



PRELIMINARY STORMWATER MANAGEMENT REPORT – HOMESTEAD AT SCOTTS FARM

Jerome Township
Union County, Ohio

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1. PROJECT DESCRIPTION

The proposed development is located on the south side of Brock Road between US Route 23 and Glacier Ridge Metro Park in Union County, Ohio. The development is bordered on the north by single-family homes and Brock Road, on the south and west by US Route 23, and east by a combination of existing agricultural land, woods and single-family homes. The development site consists of three existing drainage areas that generally flow south across the site. A ridge in the middle of the site separates the northwestern and southeastern portions, with the northwestern portion ultimately tributary to Big Darby Creek and the southeastern portion ultimately tributary to the Scioto River.

The proposed development consists of 248 new detached single-family homes with public streets with associated stormwater, sanitary sewer and water utilities. Proposed stormwater basins to be built within the development will provide stormwater management and water quality treatment for the new development. Release from the stormwater basins will be to the existing ditches crossing the site. No improvements are planned offsite to the existing outlets.

The stormwater basins for the Homestead at Scotts Farm stormwater management will be sized to handle stormwater for the site and for the offsite pass through tributary. The basins will meet the current design requirements set forth by the Union County Technical Design Standards and the Ohio Protection Agency (EPA) General Permit OHC000005.

1.1. Pre-Development Conditions

The proposed Homestead at Scotts Farm development site is approximately 138.37 acres of undeveloped land used for agricultural purposes, comprised of row crops, brush, woods and grass. The site generally drains to the southeast. Existing soils are Types C/D and D with minimal slope towards the southern and western property lines and curve numbers in the low to mid-80s.

Three watersheds with three unique outlet points, exist on or flow through the site. Watershed A drains the northwestern portion of the site to the west property line via an existing ephemeral ditch., Watershed B drains the southern portion of the site to the southeastern corner via an existing ditch, and Watershed C drains the small eastern corner of the site. Both of these watersheds flow to an existing stream at the south corner of the site to an existing stream directly offsite. See Tables 1-3 for existing release rates and Exhibit 4 for the pre-development tributary area map.

Pre-Developed Watershed A Characteristics

Summary: Drains northwestern portion of the site. Flows into an existing ephemeral ditch tributary to Sugar Run , ultimately tributary to Big Darby Creek.

Outlet: Existing ephemeral ditch.

Area = 57.82 acres

Weighted Curve Number = 81

Time of Concentration = 97.8 minutes

Watershed A1 Offsite Pass-Through Characteristics

Area = 60.00 acres

Weighted Curve Number = 82

Time of Concentration = 97.8 minutes

Pre-Developed Watershed B Characteristics

Summary: Drains southern portion of the site. Flows into an existing stream tributary to North Fork Indian Run, ultimately tributary to the Scioto River.

Outlet: Existing ditch along southeast property line.

Area = 64.70 acres

Weighted Curve Number = 81

Time of Concentration = 54.5 minutes

Watershed B1 Offsite Pass-Through Characteristics

Area = 5.05 acres

Weighted Curve Number = 77

Time of Concentration = 54.5 minutes

Watershed B2 Offsite Pass-Through Characteristics

Area = 13.61 acres

Weighted Curve Number = 84

Time of Concentration = 30.8 minutes

Pre-Developed Watershed C Characteristics

Summary: Drains small eastern corner of the site. Flows offsite near the mid-eastern corner of the property to an existing stream.

Outlet: Existing stream that flows southeast through the Bishop property.

Area = 6.50 acres

Weighted Curve Number = 85

Time of Concentration = 17.0 minutes

1.2. Post-Development Conditions

The proposed Homestead at Scotts Farm development will consist of 248 new detached single-family homes. The post-developed stormwater management will be based on the requirements of the Union County Technical Design Standards. 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. Refer to Tables 1-3 below and Exhibit 2 for allowable release rates.

The critical storm was determined to be the 5-year based on the percent increase in total runoff volume due to development. Supporting calculations are shown below and in the Exhibit 2.

Critical Storm Calculation

1-Year Pre-Developed Runoff Volume = 8.24 AC-FT

1-Year Post-Developed Runoff Volume = 10.63 AC-FT

Volume % Increase = 28.9%

Critical Storm = 5-Year

Allowable Release Rates

Table 1: Storm Event Release Rates for Watershed A				
Storm Event	Onsite Pre-Developed Peak Discharge (CFS)	Offsite A1 (Pass-Through) Peak Discharge (CFS)	Allowable Post-Developed Release Rate Including Offsite Flows(CFS)	Actual Post-Developed Release Rate Including Offsite Flows (CFS)*
1-year	14.02	14.55	28.57	18.50
2-year	20.52	21.30	35.32	26.57
5-year	30.45	31.60	45.62	38.42
10-year	38.99	40.46	79.45	48.67
25-year	51.55	53.49	105.04	64.38
50-year	62.18	64.52	126.70	76.69
100-year	73.37	76.13	149.50	89.41

*All proposed release rates are preliminary and are subject to change due to final engineering. Release rate will not increase to a rate greater than allowable.

Table 2: Storm Event Release Rates for Watershed B

Storm Event	Onsite Pre-Developed Peak Discharge (CFS)	Offsite B1 (Pass-Through) Peak Discharge (CFS)	Offsite B2 (Pass-Through) Peak Discharge (CFS)	Allowable Post-Developed Release Rate (CFS)	Actual Post-Developed Release Rate Including Offsite Flows (CFS)*
1-year	28.65	1.33	9.72	39.70	10.83
2-year	41.80	2.08	13.54	42.19	14.97
5-year	61.88	3.29	19.22	47.87	24.02
10-year	79.10	4.35	24.01	107.46	32.54
25-year	104.42	5.94	30.96	141.32	42.57
50-year	125.80	7.31	36.76	169.87	50.21
100-year	148.29	8.76	42.81	199.86	57.93

*All proposed release rates are preliminary and are subject to change due to final engineering. Release rate will not increase to a rate greater than allowable.

Table 3: Storm Event Release Rates for Watershed C

Storm Event	Onsite Pre-Developed Peak Discharge (CFS)	Allowable Post-Developed Release Rate (CFS)	Actual Post-Developed Release Rate (CFS)*
1-year	7.17	7.17	1.54
2-year	9.80	7.17	3.84
5-year	13.67	7.17	7.03
10-year	16.91	16.91	8.32
25-year	21.57	21.57	9.58
50-year	25.44	25.44	10.16
100-year	29.47	29.47	10.66

*All proposed release rates are preliminary and are subject to change due to final engineering. Release rate will not increase to a rate greater than allowable.

2. DESIGN SUMMARY

The proposed basins for Homestead at Scotts Farm will be designed using HydroCAD software to accomplish the detention and water quality requirements for the development. 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 proposed Homestead at Scotts Farm Development will require onsite stormwater management for the development. Post-developed outlet design will maintain the same number of watersheds and release points. The stormwater management will be designed to meet the requirements of the Union County Technical Design Standards and the Ohio EPA General Permit OHC000005 for providing onsite detention and water quality treatment. The proposed stormwater management basins are designed to detain the post-developed release rate back to the 1-year pre-developed release rate up to the critical storm year and to detain the post-developed release rate for every year thereafter back to the same frequency storm pre-developed release rate. The proposed stormwater management system should not pose a threat to property and public safety downstream of the proposed development.

4. ENGINEERING NARRATIVE

The proposed Homestead at Scotts Farm Development will include 248 single-family homes and will require onsite stormwater management for the development. Post-developed outlet design will maintain the same number of watersheds and release points as pre-developed conditions.

Street A will be extended by others along the western property line and will include its own stormwater management. The street, which will be classified as a minor collector with an open ditch section, will service the site with a future connection to the Glacier Pointe Development.



Exhibit 1 – Pre-Development Release Rates



Homestead at Scotts Farm - Preliminary

Prepared by Kimley-Horn

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Watershed A Existing
Onsite



Watershed A1 Offsite



Watershed B Existing
Onsite



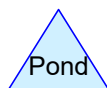
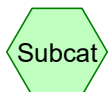
Watershed B1 Offsite



Watershed B2 Offsite



Watershed C Existing
Onsite Total



Routing Diagram for Homestead at Scotts Farm - Preliminary

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Homestead at Scotts Farm - Preliminary

Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 7S: Watershed A Existing Onsite

Runoff = 14.02 cfs @ 13.16 hrs, Volume= 3.445 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
0.420	98	Unconnected pavement, HSG D
28.720	85	Legumes, straight row, Good, HSG D
2.740	77	Woods, Good, HSG D
6.300	80	>75% Grass cover, Good, HSG D
19.640	77	Brush, Fair, HSG D
57.820	81	Weighted Average
57.400		99.27% Pervious Area
0.420		0.73% Impervious Area
0.420		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Homestead at Scotts Farm - Preliminary

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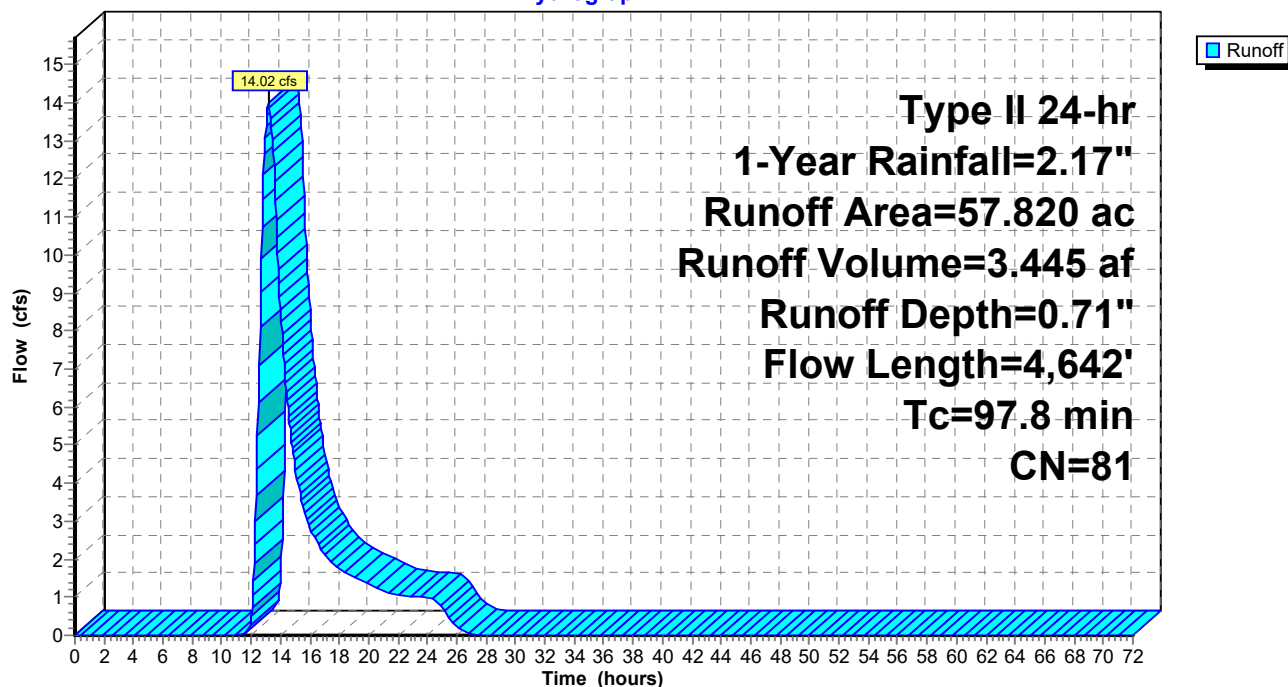
Type II 24-hr 1-Year Rainfall=2.17"

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Subcatchment 7S: Watershed A Existing Onsite

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 8S: Watershed B Existing Onsite

Runoff = 24.38 cfs @ 12.59 hrs, Volume= 3.855 af, Depth= 0.71"

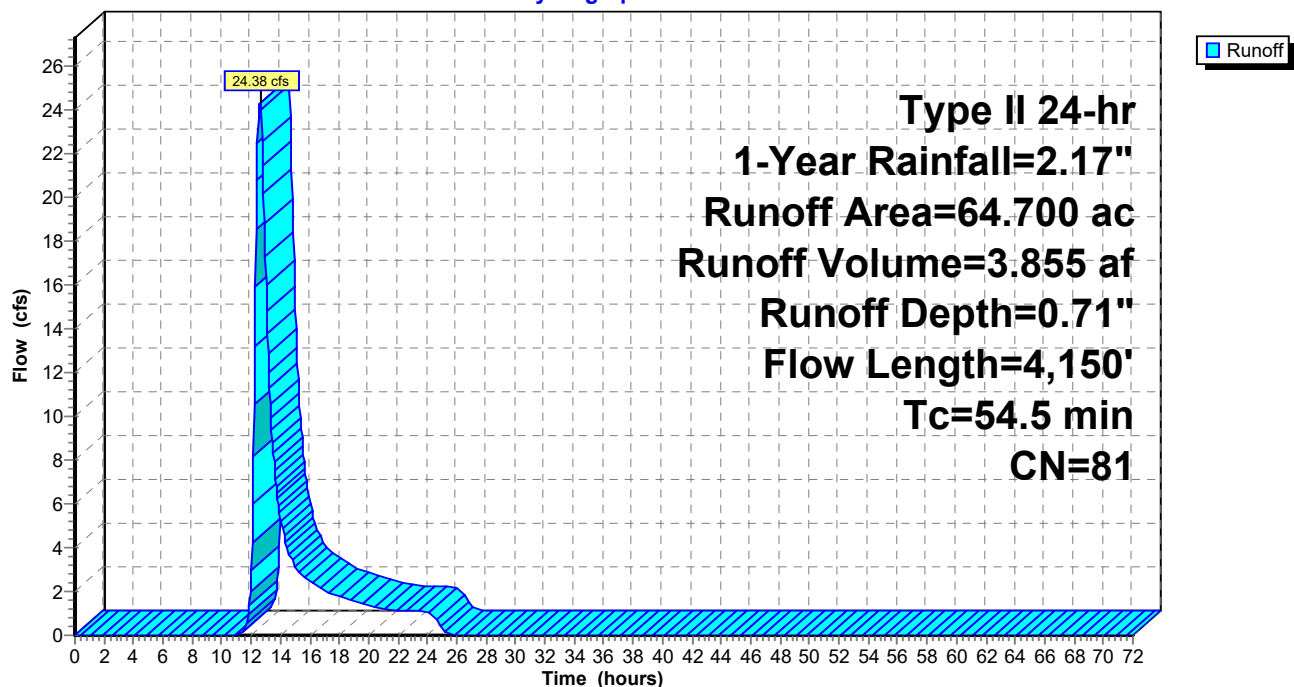
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
36.200	85	Legumes, straight row, Good, HSG D
28.500	77	Brush, Fair, HSG D
64.700	81	Weighted Average
64.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 8S: Watershed B Existing Onsite

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 13S: Watershed C Existing Onsite Total

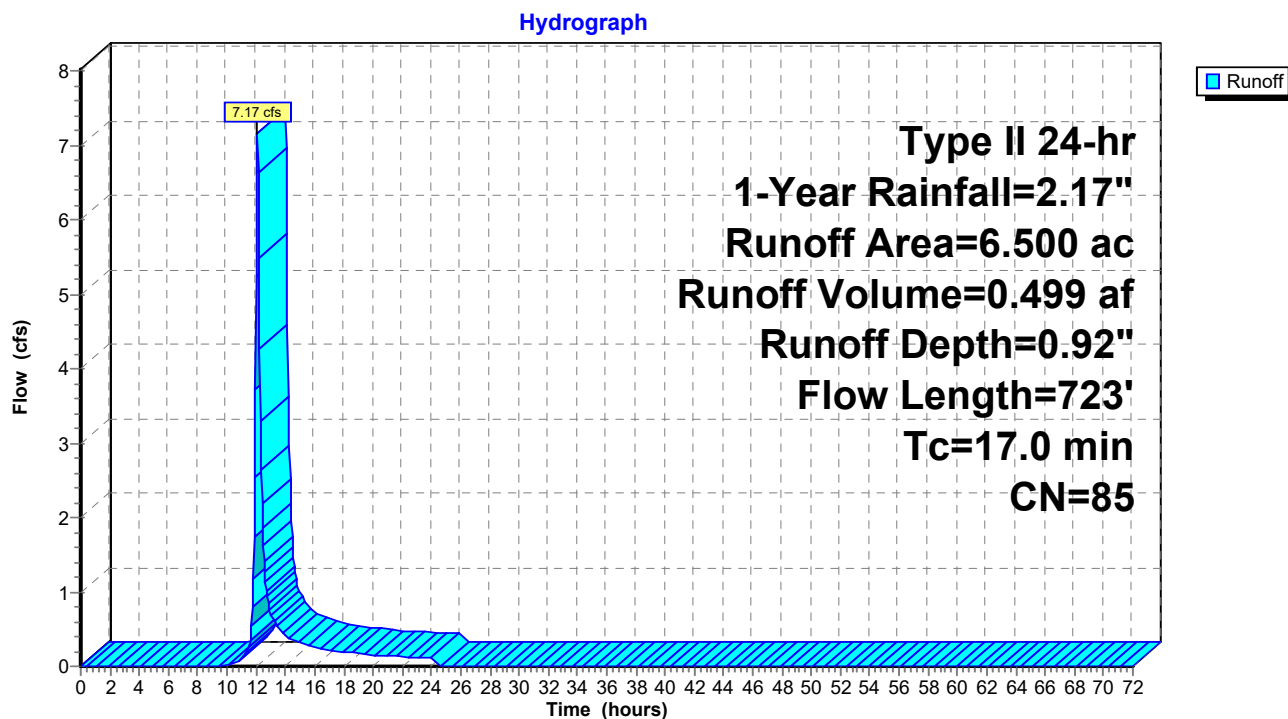
Runoff = 7.17 cfs @ 12.10 hrs, Volume= 0.499 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
6.500	85	Legumes, straight row, Good, HSG D
6.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0143	0.27		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.9	623	0.0113	0.96		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
17.0	723	Total			

Subcatchment 13S: Watershed C Existing Onsite Total



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 32S: Watershed B1 Offsite

Runoff = 1.33 cfs @ 12.63 hrs, Volume= 0.228 af, Depth= 0.54"

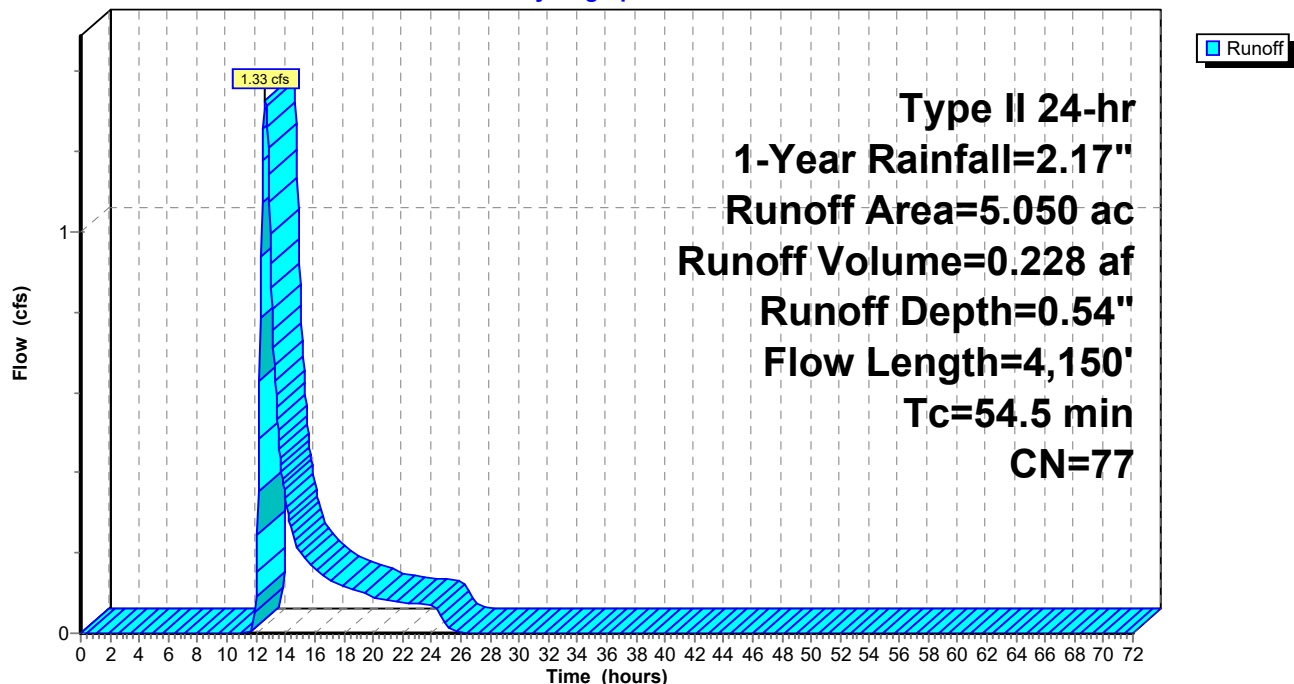
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 32S: Watershed B1 Offsite

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 33S: Watershed A1 Offsite

Runoff = 14.55 cfs @ 13.16 hrs, Volume= 3.575 af, Depth= 0.71"

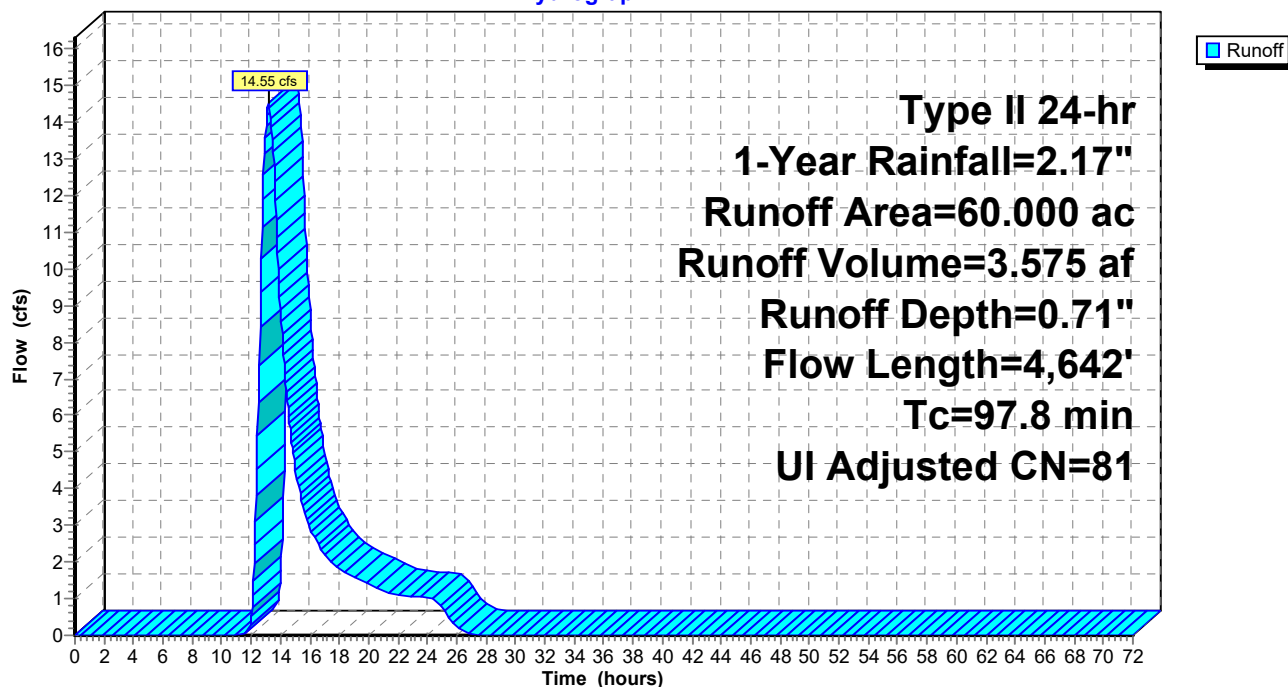
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 33S: Watershed A1 Offsite

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 43S: Watershed B2 Offsite

Runoff = 9.72 cfs @ 12.27 hrs, Volume= 0.983 af, Depth= 0.87"

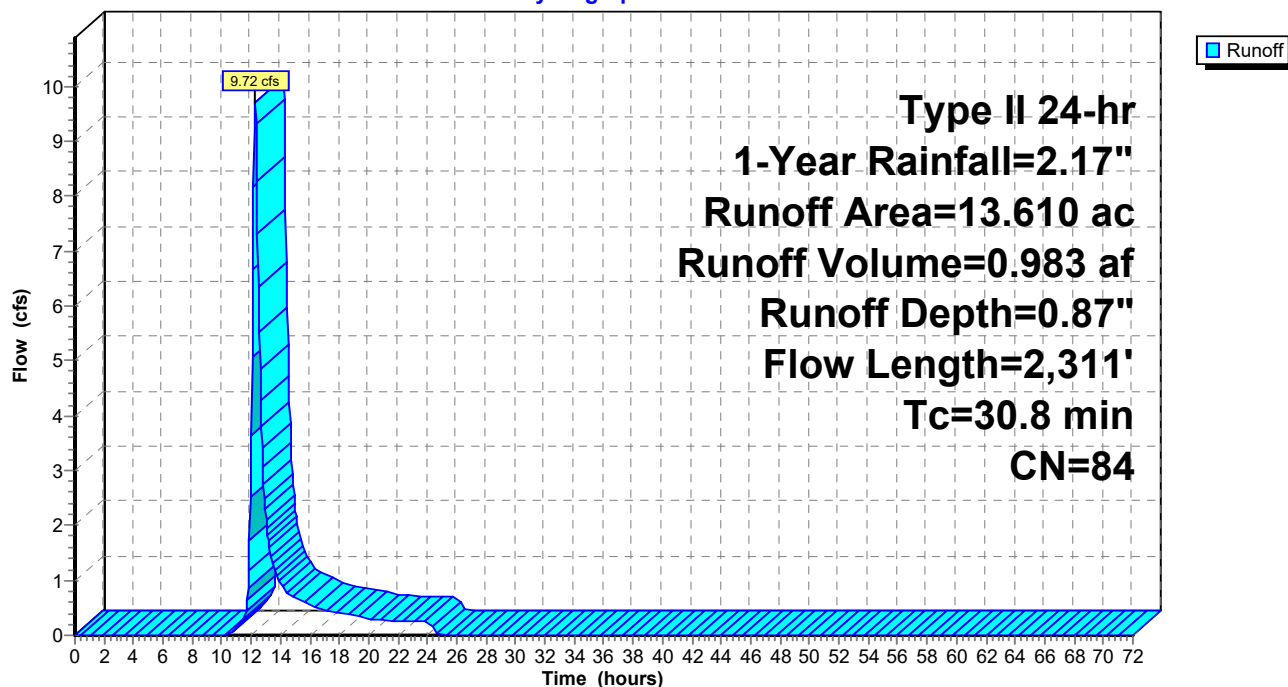
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 43S: Watershed B2 Offsite

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 7S: Watershed A Existing Onsite

Runoff = 20.52 cfs @ 13.15 hrs, Volume= 4.852 af, Depth= 1.01"

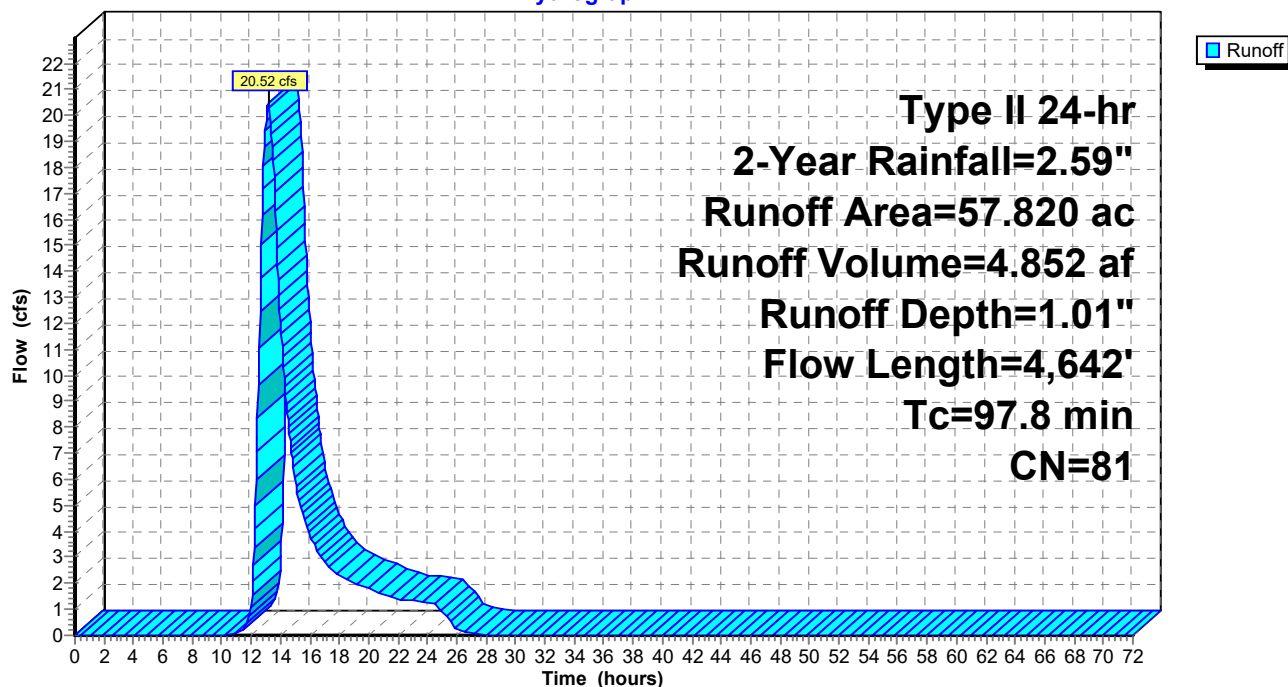
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
0.420	98	Unconnected pavement, HSG D
28.720	85	Legumes, straight row, Good, HSG D
2.740	77	Woods, Good, HSG D
6.300	80	>75% Grass cover, Good, HSG D
19.640	77	Brush, Fair, HSG D
57.820	81	Weighted Average
57.400		99.27% Pervious Area
0.420		0.73% Impervious Area
0.420		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 7S: Watershed A Existing Onsite

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 8S: Watershed B Existing Onsite

Runoff = 35.68 cfs @ 12.57 hrs, Volume= 5.430 af, Depth= 1.01"

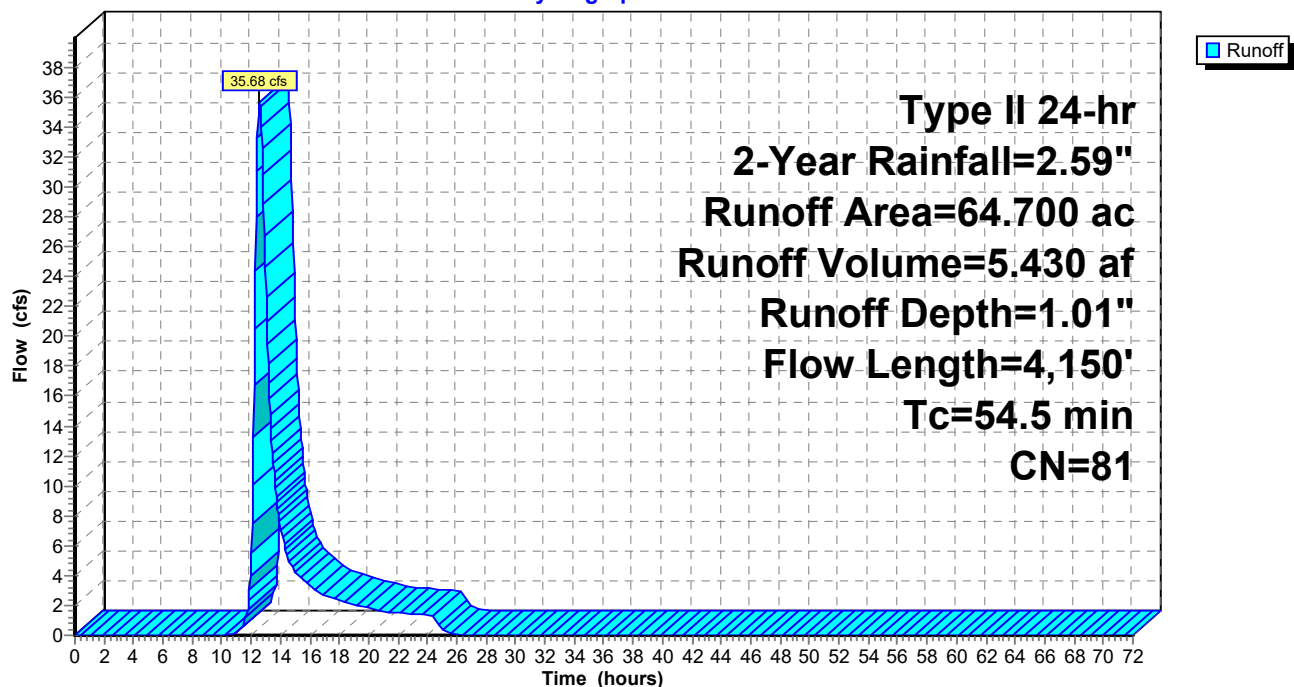
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
36.200	85	Legumes, straight row, Good, HSG D
28.500	77	Brush, Fair, HSG D
64.700	81	Weighted Average
64.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 8S: Watershed B Existing Onsite

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 13S: Watershed C Existing Onsite Total

Runoff = 9.80 cfs @ 12.10 hrs, Volume= 0.677 af, Depth= 1.25"

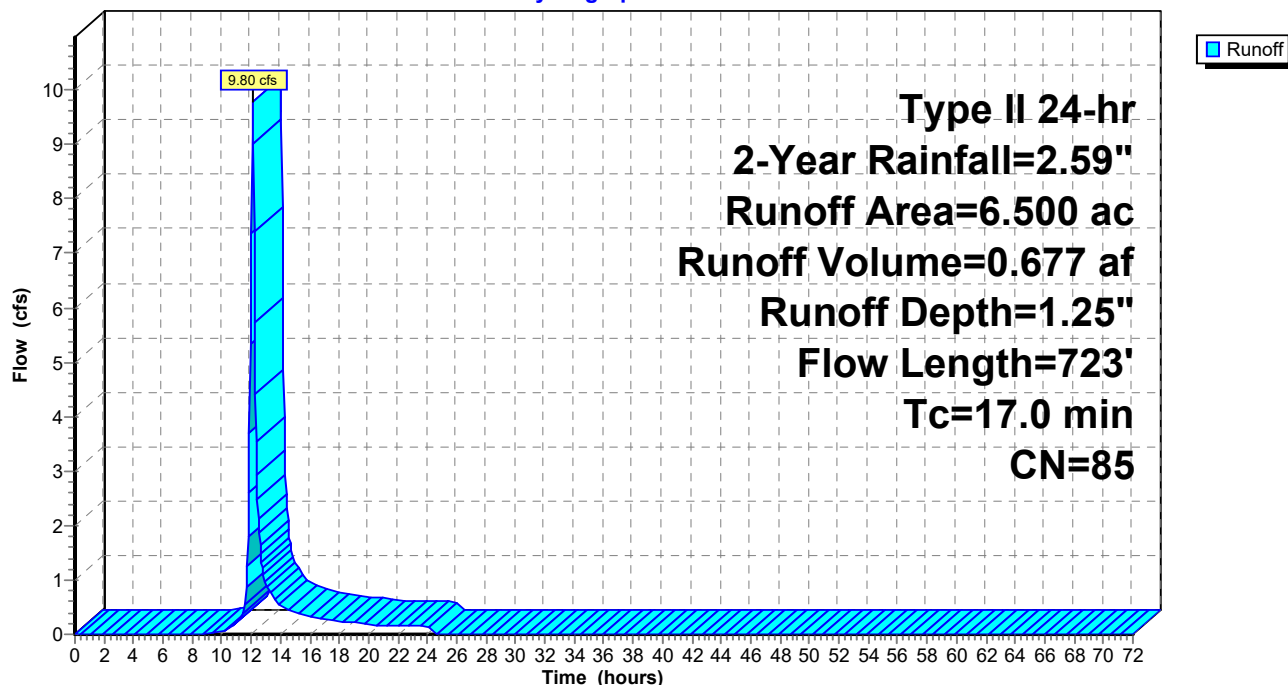
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
6.500	85	Legumes, straight row, Good, HSG D
6.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0143	0.27		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.9	623	0.0113	0.96		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
17.0	723	Total			

Subcatchment 13S: Watershed C Existing Onsite Total

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 32S: Watershed B1 Offsite

Runoff = 2.08 cfs @ 12.60 hrs, Volume= 0.336 af, Depth= 0.80"

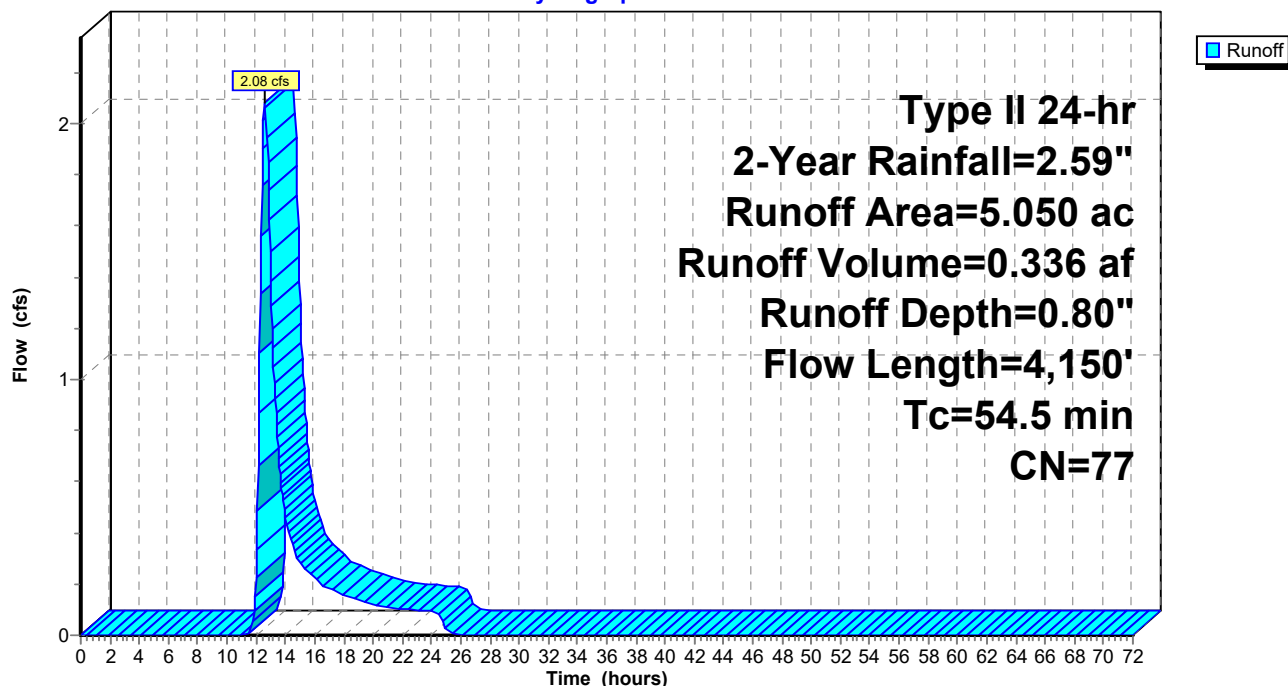
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 32S: Watershed B1 Offsite

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 33S: Watershed A1 Offsite

Runoff = 21.30 cfs @ 13.15 hrs, Volume= 5.035 af, Depth= 1.01"

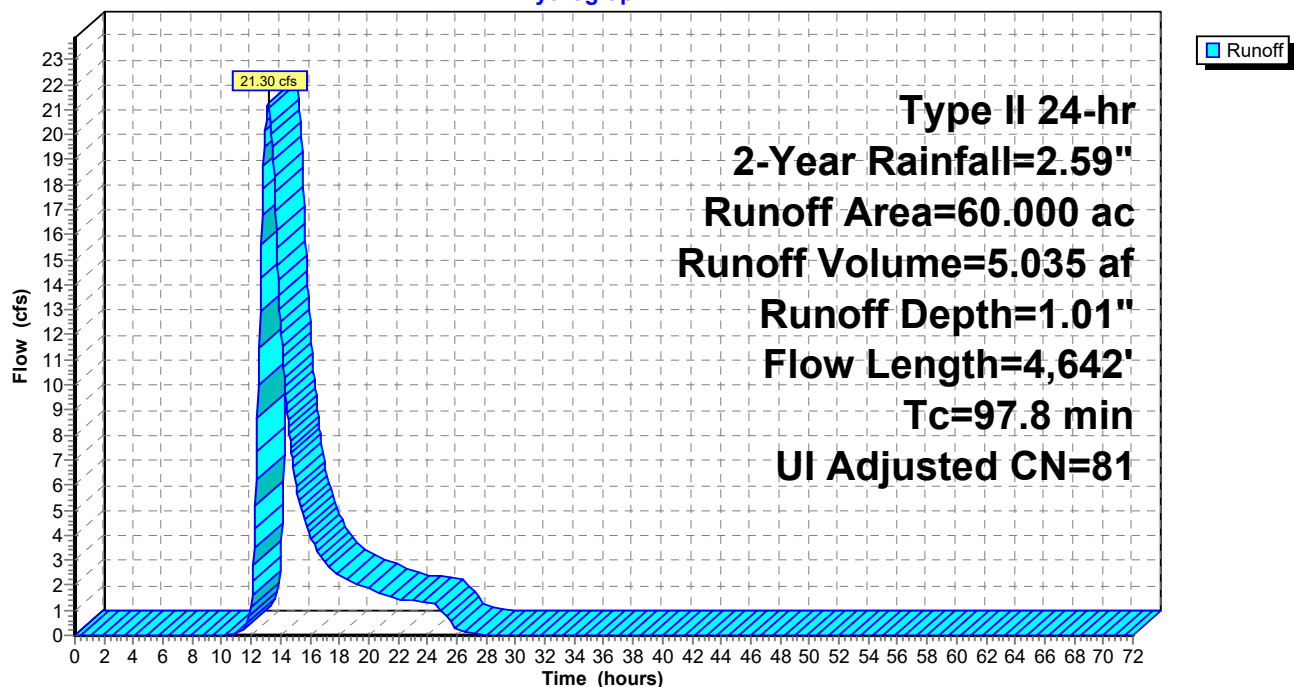
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 33S: Watershed A1 Offsite

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 43S: Watershed B2 Offsite

Runoff = 13.54 cfs @ 12.26 hrs, Volume= 1.345 af, Depth= 1.19"

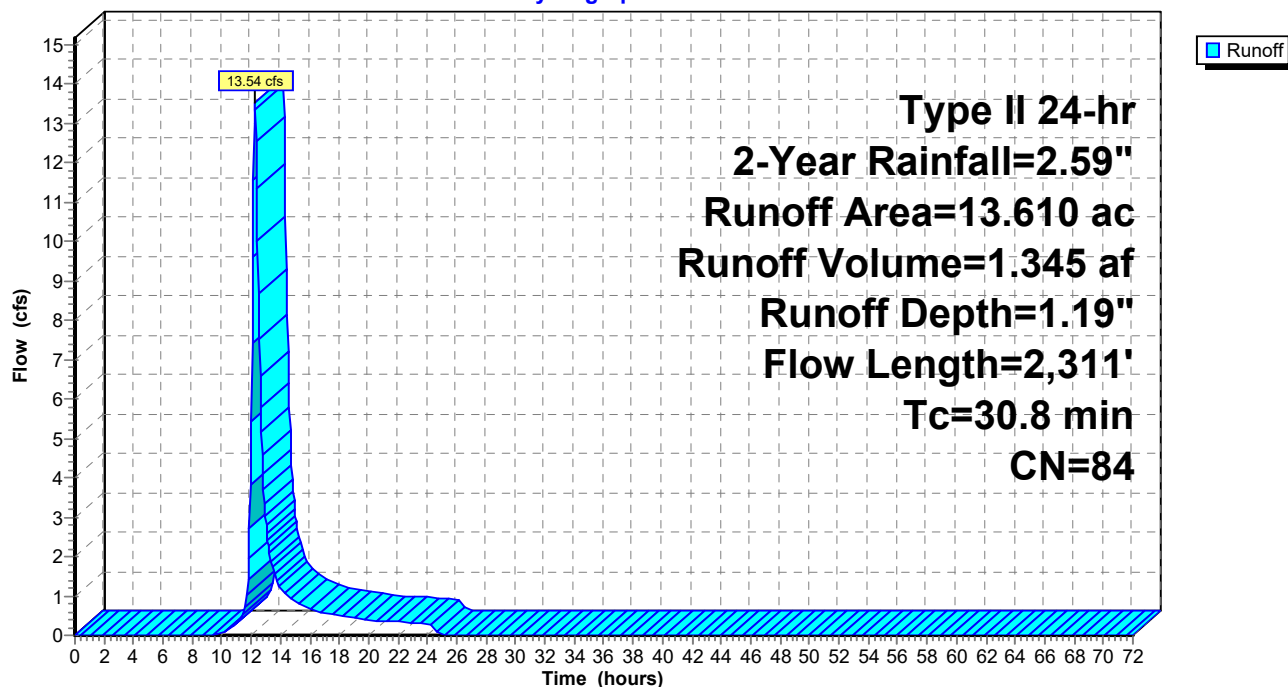
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 43S: Watershed B2 Offsite

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 7S: Watershed A Existing Onsite

Runoff = 30.45 cfs @ 13.14 hrs, Volume= 7.003 af, Depth= 1.45"

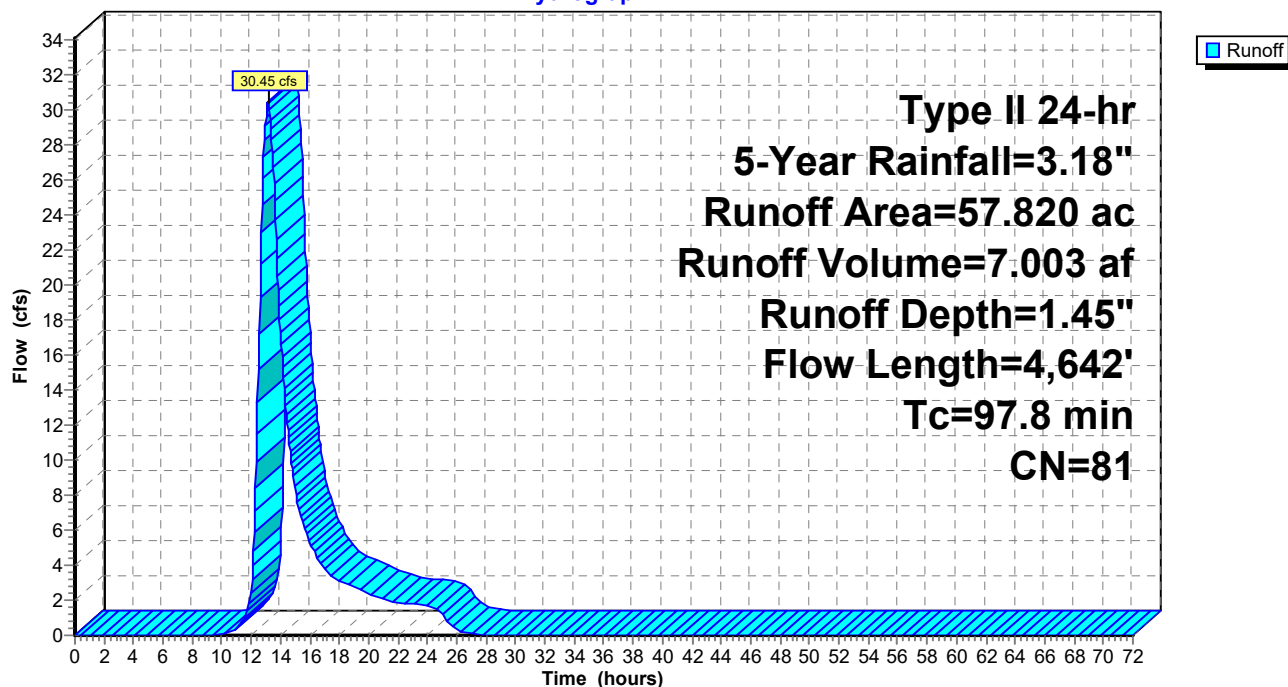
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
0.420	98	Unconnected pavement, HSG D
28.720	85	Legumes, straight row, Good, HSG D
2.740	77	Woods, Good, HSG D
6.300	80	>75% Grass cover, Good, HSG D
19.640	77	Brush, Fair, HSG D
57.820	81	Weighted Average
57.400		99.27% Pervious Area
0.420		0.73% Impervious Area
0.420		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 7S: Watershed A Existing Onsite

