PRELIMINARY STORMWATER MANAGEMENT REPORT – Avondale

Jerome/Darby Township
Union County, Ohio

Prepared by:
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Prepared on: February 20, 2025

Kimley»Horn

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1. PROJECT DESCRIPTION

The proposed Avondale development is located on State Route 736, Jerome/Darby Township, Union County, Ohio. The development is bordered on the north by Estate lots, on the west by the Big Darby Creek, the south by the Darby Brayside development and the east by State Route 736. The development site consists of three existing drainage areas that flow from a ridge on the north side south into Robinson Run.

The proposed development consists of 30 new single-family estate homes to be built on minimum 1.6 acre lots. This included public streets with open ditches, and private septic and well water. Detention basins will not be required as the curve numbers for the existing drainage areas are greater than the proposed use. Water quality will be provided with the use of vegetated swales along the proposed roadways and in backyard areas.

1.1. Pre-Development Conditions

The proposed development site is approximately 66.1 acres of undeveloped land used for agricultural purposes, comprised of row crops. The site primarily drains north to south and the existing soils are primarily hydrulic D.

Three watersheds, each with outlet points, exist on the site. Curve numbers were calculated based on the existing land types for each watershed. See Exhibit 1 for the pre-development tributary area map and Exhibit 2 for the pre-development release rates.

Pre-Developed Watershed A Characteristics
Summary: Drains west portion of the site. Sheet flows into the existing swales to the south outlet point and ultimately into Robinson Run.
Outlet: Robinson Run west side of the site.
Area = 28.16 acres
Weighted Curve Number = 89
Time of Concentration = 26.9 minutes

Pre-Developed Watershed B Characteristics
Summary: Drains center portion of the site. Sheet flows into the existing swales to the south outlet point and ultimately into Robinson Run.
Outlet: Robinson Run senter of the site.
Area = 23.61 acres
Weighted Curve Number = 89
Time of Concentration = 26.9 minutes

Pre-Developed Watershed C Characteristics
Summary: Drains east portion of the site. Sheet flows into the existing swales to the south outlet point and ultimately into Robinson Run.
Outlet: Robinson Run east side of the site.

Area = 14.33 acres
Weighted Curve Number = 89
Time of Concentration = 26.9 minutes

1.2. Post Development Conditions

The proposed development will consist of 30 new single-family estate homes. The post-developed stormwater management will be based on the requirements of the Union County Technical Design Standards. The proposed drainage areas will follow existing drainage patterns and maintain the flow to the three existing outlet points discussed above. Using the critical storm method, the peak rate of runoff under post-development conditions is to be equal to a one year pre-developed runoff rate up to the critical storm year, while the peak rate of runoff for all storms greater than or equal to the critical storm shall be limited to the pre-development runoff rate from the same frequency storm. The proposed curve numbers have been reduced, and therefore there is no increase in runoff volume, so the critical storm will be the 1-year storm. The peak rate of runoff under post development conditions shall not be greater than the peak runoff rate of predevelopment conditions in any storm event.

To calculate proposed weighted curve numbers, we used Table 2-2a in the Urban Hydrology for small watersheds (TR-55) manual and used a CN=82 for our 2 acre lots with type D soils.

Water quality will be provided using vegetated swales in the open ditch road section and along property lines and backyards of the proposed lots.

Refer to Exhibit 3 for the post development tributary map and Exhibit 4 for the post development release rates.

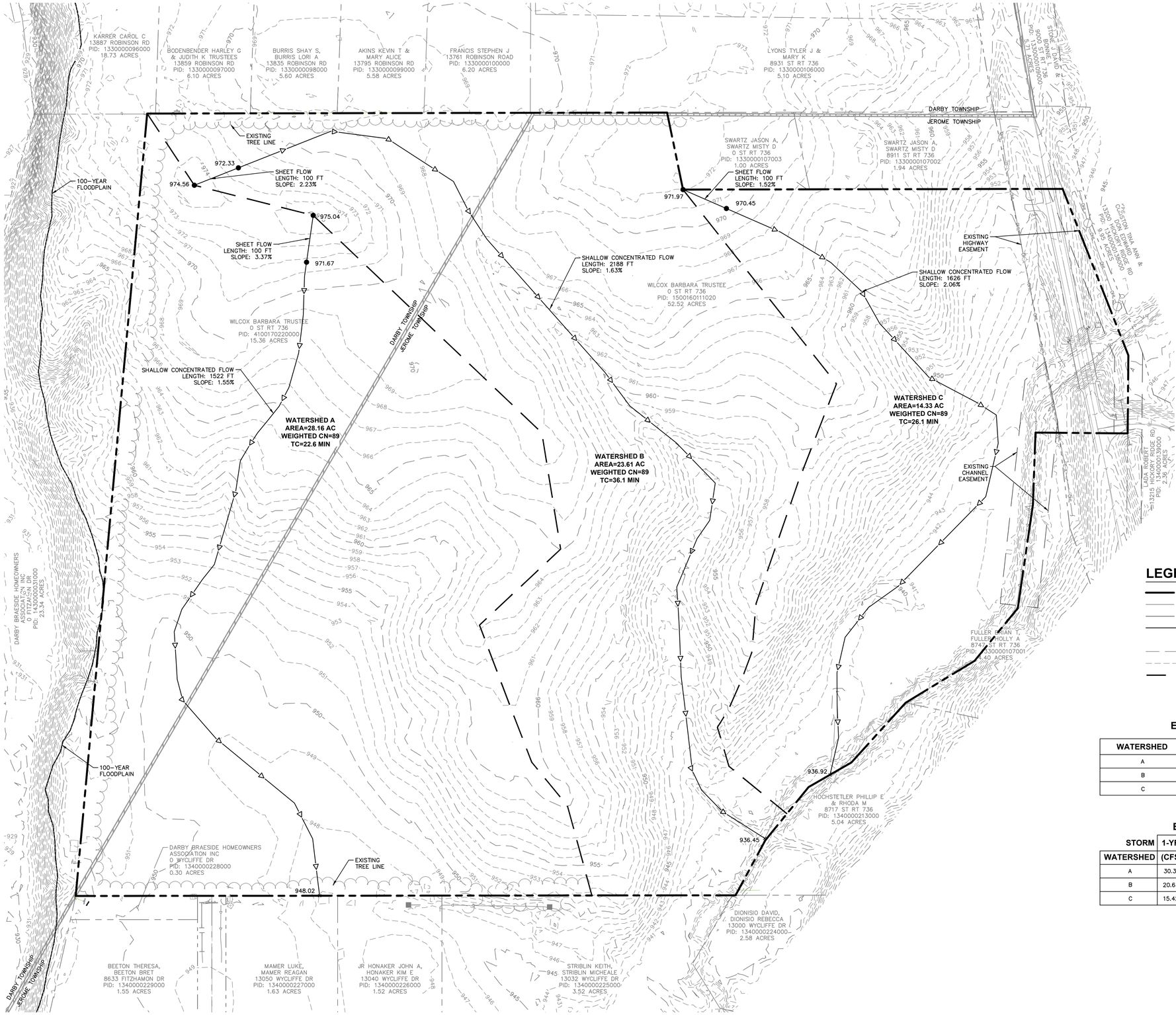
2. DESIGN SUMMARY

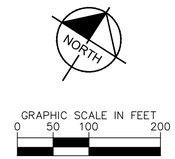
The existing and proposed realease rates and water quality for the development will be designed using HydroCAD. An SCS Type II 24-hour storm will be modeled using rainfall depths obtained from the National Oceanic and Atmospheric Administration Atlas 14 precipitation frequency estimates.

3. CONCLUSION

The stormwater management will be designed to meet the requirements of the Union County Technical Design Standards and the Ohio EPA General Permit OHC000006 for the proposed development providing water quality treatment. The proposed drainage patterns will match existing flow paths and the proposed release rates will be less than the existing for each storm event.

Exhibit 1 – Pre-Development Tributary Map





LEGEND

- EXISTING SITE BOUNDARY
- EXISTING PROPERTY LINE
- EXISTING RIGHT-OF-WAY
- EXISTING FLOW PATH
- CHANGE IN SURFACE FLOW CONDITIONS
- 940 EXISTING INDEX CONTOUR
- 942 EXISTING INTERMEDIATE CONTOUR
- EXISTING WATERSHED BOUNDARY

EXISTING WATERSHED SUMMARY

WATERSHED	AREA (AC)	CN	TC (MIN.)
A	28.16	89	26.9
B	23.61	89	36.8
C	14.33	89	26.9

EXISTING PEAK FLOW SUMMARY

STORM	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
WATERSHED	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)
A	30.31	39.84	53.52	65.01	80.80	94.00	107.65
B	20.63	27.22	36.64	44.57	55.46	64.57	74.00
C	15.42	20.27	27.23	33.08	41.12	47.83	54.78

No.	REVISIONS	DATE	BY

Kimley»Horn

7965 N. HIGH STREET, COLUMBUS, OH 43235
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SCALE: AS NOTED
DESIGNED BY: JDW
DRAWN BY: JDW
CHECKED BY: NSS

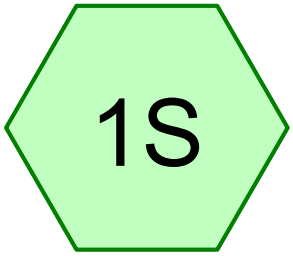
INSERT CLIENT LOGO HERE

PRE-DEVELOPMENT TRIBUTARY MAP

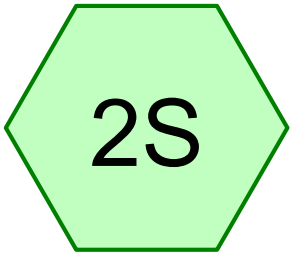
PRELIMINARY ENGINEERING PLAN FOR
AVONDALE
STATE ROUTE 736
PLAIN CITY, OHIO 43064

ORIGINAL ISSUE: 2/20/2025
KHA PROJECT NO. 190363000
SHEET NUMBER 1

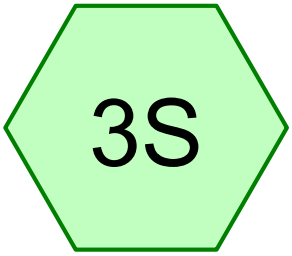
Exhibit 2 – Pre-Development Release Rates



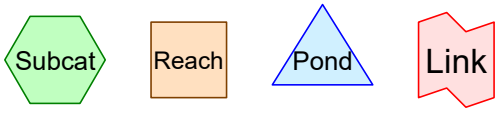
EX Watershed A



EX Watershed B



EX Watershed C



Routing Diagram for Prelim Model
Prepared by Kimley-Horn & Associates, Printed 2/20/2025

Summary for Subcatchment 1S: EX Watershed A

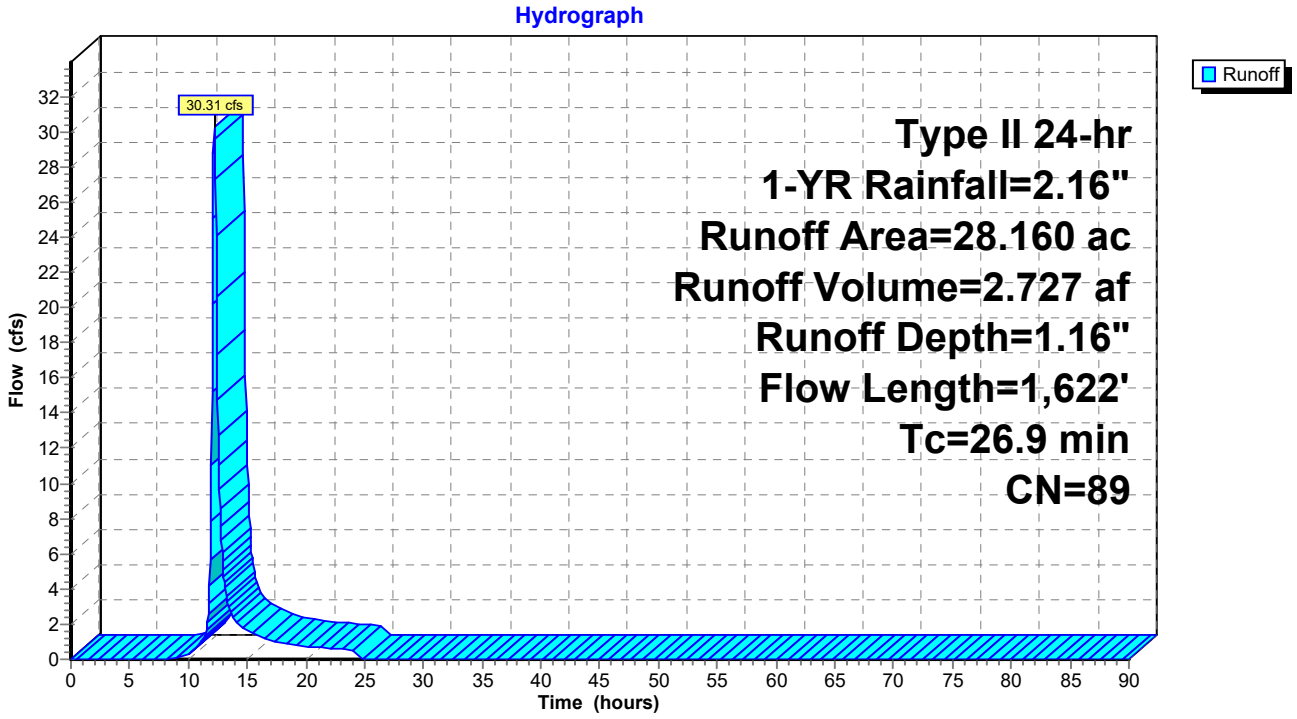
Runoff = 30.31 cfs @ 12.21 hrs, Volume= 2.727 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.16"

Area (ac)	CN	Description
28.160	89	Row crops, straight row, Good, HSG D
28.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.0337	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
22.6	1,522	0.0155	1.12		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,622	Total			

Subcatchment 1S: EX Watershed A



Summary for Subcatchment 2S: EX Watershed B

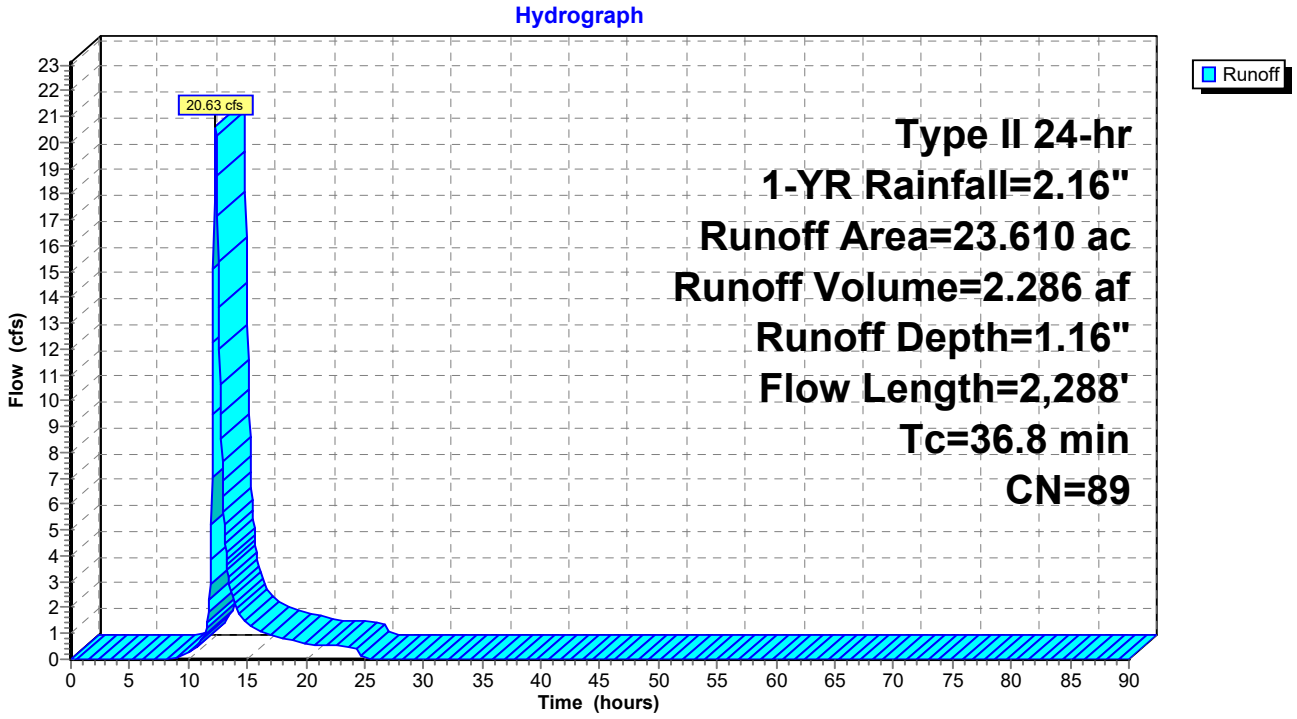
Runoff = 20.63 cfs @ 12.33 hrs, Volume= 2.286 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.16"

Area (ac)	CN	Description
23.610	89	Row crops, straight row, Good, HSG D
23.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.0223	0.33		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
31.7	2,188	0.0163	1.15		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.8	2,288	Total			

Subcatchment 2S: EX Watershed B



Summary for Subcatchment 3S: EX Watershed C

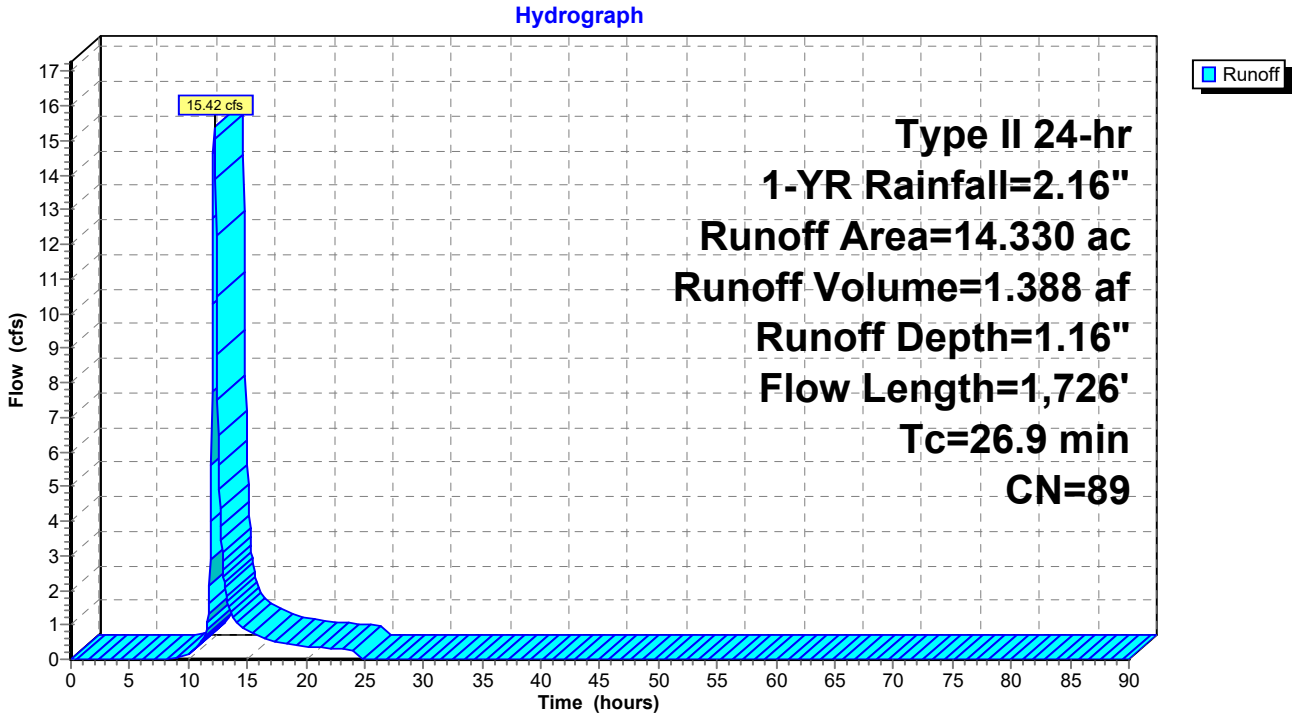
Runoff = 15.42 cfs @ 12.21 hrs, Volume= 1.388 af, Depth= 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.16"

