 17S: DA 1 - Pre Dev

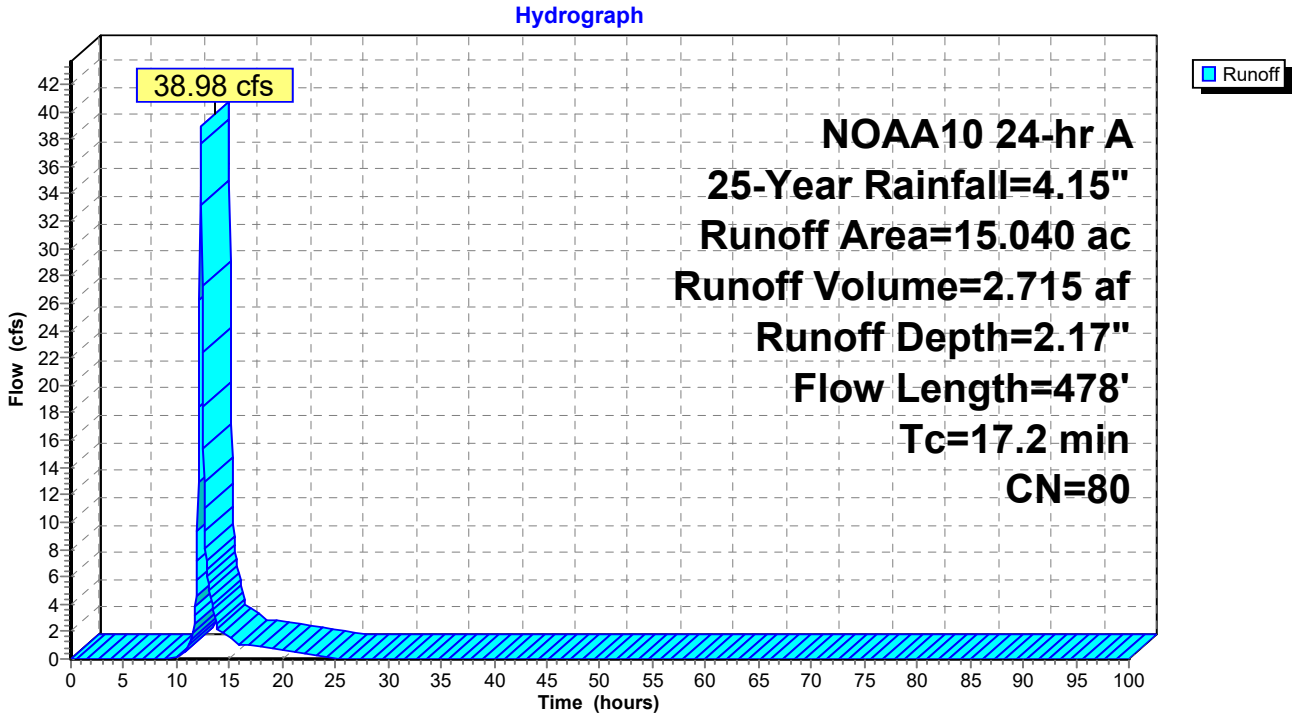
Runoff = 38.98 cfs @ 12.27 hrs, Volume= 2.715 af, Depth= 2.17"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
15.040	80	>75% Grass cover, Good, HSG D
15.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		**Sheet Flow, SHEET FLOW - GRASS** Grass: Short n= 0.150 P2= 2.29"
4.2	378	0.0100	1.50		**Shallow Concentrated Flow, SHALLOW CONCETRATED FLOW -** Grassed Waterway Kv= 15.0 fps
17.2	478	Total			

Subcatchment 17S: DA 1 - Pre Dev



Summary for Subcatchment 21S: DA-3 Pre-Dev

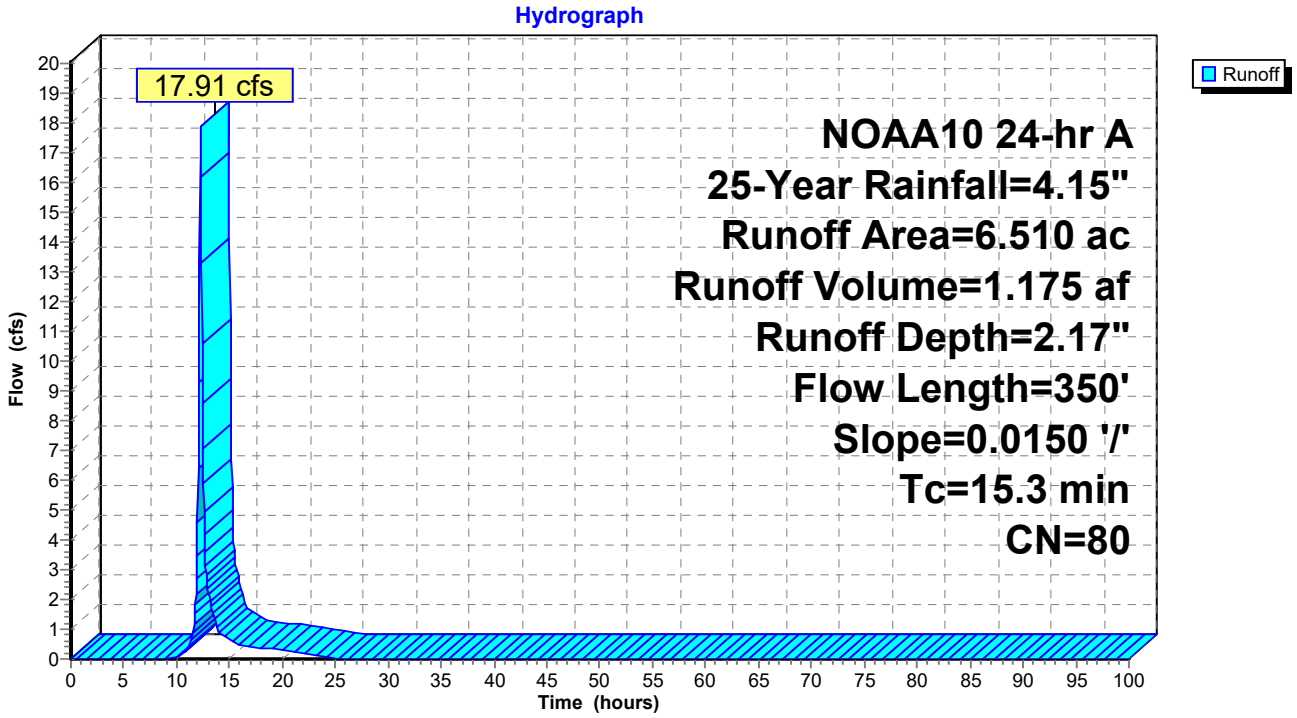
Runoff = 17.91 cfs @ 12.24 hrs, Volume= 1.175 af, Depth= 2.17"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
6.510	80	>75% Grass cover, Good, HSG D
6.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
2.3	250	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.3	350	Total			

Subcatchment 21S: DA-3 Pre-Dev



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment16S: DA 2 - Pre Dev Runoff Area=3.360 ac 0.00% Impervious Runoff Depth=3.11"
Flow Length=400' Tc=14.9 min CN=80 Runoff=13.32 cfs 0.871 af

Subcatchment17S: DA 1 - Pre Dev Runoff Area=15.040 ac 0.00% Impervious Runoff Depth=3.11"
Flow Length=478' Tc=17.2 min CN=80 Runoff=55.88 cfs 3.900 af

Subcatchment21S: DA-3 Pre-Dev Runoff Area=6.510 ac 0.00% Impervious Runoff Depth=3.11"
Flow Length=350' Slope=0.0150 '/' Tc=15.3 min CN=80 Runoff=25.66 cfs 1.688 af

Total Runoff Area = 24.910 ac Runoff Volume = 6.460 af Average Runoff Depth = 3.11"
100.00% Pervious = 24.910 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 16S: DA 2 - Pre Dev

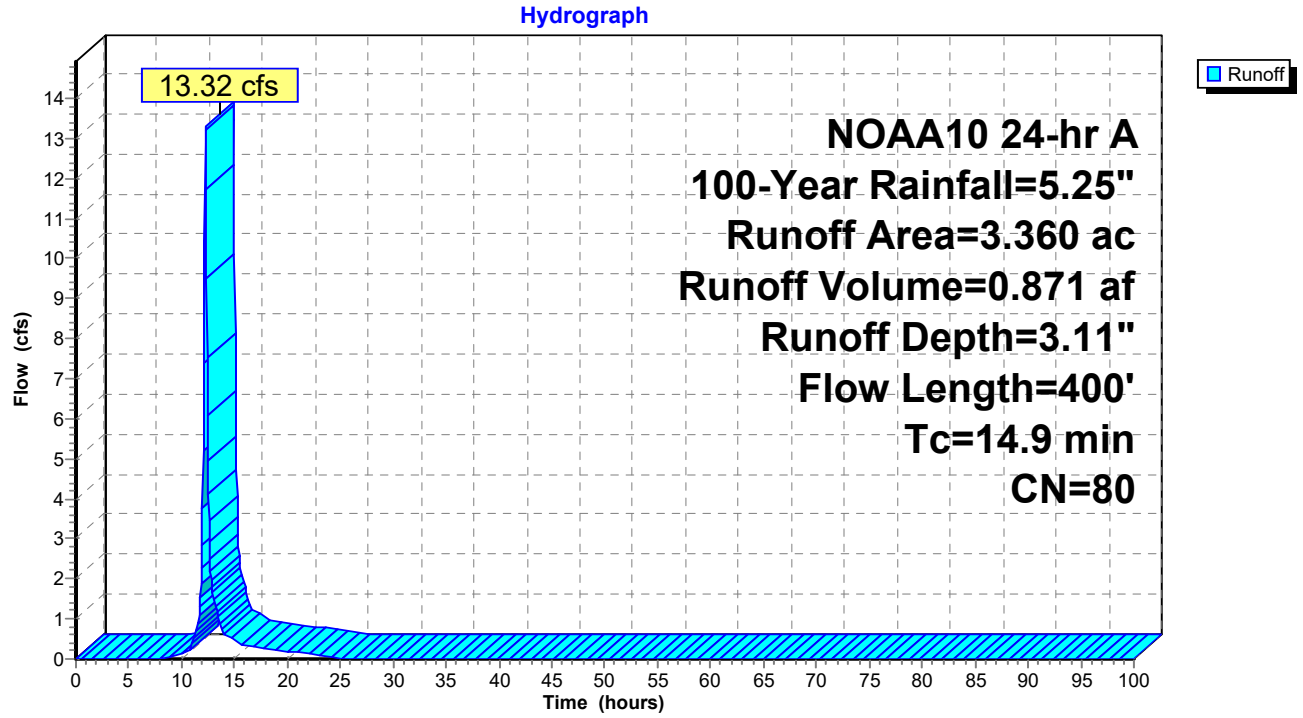
Runoff = 13.32 cfs @ 12.23 hrs, Volume= 0.871 af, Depth= 3.11"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
3.360	80	>75% Grass cover, Good, HSG D
3.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0200	0.14		**Sheet Flow, SHEET FLOW - GRASS** Grass: Short n= 0.150 P2= 2.29"
3.3	300	0.0100	1.50		**Shallow Concentrated Flow, SHALLOW CONCENTRATED FLOW** Grassed Waterway Kv= 15.0 fps
14.9	400	Total			

Subcatchment 16S: DA 2 - Pre Dev



Summary for Subcatchment 17S: DA 1 - Pre Dev

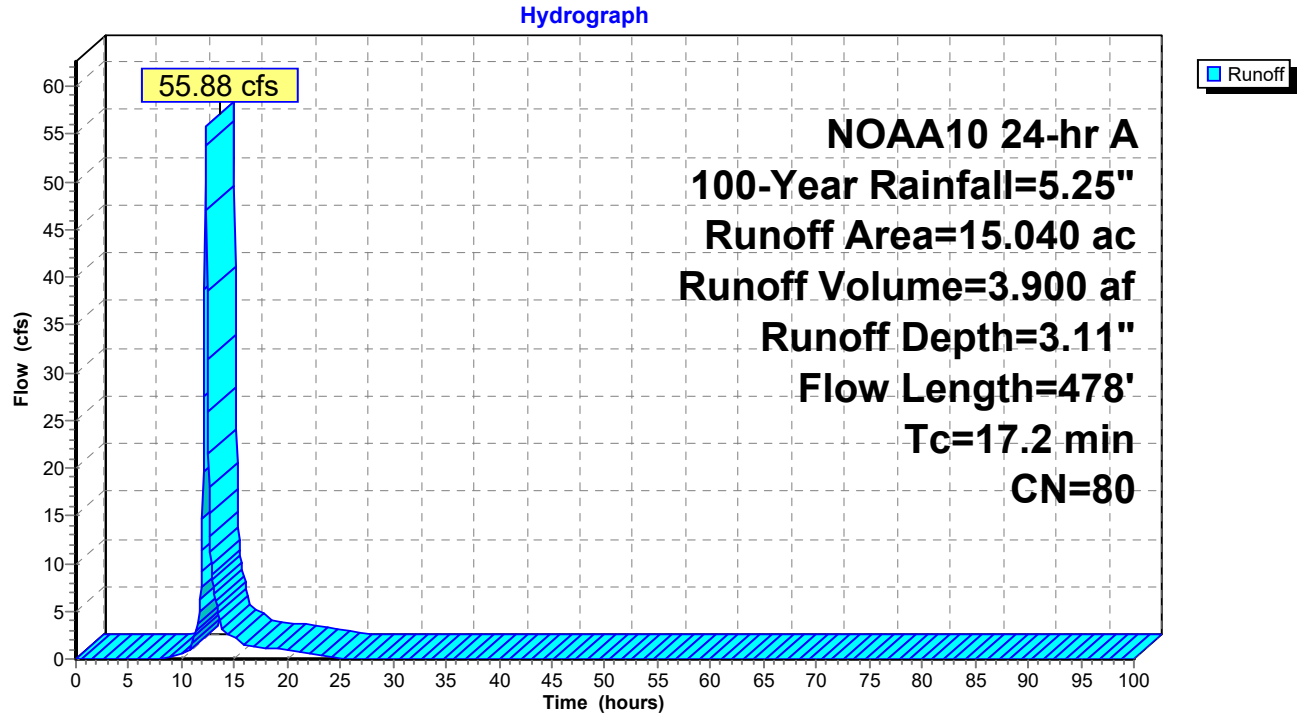
Runoff = 55.88 cfs @ 12.26 hrs, Volume= 3.900 af, Depth= 3.11"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
15.040	80	>75% Grass cover, Good, HSG D
15.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		**Sheet Flow, SHEET FLOW - GRASS** Grass: Short n= 0.150 P2= 2.29"
4.2	378	0.0100	1.50		**Shallow Concentrated Flow, SHALLOW CONCETRATED FLOW -** Grassed Waterway Kv= 15.0 fps
17.2	478	Total			

Subcatchment 17S: DA 1 - Pre Dev



Summary for Subcatchment 21S: DA-3 Pre-Dev

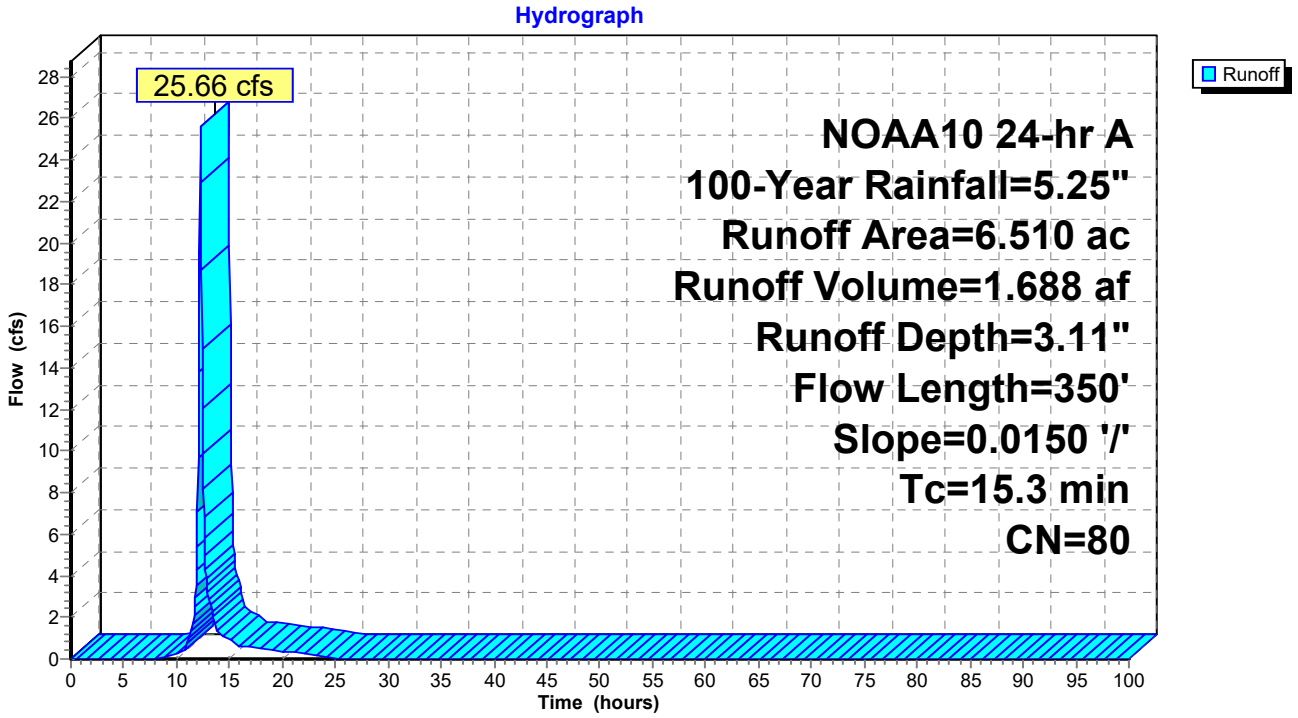
Runoff = 25.66 cfs @ 12.24 hrs, Volume= 1.688 af, Depth= 3.11"
Routed to nonexistent node 25L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 100-Year Rainfall=5.25"

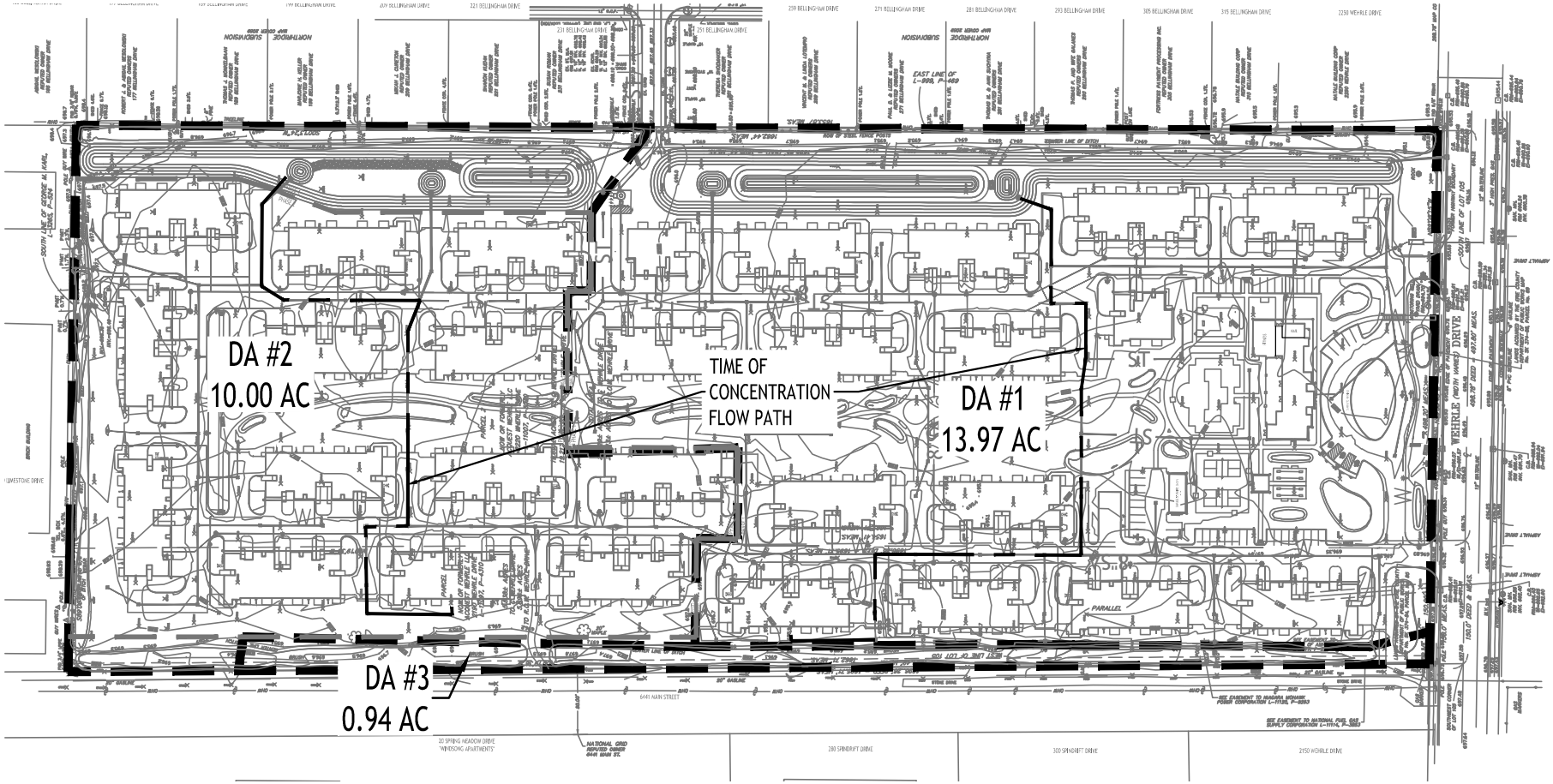
Area (ac)	CN	Description
6.510	80	>75% Grass cover, Good, HSG D
6.510		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0150	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
2.3	250	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.3	350	Total			