Hydrograph



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 8S: Watershed B Existing Onsite

Runoff = 52.84 cfs @ 12.56 hrs, Volume= 7.836 af, Depth= 1.45"

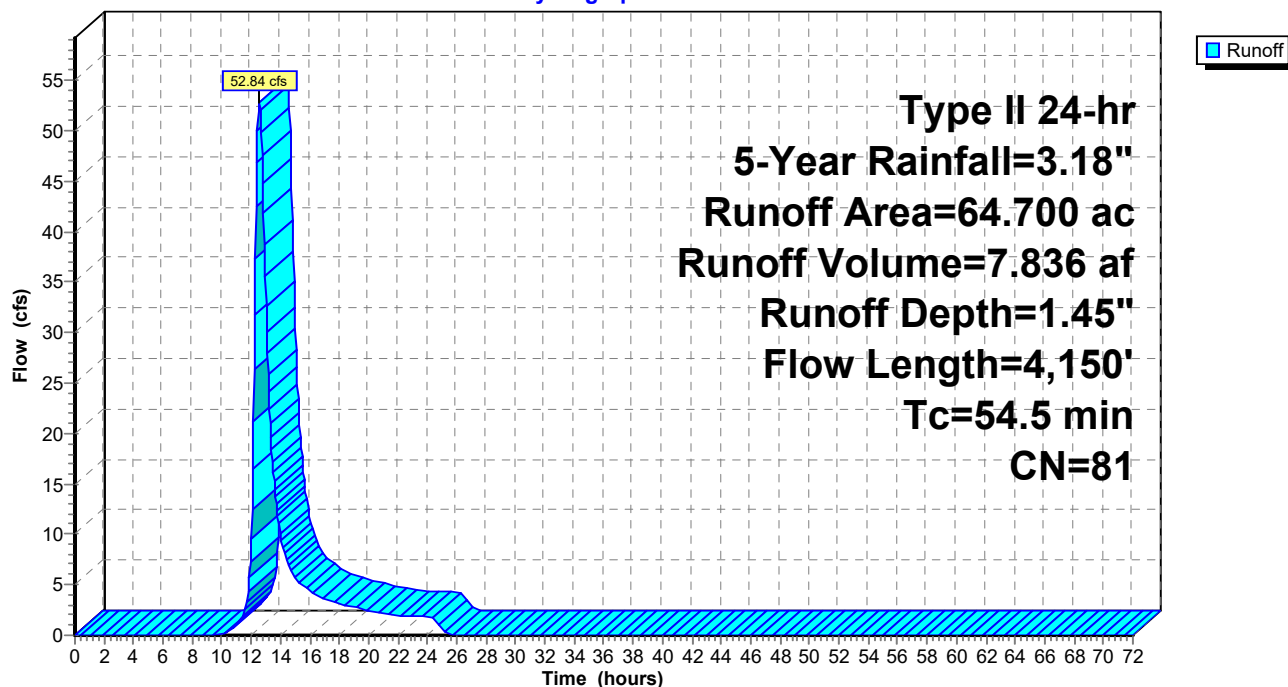
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
36.200	85	Legumes, straight row, Good, HSG D
28.500	77	Brush, Fair, HSG D
64.700	81	Weighted Average
64.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 8S: Watershed B Existing Onsite

Hydrograph



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 13S: Watershed C Existing Onsite Total

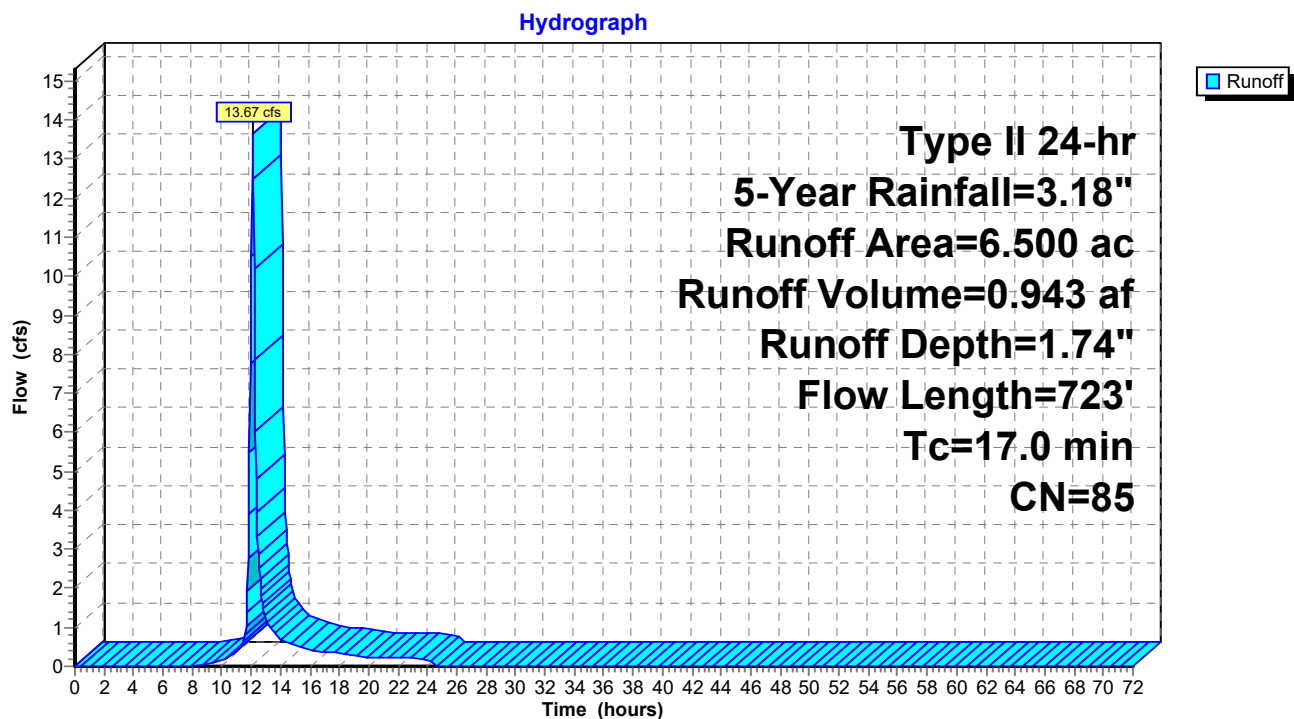
Runoff = 13.67 cfs @ 12.09 hrs, Volume= 0.943 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
6.500	85	Legumes, straight row, Good, HSG D
6.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0143	0.27		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.9	623	0.0113	0.96		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
17.0	723	Total			

Subcatchment 13S: Watershed C Existing Onsite Total



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 32S: Watershed B1 Offsite

Runoff = 3.29 cfs @ 12.57 hrs, Volume= 0.504 af, Depth= 1.20"

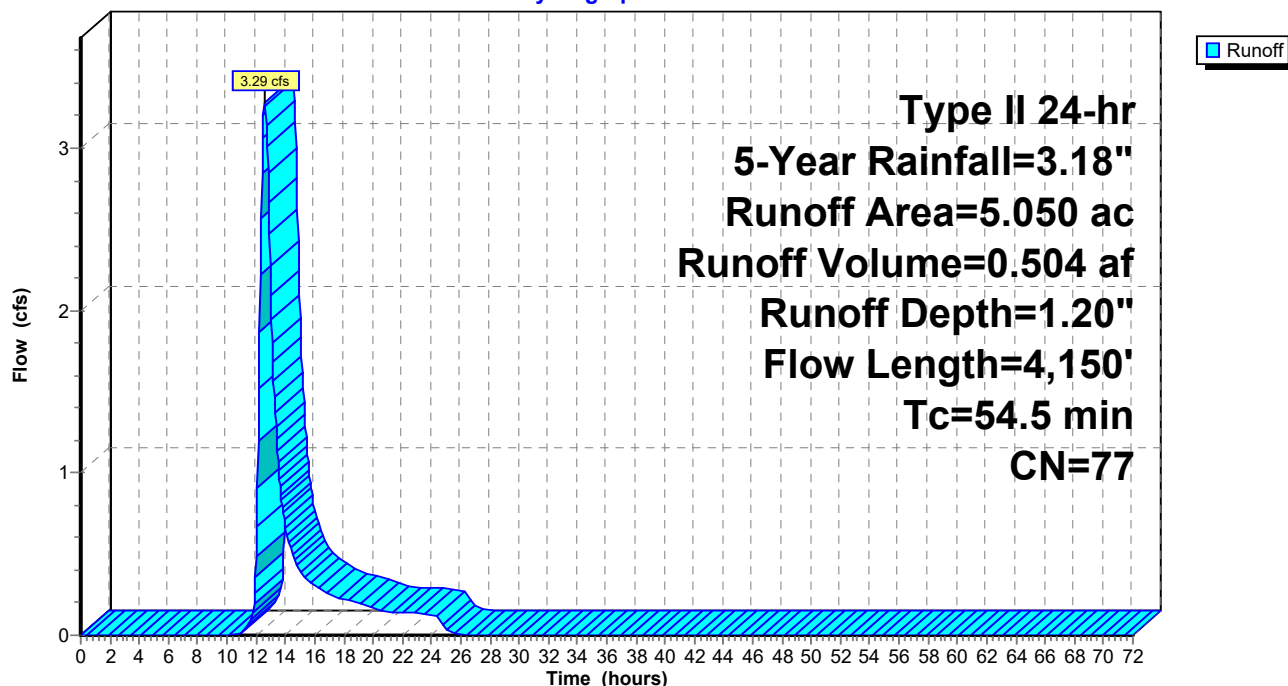
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 32S: Watershed B1 Offsite

Hydrograph



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 33S: Watershed A1 Offsite

Runoff = 31.60 cfs @ 13.14 hrs, Volume= 7.267 af, Depth= 1.45"

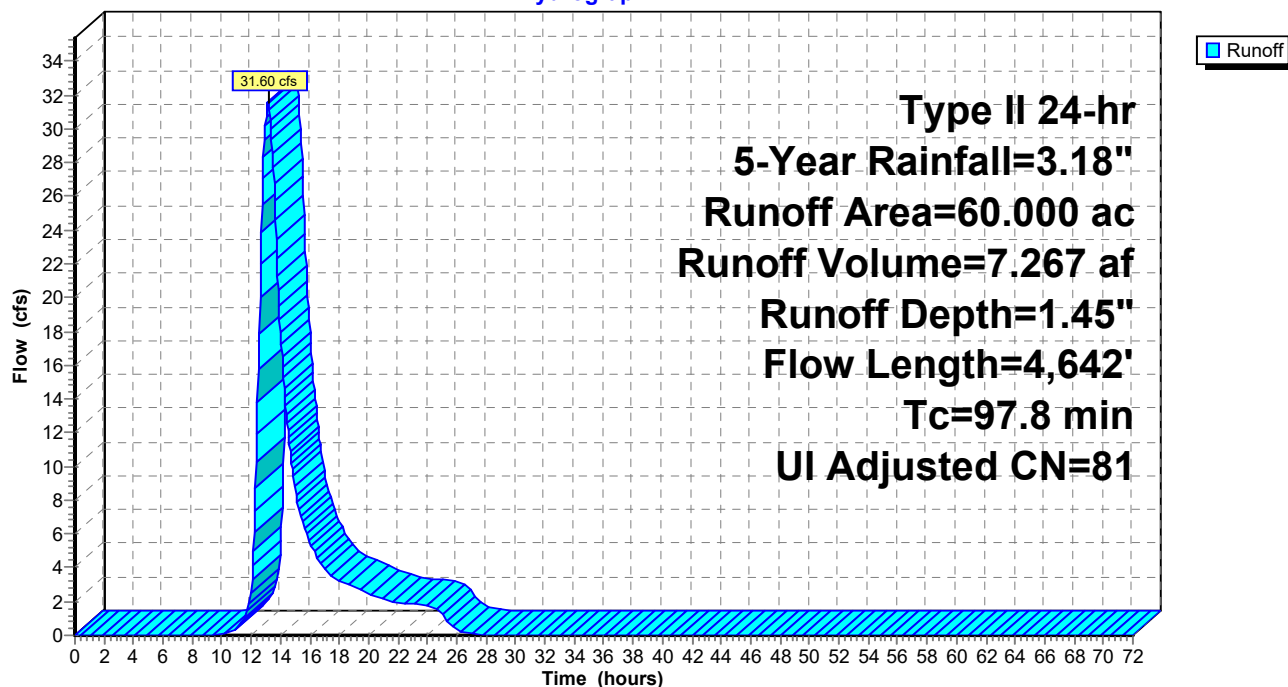
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 33S: Watershed A1 Offsite

Hydrograph



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 43S: Watershed B2 Offsite

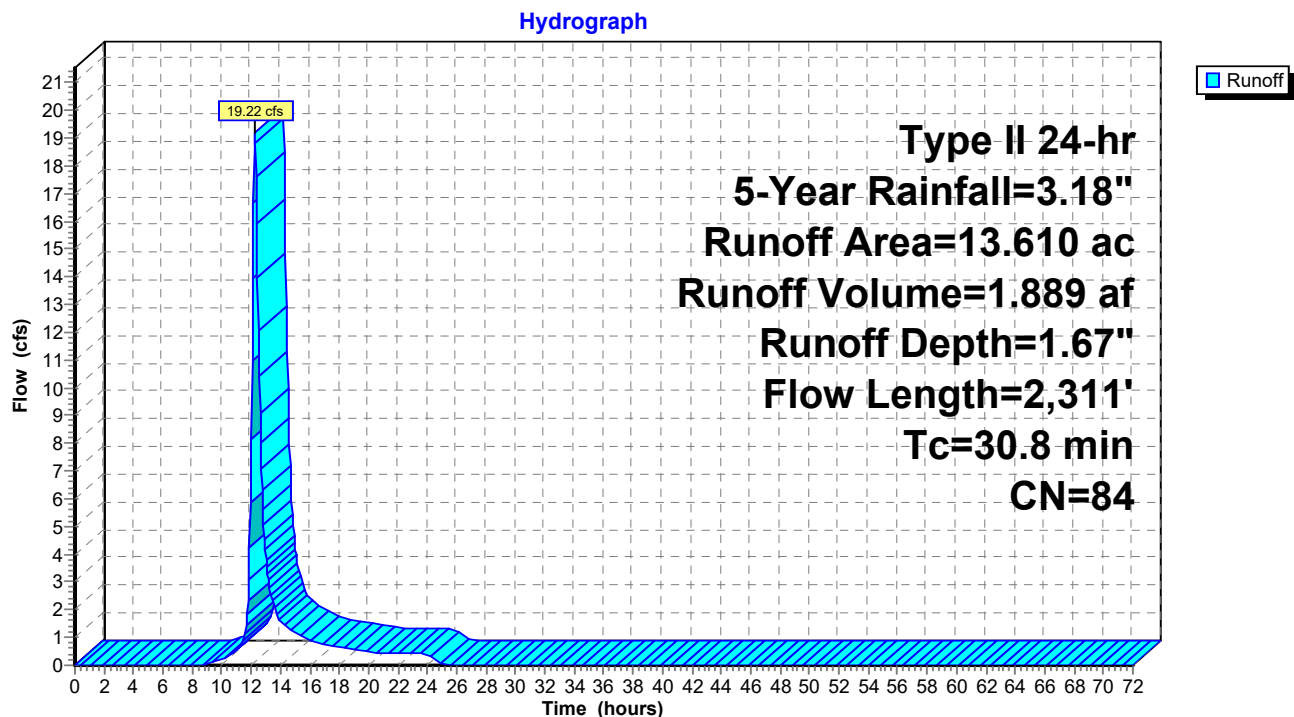
Runoff = 19.22 cfs @ 12.26 hrs, Volume= 1.889 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 43S: Watershed B2 Offsite



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 7S: Watershed A Existing Onsite

Runoff = 38.99 cfs @ 13.14 hrs, Volume= 8.861 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
0.420	98	Unconnected pavement, HSG D
28.720	85	Legumes, straight row, Good, HSG D
2.740	77	Woods, Good, HSG D
6.300	80	>75% Grass cover, Good, HSG D
19.640	77	Brush, Fair, HSG D
57.820	81	Weighted Average
57.400		99.27% Pervious Area
0.420		0.73% Impervious Area
0.420		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

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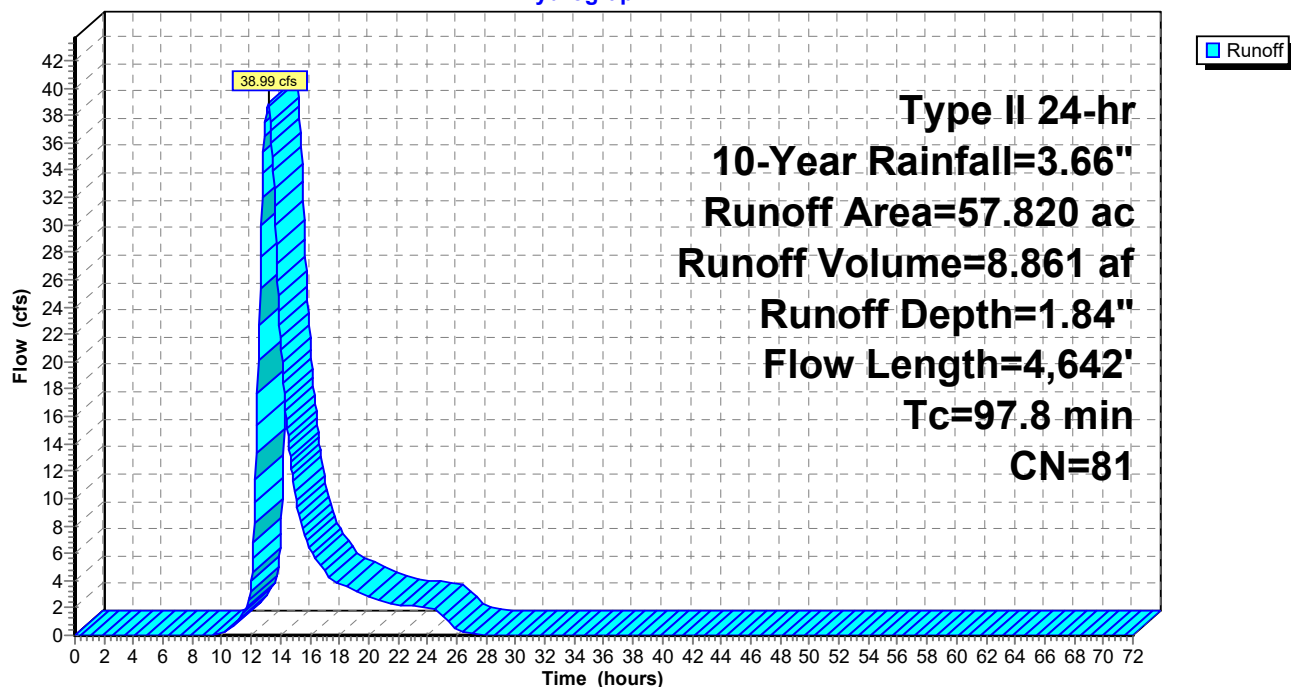
Type II 24-hr 10-Year Rainfall=3.66"

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Subcatchment 7S: Watershed A Existing Onsite

Hydrograph



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 8S: Watershed B Existing Onsite

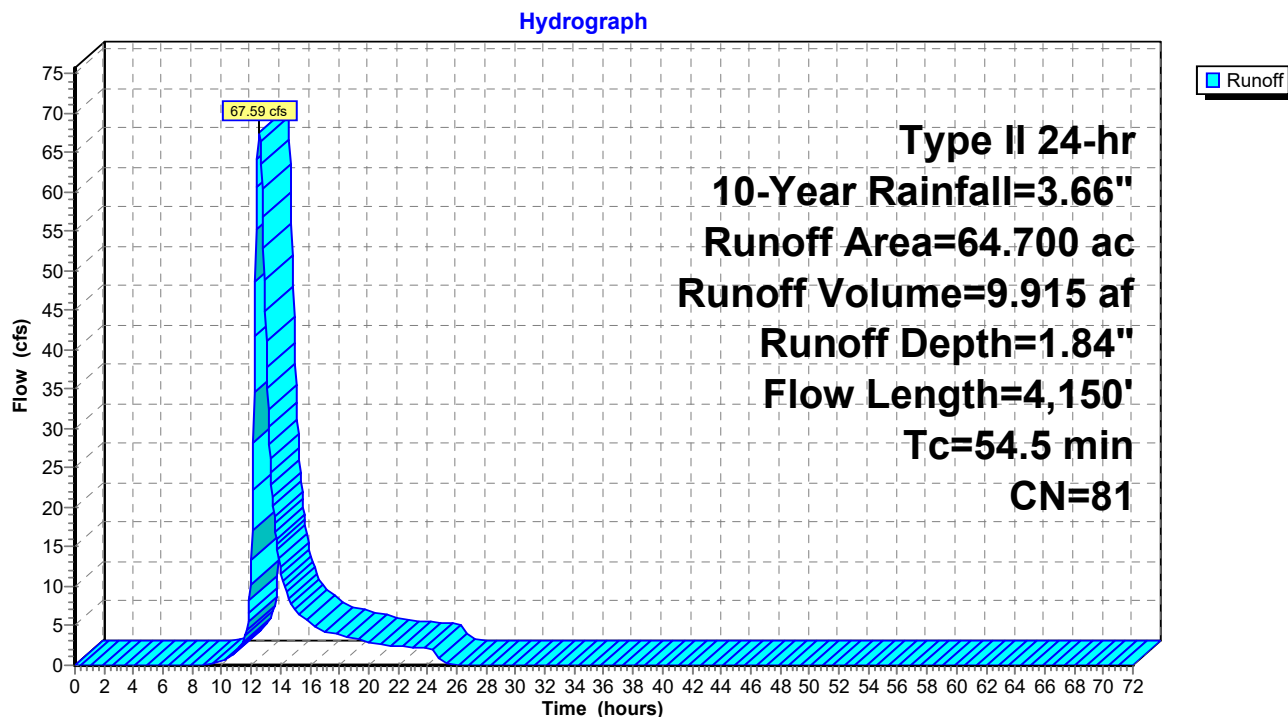
Runoff = 67.59 cfs @ 12.56 hrs, Volume= 9.915 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
36.200	85	Legumes, straight row, Good, HSG D
28.500	77	Brush, Fair, HSG D
64.700	81	Weighted Average
64.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 8S: Watershed B Existing Onsite



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 13S: Watershed C Existing Onsite Total

Runoff = 16.91 cfs @ 12.09 hrs, Volume= 1.168 af, Depth= 2.16"

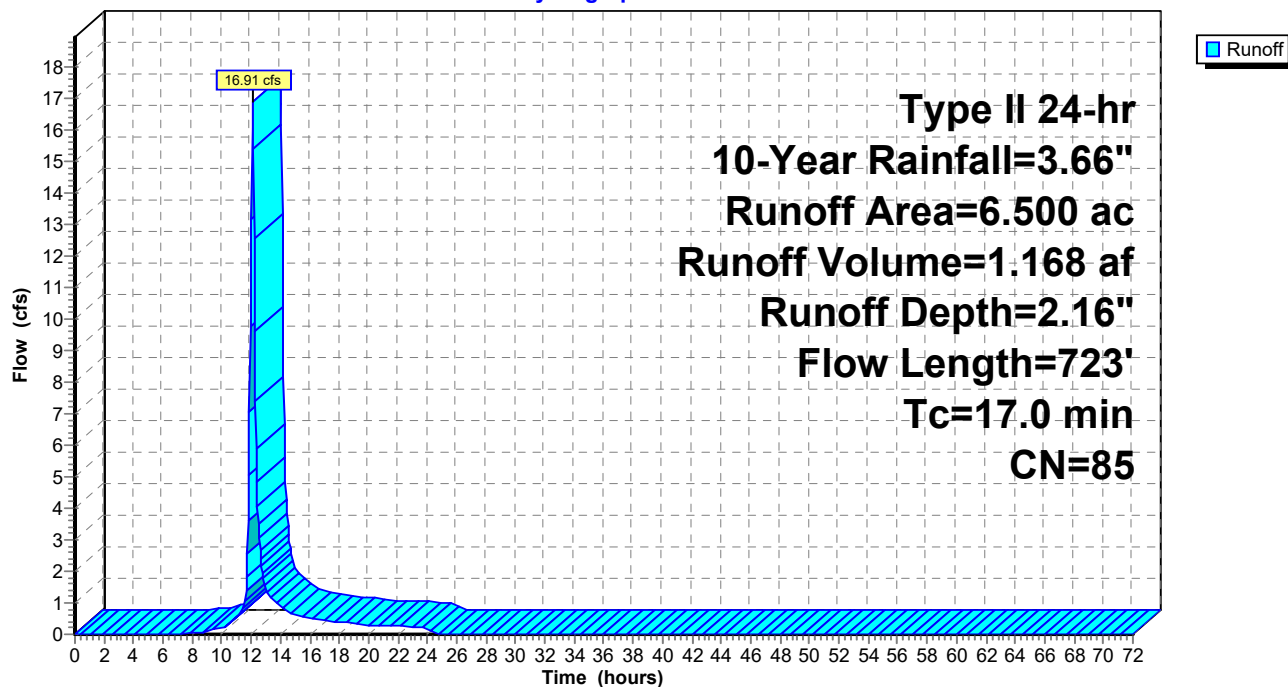
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
6.500	85	Legumes, straight row, Good, HSG D
6.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0143	0.27		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.9	623	0.0113	0.96		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
17.0	723	Total			

Subcatchment 13S: Watershed C Existing Onsite Total

Hydrograph



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 32S: Watershed B1 Offsite

Runoff = 4.35 cfs @ 12.57 hrs, Volume= 0.652 af, Depth= 1.55"

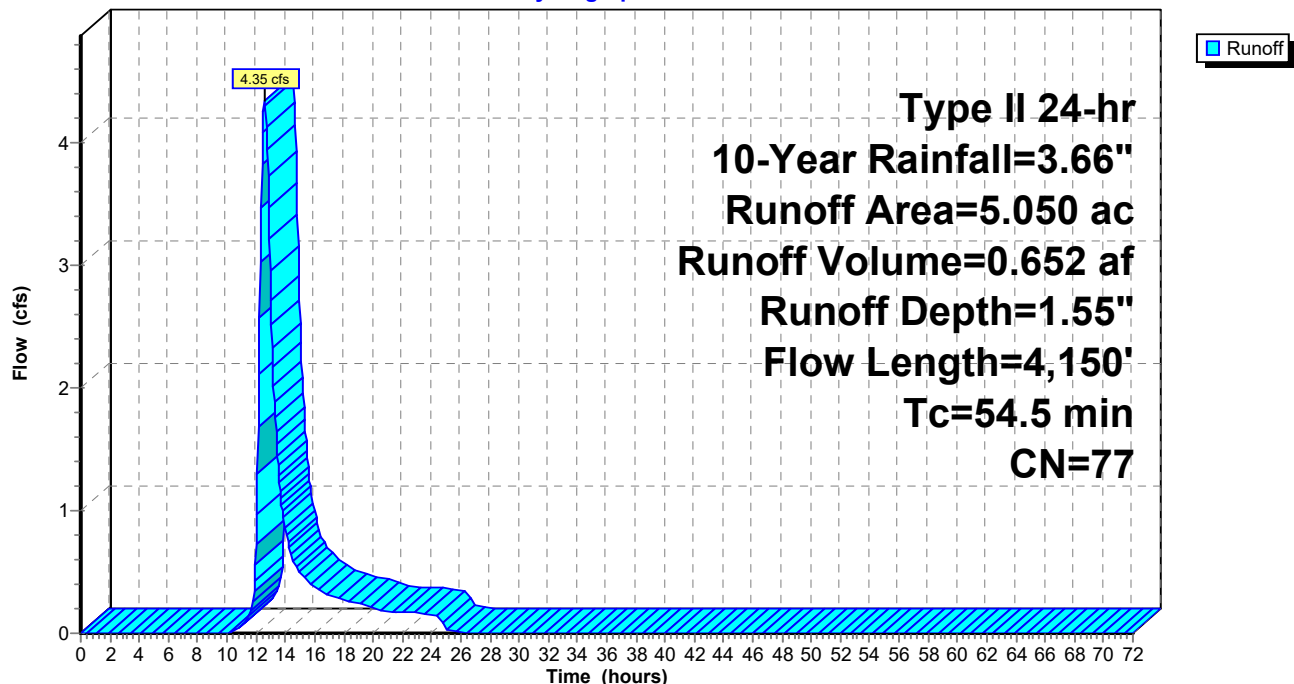
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 32S: Watershed B1 Offsite

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 33S: Watershed A1 Offsite

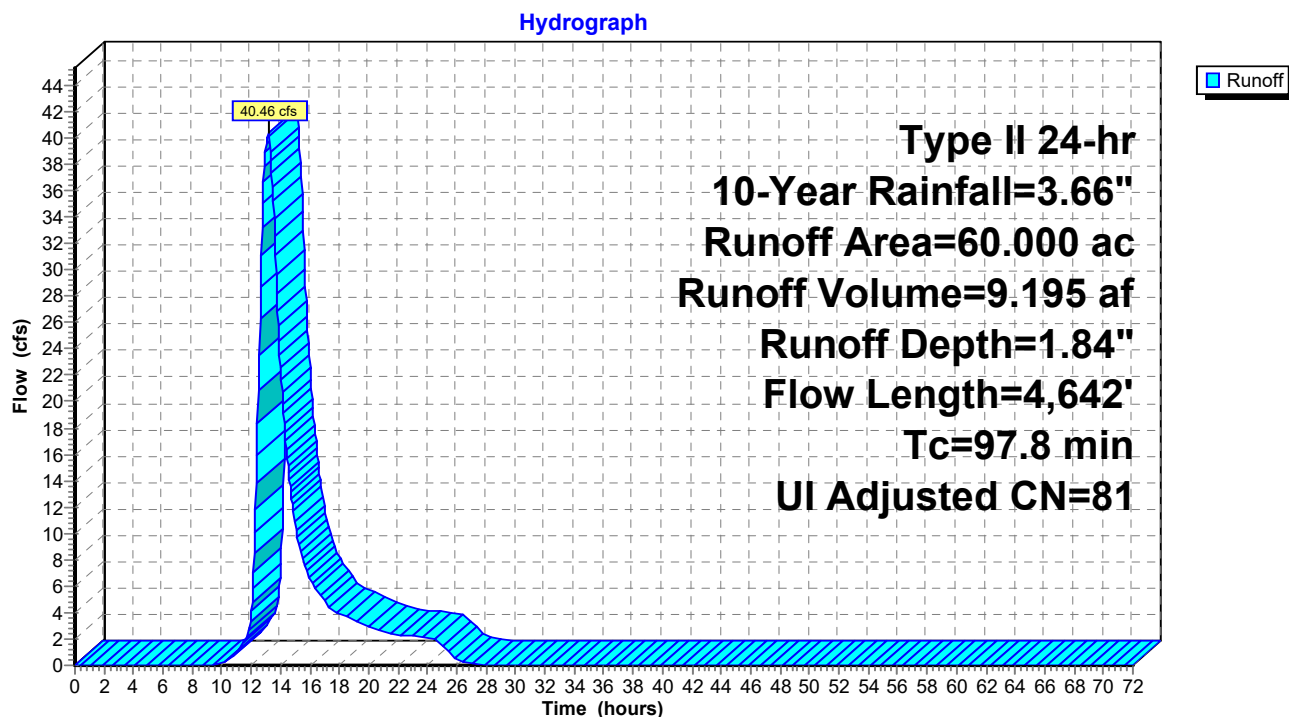
Runoff = 40.46 cfs @ 13.14 hrs, Volume= 9.195 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 33S: Watershed A1 Offsite



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 43S: Watershed B2 Offsite

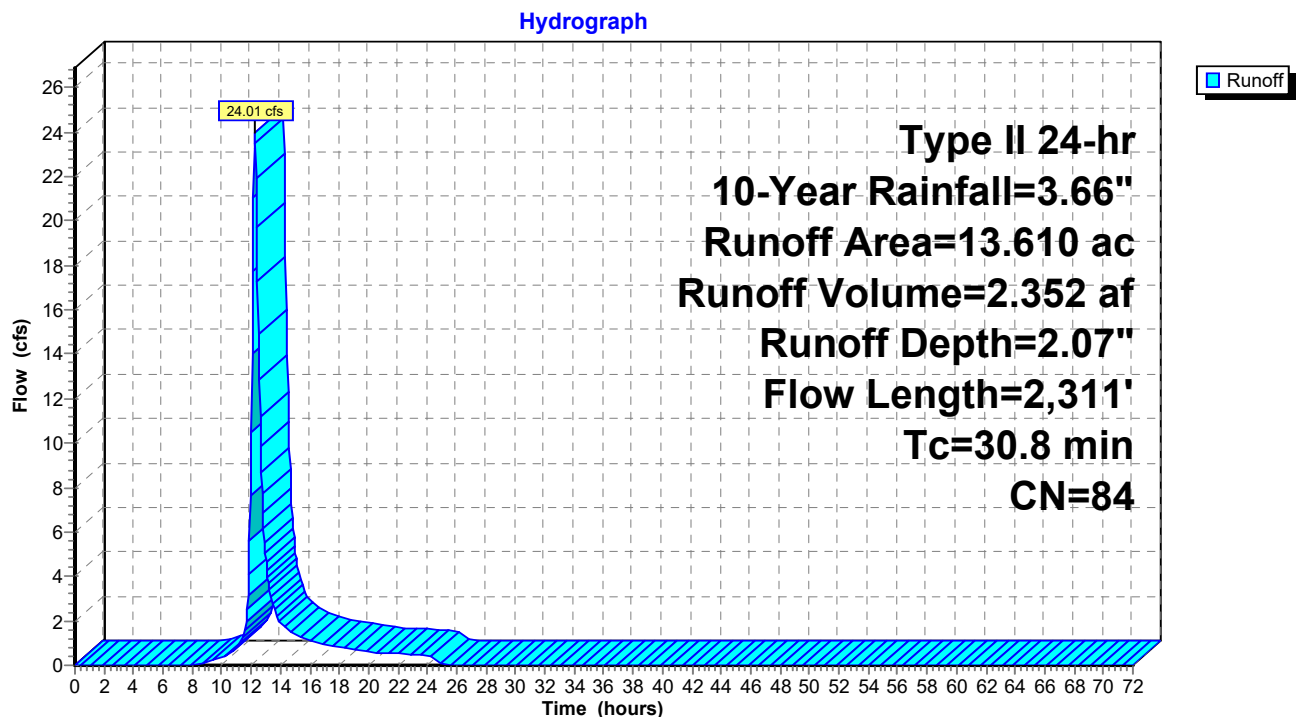
Runoff = 24.01 cfs @ 12.25 hrs, Volume= 2.352 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 43S: Watershed B2 Offsite



Homestead at Scotts Farm - Preliminary

Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 7S: Watershed A Existing Onsite

Runoff = 51.55 cfs @ 13.13 hrs, Volume= 11.614 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
0.420	98	Unconnected pavement, HSG D
28.720	85	Legumes, straight row, Good, HSG D
2.740	77	Woods, Good, HSG D
6.300	80	>75% Grass cover, Good, HSG D
19.640	77	Brush, Fair, HSG D
57.820	81	Weighted Average
57.400		99.27% Pervious Area
0.420		0.73% Impervious Area
0.420		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Homestead at Scotts Farm - Preliminary

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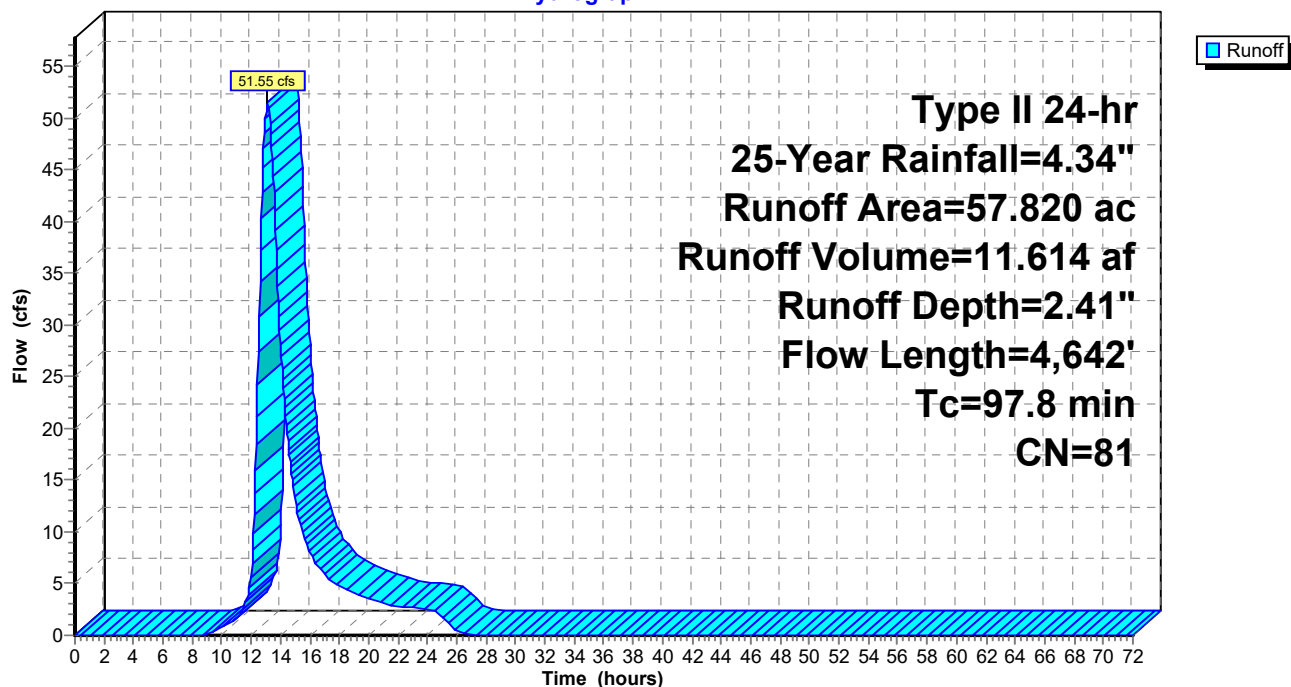
Type II 24-hr 25-Year Rainfall=4.34"

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Subcatchment 7S: Watershed A Existing Onsite

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 8S: Watershed B Existing Onsite

Runoff = 89.29 cfs @ 12.55 hrs, Volume= 12.995 af, Depth= 2.41"

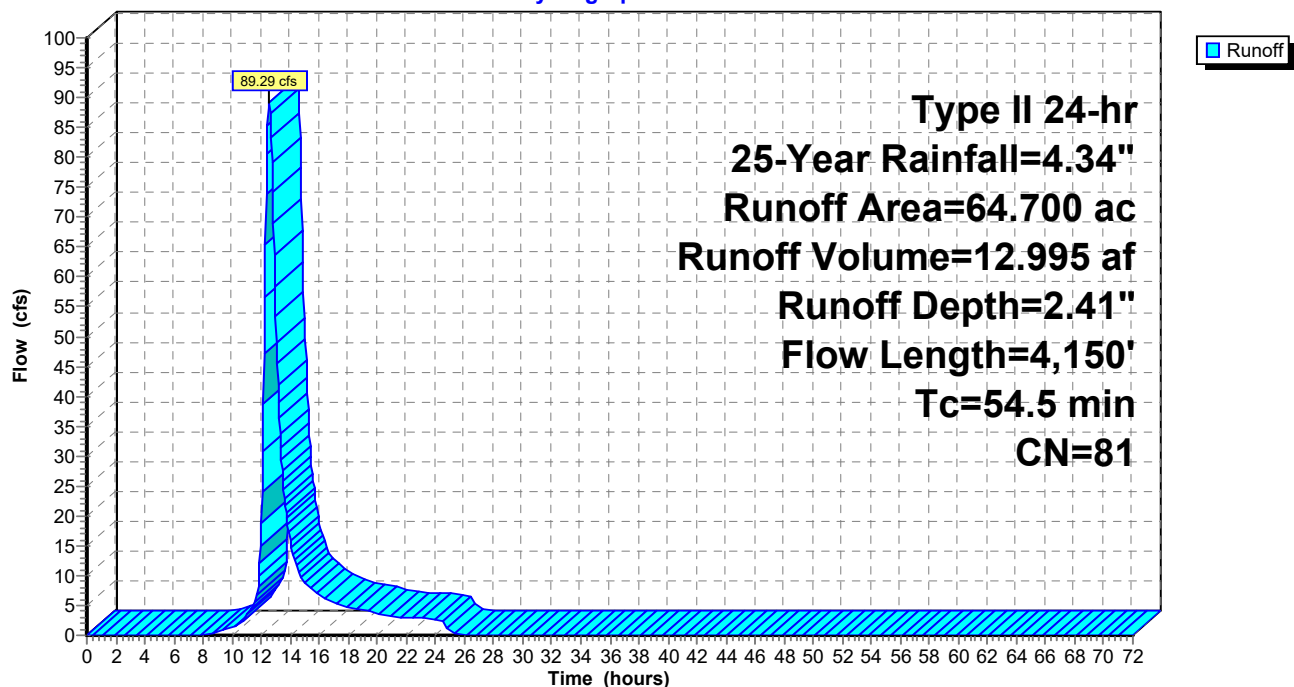
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
36.200	85	Legumes, straight row, Good, HSG D
28.500	77	Brush, Fair, HSG D
64.700	81	Weighted Average
64.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 8S: Watershed B Existing Onsite

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 13S: Watershed C Existing Onsite Total

Runoff = 21.57 cfs @ 12.09 hrs, Volume= 1.497 af, Depth= 2.76"

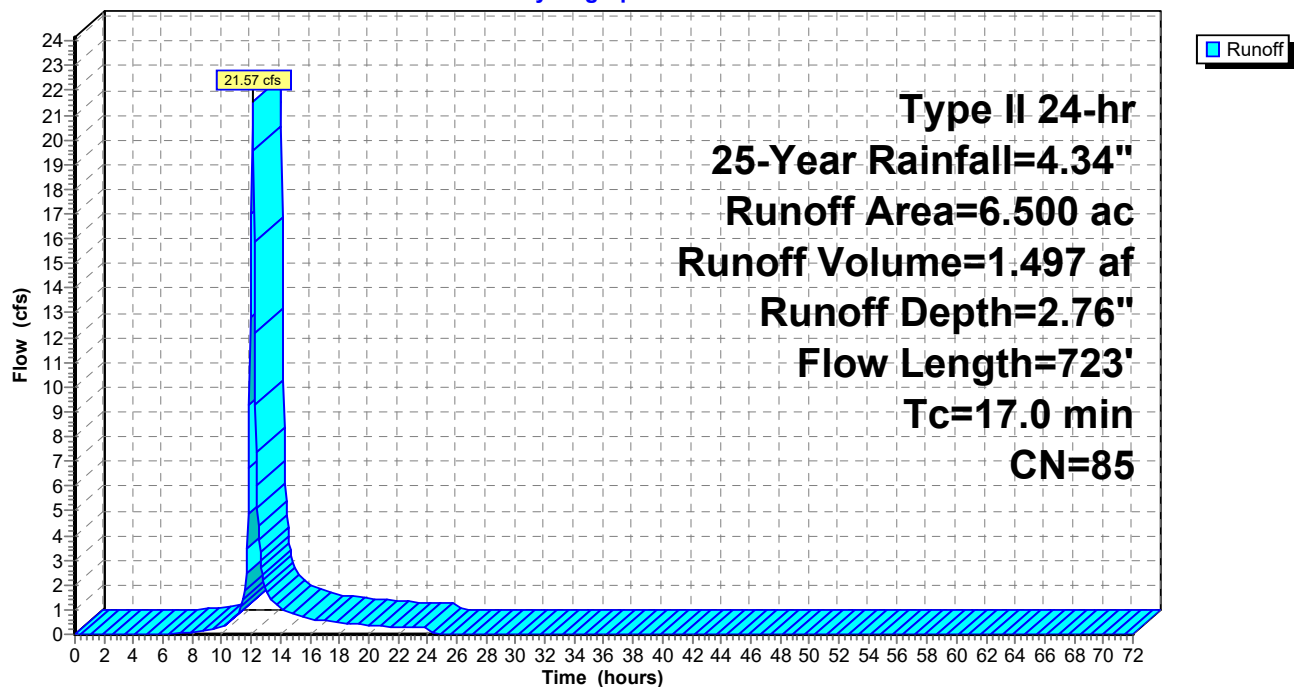
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
6.500	85	Legumes, straight row, Good, HSG D
6.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0143	0.27		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.9	623	0.0113	0.96		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
17.0	723	Total			

Subcatchment 13S: Watershed C Existing Onsite Total

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 32S: Watershed B1 Offsite

Runoff = 5.94 cfs @ 12.56 hrs, Volume= 0.876 af, Depth= 2.08"