Area (ac)	CN	Description
14.330	89	Row crops, straight row, Good, HSG D
14.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0152	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
21.0	1,626	0.0206	1.29		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,726	Total			

Subcatchment 3S: EX Watershed C



Summary for Subcatchment 1S: EX Watershed A

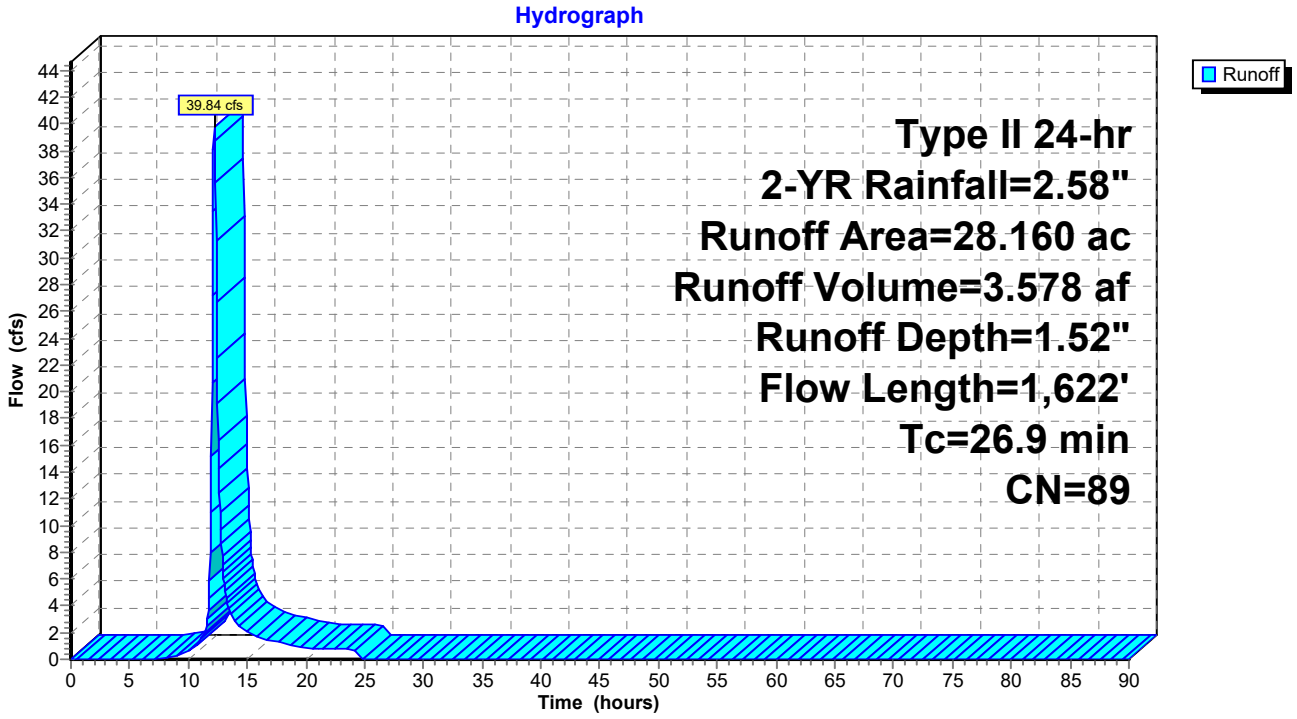
Runoff = 39.84 cfs @ 12.21 hrs, Volume= 3.578 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=2.58"

Area (ac)	CN	Description
28.160	89	Row crops, straight row, Good, HSG D
28.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.0337	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
22.6	1,522	0.0155	1.12		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,622	Total			

Subcatchment 1S: EX Watershed A



Summary for Subcatchment 2S: EX Watershed B

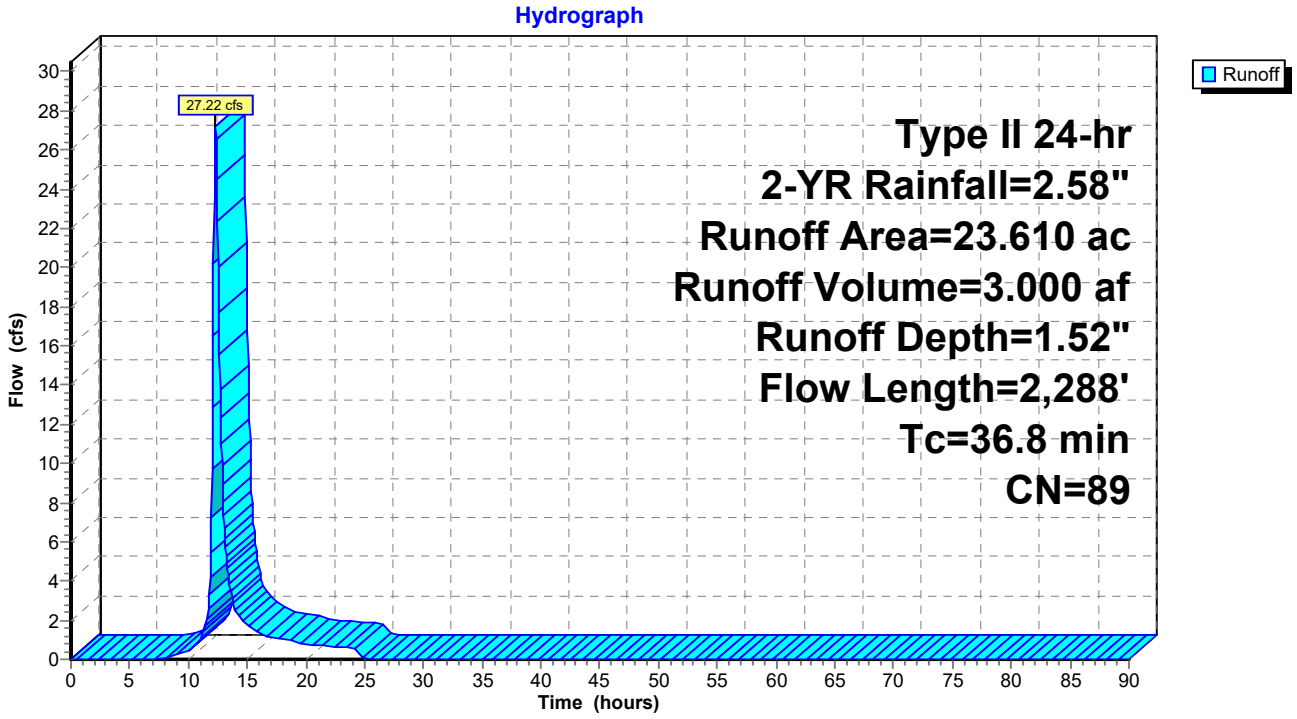
Runoff = 27.22 cfs @ 12.32 hrs, Volume= 3.000 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=2.58"

Area (ac)	CN	Description
23.610	89	Row crops, straight row, Good, HSG D
23.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.0223	0.33		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
31.7	2,188	0.0163	1.15		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.8	2,288	Total			

Subcatchment 2S: EX Watershed B



Summary for Subcatchment 3S: EX Watershed C

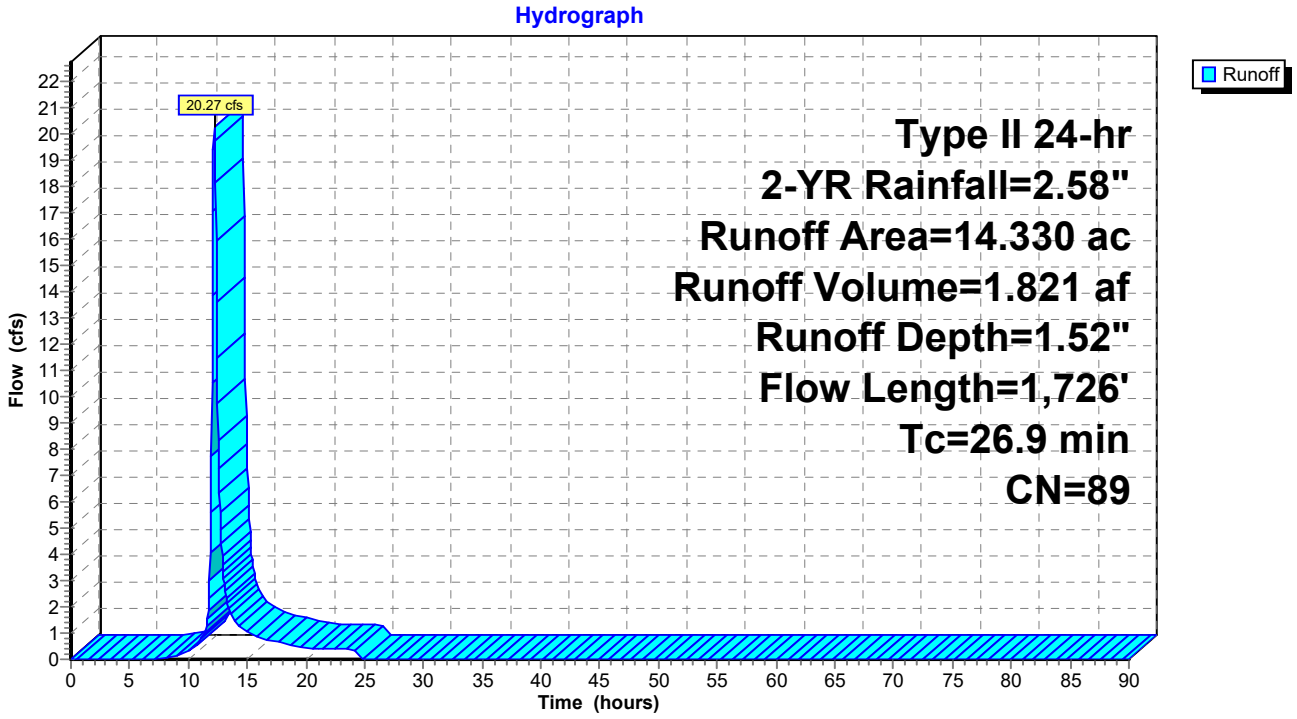
Runoff = 20.27 cfs @ 12.21 hrs, Volume= 1.821 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=2.58"

Area (ac)	CN	Description
14.330	89	Row crops, straight row, Good, HSG D
14.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0152	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
21.0	1,626	0.0206	1.29		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,726	Total			

Subcatchment 3S: EX Watershed C



Summary for Subcatchment 1S: EX Watershed A

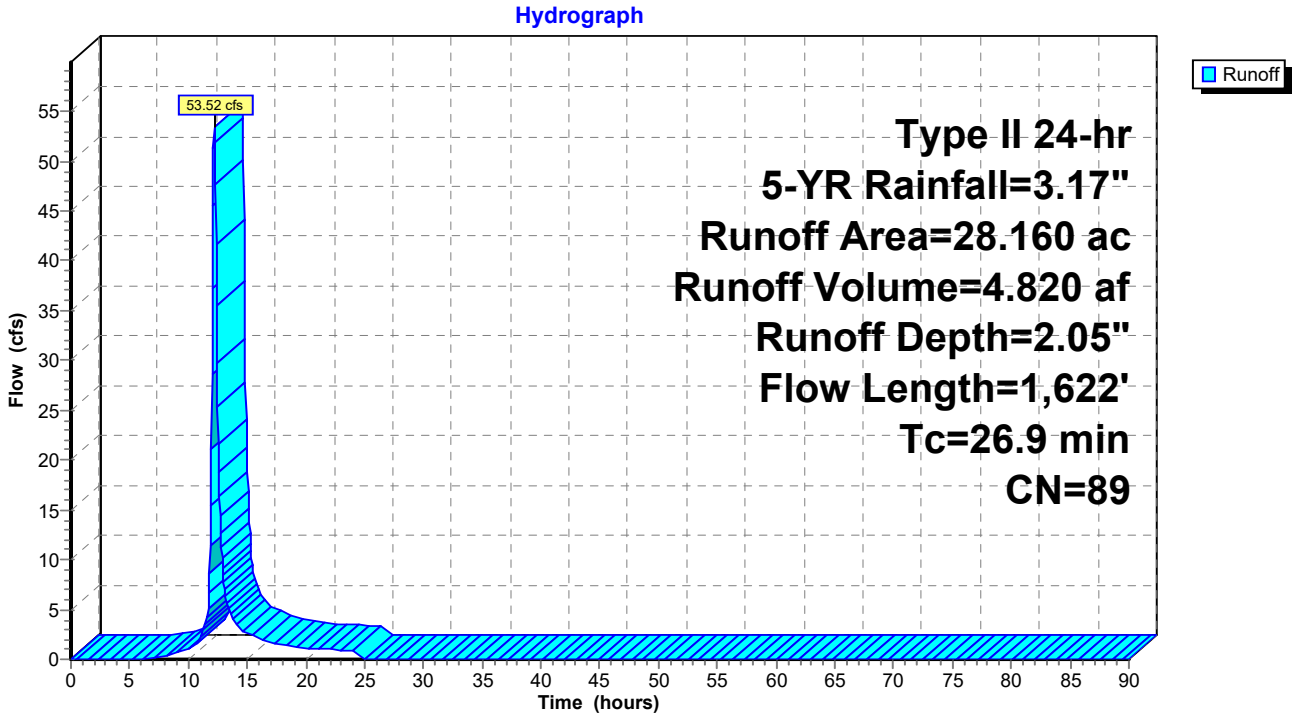
Runoff = 53.52 cfs @ 12.20 hrs, Volume= 4.820 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-YR Rainfall=3.17"

Area (ac)	CN	Description
28.160	89	Row crops, straight row, Good, HSG D
28.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.0337	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
22.6	1,522	0.0155	1.12		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,622	Total			

Subcatchment 1S: EX Watershed A



Summary for Subcatchment 2S: EX Watershed B

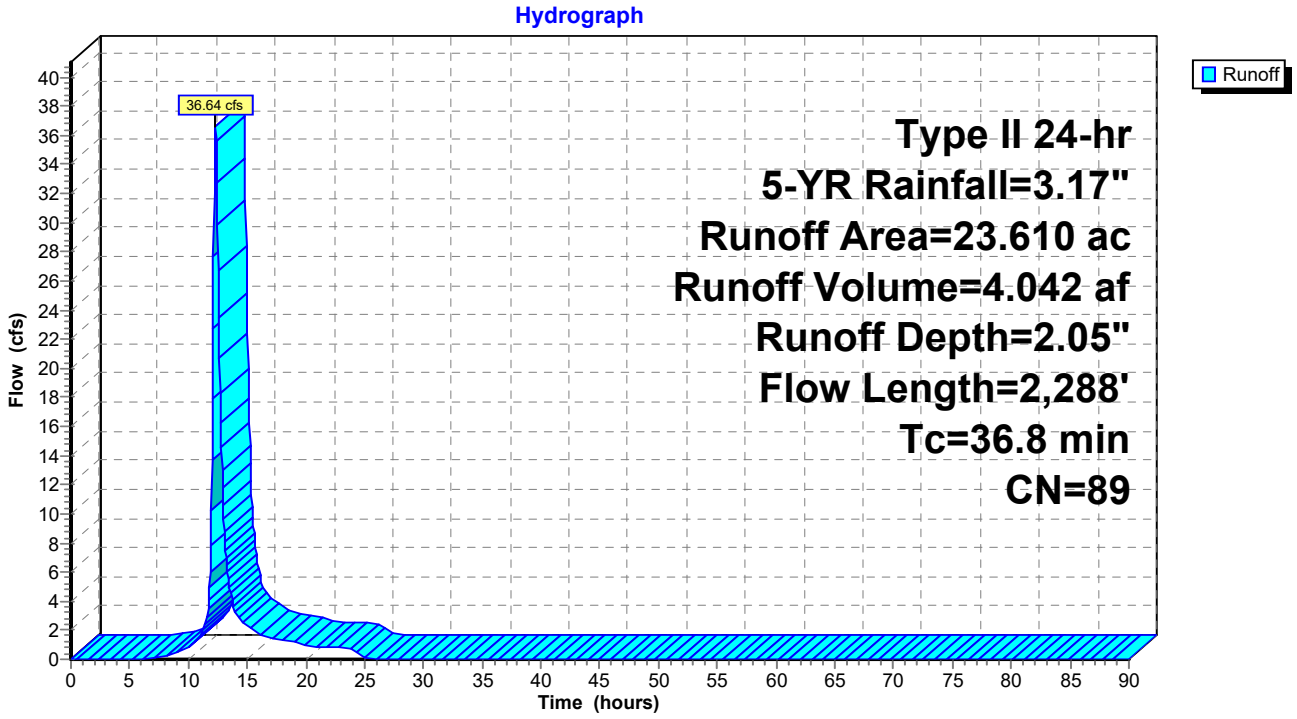
Runoff = 36.64 cfs @ 12.32 hrs, Volume= 4.042 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-YR Rainfall=3.17"

Area (ac)	CN	Description
23.610	89	Row crops, straight row, Good, HSG D
23.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.0223	0.33		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
31.7	2,188	0.0163	1.15		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.8	2,288	Total			