Subcatchment 21S: DA-3 Pre-Dev



Proposed Runoff



N

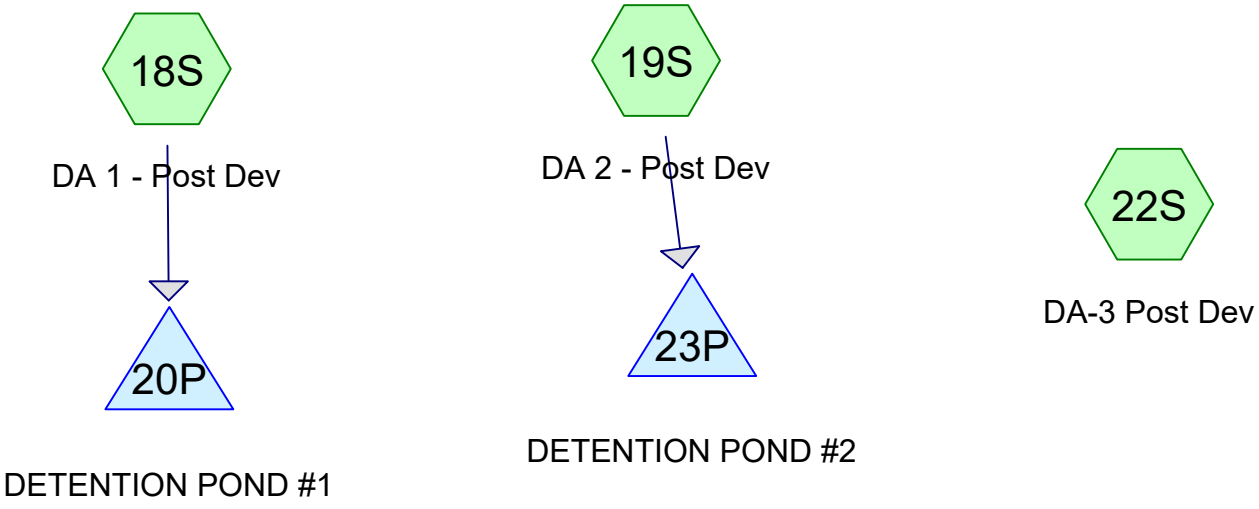
POST-DEV DRAINAGE MAP

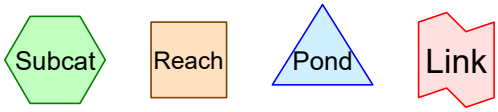
SCALE: 1"=200'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

200 0 200 400Ft.

200'





Routing Diagram for 25-4008 HYDROCAD
Prepared by Carmina Wood Design, Printed 6/16/2026

Project Notes

Rainfall events imported from "NRCS2-Rain.txt" for 1421 NY Erie
Rainfall events imported from "NRCS2-Rain.txt" for 1421 NY Erie

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	NOAA10 24-hr	A	Default	24.00	1	1.91	2
2	10-Year	NOAA10 24-hr	A	Default	24.00	1	3.44	2
3	25-Year	NOAA10 24-hr	A	Default	24.00	1	4.15	2
4	100-Year	NOAA10 24-hr	A	Default	24.00	1	5.25	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
13.840	80	>75% Grass cover, Good, HSG D (18S, 19S, 22S)
6.750	98	Paved parking, HSG D (18S, 19S)
4.320	98	Roofs, HSG D (18S, 19S)
24.910	**88**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
24.910	HSG D	18S, 19S, 22S
0.000	Other	
24.910		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	13.840	0.000	13.840	>75% Grass cover, Good	18S, 19S, 22S
0.000	0.000	0.000	6.750	0.000	6.750	Paved parking	18S, 19S
0.000	0.000	0.000	4.320	0.000	4.320	Roofs	18S, 19S
0.000	**0.000**	**0.000**	**24.910**	**0.000**	**24.910**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	18S	0.00	0.00	860.0	0.0020	0.013	0.0	12.0	0.0	
2	19S	0.00	0.00	780.0	0.0020	0.013	0.0	12.0	0.0	
3	20P	691.80	691.50	200.0	0.0015	0.013	0.0	24.0	0.0	
4	20P	692.00	691.90	5.0	0.0200	0.013	0.0	18.0	0.0	
5	23P	692.85	692.43	200.0	0.0021	0.013	0.0	12.0	0.0	
6	23P	693.00	692.95	5.0	0.0100	0.013	0.0	12.0	0.0	

Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment18S: DA 1 - Post Dev Runoff Area=13.970 ac 47.24% Impervious Runoff Depth=0.95"
Flow Length=940' Tc=16.8 min CN=89 Runoff=16.14 cfs 1.110 af

Subcatchment19S: DA 2 - Post Dev Runoff Area=10.000 ac 44.70% Impervious Runoff Depth=0.89"
Flow Length=860' Tc=16.1 min CN=88 Runoff=11.01 cfs 0.744 af

Subcatchment22S: DA-3 Post Dev Runoff Area=0.940 ac 0.00% Impervious Runoff Depth=0.51"
Tc=5.0 min CN=80 Runoff=0.85 cfs 0.040 af

Pond 20P: DETENTION POND #1 Peak Elev=692.94' Storage=23,333 cf Inflow=16.14 cfs 1.110 af
Outflow=3.00 cfs 1.108 af

Pond 23P: DETENTION POND #2 Peak Elev=693.77' Storage=16,806 cf Inflow=11.01 cfs 0.744 af
Outflow=1.43 cfs 0.737 af

Total Runoff Area = 24.910 ac Runoff Volume = 1.895 af Average Runoff Depth = 0.91"
55.56% Pervious = 13.840 ac 44.44% Impervious = 11.070 ac

Summary for Subcatchment 18S: DA 1 - Post Dev

[47] Hint: Peak is 1013% of capacity of segment #2

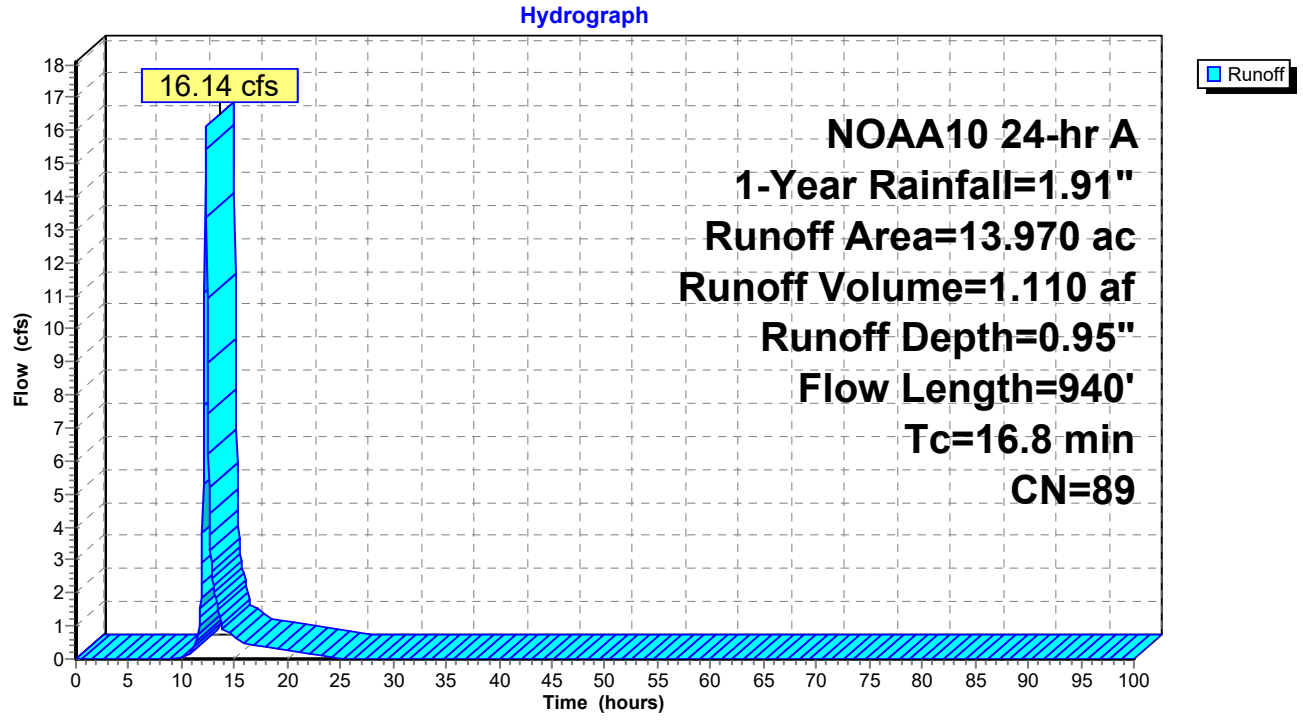
Runoff = 16.14 cfs @ 12.26 hrs, Volume= 1.110 af, Depth= 0.95"
Routed to Pond 20P : DETENTION POND #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
2.470	98	Roofs, HSG D
4.130	98	Paved parking, HSG D
7.370	80	>75% Grass cover, Good, HSG D
13.970	89	Weighted Average
7.370		52.76% Pervious Area
6.600		47.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
7.1	860	0.0020	2.03	1.59	**Pipe Channel, PIPE FLOW** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.8	940	Total			

Subcatchment 18S: DA 1 - Post Dev



Summary for Subcatchment 19S: DA 2 - Post Dev

[47] Hint: Peak is 691% of capacity of segment #2

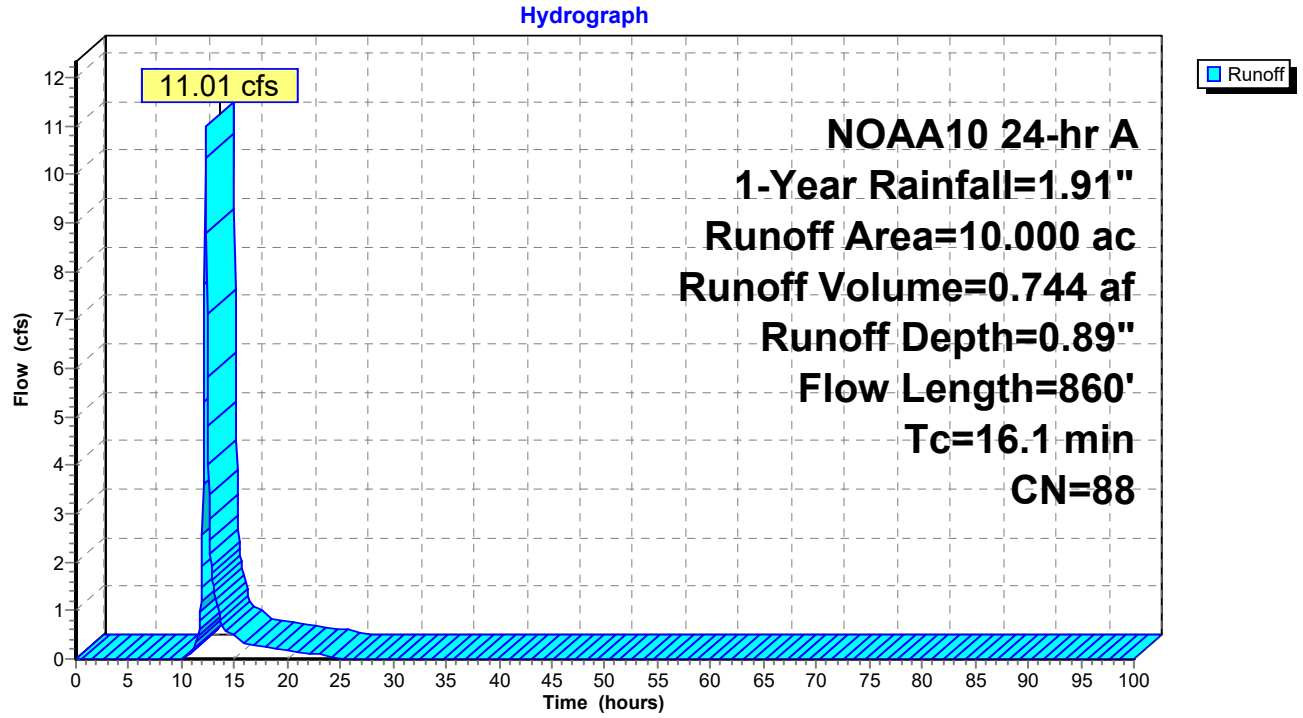
Runoff = 11.01 cfs @ 12.25 hrs, Volume= 0.744 af, Depth= 0.89"
Routed to Pond 23P : DETENTION POND #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
1.850	98	Roofs, HSG D
2.620	98	Paved parking, HSG D
5.530	80	>75% Grass cover, Good, HSG D
10.000	88	Weighted Average
5.530		55.30% Pervious Area
4.470		44.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
6.4	780	0.0020	2.03	1.59	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.1	860	Total			

Subcatchment 19S: DA 2 - Post Dev



Summary for Subcatchment 22S: DA-3 Post Dev

[49] Hint: Tc<2dt may require smaller dt

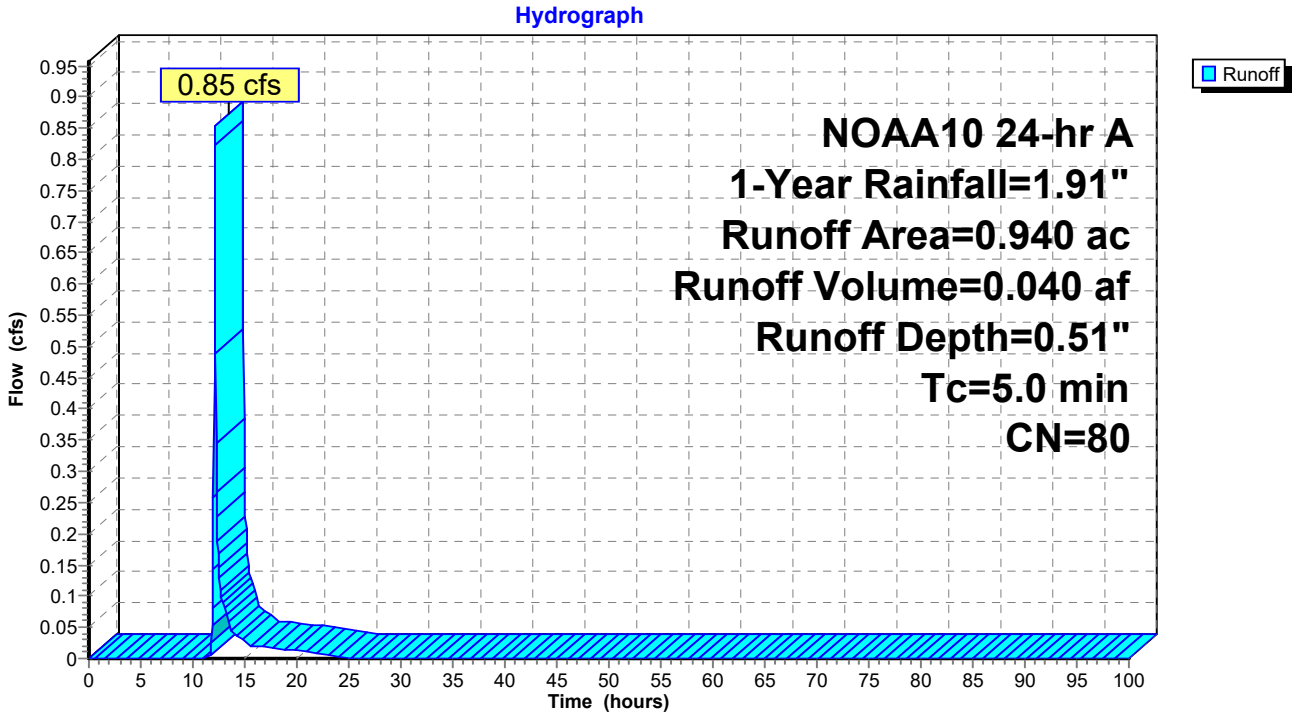
Runoff = 0.85 cfs @ 12.13 hrs, Volume= 0.040 af, Depth= 0.51"
Routed to nonexistent node 24L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 1-Year Rainfall=1.91"

Area (ac)	CN	Description
0.940	80	>75% Grass cover, Good, HSG D
0.940		100.00% Pervious Area

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

Subcatchment 22S: DA-3 Post Dev



Summary for Pond 20P: DETENTION POND #1

Inflow Area = 13.970 ac, 47.24% Impervious, Inflow Depth = 0.95" for 1-Year event
Inflow = 16.14 cfs @ 12.26 hrs, Volume= 1.110 af
Outflow = 3.00 cfs @ 12.79 hrs, Volume= 1.108 af, Atten= 81%, Lag= 31.8 min
Primary = 3.00 cfs @ 12.79 hrs, Volume= 1.108 af
Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 692.94' @ 12.79 hrs Surf.Area= 28,187 sf Storage= 23,333 cf

Plug-Flow detention time= 229.2 min calculated for 1.107 af (100% of inflow)
Center-of-Mass det. time= 229.8 min (1,056.4 - 826.6)

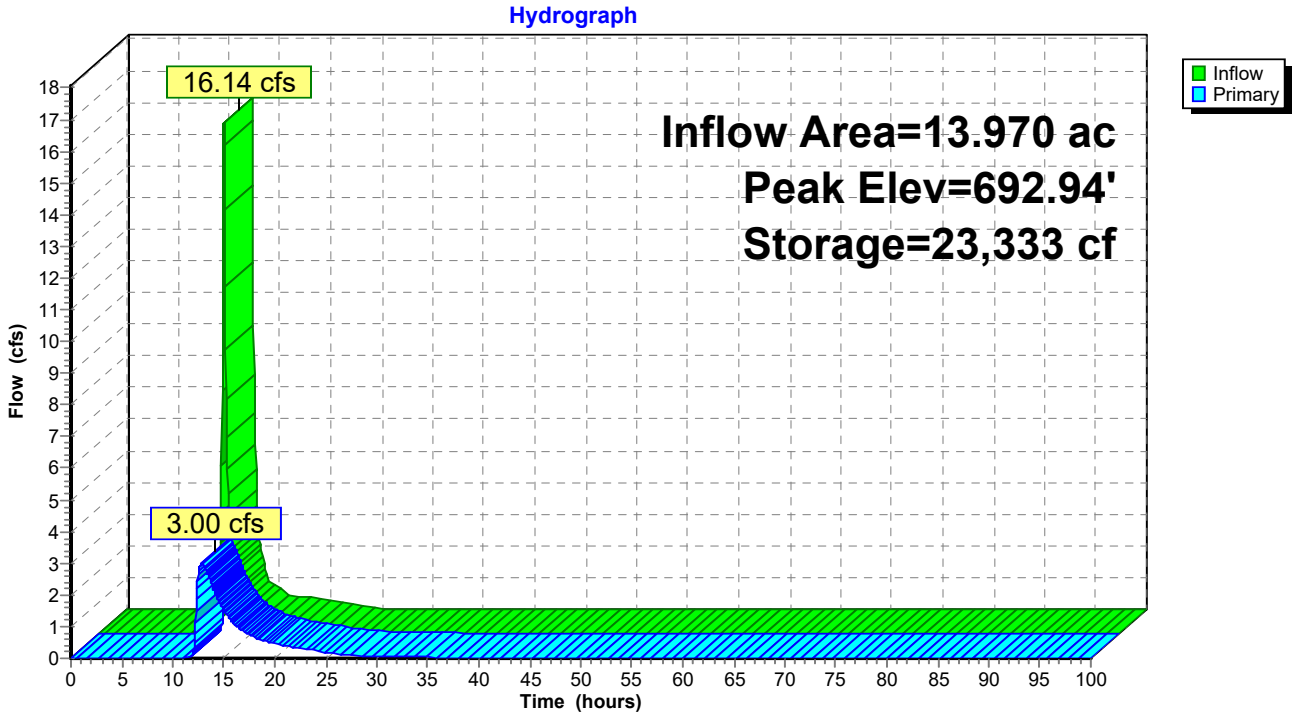
Volume	Invert	Avail.Storage	Storage Description
#1	692.00'	144,521 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
692.00	21,500	0	0
693.00	28,620	25,060	25,060
694.00	36,000	32,310	57,370
695.00	43,560	39,780	97,150
696.00	51,182	47,371	144,521