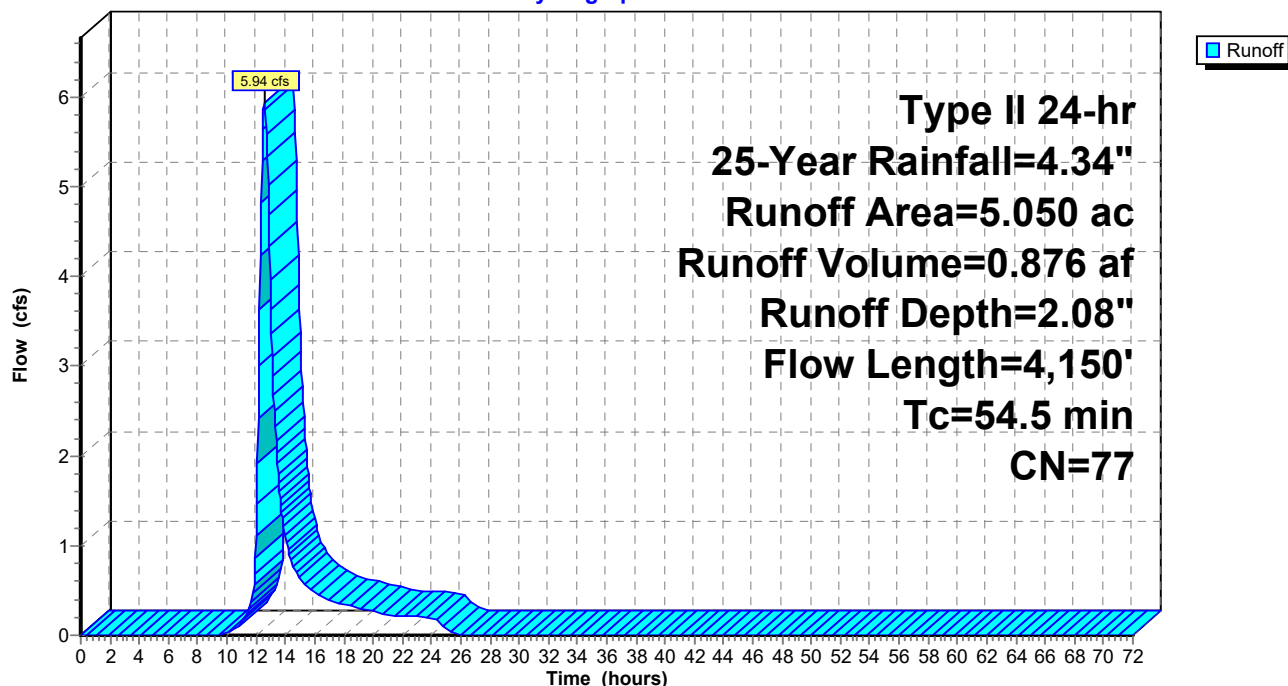
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 32S: Watershed B1 Offsite

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 33S: Watershed A1 Offsite

Runoff = 53.49 cfs @ 13.13 hrs, Volume= 12.051 af, Depth= 2.41"

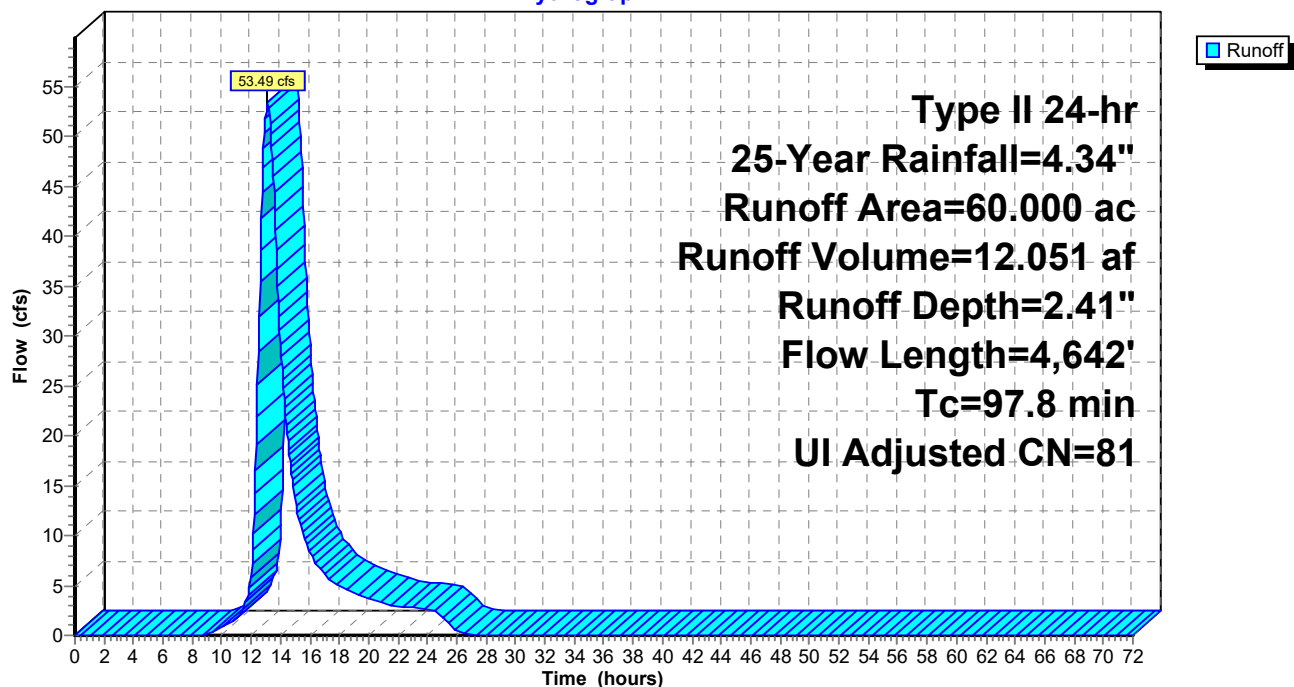
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 33S: Watershed A1 Offsite

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 43S: Watershed B2 Offsite

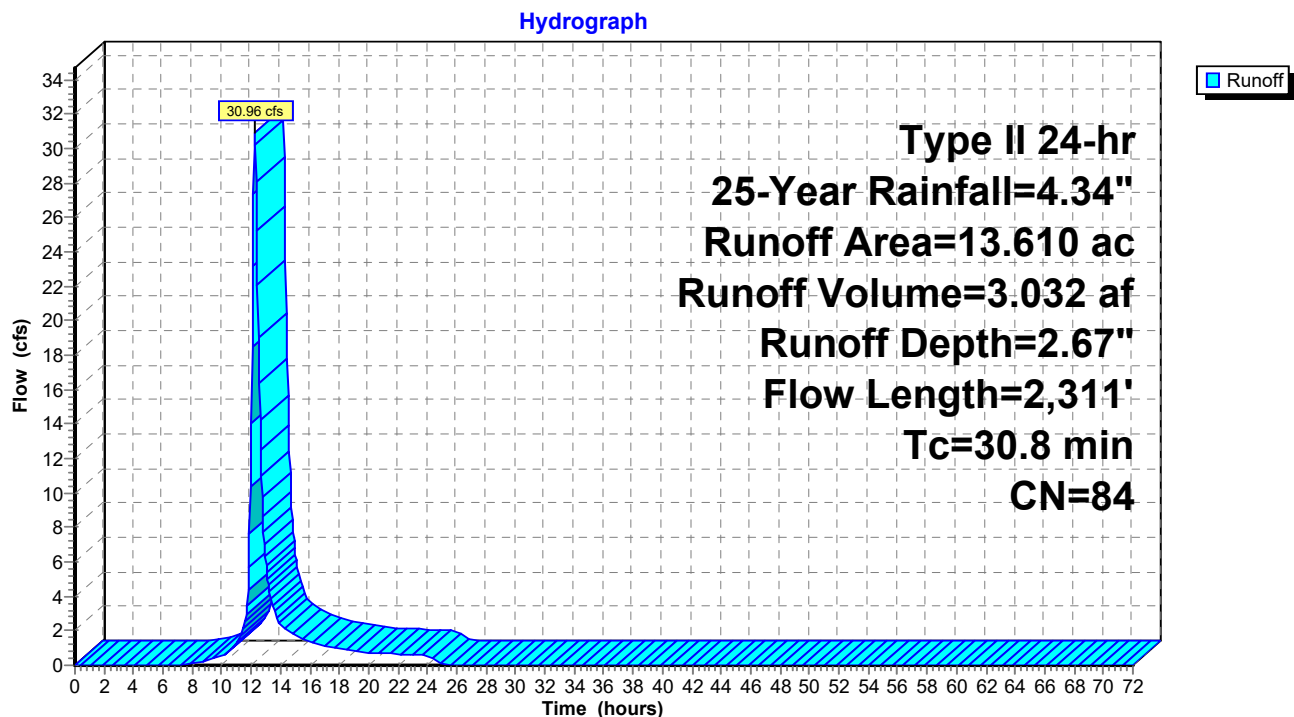
Runoff = 30.96 cfs @ 12.25 hrs, Volume= 3.032 af, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 43S: Watershed B2 Offsite



Homestead at Scotts Farm - Preliminary

Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 7S: Watershed A Existing Onsite

Runoff = 62.18 cfs @ 13.13 hrs, Volume= 13.959 af, Depth= 2.90"

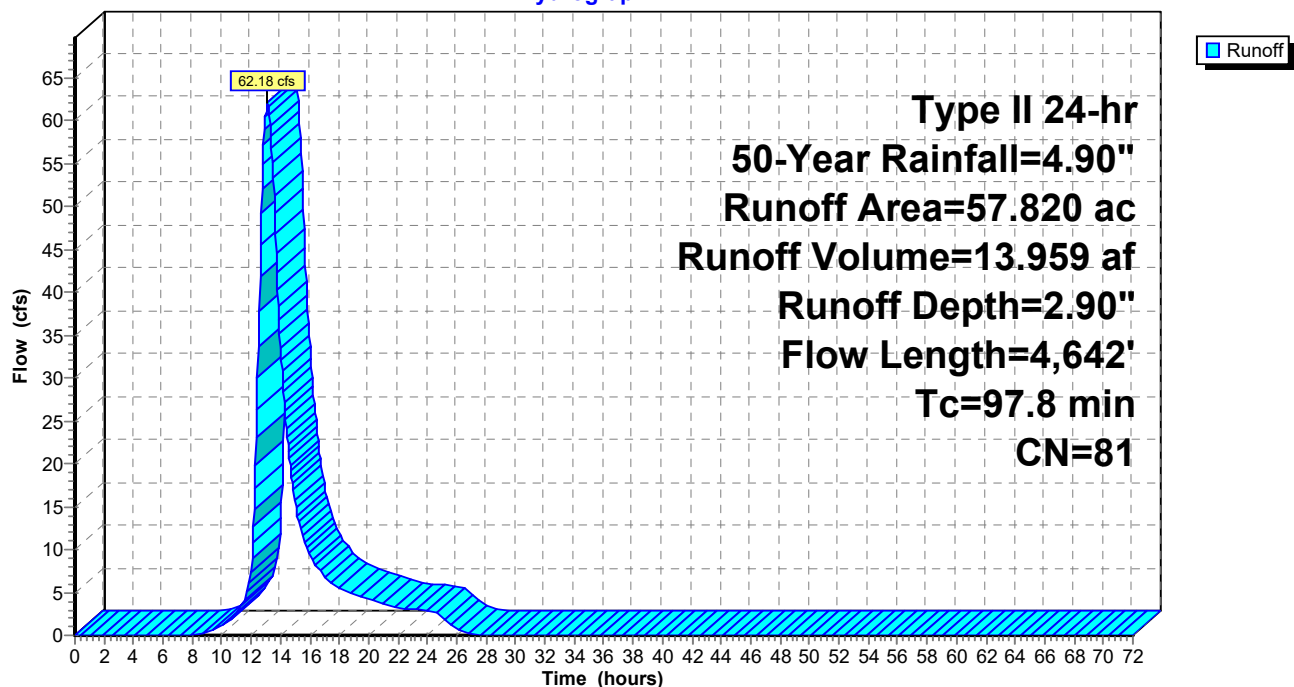
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
0.420	98	Unconnected pavement, HSG D
28.720	85	Legumes, straight row, Good, HSG D
2.740	77	Woods, Good, HSG D
6.300	80	>75% Grass cover, Good, HSG D
19.640	77	Brush, Fair, HSG D
57.820	81	Weighted Average
57.400		99.27% Pervious Area
0.420		0.73% Impervious Area
0.420		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 7S: Watershed A Existing Onsite

Hydrograph



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 8S: Watershed B Existing Onsite

Runoff = 107.62 cfs @ 12.55 hrs, Volume= 15.620 af, Depth= 2.90"

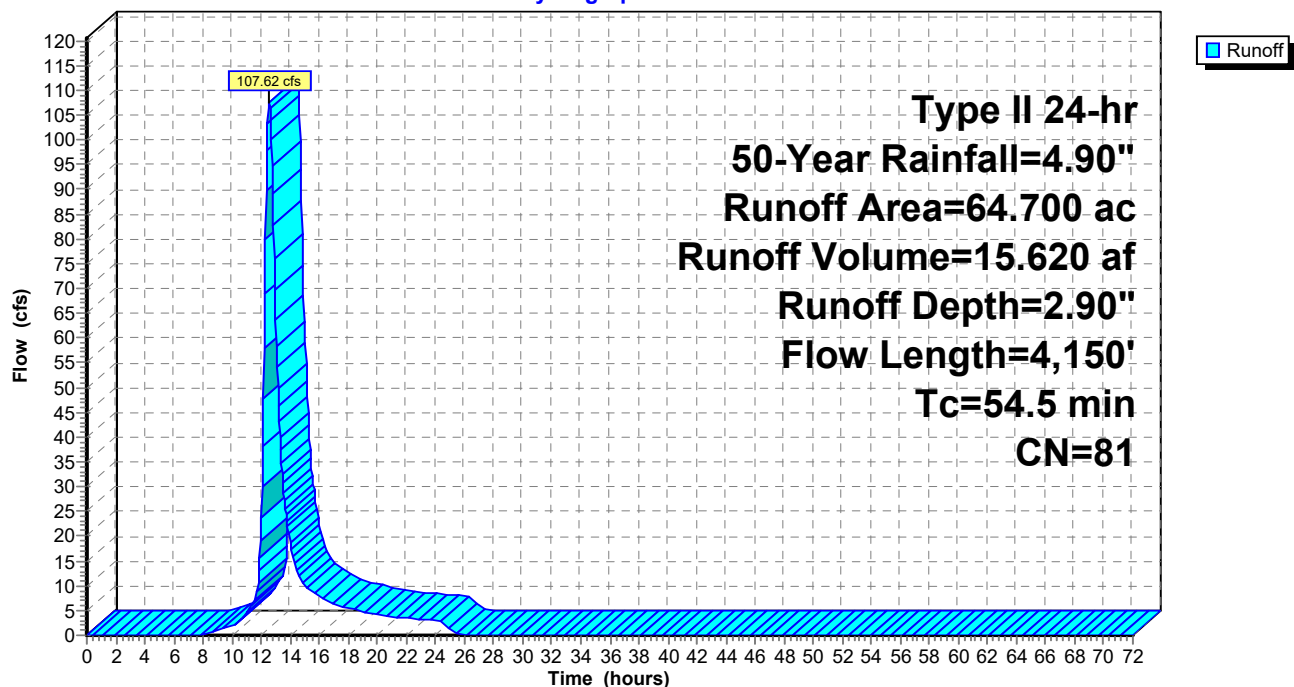
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
36.200	85	Legumes, straight row, Good, HSG D
28.500	77	Brush, Fair, HSG D
64.700	81	Weighted Average
64.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 8S: Watershed B Existing Onsite

Hydrograph



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 13S: Watershed C Existing Onsite Total

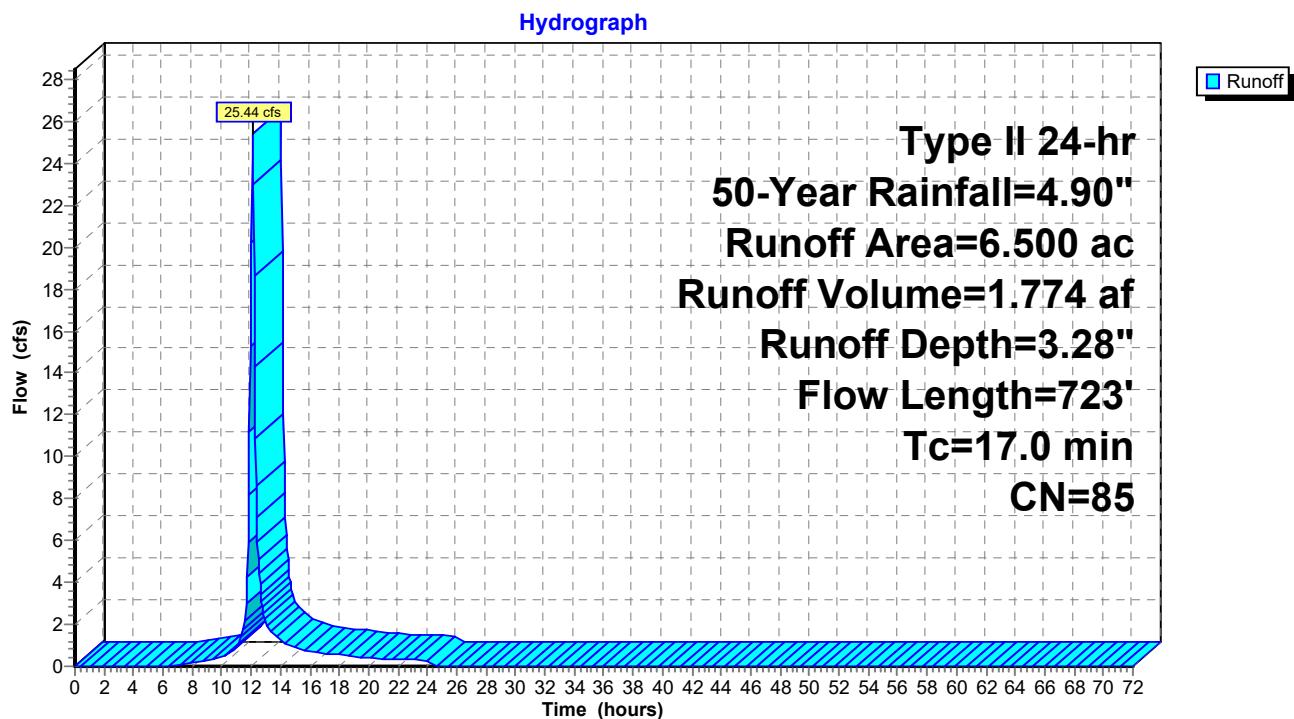
Runoff = 25.44 cfs @ 12.09 hrs, Volume= 1.774 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
6.500	85	Legumes, straight row, Good, HSG D
6.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0143	0.27		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.9	623	0.0113	0.96		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
17.0	723	Total			

Subcatchment 13S: Watershed C Existing Onsite Total



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 32S: Watershed B1 Offsite

Runoff = 7.31 cfs @ 12.56 hrs, Volume= 1.069 af, Depth= 2.54"

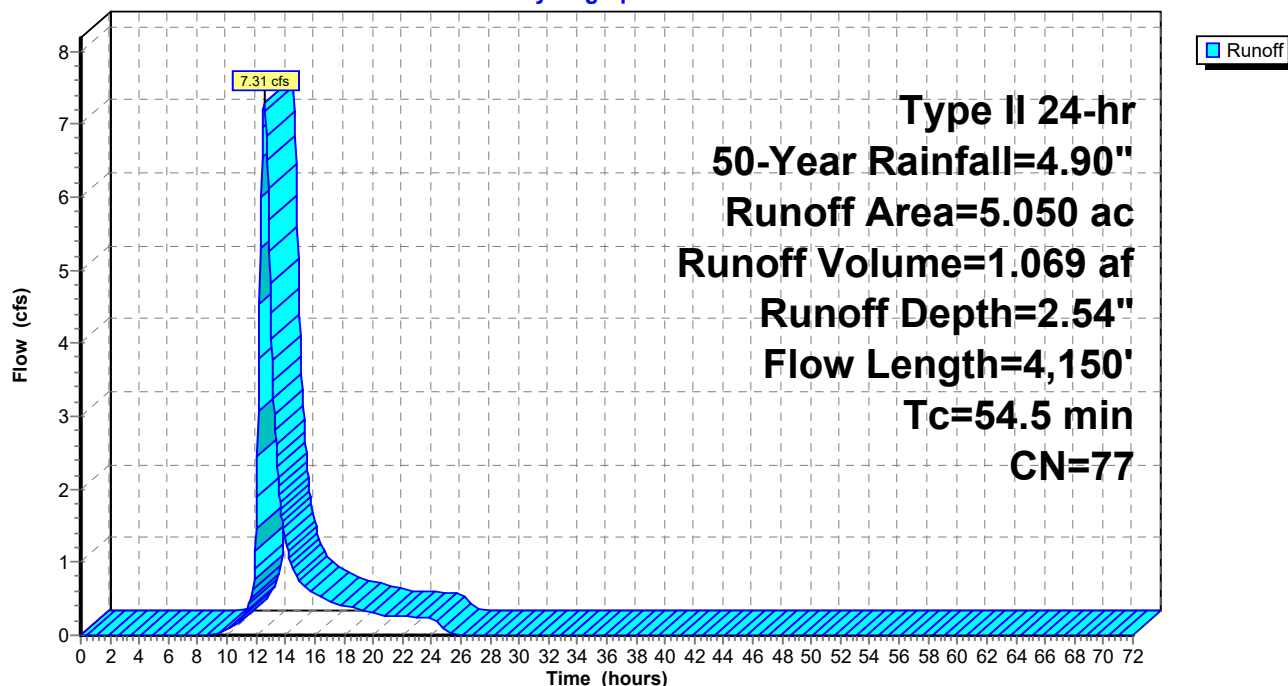
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 32S: Watershed B1 Offsite

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 33S: Watershed A1 Offsite

Runoff = 64.52 cfs @ 13.13 hrs, Volume= 14.486 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Homestead at Scotts Farm - Preliminary

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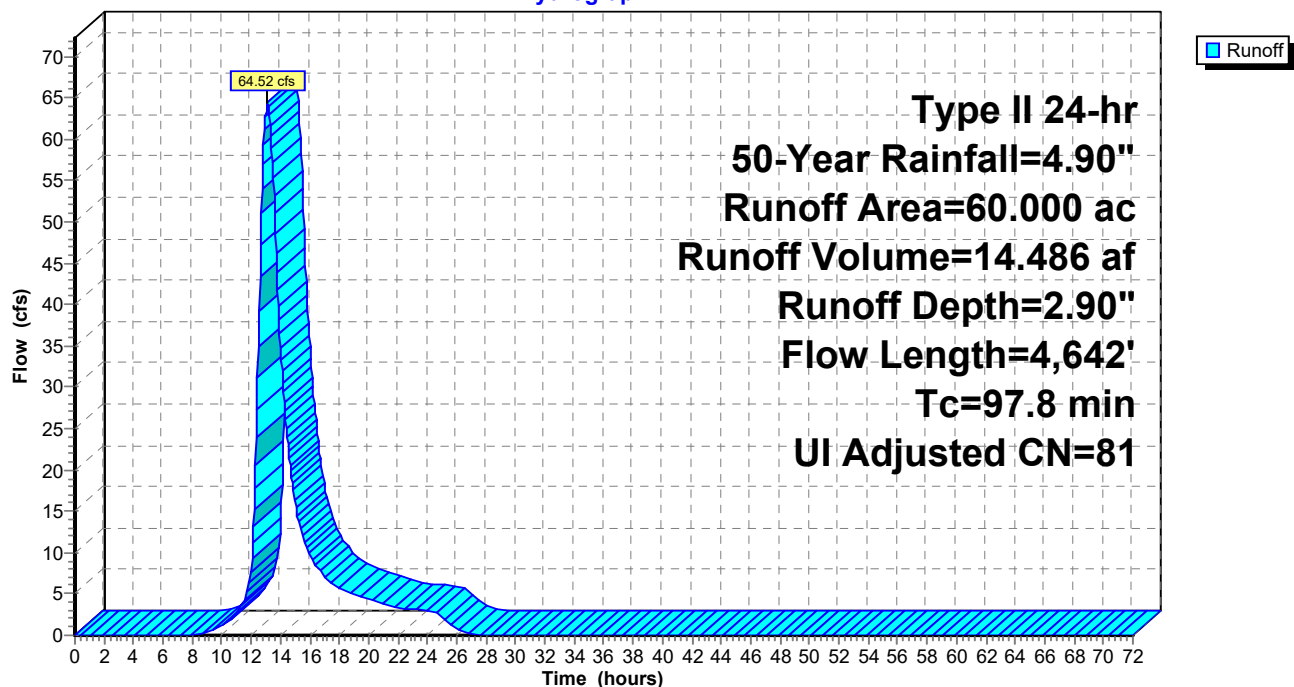
Type II 24-hr 50-Year Rainfall=4.90"

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Subcatchment 33S: Watershed A1 Offsite

Hydrograph



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 43S: Watershed B2 Offsite

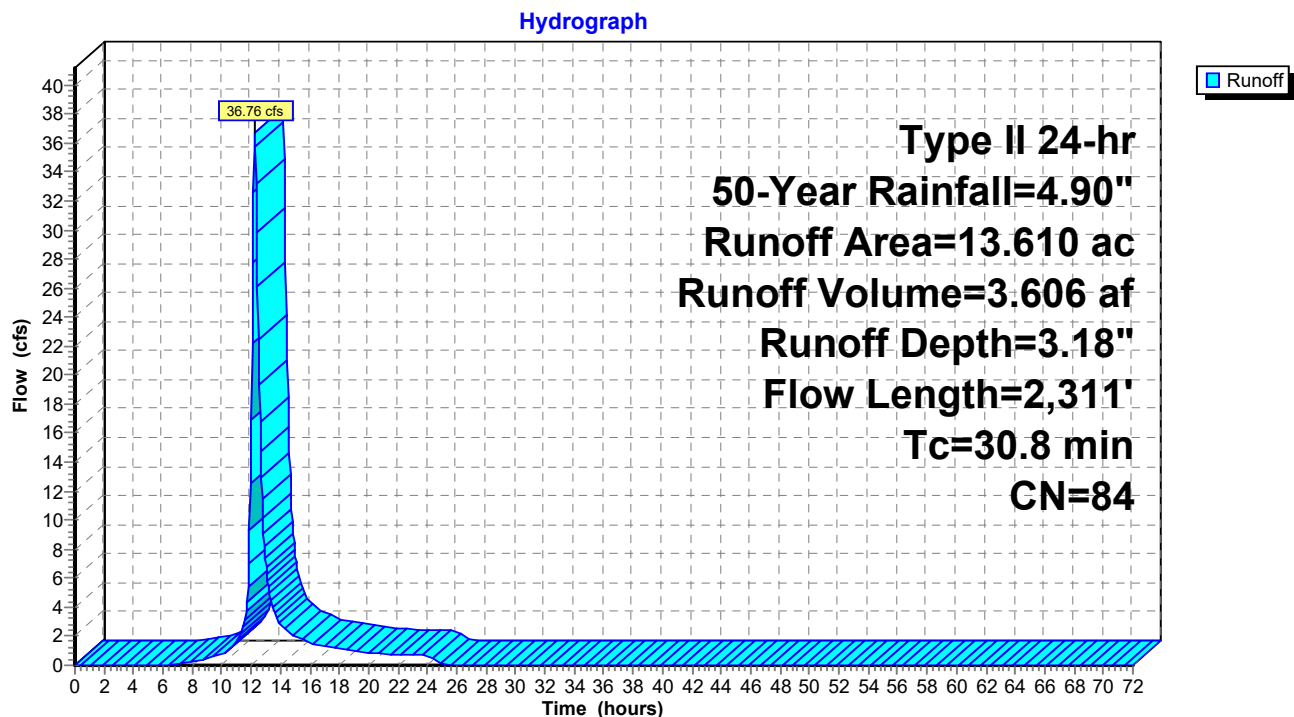
Runoff = 36.76 cfs @ 12.25 hrs, Volume= 3.606 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 43S: Watershed B2 Offsite



Homestead at Scotts Farm - Preliminary

Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 7S: Watershed A Existing Onsite

Runoff = 73.37 cfs @ 13.13 hrs, Volume= 16.446 af, Depth= 3.41"

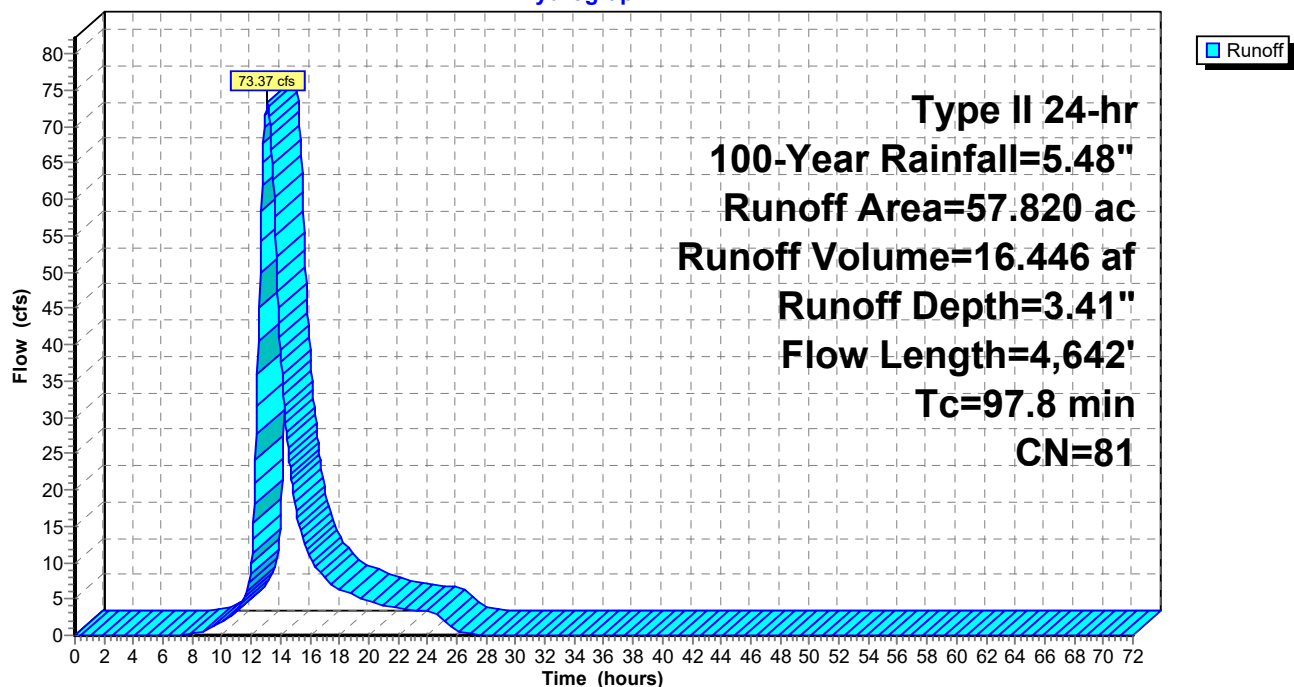
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
0.420	98	Unconnected pavement, HSG D
28.720	85	Legumes, straight row, Good, HSG D
2.740	77	Woods, Good, HSG D
6.300	80	>75% Grass cover, Good, HSG D
19.640	77	Brush, Fair, HSG D
57.820	81	Weighted Average
57.400		99.27% Pervious Area
0.420		0.73% Impervious Area
0.420		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 7S: Watershed A Existing Onsite

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 8S: Watershed B Existing Onsite

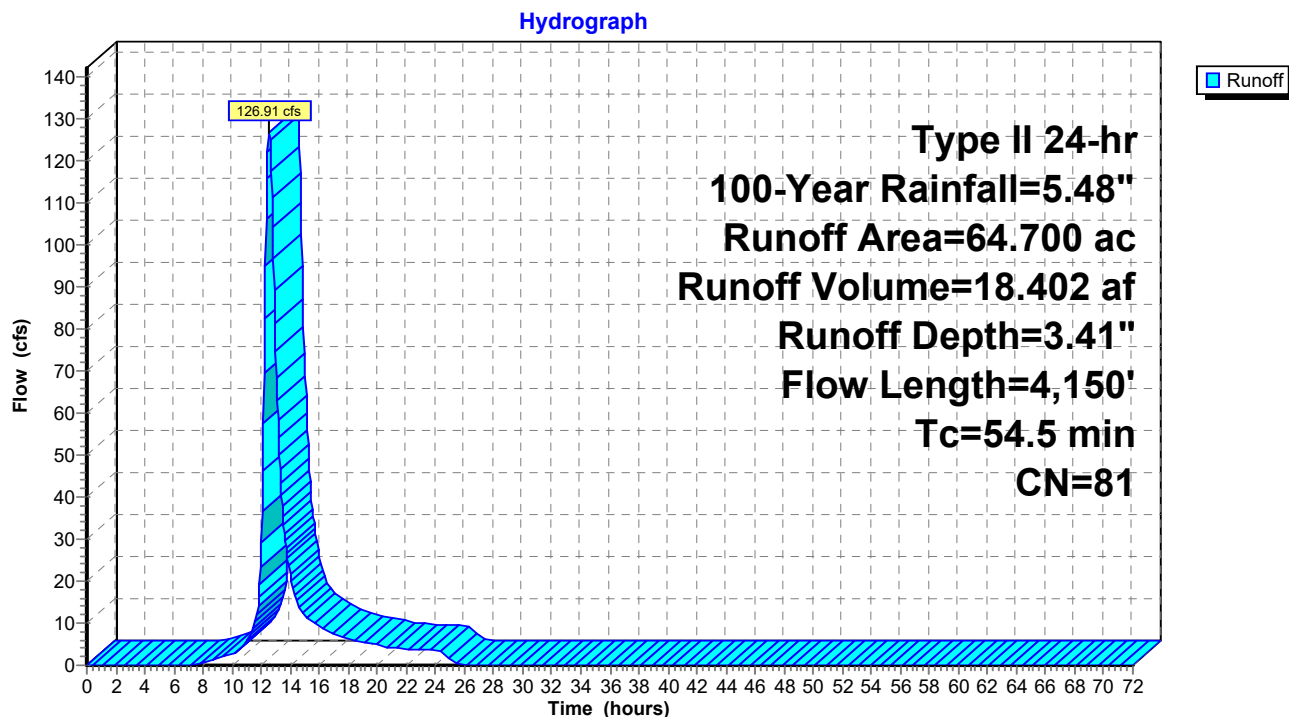
Runoff = 126.91 cfs @ 12.55 hrs, Volume= 18.402 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
36.200	85	Legumes, straight row, Good, HSG D
28.500	77	Brush, Fair, HSG D
64.700	81	Weighted Average
64.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 8S: Watershed B Existing Onsite



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 13S: Watershed C Existing Onsite Total

Runoff = 29.47 cfs @ 12.09 hrs, Volume= 2.066 af, Depth= 3.81"

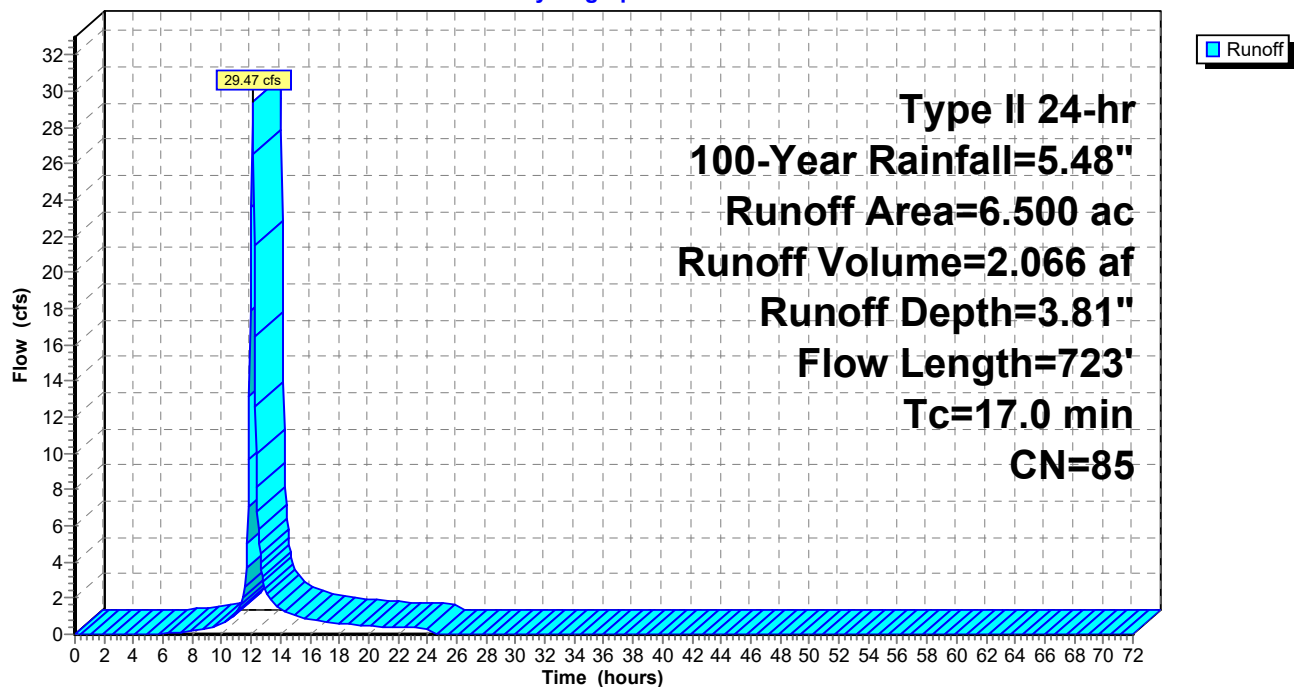
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
6.500	85	Legumes, straight row, Good, HSG D
6.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0143	0.27		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.9	623	0.0113	0.96		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
17.0	723	Total			

Subcatchment 13S: Watershed C Existing Onsite Total

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 32S: Watershed B1 Offsite

Runoff = 8.76 cfs @ 12.55 hrs, Volume= 1.275 af, Depth= 3.03"

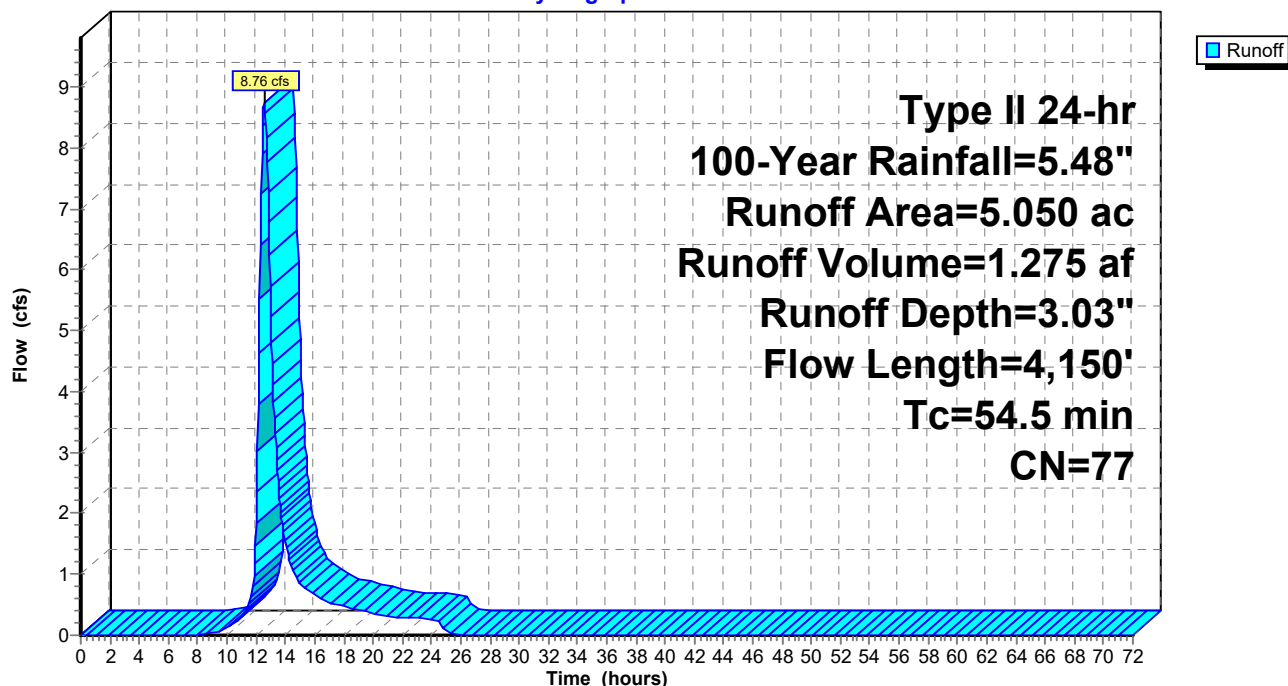
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 32S: Watershed B1 Offsite

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 33S: Watershed A1 Offsite

Runoff = 76.13 cfs @ 13.13 hrs, Volume= 17.066 af, Depth= 3.41"

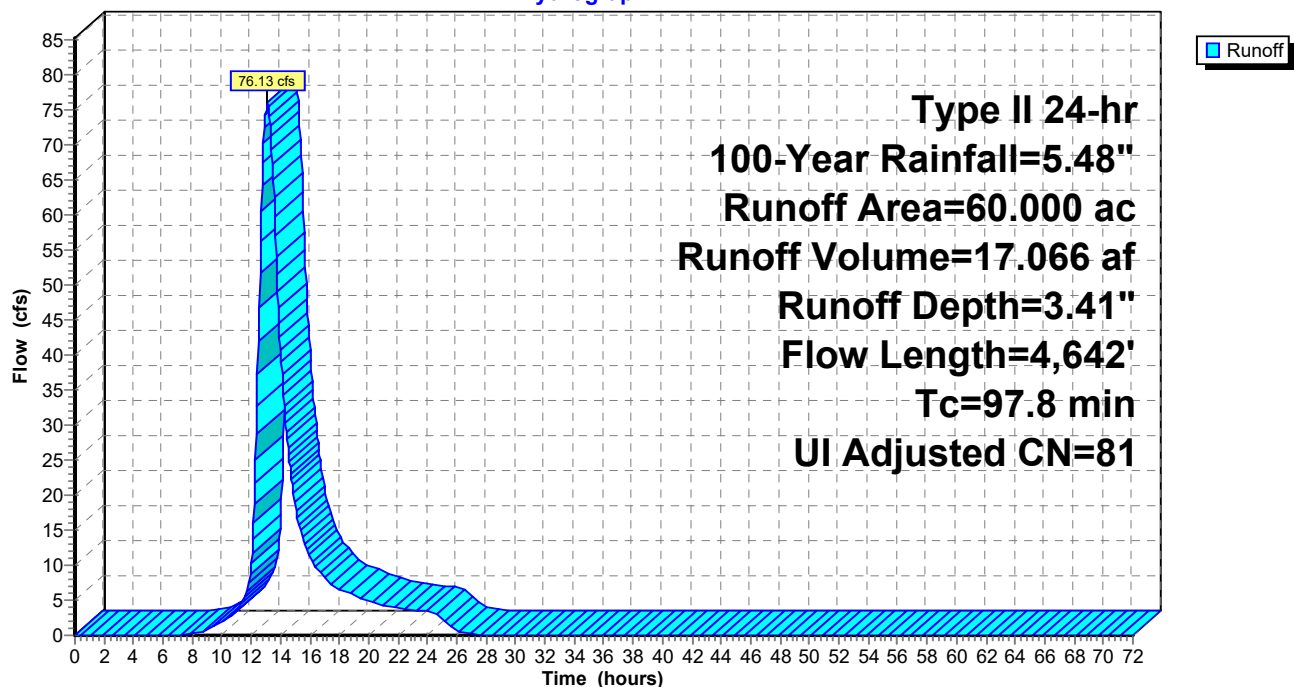
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 33S: Watershed A1 Offsite

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 43S: Watershed B2 Offsite

Runoff = 42.81 cfs @ 12.25 hrs, Volume= 4.210 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 43S: Watershed B2 Offsite

Hydrograph

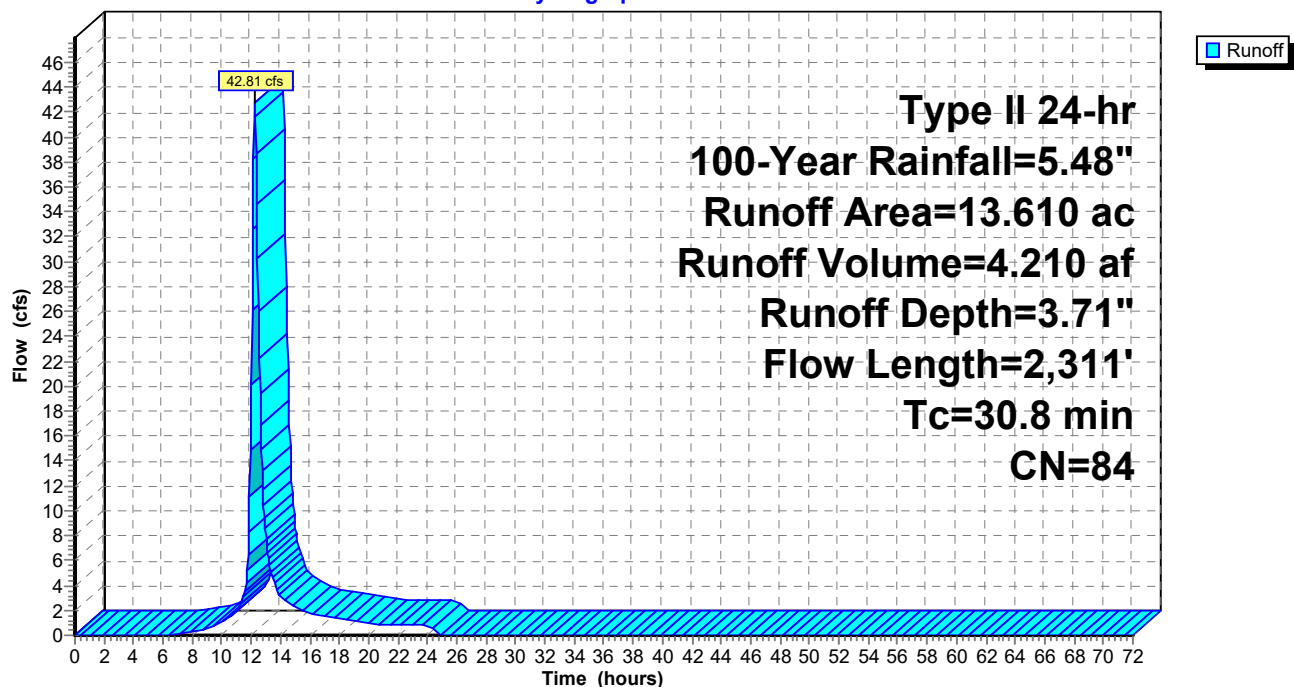




Exhibit 2 – Critical Storm Calculations and Allowable Discharge Rate Summary





Exhibit 2 – Critical Storm Calculations and Allowable Discharge Rate Summary

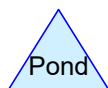
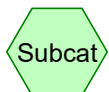




Existing Onsite Total
(Critical Storm)



Proposed Onsite Total
(Critical Storm)



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 39S: Proposed Onsite Total (Critical Storm)

Runoff = 124.82 cfs @ 12.18 hrs, Volume= 10.629 af, Depth= 0.92"