Subcatchment 2S: EX Watershed B



Summary for Subcatchment 3S: EX Watershed C

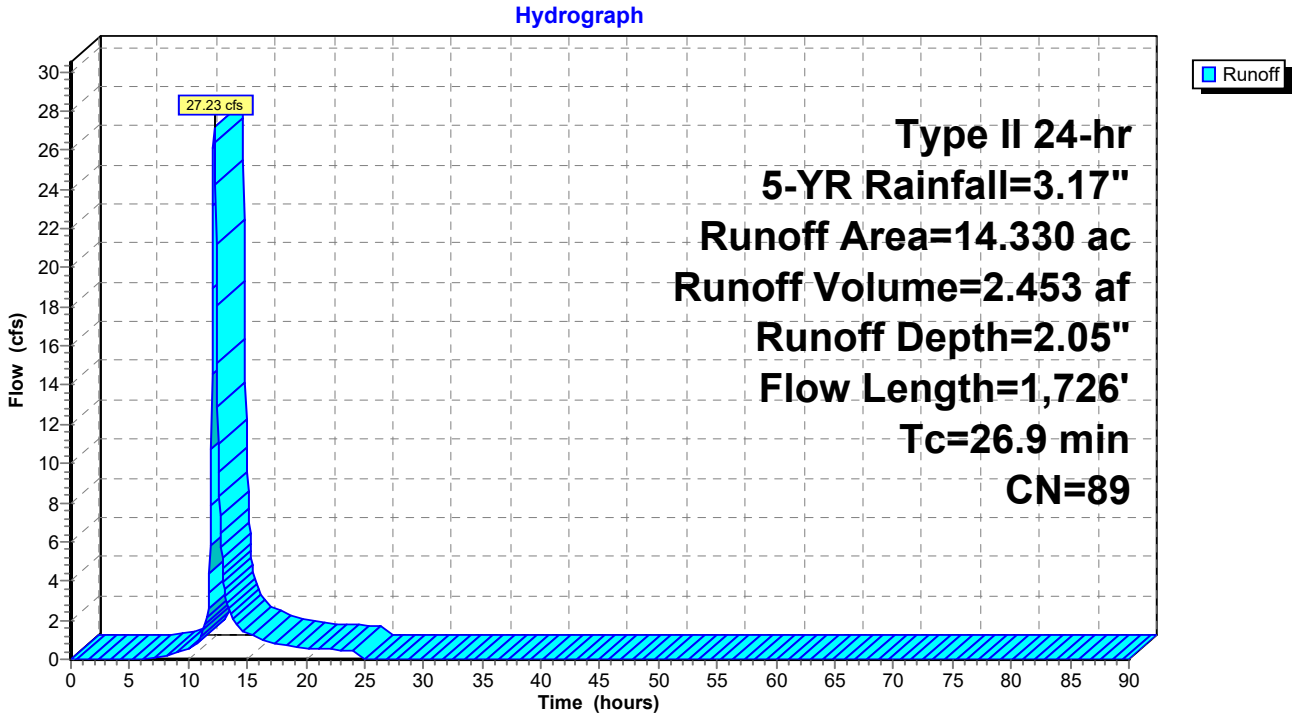
Runoff = 27.23 cfs @ 12.20 hrs, Volume= 2.453 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-YR Rainfall=3.17"

Area (ac)	CN	Description
14.330	89	Row crops, straight row, Good, HSG D
14.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0152	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
21.0	1,626	0.0206	1.29		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,726	Total			

Subcatchment 3S: EX Watershed C



Summary for Subcatchment 1S: EX Watershed A

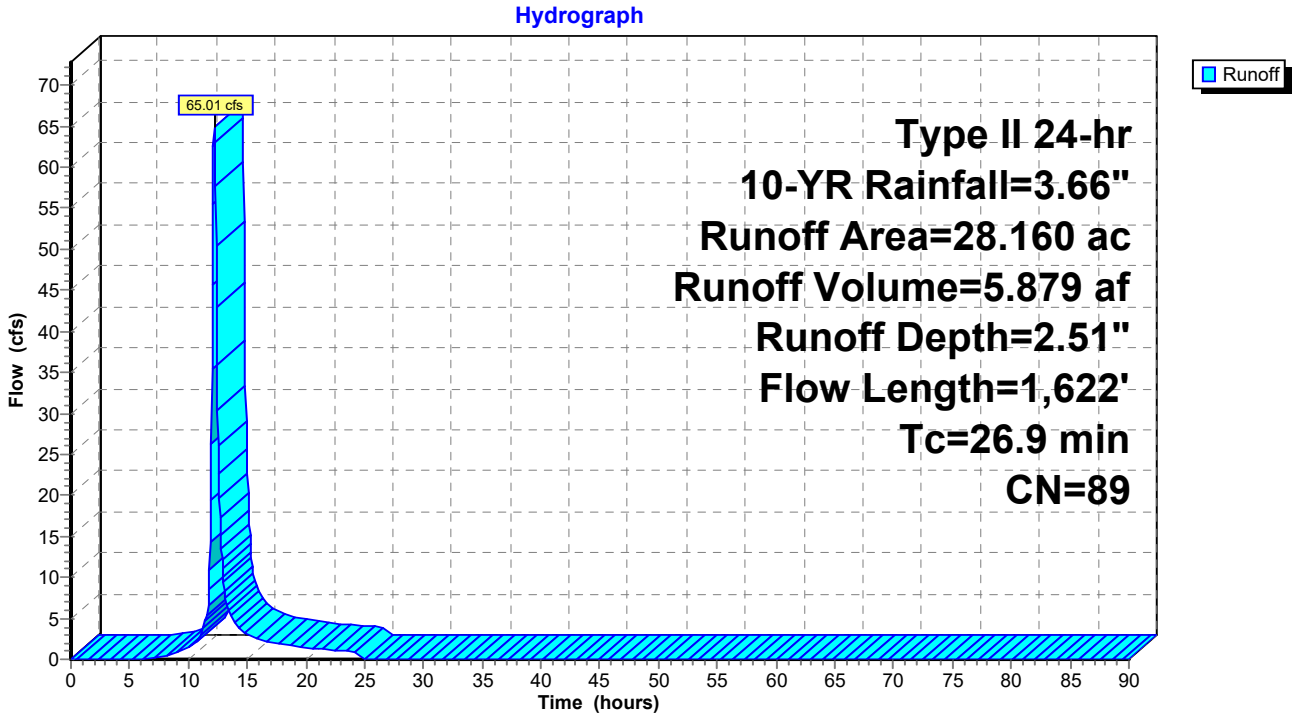
Runoff = 65.01 cfs @ 12.20 hrs, Volume= 5.879 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.66"

Area (ac)	CN	Description
28.160	89	Row crops, straight row, Good, HSG D
28.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.0337	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
22.6	1,522	0.0155	1.12		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,622	Total			

Subcatchment 1S: EX Watershed A



Summary for Subcatchment 2S: EX Watershed B

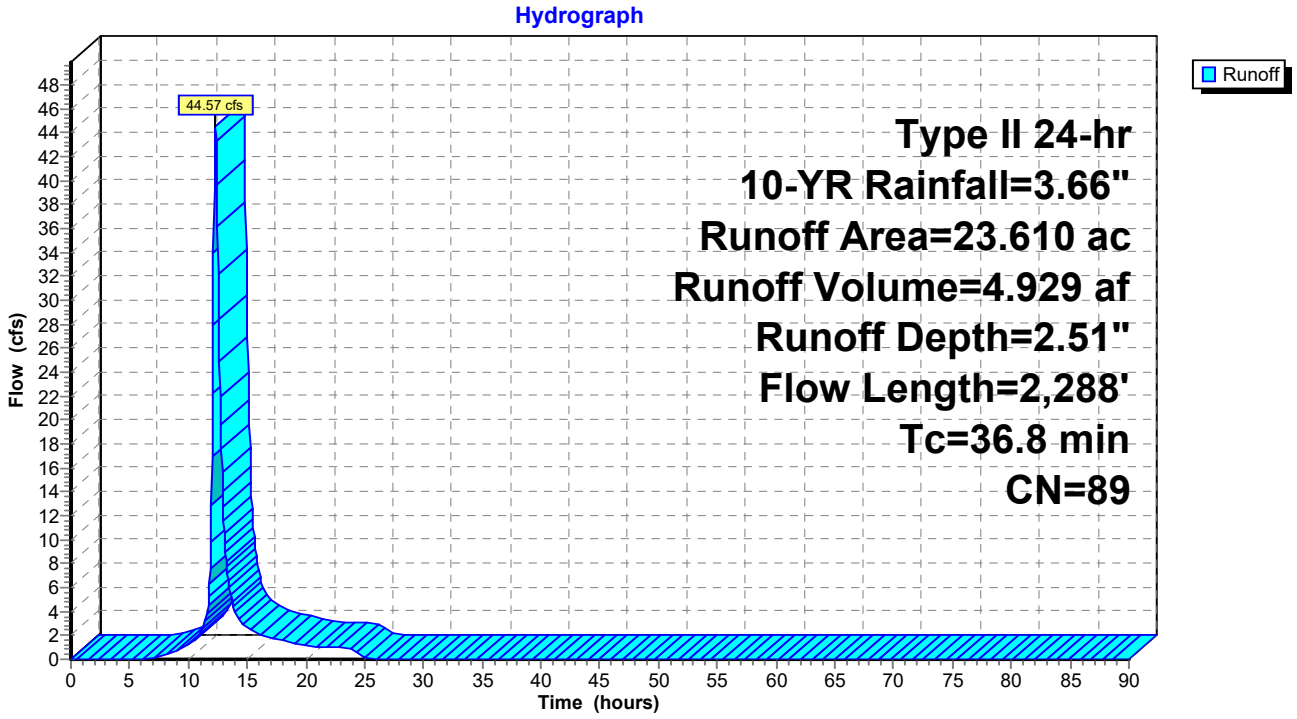
Runoff = 44.57 cfs @ 12.32 hrs, Volume= 4.929 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.66"

Area (ac)	CN	Description
23.610	89	Row crops, straight row, Good, HSG D
23.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.0223	0.33		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
31.7	2,188	0.0163	1.15		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.8	2,288	Total			

Subcatchment 2S: EX Watershed B



Summary for Subcatchment 3S: EX Watershed C

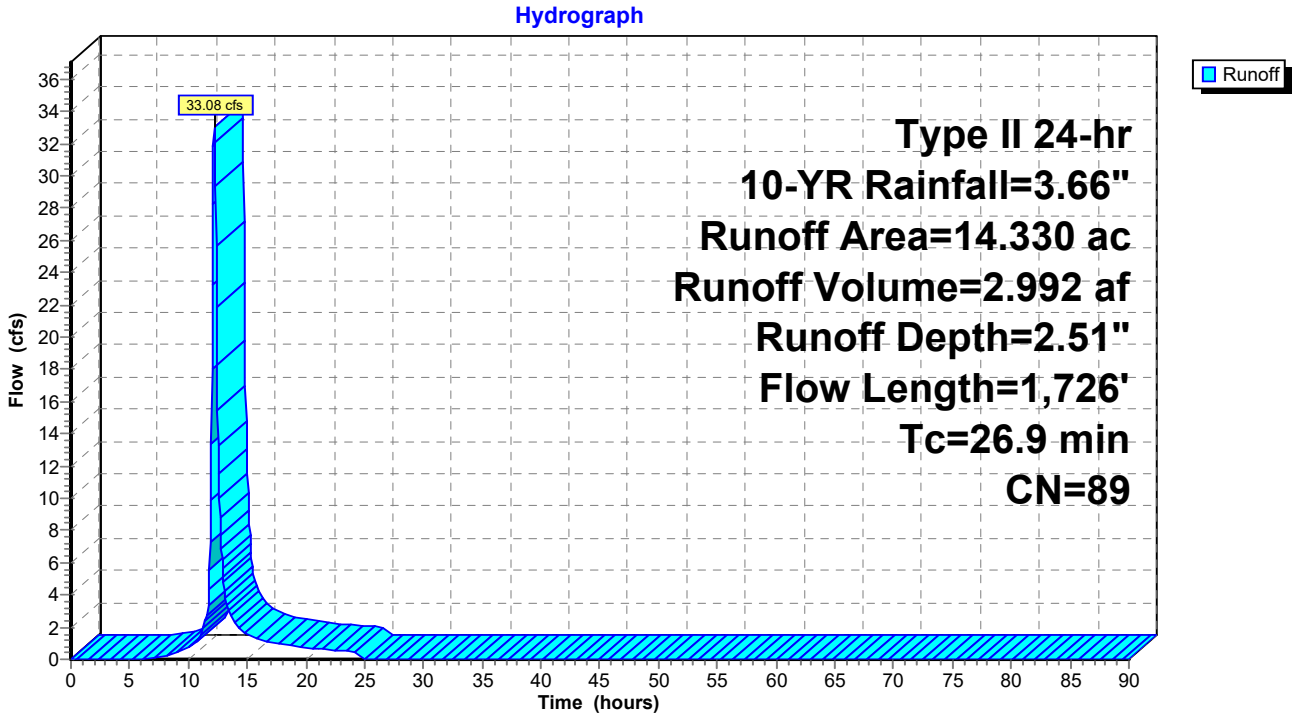
Runoff = 33.08 cfs @ 12.20 hrs, Volume= 2.992 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.66"

Area (ac)	CN	Description
14.330	89	Row crops, straight row, Good, HSG D
14.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0152	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
21.0	1,626	0.0206	1.29		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,726	Total			

Subcatchment 3S: EX Watershed C



Summary for Subcatchment 1S: EX Watershed A

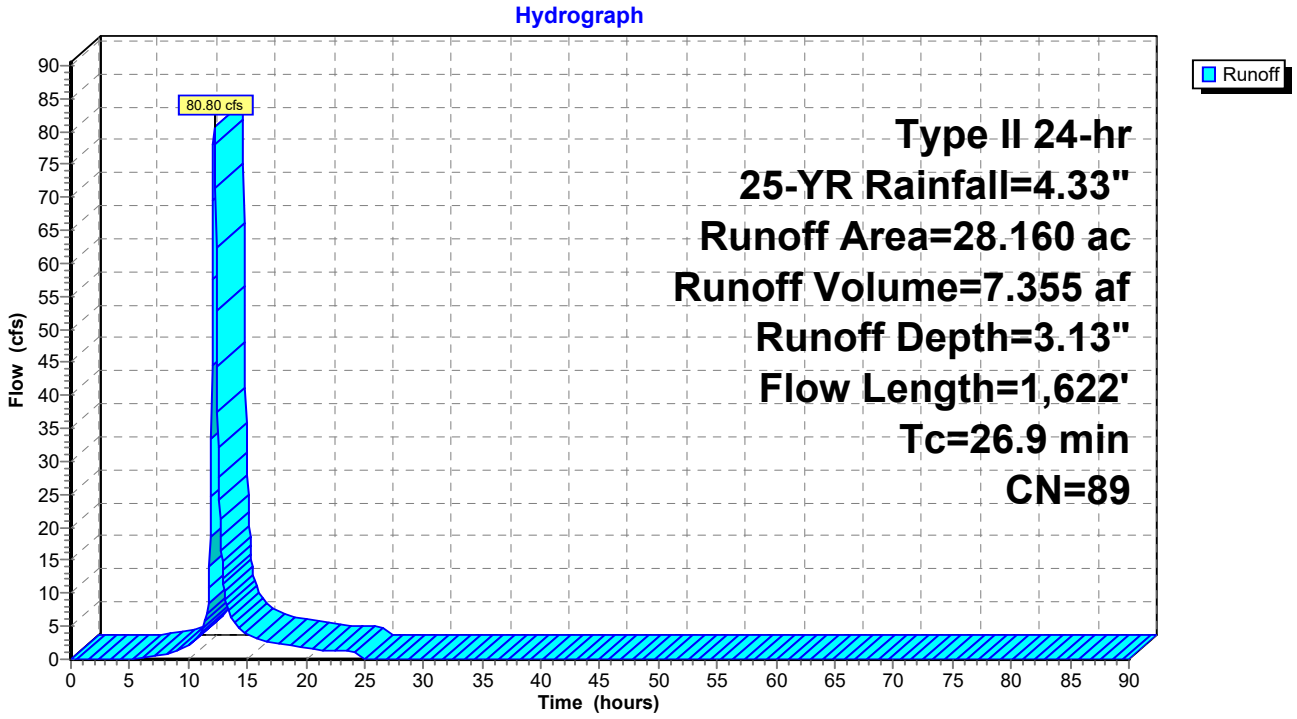
Runoff = 80.80 cfs @ 12.20 hrs, Volume= 7.355 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-YR Rainfall=4.33"

Area (ac)	CN	Description
28.160	89	Row crops, straight row, Good, HSG D
28.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.0337	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
22.6	1,522	0.0155	1.12		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,622	Total			

Subcatchment 1S: EX Watershed A



Summary for Subcatchment 2S: EX Watershed B

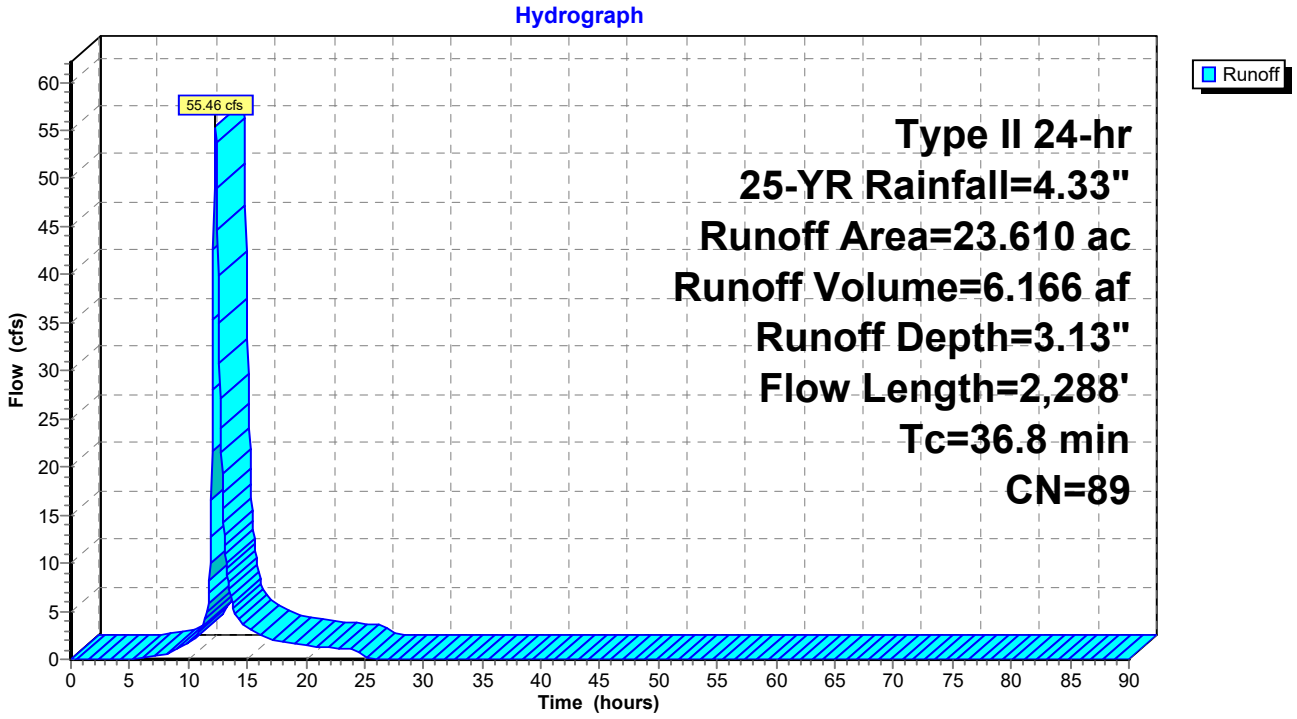
Runoff = 55.46 cfs @ 12.32 hrs, Volume= 6.166 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-YR Rainfall=4.33"

Area (ac)	CN	Description
23.610	89	Row crops, straight row, Good, HSG D
23.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.0223	0.33		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
31.7	2,188	0.0163	1.15		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.8	2,288	Total			