Device	Routing	Invert	Outlet Devices
#1	Primary	691.80'	**24.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 691.80' / 691.50' S= 0.0015 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	694.35'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	692.00'	**18.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.00' / 691.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.99 cfs @ 12.79 hrs HW=692.94' (Free Discharge)
└**1=Culvert** (Passes 2.99 cfs of 3.76 cfs potential flow)
  ├**2=Grate** (Controls 0.00 cfs)
  └**3=Culvert** (Barrel Controls 2.99 cfs @ 3.67 fps)

Pond 20P: DETENTION POND #1



Summary for Pond 23P: DETENTION POND #2

Inflow Area = 10.000 ac, 44.70% Impervious, Inflow Depth = 0.89" for 1-Year event
Inflow = 11.01 cfs @ 12.25 hrs, Volume= 0.744 af
Outflow = 1.43 cfs @ 13.03 hrs, Volume= 0.737 af, Atten= 87%, Lag= 46.5 min
Primary = 1.43 cfs @ 13.03 hrs, Volume= 0.737 af
Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 693.77' @ 13.03 hrs Surf.Area= 23,225 sf Storage= 16,806 cf

Plug-Flow detention time= 338.6 min calculated for 0.737 af (99% of inflow)
Center-of-Mass det. time= 333.0 min (1,162.7 - 829.7)

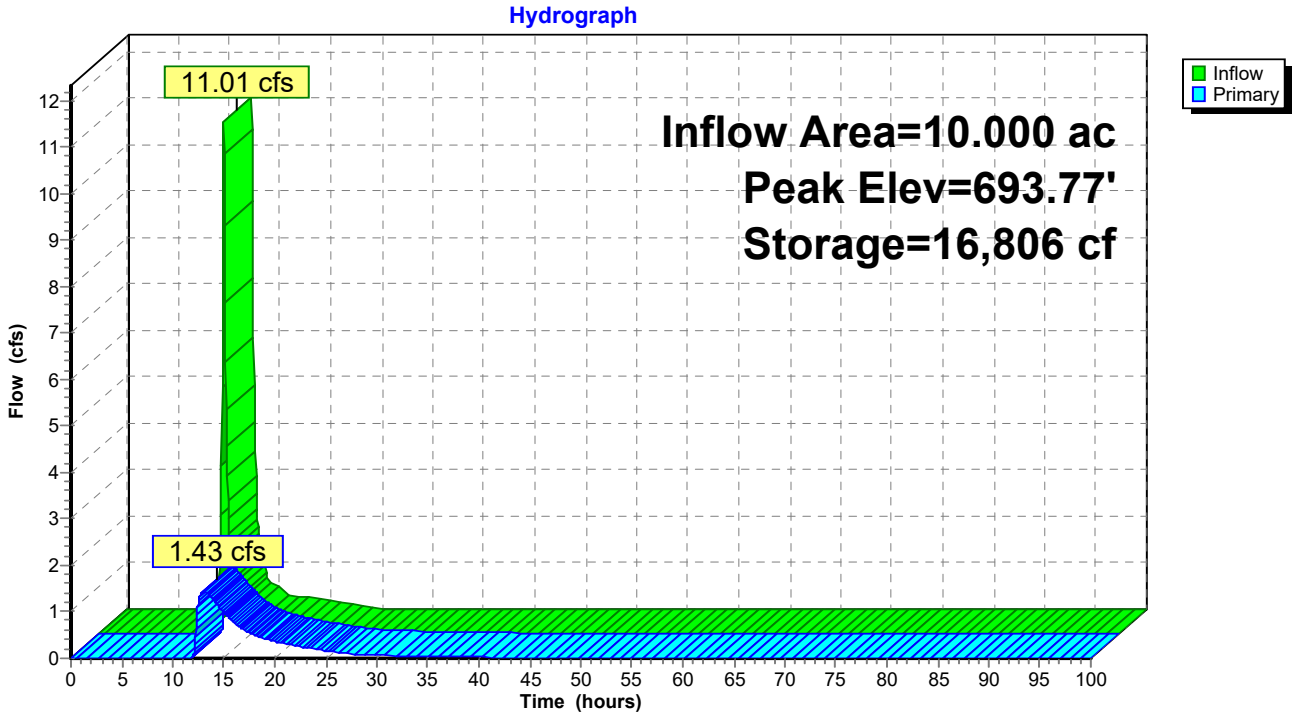
Volume	Invert	Avail.Storage	Storage Description
#1	693.00'	116,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
693.00	20,700	0	0
694.00	24,000	22,350	22,350
695.00	28,900	26,450	48,800
696.00	34,000	31,450	80,250
697.00	39,369	36,685	116,935

Device	Routing	Invert	Outlet Devices
#1	Primary	692.85'	**12.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.85' / 692.43' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	694.90'	**36.0" x 36.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	693.00'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.00' / 692.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.44 cfs @ 13.03 hrs HW=693.77' (Free Discharge)
└**1=Culvert** (Passes 1.44 cfs of 1.45 cfs potential flow)
  ├**2=Grate** (Controls 0.00 cfs)
  └**3=Culvert** (Barrel Controls 1.44 cfs @ 3.08 fps)

Pond 23P: DETENTION POND #2



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment18S: DA 1 - Post Dev Runoff Area=13.970 ac 47.24% Impervious Runoff Depth=2.30"
Flow Length=940' Tc=16.8 min CN=89 Runoff=38.53 cfs 2.680 af

Subcatchment19S: DA 2 - Post Dev Runoff Area=10.000 ac 44.70% Impervious Runoff Depth=2.21"
Flow Length=860' Tc=16.1 min CN=88 Runoff=27.12 cfs 1.845 af

Subcatchment22S: DA-3 Post Dev Runoff Area=0.940 ac 0.00% Impervious Runoff Depth=1.59"
Tc=5.0 min CN=80 Runoff=2.78 cfs 0.124 af

Pond 20P: DETENTION POND #1 Peak Elev=693.95' Storage=55,661 cf Inflow=38.53 cfs 2.680 af
Outflow=8.59 cfs 2.677 af

Pond 23P: DETENTION POND #2 Peak Elev=694.89' Storage=45,721 cf Inflow=27.12 cfs 1.845 af
Outflow=2.73 cfs 1.837 af

Total Runoff Area = 24.910 ac Runoff Volume = 4.649 af Average Runoff Depth = 2.24"
55.56% Pervious = 13.840 ac 44.44% Impervious = 11.070 ac

Summary for Subcatchment 18S: DA 1 - Post Dev

[47] Hint: Peak is 2418% of capacity of segment #2

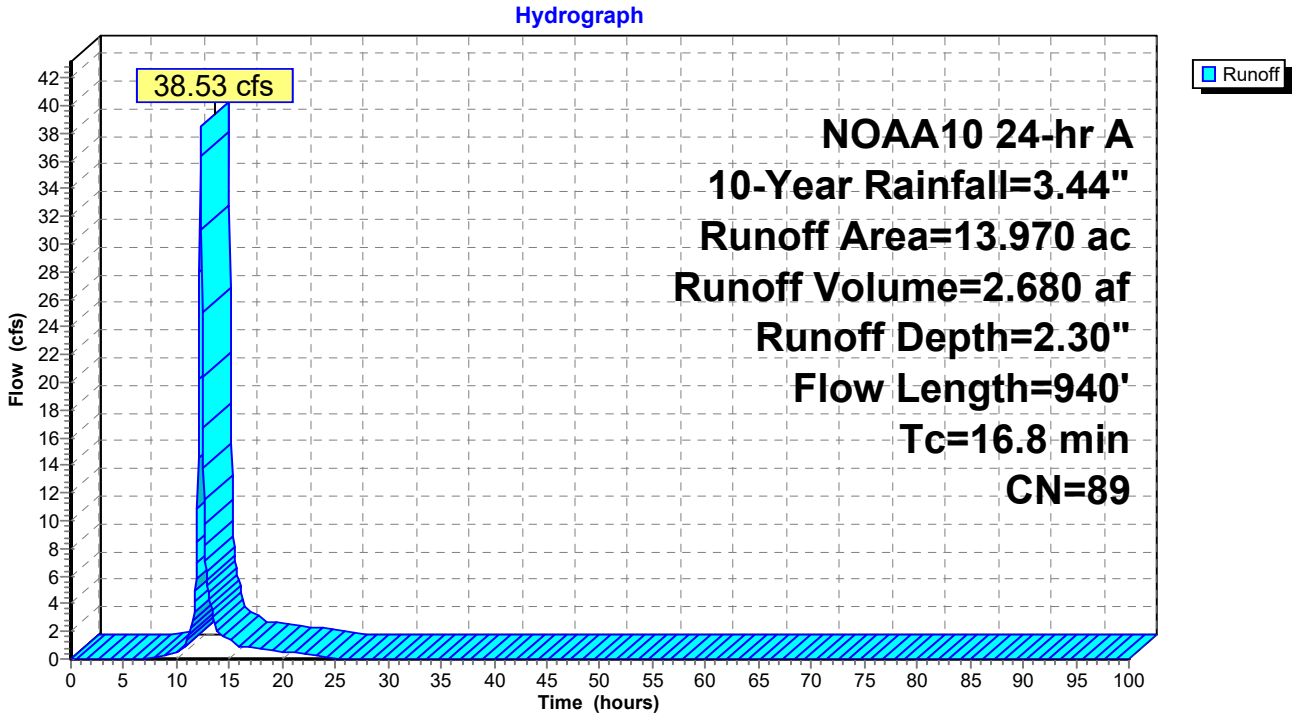
Runoff = 38.53 cfs @ 12.25 hrs, Volume= 2.680 af, Depth= 2.30"
Routed to Pond 20P : DETENTION POND #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
2.470	98	Roofs, HSG D
4.130	98	Paved parking, HSG D
7.370	80	>75% Grass cover, Good, HSG D
13.970	89	Weighted Average
7.370		52.76% Pervious Area
6.600		47.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
7.1	860	0.0020	2.03	1.59	**Pipe Channel, PIPE FLOW** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.8	940	Total			

Subcatchment 18S: DA 1 - Post Dev



Summary for Subcatchment 19S: DA 2 - Post Dev

[47] Hint: Peak is 1702% of capacity of segment #2

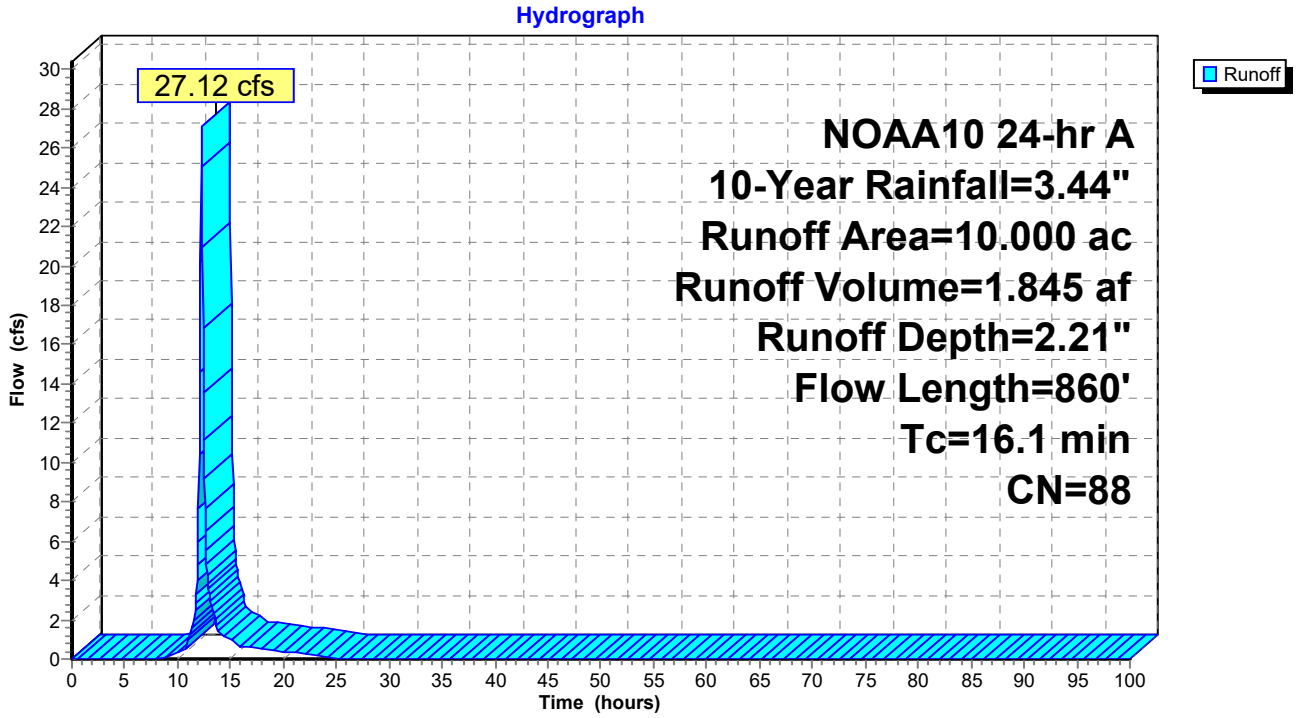
Runoff = 27.12 cfs @ 12.25 hrs, Volume= 1.845 af, Depth= 2.21"
Routed to Pond 23P : DETENTION POND #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
1.850	98	Roofs, HSG D
2.620	98	Paved parking, HSG D
5.530	80	>75% Grass cover, Good, HSG D
10.000	88	Weighted Average
5.530		55.30% Pervious Area
4.470		44.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
6.4	780	0.0020	2.03	1.59	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.1	860	Total			

Subcatchment 19S: DA 2 - Post Dev



Summary for Subcatchment 22S: DA-3 Post Dev

[49] Hint: Tc<2dt may require smaller dt

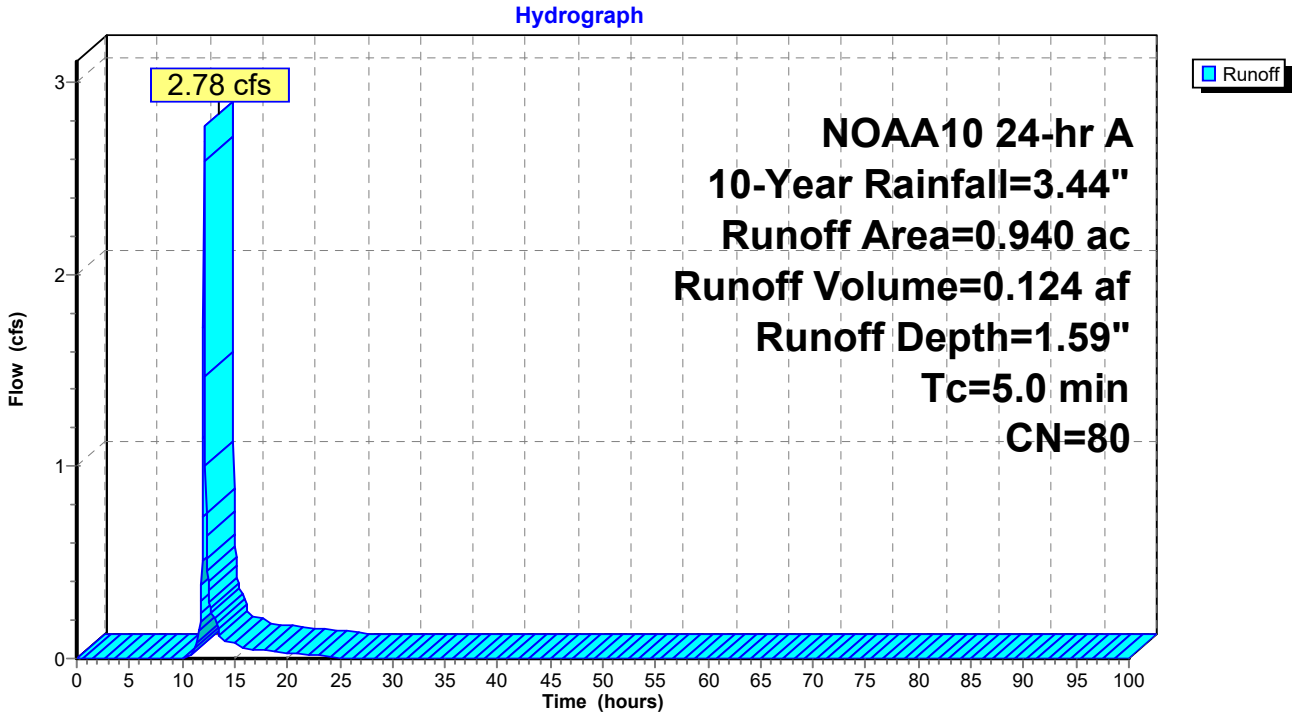
Runoff = 2.78 cfs @ 12.12 hrs, Volume= 0.124 af, Depth= 1.59"
Routed to nonexistent node 24L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 10-Year Rainfall=3.44"

Area (ac)	CN	Description
0.940	80	>75% Grass cover, Good, HSG D
0.940		100.00% Pervious Area

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

Subcatchment 22S: DA-3 Post Dev



Summary for Pond 20P: DETENTION POND #1

Inflow Area = 13.970 ac, 47.24% Impervious, Inflow Depth = 2.30" for 10-Year event
Inflow = 38.53 cfs @ 12.25 hrs, Volume= 2.680 af
Outflow = 8.59 cfs @ 12.69 hrs, Volume= 2.677 af, Atten= 78%, Lag= 26.2 min
Primary = 8.59 cfs @ 12.69 hrs, Volume= 2.677 af
Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 693.95' @ 12.69 hrs Surf.Area= 35,648 sf Storage= 55,661 cf

Plug-Flow detention time= 158.7 min calculated for 2.675 af (100% of inflow)
Center-of-Mass det. time= 160.0 min (966.6 - 806.6)

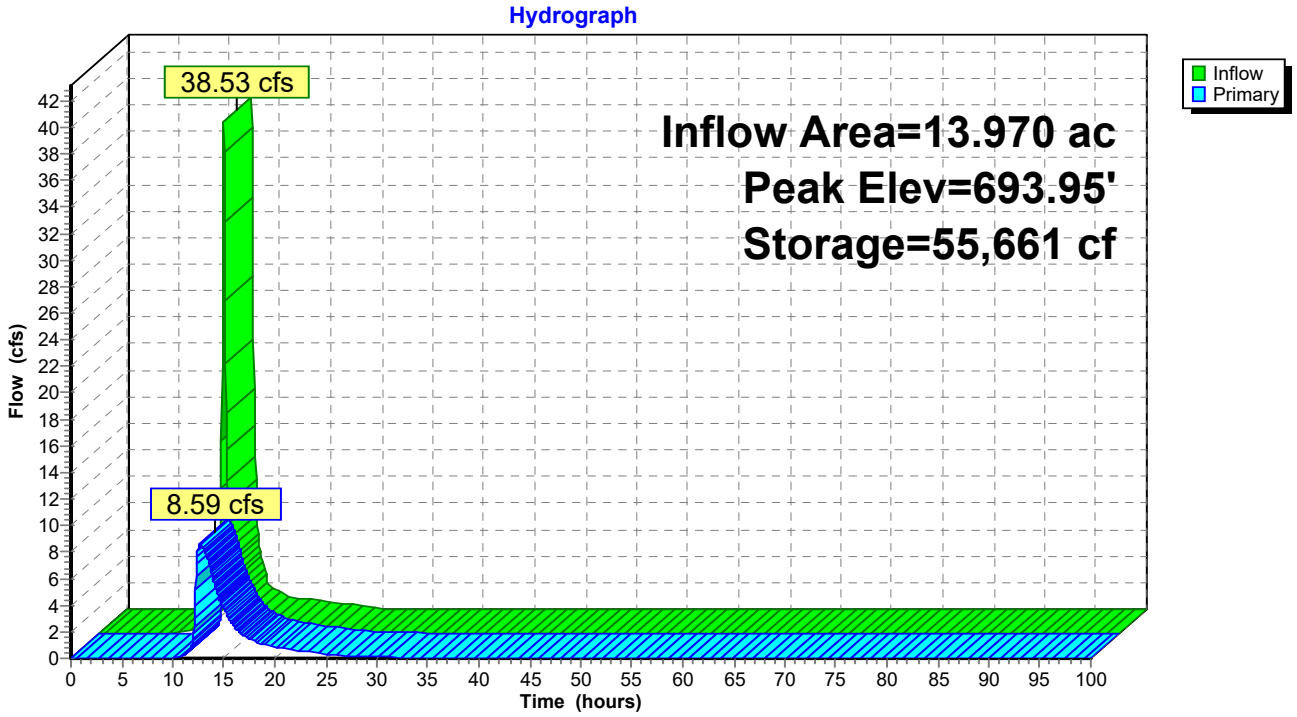
Volume	Invert	Avail.Storage	Storage Description
#1	692.00'	144,521 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
692.00	21,500	0	0
693.00	28,620	25,060	25,060
694.00	36,000	32,310	57,370
695.00	43,560	39,780	97,150
696.00	51,182	47,371	144,521