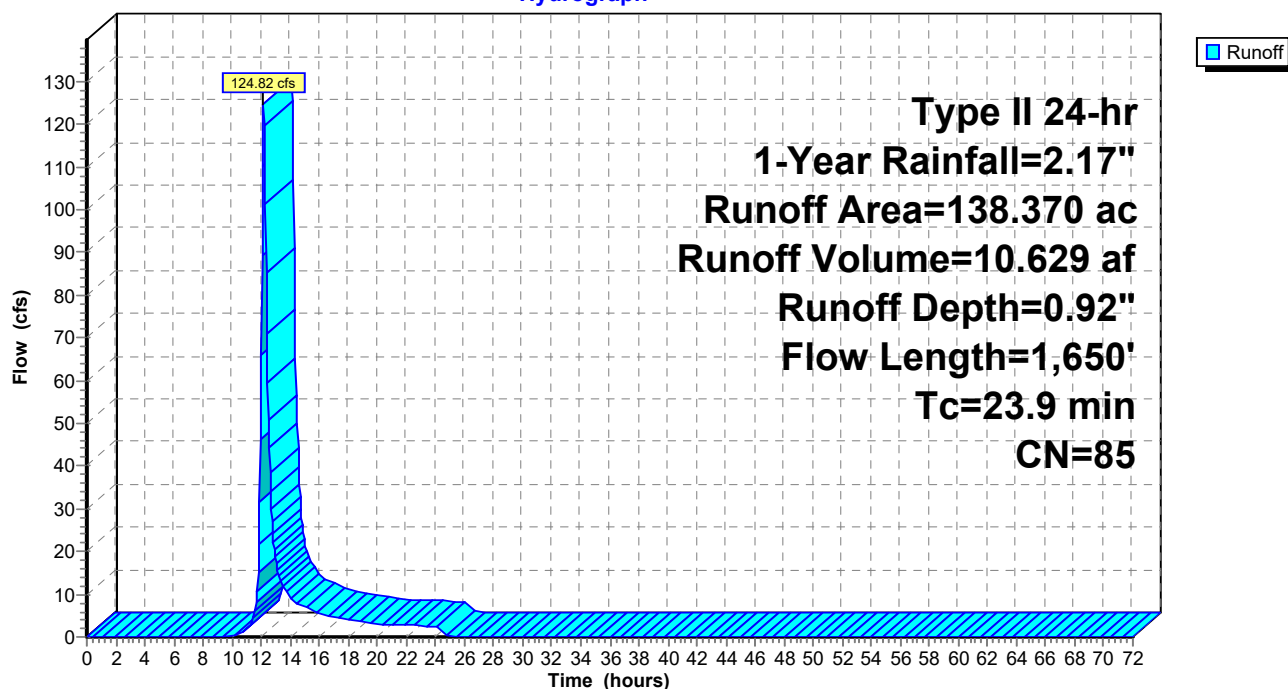
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
49.800	80	>75% Grass cover, Good, HSG D
5.140	77	Woods, Good, HSG D
76.450	87	1/4 acre lots, 38% imp, HSG D
6.980	98	Water Surface, HSG D
138.370	85	Weighted Average
102.339		73.96% Pervious Area
36.031		26.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
9.3	1,550	0.0022	2.79	4.93	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
23.9	1,650	Total			

Subcatchment 39S: Proposed Onsite Total (Critical Storm)

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 50S: Existing Onsite Total (Critical Storm)

Runoff = 203.87 cfs @ 11.90 hrs, Volume= 8.244 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
0.420	98	Unconnected pavement, HSG D
71.420	85	Legumes, straight row, Good, HSG D
12.090	77	Woods, Good, HSG D
6.300	80	>75% Grass cover, Good, HSG D
48.140	77	Brush, Fair, HSG D
138.370	81	Weighted Average
137.950		99.70% Pervious Area
0.420		0.30% Impervious Area
0.420		100.00% Unconnected

Subcatchment 50S: Existing Onsite Total (Critical Storm)

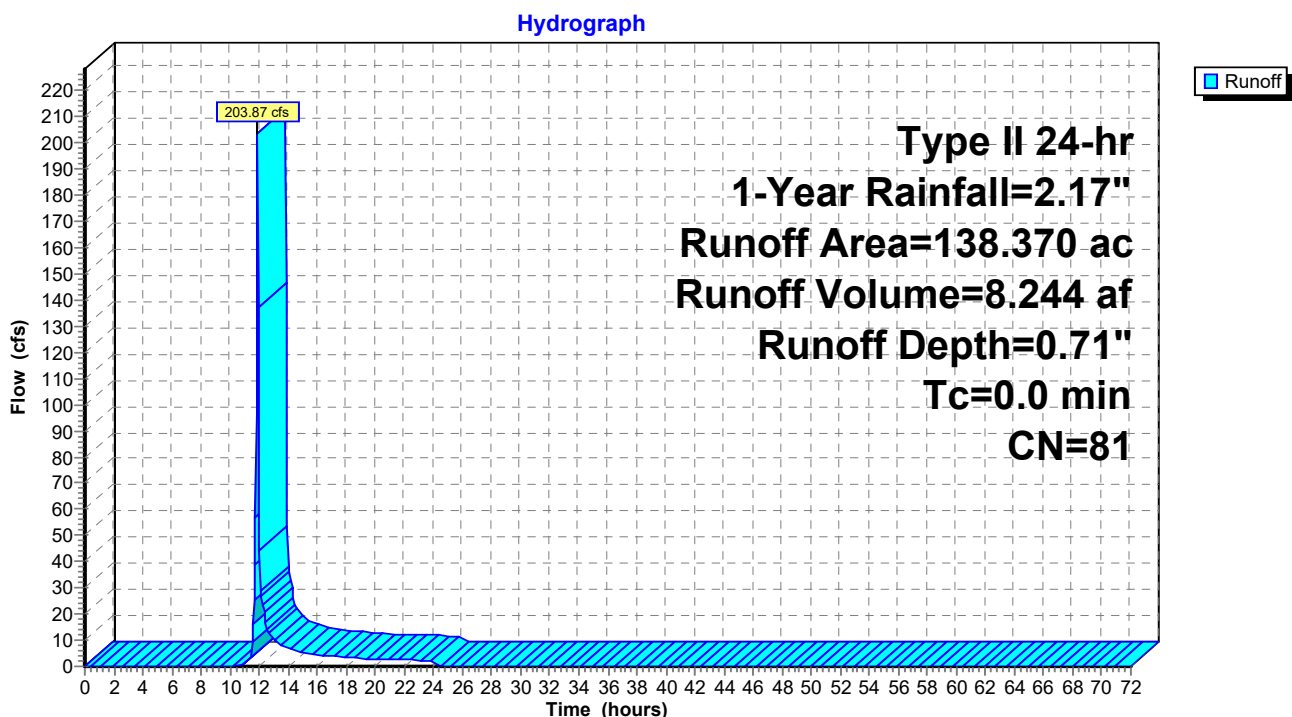


Table 1: Storm Event Release Rates for Watershed A

Storm Event	Onsite Pre-Developed Peak Discharge (CFS)	Offsite A1 (Pass-Through) Peak Discharge (CFS)	Allowable Post-Developed Release Rate Including Offsite Flows(CFS)	Actual Post-Developed Release Rate Including Offsite Flows (CFS)*
1-year	14.02	14.55	28.57	18.50
2-year	20.52	21.30	35.32	26.57
5-year	30.45	31.60	45.62	38.42
10-year	38.99	40.46	79.45	48.67
25-year	51.55	53.49	105.04	64.38
50-year	62.18	64.52	126.70	76.69
100-year	73.37	76.13	149.50	89.41

Table 2: Storm Event Release Rates for Watershed B

Storm Event	Onsite Pre-Developed Peak Discharge (CFS)	Offsite B1 (Pass-Through) Peak Discharge (CFS)	Offsite B2 (Pass-Through) Peak Discharge (CFS)	Allowable Post-Developed Release Rate (CFS)	Actual Post-Developed Release Rate Including Offsite Flows (CFS)*
1-year	28.65	1.33	9.72	39.70	10.83
2-year	41.80	2.08	13.54	42.19	14.97
5-year	61.88	3.29	19.22	47.87	24.02
10-year	79.10	4.35	24.01	107.46	32.54
25-year	104.42	5.94	30.96	141.32	42.57
50-year	125.80	7.31	36.76	169.87	50.21
100-year	148.29	8.76	42.81	199.86	57.93

Table 3: Storm Event Release Rates for Watershed C

Storm Event	Onsite Pre-Developed Peak Discharge (CFS)	Allowable Post-Developed Release Rate (CFS)	Actual Post-Developed Release Rate (CFS)*
1-year	7.17	7.17	1.54
2-year	9.80	7.17	3.84
5-year	13.67	7.17	7.03
10-year	16.91	16.91	8.32
25-year	21.57	21.57	9.58
50-year	25.44	25.44	10.16
100-year	29.47	29.47	10.66



Exhibit 3 – Preliminary Post-Developed Release Rates



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- 3 Subcat 14S: Watershed C Proposed
- 4 Subcat 17S: Watershed A3 Proposed
- 5 Subcat 19S: Watershed A2 Proposed
- 6 Subcat 20S: Watershed B1 Proposed
- 7 Subcat 28S: Watershed B1 Offsite
- 8 Subcat 37S: Watershed B2 Proposed
- 9 Subcat 44S: Watershed A1 Offsite
- 11 Subcat 48S: Watershed B2 Offsite
- 12 Pond 4P: Basin A2
- 14 Pond 34P: Basin B1
- 16 Pond 35P: Basin B2
- 18 Pond 39P: Basin C
- 20 Pond 41P: Basin A3
- 22 Pond 44P: Basin A1
- 24 Link 26L: Total Watershed A Release
- 25 Link 27L: Total Watershed B Release

2-Year Event

- 26 Subcat 12S: Watershed A1 Proposed
- 27 Subcat 14S: Watershed C Proposed
- 28 Subcat 17S: Watershed A3 Proposed
- 29 Subcat 19S: Watershed A2 Proposed
- 30 Subcat 20S: Watershed B1 Proposed
- 31 Subcat 28S: Watershed B1 Offsite
- 32 Subcat 37S: Watershed B2 Proposed
- 33 Subcat 44S: Watershed A1 Offsite
- 35 Subcat 48S: Watershed B2 Offsite
- 36 Pond 4P: Basin A2
- 38 Pond 34P: Basin B1
- 40 Pond 35P: Basin B2
- 42 Pond 39P: Basin C
- 44 Pond 41P: Basin A3
- 46 Pond 44P: Basin A1
- 48 Link 26L: Total Watershed A Release
- 49 Link 27L: Total Watershed B Release

5-Year Event

- 50 Subcat 12S: Watershed A1 Proposed
- 51 Subcat 14S: Watershed C Proposed
- 52 Subcat 17S: Watershed A3 Proposed
- 53 Subcat 19S: Watershed A2 Proposed

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- 72 Link 26L: Total Watershed A Release
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10-Year Event

- 74 Subcat 12S: Watershed A1 Proposed
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- 77 Subcat 19S: Watershed A2 Proposed
- 78 Subcat 20S: Watershed B1 Proposed
- 79 Subcat 28S: Watershed B1 Offsite
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- 100 Subcat 17S: Watershed A3 Proposed
- 101 Subcat 19S: Watershed A2 Proposed
- 102 Subcat 20S: Watershed B1 Proposed
- 103 Subcat 28S: Watershed B1 Offsite
- 104 Subcat 37S: Watershed B2 Proposed
- 105 Subcat 44S: Watershed A1 Offsite
- 107 Subcat 48S: Watershed B2 Offsite
- 108 Pond 4P: Basin A2
- 110 Pond 34P: Basin B1
- 112 Pond 35P: Basin B2
- 114 Pond 39P: Basin C
- 116 Pond 41P: Basin A3

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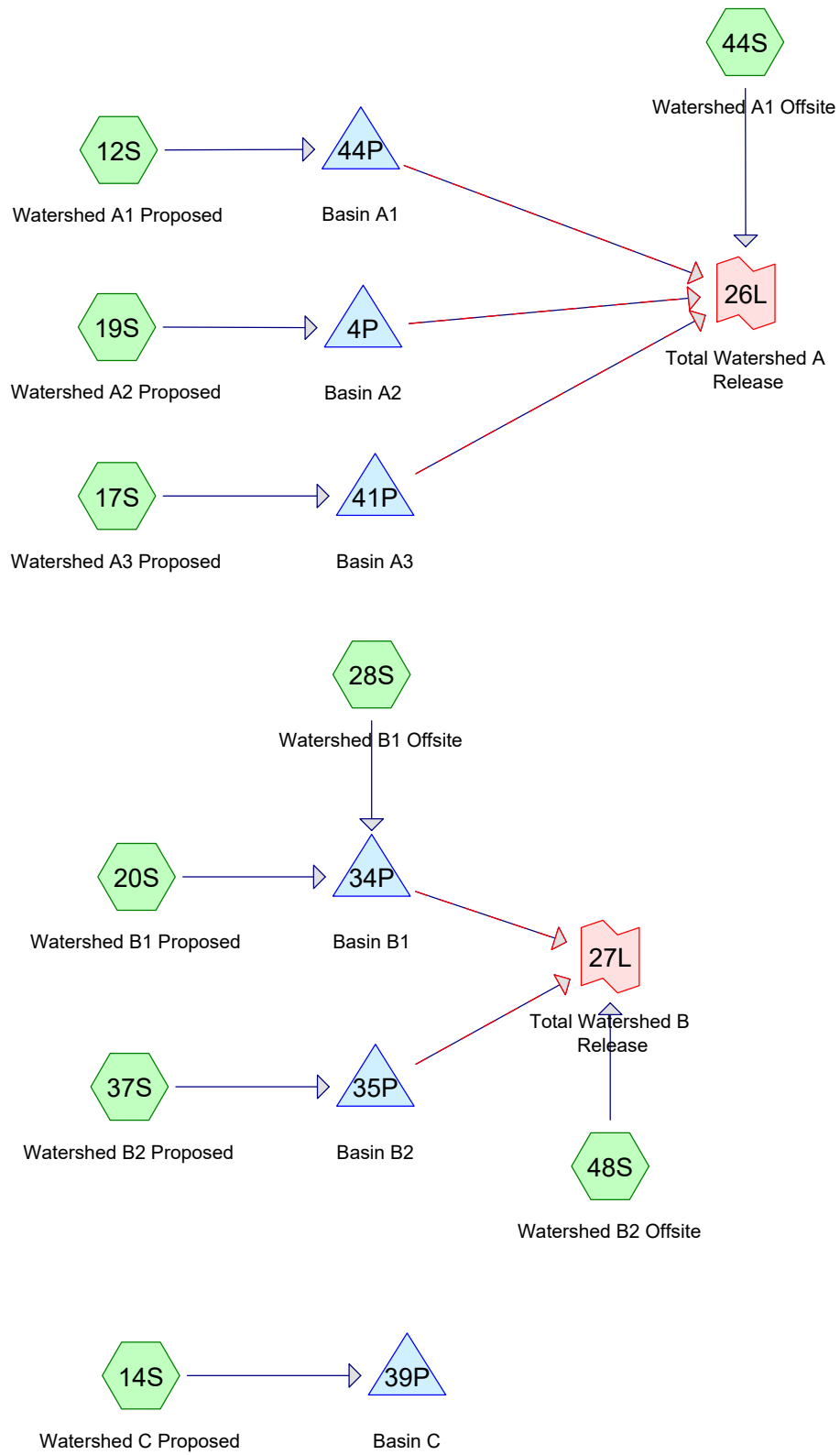
- 118 Pond 44P: Basin A1
- 120 Link 26L: Total Watershed A Release
- 121 Link 27L: Total Watershed B Release

50-Year Event

- 122 Subcat 12S: Watershed A1 Proposed
- 123 Subcat 14S: Watershed C Proposed
- 124 Subcat 17S: Watershed A3 Proposed
- 125 Subcat 19S: Watershed A2 Proposed
- 126 Subcat 20S: Watershed B1 Proposed
- 127 Subcat 28S: Watershed B1 Offsite
- 128 Subcat 37S: Watershed B2 Proposed
- 129 Subcat 44S: Watershed A1 Offsite
- 131 Subcat 48S: Watershed B2 Offsite
- 132 Pond 4P: Basin A2
- 134 Pond 34P: Basin B1
- 136 Pond 35P: Basin B2
- 138 Pond 39P: Basin C
- 140 Pond 41P: Basin A3
- 142 Pond 44P: Basin A1
- 144 Link 26L: Total Watershed A Release
- 145 Link 27L: Total Watershed B Release

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- 147 Subcat 14S: Watershed C Proposed
- 148 Subcat 17S: Watershed A3 Proposed
- 149 Subcat 19S: Watershed A2 Proposed
- 150 Subcat 20S: Watershed B1 Proposed
- 151 Subcat 28S: Watershed B1 Offsite
- 152 Subcat 37S: Watershed B2 Proposed
- 153 Subcat 44S: Watershed A1 Offsite
- 155 Subcat 48S: Watershed B2 Offsite
- 156 Pond 4P: Basin A2
- 158 Pond 34P: Basin B1
- 160 Pond 35P: Basin B2
- 162 Pond 39P: Basin C
- 164 Pond 41P: Basin A3
- 166 Pond 44P: Basin A1
- 168 Link 26L: Total Watershed A Release
- 169 Link 27L: Total Watershed B Release



Routing Diagram for Homestead at Scotts Farm - Preliminary

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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 12S: Watershed A1 Proposed

[47] Hint: Peak is 280% of capacity of segment #2

Runoff = 37.05 cfs @ 12.11 hrs, Volume= 2.671 af, Depth= 1.04"

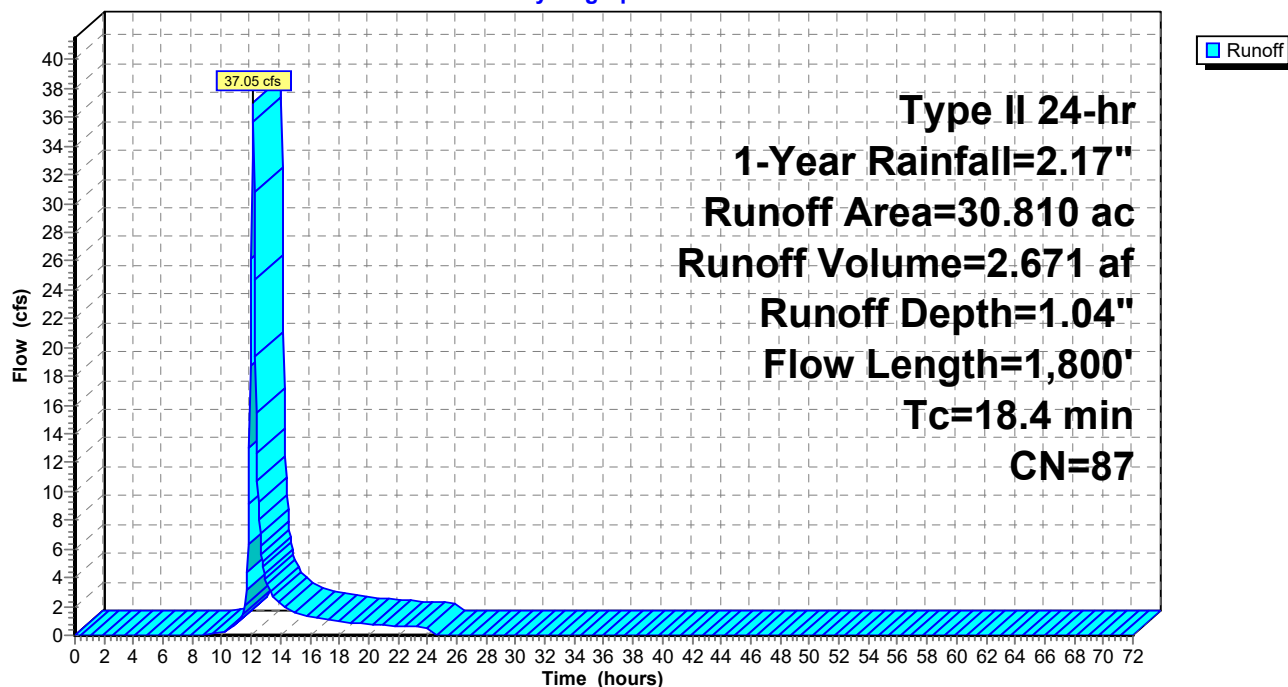
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
30.810	87	1/4 acre lots, 38% imp, HSG D
19.102		62.00% Pervious Area
11.708		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.8	1,700	0.0135	7.48	13.22	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
18.4	1,800	Total			

Subcatchment 12S: Watershed A1 Proposed

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 14S: Watershed C Proposed

[47] Hint: Peak is 286% of capacity of segment #2

Runoff = 7.80 cfs @ 12.10 hrs, Volume= 0.536 af, Depth= 1.04"

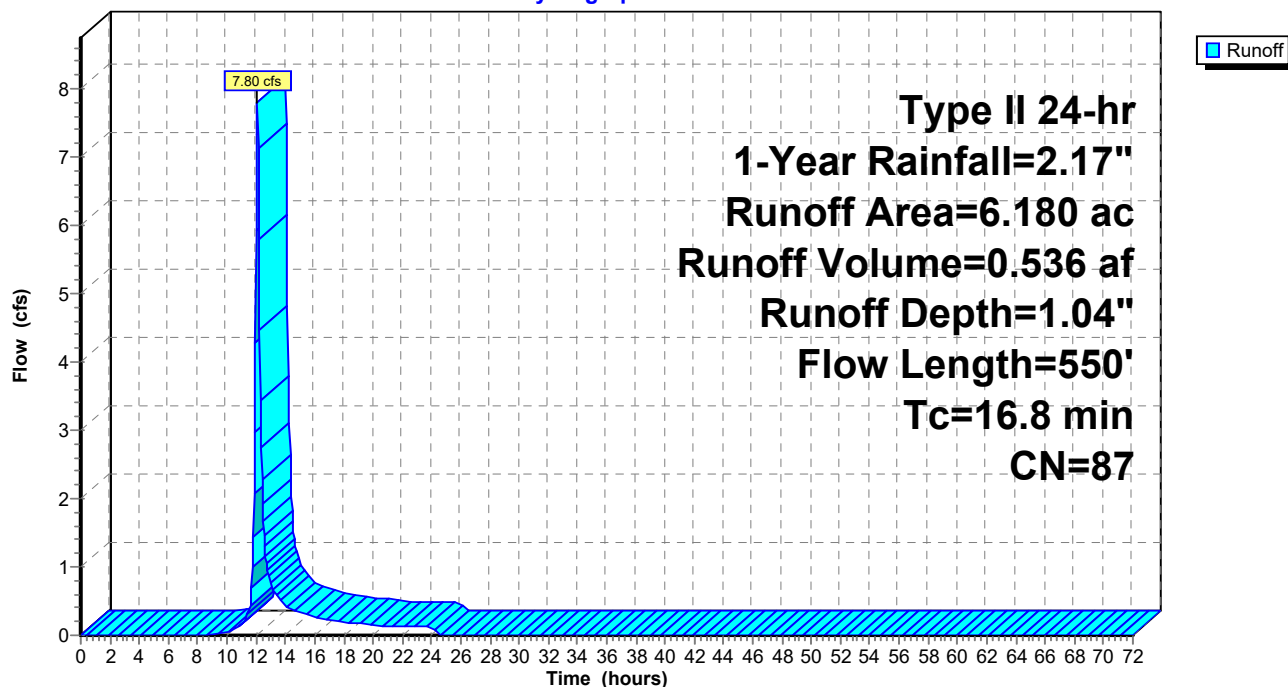
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
6.180	87	1/4 acre lots, 38% imp, HSG D
3.832		62.00% Pervious Area
2.348		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.2	450	0.0050	3.47	2.73	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.8	550	Total			

Subcatchment 14S: Watershed C Proposed

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 17S: Watershed A3 Proposed

Runoff = 4.99 cfs @ 12.11 hrs, Volume= 0.355 af, Depth= 1.04"

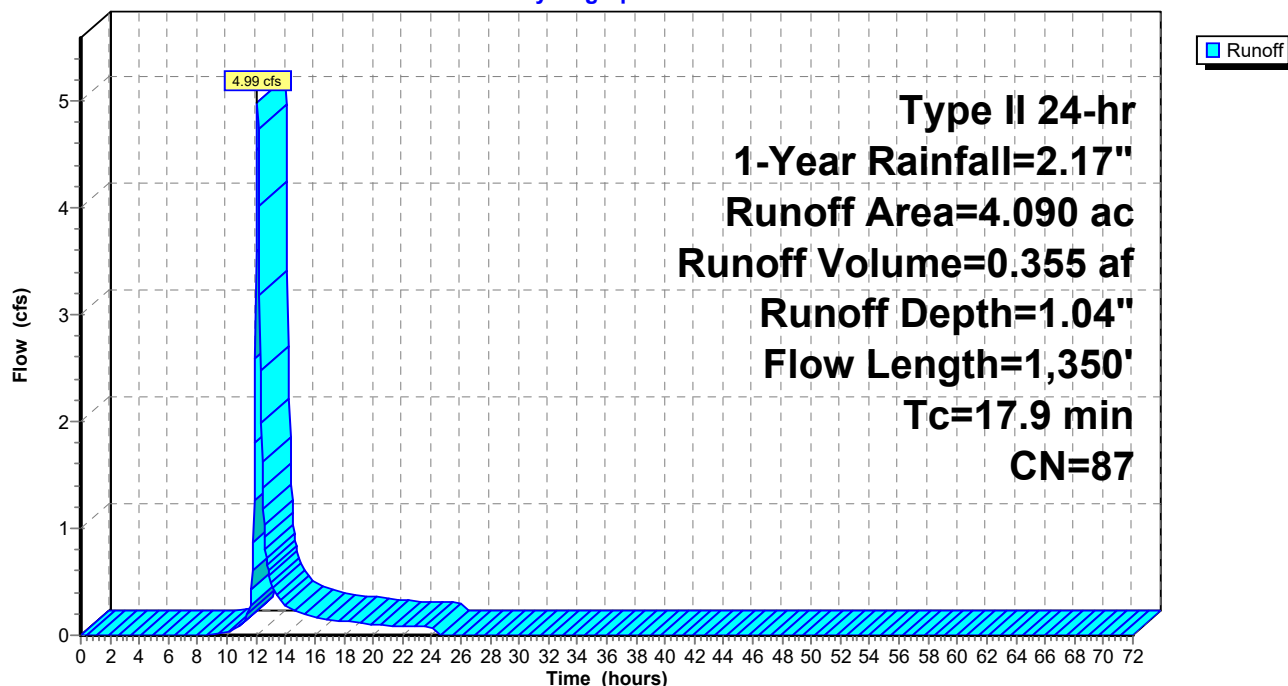
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
4.090	87	1/4 acre lots, 38% imp, HSG D
2.536		62.00% Pervious Area
1.554		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,250	0.0120	6.25	7.67	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
17.9	1,350	Total			

Subcatchment 17S: Watershed A3 Proposed

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 19S: Watershed A2 Proposed

[47] Hint: Peak is 396% of capacity of segment #2

Runoff = 19.58 cfs @ 12.10 hrs, Volume= 1.349 af, Depth= 1.04"

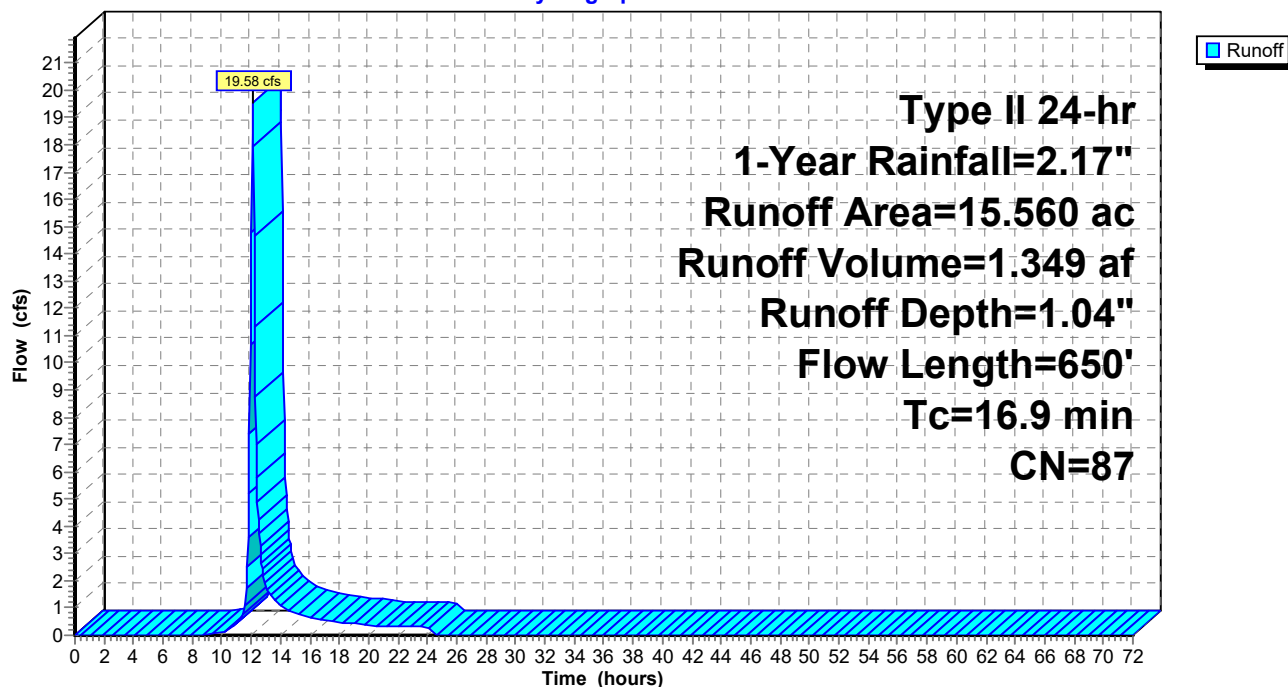
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
15.560	87	1/4 acre lots, 38% imp, HSG D
9.647		62.00% Pervious Area
5.913		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	550	0.0050	4.03	4.95	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
16.9	650	Total			

Subcatchment 19S: Watershed A2 Proposed

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 20S: Watershed B1 Proposed

[47] Hint: Peak is 258% of capacity of segment #2

Runoff = 43.63 cfs @ 12.10 hrs, Volume= 3.007 af, Depth= 1.04"

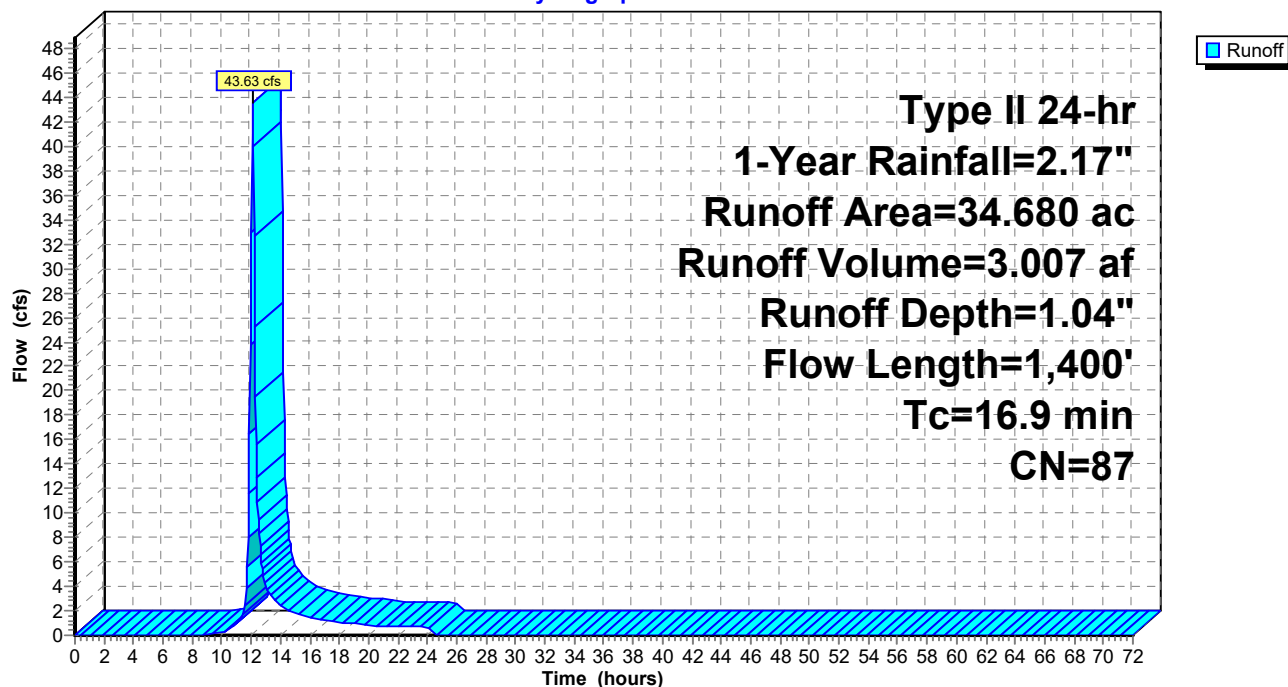
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
34.680	87	1/4 acre lots, 38% imp, HSG D
21.502		62.00% Pervious Area
13.178		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	1,300	0.0220	9.55	16.88	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
16.9	1,400	Total			

Subcatchment 20S: Watershed B1 Proposed

Hydrograph



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Summary for Subcatchment 28S: Watershed B1 Offsite

Runoff = 1.33 cfs @ 12.63 hrs, Volume= 0.228 af, Depth= 0.54"

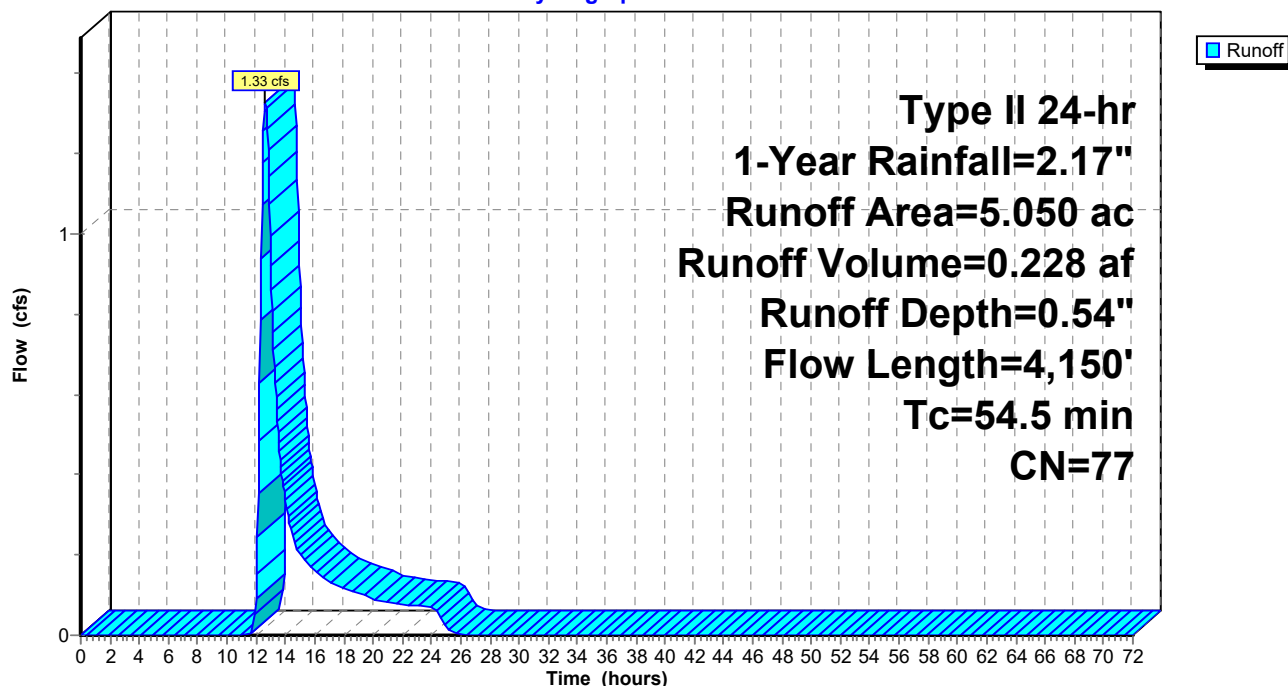
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 28S: Watershed B1 Offsite

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 37S: Watershed B2 Proposed

[47] Hint: Peak is 274% of capacity of segment #2

Runoff = 39.46 cfs @ 12.11 hrs, Volume= 2.803 af, Depth= 1.04"

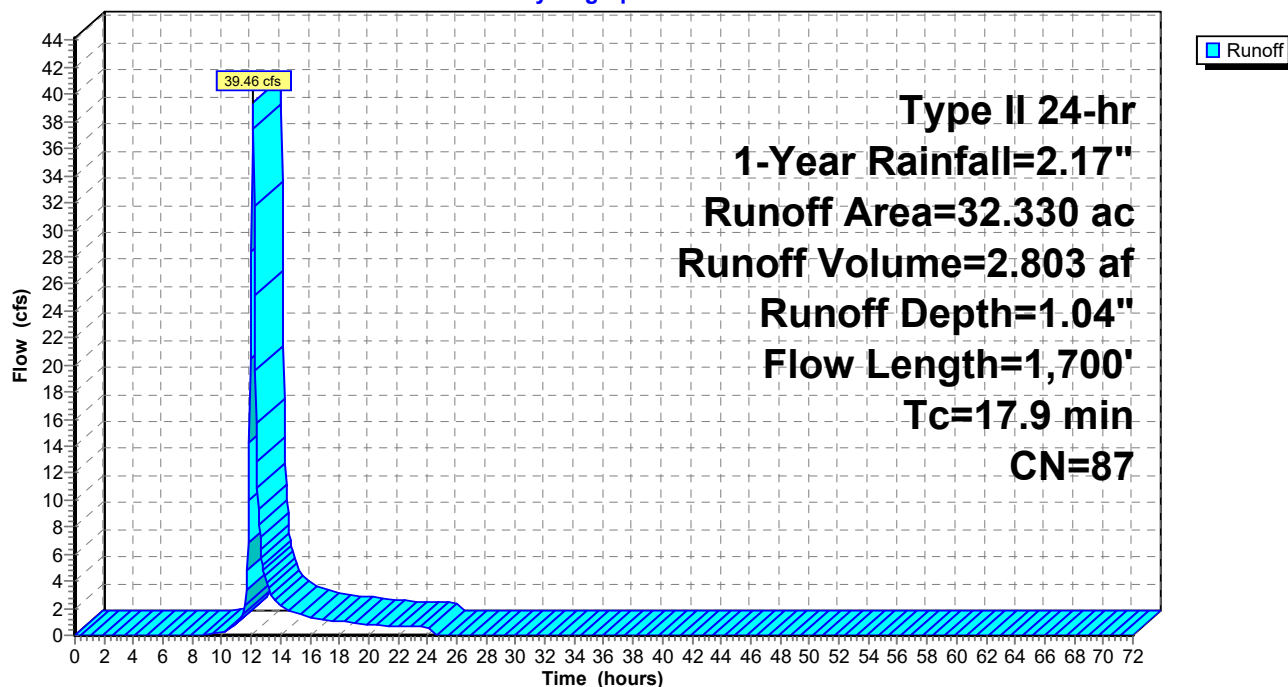
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
32.330	87	1/4 acre lots, 38% imp, HSG D
20.045		62.00% Pervious Area
12.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,600	0.0160	8.15	14.39	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
17.9	1,700	Total			

Subcatchment 37S: Watershed B2 Proposed

Hydrograph



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Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Subcatchment 44S: Watershed A1 Offsite

Runoff = 14.55 cfs @ 13.16 hrs, Volume= 3.575 af, Depth= 0.71"

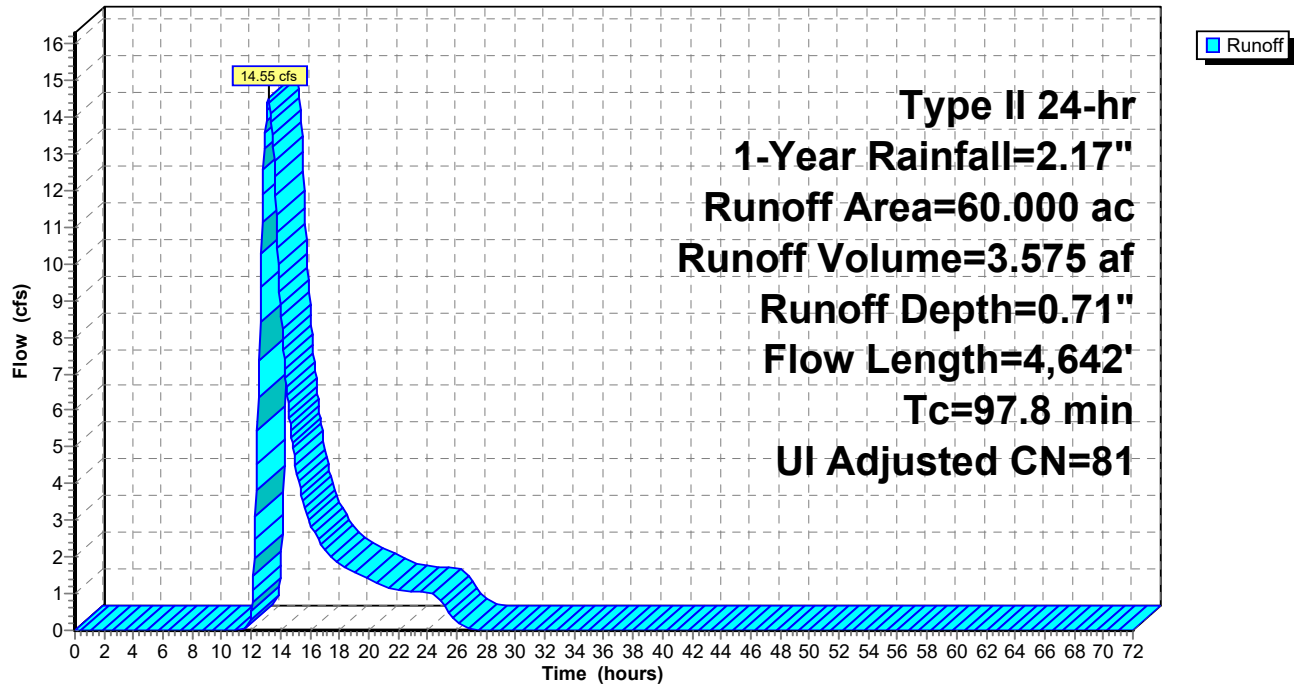
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 44S: Watershed A1 Offsite

Hydrograph



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Summary for Subcatchment 48S: Watershed B2 Offsite

Runoff = 9.72 cfs @ 12.27 hrs, Volume= 0.983 af, Depth= 0.87"

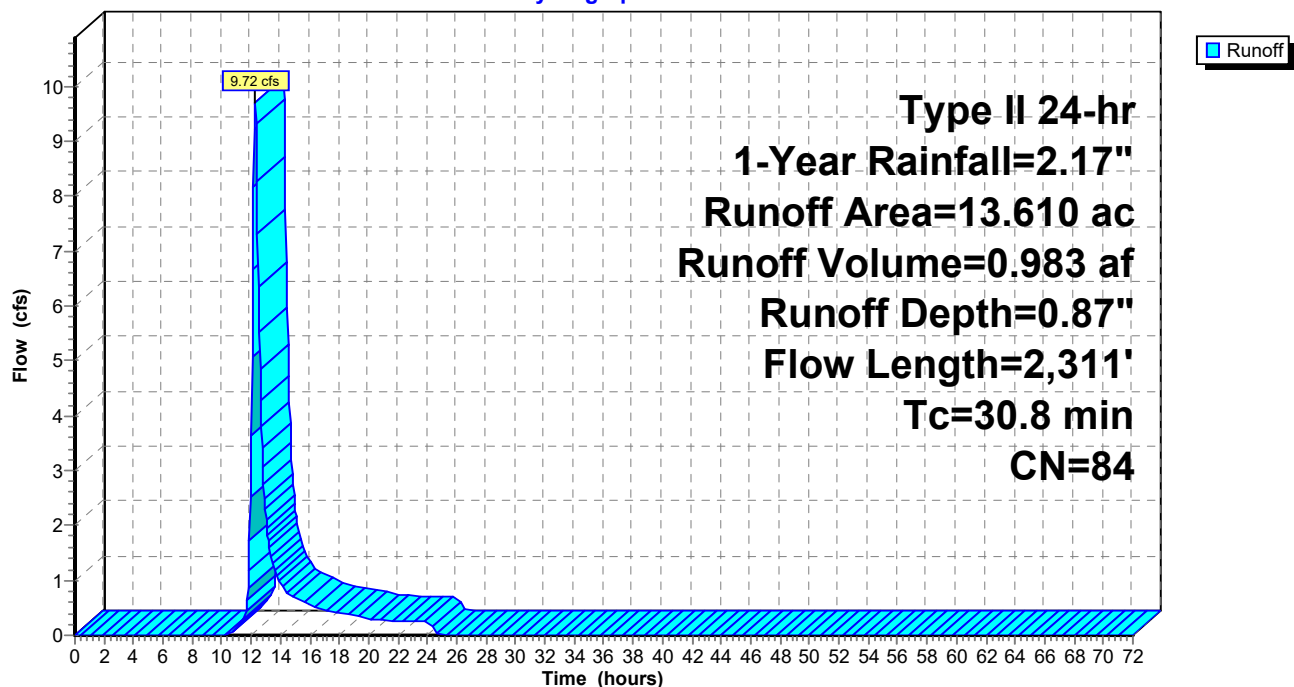
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.17"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 48S: Watershed B2 Offsite

Hydrograph



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Summary for Pond 4P: Basin A2

Inflow Area = 15.560 ac, 38.00% Impervious, Inflow Depth = 1.04" for 1-Year event
Inflow = 19.58 cfs @ 12.10 hrs, Volume= 1.349 af
Outflow = 0.53 cfs @ 17.45 hrs, Volume= 1.160 af, Atten= 97%, Lag= 321.2 min
Primary = 0.53 cfs @ 17.45 hrs, Volume= 1.160 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 982.56' @ 17.45 hrs Surf.Area= 72,925 sf Storage= 40,104 cf

Plug-Flow detention time= 1,004.1 min calculated for 1.160 af (86% of inflow)
Center-of-Mass det. time= 937.9 min (1,781.2 - 843.3)

Volume	Invert	Avail.Storage	Storage Description
#1	982.00'	328,816 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
982.00	69,352	0	0
983.00	75,690	72,521	72,521
984.00	82,128	78,909	151,430
985.00	88,668	85,398	236,828
986.00	95,308	91,988	328,816

Device	Routing	Invert	Outlet Devices
#1	Primary	982.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 982.00' / 980.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	982.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	985.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	985.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.53 cfs @ 17.45 hrs HW=982.56' (Free Discharge)

1=Culvert (Passes 0.53 cfs of 1.46 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.53 cfs @ 2.70 fps)
3=Orifice/Grate (Controls 0.00 cfs)
4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=982.00' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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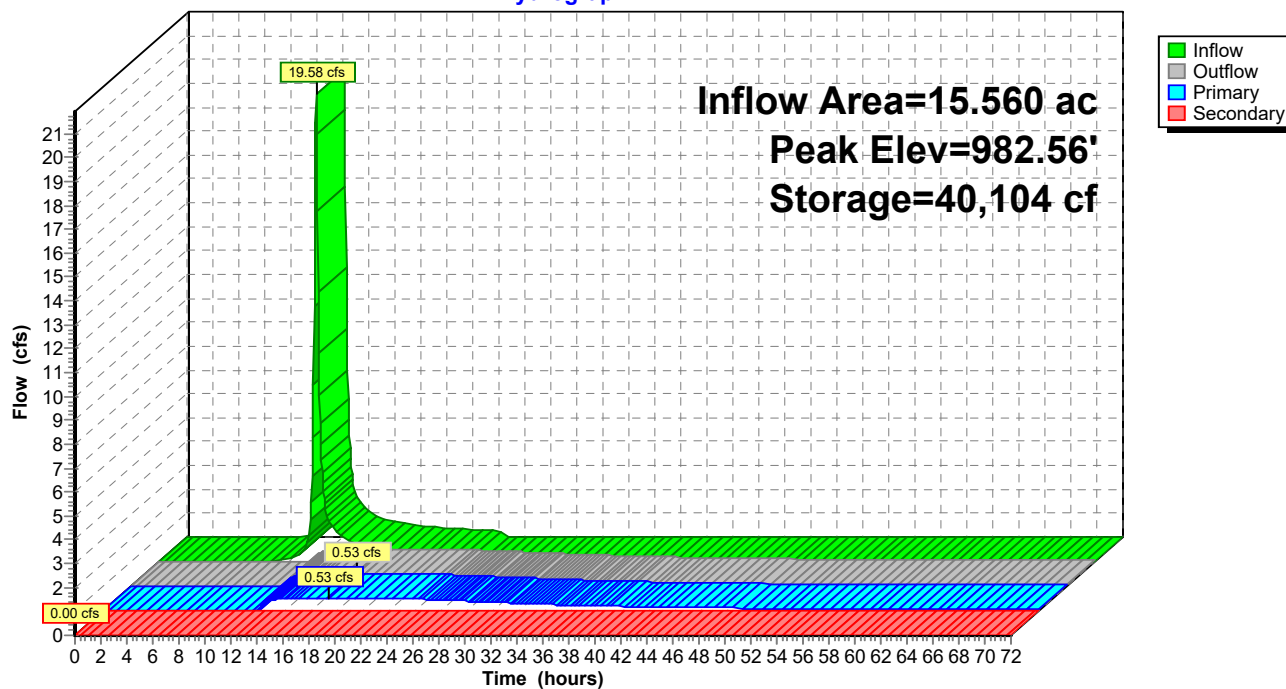
Type II 24-hr 1-Year Rainfall=2.17"