Subcatchment 2S: EX Watershed B



Summary for Subcatchment 3S: EX Watershed C

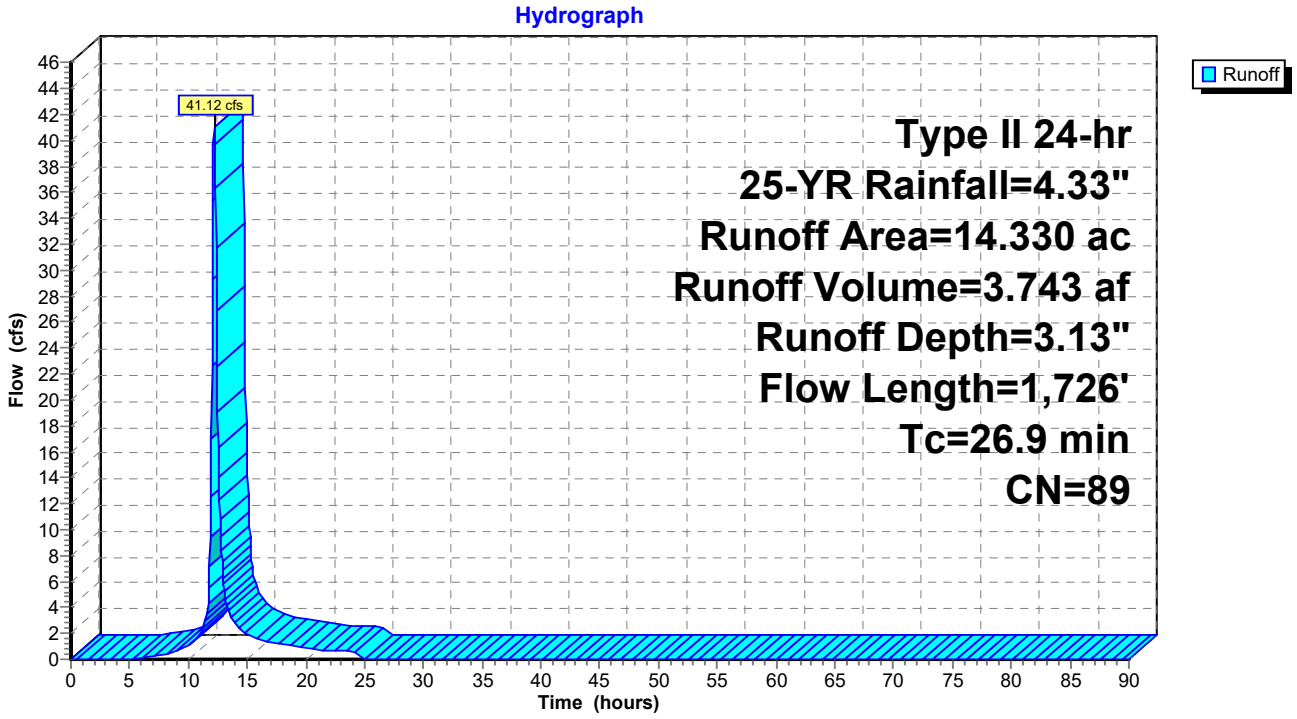
Runoff = 41.12 cfs @ 12.20 hrs, Volume= 3.743 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-YR Rainfall=4.33"

Area (ac)	CN	Description
14.330	89	Row crops, straight row, Good, HSG D
14.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0152	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
21.0	1,626	0.0206	1.29		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,726	Total			

Subcatchment 3S: EX Watershed C



Summary for Subcatchment 1S: EX Watershed A

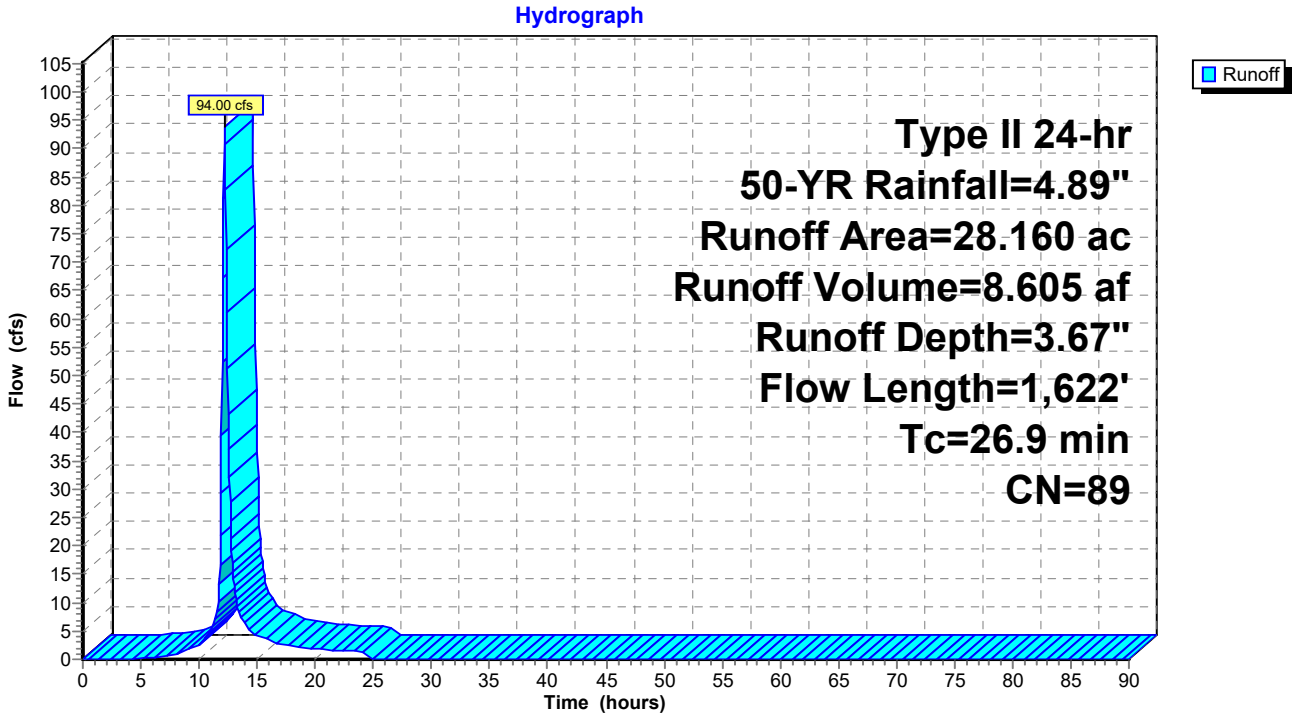
Runoff = 94.00 cfs @ 12.20 hrs, Volume= 8.605 af, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-YR Rainfall=4.89"

Area (ac)	CN	Description
28.160	89	Row crops, straight row, Good, HSG D
28.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.0337	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
22.6	1,522	0.0155	1.12		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,622	Total			

Subcatchment 1S: EX Watershed A



Summary for Subcatchment 2S: EX Watershed B

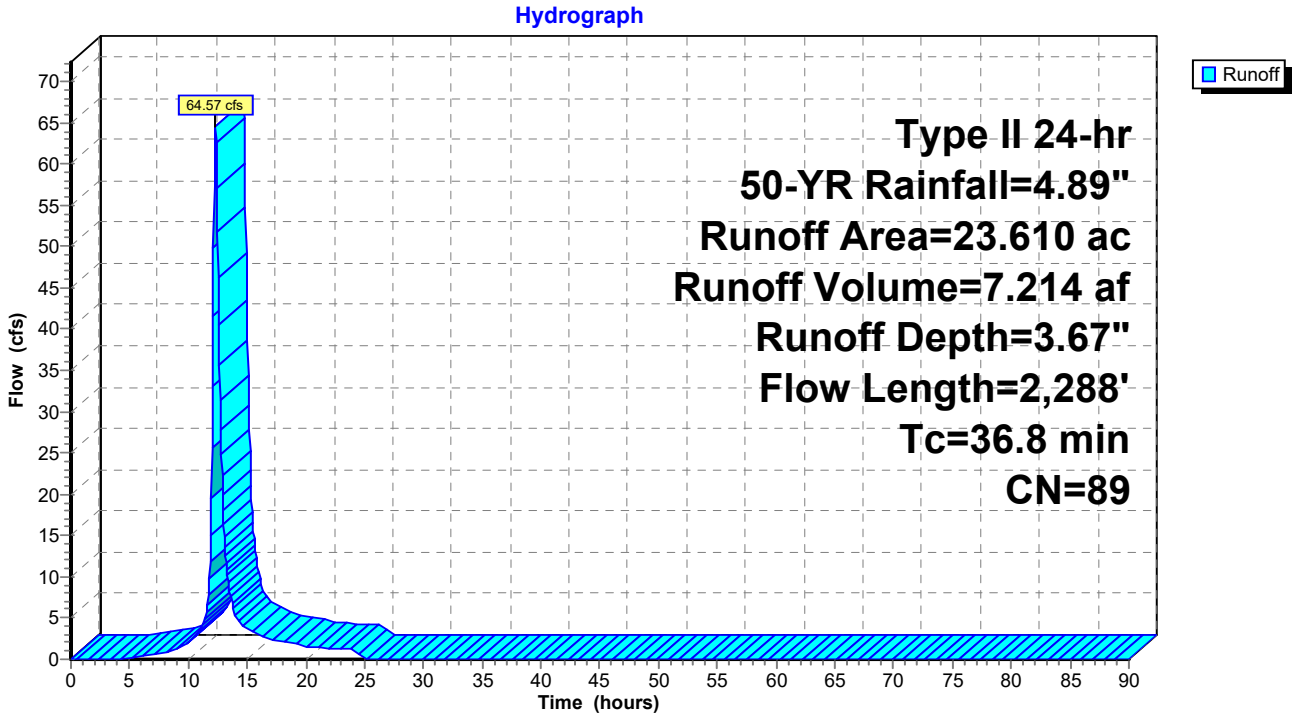
Runoff = 64.57 cfs @ 12.31 hrs, Volume= 7.214 af, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-YR Rainfall=4.89"

Area (ac)	CN	Description
23.610	89	Row crops, straight row, Good, HSG D
23.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.0223	0.33		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
31.7	2,188	0.0163	1.15		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.8	2,288	Total			

Subcatchment 2S: EX Watershed B



Summary for Subcatchment 3S: EX Watershed C

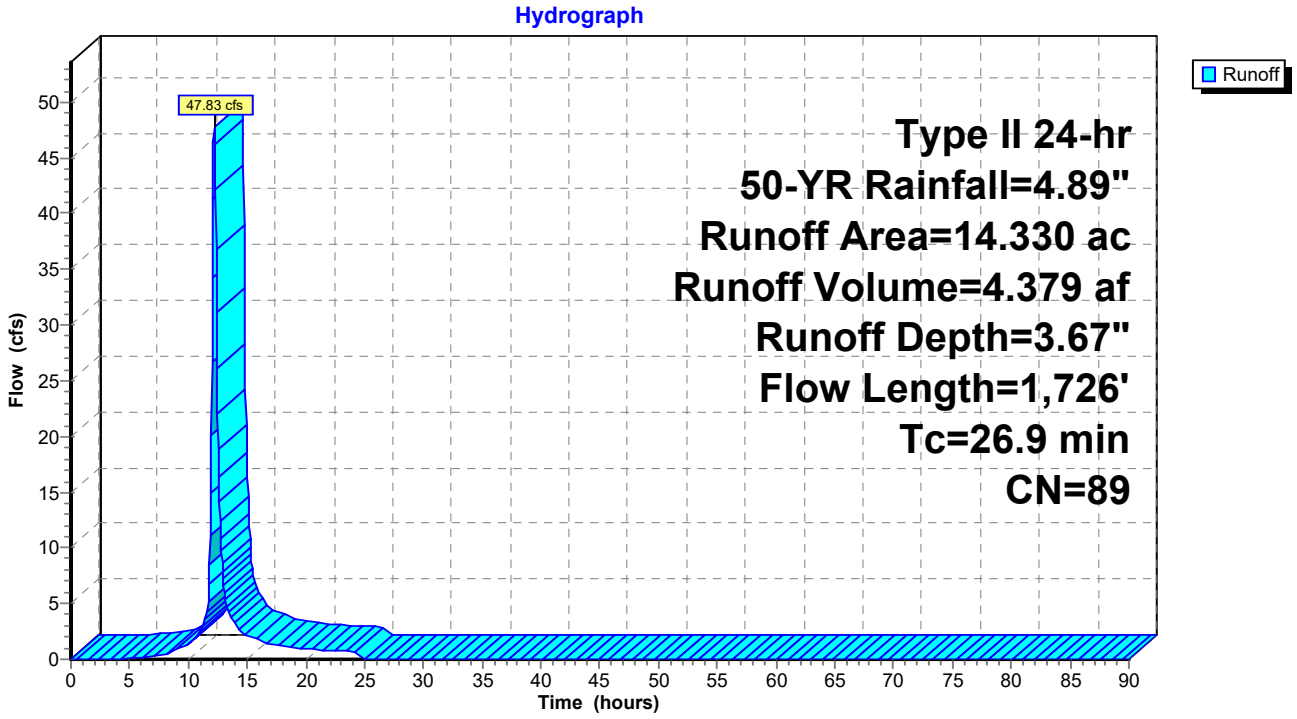
Runoff = 47.83 cfs @ 12.20 hrs, Volume= 4.379 af, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-YR Rainfall=4.89"

Area (ac)	CN	Description
14.330	89	Row crops, straight row, Good, HSG D
14.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0152	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
21.0	1,626	0.0206	1.29		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,726	Total			

Subcatchment 3S: EX Watershed C



Summary for Subcatchment 1S: EX Watershed A

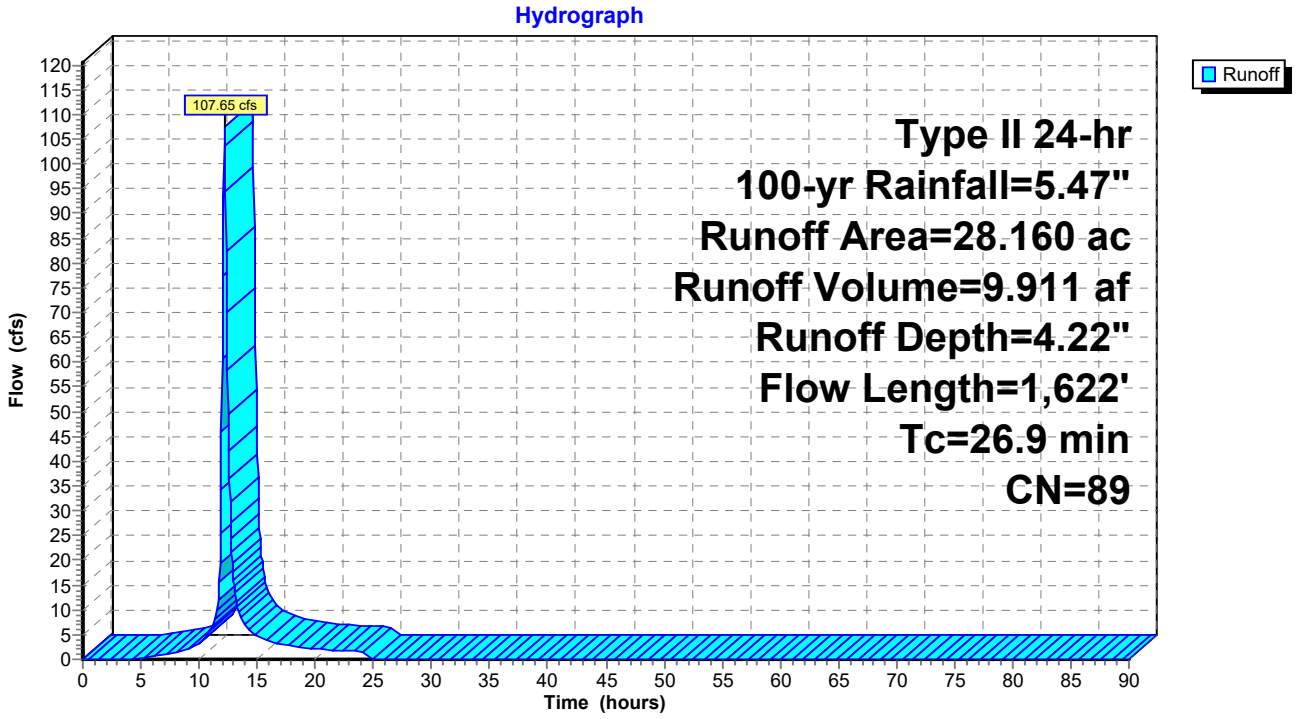
Runoff = 107.65 cfs @ 12.20 hrs, Volume= 9.911 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.47"

Area (ac)	CN	Description
28.160	89	Row crops, straight row, Good, HSG D
28.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	100	0.0337	0.39		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
22.6	1,522	0.0155	1.12		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,622	Total			

Subcatchment 1S: EX Watershed A



Summary for Subcatchment 2S: EX Watershed B

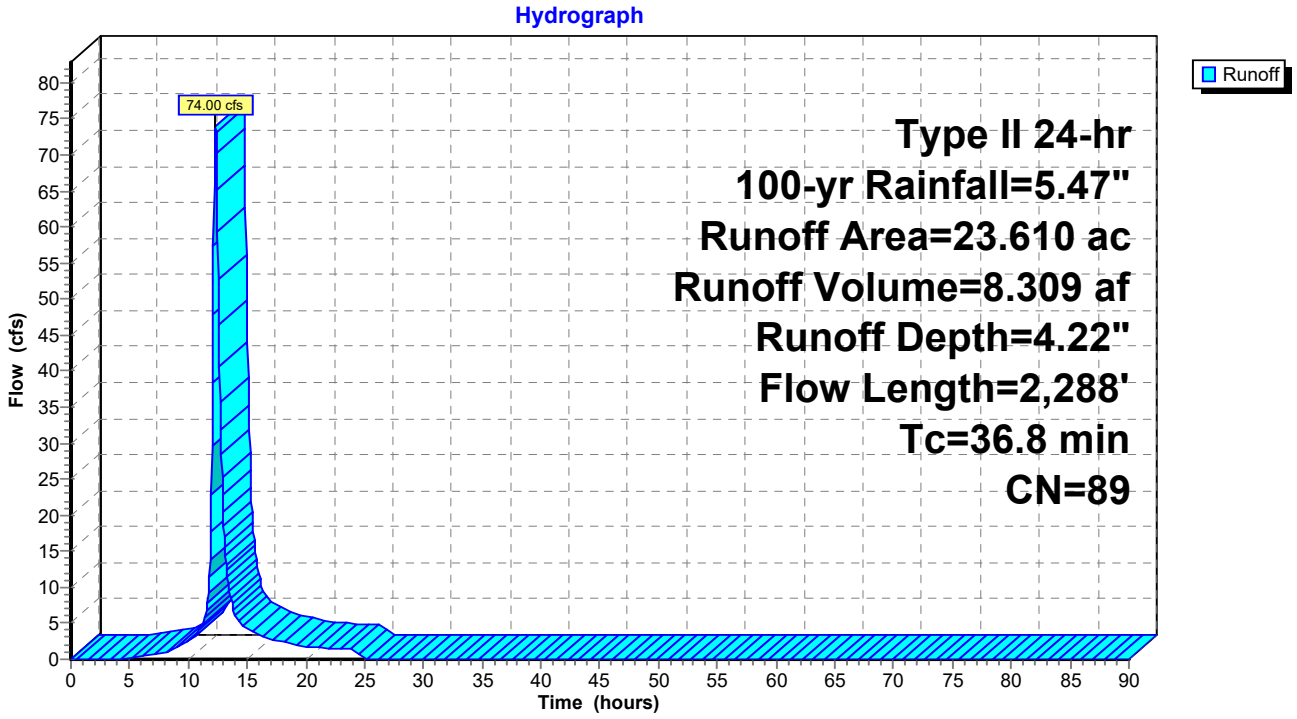
Runoff = 74.00 cfs @ 12.31 hrs, Volume= 8.309 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.47"