Device	Routing	Invert	Outlet Devices
#1	Primary	691.80'	**24.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 691.80' / 691.50' S= 0.0015 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	694.35'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	692.00'	**18.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.00' / 691.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.60 cfs @ 12.69 hrs HW=693.95' (Free Discharge)
└**1=Culvert** (Passes 8.60 cfs of 10.79 cfs potential flow)
  ├**2=Grate** (Controls 0.00 cfs)
  └**3=Culvert** (Barrel Controls 8.60 cfs @ 4.90 fps)

Pond 20P: DETENTION POND #1



Summary for Pond 23P: DETENTION POND #2

Inflow Area = 10.000 ac, 44.70% Impervious, Inflow Depth = 2.21" for 10-Year event
Inflow = 27.12 cfs @ 12.25 hrs, Volume= 1.845 af
Outflow = 2.73 cfs @ 13.20 hrs, Volume= 1.837 af, Atten= 90%, Lag= 57.4 min
Primary = 2.73 cfs @ 13.20 hrs, Volume= 1.837 af
Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 694.89' @ 13.20 hrs Surf.Area= 28,373 sf Storage= 45,721 cf

Plug-Flow detention time= 279.0 min calculated for 1.837 af (100% of inflow)
Center-of-Mass det. time= 278.5 min (1,087.6 - 809.0)

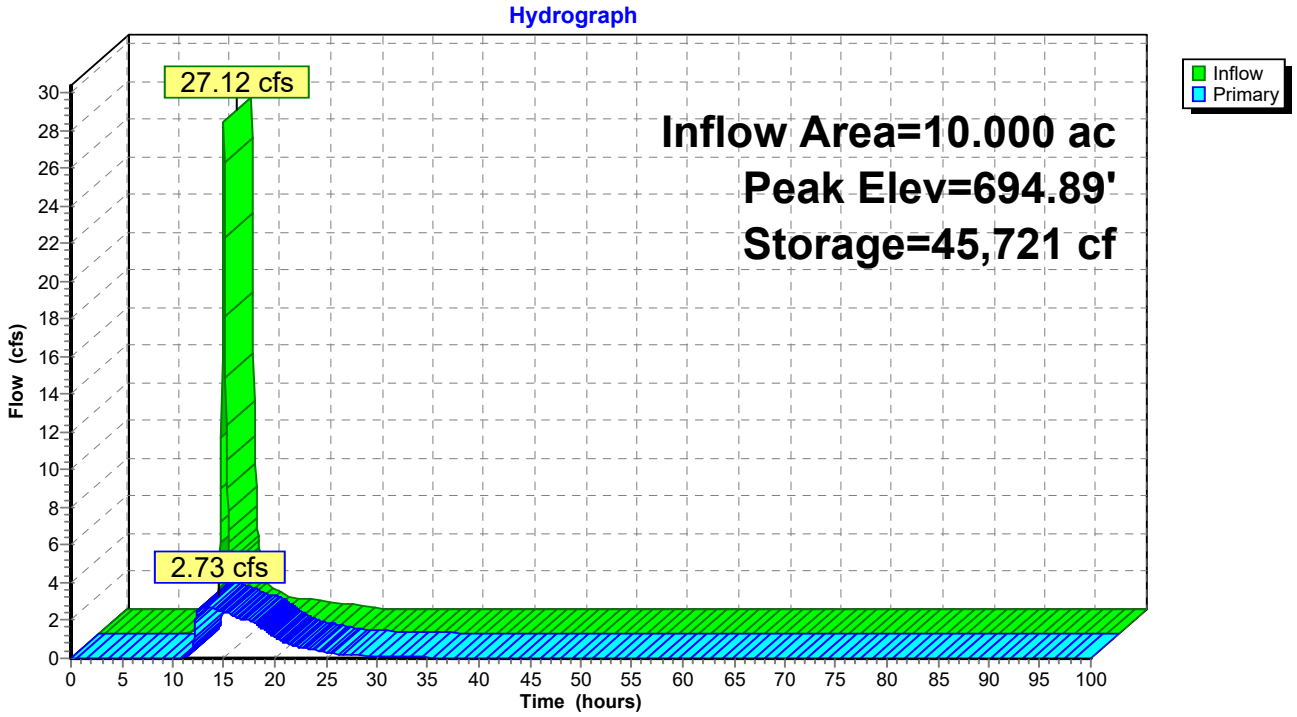
Volume	Invert	Avail.Storage	Storage Description
#1	693.00'	116,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
693.00	20,700	0	0
694.00	24,000	22,350	22,350
695.00	28,900	26,450	48,800
696.00	34,000	31,450	80,250
697.00	39,369	36,685	116,935

Device	Routing	Invert	Outlet Devices
#1	Primary	692.85'	**12.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.85' / 692.43' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	694.90'	**36.0" x 36.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	693.00'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.00' / 692.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.73 cfs @ 13.20 hrs HW=694.89' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.73 cfs @ 3.48 fps)
  └**2=Grate** (Controls 0.00 cfs)
  └**3=Culvert** (Passes 2.73 cfs of 4.46 cfs potential flow)

Pond 23P: DETENTION POND #2



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment18S: DA 1 - Post Dev Runoff Area=13.970 ac 47.24% Impervious Runoff Depth=2.96"
Flow Length=940' Tc=16.8 min CN=89 Runoff=49.16 cfs 3.451 af

Subcatchment19S: DA 2 - Post Dev Runoff Area=10.000 ac 44.70% Impervious Runoff Depth=2.87"
Flow Length=860' Tc=16.1 min CN=88 Runoff=34.84 cfs 2.390 af

Subcatchment22S: DA-3 Post Dev Runoff Area=0.940 ac 0.00% Impervious Runoff Depth=2.17"
Tc=5.0 min CN=80 Runoff=3.78 cfs 0.170 af

Pond 20P: DETENTION POND #1 Peak Elev=694.38' Storage=71,649 cf Inflow=49.16 cfs 3.451 af
Outflow=11.20 cfs 3.448 af

Pond 23P: DETENTION POND #2 Peak Elev=695.40' Storage=60,844 cf Inflow=34.84 cfs 2.390 af
Outflow=3.17 cfs 2.383 af

Total Runoff Area = 24.910 ac Runoff Volume = 6.011 af Average Runoff Depth = 2.90"
55.56% Pervious = 13.840 ac 44.44% Impervious = 11.070 ac

Summary for Subcatchment 18S: DA 1 - Post Dev

[47] Hint: Peak is 3085% of capacity of segment #2

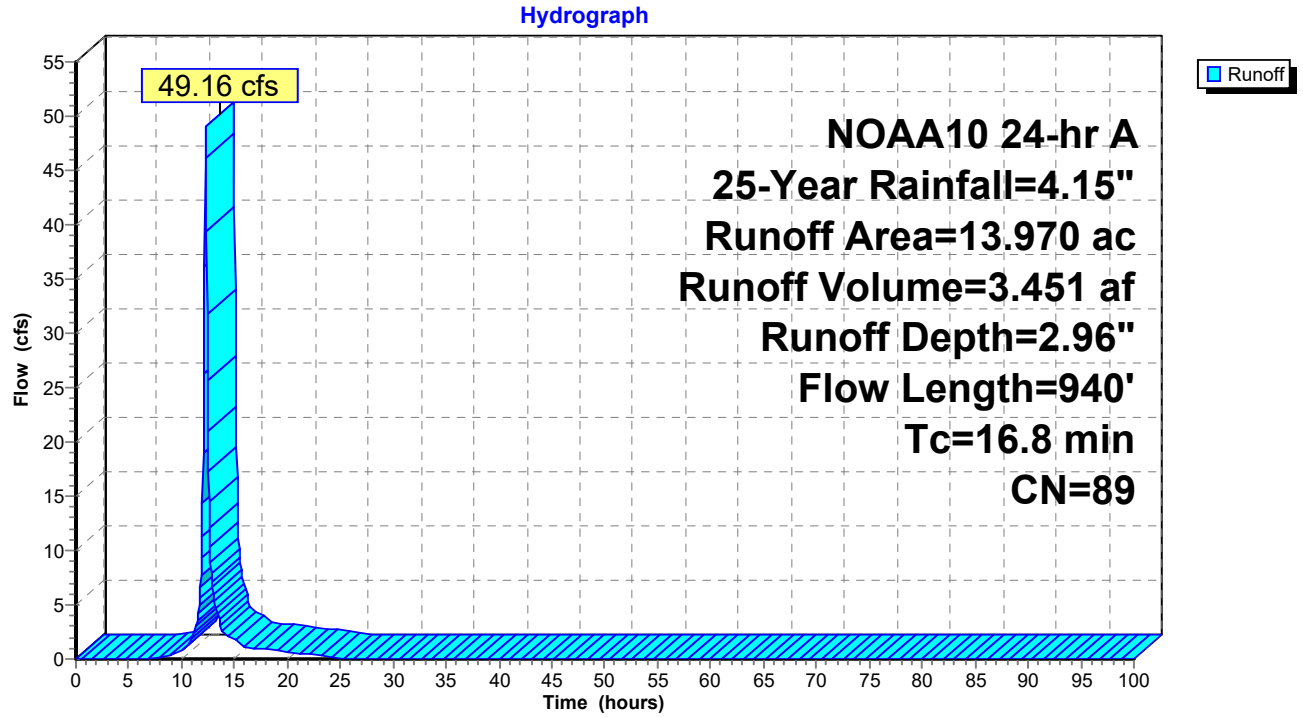
Runoff = 49.16 cfs @ 12.25 hrs, Volume= 3.451 af, Depth= 2.96"
Routed to Pond 20P : DETENTION POND #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
2.470	98	Roofs, HSG D
4.130	98	Paved parking, HSG D
7.370	80	>75% Grass cover, Good, HSG D
13.970	89	Weighted Average
7.370		52.76% Pervious Area
6.600		47.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
7.1	860	0.0020	2.03	1.59	**Pipe Channel, PIPE FLOW** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.8	940	Total			

Subcatchment 18S: DA 1 - Post Dev



Summary for Subcatchment 19S: DA 2 - Post Dev

[47] Hint: Peak is 2187% of capacity of segment #2

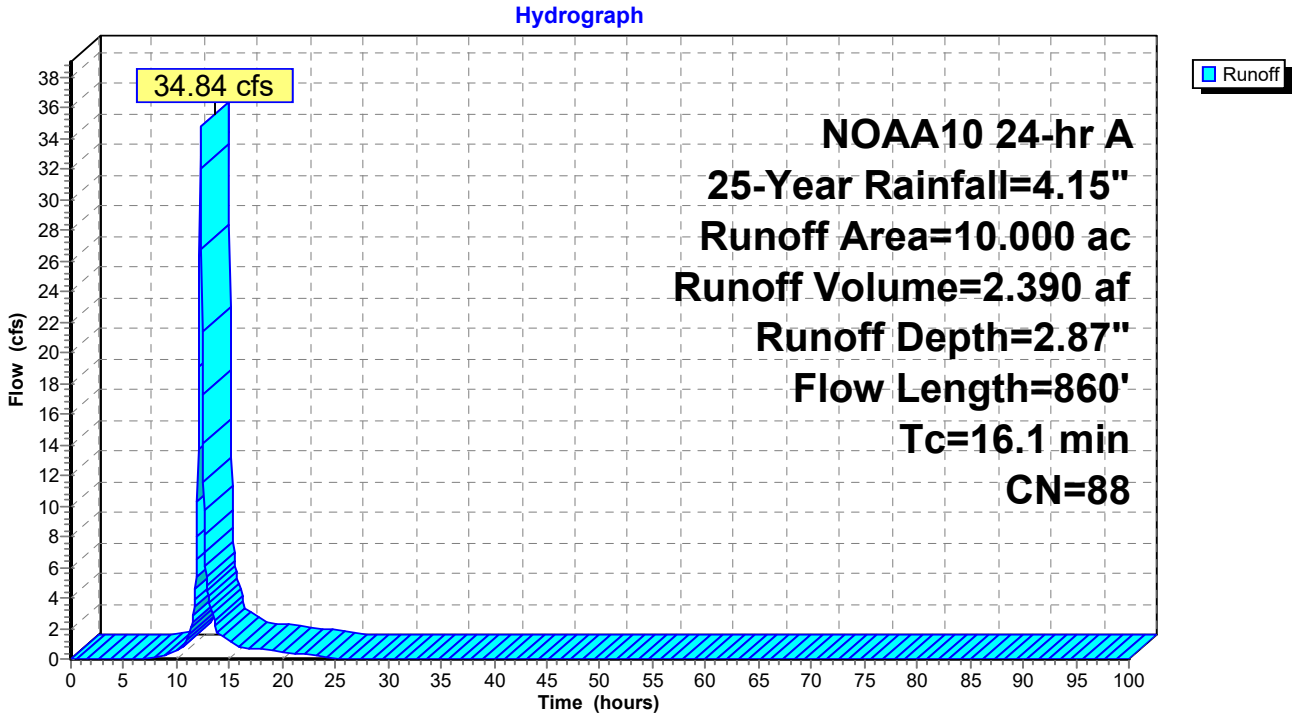
Runoff = 34.84 cfs @ 12.25 hrs, Volume= 2.390 af, Depth= 2.87"
Routed to Pond 23P : DETENTION POND #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
1.850	98	Roofs, HSG D
2.620	98	Paved parking, HSG D
5.530	80	>75% Grass cover, Good, HSG D
10.000	88	Weighted Average
5.530		55.30% Pervious Area
4.470		44.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
6.4	780	0.0020	2.03	1.59	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.1	860	Total			

Subcatchment 19S: DA 2 - Post Dev



Summary for Subcatchment 22S: DA-3 Post Dev

[49] Hint: Tc<2dt may require smaller dt

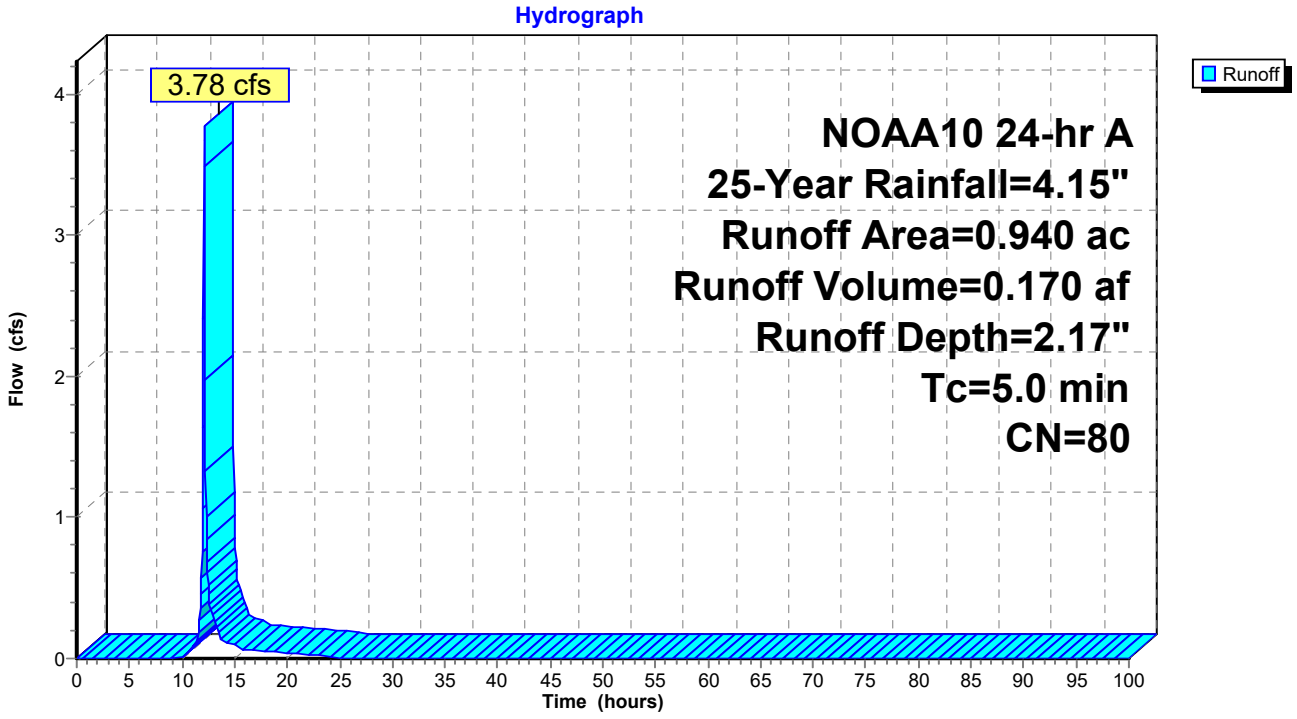
Runoff = 3.78 cfs @ 12.12 hrs, Volume= 0.170 af, Depth= 2.17"
Routed to nonexistent node 24L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 25-Year Rainfall=4.15"

Area (ac)	CN	Description
0.940	80	>75% Grass cover, Good, HSG D
0.940		100.00% Pervious Area

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

Subcatchment 22S: DA-3 Post Dev



Summary for Pond 20P: DETENTION POND #1

Inflow Area = 13.970 ac, 47.24% Impervious, Inflow Depth = 2.96" for 25-Year event
Inflow = 49.16 cfs @ 12.25 hrs, Volume= 3.451 af
Outflow = 11.20 cfs @ 12.68 hrs, Volume= 3.448 af, Atten= 77%, Lag= 25.5 min
Primary = 11.20 cfs @ 12.68 hrs, Volume= 3.448 af
Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 694.38' @ 12.68 hrs Surf.Area= 38,883 sf Storage= 71,649 cf

Plug-Flow detention time= 150.0 min calculated for 3.448 af (100% of inflow)
Center-of-Mass det. time= 149.4 min (950.3 - 800.8)

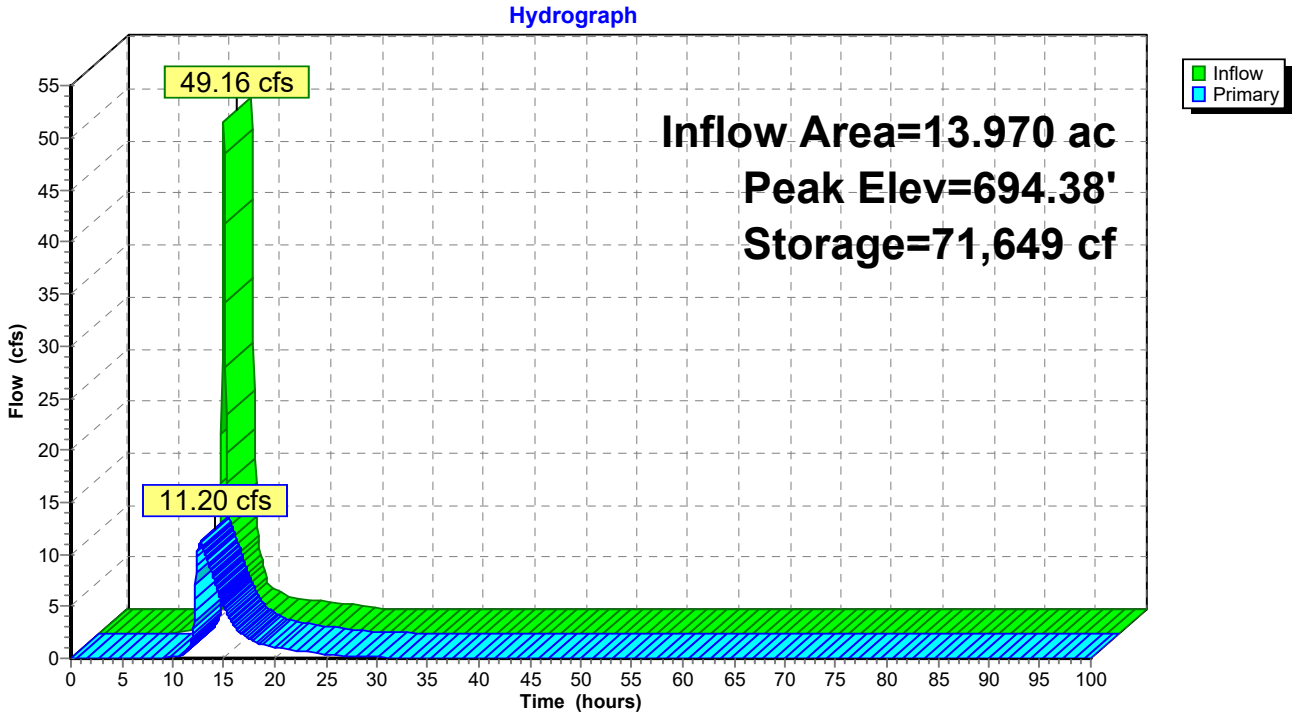
Volume	Invert	Avail.Storage	Storage Description
#1	692.00'	144,521 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
692.00	21,500	0	0
693.00	28,620	25,060	25,060
694.00	36,000	32,310	57,370
695.00	43,560	39,780	97,150
696.00	51,182	47,371	144,521