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Pond 4P: Basin A2

Hydrograph



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Summary for Pond 34P: Basin B1

Inflow Area = 39.730 ac, 33.17% Impervious, Inflow Depth = 0.98" for 1-Year event
Inflow = 43.87 cfs @ 12.10 hrs, Volume= 3.235 af
Outflow = 0.80 cfs @ 22.48 hrs, Volume= 2.587 af, Atten= 98%, Lag= 622.9 min
Primary = 0.80 cfs @ 22.48 hrs, Volume= 2.587 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 960.96' @ 22.48 hrs Surf.Area= 115,680 sf Storage= 107,770 cf

Plug-Flow detention time= 1,361.3 min calculated for 2.585 af (80% of inflow)
Center-of-Mass det. time= 1,277.1 min (2,125.9 - 848.7)

Volume	Invert	Avail.Storage	Storage Description
#1	960.00'	490,366 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
960.00	109,496	0	0
961.00	115,956	112,726	112,726
962.00	122,516	119,236	231,962
963.00	129,177	125,847	357,809
964.00	135,938	132,558	490,366

Device	Routing	Invert	Outlet Devices
#1	Primary	960.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 960.00' / 958.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	960.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	961.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	963.00'	1.0" x 12.0" Horiz. Orifice/Grate X 5.00 C= 0.600 in 12.0" x 12.0" Grate (42% open area) Limited to weir flow at low heads
#5	Secondary	963.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.80 cfs @ 22.48 hrs HW=960.96' (Free Discharge)

- 1=Culvert (Passes 0.80 cfs of 3.22 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.80 cfs @ 4.05 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=960.00' (Free Discharge)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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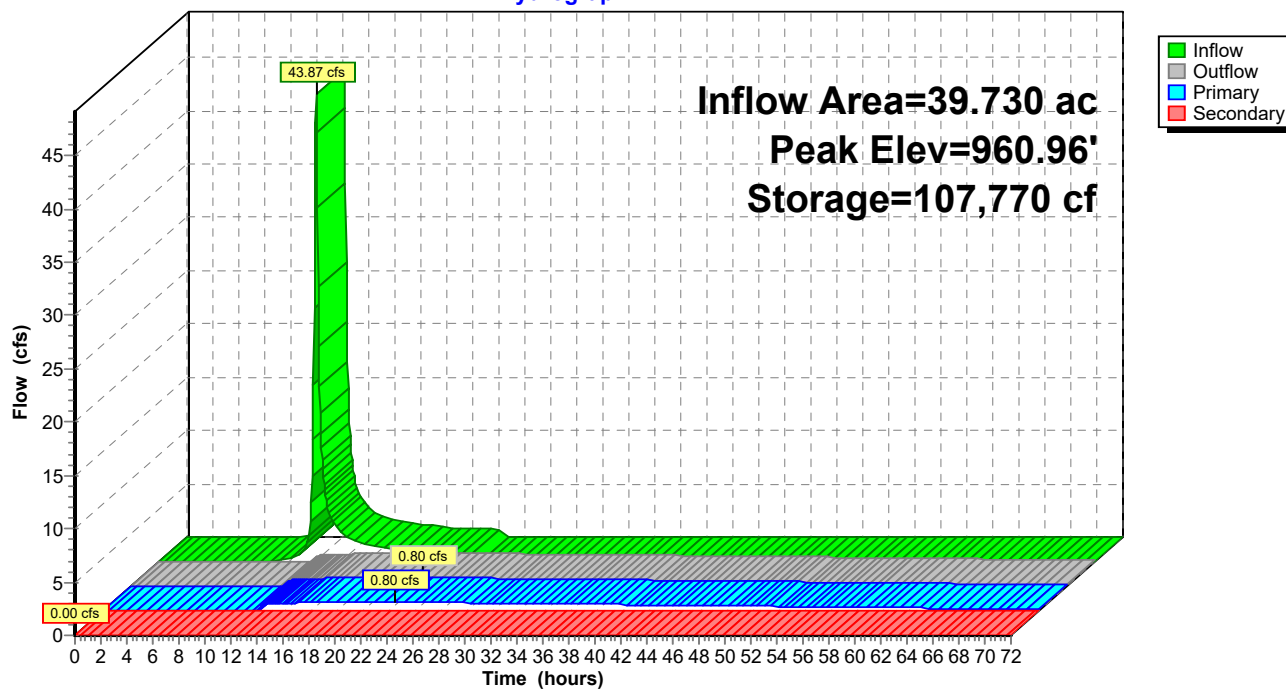
Type II 24-hr 1-Year Rainfall=2.17"

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Pond 34P: Basin B1

Hydrograph



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Summary for Pond 35P: Basin B2

Inflow Area = 32.330 ac, 38.00% Impervious, Inflow Depth = 1.04" for 1-Year event
 Inflow = 39.46 cfs @ 12.11 hrs, Volume= 2.803 af
 Outflow = 1.26 cfs @ 16.29 hrs, Volume= 2.517 af, Atten= 97%, Lag= 250.9 min
 Primary = 1.26 cfs @ 16.29 hrs, Volume= 2.517 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 953.10' @ 16.29 hrs Surf.Area= 79,072 sf Storage= 82,996 cf

Plug-Flow detention time= 1,048.9 min calculated for 2.515 af (90% of inflow)
 Center-of-Mass det. time= 998.4 min (1,842.7 - 844.3)

Volume	Invert	Avail.Storage	Storage Description
#1	952.00'	339,139 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
952.00	72,332	0	0
953.00	78,470	75,401	75,401
954.00	84,709	81,590	156,991
955.00	91,049	87,879	244,870
956.00	97,489	94,269	339,139

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 952.00' / 950.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	952.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	953.00'	15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	955.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	955.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.25 cfs @ 16.29 hrs HW=953.10' (Free Discharge)

1=Culvert (Passes 0.87 cfs of 3.65 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.87 cfs @ 4.43 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Weir Controls 0.38 cfs @ 1.02 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=952.00' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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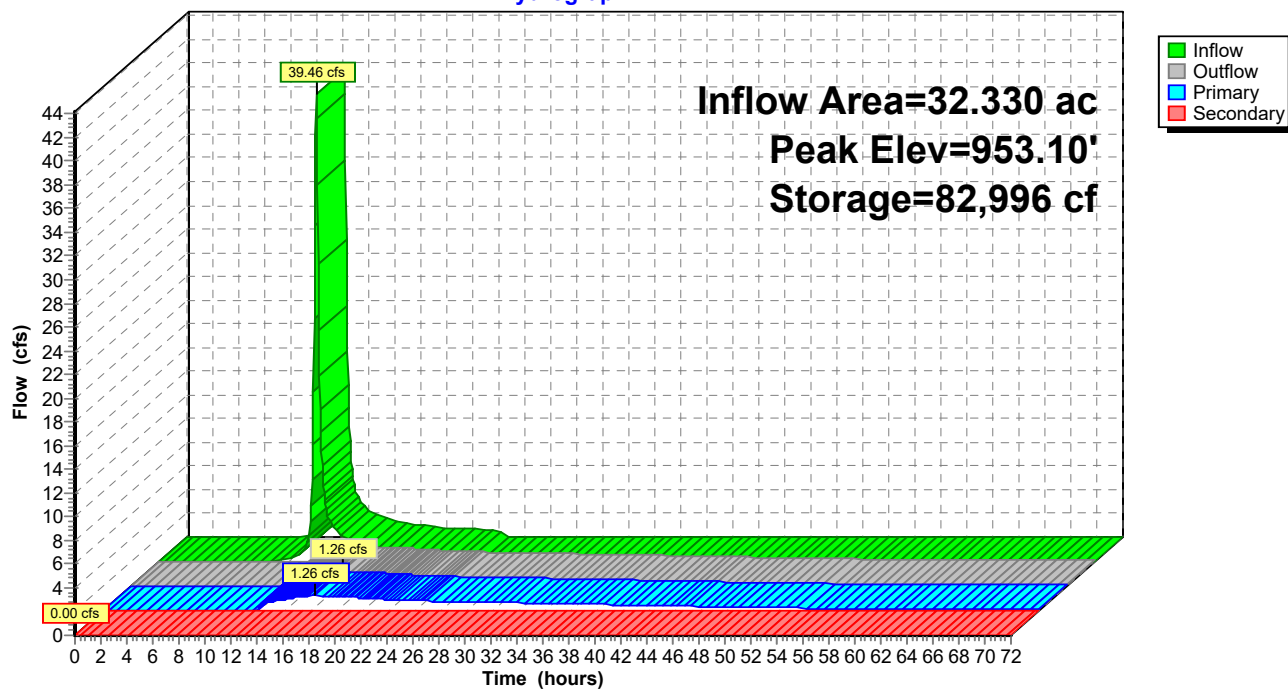
Type II 24-hr 1-Year Rainfall=2.17"

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Pond 35P: Basin B2

Hydrograph



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Summary for Pond 39P: Basin C

Inflow Area = 6.180 ac, 38.00% Impervious, Inflow Depth = 1.04" for 1-Year event
 Inflow = 7.80 cfs @ 12.10 hrs, Volume= 0.536 af
 Outflow = 1.54 cfs @ 12.53 hrs, Volume= 0.529 af, Atten= 80%, Lag= 26.4 min
 Primary = 1.54 cfs @ 12.53 hrs, Volume= 0.529 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 987.20' @ 12.53 hrs Surf.Area= 10,359 sf Storage= 11,008 cf

Plug-Flow detention time= 535.1 min calculated for 0.529 af (99% of inflow)
 Center-of-Mass det. time= 529.6 min (1,372.8 - 843.2)

Volume	Invert	Avail.Storage	Storage Description
#1	986.00'	48,247 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
986.00	8,024	0	0
987.00	9,955	8,990	8,990
988.00	11,986	10,971	19,960
989.00	14,118	13,052	33,012
990.00	16,352	15,235	48,247

Device	Routing	Invert	Outlet Devices
#1	Primary	986.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 986.00' / 984.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	986.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	987.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.53 cfs @ 12.53 hrs HW=987.20' (Free Discharge)

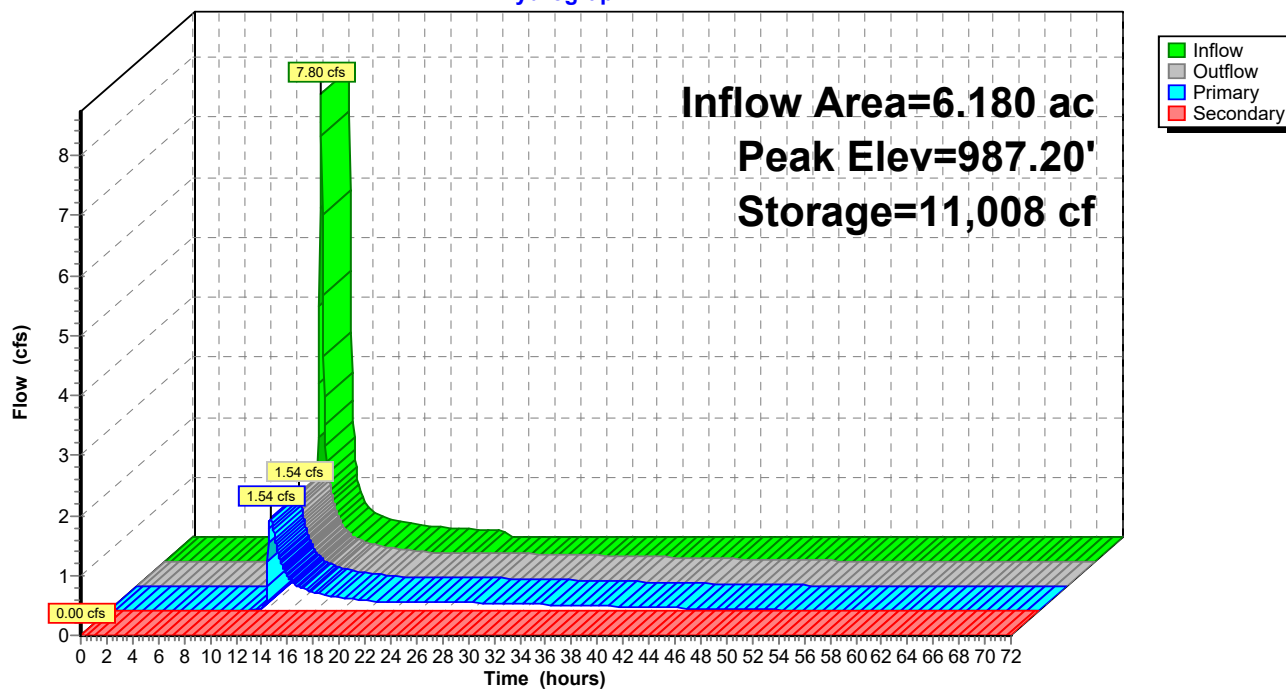
↑ **1=Culvert** (Passes 1.53 cfs of 5.64 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.17 cfs @ 5.04 fps)
 ↑ **3=Orifice/Grate** (Weir Controls 1.36 cfs @ 1.46 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=986.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Basin C

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Pond 41P: Basin A3

Inflow Area = 4.090 ac, 38.00% Impervious, Inflow Depth = 1.04" for 1-Year event
Inflow = 4.99 cfs @ 12.11 hrs, Volume= 0.355 af
Outflow = 2.14 cfs @ 12.34 hrs, Volume= 0.354 af, Atten= 57%, Lag= 13.9 min
Primary = 2.14 cfs @ 12.34 hrs, Volume= 0.354 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 988.23' @ 12.34 hrs Surf.Area= 5,276 sf Storage= 5,699 cf

Plug-Flow detention time= 148.3 min calculated for 0.354 af (100% of inflow)
Center-of-Mass det. time= 147.7 min (992.0 - 844.3)

Volume	Invert	Avail.Storage	Storage Description
#1	987.00'	16,986 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
987.00	3,824	0	0
988.00	4,979	4,402	4,402
989.00	6,266	5,623	10,024
990.00	7,657	6,962	16,986

Device	Routing	Invert	Outlet Devices
#1	Primary	987.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 987.00' / 986.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	987.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	988.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.13 cfs @ 12.34 hrs HW=988.23' (Free Discharge)

1=Culvert (Passes 2.13 cfs of 5.37 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.43 cfs @ 4.96 fps)
3=Orifice/Grate (Weir Controls 1.70 cfs @ 1.57 fps)
4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=987.00' (Free Discharge)

5=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

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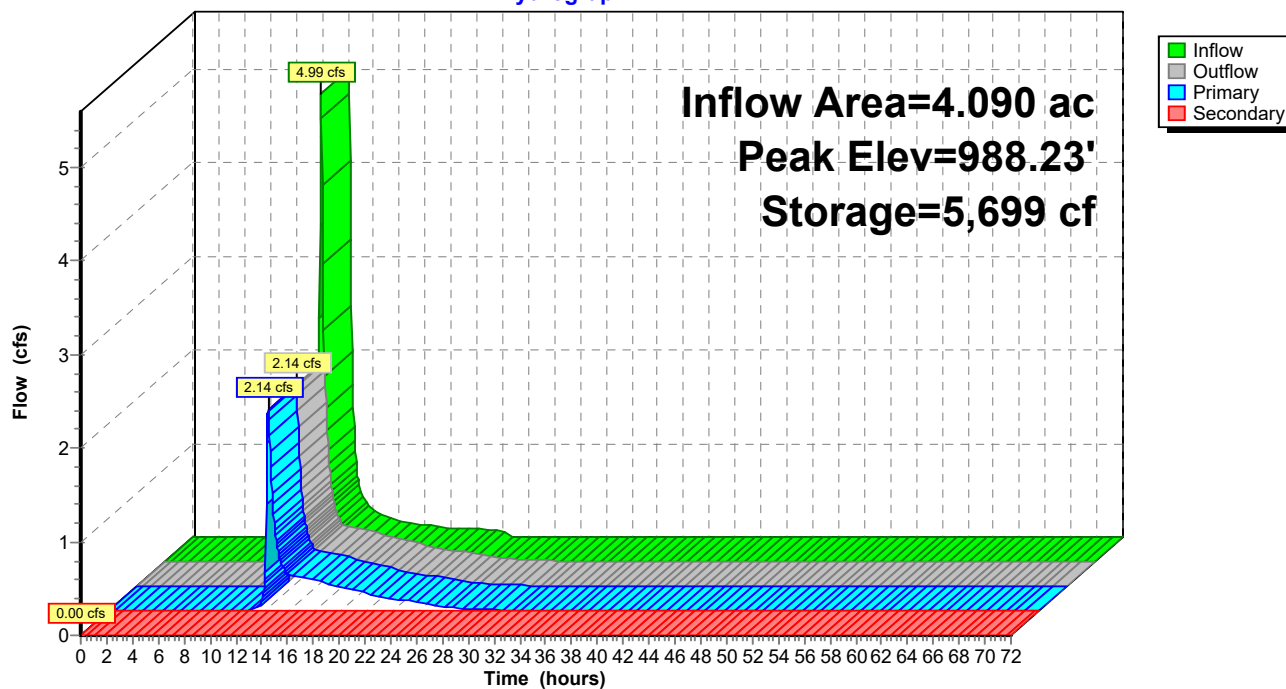
Type II 24-hr 1-Year Rainfall=2.17"

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Pond 41P: Basin A3

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 1-Year Rainfall=2.17"

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Summary for Pond 44P: Basin A1

Inflow Area = 30.810 ac, 38.00% Impervious, Inflow Depth = 1.04" for 1-Year event
Inflow = 37.05 cfs @ 12.11 hrs, Volume= 2.671 af
Outflow = 2.90 cfs @ 13.38 hrs, Volume= 2.486 af, Atten= 92%, Lag= 76.2 min
Primary = 2.90 cfs @ 13.38 hrs, Volume= 2.486 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 983.92' @ 13.38 hrs Surf.Area= 71,148 sf Storage= 63,206 cf

Plug-Flow detention time= 584.5 min calculated for 2.484 af (93% of inflow)
Center-of-Mass det. time= 548.6 min (1,393.4 - 844.7)

Volume	Invert	Avail.Storage	Storage Description
#1	983.00'	394,979 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
983.00	66,698	0	0
984.00	71,550	69,124	69,124
985.00	76,456	74,003	143,127
986.00	81,422	78,939	222,066
987.00	86,442	83,932	305,998
988.00	91,520	88,981	394,979

Device	Routing	Invert	Outlet Devices
#1	Primary	983.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 983.00' / 981.00' S= 0.0200 ' /' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	983.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.60'	12.0" Horiz. Orifice/Grate C= 0.600
#4	Device 1	987.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area)
#5	Secondary	987.00'	20.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.90 cfs @ 13.38 hrs HW=983.92' (Free Discharge)

1=Culvert (Passes 2.90 cfs of 3.07 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.77 cfs @ 3.93 fps)
3=Orifice/Grate (Orifice Controls 2.13 cfs @ 2.71 fps)
4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=983.00' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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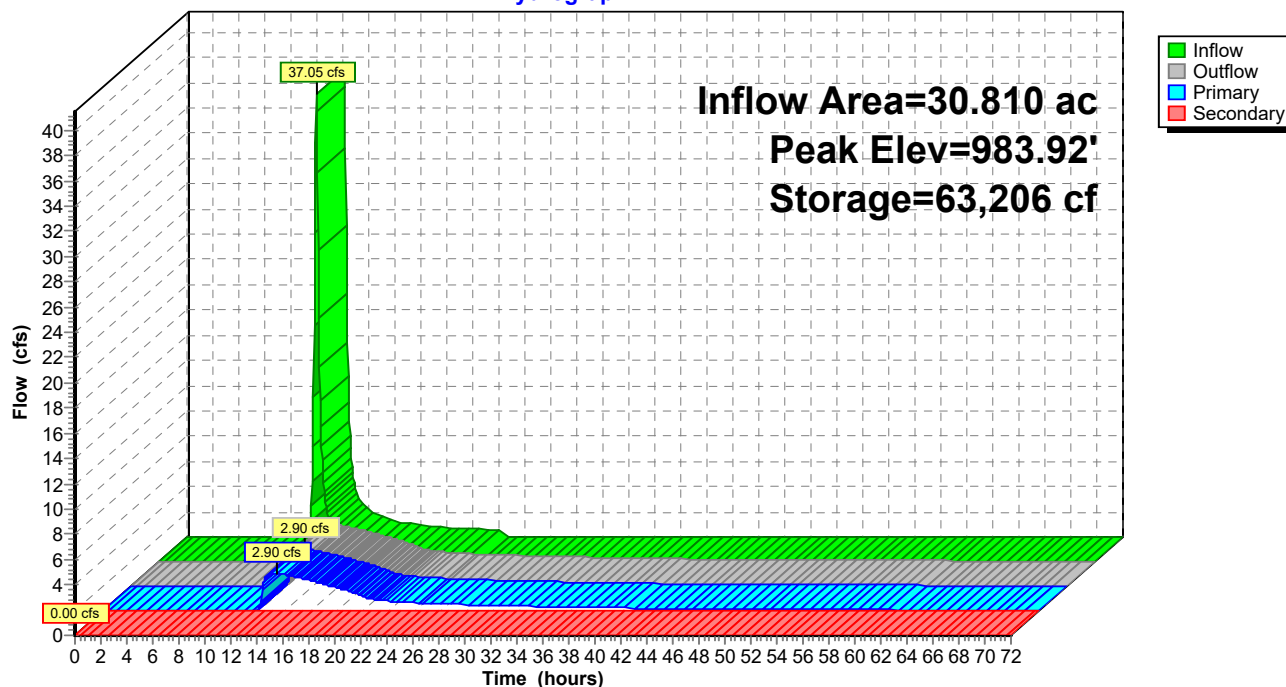
Type II 24-hr 1-Year Rainfall=2.17"

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Pond 44P: Basin A1

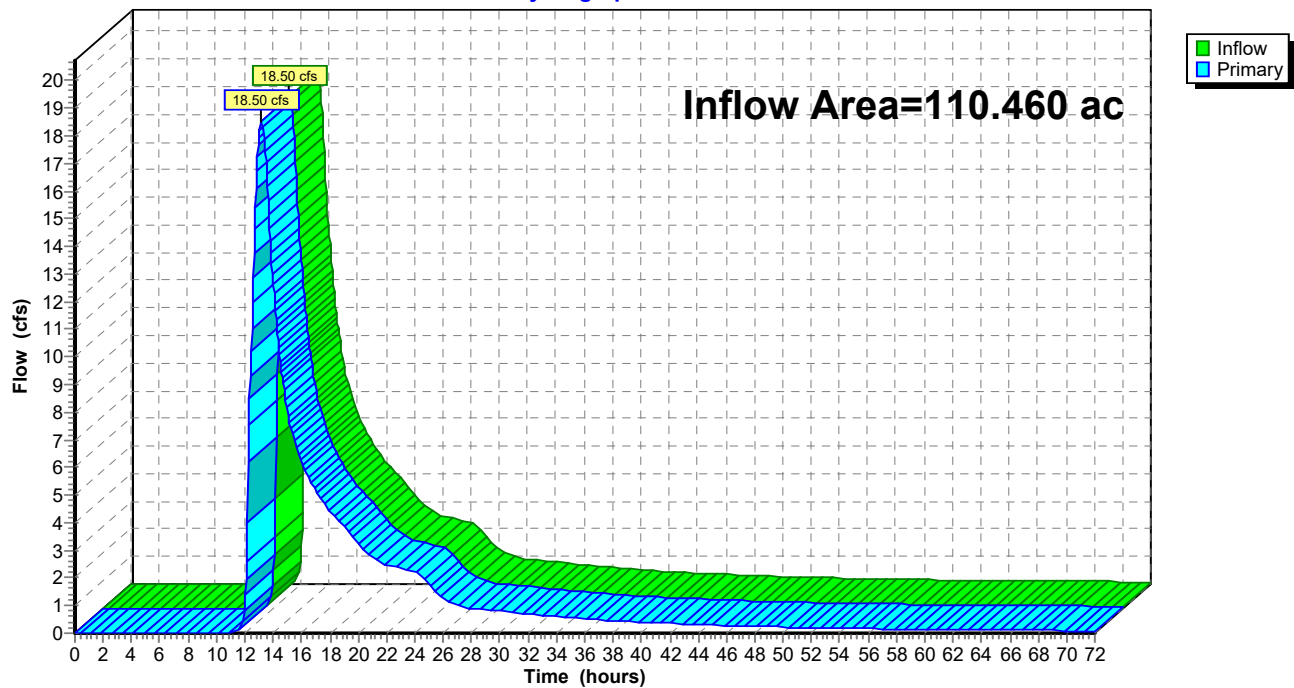
Hydrograph



Summary for Link 26L: Total Watershed A Release

Inflow Area = 110.460 ac, 25.07% Impervious, Inflow Depth > 0.82" for 1-Year event
Inflow = 18.50 cfs @ 13.16 hrs, Volume= 7.575 af
Primary = 18.50 cfs @ 13.16 hrs, Volume= 7.575 af, Atten= 0%, Lag= 0.0 min

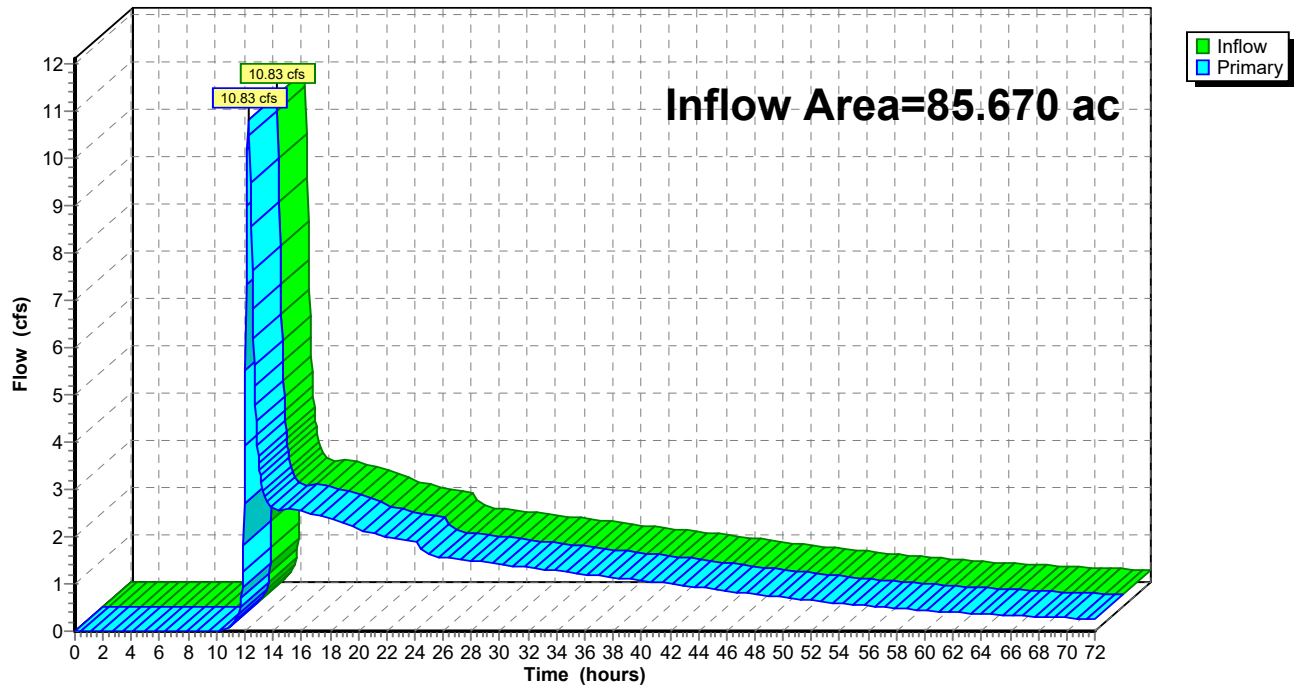
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 26L: Total Watershed A Release**Hydrograph**

Summary for Link 27L: Total Watershed B Release

Inflow Area = 85.670 ac, 29.72% Impervious, Inflow Depth > 0.85" for 1-Year event
Inflow = 10.83 cfs @ 12.27 hrs, Volume= 6.087 af
Primary = 10.83 cfs @ 12.27 hrs, Volume= 6.087 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 27L: Total Watershed B Release**Hydrograph**

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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 12S: Watershed A1 Proposed

[47] Hint: Peak is 375% of capacity of segment #2

Runoff = 49.56 cfs @ 12.11 hrs, Volume= 3.560 af, Depth= 1.39"

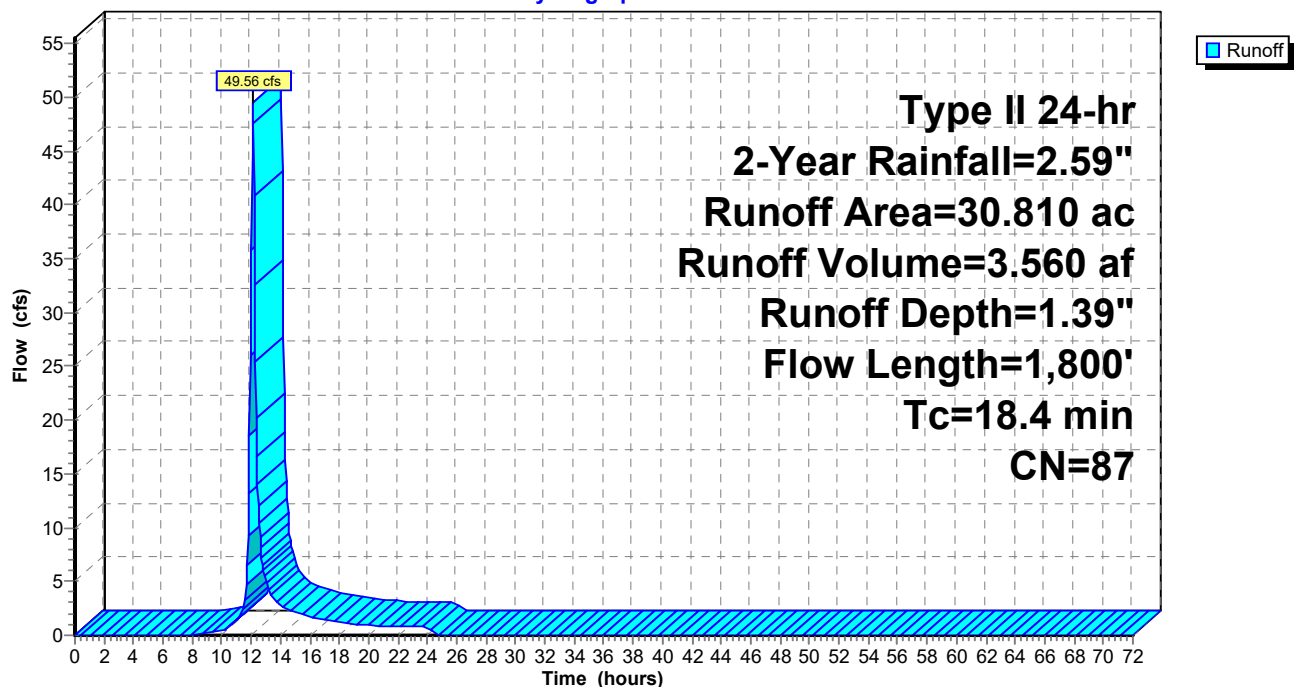
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
30.810	87	1/4 acre lots, 38% imp, HSG D
19.102		62.00% Pervious Area
11.708		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.8	1,700	0.0135	7.48	13.22	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
18.4	1,800	Total			

Subcatchment 12S: Watershed A1 Proposed

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 14S: Watershed C Proposed

[47] Hint: Peak is 382% of capacity of segment #2

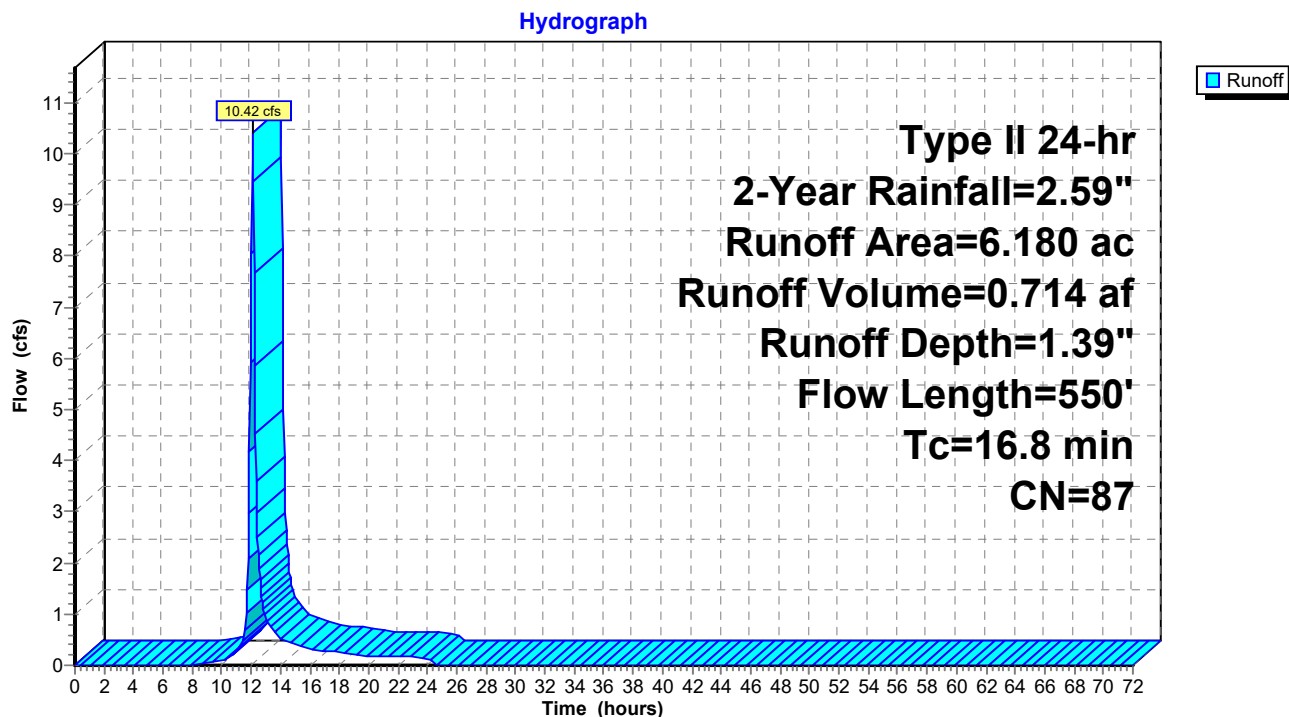
Runoff = 10.42 cfs @ 12.09 hrs, Volume= 0.714 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
6.180	87	1/4 acre lots, 38% imp, HSG D
3.832		62.00% Pervious Area
2.348		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.2	450	0.0050	3.47	2.73	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.8	550	Total			

Subcatchment 14S: Watershed C Proposed



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 17S: Watershed A3 Proposed

Runoff = 6.67 cfs @ 12.10 hrs, Volume= 0.473 af, Depth= 1.39"

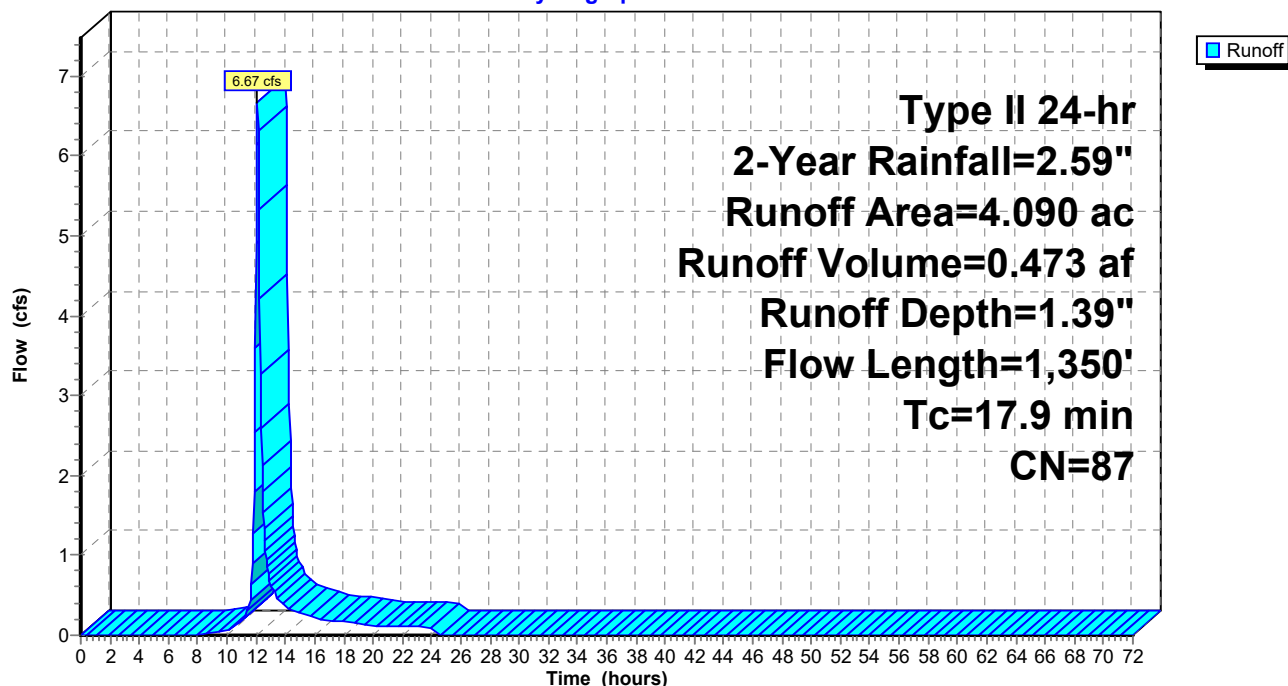
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
4.090	87	1/4 acre lots, 38% imp, HSG D
2.536		62.00% Pervious Area
1.554		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,250	0.0120	6.25	7.67	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
17.9	1,350	Total			

Subcatchment 17S: Watershed A3 Proposed

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 19S: Watershed A2 Proposed

[47] Hint: Peak is 529% of capacity of segment #2

Runoff = 26.16 cfs @ 12.09 hrs, Volume= 1.798 af, Depth= 1.39"

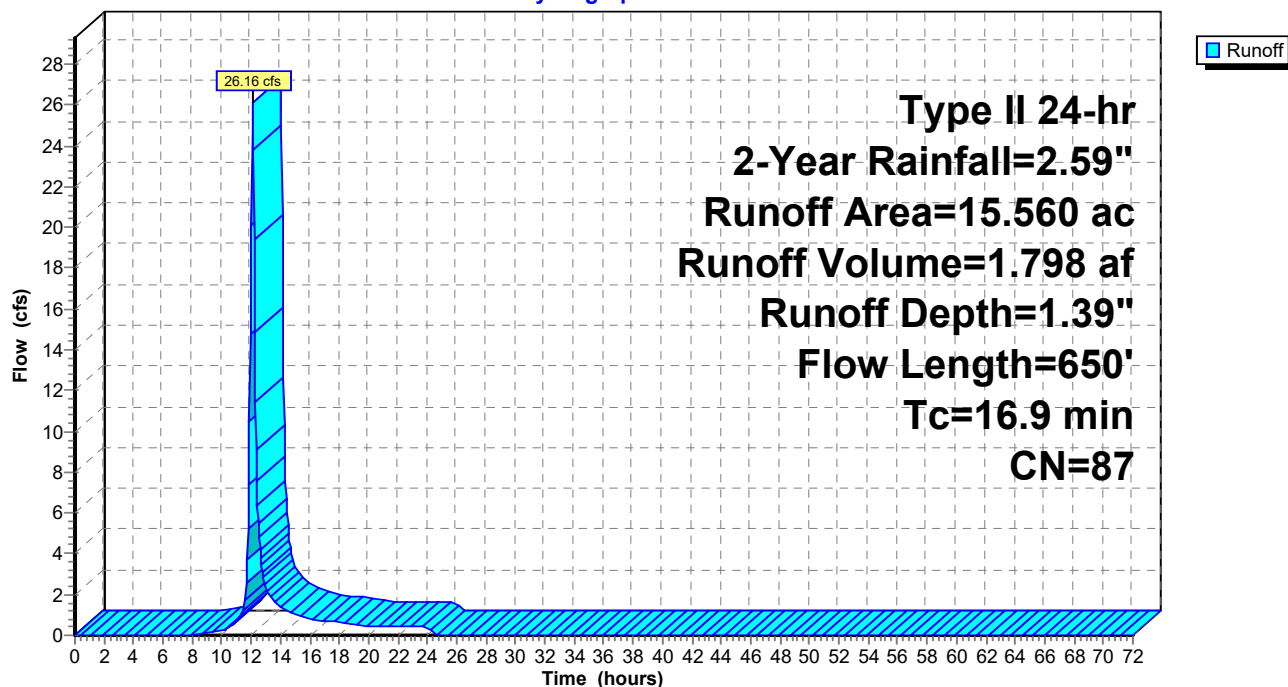
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
15.560	87	1/4 acre lots, 38% imp, HSG D
9.647		62.00% Pervious Area
5.913		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	550	0.0050	4.03	4.95	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
16.9	650	Total			

Subcatchment 19S: Watershed A2 Proposed

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 20S: Watershed B1 Proposed

[47] Hint: Peak is 345% of capacity of segment #2

Runoff = 58.30 cfs @ 12.09 hrs, Volume= 4.008 af, Depth= 1.39"

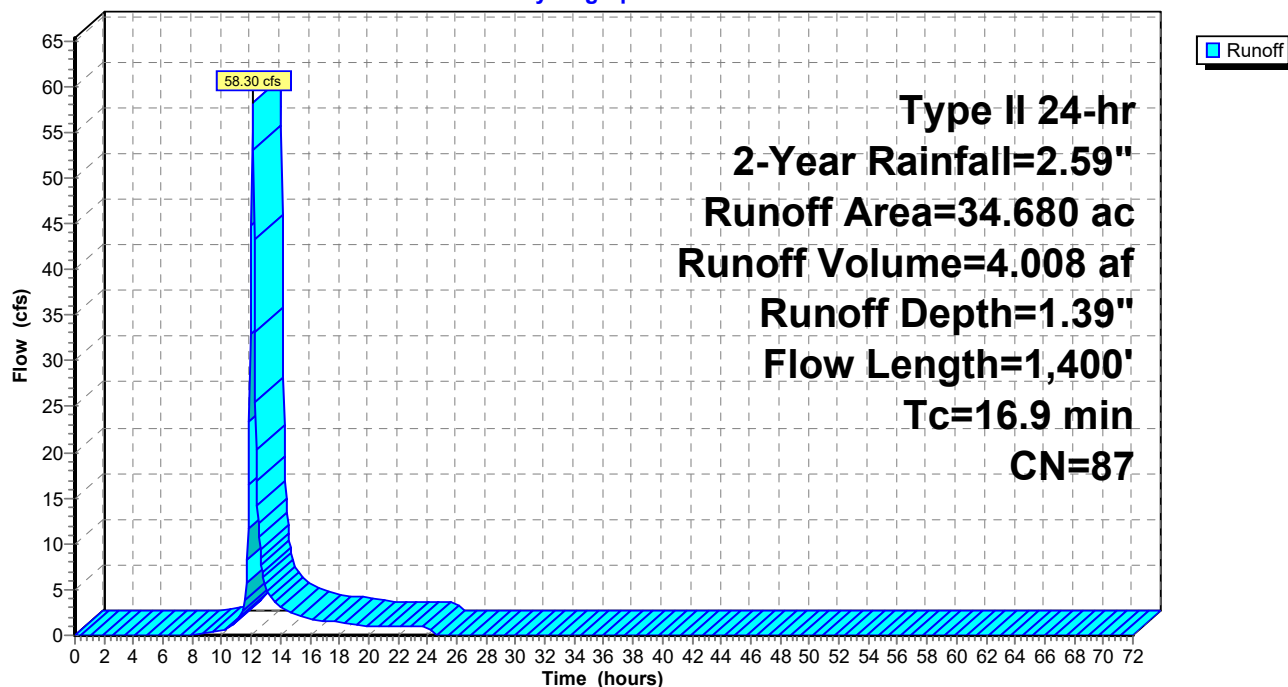
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
34.680	87	1/4 acre lots, 38% imp, HSG D
21.502		62.00% Pervious Area
13.178		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	1,300	0.0220	9.55	16.88	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
16.9	1,400	Total			

Subcatchment 20S: Watershed B1 Proposed

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 28S: Watershed B1 Offsite

Runoff = 2.08 cfs @ 12.60 hrs, Volume= 0.336 af, Depth= 0.80"

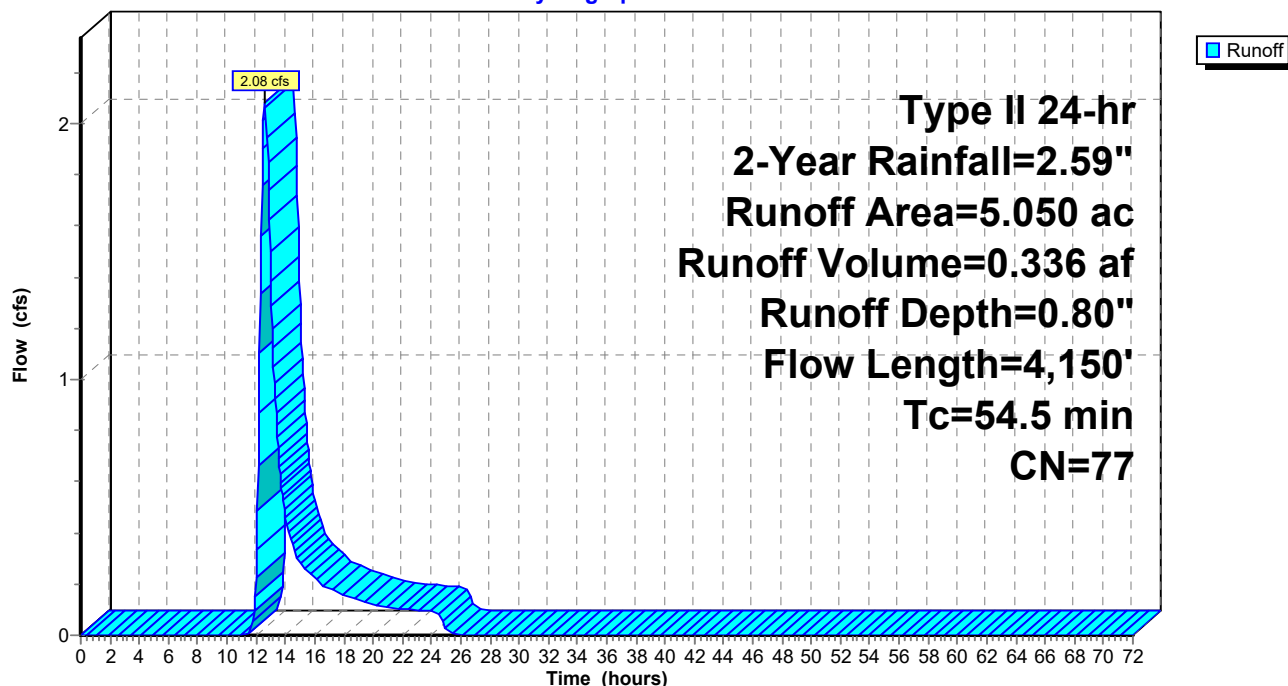
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 28S: Watershed B1 Offsite