Area (ac)	CN	Description
23.610	89	Row crops, straight row, Good, HSG D
23.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.0223	0.33		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
31.7	2,188	0.0163	1.15		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.8	2,288	Total			

Subcatchment 2S: EX Watershed B



Summary for Subcatchment 3S: EX Watershed C

Runoff = 54.78 cfs @ 12.20 hrs, Volume= 5.043 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.47"

Area (ac)	CN	Description
14.330	89	Row crops, straight row, Good, HSG D
14.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0152	0.28		**Sheet Flow,** Cultivated: Residue<=20% n= 0.060 P2= 2.50"
21.0	1,626	0.0206	1.29		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.9	1,726	Total			

Subcatchment 3S: EX Watershed C

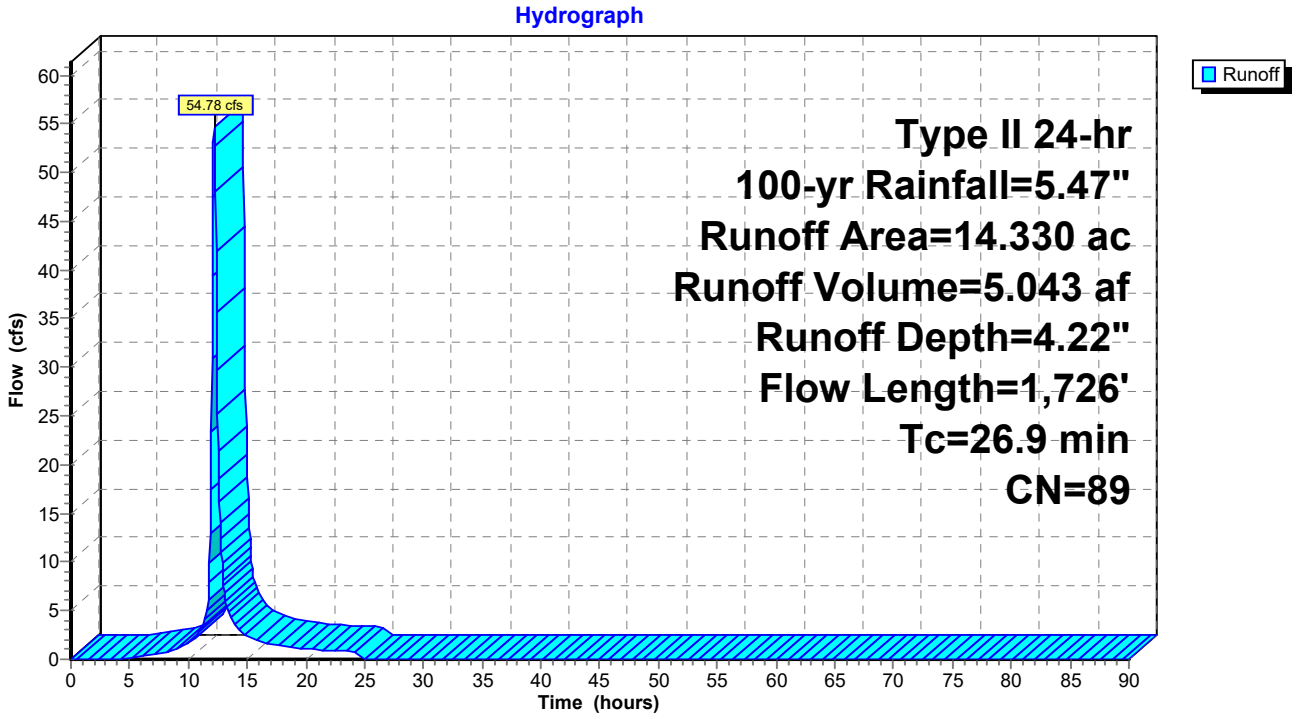


Exhibit 3 – Post-Developed Tributary Map

LEGEND

- EXISTING SITE BOUNDARY
- EXISTING PROPERTY LINE
- EXISTING RIGHT-OF-WAY
- TIME OF CONCENTRATION PATH
- CHANGE IN SURFACE FLOW CONDITIONS
- 940 EXISTING INDEX CONTOUR
- 942 EXISTING INTERMEDIATE CONTOUR
- PROPOSED WATERSHED BOUNDARY
- 940 PROPOSED INDEX CONTOUR
- 942 PROPOSED INTERMEDIATE CONTOUR

PROPOSED WATERSHED SUMMARY

WATERSHED	AREA (AC)	CN	TC (MIN.)
A	26.48	82	29.6
B	23.21	82	28.1
C	16.41	82	26.5

PROPOSED PEAK FLOW SUMMARY

STORM	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
WATERSHED	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)
A	16.57	23.79	34.67	44.15	57.52	68.93	80.89
B	15.04	21.57	31.43	40.09	52.23	62.58	73.42
C	11.05	15.85	23.07	29.36	38.23	45.79	53.72

No.	REVISIONS	DATE	BY

Kimley»Horn

© 2025 KIMLEY-HORN AND ASSOCIATES, INC.
7965 N. HIGH STREET, SUITE 200,
COLUMBUS, OH 43235
PHONE: 614-540-6939
WWW.KIMLEY-HORN.COM

SCALE: AS NOTED
DESIGNED BY: NSS
DRAWN BY: JDW
CHECKED BY: NSS

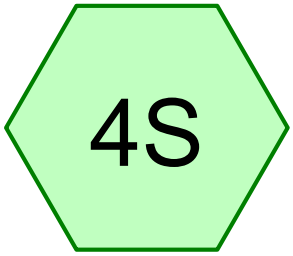
INSERT CLIENT LOGO HERE

POST-DEVELOPMENT TRIBUTARY MAP

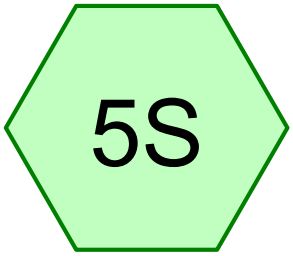
PRELIMINARY ENGINEERING PLAN
FOR
AVONDALE
STATE ROUTE 736
PLAIN CITY, OHIO 43064

ORIGINAL ISSUE: 2/20/2025
KHA PROJECT NO. 190363000
SHEET NUMBER
2

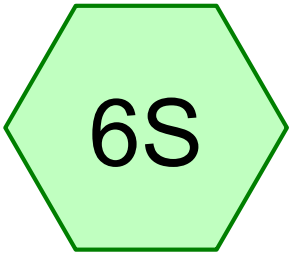
Exhibit 4 – Post-Developed Release Rates



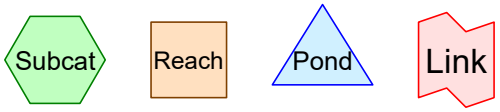
PROP Watershed A



PROP Watershed B



PROP Watershed C



Routing Diagram for Prelim Model
Prepared by Kimley-Horn & Associates, Printed 2/20/2025

Summary for Subcatchment 4S: PROP Watershed A

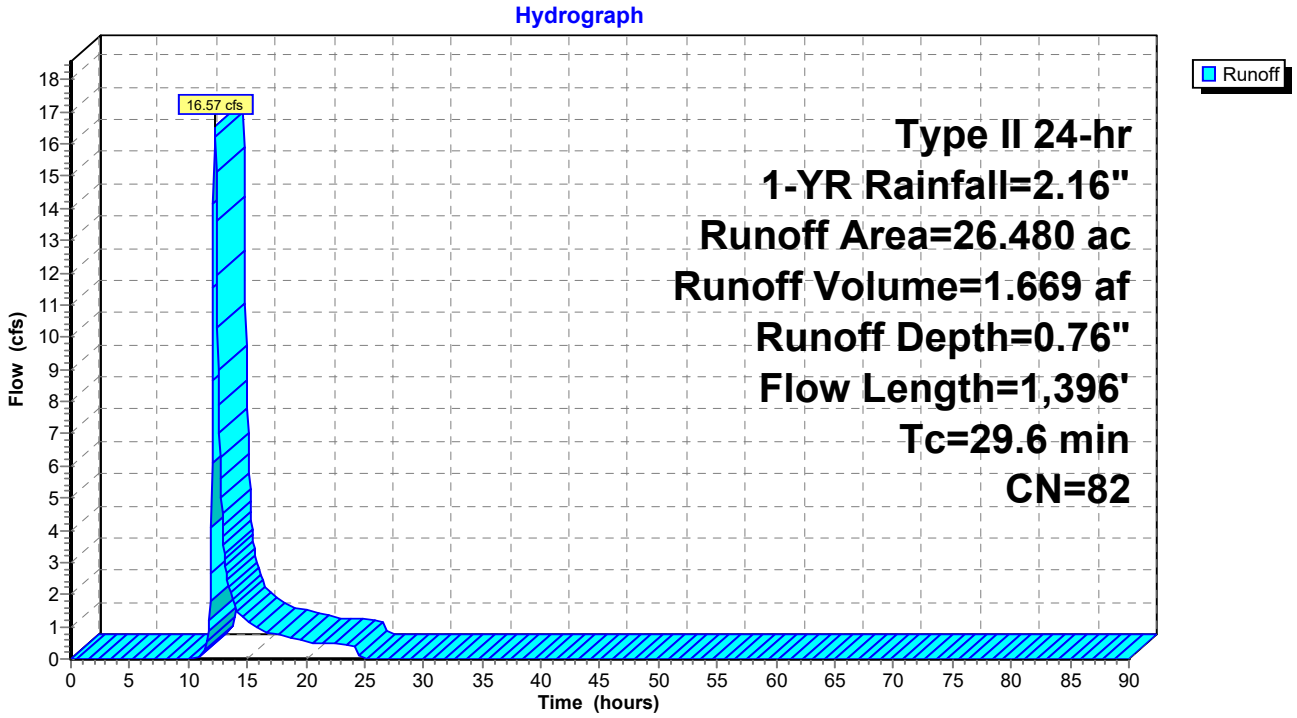
Runoff = 16.57 cfs @ 12.26 hrs, Volume= 1.669 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.16"

Area (ac)	CN	Description
26.480	82	2 acre lots, 12% imp, HSG D
23.302		88.00% Pervious Area
3.178		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	100	0.0056	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
11.2	1,296	0.0164	1.92		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
29.6	1,396	Total			

Subcatchment 4S: PROP Watershed A



Summary for Subcatchment 5S: PROP Watershed B

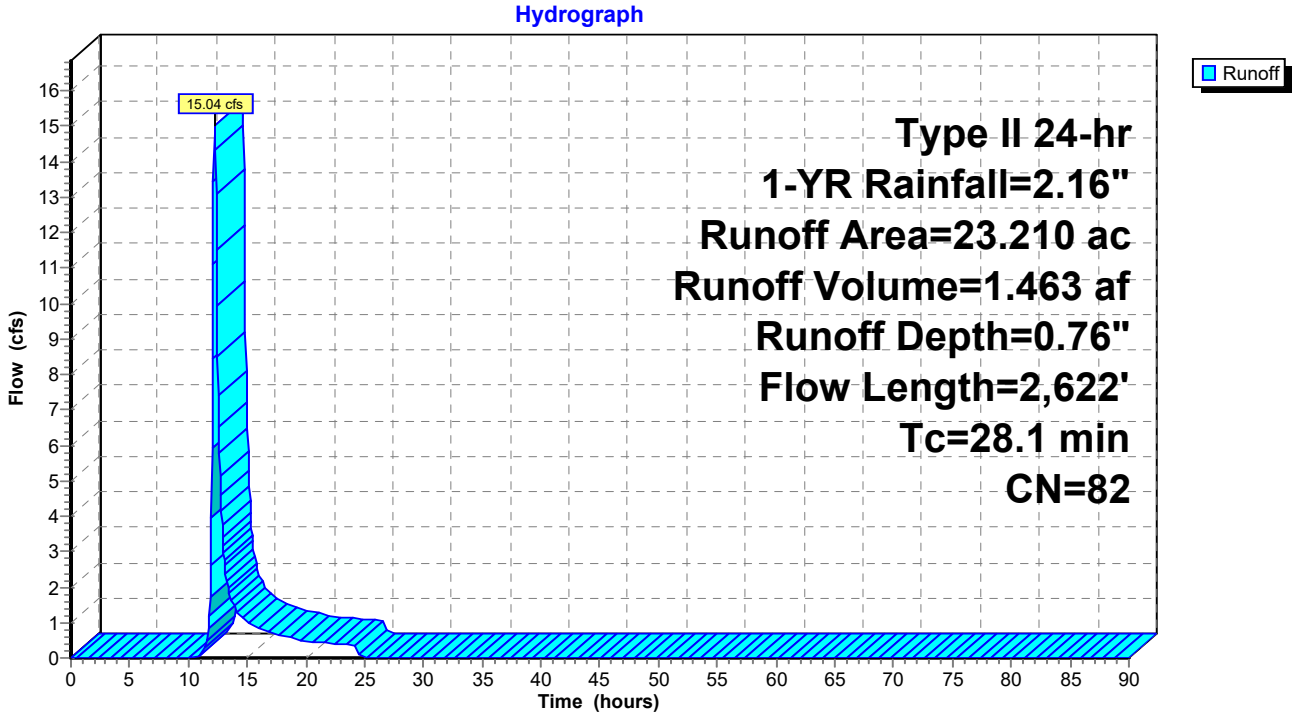
Runoff = 15.04 cfs @ 12.24 hrs, Volume= 1.463 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.16"

Area (ac)	CN	Description
23.210	82	2 acre lots, 12% imp, HSG D
20.425		88.00% Pervious Area
2.785		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0223	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
10.9	755	0.0059	1.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
4.0	1,352	0.0075	5.58	9.86	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Corrugated PP, smooth interior
2.6	415	0.0310	2.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	2,622	Total			

Subcatchment 5S: PROP Watershed B



Summary for Subcatchment 6S: PROP Watershed C

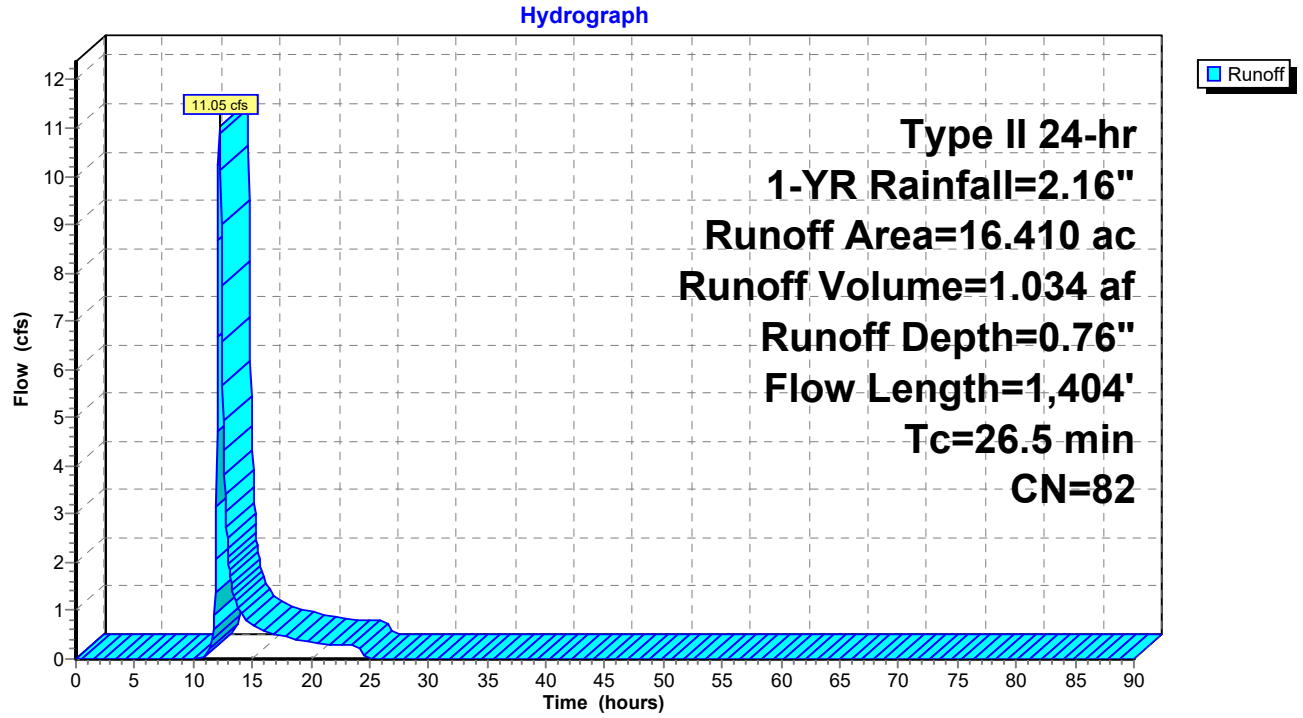
Runoff = 11.05 cfs @ 12.22 hrs, Volume= 1.034 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.16"

Area (ac)	CN	Description
16.410	82	2 acre lots, 12% imp, HSG D
14.441		88.00% Pervious Area
1.969		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0418	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
18.2	1,304	0.0177	1.20		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.5	1,404	Total			

Subcatchment 6S: PROP Watershed C



Summary for Subcatchment 4S: PROP Watershed A

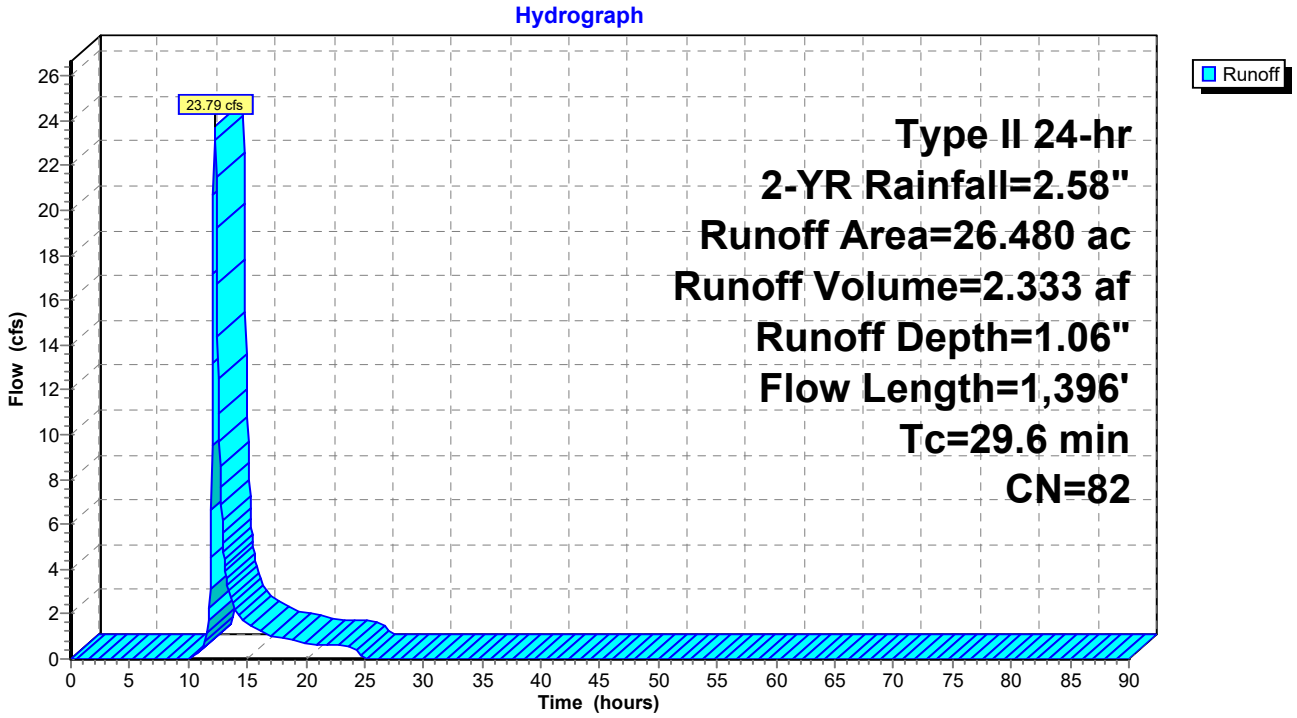
Runoff = 23.79 cfs @ 12.25 hrs, Volume= 2.333 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=2.58"