Device	Routing	Invert	Outlet Devices
#1	Primary	691.80'	**24.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 691.80' / 691.50' S= 0.0015 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	694.35'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	692.00'	**18.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.00' / 691.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=11.14 cfs @ 12.68 hrs HW=694.38' (Free Discharge)
└**1=Culvert** (Passes 11.14 cfs of 12.71 cfs potential flow)
  ├**2=Grate** (Weir Controls 0.28 cfs @ 0.57 fps)
  └**3=Culvert** (Inlet Controls 10.86 cfs @ 6.15 fps)

Pond 20P: DETENTION POND #1



Summary for Pond 23P: DETENTION POND #2

Inflow Area = 10.000 ac, 44.70% Impervious, Inflow Depth = 2.87" for 25-Year event
Inflow = 34.84 cfs @ 12.25 hrs, Volume= 2.390 af
Outflow = 3.17 cfs @ 13.30 hrs, Volume= 2.383 af, Atten= 91%, Lag= 63.2 min
Primary = 3.17 cfs @ 13.30 hrs, Volume= 2.383 af
Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 695.40' @ 13.30 hrs Surf.Area= 30,953 sf Storage= 60,844 cf

Plug-Flow detention time= 291.9 min calculated for 2.383 af (100% of inflow)
Center-of-Mass det. time= 289.8 min (1,093.0 - 803.2)

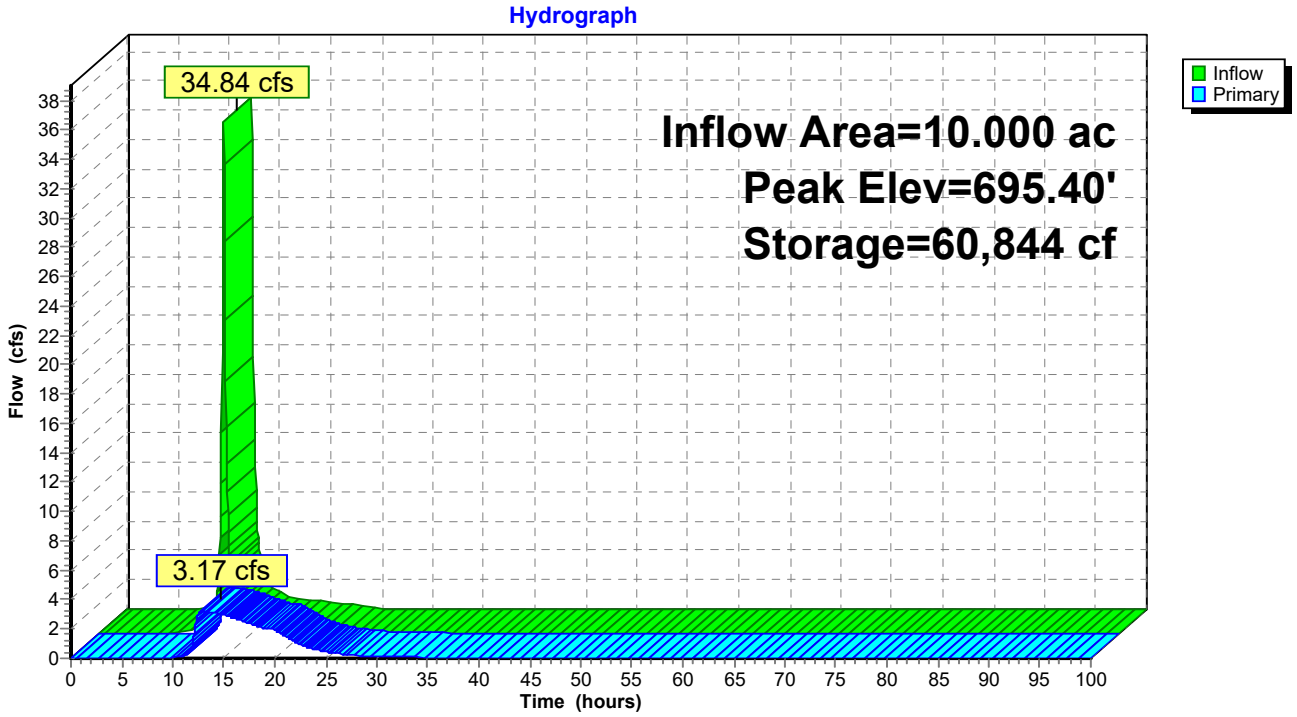
Volume	Invert	Avail.Storage	Storage Description
#1	693.00'	116,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
693.00	20,700	0	0
694.00	24,000	22,350	22,350
695.00	28,900	26,450	48,800
696.00	34,000	31,450	80,250
697.00	39,369	36,685	116,935

Device	Routing	Invert	Outlet Devices
#1	Primary	692.85'	**12.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.85' / 692.43' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	694.90'	**36.0" x 36.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	693.00'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.00' / 692.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.17 cfs @ 13.30 hrs HW=695.40' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.17 cfs @ 4.04 fps)
└**2=Grate** (Passes < 13.98 cfs potential flow)
└**3=Culvert** (Passes < 5.22 cfs potential flow)

Pond 23P: DETENTION POND #2



Time span=0.00-100.00 hrs, dt=0.05 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment18S: DA 1 - Post Dev Runoff Area=13.970 ac 47.24% Impervious Runoff Depth=4.01"
Flow Length=940' Tc=16.8 min CN=89 Runoff=65.62 cfs 4.670 af

Subcatchment19S: DA 2 - Post Dev Runoff Area=10.000 ac 44.70% Impervious Runoff Depth=3.91"
Flow Length=860' Tc=16.1 min CN=88 Runoff=46.83 cfs 3.256 af

Subcatchment22S: DA-3 Post Dev Runoff Area=0.940 ac 0.00% Impervious Runoff Depth=3.11"
Tc=5.0 min CN=80 Runoff=5.39 cfs 0.244 af

Pond 20P: DETENTION POND #1 Peak Elev=694.97' Storage=95,648 cf Inflow=65.62 cfs 4.670 af
Outflow=15.27 cfs 4.667 af

Pond 23P: DETENTION POND #2 Peak Elev=696.15' Storage=85,291 cf Inflow=46.83 cfs 3.256 af
Outflow=3.72 cfs 3.248 af

Total Runoff Area = 24.910 ac Runoff Volume = 8.170 af Average Runoff Depth = 3.94"
55.56% Pervious = 13.840 ac 44.44% Impervious = 11.070 ac

Summary for Subcatchment 18S: DA 1 - Post Dev

[47] Hint: Peak is 4118% of capacity of segment #2

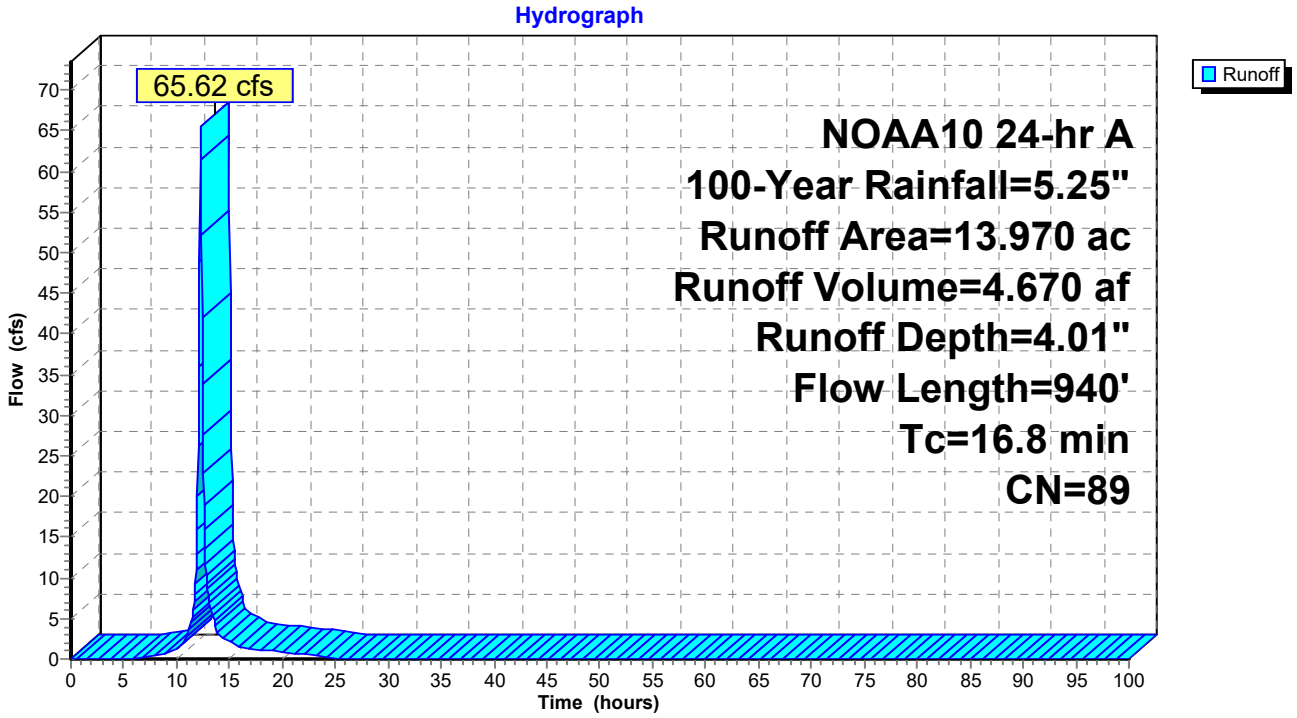
Runoff = 65.62 cfs @ 12.25 hrs, Volume= 4.670 af, Depth= 4.01"
Routed to Pond 20P : DETENTION POND #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
2.470	98	Roofs, HSG D
4.130	98	Paved parking, HSG D
7.370	80	>75% Grass cover, Good, HSG D
13.970	89	Weighted Average
7.370		52.76% Pervious Area
6.600		47.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
7.1	860	0.0020	2.03	1.59	**Pipe Channel, PIPE FLOW** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.8	940	Total			

Subcatchment 18S: DA 1 - Post Dev



Summary for Subcatchment 19S: DA 2 - Post Dev

[47] Hint: Peak is 2939% of capacity of segment #2

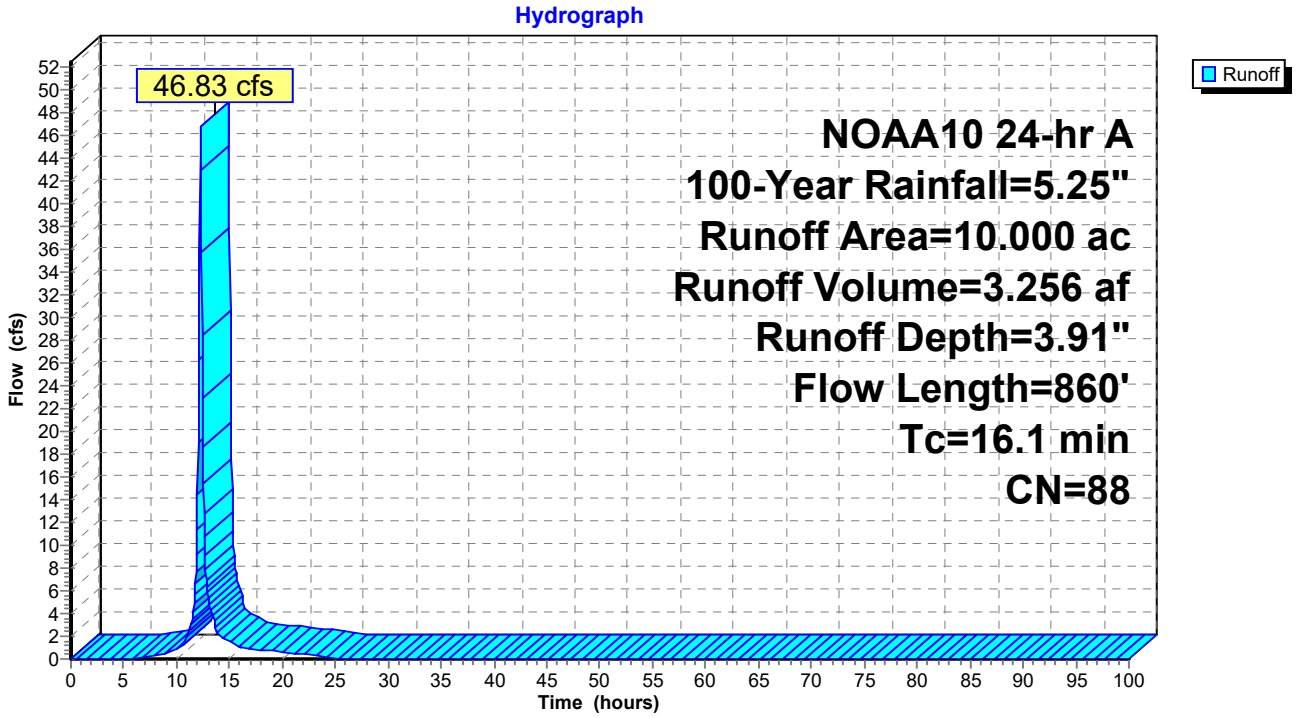
Runoff = 46.83 cfs @ 12.24 hrs, Volume= 3.256 af, Depth= 3.91"
Routed to Pond 23P : DETENTION POND #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
1.850	98	Roofs, HSG D
2.620	98	Paved parking, HSG D
5.530	80	>75% Grass cover, Good, HSG D
10.000	88	Weighted Average
5.530		55.30% Pervious Area
4.470		44.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	80	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.29"
6.4	780	0.0020	2.03	1.59	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.1	860	Total			

Subcatchment 19S: DA 2 - Post Dev



Summary for Subcatchment 22S: DA-3 Post Dev

[49] Hint: Tc<2dt may require smaller dt

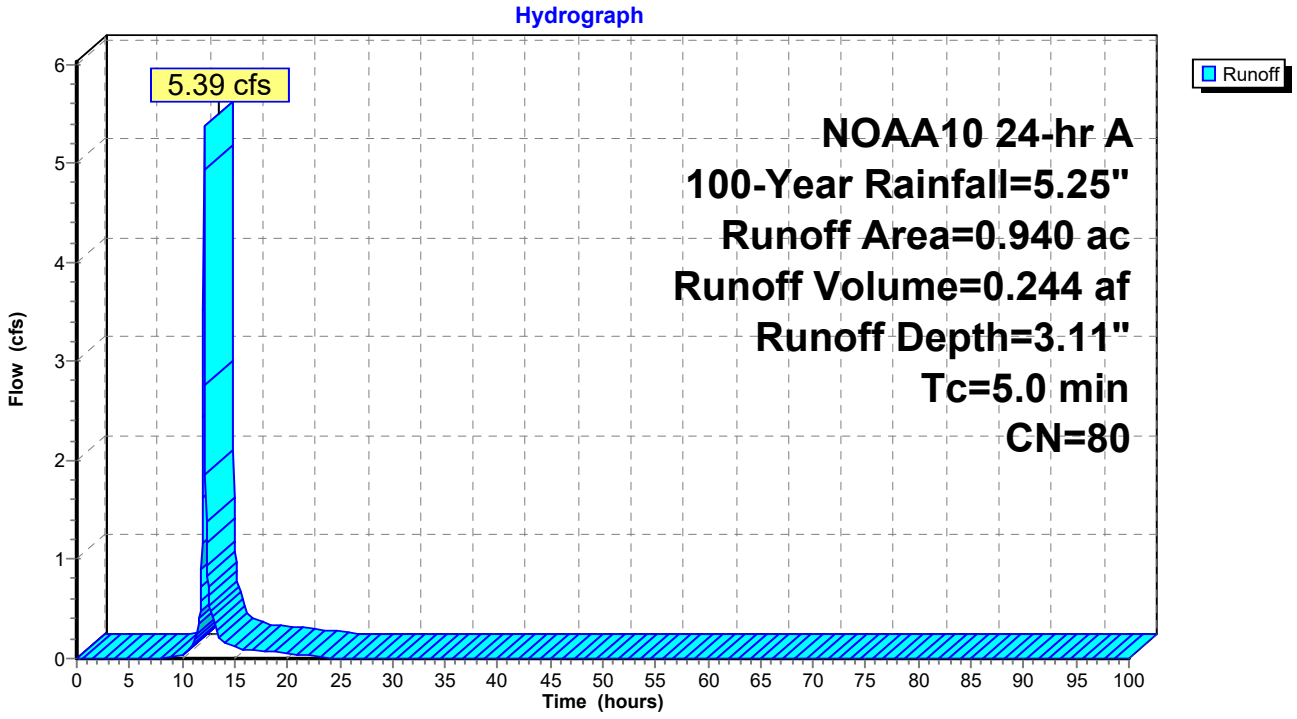
Runoff = 5.39 cfs @ 12.12 hrs, Volume= 0.244 af, Depth= 3.11"
Routed to nonexistent node 24L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
NOAA10 24-hr A 100-Year Rainfall=5.25"

Area (ac)	CN	Description
0.940	80	>75% Grass cover, Good, HSG D
0.940		100.00% Pervious Area

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

Subcatchment 22S: DA-3 Post Dev



Summary for Pond 20P: DETENTION POND #1

Inflow Area = 13.970 ac, 47.24% Impervious, Inflow Depth = 4.01" for 100-Year event
Inflow = 65.62 cfs @ 12.25 hrs, Volume= 4.670 af
Outflow = 15.27 cfs @ 12.67 hrs, Volume= 4.667 af, Atten= 77%, Lag= 24.9 min
Primary = 15.27 cfs @ 12.67 hrs, Volume= 4.667 af
Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 694.97' @ 12.67 hrs Surf.Area= 43,299 sf Storage= 95,648 cf

Plug-Flow detention time= 136.2 min calculated for 4.665 af (100% of inflow)
Center-of-Mass det. time= 137.7 min (931.8 - 794.0)

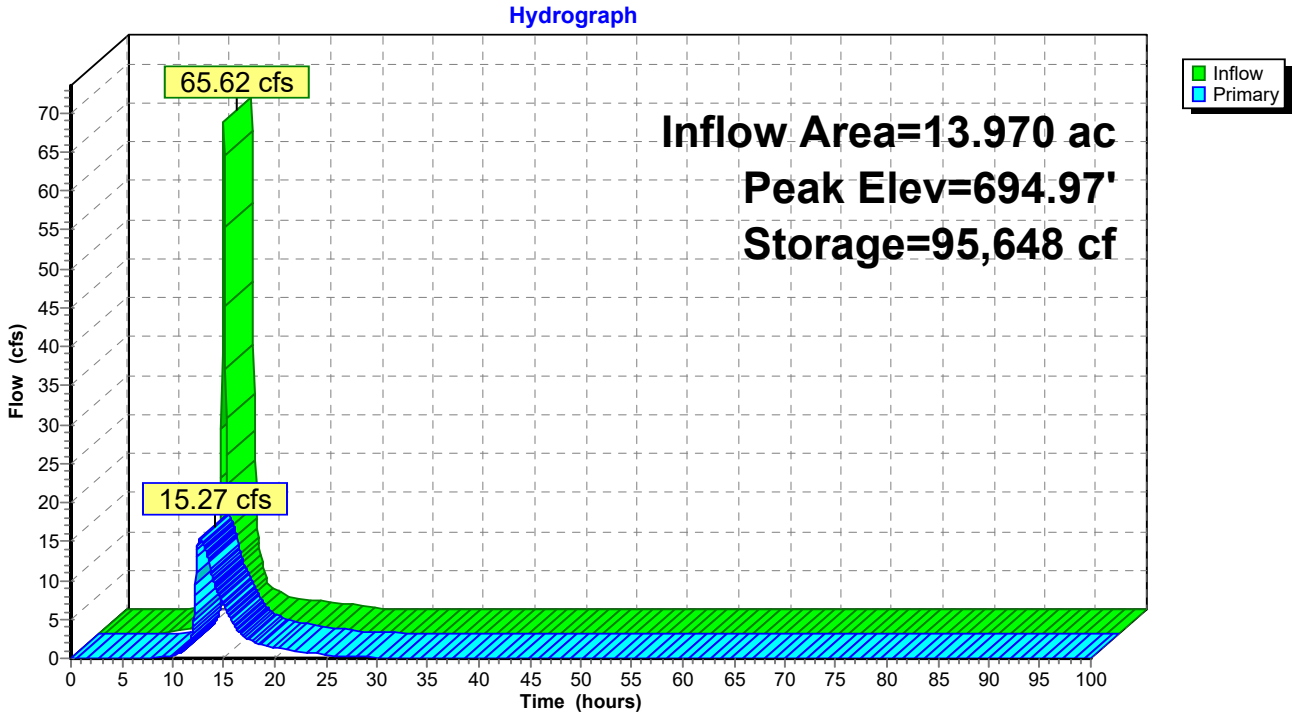
Volume	Invert	Avail.Storage	Storage Description
#1	692.00'	144,521 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
692.00	21,500	0	0
693.00	28,620	25,060	25,060
694.00	36,000	32,310	57,370
695.00	43,560	39,780	97,150
696.00	51,182	47,371	144,521