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 37S: Watershed B2 Proposed

[47] Hint: Peak is 367% of capacity of segment #2

Runoff = 52.76 cfs @ 12.10 hrs, Volume= 3.736 af, Depth= 1.39"

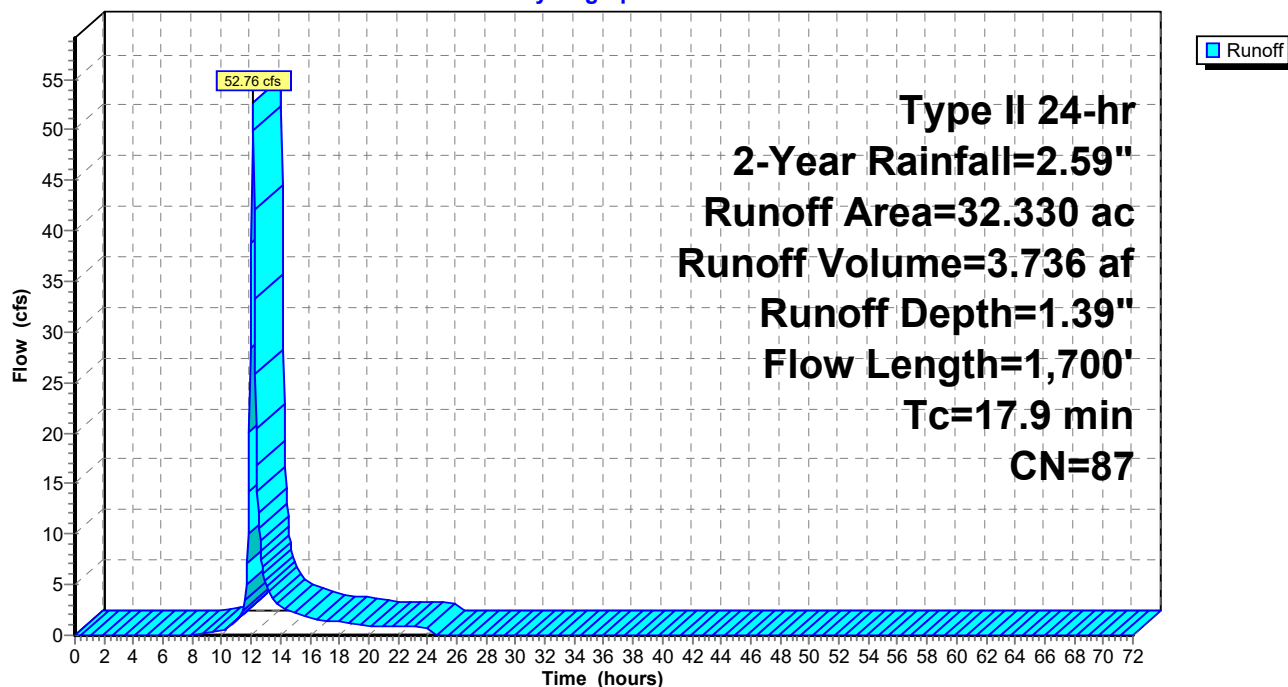
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
32.330	87	1/4 acre lots, 38% imp, HSG D
20.045		62.00% Pervious Area
12.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,600	0.0160	8.15	14.39	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
17.9	1,700	Total			

Subcatchment 37S: Watershed B2 Proposed

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 44S: Watershed A1 Offsite

Runoff = 21.30 cfs @ 13.15 hrs, Volume= 5.035 af, Depth= 1.01"

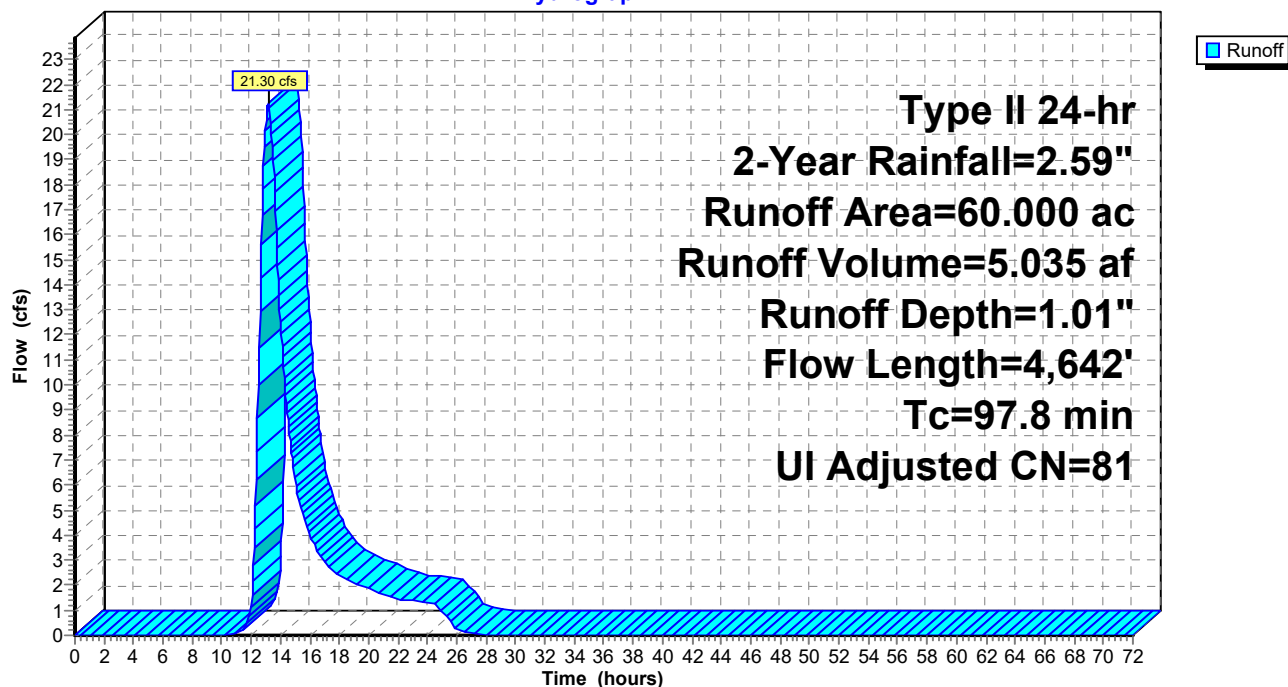
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 44S: Watershed A1 Offsite

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Subcatchment 48S: Watershed B2 Offsite

Runoff = 13.54 cfs @ 12.26 hrs, Volume= 1.345 af, Depth= 1.19"

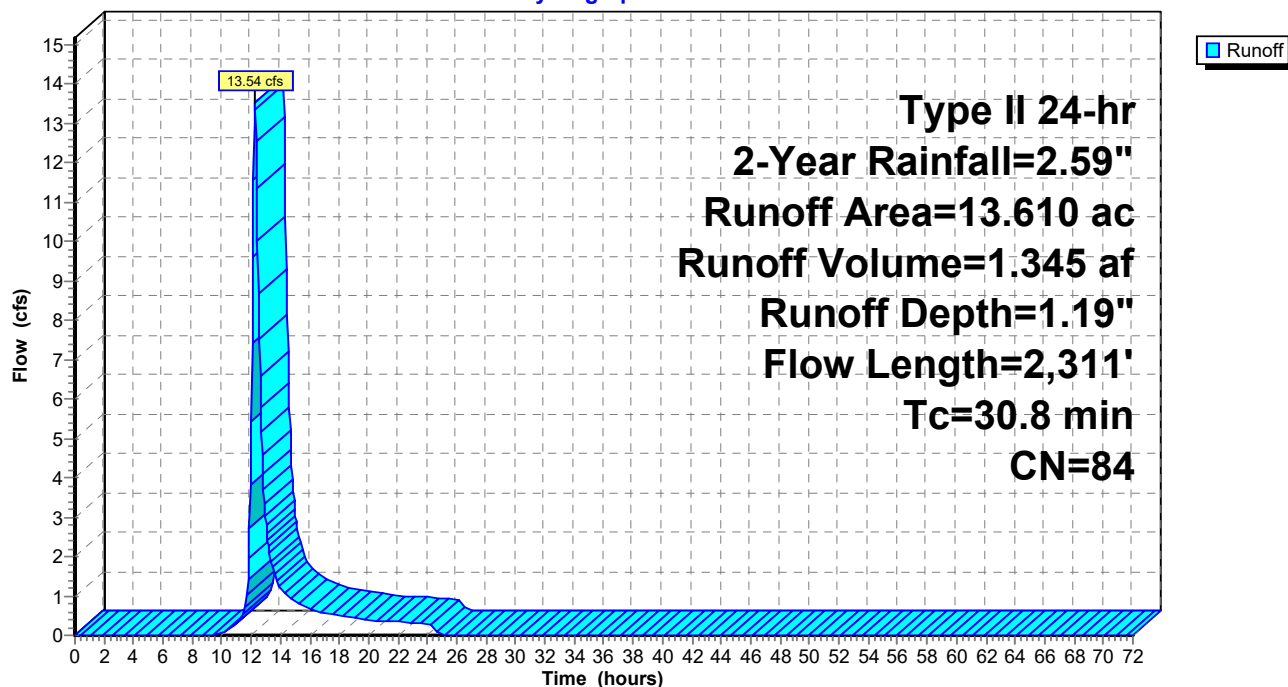
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.59"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 48S: Watershed B2 Offsite

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Pond 4P: Basin A2

Inflow Area = 15.560 ac, 38.00% Impervious, Inflow Depth = 1.39" for 2-Year event
 Inflow = 26.16 cfs @ 12.09 hrs, Volume= 1.798 af
 Outflow = 0.67 cfs @ 17.39 hrs, Volume= 1.584 af, Atten= 97%, Lag= 317.6 min
 Primary = 0.67 cfs @ 17.39 hrs, Volume= 1.584 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 982.76' @ 17.39 hrs Surf.Area= 74,157 sf Storage= 54,399 cf

Plug-Flow detention time= 1,030.9 min calculated for 1.584 af (88% of inflow)
 Center-of-Mass det. time= 972.4 min (1,807.5 - 835.1)

Volume	Invert	Avail.Storage	Storage Description
#1	982.00'	328,816 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
982.00	69,352	0	0
983.00	75,690	72,521	72,521
984.00	82,128	78,909	151,430
985.00	88,668	85,398	236,828
986.00	95,308	91,988	328,816

Device	Routing	Invert	Outlet Devices
#1	Primary	982.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 982.00' / 980.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	982.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	985.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	985.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.67 cfs @ 17.39 hrs HW=982.76' (Free Discharge)

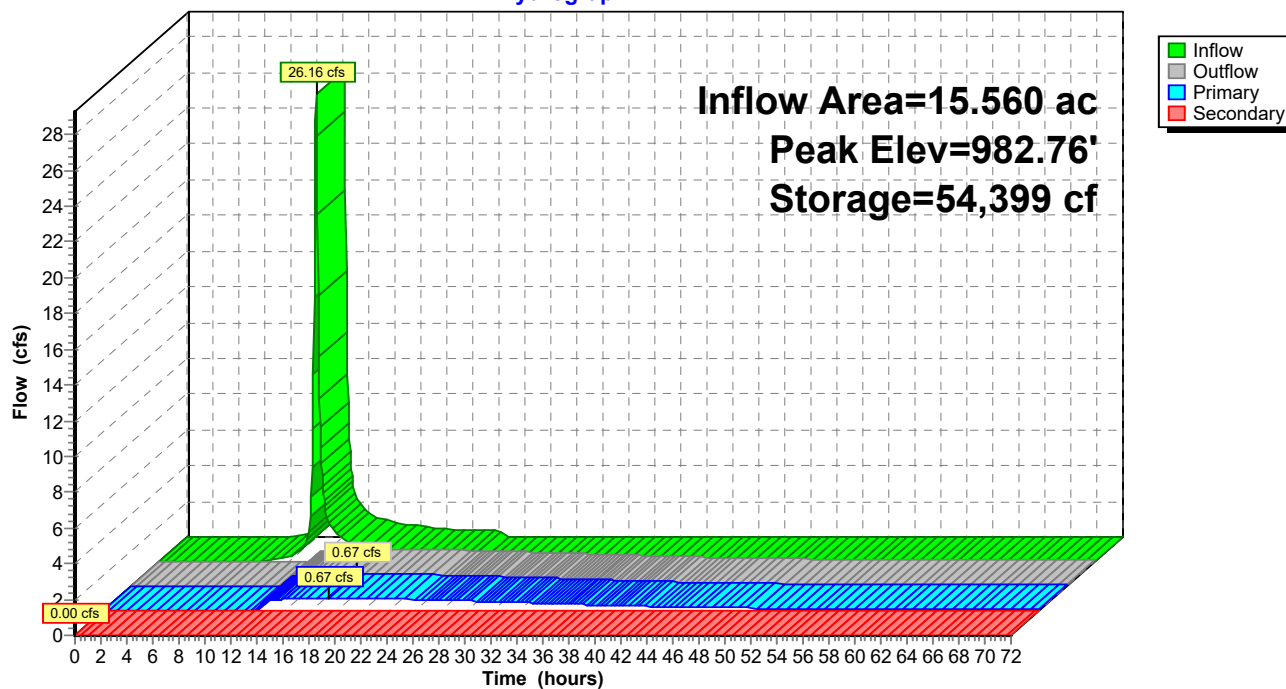
- ↑ **1=Culvert** (Passes 0.67 cfs of 2.37 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.67 cfs @ 3.43 fps)
- ↑ **3=Orifice/Grate** (Controls 0.00 cfs)
- ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=982.00' (Free Discharge)

- ↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Basin A2

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Pond 34P: Basin B1

Inflow Area = 39.730 ac, 33.17% Impervious, Inflow Depth = 1.31" for 2-Year event
 Inflow = 58.77 cfs @ 12.09 hrs, Volume= 4.343 af
 Outflow = 1.73 cfs @ 17.11 hrs, Volume= 3.608 af, Atten= 97%, Lag= 301.2 min
 Primary = 1.73 cfs @ 17.11 hrs, Volume= 3.608 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 961.18' @ 17.11 hrs Surf.Area= 117,162 sf Storage= 134,155 cf

Plug-Flow detention time= 1,210.7 min calculated for 3.606 af (83% of inflow)
 Center-of-Mass det. time= 1,136.4 min (1,977.0 - 840.6)

Volume	Invert	Avail.Storage	Storage Description
#1	960.00'	490,366 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
960.00	109,496	0	0
961.00	115,956	112,726	112,726
962.00	122,516	119,236	231,962
963.00	129,177	125,847	357,809
964.00	135,938	132,558	490,366

Device	Routing	Invert	Outlet Devices
#1	Primary	960.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 960.00' / 958.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	960.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	961.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	963.00'	1.0" x 12.0" Horiz. Orifice/Grate X 5.00 C= 0.600 in 12.0" x 12.0" Grate (42% open area) Limited to weir flow at low heads
#5	Secondary	963.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.72 cfs @ 17.11 hrs HW=961.18' (Free Discharge)

↑ **1=Culvert** (Passes 1.72 cfs of 3.91 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.91 cfs @ 4.65 fps)
 ↑ **3=Orifice/Grate** (Weir Controls 0.81 cfs @ 1.40 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=960.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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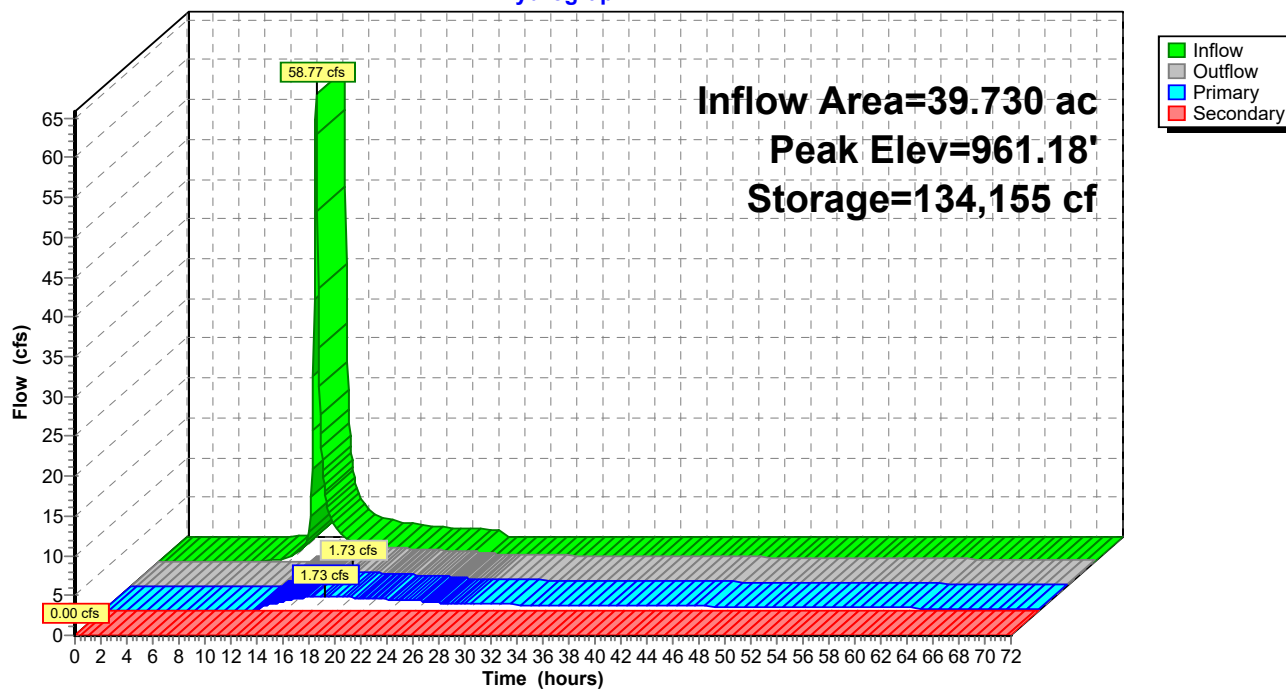
Type II 24-hr 2-Year Rainfall=2.59"

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Pond 34P: Basin B1

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Pond 35P: Basin B2

Inflow Area = 32.330 ac, 38.00% Impervious, Inflow Depth = 1.39" for 2-Year event
 Inflow = 52.76 cfs @ 12.10 hrs, Volume= 3.736 af
 Outflow = 3.02 cfs @ 13.87 hrs, Volume= 3.443 af, Atten= 94%, Lag= 106.2 min
 Primary = 3.02 cfs @ 13.87 hrs, Volume= 3.443 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 953.29' @ 13.87 hrs Surf.Area= 80,308 sf Storage= 98,790 cf

Plug-Flow detention time= 841.4 min calculated for 3.440 af (92% of inflow)
 Center-of-Mass det. time= 801.1 min (1,637.1 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	952.00'	339,139 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
952.00	72,332	0	0
953.00	78,470	75,401	75,401
954.00	84,709	81,590	156,991
955.00	91,049	87,879	244,870
956.00	97,489	94,269	339,139

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 952.00' / 950.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	952.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	953.00'	15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	955.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	955.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.02 cfs @ 13.87 hrs HW=953.29' (Free Discharge)

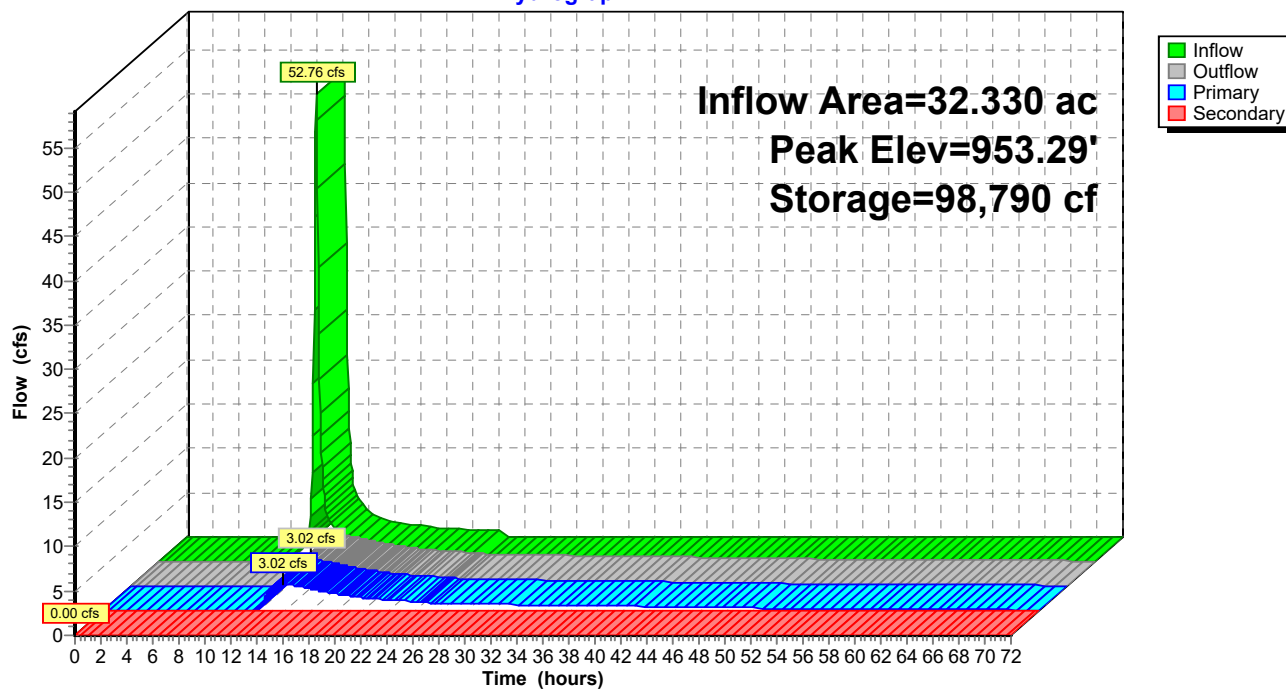
1=Culvert (Passes 0.97 cfs of 4.21 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.97 cfs @ 4.92 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Weir Controls 2.05 cfs @ 1.77 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=952.00' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 35P: Basin B2

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Pond 39P: Basin C

Inflow Area = 6.180 ac, 38.00% Impervious, Inflow Depth = 1.39" for 2-Year event
 Inflow = 10.42 cfs @ 12.09 hrs, Volume= 0.714 af
 Outflow = 3.84 cfs @ 12.34 hrs, Volume= 0.708 af, Atten= 63%, Lag= 14.9 min
 Primary = 3.84 cfs @ 12.34 hrs, Volume= 0.708 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 987.38' @ 12.34 hrs Surf.Area= 10,733 sf Storage= 12,950 cf

Plug-Flow detention time= 420.8 min calculated for 0.708 af (99% of inflow)
 Center-of-Mass det. time= 415.3 min (1,250.3 - 835.0)

Volume	Invert	Avail.Storage	Storage Description
#1	986.00'	48,247 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
986.00	8,024	0	0
987.00	9,955	8,990	8,990
988.00	11,986	10,971	19,960
989.00	14,118	13,052	33,012
990.00	16,352	15,235	48,247

Device	Routing	Invert	Outlet Devices
#1	Primary	986.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 986.00' / 984.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	986.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	987.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.82 cfs @ 12.34 hrs HW=987.38' (Free Discharge)

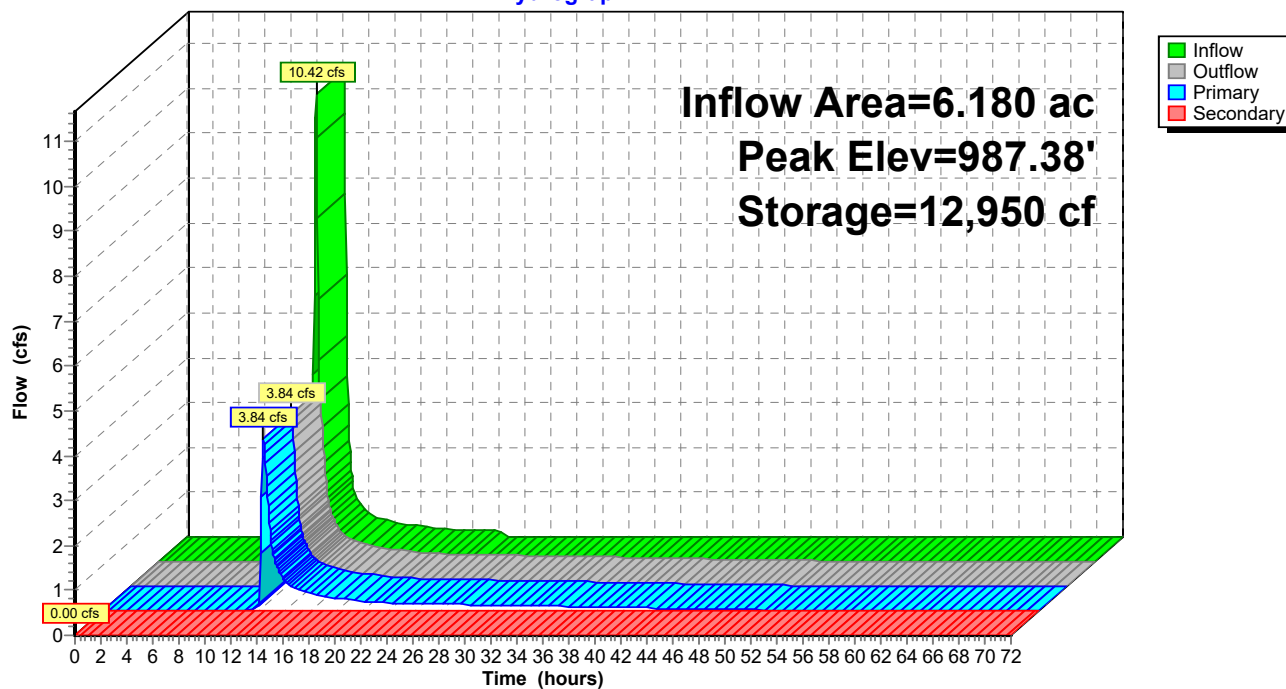
↑ **1=Culvert** (Passes 3.82 cfs of 6.43 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.19 cfs @ 5.44 fps)
 ↑ **3=Orifice/Grate** (Weir Controls 3.64 cfs @ 2.02 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=986.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Basin C

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Pond 41P: Basin A3

Inflow Area = 4.090 ac, 38.00% Impervious, Inflow Depth = 1.39" for 2-Year event
 Inflow = 6.67 cfs @ 12.10 hrs, Volume= 0.473 af
 Outflow = 4.19 cfs @ 12.26 hrs, Volume= 0.472 af, Atten= 37%, Lag= 9.2 min
 Primary = 4.19 cfs @ 12.26 hrs, Volume= 0.472 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 988.39' @ 12.26 hrs Surf.Area= 5,478 sf Storage= 6,582 cf

Plug-Flow detention time= 125.5 min calculated for 0.472 af (100% of inflow)
 Center-of-Mass det. time= 126.7 min (962.7 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	987.00'	16,986 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
987.00	3,824	0	0
988.00	4,979	4,402	4,402
989.00	6,266	5,623	10,024
990.00	7,657	6,962	16,986

Device	Routing	Invert	Outlet Devices
#1	Primary	987.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 987.00' / 986.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	987.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	988.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.15 cfs @ 12.26 hrs HW=988.39' (Free Discharge)

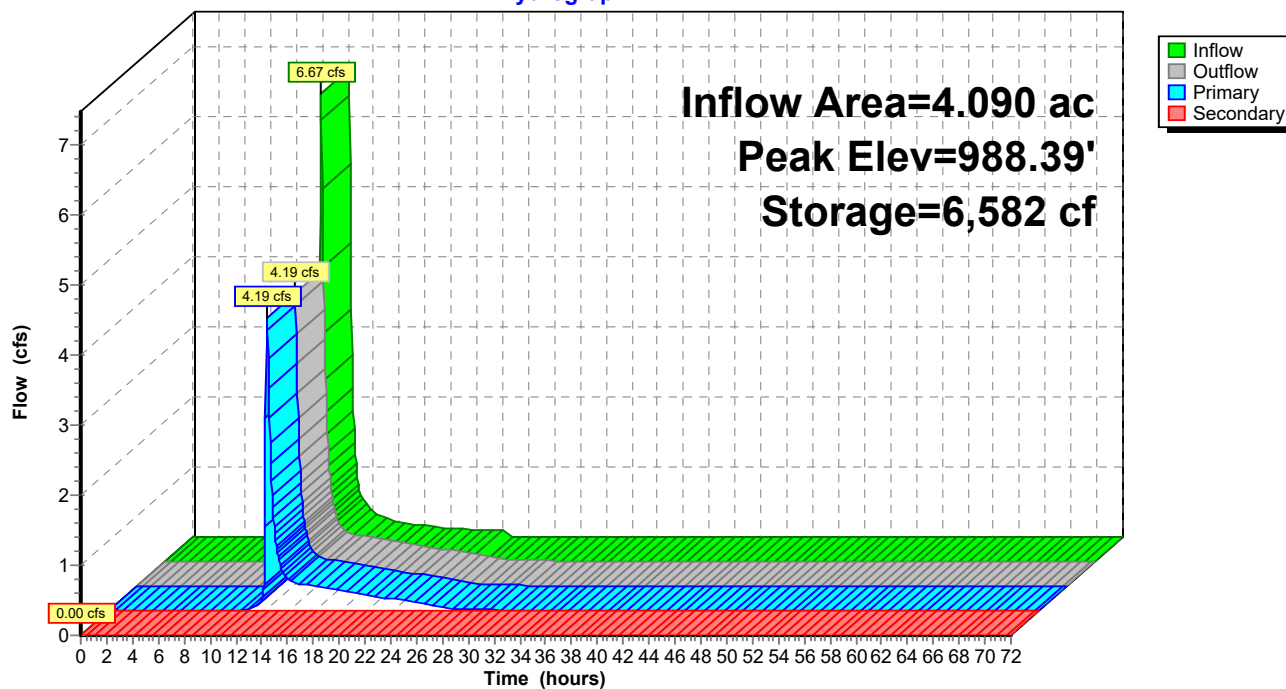
↑ **1=Culvert** (Passes 4.15 cfs of 6.14 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.46 cfs @ 5.32 fps)
 ↑ **3=Orifice/Grate** (Weir Controls 3.69 cfs @ 2.03 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=987.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 41P: Basin A3

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Pond 44P: Basin A1

Inflow Area = 30.810 ac, 38.00% Impervious, Inflow Depth = 1.39" for 2-Year event
 Inflow = 49.56 cfs @ 12.11 hrs, Volume= 3.560 af
 Outflow = 3.93 cfs @ 13.28 hrs, Volume= 3.374 af, Atten= 92%, Lag= 70.2 min
 Primary = 3.93 cfs @ 13.28 hrs, Volume= 3.374 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 984.23' @ 13.28 hrs Surf.Area= 72,664 sf Storage= 85,504 cf

Plug-Flow detention time= 497.0 min calculated for 3.372 af (95% of inflow)
 Center-of-Mass det. time= 469.3 min (1,305.8 - 836.5)

Volume	Invert	Avail.Storage	Storage Description
#1	983.00'	394,979 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
983.00	66,698	0	0
984.00	71,550	69,124	69,124
985.00	76,456	74,003	143,127
986.00	81,422	78,939	222,066
987.00	86,442	83,932	305,998
988.00	91,520	88,981	394,979

Device	Routing	Invert	Outlet Devices
#1	Primary	983.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 983.00' / 981.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	983.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.60'	12.0" Horiz. Orifice/Grate C= 0.600
#4	Device 1	987.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area)
#5	Secondary	987.00'	20.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.93 cfs @ 13.28 hrs HW=984.23' (Free Discharge)

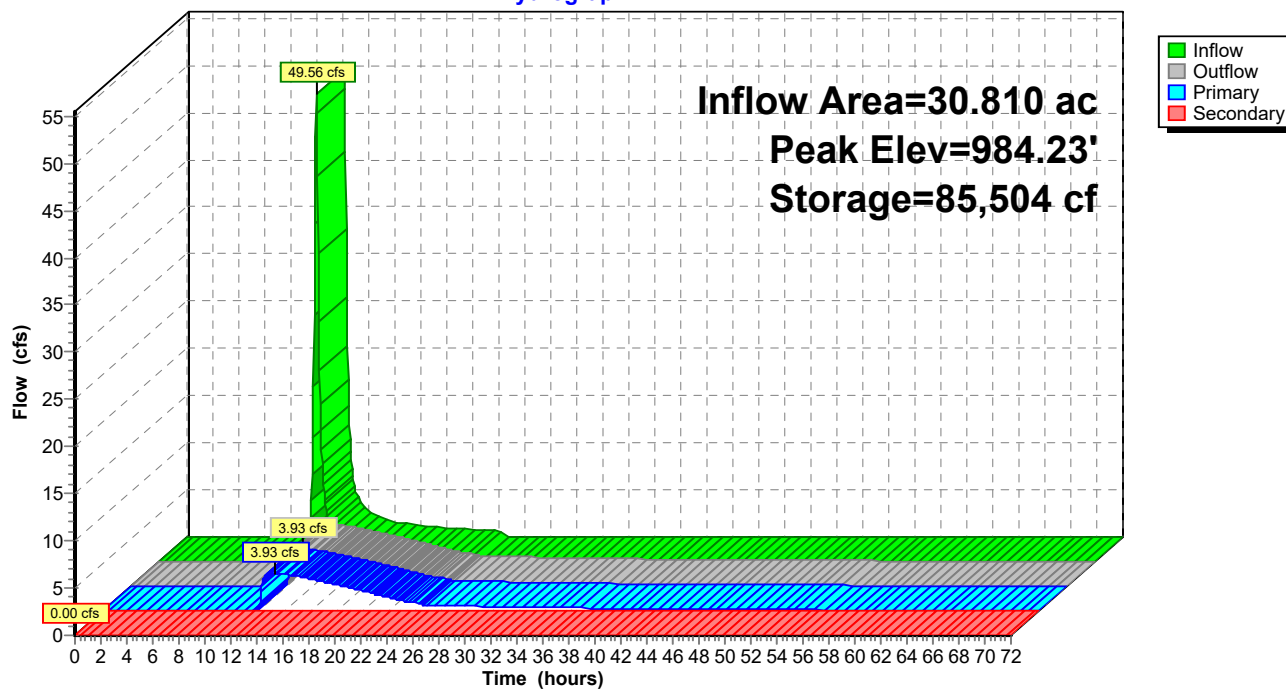
↑ **1=Culvert** (Passes 3.93 cfs of 4.03 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.93 cfs @ 4.76 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 2.99 cfs @ 3.81 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=983.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 44P: Basin A1

Hydrograph



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Type II 24-hr 2-Year Rainfall=2.59"

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Summary for Link 26L: Total Watershed A Release

Inflow Area = 110.460 ac, 25.07% Impervious, Inflow Depth > 1.14" for 2-Year event

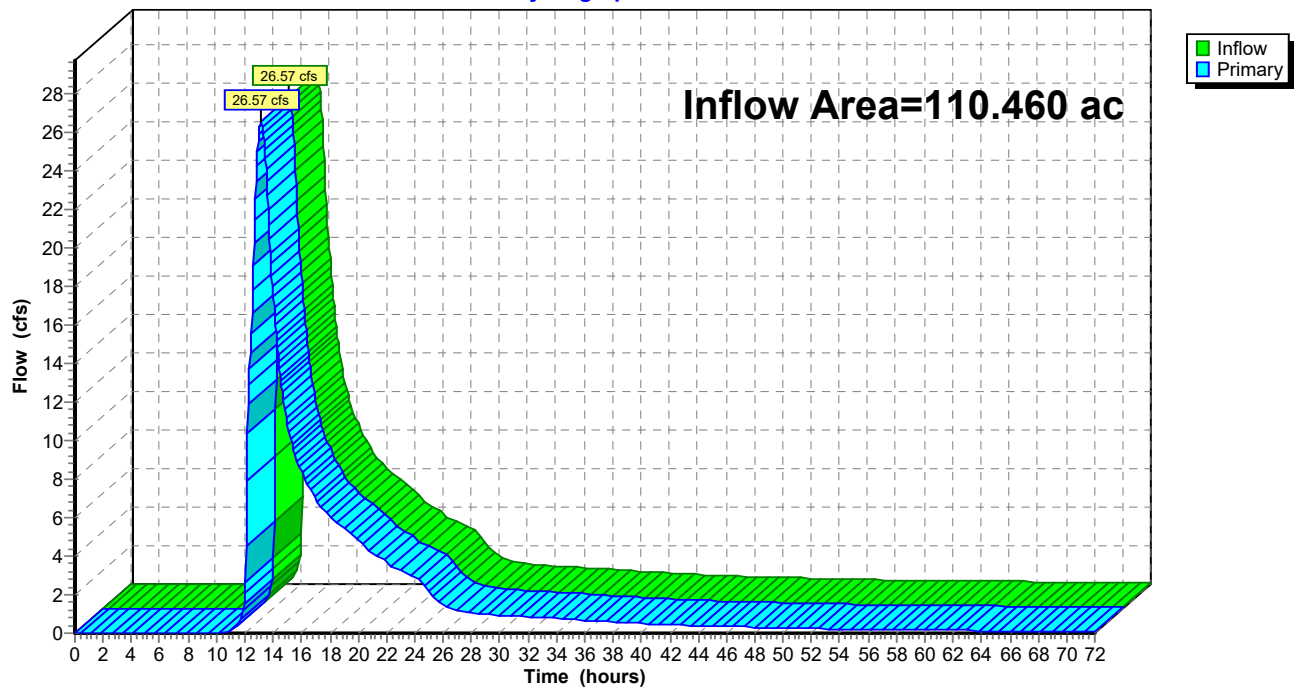
Inflow = 26.57 cfs @ 13.15 hrs, Volume= 10.466 af

Primary = 26.57 cfs @ 13.15 hrs, Volume= 10.466 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 26L: Total Watershed A Release

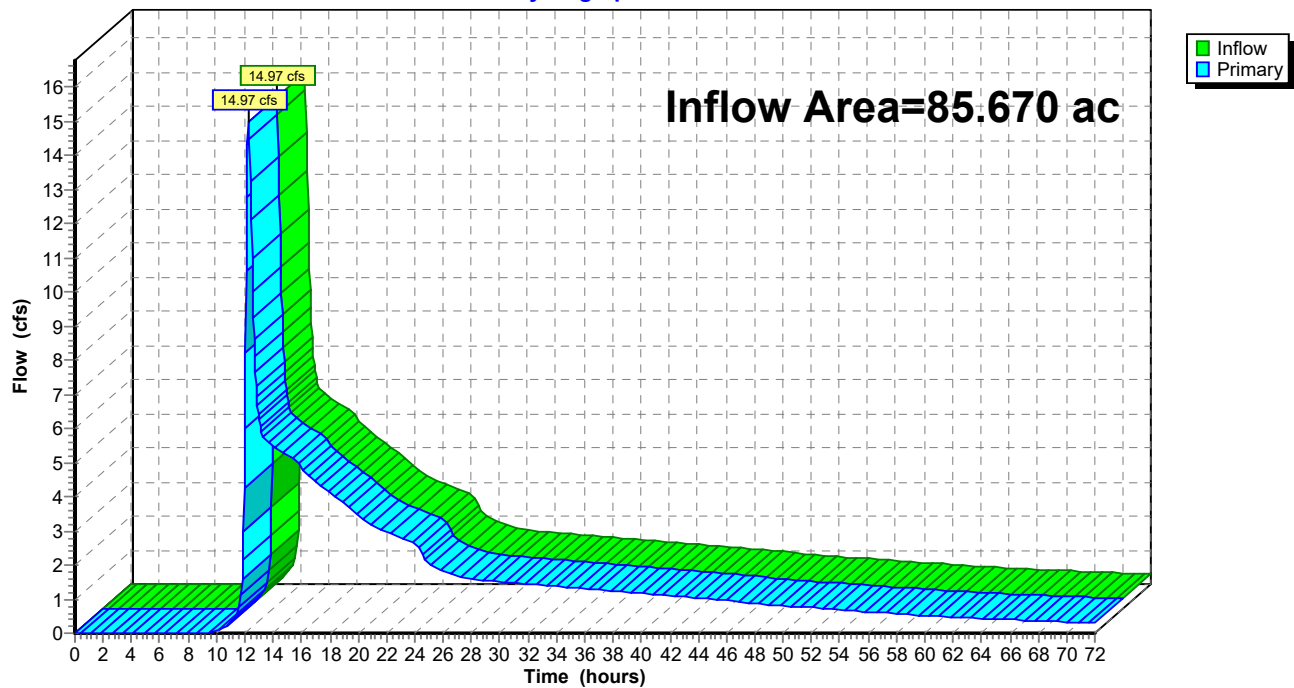
Hydrograph



Summary for Link 27L: Total Watershed B Release

Inflow Area = 85.670 ac, 29.72% Impervious, Inflow Depth > 1.18" for 2-Year event
Inflow = 14.97 cfs @ 12.27 hrs, Volume= 8.396 af
Primary = 14.97 cfs @ 12.27 hrs, Volume= 8.396 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 27L: Total Watershed B Release**Hydrograph**

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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 12S: Watershed A1 Proposed

[47] Hint: Peak is 512% of capacity of segment #2

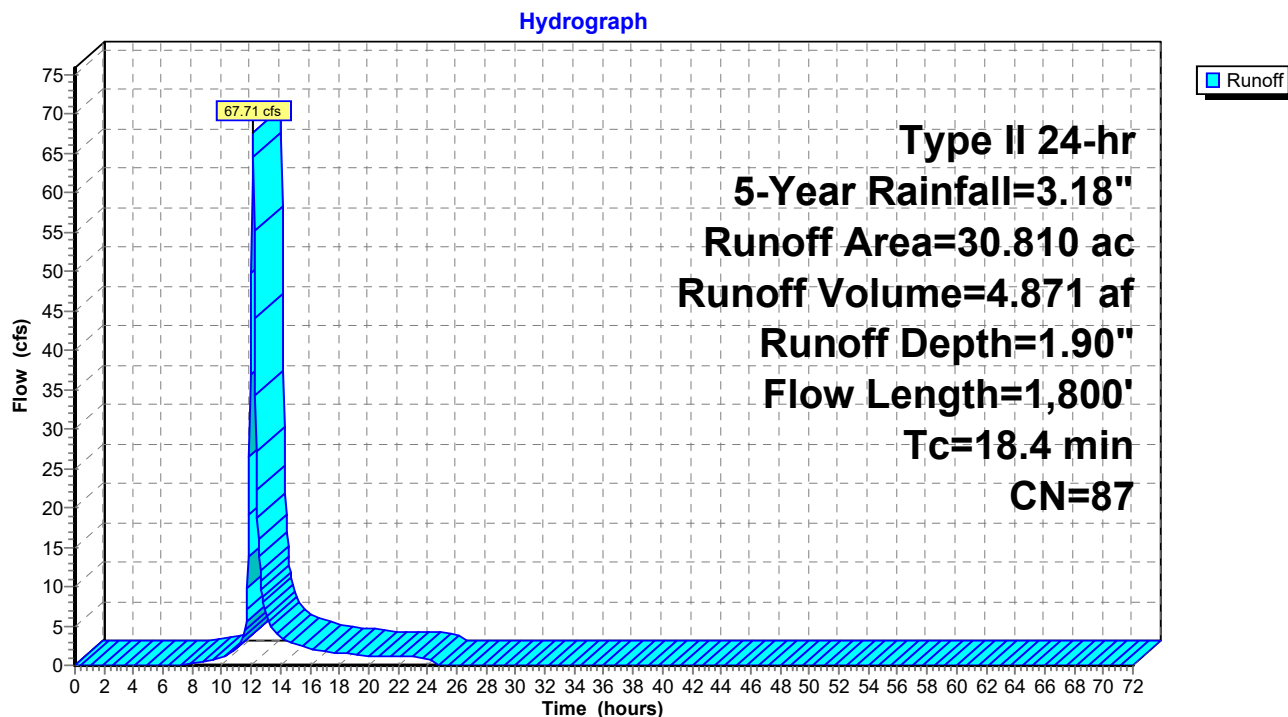
Runoff = 67.71 cfs @ 12.11 hrs, Volume= 4.871 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
30.810	87	1/4 acre lots, 38% imp, HSG D
19.102		62.00% Pervious Area
11.708		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.8	1,700	0.0135	7.48	13.22	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
18.4	1,800	Total			

Subcatchment 12S: Watershed A1 Proposed



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 14S: Watershed C Proposed

[47] Hint: Peak is 521% of capacity of segment #2

Runoff = 14.23 cfs @ 12.09 hrs, Volume= 0.977 af, Depth= 1.90"

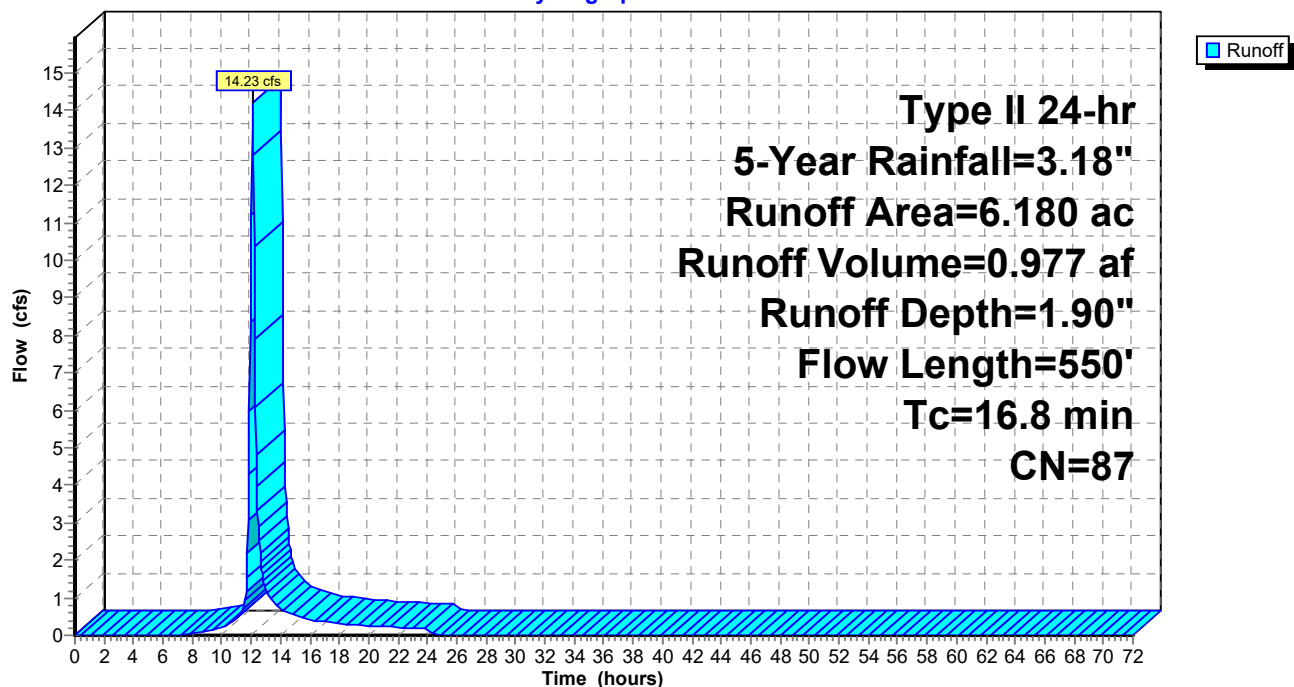
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
6.180	87	1/4 acre lots, 38% imp, HSG D
3.832		62.00% Pervious Area
2.348		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.2	450	0.0050	3.47	2.73	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.8	550	Total			