Area (ac)	CN	Description
26.480	82	2 acre lots, 12% imp, HSG D
23.302		88.00% Pervious Area
3.178		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	100	0.0056	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
11.2	1,296	0.0164	1.92		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
29.6	1,396	Total			

Subcatchment 4S: PROP Watershed A



Summary for Subcatchment 5S: PROP Watershed B

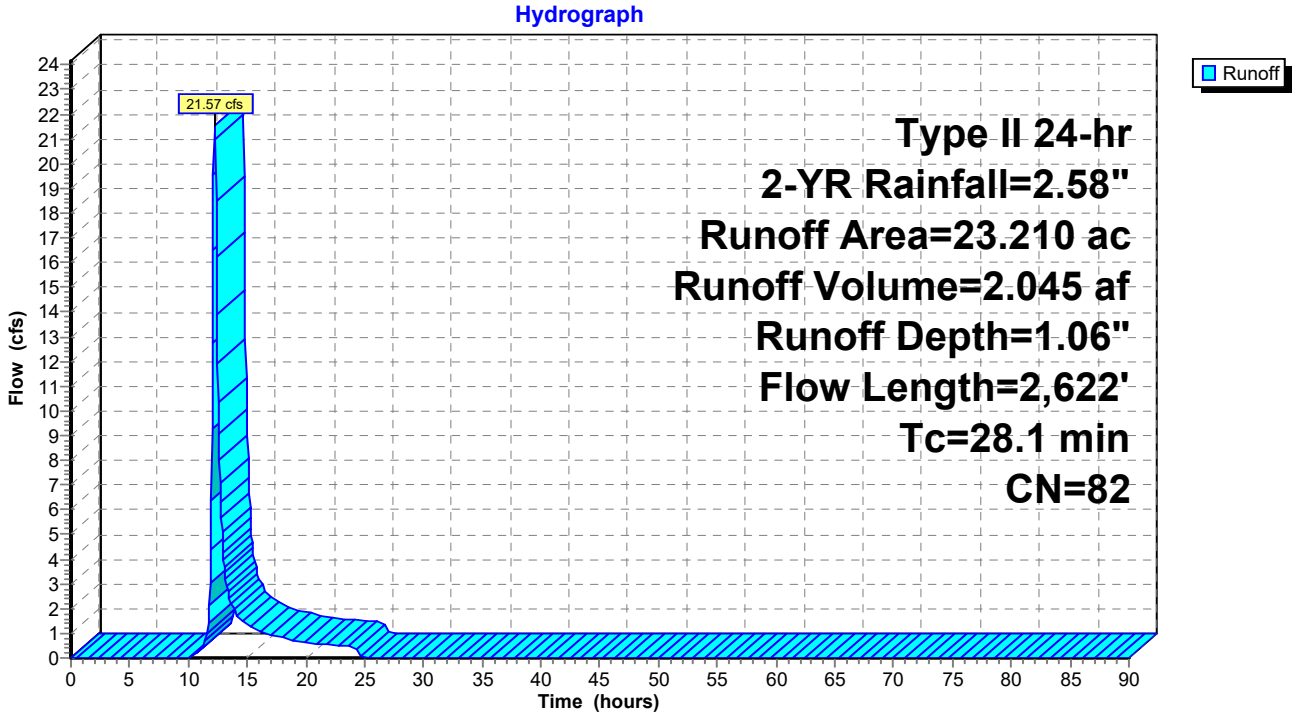
Runoff = 21.57 cfs @ 12.23 hrs, Volume= 2.045 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=2.58"

Area (ac)	CN	Description
23.210	82	2 acre lots, 12% imp, HSG D
20.425		88.00% Pervious Area
2.785		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0223	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
10.9	755	0.0059	1.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
4.0	1,352	0.0075	5.58	9.86	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Corrugated PP, smooth interior
2.6	415	0.0310	2.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	2,622	Total			

Subcatchment 5S: PROP Watershed B



Summary for Subcatchment 6S: PROP Watershed C

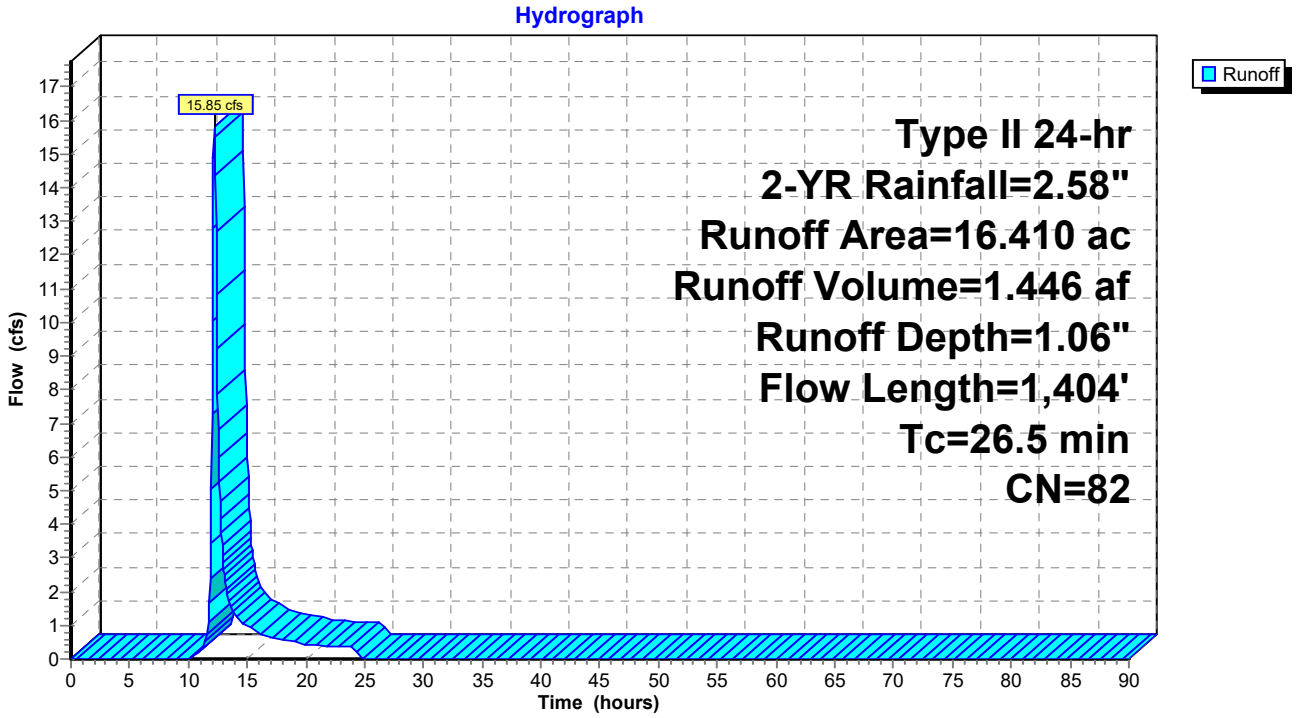
Runoff = 15.85 cfs @ 12.21 hrs, Volume= 1.446 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=2.58"

Area (ac)	CN	Description
16.410	82	2 acre lots, 12% imp, HSG D
14.441		88.00% Pervious Area
1.969		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0418	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
18.2	1,304	0.0177	1.20		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.5	1,404	Total			

Subcatchment 6S: PROP Watershed C



Summary for Subcatchment 4S: PROP Watershed A

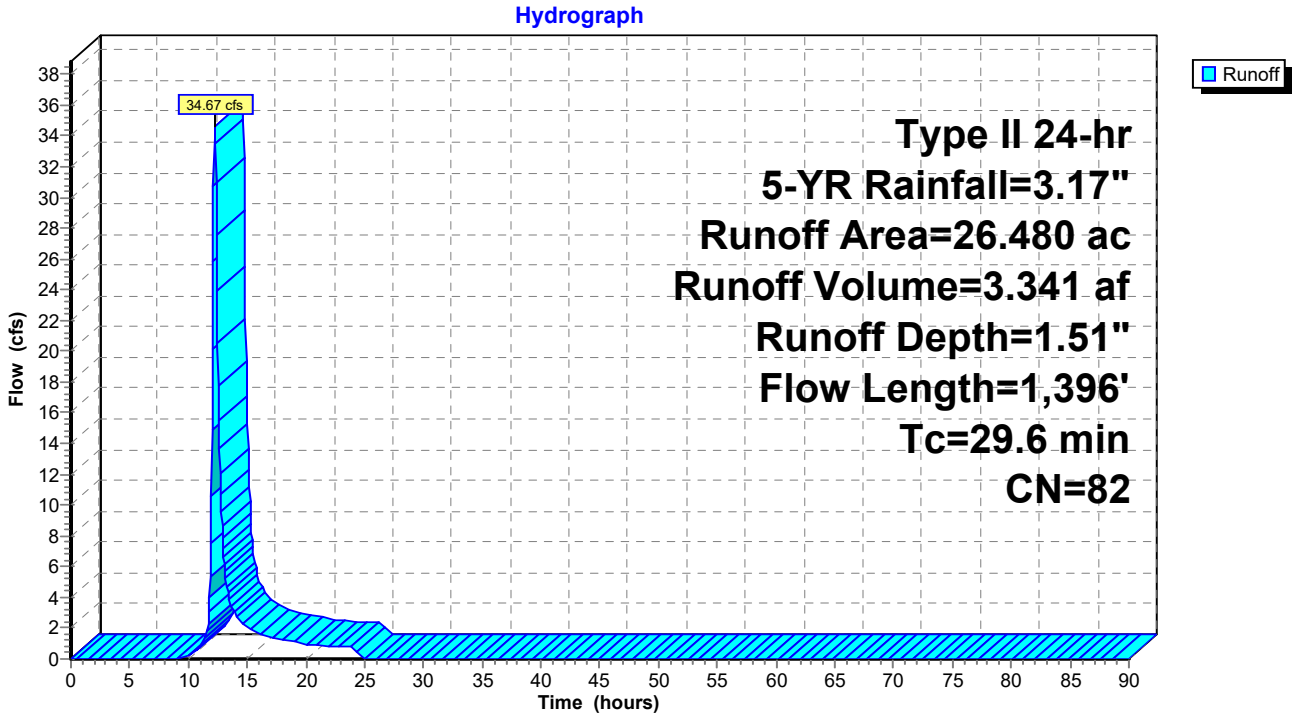
Runoff = 34.67 cfs @ 12.25 hrs, Volume= 3.341 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-YR Rainfall=3.17"

Area (ac)	CN	Description
26.480	82	2 acre lots, 12% imp, HSG D
23.302		88.00% Pervious Area
3.178		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	100	0.0056	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
11.2	1,296	0.0164	1.92		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
29.6	1,396	Total			

Subcatchment 4S: PROP Watershed A



Summary for Subcatchment 5S: PROP Watershed B

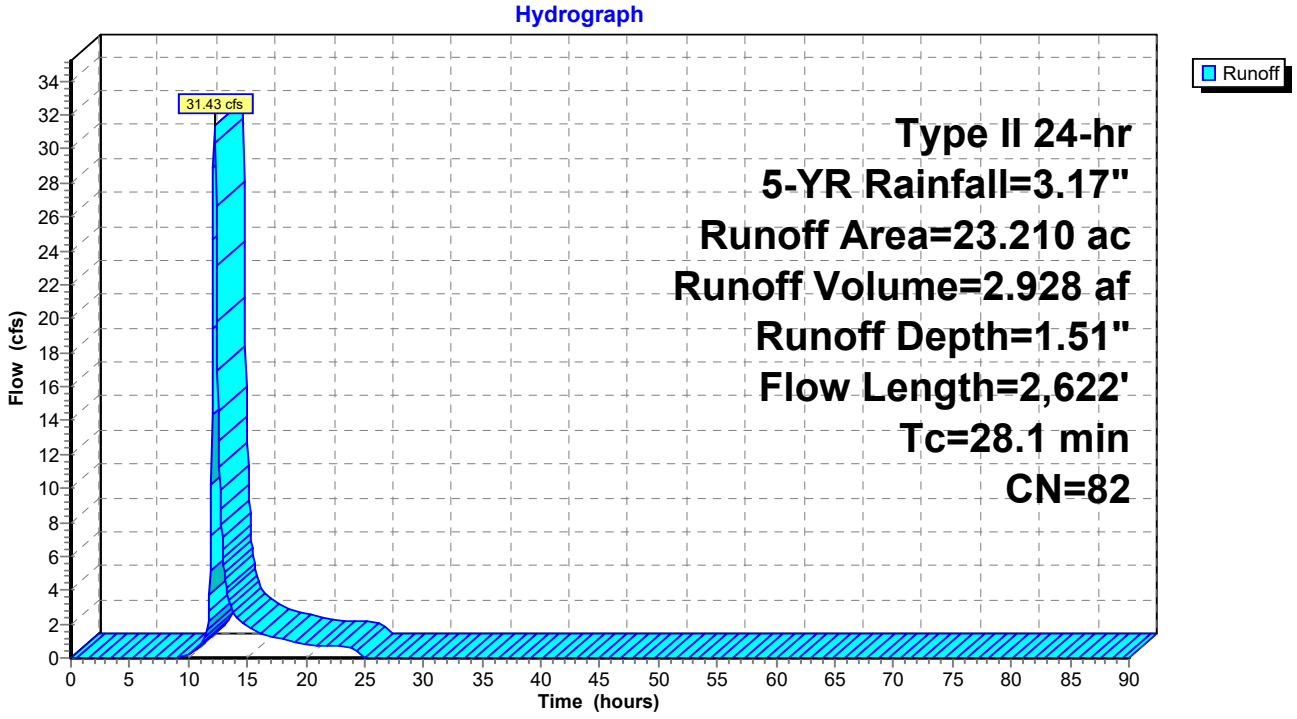
Runoff = 31.43 cfs @ 12.23 hrs, Volume= 2.928 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-YR Rainfall=3.17"

Area (ac)	CN	Description
23.210	82	2 acre lots, 12% imp, HSG D
20.425		88.00% Pervious Area
2.785		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0223	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
10.9	755	0.0059	1.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
4.0	1,352	0.0075	5.58	9.86	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Corrugated PP, smooth interior
2.6	415	0.0310	2.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	2,622	Total			

Subcatchment 5S: PROP Watershed B



Summary for Subcatchment 6S: PROP Watershed C

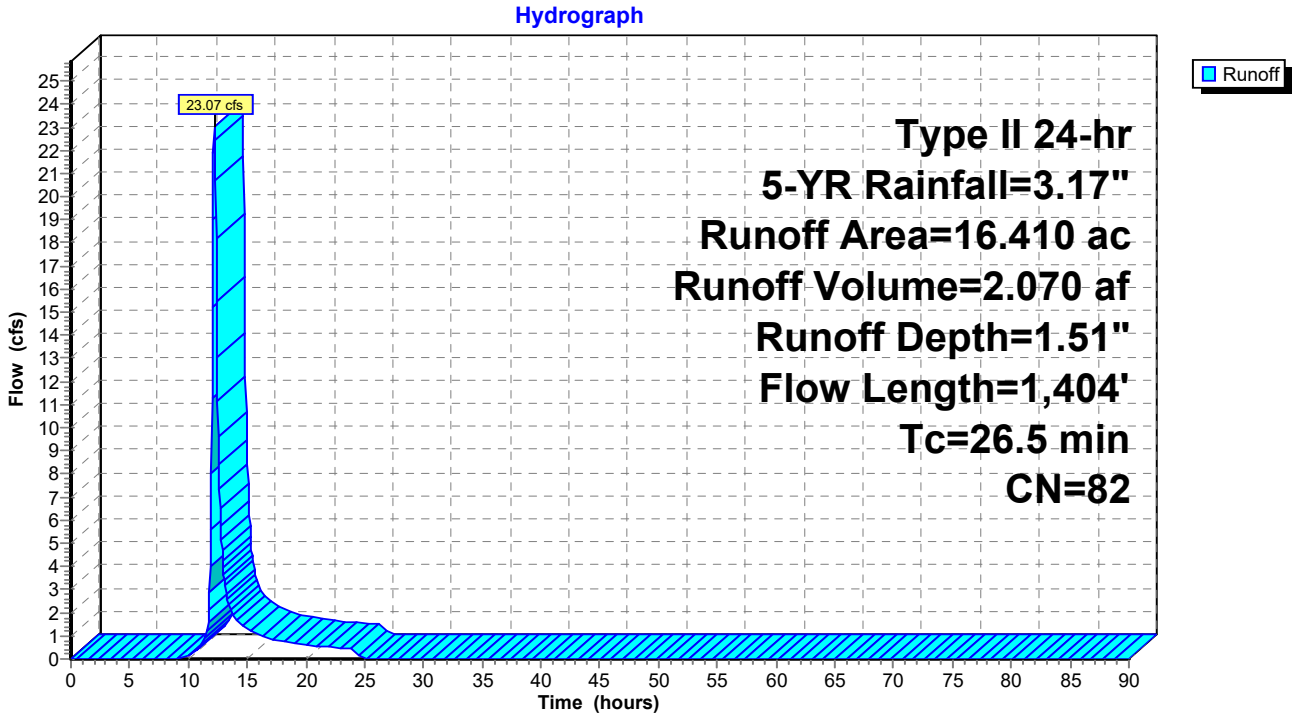
Runoff = 23.07 cfs @ 12.21 hrs, Volume= 2.070 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-YR Rainfall=3.17"

Area (ac)	CN	Description
16.410	82	2 acre lots, 12% imp, HSG D
14.441		88.00% Pervious Area
1.969		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0418	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
18.2	1,304	0.0177	1.20		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.5	1,404	Total			