Device	Routing	Invert	Outlet Devices
#1	Primary	691.80'	**24.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 691.80' / 691.50' S= 0.0015 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	694.35'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	692.00'	**18.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.00' / 691.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=15.27 cfs @ 12.67 hrs HW=694.96' (Free Discharge)
└**1=Culvert** (Barrel Controls 15.27 cfs @ 4.86 fps)
  └**2=Grate** (Passes < 25.18 cfs potential flow)
  └**3=Culvert** (Passes < 12.66 cfs potential flow)

Pond 20P: DETENTION POND #1



Summary for Pond 23P: DETENTION POND #2

Inflow Area = 10.000 ac, 44.70% Impervious, Inflow Depth = 3.91" for 100-Year event
Inflow = 46.83 cfs @ 12.24 hrs, Volume= 3.256 af
Outflow = 3.72 cfs @ 13.43 hrs, Volume= 3.248 af, Atten= 92%, Lag= 71.1 min
Primary = 3.72 cfs @ 13.43 hrs, Volume= 3.248 af
Routed to nonexistent node 24L

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 696.15' @ 13.43 hrs Surf.Area= 34,787 sf Storage= 85,291 cf

Plug-Flow detention time= 316.4 min calculated for 3.246 af (100% of inflow)
Center-of-Mass det. time= 316.8 min (1,113.0 - 796.2)

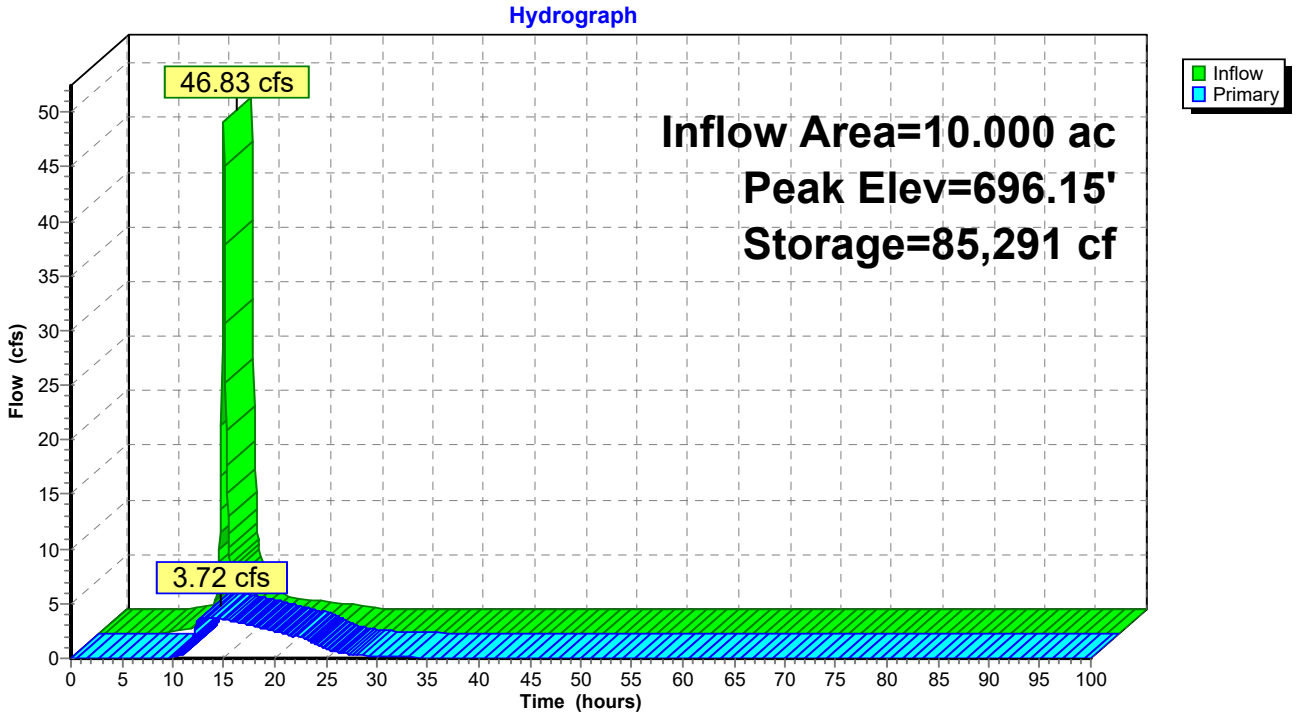
Volume	Invert	Avail.Storage	Storage Description
#1	693.00'	116,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

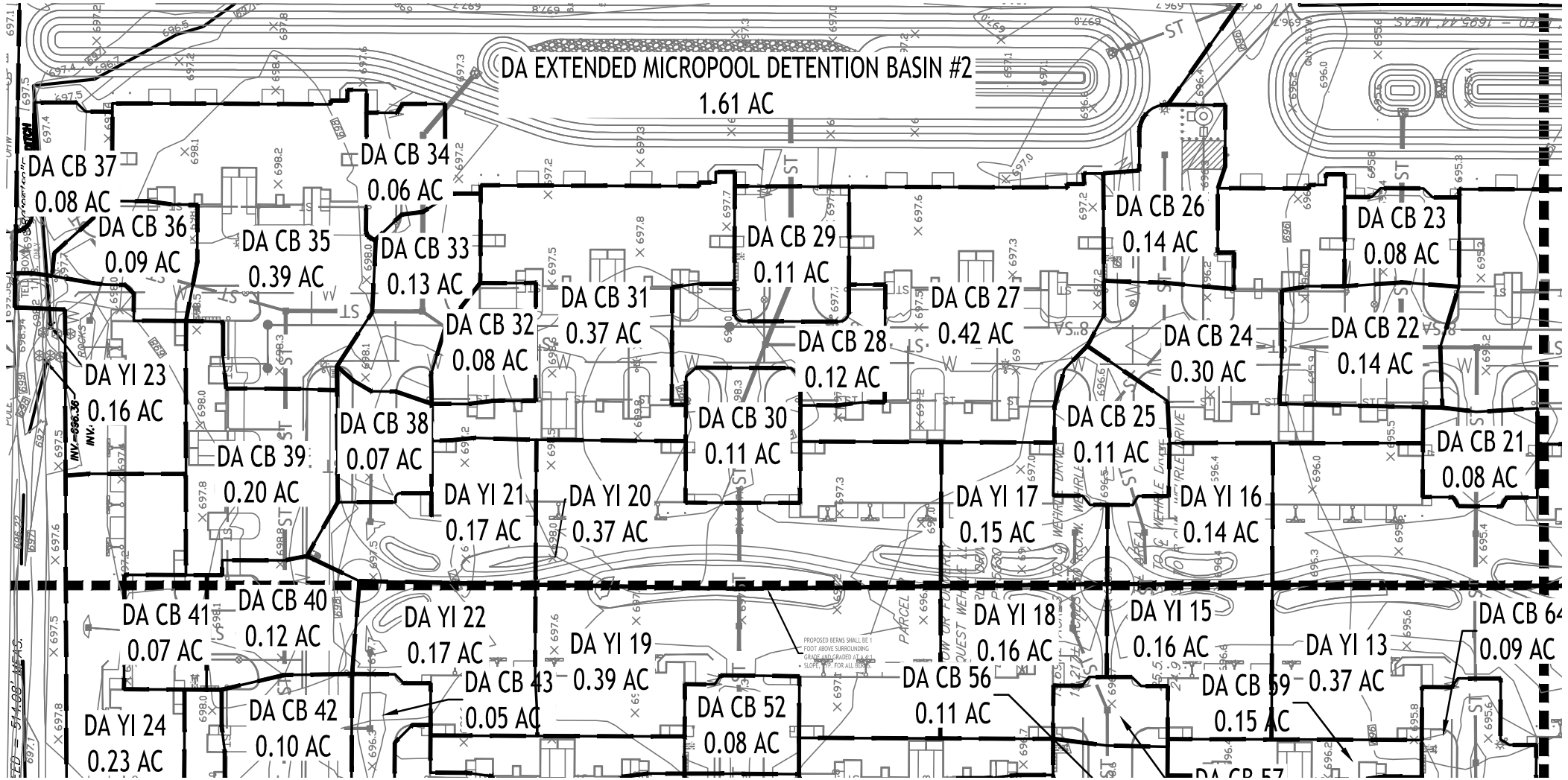
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
693.00	20,700	0	0
694.00	24,000	22,350	22,350
695.00	28,900	26,450	48,800
696.00	34,000	31,450	80,250
697.00	39,369	36,685	116,935

Device	Routing	Invert	Outlet Devices
#1	Primary	692.85'	**12.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 692.85' / 692.43' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	694.90'	**36.0" x 36.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	693.00'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.00' / 692.95' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.72 cfs @ 13.43 hrs HW=696.15' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.72 cfs @ 4.74 fps)
└**2=Grate** (Passes < 48.38 cfs potential flow)
└**3=Culvert** (Passes < 6.15 cfs potential flow)

Pond 23P: DETENTION POND #2





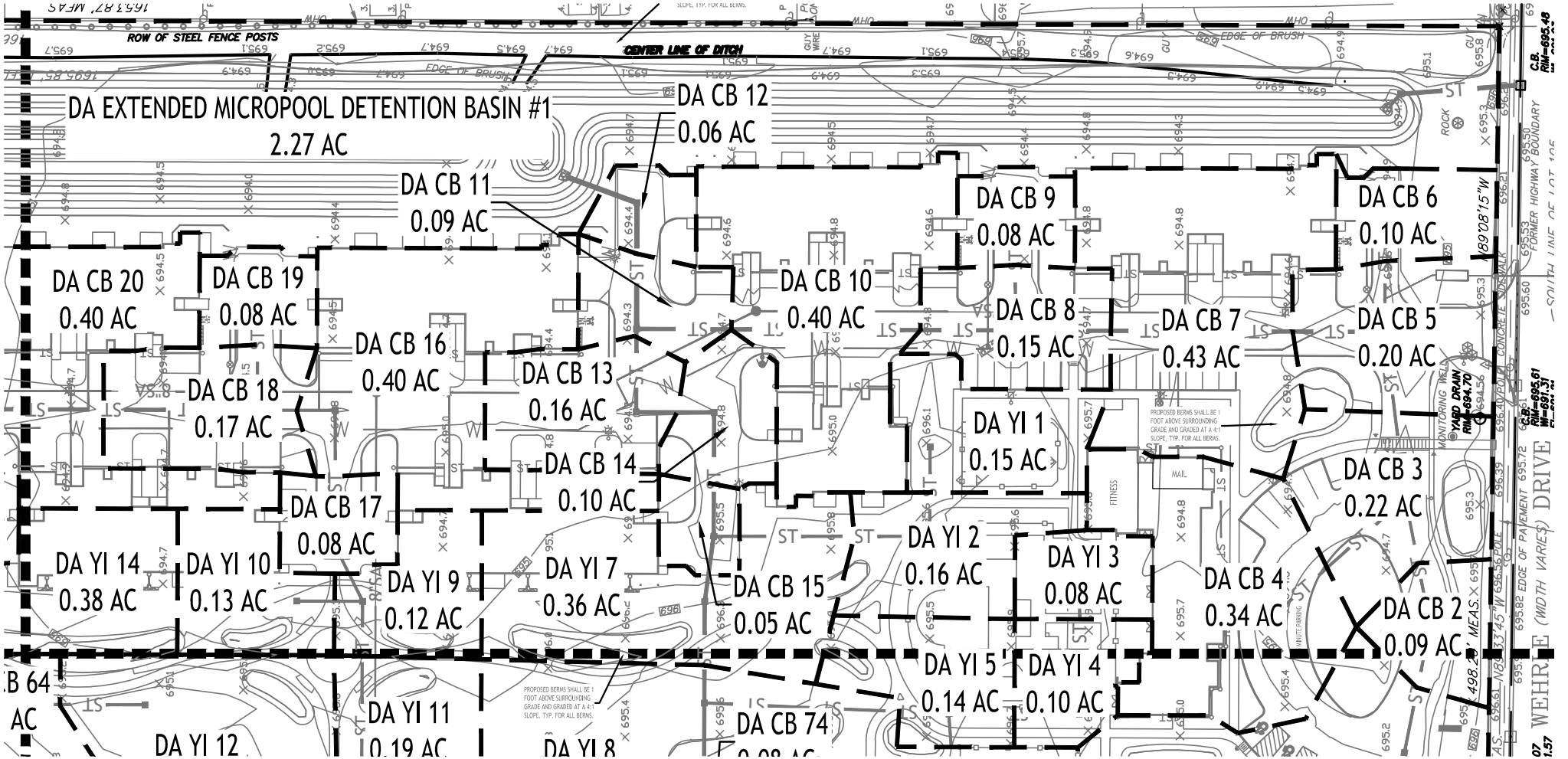
N

STORM MAP

SCALE: 1"=80'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

80' 80 0 80 160Ft.



N

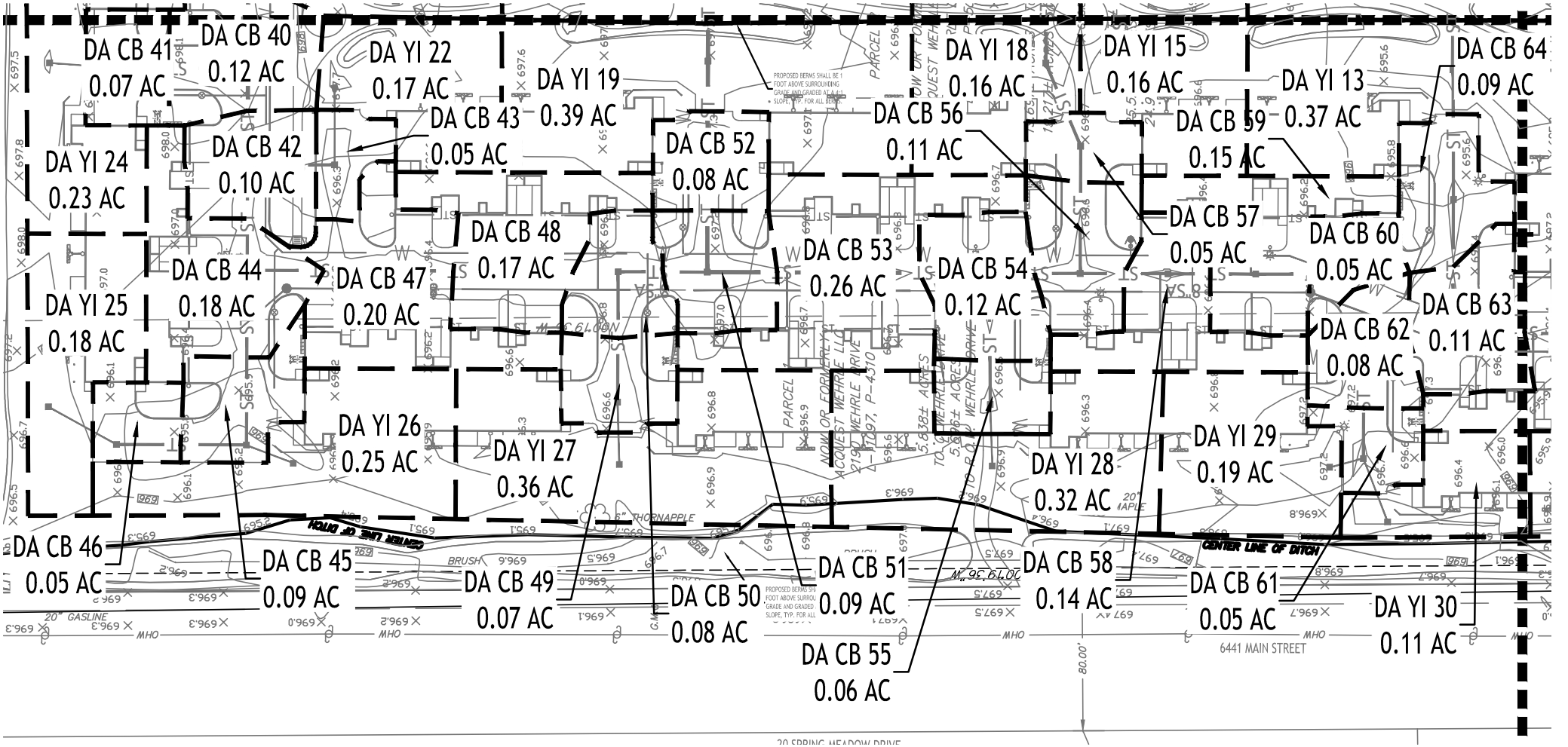
STORM MAP

SCALE: 1"=80'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

80 0 80 160Ft.

80'



STORM MAP

SCALE: 1"=80'

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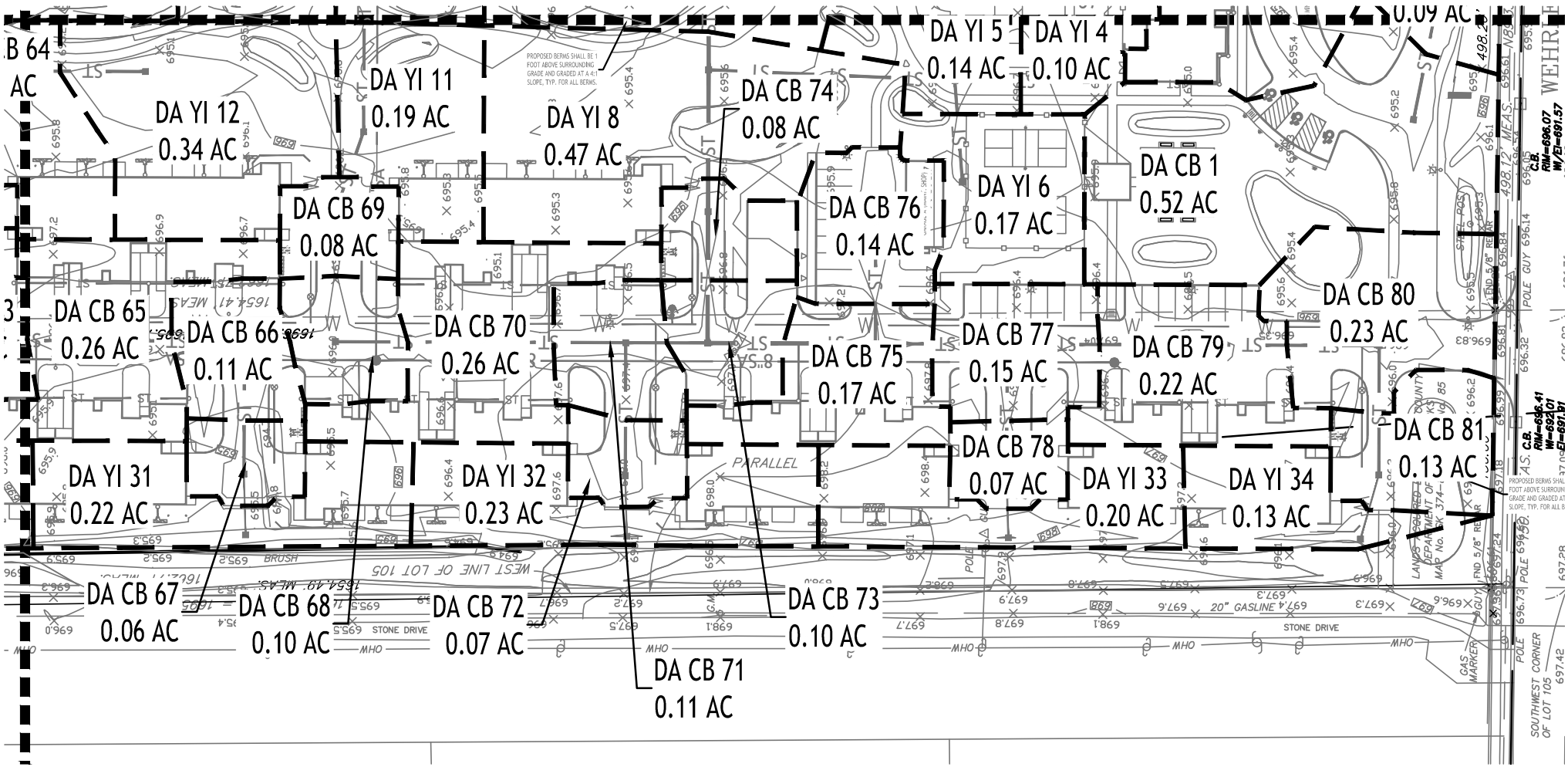
80' 80 0 80 160Ft.



N

STORM MAP

SCALE: 1"=80'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

80 0 80 160Ft.