Subcatchment 14S: Watershed C Proposed

Hydrograph



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 17S: Watershed A3 Proposed

[47] Hint: Peak is 119% of capacity of segment #2

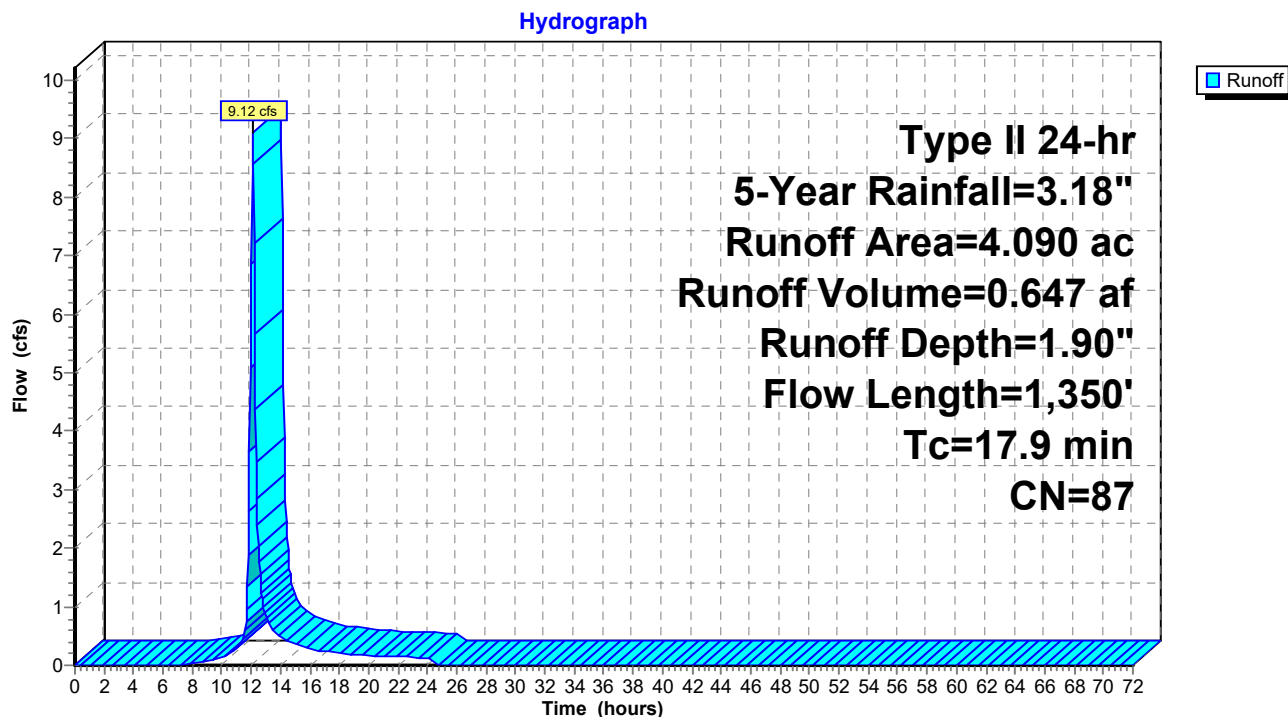
Runoff = 9.12 cfs @ 12.10 hrs, Volume= 0.647 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
4.090	87	1/4 acre lots, 38% imp, HSG D
2.536		62.00% Pervious Area
1.554		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,250	0.0120	6.25	7.67	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
17.9	1,350	Total			

Subcatchment 17S: Watershed A3 Proposed



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 19S: Watershed A2 Proposed

[47] Hint: Peak is 722% of capacity of segment #2

Runoff = 35.70 cfs @ 12.09 hrs, Volume= 2.460 af, Depth= 1.90"

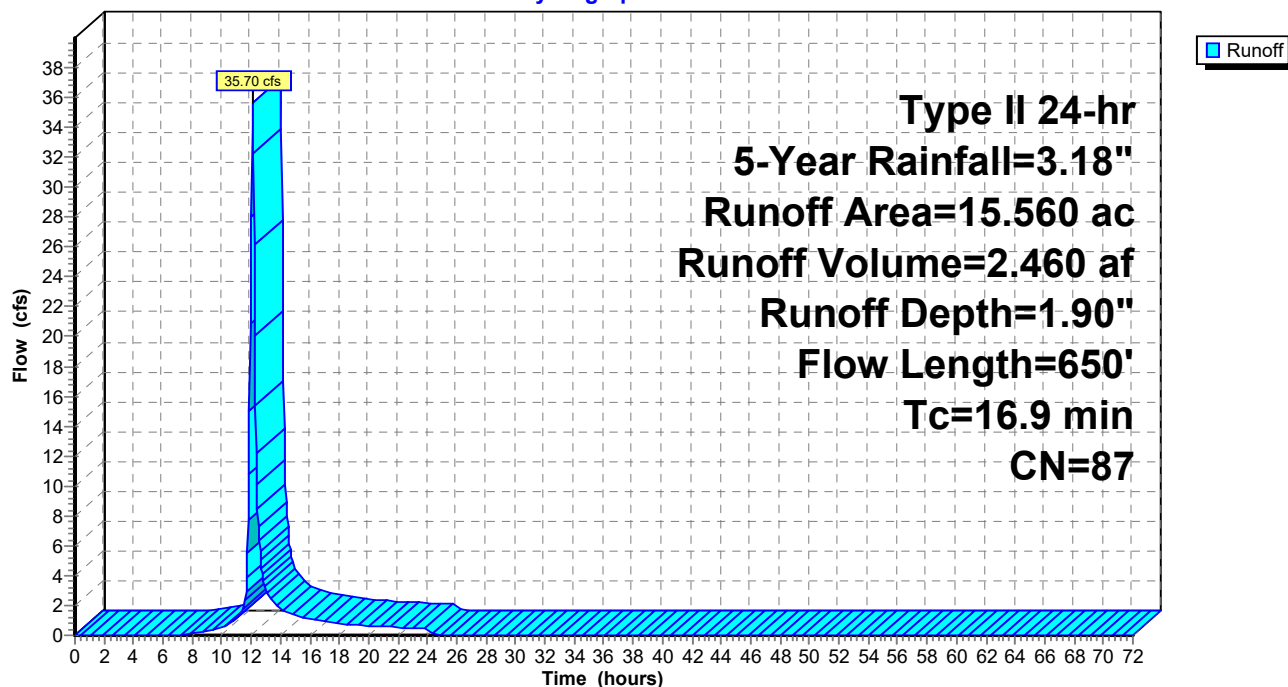
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
15.560	87	1/4 acre lots, 38% imp, HSG D
9.647		62.00% Pervious Area
5.913		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	550	0.0050	4.03	4.95	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
16.9	650	Total			

Subcatchment 19S: Watershed A2 Proposed

Hydrograph



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Summary for Subcatchment 20S: Watershed B1 Proposed

[47] Hint: Peak is 471% of capacity of segment #2

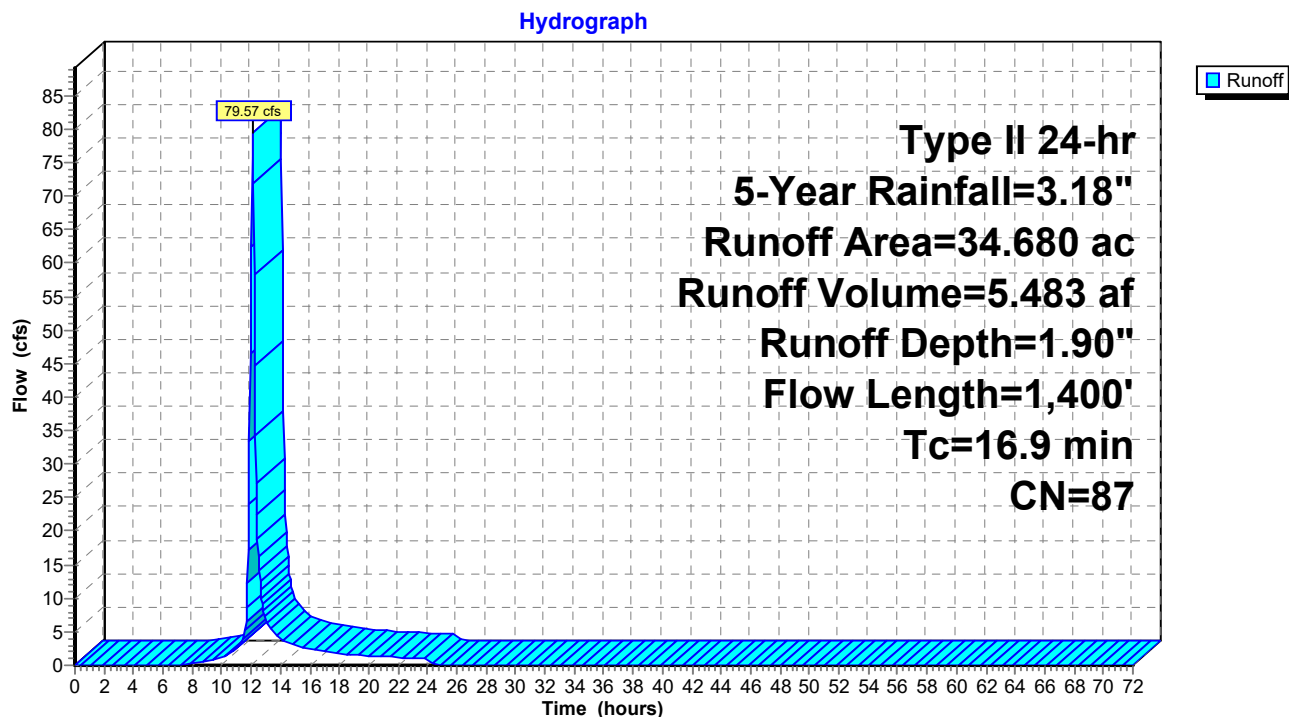
Runoff = 79.57 cfs @ 12.09 hrs, Volume= 5.483 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
34.680	87	1/4 acre lots, 38% imp, HSG D
21.502		62.00% Pervious Area
13.178		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	1,300	0.0220	9.55	16.88	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
16.9	1,400	Total			

Subcatchment 20S: Watershed B1 Proposed



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 28S: Watershed B1 Offsite

Runoff = 3.29 cfs @ 12.57 hrs, Volume= 0.504 af, Depth= 1.20"

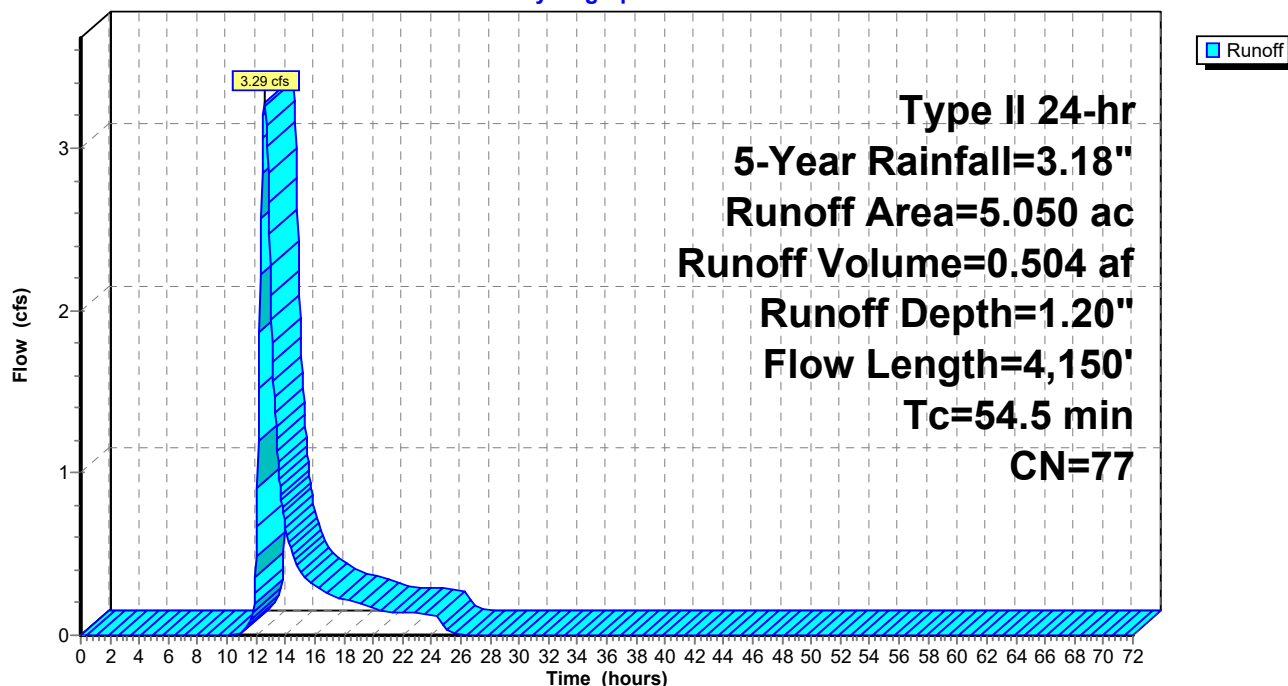
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 28S: Watershed B1 Offsite

Hydrograph



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 37S: Watershed B2 Proposed

[47] Hint: Peak is 501% of capacity of segment #2

Runoff = 72.06 cfs @ 12.10 hrs, Volume= 5.111 af, Depth= 1.90"

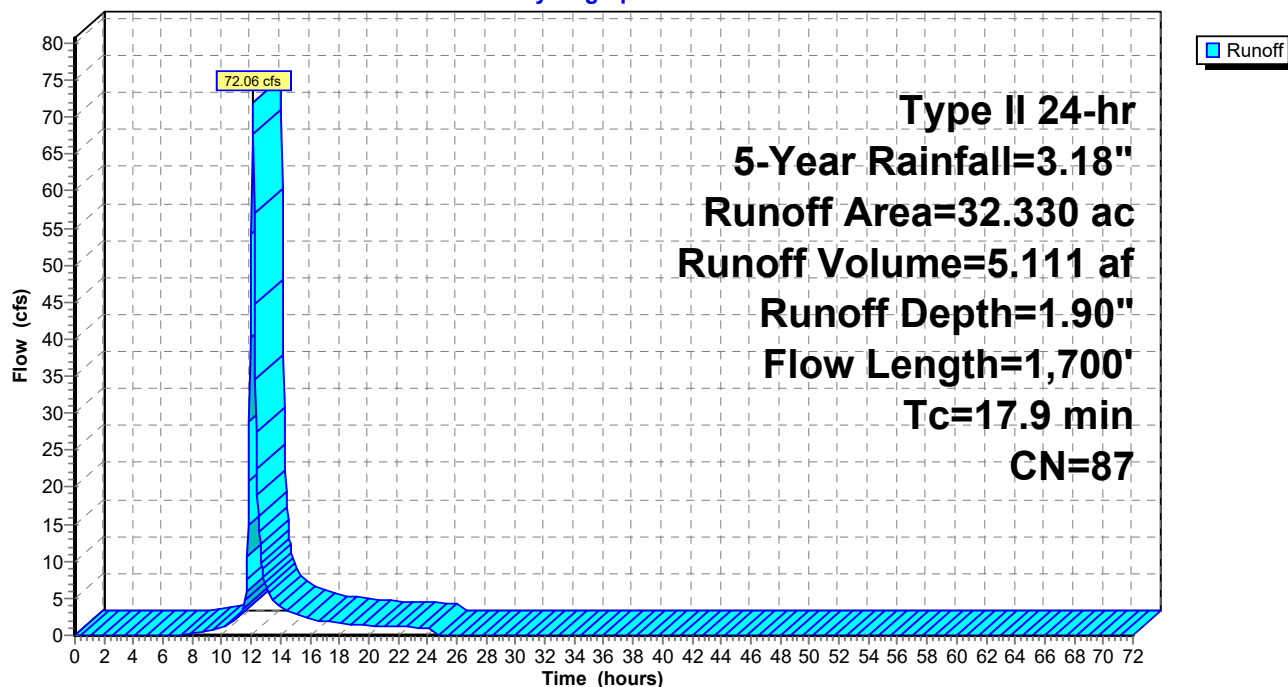
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
32.330	87	1/4 acre lots, 38% imp, HSG D
20.045		62.00% Pervious Area
12.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,600	0.0160	8.15	14.39	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
17.9	1,700	Total			

Subcatchment 37S: Watershed B2 Proposed

Hydrograph



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Subcatchment 44S: Watershed A1 Offsite

Runoff = 31.60 cfs @ 13.14 hrs, Volume= 7.267 af, Depth= 1.45"

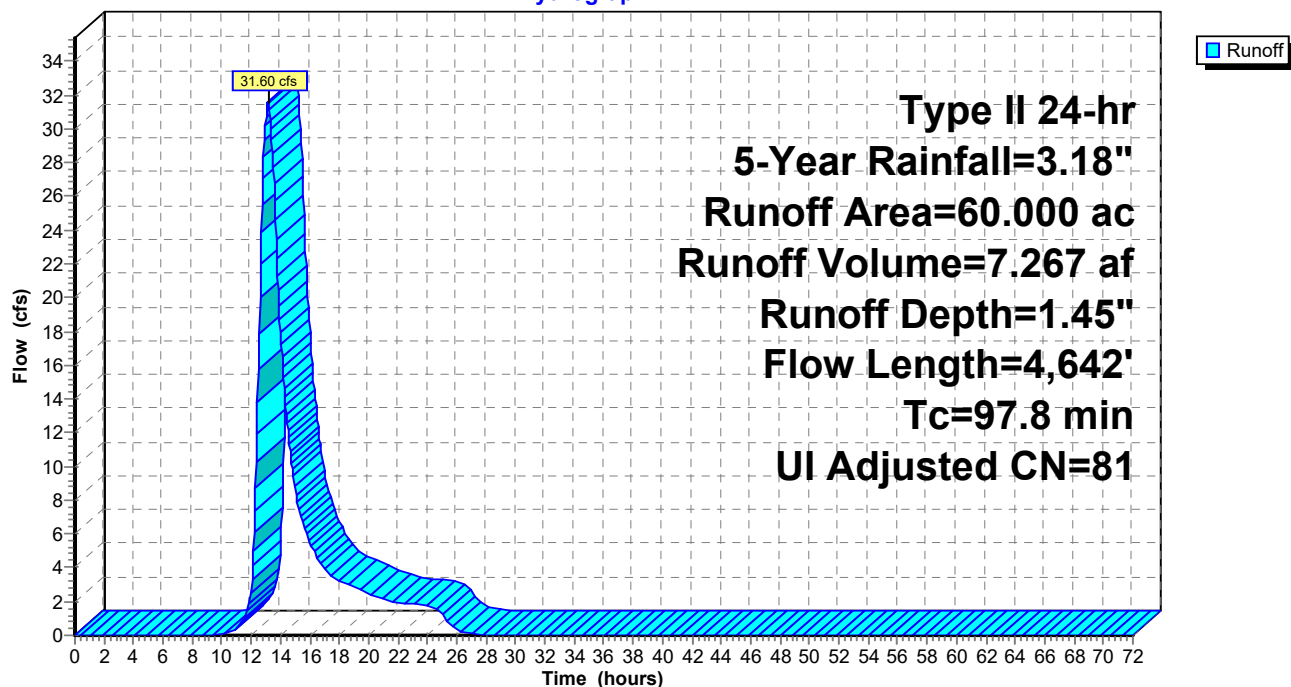
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 44S: Watershed A1 Offsite

Hydrograph



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Summary for Subcatchment 48S: Watershed B2 Offsite

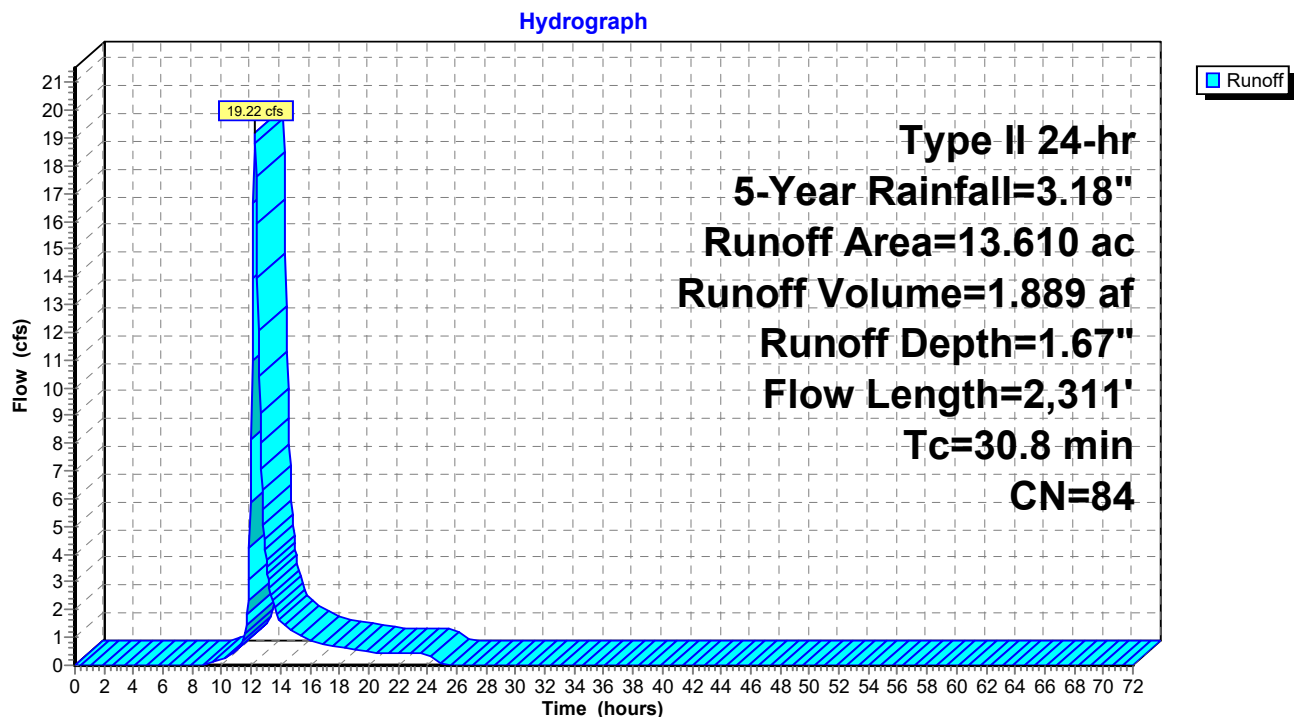
Runoff = 19.22 cfs @ 12.26 hrs, Volume= 1.889 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.18"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 48S: Watershed B2 Offsite



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Pond 4P: Basin A2

Inflow Area = 15.560 ac, 38.00% Impervious, Inflow Depth = 1.90" for 5-Year event
Inflow = 35.70 cfs @ 12.09 hrs, Volume= 2.460 af
Outflow = 0.93 cfs @ 16.81 hrs, Volume= 2.206 af, Atten= 97%, Lag= 283.0 min
Primary = 0.93 cfs @ 16.81 hrs, Volume= 2.206 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 983.04' @ 16.81 hrs Surf.Area= 75,961 sf Storage= 75,707 cf

Plug-Flow detention time= 1,081.4 min calculated for 2.205 af (90% of inflow)
Center-of-Mass det. time= 1,030.6 min (1,856.8 - 826.2)

Volume	Invert	Avail.Storage	Storage Description
#1	982.00'	328,816 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
982.00	69,352	0	0
983.00	75,690	72,521	72,521
984.00	82,128	78,909	151,430
985.00	88,668	85,398	236,828
986.00	95,308	91,988	328,816

Device	Routing	Invert	Outlet Devices
#1	Primary	982.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 982.00' / 980.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	982.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	985.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	985.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.93 cfs @ 16.81 hrs HW=983.04' (Free Discharge)

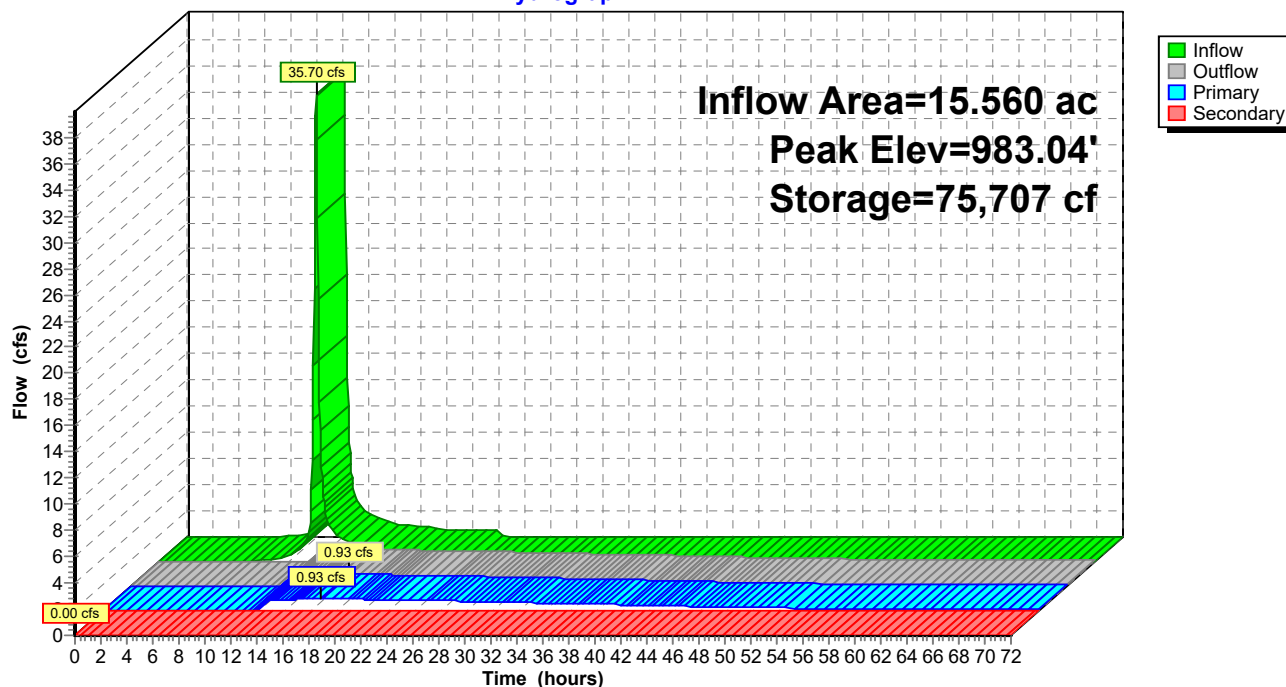
- 1=Culvert (Passes 0.93 cfs of 3.48 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.84 cfs @ 4.29 fps)
- 3=Orifice/Grate (Weir Controls 0.09 cfs @ 0.67 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=982.00' (Free Discharge)

- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: Basin A2

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Pond 34P: Basin B1

Inflow Area = 39.730 ac, 33.17% Impervious, Inflow Depth = 1.81" for 5-Year event
 Inflow = 80.44 cfs @ 12.09 hrs, Volume= 5.987 af
 Outflow = 3.62 cfs @ 14.73 hrs, Volume= 5.219 af, Atten= 95%, Lag= 158.3 min
 Primary = 3.62 cfs @ 14.73 hrs, Volume= 5.219 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 961.47' @ 14.73 hrs Surf.Area= 119,011 sf Storage= 167,431 cf

Plug-Flow detention time= 952.3 min calculated for 5.219 af (87% of inflow)
 Center-of-Mass det. time= 890.4 min (1,722.3 - 831.9)

Volume	Invert	Avail.Storage	Storage Description
#1	960.00'	490,366 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
960.00	109,496	0	0
961.00	115,956	112,726	112,726
962.00	122,516	119,236	231,962
963.00	129,177	125,847	357,809
964.00	135,938	132,558	490,366

Device	Routing	Invert	Outlet Devices
#1	Primary	960.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 960.00' / 958.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	960.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	961.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	963.00'	1.0" x 12.0" Horiz. Orifice/Grate X 5.00 C= 0.600 in 12.0" x 12.0" Grate (42% open area) Limited to weir flow at low heads
#5	Secondary	963.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.62 cfs @ 14.73 hrs HW=961.47' (Free Discharge)

↑ **1=Culvert** (Passes 3.62 cfs of 4.65 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 1.04 cfs @ 5.31 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 2.58 cfs @ 3.29 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=960.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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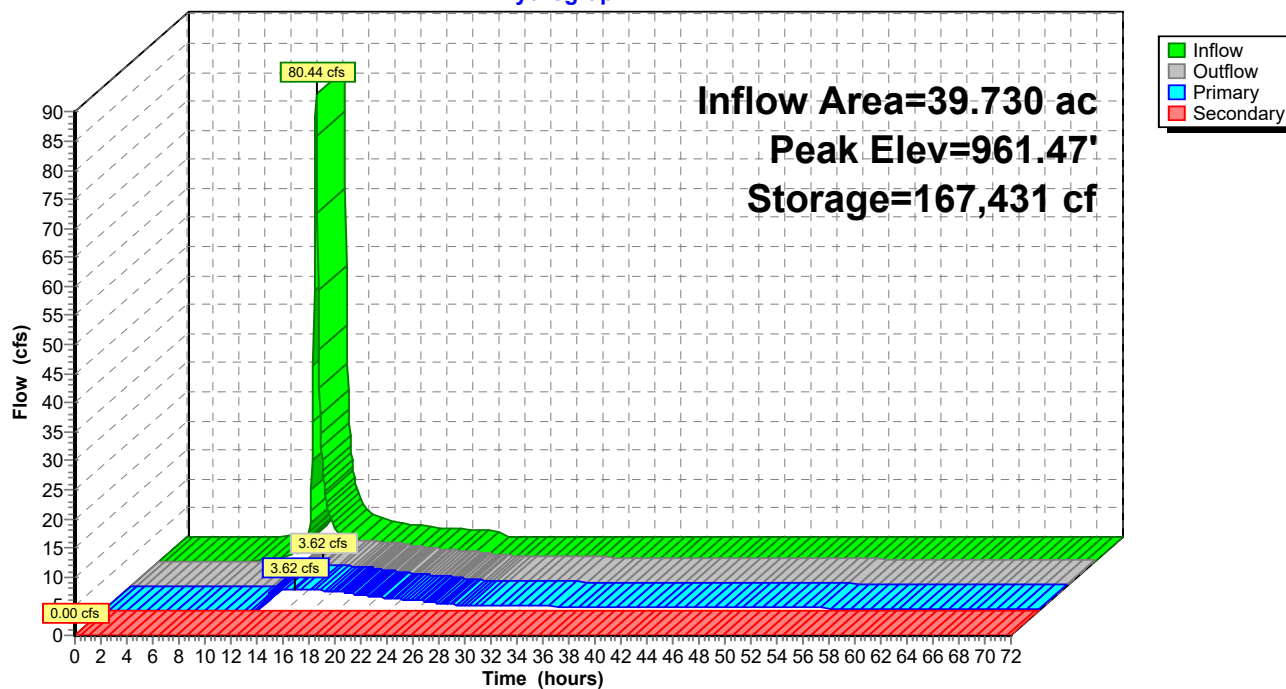
Type II 24-hr 5-Year Rainfall=3.18"

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Pond 34P: Basin B1

Hydrograph



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Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Pond 35P: Basin B2

Inflow Area = 32.330 ac, 38.00% Impervious, Inflow Depth = 1.90" for 5-Year event
 Inflow = 72.06 cfs @ 12.10 hrs, Volume= 5.111 af
 Outflow = 5.85 cfs @ 13.15 hrs, Volume= 4.812 af, Atten= 92%, Lag= 62.9 min
 Primary = 5.85 cfs @ 13.15 hrs, Volume= 4.812 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 953.64' @ 13.15 hrs Surf.Area= 82,481 sf Storage= 127,139 cf

Plug-Flow detention time= 661.2 min calculated for 4.812 af (94% of inflow)
 Center-of-Mass det. time= 628.5 min (1,455.6 - 827.1)

Volume	Invert	Avail.Storage	Storage Description
#1	952.00'	339,139 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
952.00	72,332	0	0
953.00	78,470	75,401	75,401
954.00	84,709	81,590	156,991
955.00	91,049	87,879	244,870
956.00	97,489	94,269	339,139

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 952.00' / 950.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	952.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	953.00'	15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	955.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	955.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=5.85 cfs @ 13.15 hrs HW=953.64' (Free Discharge)

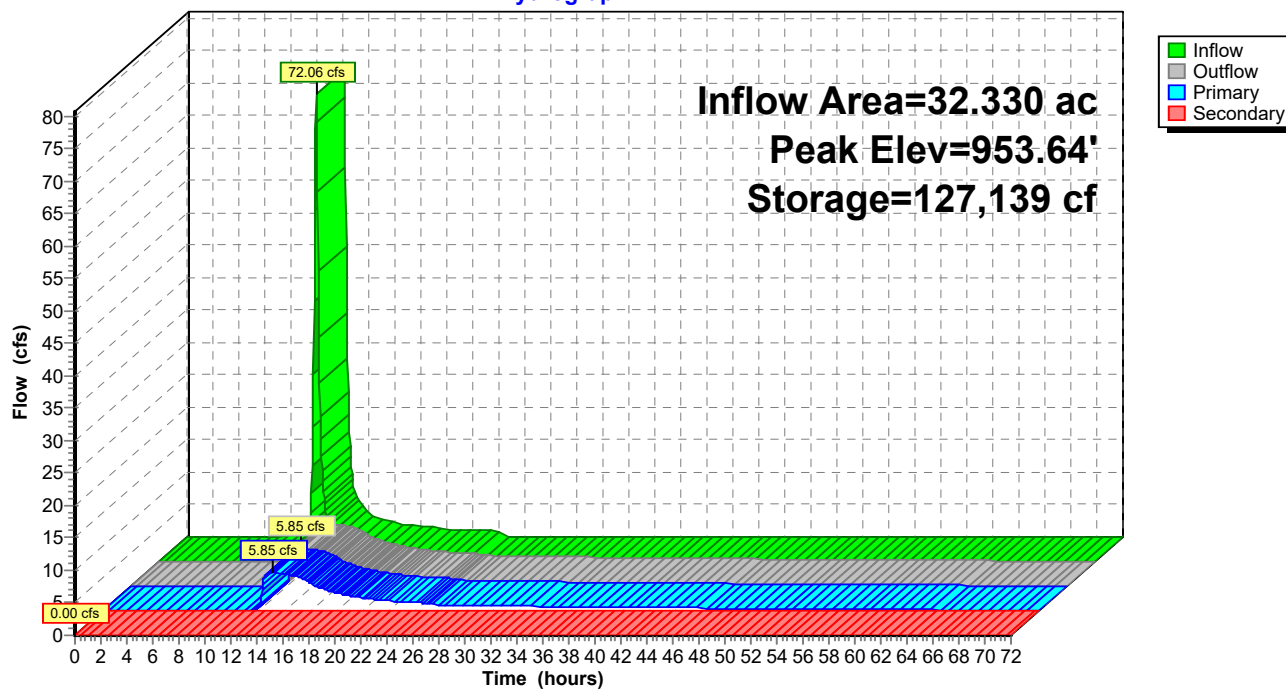
1=Culvert (Passes 1.12 cfs of 5.05 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.12 cfs @ 5.68 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Orifice Controls 4.74 cfs @ 3.86 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=952.00' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 35P: Basin B2

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Pond 39P: Basin C

Inflow Area = 6.180 ac, 38.00% Impervious, Inflow Depth = 1.90" for 5-Year event
 Inflow = 14.23 cfs @ 12.09 hrs, Volume= 0.977 af
 Outflow = 7.03 cfs @ 12.27 hrs, Volume= 0.971 af, Atten= 51%, Lag= 11.0 min
 Primary = 7.03 cfs @ 12.27 hrs, Volume= 0.971 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 987.64' @ 12.27 hrs Surf.Area= 11,262 sf Storage= 15,814 cf

Plug-Flow detention time= 318.6 min calculated for 0.971 af (99% of inflow)
 Center-of-Mass det. time= 314.5 min (1,140.5 - 826.1)

Volume	Invert	Avail.Storage	Storage Description
#1	986.00'	48,247 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
986.00	8,024	0	0
987.00	9,955	8,990	8,990
988.00	11,986	10,971	19,960
989.00	14,118	13,052	33,012
990.00	16,352	15,235	48,247

Device	Routing	Invert	Outlet Devices
#1	Primary	986.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 986.00' / 984.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	986.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	987.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.00 cfs @ 12.27 hrs HW=987.64' (Free Discharge)

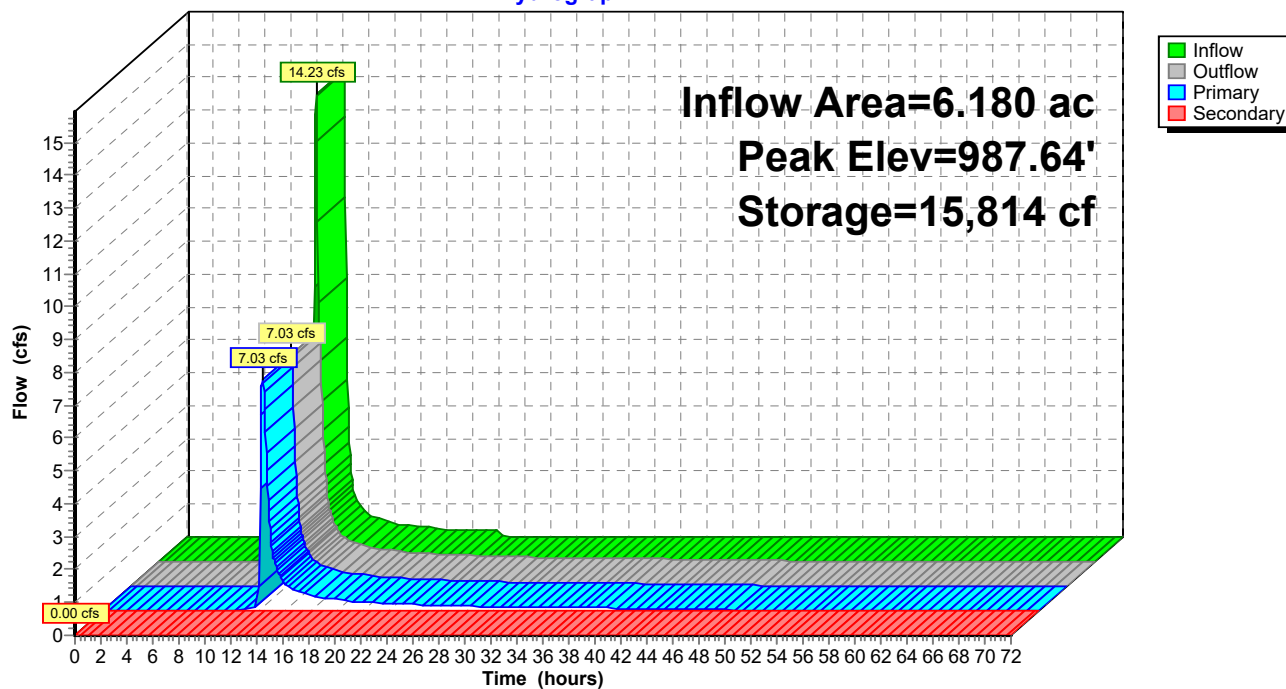
↑ **1=Culvert** (Passes 7.00 cfs of 7.44 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.20 cfs @ 5.96 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 6.80 cfs @ 3.85 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=986.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Basin C

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Pond 41P: Basin A3

Inflow Area = 4.090 ac, 38.00% Impervious, Inflow Depth = 1.90" for 5-Year event
Inflow = 9.12 cfs @ 12.10 hrs, Volume= 0.647 af
Outflow = 6.77 cfs @ 12.22 hrs, Volume= 0.646 af, Atten= 26%, Lag= 7.2 min
Primary = 6.77 cfs @ 12.22 hrs, Volume= 0.646 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 988.58' @ 12.22 hrs Surf.Area= 5,719 sf Storage= 7,636 cf

Plug-Flow detention time= 109.0 min calculated for 0.646 af (100% of inflow)
Center-of-Mass det. time= 108.6 min (935.7 - 827.1)

Volume	Invert	Avail.Storage	Storage Description
#1	987.00'	16,986 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
987.00	3,824	0	0
988.00	4,979	4,402	4,402
989.00	6,266	5,623	10,024
990.00	7,657	6,962	16,986

Device	Routing	Invert	Outlet Devices
#1	Primary	987.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 987.00' / 986.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	987.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	988.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.73 cfs @ 12.22 hrs HW=988.57' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 6.73 cfs @ 5.62 fps)
↑ **2=Orifice/Grate** (Passes < 0.50 cfs potential flow)
↑ **3=Orifice/Grate** (Passes < 6.41 cfs potential flow)
↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=987.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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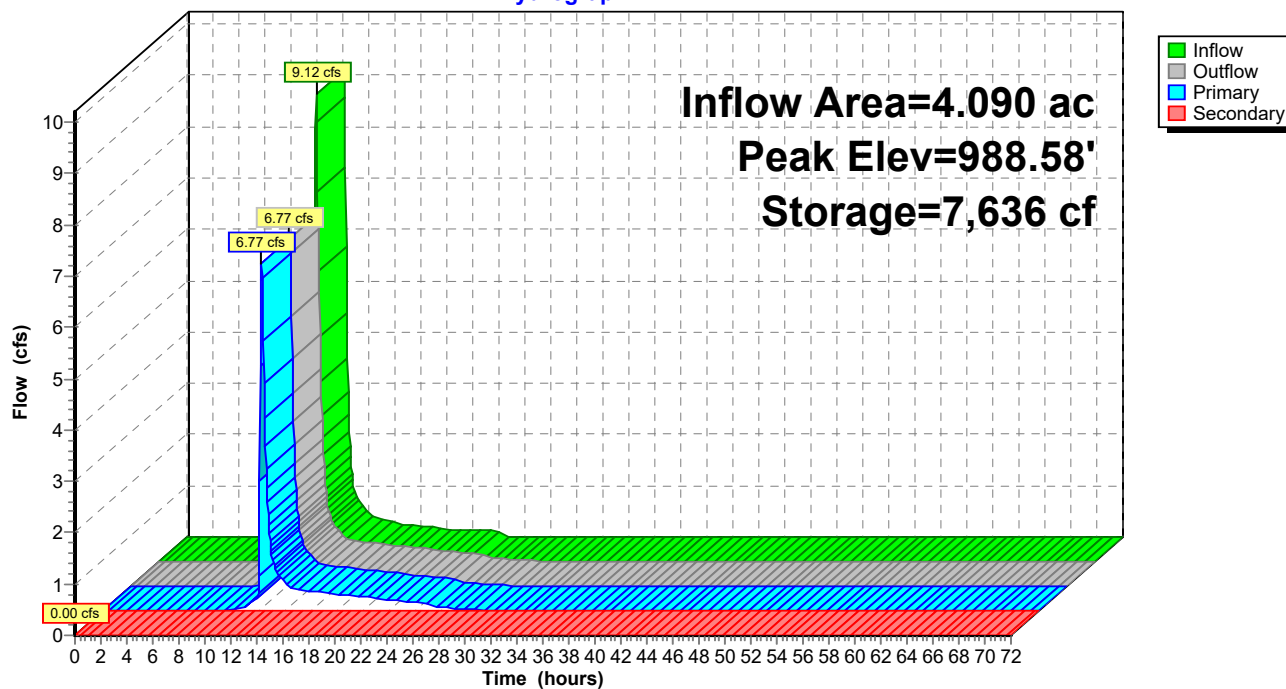
Type II 24-hr 5-Year Rainfall=3.18"

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Pond 41P: Basin A3

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 5-Year Rainfall=3.18"

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Summary for Pond 44P: Basin A1

Inflow Area = 30.810 ac, 38.00% Impervious, Inflow Depth = 1.90" for 5-Year event
 Inflow = 67.71 cfs @ 12.11 hrs, Volume= 4.871 af
 Outflow = 5.11 cfs @ 13.29 hrs, Volume= 4.681 af, Atten= 92%, Lag= 71.0 min
 Primary = 5.11 cfs @ 13.29 hrs, Volume= 4.681 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 984.70' @ 13.29 hrs Surf.Area= 74,991 sf Storage= 120,522 cf

Plug-Flow detention time= 456.2 min calculated for 4.681 af (96% of inflow)
 Center-of-Mass det. time= 433.5 min (1,261.0 - 827.6)

Volume	Invert	Avail.Storage	Storage Description
#1	983.00'	394,979 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
983.00	66,698	0	0
984.00	71,550	69,124	69,124
985.00	76,456	74,003	143,127
986.00	81,422	78,939	222,066
987.00	86,442	83,932	305,998
988.00	91,520	88,981	394,979

Device	Routing	Invert	Outlet Devices
#1	Primary	983.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 983.00' / 981.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	983.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.60'	12.0" Horiz. Orifice/Grate C= 0.600
#4	Device 1	987.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area)
#5	Secondary	987.00'	20.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.11 cfs @ 13.29 hrs HW=984.70' (Free Discharge)