Subcatchment 6S: PROP Watershed C



Summary for Subcatchment 4S: PROP Watershed A

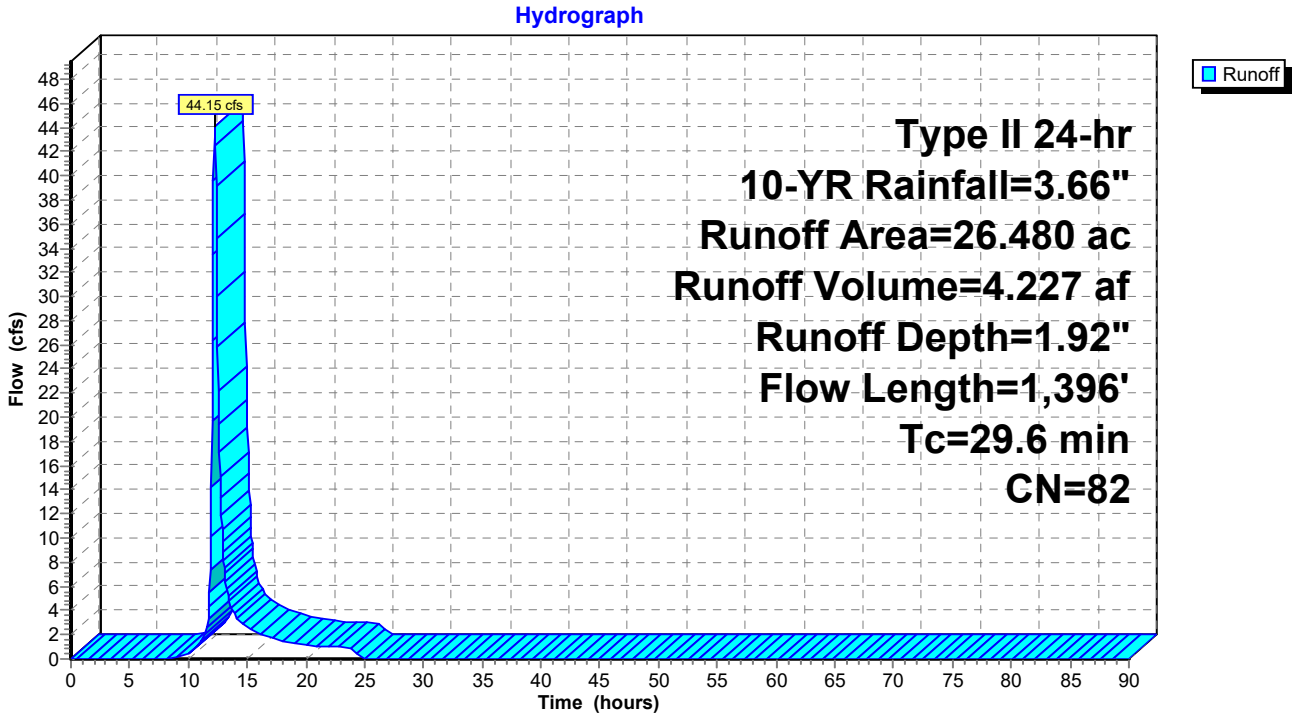
Runoff = 44.15 cfs @ 12.24 hrs, Volume= 4.227 af, Depth= 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.66"

Area (ac)	CN	Description
26.480	82	2 acre lots, 12% imp, HSG D
23.302		88.00% Pervious Area
3.178		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	100	0.0056	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
11.2	1,296	0.0164	1.92		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
29.6	1,396	Total			

Subcatchment 4S: PROP Watershed A



Summary for Subcatchment 5S: PROP Watershed B

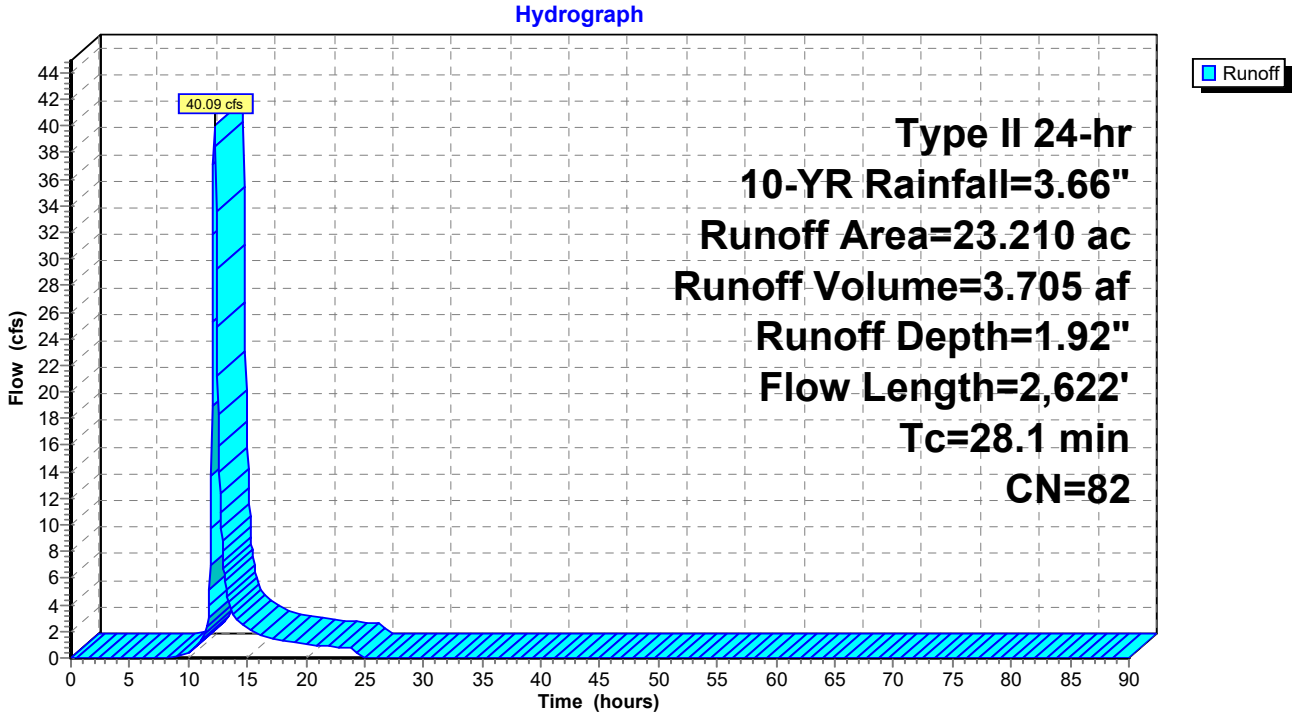
Runoff = 40.09 cfs @ 12.22 hrs, Volume= 3.705 af, Depth= 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.66"

Area (ac)	CN	Description
23.210	82	2 acre lots, 12% imp, HSG D
20.425		88.00% Pervious Area
2.785		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0223	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
10.9	755	0.0059	1.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
4.0	1,352	0.0075	5.58	9.86	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Corrugated PP, smooth interior
2.6	415	0.0310	2.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	2,622	Total			

Subcatchment 5S: PROP Watershed B



Summary for Subcatchment 6S: PROP Watershed C

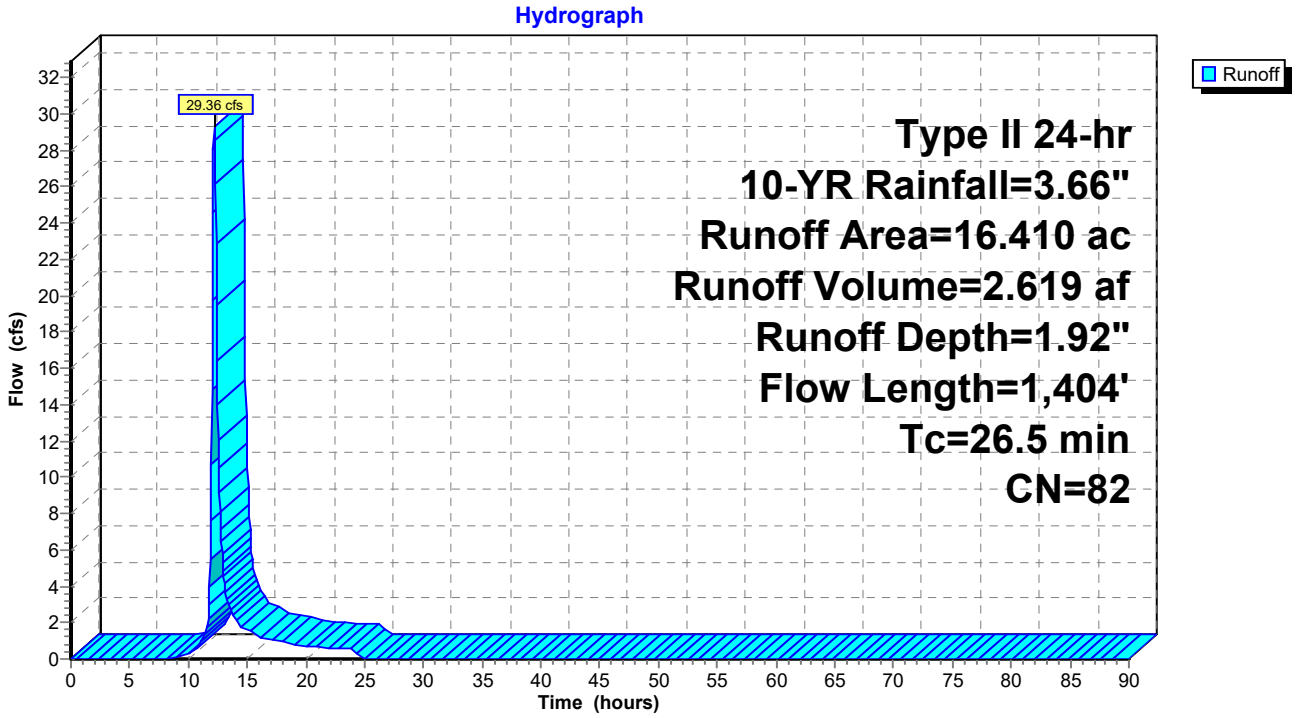
Runoff = 29.36 cfs @ 12.21 hrs, Volume= 2.619 af, Depth= 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.66"

Area (ac)	CN	Description
16.410	82	2 acre lots, 12% imp, HSG D
14.441		88.00% Pervious Area
1.969		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0418	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
18.2	1,304	0.0177	1.20		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.5	1,404	Total			

Subcatchment 6S: PROP Watershed C



Summary for Subcatchment 4S: PROP Watershed A

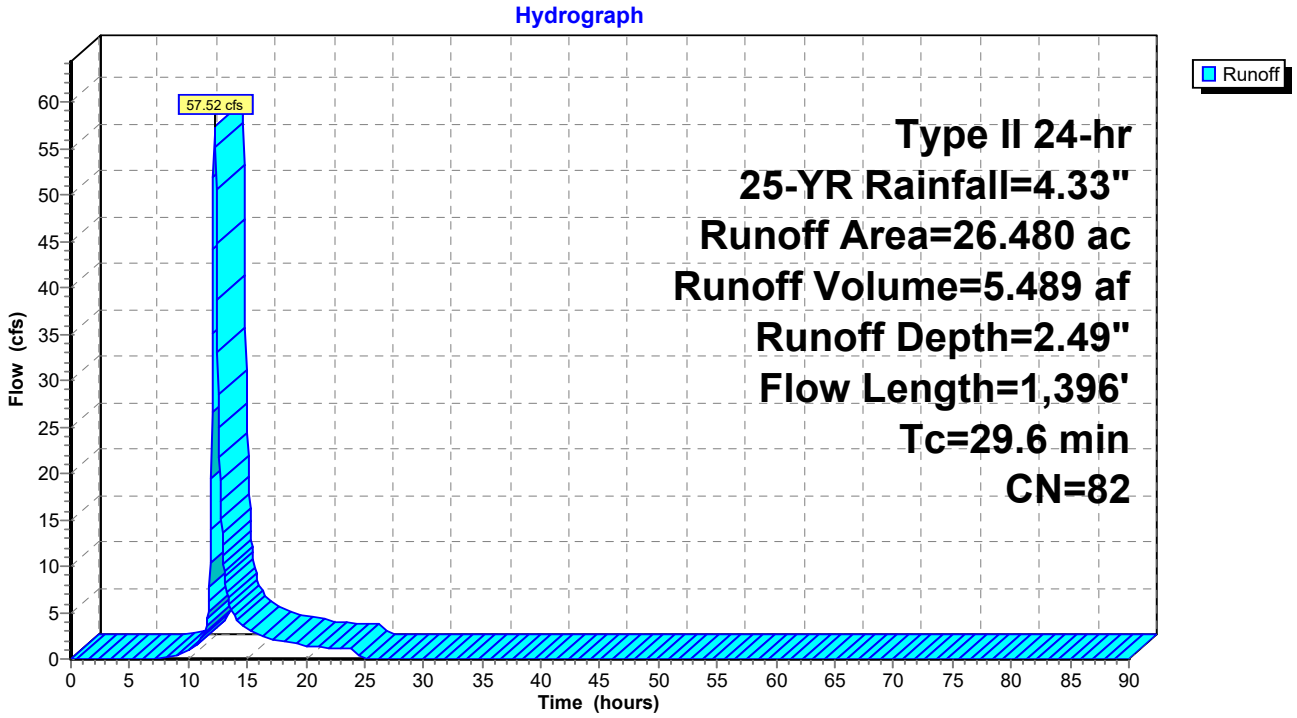
Runoff = 57.52 cfs @ 12.24 hrs, Volume= 5.489 af, Depth= 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-YR Rainfall=4.33"

Area (ac)	CN	Description
26.480	82	2 acre lots, 12% imp, HSG D
23.302		88.00% Pervious Area
3.178		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	100	0.0056	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
11.2	1,296	0.0164	1.92		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
29.6	1,396	Total			

Subcatchment 4S: PROP Watershed A



Summary for Subcatchment 5S: PROP Watershed B

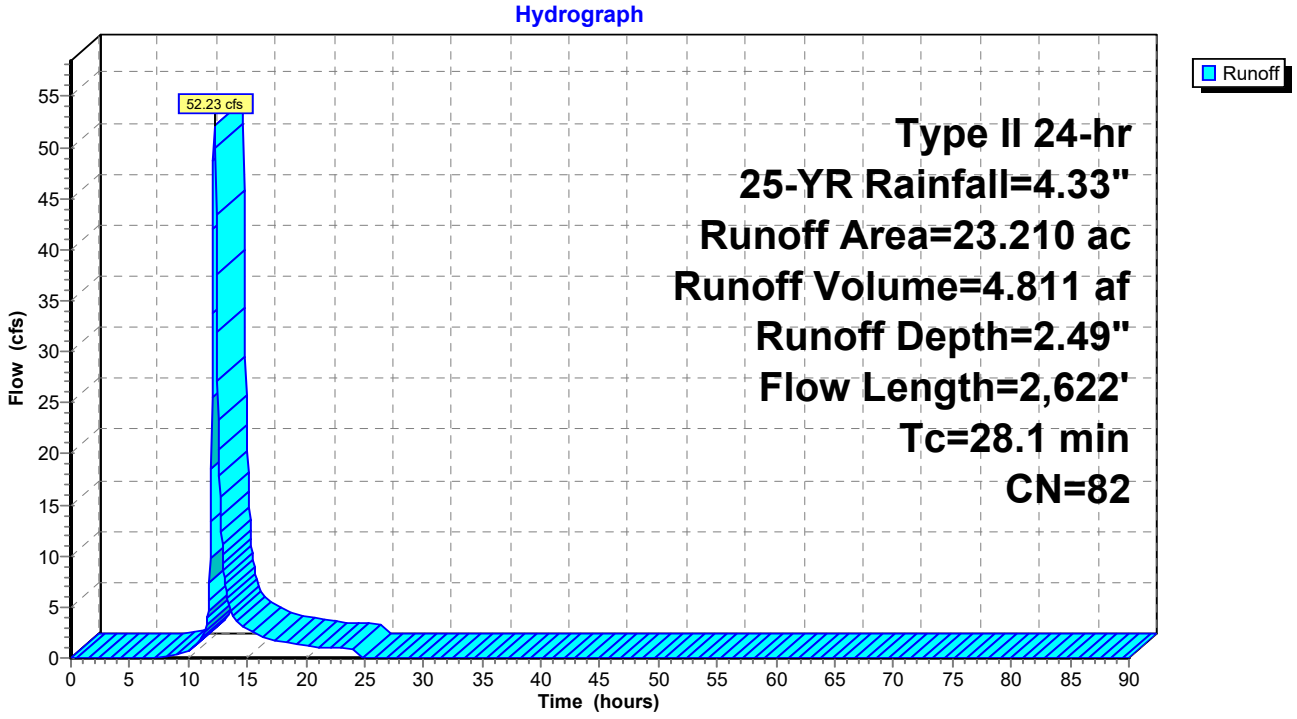
Runoff = 52.23 cfs @ 12.22 hrs, Volume= 4.811 af, Depth= 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-YR Rainfall=4.33"

Area (ac)	CN	Description
23.210	82	2 acre lots, 12% imp, HSG D
20.425		88.00% Pervious Area
2.785		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0223	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
10.9	755	0.0059	1.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
4.0	1,352	0.0075	5.58	9.86	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Corrugated PP, smooth interior
2.6	415	0.0310	2.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	2,622	Total			

Subcatchment 5S: PROP Watershed B



Summary for Subcatchment 6S: PROP Watershed C

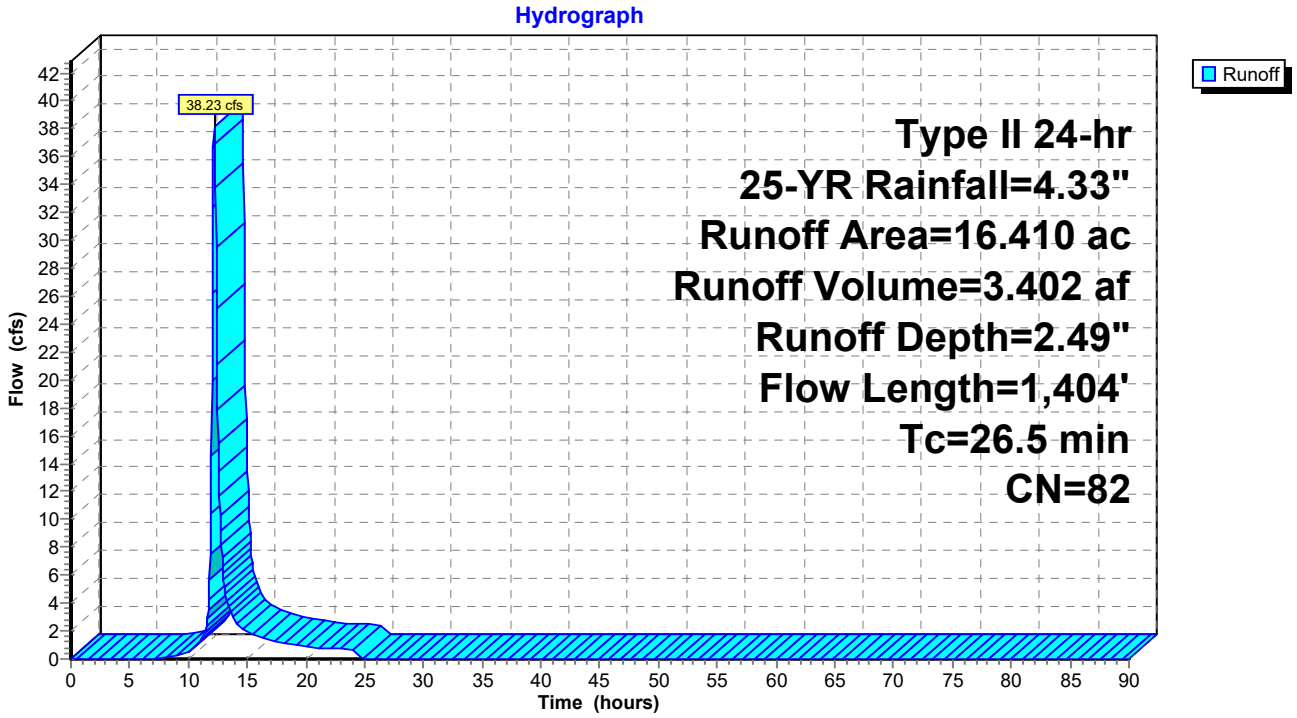
Runoff = 38.23 cfs @ 12.20 hrs, Volume= 3.402 af, Depth= 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-YR Rainfall=4.33"