80'

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
5	4	53.224	0.39	2.64	0.45	0.18	1.41	15.0	23.6	2.8	3.90	4.78	2.29	18	0.21	693.47	693.58	694.88	694.94	696.51	696.61	YI 19 - YI 20
4	3	67.489	0.37	3.01	0.45	0.17	1.57	15.0	24.0	2.7	4.32	4.78	2.56	18	0.21	693.34	693.48	694.73	694.82	696.37	696.51	YI 20 - CB 30
3	2	39.324	0.11	3.12	0.65	0.07	1.64	10.0	24.3	2.7	4.48	4.70	2.71	18	0.20	693.26	693.34	694.59	694.66	696.29	696.37	CB 30 - CB 28
2	1	38.495	0.12	3.66	0.65	0.08	2.00	10.0	24.6	2.7	5.40	10.31	2.89	24	0.21	693.18	693.26	694.35	694.39	695.93	696.29	CB 28 - CB 29
1	End	92.008	0.11	3.77	0.65	0.07	2.07	10.0	24.9	2.7	5.55	10.84	3.90	24	0.20	693.00	693.18	693.83	694.24	694.05	695.93	CB 29 - ES 3

Project File: 25-4008 HYDRAFLOW - 20260609.stm

Number of lines: 115

Run Date: 6/12/2026

NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
27	26	75.850	0.17	0.17	0.65	0.11	0.11	10.0	10.0	4.5	0.50	1.58	0.64	12	0.20	694.34	694.49	696.03	696.04	696.38	696.43	CB 48 - CB 47
26	23	75.849	0.20	0.37	0.65	0.13	0.24	10.0	12.0	4.1	0.99	1.58	1.26	12	0.20	694.19	694.34	695.96	696.01	696.40	696.38	CB 47 - CB 44
25	24	71.833	0.05	0.23	0.65	0.03	0.10	10.0	15.5	3.6	0.37	1.57	0.47	12	0.19	694.38	694.52	696.05	696.06	696.40	696.46	CB 46 - CB 45
24	23	96.547	0.09	0.57	0.65	0.06	0.26	10.0	18.0	3.3	0.86	1.58	1.09	12	0.20	694.19	694.38	695.96	696.01	696.40	696.40	CB 45 - CB 44
23	22	58.352	0.18	1.12	0.65	0.12	0.62	10.0	19.4	3.1	1.94	1.87	2.47	12	0.27	694.03	694.19	695.64	695.81	696.40	696.40	CB 44 - CB 42
22	21	53.127	0.10	1.44	0.65	0.07	0.79	10.0	19.7	3.1	2.46	4.78	1.39	18	0.21	693.92	694.03	695.57	695.60	696.06	696.40	CB 42 - CB 40
21	20	93.371	0.12	1.86	0.65	0.08	1.01	10.0	20.3	3.0	3.07	4.74	1.74	18	0.20	693.73	693.92	695.42	695.50	696.10	696.06	CB 40 - CB 39
20	19	86.892	0.20	2.30	0.65	0.13	1.26	10.0	21.1	3.0	3.75	4.64	2.12	18	0.20	693.56	693.73	695.20	695.31	695.67	696.10	CB 39 - CB 35
19	18	76.470	0.39	3.02	0.65	0.25	1.69	10.0	21.7	2.9	4.93	4.95	2.82	18	0.22	693.39	693.56	694.86	695.00	695.89	695.67	CB 35 - CB 33
18	17	98.712	0.13	3.71	0.65	0.08	2.14	10.0	22.1	2.9	6.17	11.61	3.19	24	0.26	693.13	693.39	694.38	694.51	695.70	695.89	CB 33 - CB 34
17	End	42.120	0.06	3.77	0.65	0.04	2.18	10.0	22.9	2.8	6.16	12.56	4.26	24	0.31	693.00	693.13	693.88	694.14	695.25	695.70	CB 34 - ES 4
16	15	60.628	0.05	0.05	0.65	0.03	0.03	10.0	10.0	4.5	0.15	1.59	0.19	12	0.20	694.43	694.55	695.59	695.59	697.10	697.07	CB 60 - CB 59
15	14	48.502	0.15	0.20	0.65	0.10	0.13	10.0	15.4	3.6	0.46	1.59	0.59	12	0.20	694.33	694.43	695.58	695.59	697.00	697.10	CB 59 - CB 58
14	10	48.502	0.14	0.34	0.65	0.09	0.22	10.0	16.5	3.4	0.76	1.62	0.97	12	0.21	694.23	694.33	695.55	695.57	696.91	697.00	CB 58 - CB 56
13	12	53.465	0.15	0.15	0.45	0.07	0.07	15.0	15.0	3.6	0.25	1.75	0.31	12	0.21	694.47	694.58	695.58	695.58	697.90	697.44	YI 17 - YI 18
12	11	49.763	0.16	0.31	0.45	0.07	0.14	15.0	17.9	3.3	0.46	1.73	0.58	12	0.20	694.37	694.47	695.57	695.58	696.97	697.90	YI 18 - CB 57
11	10	70.345	0.05	0.36	0.65	0.03	0.17	10.0	19.2	3.1	0.54	1.59	0.69	12	0.20	694.23	694.37	695.55	695.56	696.91	696.97	CB 57 - CB 56
10	9	50.231	0.11	0.81	0.65	0.07	0.46	10.0	20.7	3.0	1.40	1.59	1.78	12	0.20	694.13	694.23	695.38	695.46	696.81	696.91	CB 56 - CB 54
9	8	77.908	0.12	1.31	0.65	0.08	0.71	10.0	21.1	3.0	2.11	4.70	1.32	18	0.20	693.97	694.13	695.31	695.34	696.62	696.81	CB 54 - CB 53
8	7	77.908	0.26	1.57	0.65	0.17	0.88	10.0	22.0	2.9	2.55	4.70	1.50	18	0.20	693.81	693.97	695.26	695.29	696.33	696.62	CB 53 - CB 51
7	6	69.574	0.09	2.17	0.65	0.06	1.18	10.0	22.8	2.8	3.34	4.71	2.01	18	0.20	693.67	693.81	695.05	695.11	696.71	696.33	CB 51 - CB 52
6	5	47.040	0.08	2.25	0.65	0.05	1.23	10.0	23.3	2.8	3.44	4.59	2.03	18	0.19	693.58	693.67	694.98	695.02	696.61	696.71	CB 52 - YI 19

Project File: 25-4008 HYDRAFLOW - 20260609.stm | Number of lines: 115 | Run Date: 6/12/2026

NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
49	48	35.855	0.36	3.61	0.45	0.16	1.95	15.0	29.0	2.4	4.77	4.96	2.70	18	0.22	692.62	692.70	695.13	695.20	695.03	695.00	YI 7 - CB 15
48	47	67.351	0.05	3.97	0.65	0.03	2.11	10.0	29.2	2.4	5.13	5.28	2.90	18	0.25	692.45	692.62	694.77	694.93	694.88	695.03	CB 15 - CB 14
47	46	42.434	0.10	4.07	0.65	0.07	2.17	10.0	29.5	2.4	5.25	5.35	2.97	18	0.26	692.34	692.45	694.46	694.57	694.80	694.88	CB 14 - CB 13
46	45	45.207	0.16	4.23	0.65	0.10	2.28	10.0	29.6	2.4	5.48	5.63	3.10	18	0.29	692.21	692.34	694.11	694.24	695.21	694.80	CB 13 - CB 11
45	44	68.641	0.09	6.85	0.65	0.06	3.75	10.0	29.8	2.4	9.00	9.83	3.20	24	0.19	692.08	692.21	693.77	693.87	695.05	695.21	CB 11 - CB 12
44	End	38.892	0.06	6.91	0.65	0.04	3.79	10.0	30.1	2.4	9.03	10.26	4.71	24	0.21	692.00	692.08	693.07	693.39	694.25	695.05	CB 12 - ES 1
43	37	75.707	0.48	0.48	0.65	0.31	0.31	10.0	10.0	4.5	1.41	2.31	1.80	12	0.42	693.46	693.78	694.98	695.10	696.00	696.00	CB 31 - CB 32
42	20	48.066	0.07	0.24	0.65	0.05	0.12	10.0	15.4	3.6	0.44	2.67	0.56	12	0.56	693.71	693.98	695.42	695.42	696.10	695.99	CB 38 - CB 39
41	40	50.178	0.08	0.08	0.65	0.05	0.05	10.0	10.0	4.5	0.24	1.59	0.30	12	0.20	693.76	693.86	695.25	695.25	695.74	695.87	CB 37 - CB 36
40	19	102.914	0.09	0.33	0.65	0.06	0.17	10.0	15.5	3.6	0.62	1.65	0.79	12	0.21	693.54	693.76	695.20	695.23	695.67	695.74	CB 36 - CB 35
39	2	119.429	0.42	0.42	0.65	0.27	0.27	10.0	10.0	4.5	1.24	1.60	1.57	12	0.20	693.26	693.50	694.59	694.74	696.29	696.02	CB 27 - CB 28
38	36	36.432	0.23	0.23	0.40	0.09	0.09	15.0	15.0	3.6	0.33	0.34	1.70	6	0.36	694.05	694.18	695.58	695.71	696.34	696.15	YI 24 - CB 41
37	18	31.529	0.08	0.56	0.65	0.05	0.36	10.0	10.7	4.4	1.59	1.68	2.02	12	0.22	693.39	693.46	694.86	694.92	695.89	696.00	CB 32 - CB 33
36	21	73.274	0.07	0.30	0.65	0.05	0.14	10.0	15.4	3.6	0.49	1.61	0.63	12	0.20	693.90	694.05	695.57	695.58	696.06	696.34	CB 41 - CB 40
35	22	48.060	0.05	0.22	0.65	0.03	0.11	10.0	15.5	3.6	0.39	1.62	0.49	12	0.21	694.01	694.11	695.64	695.65	696.40	696.51	CB 43 - CB 42
34	33	34.396	0.36	0.36	0.40	0.14	0.14	15.0	15.0	3.6	0.52	0.56	2.66	6	0.99	694.05	694.39	695.34	695.64	696.60	696.07	YI 27 - CB 49
33	32	72.119	0.07	0.43	0.65	0.05	0.19	10.0	15.2	3.6	0.68	1.59	0.87	12	0.20	693.91	694.05	695.31	695.34	696.43	696.60	CB 49 - CB 50
32	7	49.217	0.08	0.51	0.65	0.05	0.24	10.0	16.6	3.4	0.83	1.59	1.05	12	0.20	693.81	693.91	695.26	695.28	696.33	696.43	CB 50 - CB 51
31	24	27.737	0.25	0.25	0.40	0.10	0.10	15.0	15.0	3.6	0.36	0.37	1.85	6	0.43	694.36	694.48	696.05	696.17	696.40	696.04	YI 26 - CB 45
30	25	42.934	0.18	0.18	0.40	0.07	0.07	15.0	15.0	3.6	0.26	0.27	1.33	6	0.23	694.52	694.62	696.06	696.16	696.46	696.30	YI 25 - CB 46
29	28	33.935	0.32	0.32	0.40	0.13	0.13	15.0	15.0	3.6	0.46	0.50	2.37	6	0.79	694.29	694.56	695.41	695.64	696.95	696.29	YI 28 - CB 55
28	9	72.591	0.06	0.38	0.65	0.04	0.17	10.0	15.2	3.6	0.60	1.59	0.76	12	0.20	694.14	694.29	695.38	695.40	696.81	696.95	CB 55 - CB 54

Project File: 25-4008 HYDRAFLOW - 20260609.stm | Number of lines: 115 | Run Date: 6/12/2026

NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
71	70	32.829	0.22	0.22	0.40	0.09	0.09	15.0	15.0	3.6	0.32	0.32	1.63	6	0.34	693.98	694.09	696.38	696.48	695.63	695.31	YI 31 - CB 67
70	69	71.684	0.06	0.28	0.65	0.04	0.13	10.0	15.3	3.6	0.46	1.59	0.58	12	0.20	693.84	693.98	696.36	696.37	695.49	695.63	CB 67 - CB 66
69	68	49.181	0.11	0.65	0.65	0.07	0.37	10.0	17.4	3.3	1.23	1.59	1.56	12	0.20	693.74	693.84	696.25	696.31	695.39	695.49	CB 66 - CB 68
68	67	71.110	0.08	0.73	0.65	0.05	0.42	10.0	17.9	3.3	1.38	1.59	1.75	12	0.20	693.60	693.74	696.07	696.18	695.53	695.39	CB 68 - CB 69
67	66	44.733	0.10	0.83	0.65	0.07	0.48	10.0	18.5	3.2	1.56	1.59	1.98	12	0.20	693.51	693.60	695.95	696.04	696.28	695.53	CB 69 - YI 11
66	65	88.857	0.19	1.02	0.45	0.09	0.57	15.0	18.9	3.2	1.81	1.78	2.31	12	0.21	693.32	693.51	695.71	695.90	696.61	696.28	YI 11 - YI 9
65	64	34.238	0.12	1.27	0.45	0.05	0.68	15.0	19.5	3.1	2.13	2.09	2.71	12	0.29	693.22	693.32	695.43	695.54	695.36	696.61	YI 9 - CB 17
64	63	73.146	0.08	1.35	0.65	0.05	0.73	10.0	19.6	3.1	2.28	2.23	2.90	12	0.39	692.93	693.22	695.03	695.33	694.63	695.36	CB 17 - CB 16
63	62	42.369	0.17	1.52	0.65	0.11	0.85	10.0	20.0	3.1	2.59	2.54	3.30	12	0.51	692.72	692.93	694.56	694.78	694.71	694.63	CB 16 - CB 18
62	61	163.649	0.40	2.00	0.65	0.26	1.16	10.0	20.2	3.0	3.53	4.70	2.00	18	0.20	692.39	692.72	694.28	694.46	695.04	694.71	CB 18 - CB 20
61	60	42.434	0.14	3.94	0.65	0.09	2.11	10.0	22.0	2.9	6.11	5.92	3.46	18	0.32	692.26	692.39	693.86	694.00	695.12	695.04	CB 20 - CB 22
60	59	73.286	0.08	4.87	0.65	0.05	2.65	10.0	22.1	2.9	7.65	10.12	3.49	24	0.20	692.11	692.26	693.43	693.57	695.49	695.12	CB 22 - CB 23
59	End	54.763	0.08	4.95	0.65	0.05	2.70	10.0	22.6	2.8	7.71	10.98	4.45	24	0.20	692.00	692.11	692.99	693.31	694.58	695.49	CB 23 - ES 2
58	57	36.082	0.13	0.13	0.40	0.05	0.05	15.0	15.0	3.6	0.19	0.25	0.96	6	0.19	694.03	694.10	696.70	696.74	695.84	695.43	YI 34 - CB 81
57	56	69.781	0.13	0.26	0.65	0.08	0.14	10.0	15.6	3.5	0.48	1.60	0.62	12	0.20	693.89	694.03	696.68	696.69	695.70	695.84	CB 81 - CB 80
56	55	100.542	0.23	0.49	0.65	0.15	0.29	10.0	17.5	3.3	0.95	1.59	1.21	12	0.20	693.69	693.89	696.58	696.65	695.50	695.70	CB 80 - CB 79
55	54	100.542	0.22	0.71	0.65	0.14	0.43	10.0	18.8	3.2	1.37	1.59	1.74	12	0.20	693.49	693.69	696.40	696.55	695.30	695.50	CB 79 - CB 77
54	53	71.258	0.15	1.13	0.65	0.10	0.65	0.0	19.7	3.1	2.02	1.93	2.57	12	0.29	693.28	693.49	696.02	696.25	695.20	695.30	CB 77 - CB 75
53	52	90.643	0.17	1.44	0.65	0.11	0.85	10.0	20.1	3.1	2.61	4.68	1.48	18	0.20	693.10	693.28	695.91	695.97	694.98	695.20	CB 75 - CB 73
52	51	71.032	0.10	2.21	0.65	0.07	1.30	10.0	21.0	3.0	3.86	4.66	2.19	18	0.20	692.96	693.10	695.65	695.75	695.42	694.98	CB 73 - CB 74
51	50	76.588	0.08	2.29	0.65	0.05	1.35	10.0	21.5	2.9	3.96	4.65	2.24	18	0.20	692.81	692.96	695.50	695.61	694.69	695.42	CB 74 - YI 8
50	49	55.176	0.47	3.25	0.45	0.21	1.79	15.0	28.7	2.5	4.40	4.69	2.49	18	0.20	692.70	692.81	695.26	695.36	695.00	694.69	YI 8 - YI 7

Project File: 25-4008 HYDRAFLOW - 20260609.stm | Number of lines: 115 | Run Date: 6/12/2026

NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
93	53	63.821	0.14	0.14	0.65	0.09	0.09	10.0	10.0	4.5	0.41	1.61	0.52	12	0.20	693.28	693.41	696.02	696.03	695.20	695.30	CB 76 - CB 75
92	90	37.490	0.11	0.11	0.40	0.04	0.04	15.0	15.0	3.6	0.16	0.25	0.81	6	0.20	693.23	693.31	694.63	694.67	695.89	695.59	YI 30 - CB 61
91	90	19.290	0.19	0.19	0.40	0.08	0.08	15.0	15.0	3.6	0.28	0.29	1.41	6	0.26	693.23	693.28	694.63	694.68	695.89	695.36	YI 29 - CB 61
90	89	69.535	0.05	0.35	0.65	0.03	0.15	10.0	15.8	3.5	0.54	1.59	0.69	12	0.20	693.09	693.23	694.60	694.62	695.75	695.89	CB 61 - CB 62
89	88	49.182	0.08	0.43	0.65	0.05	0.20	10.0	17.4	3.3	0.68	1.59	0.87	12	0.20	692.99	693.09	694.57	694.59	695.65	695.75	CB 62 - CB 63
88	87	73.792	0.11	0.54	0.65	0.07	0.28	10.0	18.3	3.2	0.89	1.59	1.14	12	0.20	692.84	692.99	694.49	694.54	695.65	695.65	CB 63 - CB 64
87	86	71.634	0.09	0.63	0.65	0.06	0.33	10.0	19.3	3.1	1.05	1.59	1.33	12	0.20	692.70	692.84	694.42	694.48	695.40	695.65	CB 64 - YI 13
86	85	56.448	0.37	1.34	0.45	0.17	0.64	15.0	20.1	3.1	1.95	4.64	1.10	18	0.19	692.59	692.70	694.37	694.39	695.25	695.40	YI 13 - YI 14
85	84	32.286	0.38	1.72	0.45	0.17	0.81	15.0	20.9	3.0	2.42	4.53	1.37	18	0.19	692.53	692.59	694.34	694.35	695.05	695.25	YI 14 - CB 21
84	61	71.792	0.08	1.80	0.65	0.05	0.86	10.0	21.2	3.0	2.55	4.70	1.44	18	0.20	692.39	692.53	694.28	694.32	695.04	695.05	CB 21 - CB 20
83	81	33.212	0.20	0.20	0.40	0.08	0.08	15.0	15.0	3.6	0.29	0.29	1.48	6	0.27	693.63	693.72	696.42	696.51	695.44	694.94	YI 33 - CB 78
82	78	103.697	0.34	0.34	0.65	0.22	0.22	10.0	10.0	4.5	1.00	1.60	1.27	12	0.20	693.31	693.52	695.16	695.24	695.21	695.43	CB 4 - CB 3
81	54	71.300	0.07	0.27	0.65	0.05	0.13	10.0	15.4	3.6	0.45	1.58	0.57	12	0.20	693.49	693.63	696.40	696.42	695.30	695.44	CB 78 - CB 77
80	79	70.530	0.52	0.52	0.40	0.21	0.21	15.0	15.0	3.6	0.76	1.59	0.96	12	0.20	693.45	693.59	695.22	695.25	695.35	695.49	CB 1 - CB 2
79	78	70.530	0.09	0.61	0.50	0.05	0.25	10.0	16.2	3.5	0.88	1.59	1.12	12	0.20	693.31	693.45	695.16	695.20	695.21	695.35	CB 2 - CB 3
78	77	91.255	0.22	1.17	0.50	0.11	0.58	10.0	17.2	3.3	1.96	1.97	2.49	12	0.31	693.03	693.31	694.76	695.04	695.03	695.21	CB 3 - CB 5
77	76	100.543	0.20	1.47	0.50	0.10	0.75	10.0	17.8	3.3	2.46	4.68	1.39	18	0.20	692.83	693.03	694.66	694.72	694.95	695.03	CB 5 - CB 7
76	75	100.543	0.43	1.90	0.60	0.26	1.01	10.0	19.0	3.2	3.19	4.68	1.81	18	0.20	692.63	692.83	694.54	694.63	694.95	694.95	CB 7 - CB 8
75	74	103.042	0.15	2.13	0.65	0.10	1.16	10.0	19.8	3.1	3.57	4.74	2.02	18	0.20	692.42	692.63	694.33	694.45	694.95	694.95	CB 8 - CB 10
74	45	103.042	0.40	2.53	0.65	0.26	1.42	10.0	20.6	3.0	4.27	4.74	2.42	18	0.20	692.21	692.42	694.11	694.28	695.21	694.95	CB 10 - CB 11
73	69	78.450	0.26	0.26	0.65	0.17	0.17	10.0	10.0	4.5	0.76	1.59	0.97	12	0.20	693.84	694.00	696.36	696.40	695.49	695.65	CB 65 - CB 66
72	40	34.588	0.16	0.16	0.40	0.06	0.06	15.0	15.0	3.6	0.23	0.25	1.18	6	0.20	693.76	693.83	695.25	695.31	695.74	696.15	YI 23 - CB 36

Project File: 25-4008 HYDRAFLOW - 20260609.stm | Number of lines: 115 | Run Date: 6/12/2026

NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
115	42	30.793	0.17	0.17	0.45	0.08	0.08	15.0	15.0	3.6	0.28	0.96	1.41	6	2.96	693.98	694.89	695.43	695.51	695.99	696.90	YI 21 - CB 38
114	35	42.709	0.17	0.17	0.45	0.08	0.08	15.0	15.0	3.6	0.28	0.56	1.41	6	0.98	694.01	694.43	695.65	695.76	696.51	696.90	YI 22 - CB 43
113	101	107.005	0.14	0.14	0.65	0.09	0.09	10.0	10.0	4.5	0.41	1.59	0.52	12	0.20	692.53	692.74	694.17	694.18	695.38	695.59	CB 26 - CB 24
112	75	71.296	0.08	0.08	0.65	0.05	0.05	10.0	10.0	4.5	0.24	1.58	0.30	12	0.20	692.63	692.77	694.54	694.54	694.95	694.95	CB 9 - CB 8
111	86	103.363	0.34	0.34	0.40	0.14	0.14	15.0	15.0	3.6	0.49	1.59	0.63	12	0.20	692.70	692.91	694.42	694.44	695.40	695.60	YI 12 - YI 13
110	62	71.529	0.08	0.08	0.65	0.05	0.05	10.0	10.0	4.5	0.24	1.59	0.30	12	0.20	692.72	692.86	694.56	694.56	694.71	695.25	CB 19 - CB 18
109	108	48.568	0.15	0.15	0.40	0.06	0.06	15.0	15.0	3.6	0.22	1.62	0.28	12	0.21	692.86	692.96	695.15	695.15	695.49	695.50	YI 1 - YI 2
108	48	117.589	0.16	0.31	0.40	0.06	0.12	15.0	17.9	3.3	0.41	1.61	0.52	12	0.20	692.62	692.86	695.13	695.14	695.03	695.49	YI 2 - CB 15
107	65	35.815	0.13	0.13	0.45	0.06	0.06	15.0	15.0	3.6	0.21	1.71	0.27	12	0.20	693.32	693.39	695.71	695.71	696.61	696.52	YI 10 - YI 9
106	99	32.764	0.23	0.23	0.40	0.09	0.09	15.0	15.0	3.6	0.33	0.34	1.70	6	0.37	693.33	693.45	696.05	696.16	695.21	694.91	YI 32 - CB 72
105	94	54.971	0.17	0.17	0.50	0.09	0.09	10.0	10.0	4.5	0.38	1.59	0.49	12	0.20	693.08	693.19	695.55	695.56	696.04	695.80	YI 6 - YI 5
104	103	54.337	0.16	0.16	0.45	0.07	0.07	15.0	15.0	3.6	0.26	1.74	0.33	12	0.20	692.77	692.88	694.21	694.21	696.97	697.54	YI 15 - YI 16
103	102	71.236	0.14	0.30	0.45	0.06	0.14	15.0	17.7	3.3	0.45	1.71	0.57	12	0.20	692.63	692.77	694.20	694.21	695.48	696.97	YI 16 - CB 25
102	101	47.663	0.11	0.41	0.65	0.07	0.21	10.0	19.6	3.1	0.64	1.59	0.82	12	0.20	692.53	692.63	694.17	694.19	695.38	695.48	CB 25 - CB 24
101	60	132.481	0.30	0.85	0.65	0.20	0.49	10.0	20.5	3.0	1.49	1.59	1.90	12	0.20	692.26	692.53	693.86	694.09	695.12	695.38	CB 24 - CB 22
100	77	71.371	0.10	0.10	0.65	0.07	0.07	10.0	10.0	4.5	0.29	1.58	0.37	12	0.20	693.03	693.17	694.76	694.77	695.03	695.27	CB 6 - CB 5
99	97	71.749	0.07	0.30	0.65	0.05	0.14	10.0	15.3	3.6	0.49	1.57	0.63	12	0.20	693.19	693.33	696.03	696.04	695.07	695.21	CB 72 - CB 71
98	97	78.451	0.26	0.26	0.65	0.17	0.17	10.0	10.0	4.5	0.76	1.61	0.97	12	0.20	693.19	693.35	696.03	696.07	695.07	695.23	CB 70 - CB 71
97	52	44.182	0.11	0.67	0.65	0.07	0.38	10.0	17.2	3.4	1.27	1.61	1.61	12	0.20	693.10	693.19	695.91	695.97	694.98	695.07	CB 71 - CB 73
96	95	83.104	0.08	0.08	0.45	0.04	0.04	15.0	15.0	3.6	0.13	1.61	0.17	12	0.20	693.22	693.39	695.56	695.56	696.04	696.05	YI 3 - YI 4
95	94	71.024	0.10	0.18	0.45	0.05	0.08	15.0	23.3	2.8	0.23	1.58	0.29	12	0.20	693.08	693.22	695.55	695.55	696.04	696.04	YI 4 - YI 5
94	50	133.192	0.14	0.49	0.45	0.06	0.23	15.0	26.5	2.6	0.59	1.60	0.75	12	0.20	692.81	693.08	695.50	695.54	694.69	696.04	YI 5 - YI 8

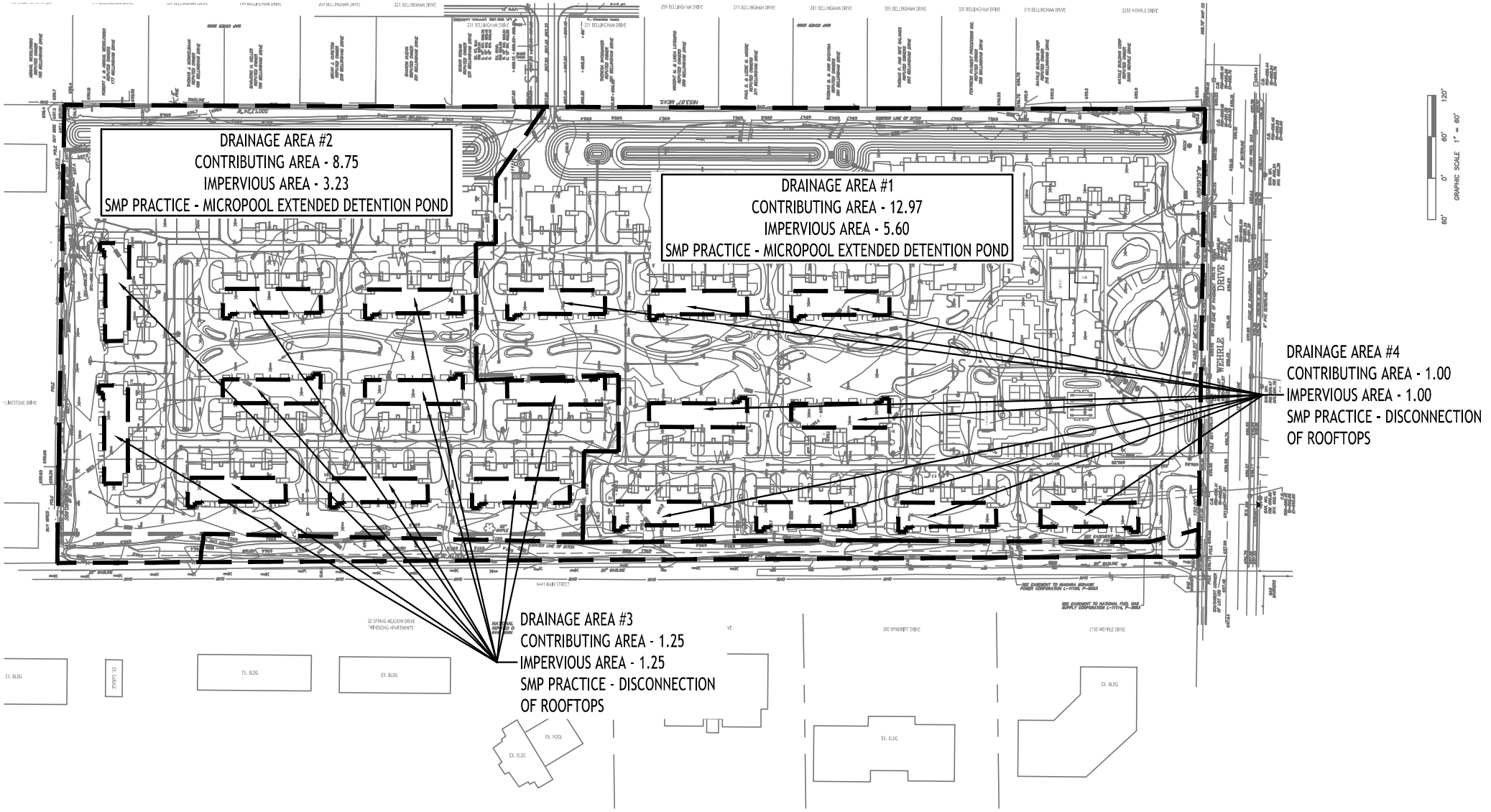
Project File: 25-4008 HYDRAFLOW - 20260609.stm

Number of lines: 115

Run Date: 6/12/2026

NOTES:Intensity = 29.35 / (Inlet time + 3.80) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box

Green Infrastructure & Water Quality Calculations



N

SMP DRAINAGE MAP

SCALE: 1"=200'

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD DESIGN ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

200 0 200 400Ft.

200'

Step 2 - Calculate Water Quality Volume

Is this project subject to Section 4.3 of the NYS Design Manual for Enhanced Phosphorus Removal?	
What is the nature of this construction project?	New Construction

Design Point:	1	
P=	0.90	inches

Calculate Required WQv

Drainage Area Number	Contributing Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (cf)	SMP Description
1	12.97	5.60	43	0.44	18,584	Micropool Extended Detention Pond
2	8.75	3.23	37	0.38	10,926	Micropool Extended Detention Pond
3	1.25	1.25	100	0.95	3,880	Disconnection of Rooftop Runoff
4	1.00	1.00	100	0.95	3,104	Disconnection of Rooftop Runoff
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
Total	23.97	11.08	46	0.47	**36494**	**Required WQv**

Step 4 - Calcuate Minimum RRv Required

Enter the Soils Data for the entire site		
Hydrologic Soil Group	Acres	S
A		55%
B		40%
C		30%
D	11.08	20%
Total Area	11.08	

Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	11.08	*acres*
Precipitation	0.90	*inches*
Rv	0.95	
Minimum RRv	**0.158**	***af***
	6882	cf

Stormwater Ponds

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Drainage Area Number	**Contributing Area** (Acres)	**Impervious Area** (Acres)	**Percent Impervious** %	**Rv**	**WQv** (cf)	**Precipitation** (in)	**Description**
1	12.97	5.60	43	0.44	18,584	0.90	Micropool Extended Detention Pond

Select pond type	Micropool Extended Detention

Design Criteria					
Is the pond located within jurisdictional waters?	No				
Enter the natural slope of the pond area (%)	2				
Enter underlying soil infiltration rate (based on geotechnical testing, refer to Appendix D).	0				
Has an impermeable liner been provided?	No				
Is the pond located within a sole source aquifer?	No				
Is the pond located within a designated hotspot?	No				
Enter depth to seasonal high water table (ft)	5				
Enter depth to sound bedrock (ft)	5				
List any drainage areas treated by other practices that will be directed to this practice.	4			Additional Areas	1
Is the contributing area less than the minimum contributing area?	No				
Will the pond discharge to trout waters?	No				
Has a controlled outlet been provided?	Yes				
Has an emergency spillway been provided?	Yes				
Has pretreatment been provided per Section 6.1.3?	Yes				
Enter freeboard depth (ft)	1				
Enter side slopes above permanent pool (X:1)	4				
Enter aquatic bench slope (%)	15				
Enter aquatic bench slope to pond floor (X:1)	6.66				
Enter min. aquatic bench width provided (ft)	10				
Enter aquatic bench average width provided (ft)	15				
Enter aquatic bench depth (inches)	1.5				
Enter maintenance access slope (%)	5				
Enter maintenance access width (ft)	20				
Enter permanent pool depth (ft)	4				
Minimum permanent pool depth per Water Balance Calculation (ft)	4.00				

Sizing Criteria			
	Value	Units	Notes
Required Water Quality Volume	18584	cf	
Pretreatment WQv Provided	2860	cf	
Permanent Pool WQv Provided	19000	cf	
Extended Detention WQv Provided	0	cf	

Determine the Water Quality Volume Treated		
Water Quality Volume Treated	**18,584**	**cf**

Stormwater Ponds

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Drainage Area Number	**Contributing Area** (Acres)	**Impervious Area** (Acres)	**Percent Impervious** %	**Rv**	**WQv** (cf)	**Precipitation** (in)	**Description**
2	8.75	3.23	37	0.38	10,926	0.90	Micropool Extended Detention Pond

Select pond type	Micropool Extended Detention				
Design Criteria					
Is the pond located within jurisdictional waters?	No				
Enter the natural slope of the pond area (%)	2				
Enter underlying soil infiltration rate (based on geotechnical testing, refer to Appendix D).	0				
Has an impermeable liner been provided?	No				
Is the pond located within a sole source aquifer?	No				
Is the pond located within a designated hotspot?	No				
Enter depth to seasonal high water table (ft)	5				
Enter depth to sound bedrock (ft)	5				
List any drainage areas treated by other practices that will be directed to this practice.	3			Additional Areas	1.25
Is the contributing area less than the minimum contributing area?	No				
Will the pond discharge to trout waters?	No				
Has a controlled outlet been provided?	Yes				
Has an emergency spillway been provided?	Yes				
Has pretreatment been provided per Section 6.1.3?	Yes				
Enter freeboard depth (ft)	1				
Enter side slopes above permanent pool (X:1)	4				
Enter aquatic bench slope (%)	15				
Enter aquatic bench slope to pond floor (X:1)	6.66				
Enter min. aquatic bench width provided (ft)	15				
Enter aquatic bench average width provided (ft)	15				
Enter aquatic bench depth (inches)	1.5				
Enter maintenance access slope (%)	5				
Enter maintenance access width (ft)	20				
Enter permanent pool depth (ft)	4				
Minimum permanent pool depth per Water Balance	4.00				

Sizing Criteria			
	Value	Units	Notes
Required Water Quality Volume	10926	cf	
Pretreatment WQv Provided	1600	cf	
Permanent Pool WQv Provided	12000	cf	
Extended Detention WQv Provided	0	cf	

Determine the Water Quality Volume Treated		
Water Quality Volume Treated	**10,926**	**cf**

Stormwater Ponds

Micropool Extended Detention

Total Area	21.72	acres
	12.97	acres
	8.75	acres
	0	acres
	0	acres
	0	acres
Total Impervious	8.83	acres
	5.6	acres
	3.23	acres
	0	acres
	0	acres
	0	acres
Total WQv Provided	29,510	cf
	18584	cf
	10926	cf
	0	cf
	0	cf
	0	cf

Wet Pond

Total Area	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total Impervious	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total WQv Provided	0	cf
	0	cf
	0	cf
	0	cf
	0	cf
	0	cf

Wet Extended Detention

Total Area	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total Impervious	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total WQv Provided	0	cf
	0	cf
	0	cf
	0	cf
	0	cf
	0	cf

Multiple Pond System

Total Area	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total Impervious	0.00	acres
	0	acres
	0	acres
	0	acres
	0	acres
	0	acres
Total WQv Provided	0	cf
	0	cf
	0	cf
	0	cf
	0	cf
	0	cf

Disconnection of Rooftop Runoff (RR-4)

Design Point:	1

Enter Site Data For Drainage Area to be Reduced							
Drainage Area Number	**Contributing Area** (Acres)	**Impervious Area** (Acres)	**Percent Impervious** %	**Rv**	**WQv** (cf)	**Precipitation** (in)	**Description**
3	1.25	1.25	100	0.95	3,880	0.90	Disconnection of Rooftop Runoff

Design Criteria		
Will disconnected runof flow over HSG C or D soils?	Yes	Amended soil required
Is the contributing area to each filter path greater than 1,000 sf?	No	
Enter the flow length of the contributing area (ft)	50	
Enter the width of the filter path (ft)	10	
Enter the length of the filter path (ft)	70	
Enter the filter path slope	0.01	

Area Reduction Adjustments		
RRv Provided	**3,880**	**cf**

Disconnection of Rooftop Runoff (RR-4)

Design Point:	1

Enter Site Data For Drainage Area to be Reduced							
Drainage Area Number	**Contributing Area** (Acres)	**Impervious Area** (Acres)	**Percent Impervious** %	**Rv**	**WQv** (cf)	**Precipitation** (in)	**Description**
4	1.00	1.00	100	0.95	3,104	0.90	Disconnection of Rooftop Runoff

Design Criteria		
Will disconnected runof flow over HSG C or D soils?	Yes	Amended soil required
Is the contributing area to each filter path greater than 1,000 sf?	No	
Enter the flow length of the contributing area (ft)	50	
Enter the width of the filter path (ft)	10	
Enter the length of the filter path (ft)	70	
Enter the filter path slope	0.01	

Area Reduction Adjustments		
RRv Provided	**3,104**	**cf**

Disconnection of Rooftop Runoff (RR-4)

Total Impervious	2.25	acres
Total RRv Provided	6,984	cf

Steps 3 and 5 - Apply RR Techniques and Standard SMPs

Runoff Reduction Volume and Treated Volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**(cf)**	**(cf)**
RR Techniques	Conservation of Natural Areas	RR-1	12.97		0	
	Sheet Flow to Riparian Buffer/Filter Strip	RR-2	0.00	0.00	0	
	Tree Planting/Tree Pit/Tree Trench	RR-3	0.00	0.00	0	
	Disconnection of Rooftop Runoff	RR-4		2.25	6,984	
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rainwater Harvesting Systems	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Extensive & Intensive)	RR-10	0.00	0.00	0	
	Stream Daylighting	RR-11				
Standard SMPs w/ RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00	0.00	0	0
	Infiltration Bioretention	F-4	0.00	0.00	0	0
	Filtration Bioretention	F-5	0.00	0.00	0	0
	Bioslope	F-6	0.00	0.00	0	0
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention	P-1	21.72	8.83		29,510
	Wet Pond	P-2	0.00	0.00		0
	Wet Extended Detention	P-3	0.00	0.00		0
	Multiple Pond System	P-4	0.00	0.00		0
	Shallow Wetland	W-1	0.00	0.00		0
	Extended Detention Shallow Wetland	W-2	0.00	0.00		0
	Pond/Wetland System	W-3	0.00	0.00		0
	Pocket Wetland	W-4	0.00	0.00		0
	Gravel Wetland	W-5	0.00	0.00		0
	Surface Sand Filter	F-1	0.00	0.00		0
	Underground Sand Filter	F-2	0.00	0.00		0
	Perimeter Sand Filter	F-3	0.00	0.00		0
	Wet Swale	O-2	0.00	0.00		0
Alt. SMPs	Flow Based Alternative Practice	-	0.00	0.00		0
	Volume Based Alternative Practice	-				
	Totals by RR Technique	→	12.97	2.25	6,984	
	Totals by Standard SMP w/RRV	→	0.00	0.00	0	0
	Totals by Standard SMP	→	21.72	8.83		29,510
	Totals by Alternative SMP	→	0.00	0.00		0
	Totals (RR Techniques + all SMPs)	→	34.69	11.08	6,984	29,510

NOI QUESTIONS

#	eNOI Question 49	Reported Value	
		cf	af
49	Total Water Quality Volume (WQv) Required	36494	0.838
49	Total RRV Provided	6984	0.160
49	Is RRv Provided ≥WQv Required?	No	
49	Minimum RRv	6882	0.158
49	Is RRv Provided ≥ Minimum RRv Required?	Yes	
49	Total WQv Treated	29510	0.677
49	Sum of Volume Reduced & Treated	36494	0.838
49	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Appendix C

Earthwork Calculations

CARMINA WOOD DESIGN
80 SILO CITY ROW, STE 100
BUFFALO, NEW YORK, 14203
(716) 842-3165
FAX (716) 842-0263

Project No.: 25-4080 Date: 6/12/2026
Project Name: Uptown Apartments
Project Address: 2190 Wehrle Drive
Subject: Earthwork Calculations
Sheet: 1 of 1

SITE EARTHWORK CALCULATIONS

INITIAL CUT/FILL NUMBERS COMPARING EX SURFACE AND PROPOSED SURFACE

CUT	18,900	CY
FILL	16,900	CY
NET	2,000	CY

TOPSOIL STRIP	23,760	CY	(ASSUME 8" OF TOPSOIL)
TOPSOIL RESPREAD	5,861	CY	(ASSUME 4" OF TOPSOIL)
TOPSOIL EXPORT	17,898	CY	

PROPOSED IMPERVIOUS VOLUME CALCULATIONS

	DEPTH (INCHES)	AREA (SF)	VOLUME (CF)	
BUILDING PADS	8	188,231	125,487	
CONCRETE	8	25,578	17,052	
ROAD	11	268,905	246,496	
TOTAL			389,036	CF
			14,409	CY

TOTAL EARTHWORK

ADJUSTED NET	(1,490)	CY	**DIRT TO BE IMPORTED**