Area (ac)	CN	Description
16.410	82	2 acre lots, 12% imp, HSG D
14.441		88.00% Pervious Area
1.969		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0418	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
18.2	1,304	0.0177	1.20		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.5	1,404	Total			

Subcatchment 6S: PROP Watershed C



Summary for Subcatchment 4S: PROP Watershed A

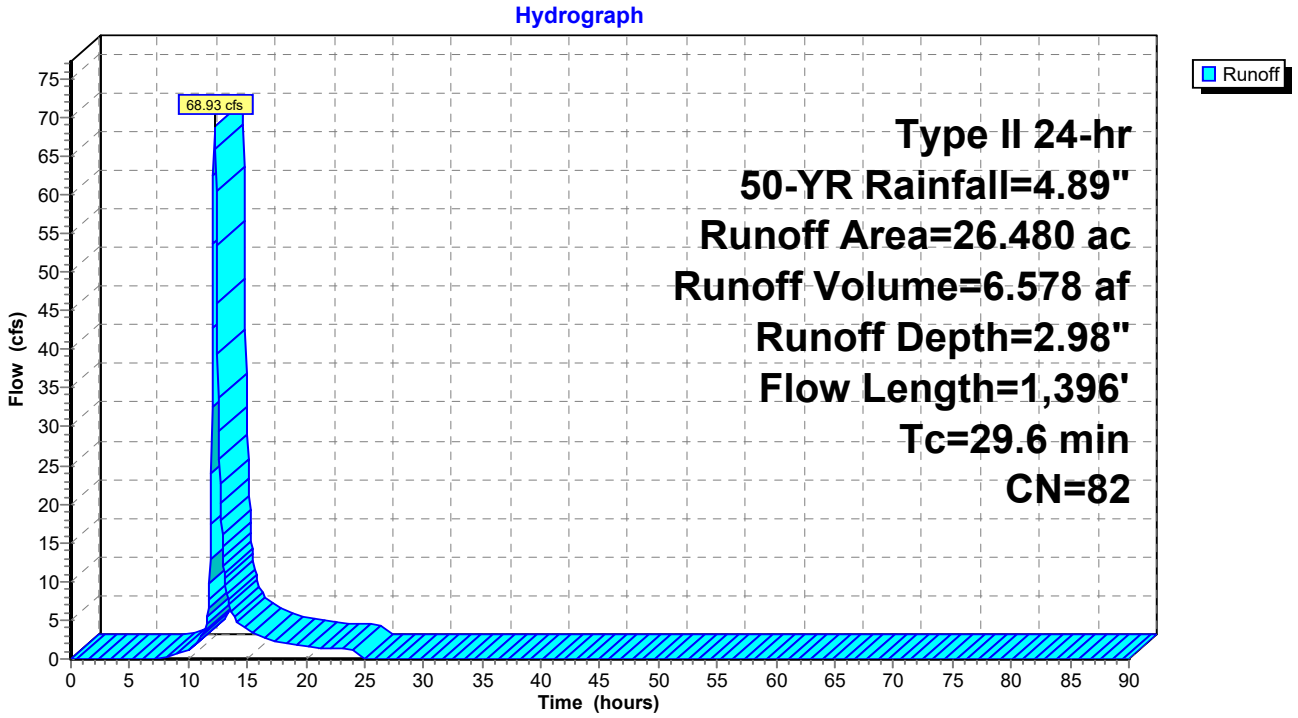
Runoff = 68.93 cfs @ 12.24 hrs, Volume= 6.578 af, Depth= 2.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-YR Rainfall=4.89"

Area (ac)	CN	Description
26.480	82	2 acre lots, 12% imp, HSG D
23.302		88.00% Pervious Area
3.178		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	100	0.0056	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
11.2	1,296	0.0164	1.92		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
29.6	1,396	Total			

Subcatchment 4S: PROP Watershed A



Summary for Subcatchment 5S: PROP Watershed B

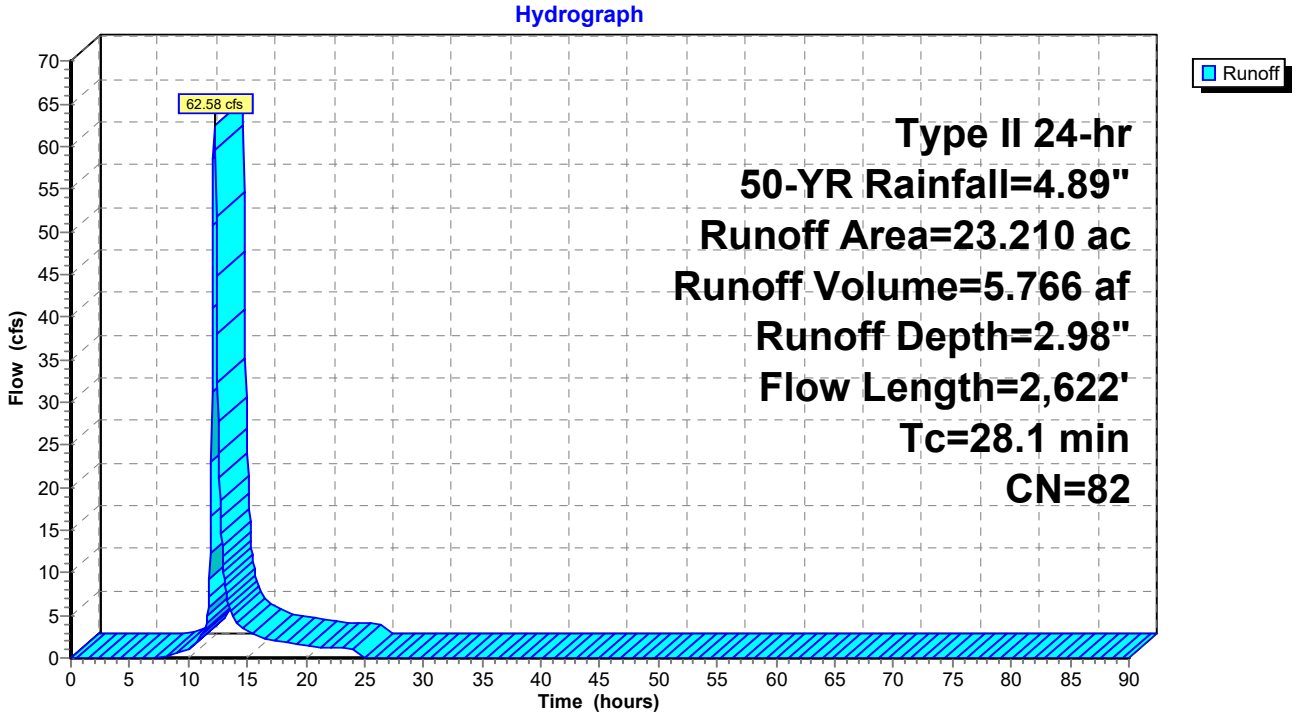
Runoff = 62.58 cfs @ 12.22 hrs, Volume= 5.766 af, Depth= 2.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-YR Rainfall=4.89"

Area (ac)	CN	Description
23.210	82	2 acre lots, 12% imp, HSG D
20.425		88.00% Pervious Area
2.785		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0223	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
10.9	755	0.0059	1.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
4.0	1,352	0.0075	5.58	9.86	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Corrugated PP, smooth interior
2.6	415	0.0310	2.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	2,622	Total			

Subcatchment 5S: PROP Watershed B



Summary for Subcatchment 6S: PROP Watershed C

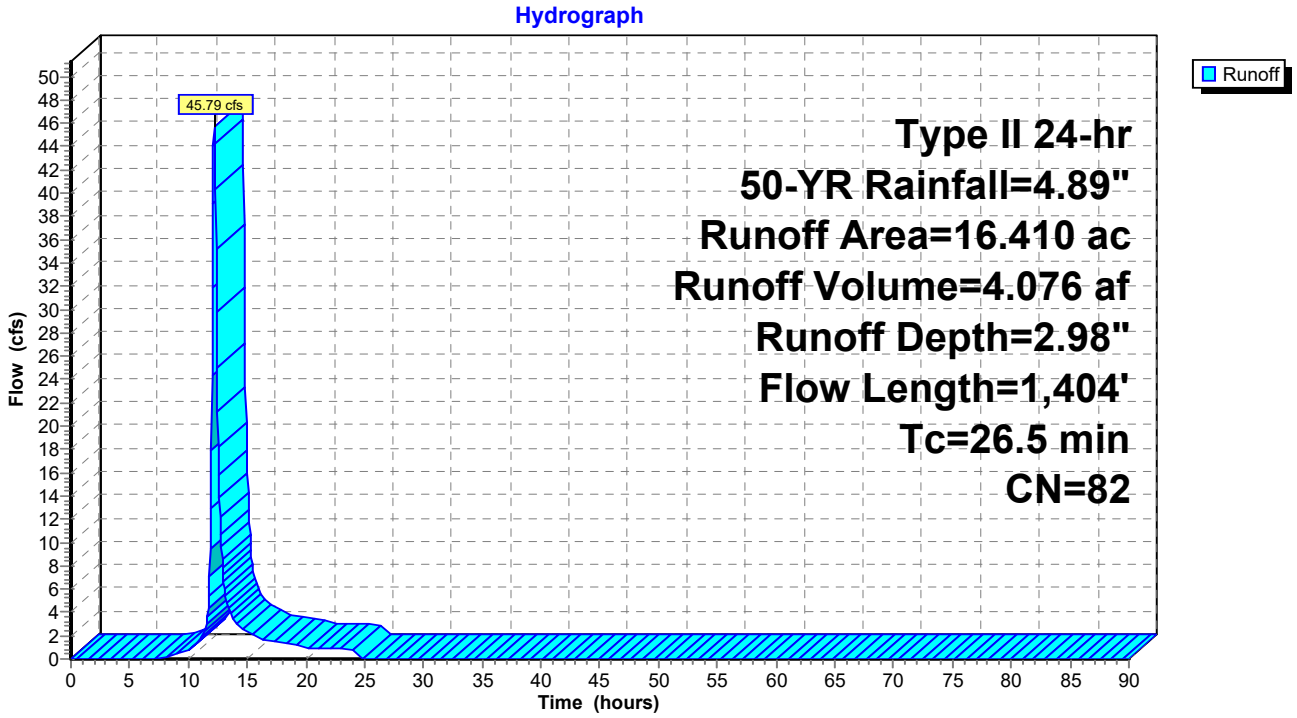
Runoff = 45.79 cfs @ 12.20 hrs, Volume= 4.076 af, Depth= 2.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-YR Rainfall=4.89"

Area (ac)	CN	Description
16.410	82	2 acre lots, 12% imp, HSG D
14.441		88.00% Pervious Area
1.969		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0418	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
18.2	1,304	0.0177	1.20		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.5	1,404	Total			

Subcatchment 6S: PROP Watershed C



Summary for Subcatchment 4S: PROP Watershed A

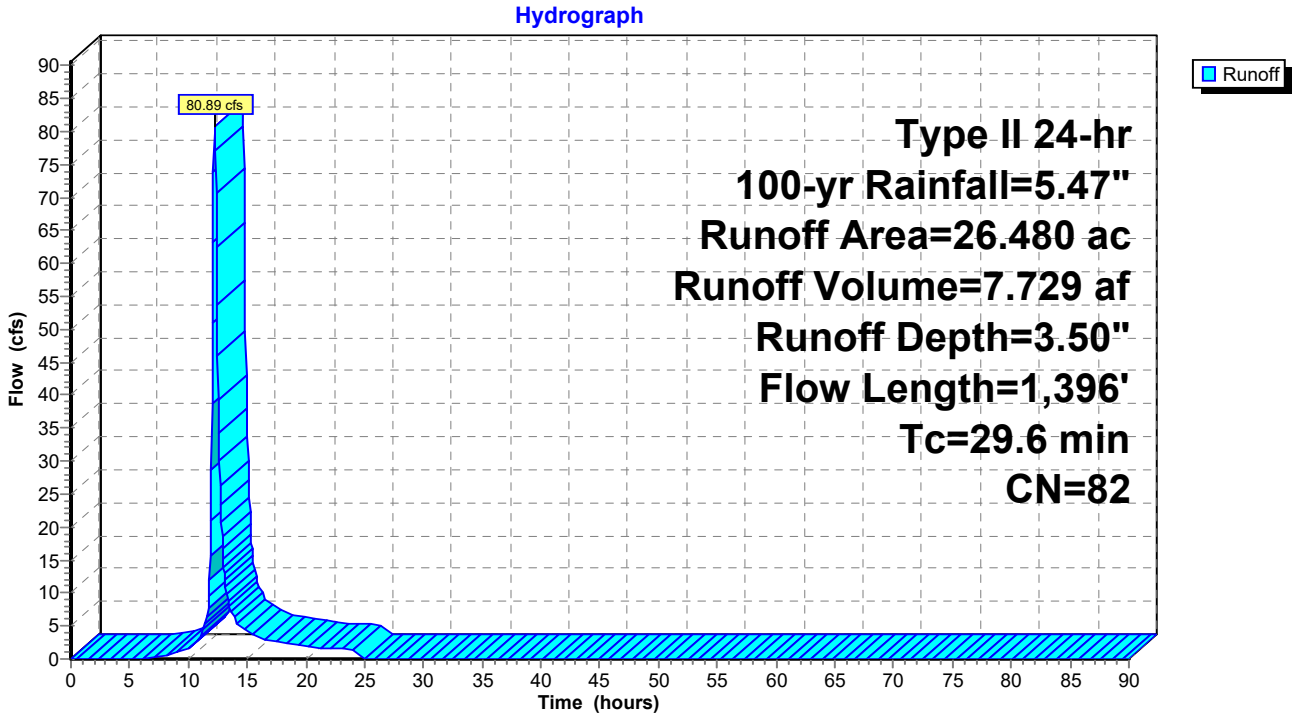
Runoff = 80.89 cfs @ 12.23 hrs, Volume= 7.729 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.47"

Area (ac)	CN	Description
26.480	82	2 acre lots, 12% imp, HSG D
23.302		88.00% Pervious Area
3.178		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	100	0.0056	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
11.2	1,296	0.0164	1.92		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
29.6	1,396	Total			

Subcatchment 4S: PROP Watershed A



Summary for Subcatchment 5S: PROP Watershed B

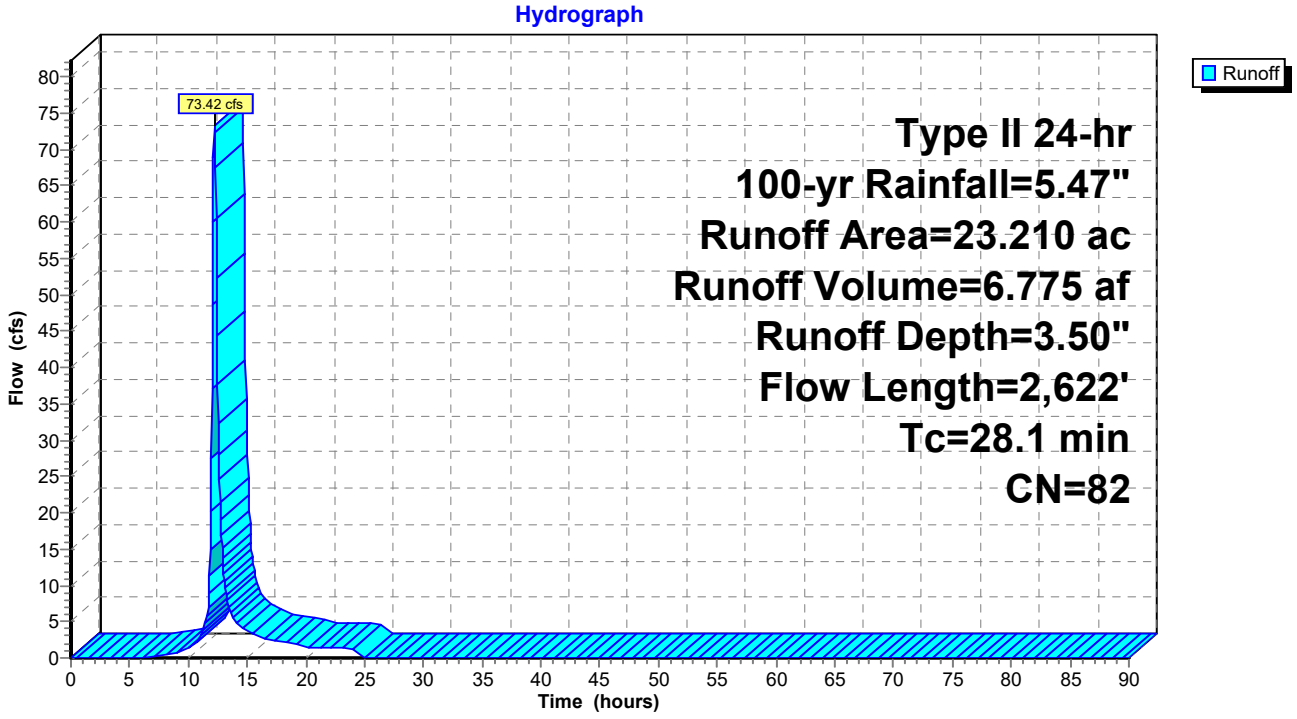
Runoff = 73.42 cfs @ 12.22 hrs, Volume= 6.775 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.47"

Area (ac)	CN	Description
23.210	82	2 acre lots, 12% imp, HSG D
20.425		88.00% Pervious Area
2.785		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.0223	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
10.9	755	0.0059	1.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
4.0	1,352	0.0075	5.58	9.86	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012 Corrugated PP, smooth interior
2.6	415	0.0310	2.64		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
28.1	2,622	Total			

Subcatchment 5S: PROP Watershed B



Summary for Subcatchment 6S: PROP Watershed C

Runoff = 53.72 cfs @ 12.20 hrs, Volume= 4.790 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-90.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.47"

Area (ac)	CN	Description
16.410	82	2 acre lots, 12% imp, HSG D
14.441		88.00% Pervious Area
1.969		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0418	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.50"
18.2	1,304	0.0177	1.20		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
26.5	1,404	Total			

Subcatchment 6S: PROP Watershed C