↑ **1=Culvert** (Passes 5.11 cfs of 5.18 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 1.14 cfs @ 5.80 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 3.97 cfs @ 5.05 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=983.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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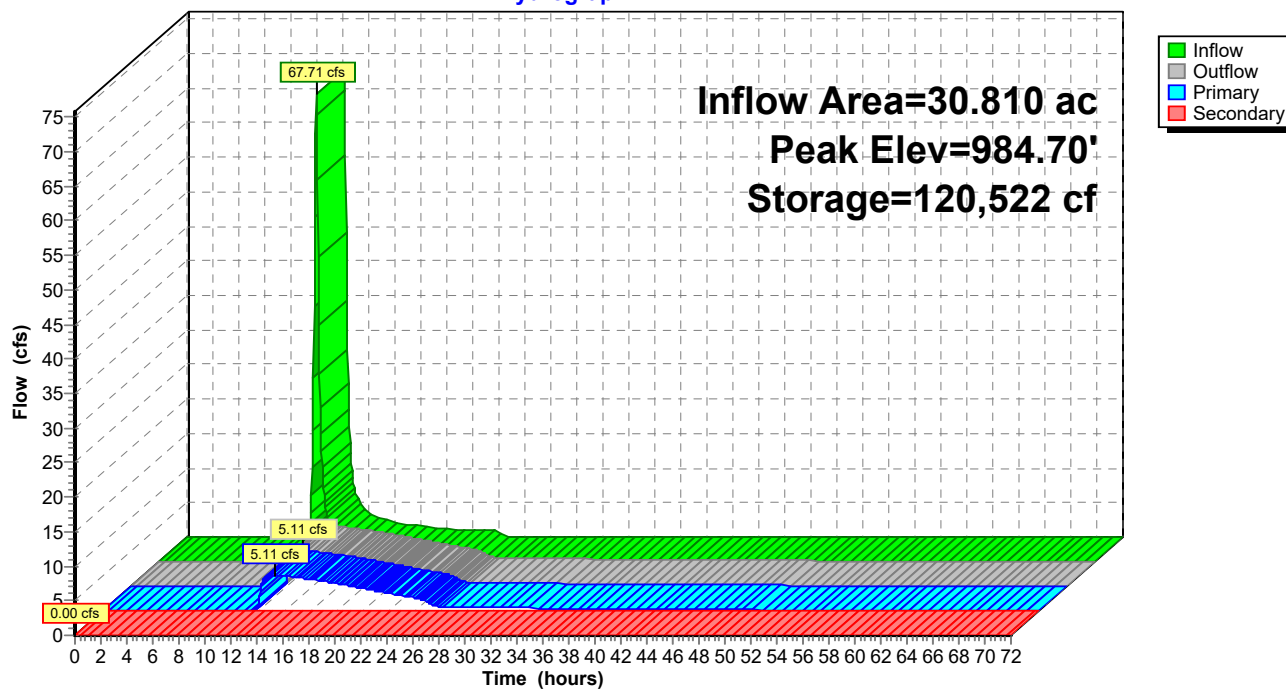
Type II 24-hr 5-Year Rainfall=3.18"

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Pond 44P: Basin A1

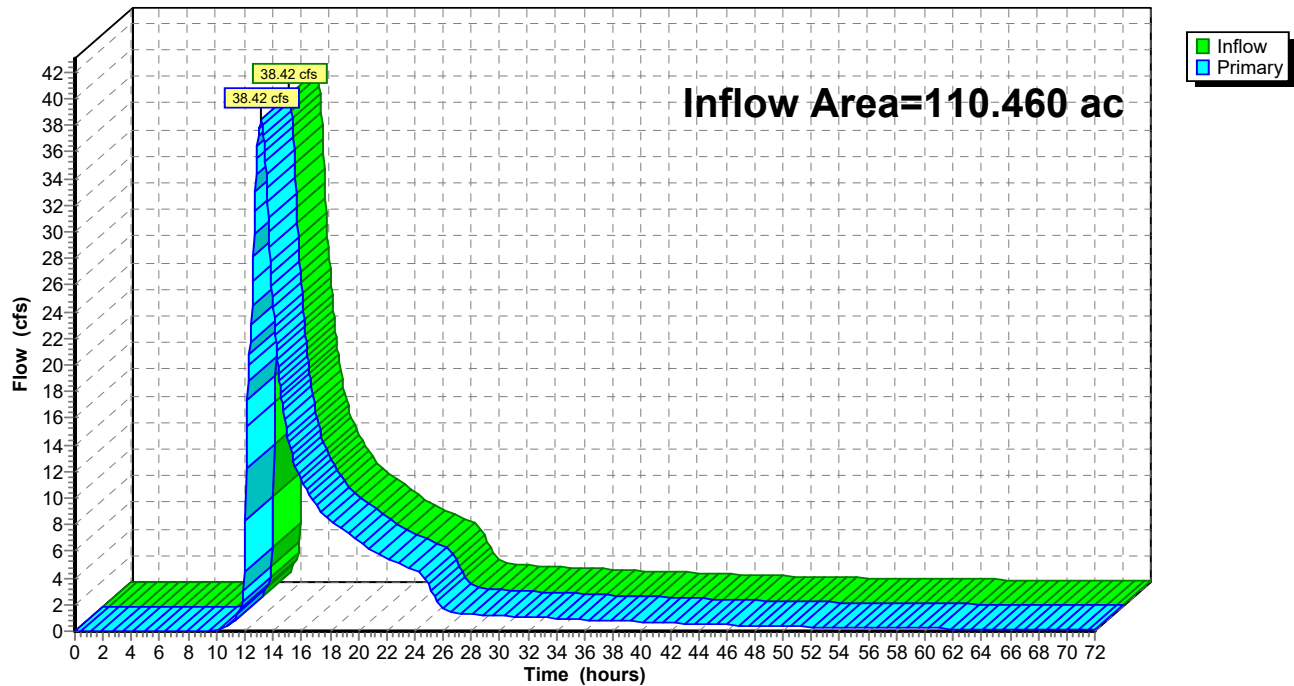
Hydrograph



Summary for Link 26L: Total Watershed A Release

Inflow Area = 110.460 ac, 25.07% Impervious, Inflow Depth > 1.61" for 5-Year event
Inflow = 38.42 cfs @ 13.14 hrs, Volume= 14.800 af
Primary = 38.42 cfs @ 13.14 hrs, Volume= 14.800 af, Atten= 0%, Lag= 0.0 min

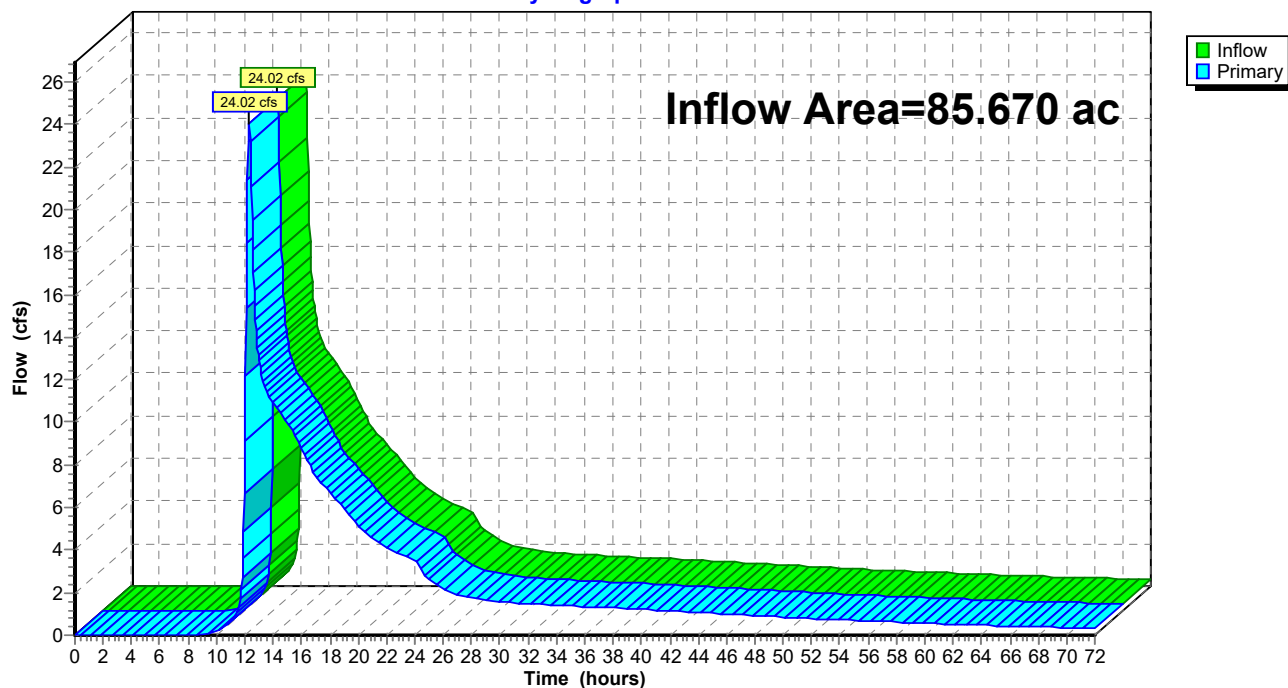
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 26L: Total Watershed A Release**Hydrograph**

Summary for Link 27L: Total Watershed B Release

Inflow Area = 85.670 ac, 29.72% Impervious, Inflow Depth > 1.67" for 5-Year event
Inflow = 24.02 cfs @ 12.31 hrs, Volume= 11.920 af
Primary = 24.02 cfs @ 12.31 hrs, Volume= 11.920 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 27L: Total Watershed B Release**Hydrograph**

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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 12S: Watershed A1 Proposed

[47] Hint: Peak is 626% of capacity of segment #2

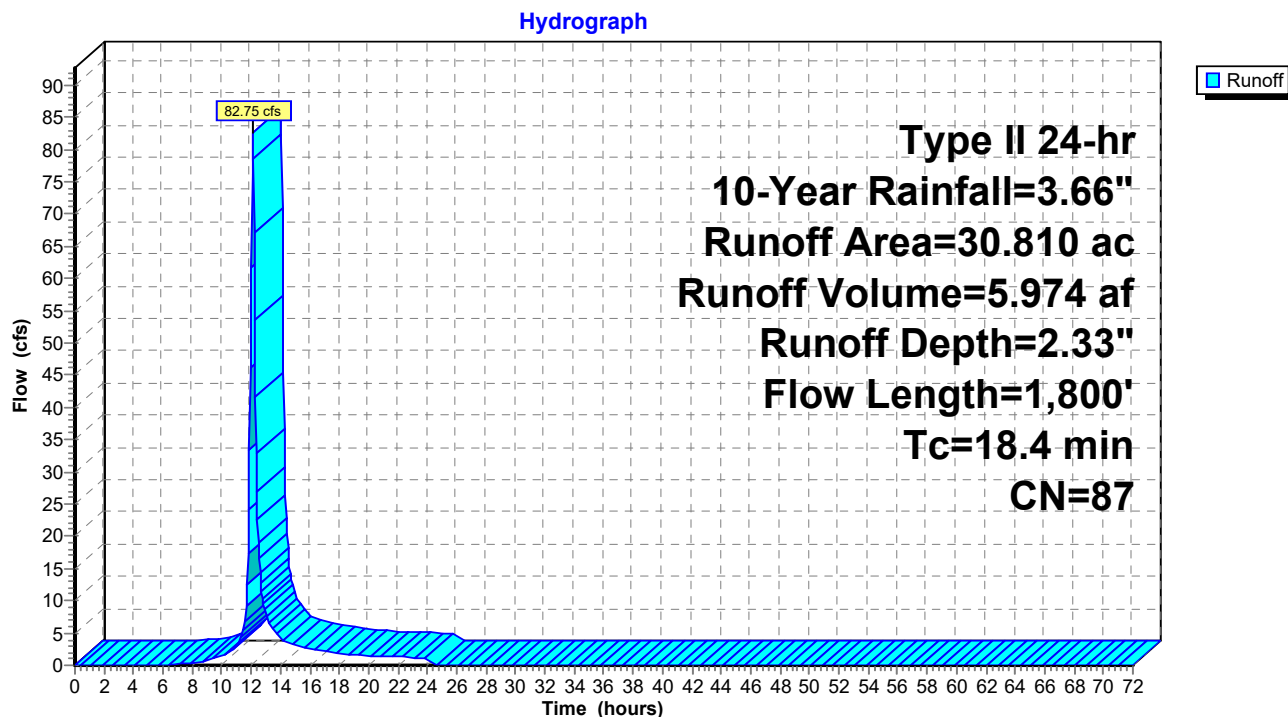
Runoff = 82.75 cfs @ 12.11 hrs, Volume= 5.974 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
30.810	87	1/4 acre lots, 38% imp, HSG D
19.102		62.00% Pervious Area
11.708		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.8	1,700	0.0135	7.48	13.22	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
18.4	1,800	Total			

Subcatchment 12S: Watershed A1 Proposed



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 14S: Watershed C Proposed

[47] Hint: Peak is 637% of capacity of segment #2

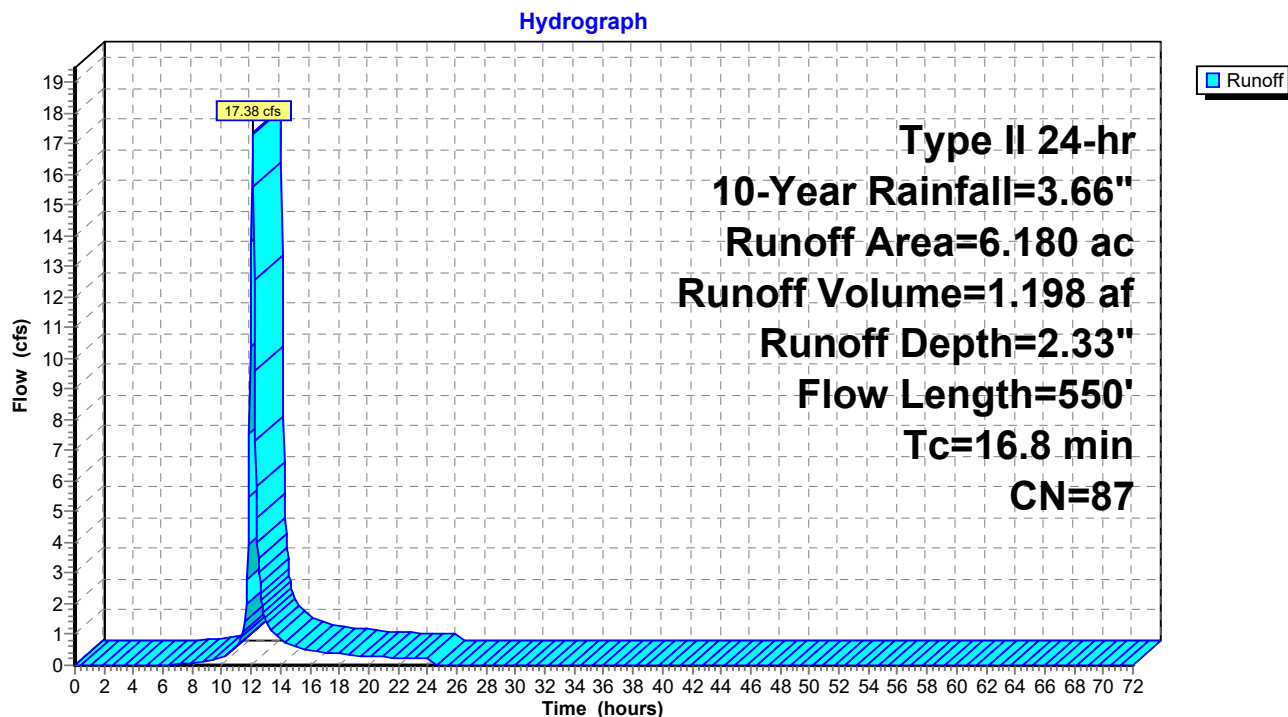
Runoff = 17.38 cfs @ 12.09 hrs, Volume= 1.198 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
6.180	87	1/4 acre lots, 38% imp, HSG D
3.832		62.00% Pervious Area
2.348		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.2	450	0.0050	3.47	2.73	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.8	550	Total			

Subcatchment 14S: Watershed C Proposed



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Summary for Subcatchment 17S: Watershed A3 Proposed

[47] Hint: Peak is 145% of capacity of segment #2

Runoff = 11.14 cfs @ 12.10 hrs, Volume= 0.793 af, Depth= 2.33"

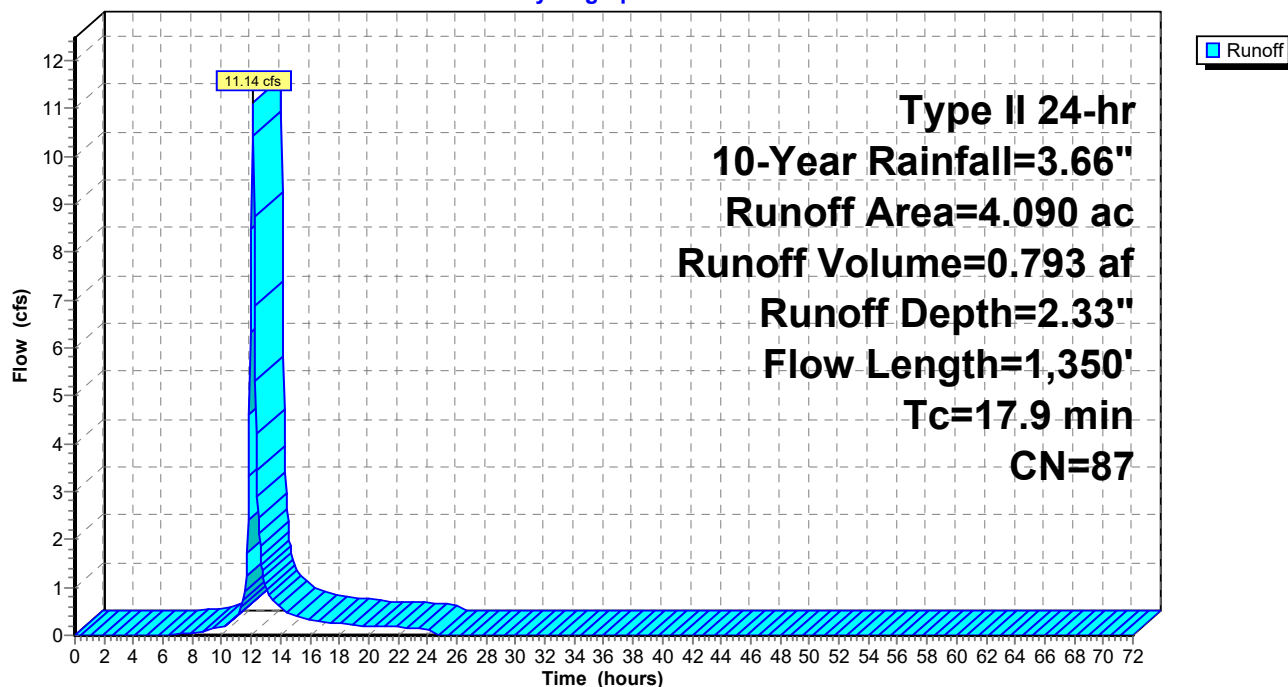
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
4.090	87	1/4 acre lots, 38% imp, HSG D
2.536		62.00% Pervious Area
1.554		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,250	0.0120	6.25	7.67	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
17.9	1,350	Total			

Subcatchment 17S: Watershed A3 Proposed

Hydrograph



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 19S: Watershed A2 Proposed

[47] Hint: Peak is 881% of capacity of segment #2

Runoff = 43.61 cfs @ 12.09 hrs, Volume= 3.017 af, Depth= 2.33"

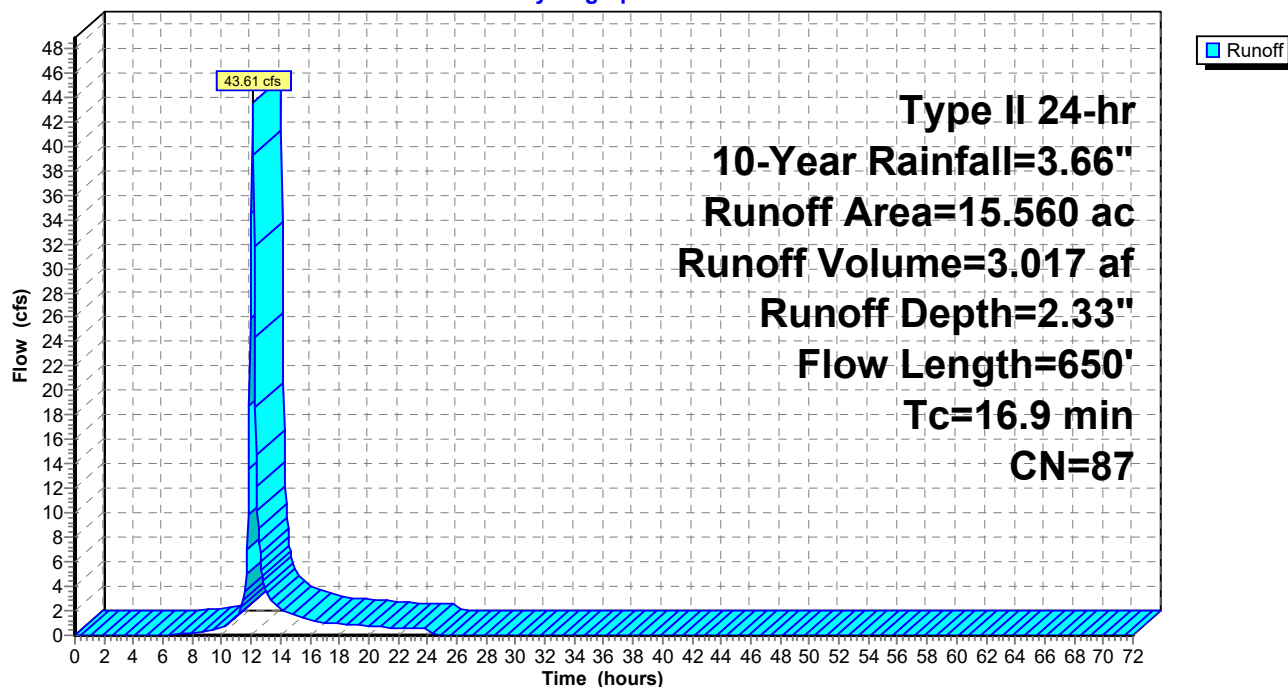
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
15.560	87	1/4 acre lots, 38% imp, HSG D
9.647		62.00% Pervious Area
5.913		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	550	0.0050	4.03	4.95	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
16.9	650	Total			

Subcatchment 19S: Watershed A2 Proposed

Hydrograph



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 20S: Watershed B1 Proposed

[47] Hint: Peak is 576% of capacity of segment #2

Runoff = 97.20 cfs @ 12.09 hrs, Volume= 6.724 af, Depth= 2.33"

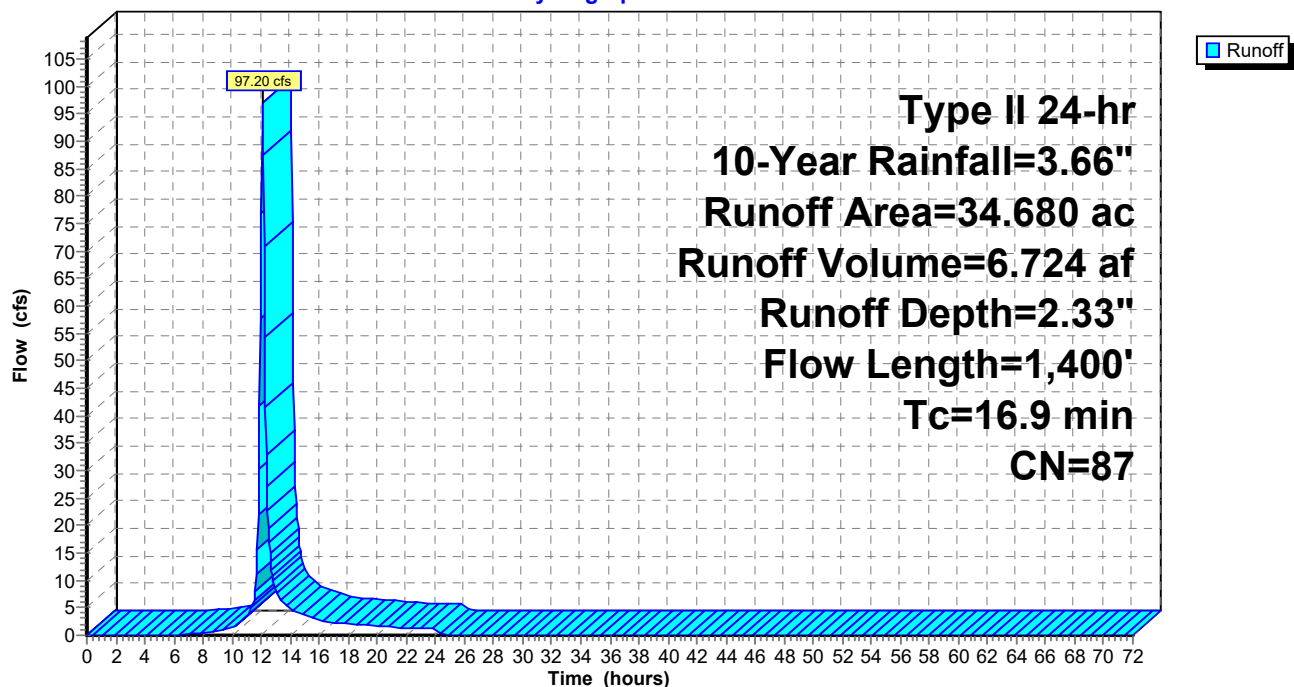
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
34.680	87	1/4 acre lots, 38% imp, HSG D
21.502		62.00% Pervious Area
13.178		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	1,300	0.0220	9.55	16.88	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
16.9	1,400	Total			

Subcatchment 20S: Watershed B1 Proposed

Hydrograph



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 28S: Watershed B1 Offsite

Runoff = 4.35 cfs @ 12.57 hrs, Volume= 0.652 af, Depth= 1.55"

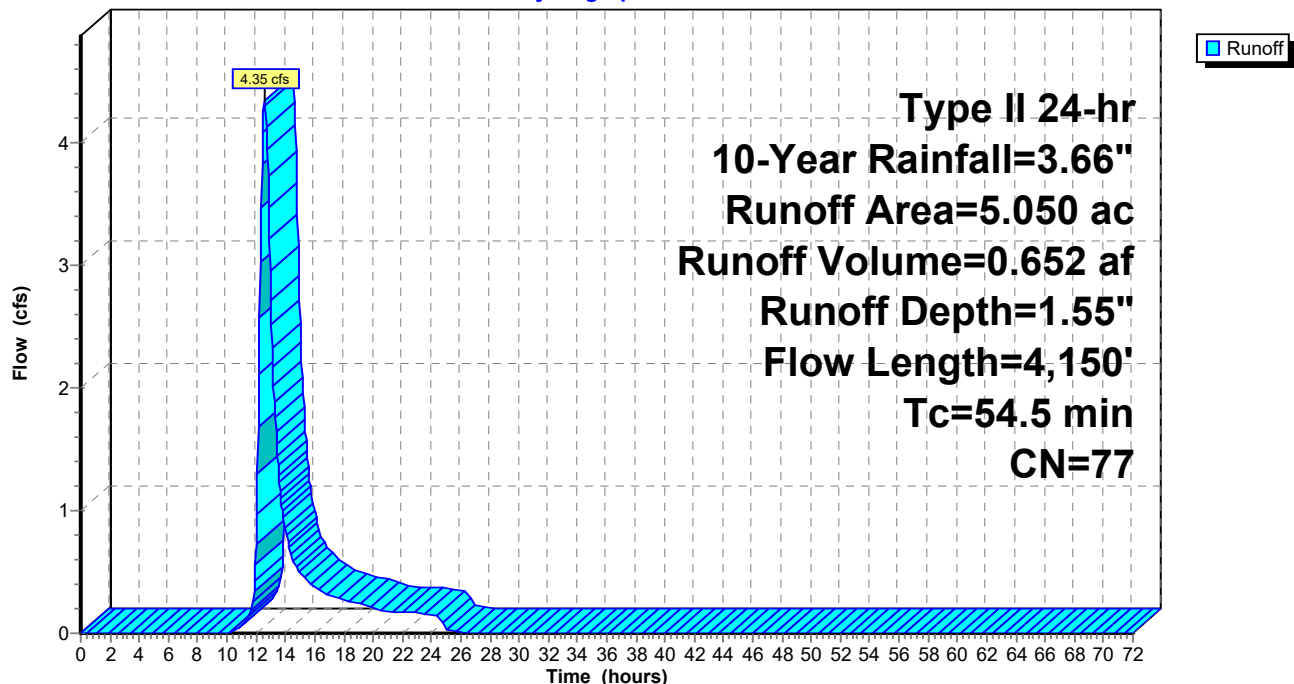
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 28S: Watershed B1 Offsite

Hydrograph



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 37S: Watershed B2 Proposed

[47] Hint: Peak is 612% of capacity of segment #2

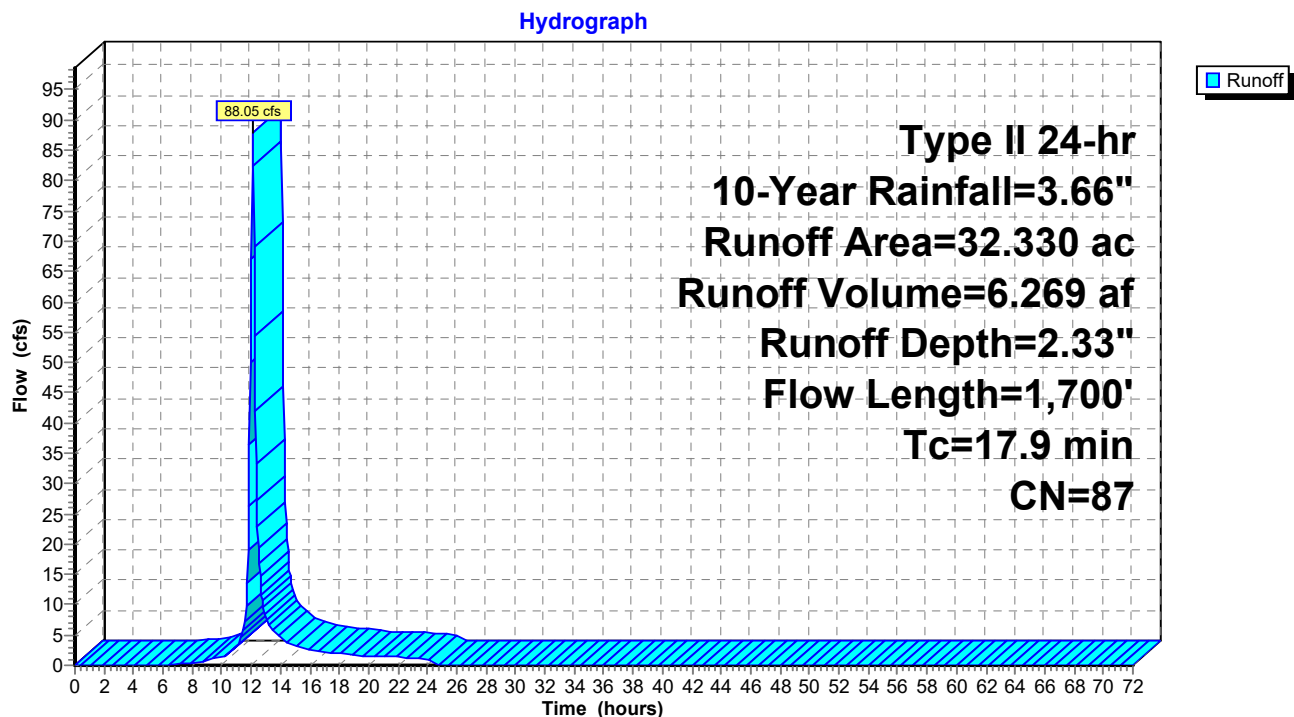
Runoff = 88.05 cfs @ 12.10 hrs, Volume= 6.269 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
32.330	87	1/4 acre lots, 38% imp, HSG D
20.045		62.00% Pervious Area
12.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,600	0.0160	8.15	14.39	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
17.9	1,700	Total			

Subcatchment 37S: Watershed B2 Proposed



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Subcatchment 44S: Watershed A1 Offsite

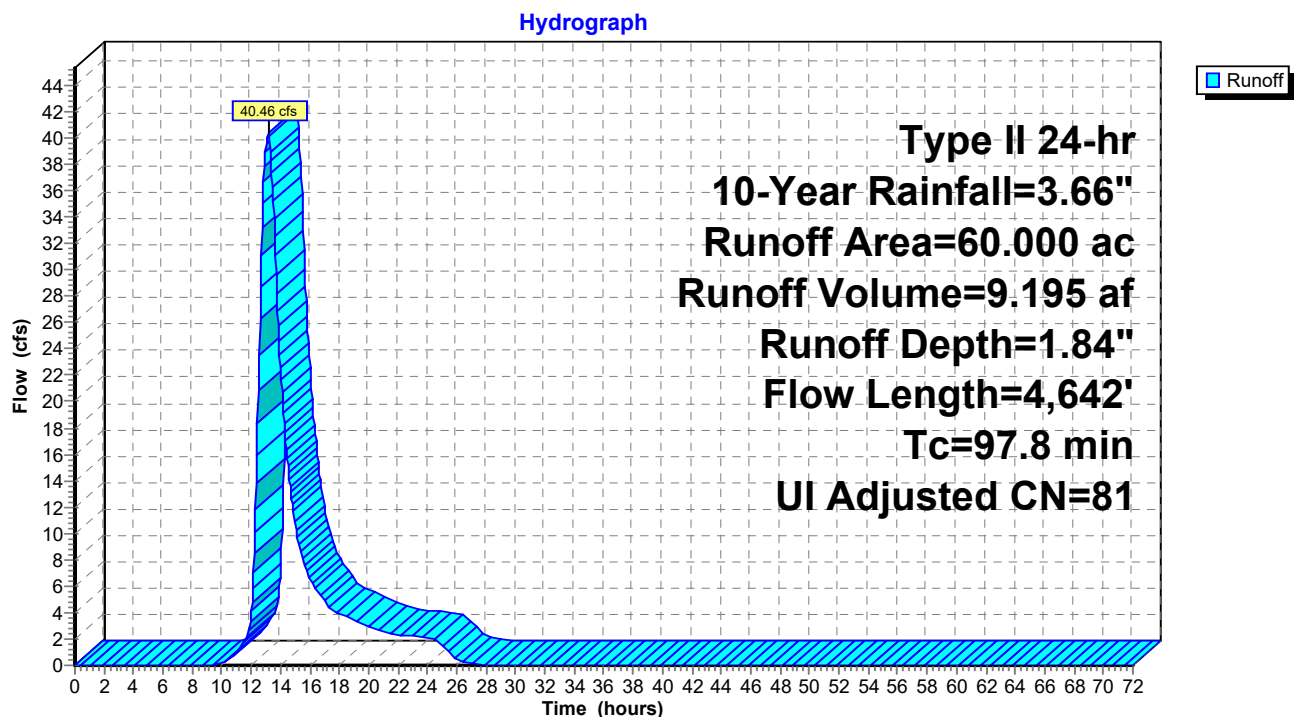
Runoff = 40.46 cfs @ 13.14 hrs, Volume= 9.195 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 44S: Watershed A1 Offsite



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Summary for Subcatchment 48S: Watershed B2 Offsite

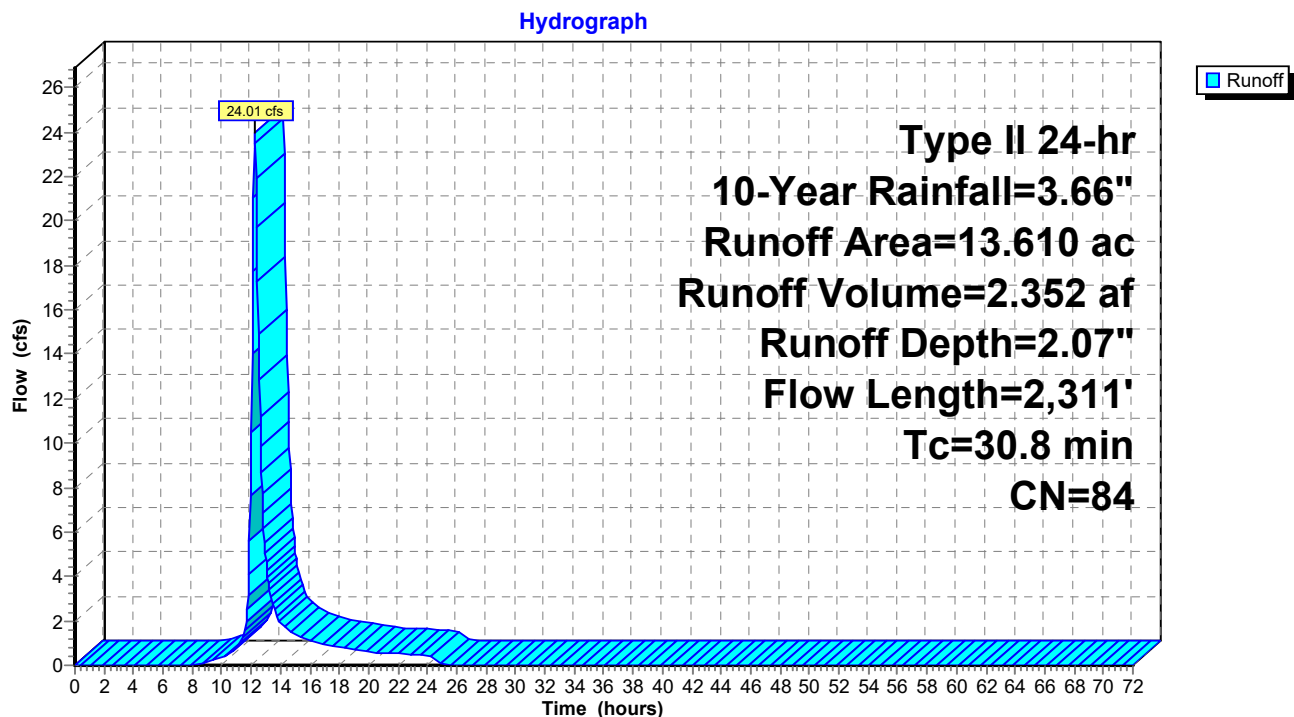
Runoff = 24.01 cfs @ 12.25 hrs, Volume= 2.352 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.66"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 48S: Watershed B2 Offsite



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Type II 24-hr 10-Year Rainfall=3.66"

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Summary for Pond 4P: Basin A2

Inflow Area = 15.560 ac, 38.00% Impervious, Inflow Depth = 2.33" for 10-Year event
 Inflow = 43.61 cfs @ 12.09 hrs, Volume= 3.017 af
 Outflow = 1.77 cfs @ 14.52 hrs, Volume= 2.754 af, Atten= 96%, Lag= 145.8 min
 Primary = 1.77 cfs @ 14.52 hrs, Volume= 2.754 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 983.19' @ 14.52 hrs Surf.Area= 76,915 sf Storage= 87,036 cf

Plug-Flow detention time= 958.7 min calculated for 2.752 af (91% of inflow)
 Center-of-Mass det. time= 914.4 min (1,734.8 - 820.3)

Volume	Invert	Avail.Storage	Storage Description
#1	982.00'	328,816 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
982.00	69,352	0	0
983.00	75,690	72,521	72,521
984.00	82,128	78,909	151,430
985.00	88,668	85,398	236,828
986.00	95,308	91,988	328,816

Device	Routing	Invert	Outlet Devices
#1	Primary	982.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 982.00' / 980.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	982.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	985.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	985.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.77 cfs @ 14.52 hrs HW=983.19' (Free Discharge)

↑ **1=Culvert** (Passes 1.77 cfs of 3.93 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.92 cfs @ 4.67 fps)
 ↑ **3=Orifice/Grate** (Weir Controls 0.85 cfs @ 1.43 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=982.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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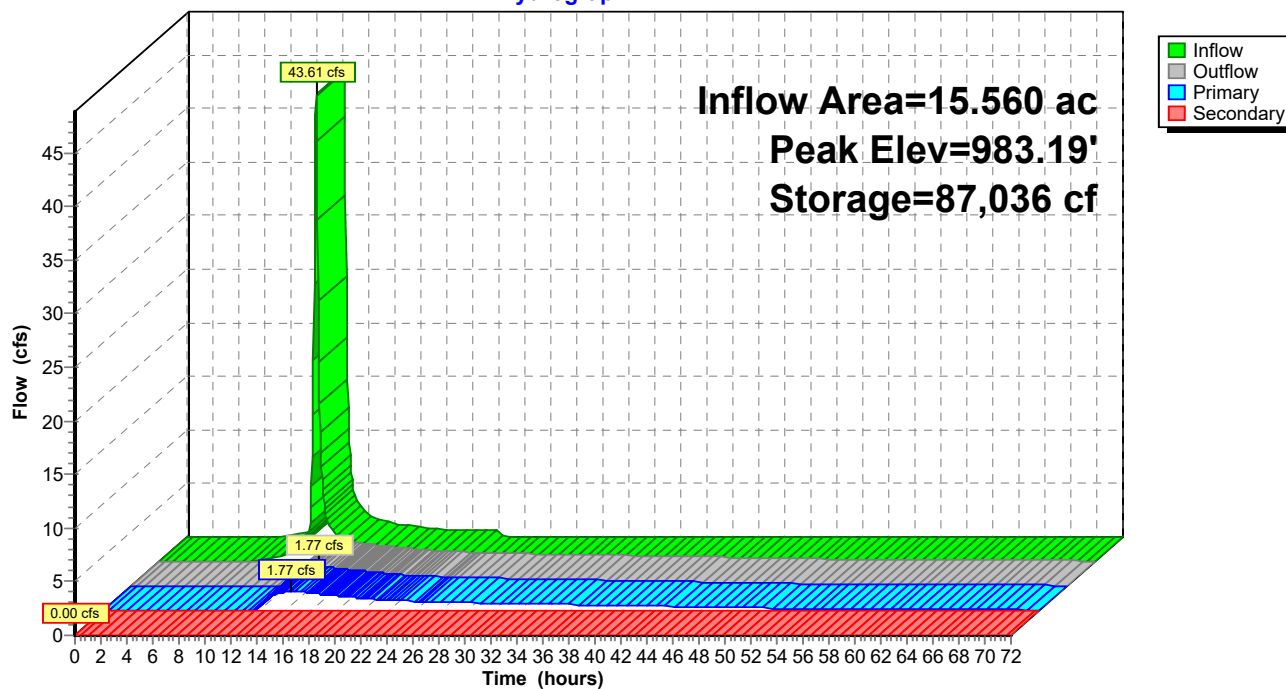
Type II 24-hr 10-Year Rainfall=3.66"

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Pond 4P: Basin A2

Hydrograph



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Summary for Pond 34P: Basin B1

Inflow Area = 39.730 ac, 33.17% Impervious, Inflow Depth = 2.23" for 10-Year event
 Inflow = 98.44 cfs @ 12.09 hrs, Volume= 7.377 af
 Outflow = 4.51 cfs @ 14.55 hrs, Volume= 6.576 af, Atten= 95%, Lag= 147.6 min
 Primary = 4.51 cfs @ 14.55 hrs, Volume= 6.576 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 961.78' @ 14.55 hrs Surf.Area= 121,088 sf Storage= 205,451 cf

Plug-Flow detention time= 859.3 min calculated for 6.571 af (89% of inflow)
 Center-of-Mass det. time= 806.4 min (1,632.6 - 826.2)

Volume	Invert	Avail.Storage	Storage Description
#1	960.00'	490,366 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
960.00	109,496	0	0
961.00	115,956	112,726	112,726
962.00	122,516	119,236	231,962
963.00	129,177	125,847	357,809
964.00	135,938	132,558	490,366

Device	Routing	Invert	Outlet Devices
#1	Primary	960.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 960.00' / 958.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	960.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	961.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	963.00'	1.0" x 12.0" Horiz. Orifice/Grate X 5.00 C= 0.600 in 12.0" x 12.0" Grate (42% open area) Limited to weir flow at low heads
#5	Secondary	963.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.52 cfs @ 14.55 hrs HW=961.78' (Free Discharge)

↑ **1=Culvert** (Passes 4.52 cfs of 5.34 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 1.17 cfs @ 5.96 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 3.34 cfs @ 4.26 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=960.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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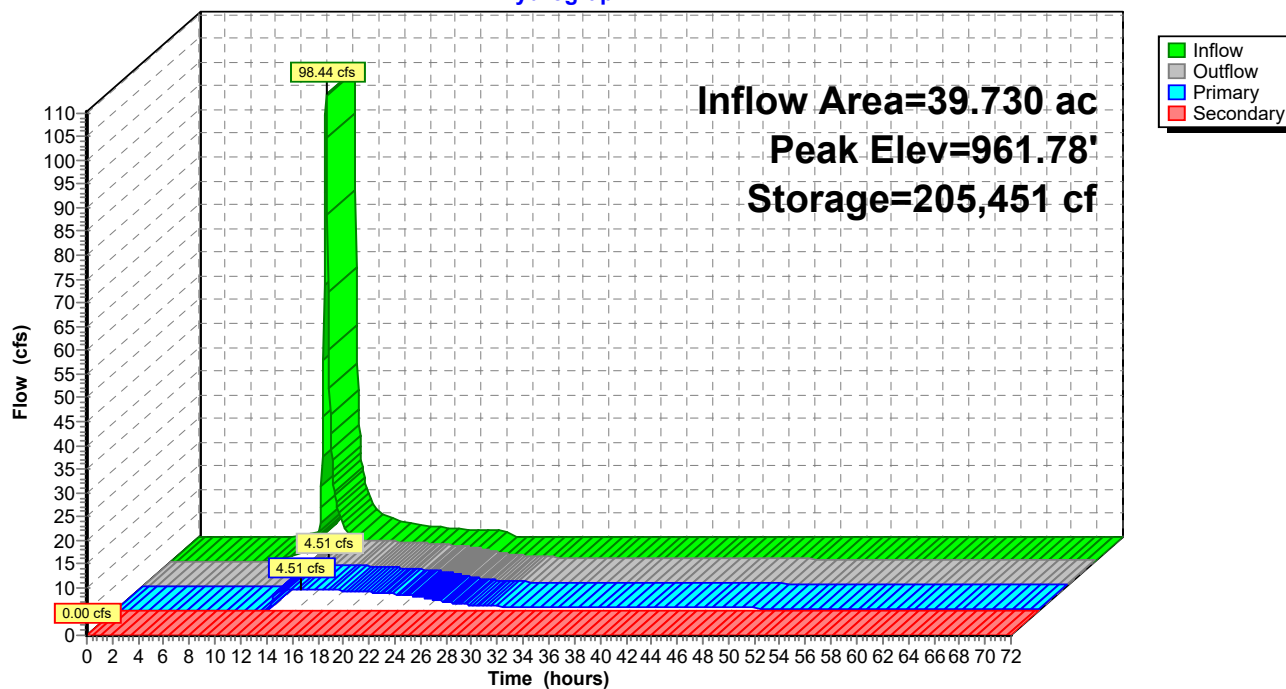
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Pond 34P: Basin B1

Hydrograph



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Summary for Pond 35P: Basin B2

Inflow Area = 32.330 ac, 38.00% Impervious, Inflow Depth = 2.33" for 10-Year event
 Inflow = 88.05 cfs @ 12.10 hrs, Volume= 6.269 af
 Outflow = 7.16 cfs @ 13.12 hrs, Volume= 5.965 af, Atten= 92%, Lag= 60.9 min
 Primary = 7.16 cfs @ 13.12 hrs, Volume= 5.965 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 954.00' @ 13.12 hrs Surf.Area= 84,707 sf Storage= 156,970 cf

Plug-Flow detention time= 582.5 min calculated for 5.961 af (95% of inflow)
 Center-of-Mass det. time= 556.4 min (1,377.7 - 821.3)

Volume	Invert	Avail.Storage	Storage Description
#1	952.00'	339,139 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
952.00	72,332	0	0
953.00	78,470	75,401	75,401
954.00	84,709	81,590	156,991
955.00	91,049	87,879	244,870
956.00	97,489	94,269	339,139

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 952.00' / 950.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	952.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	953.00'	15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	955.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	955.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.16 cfs @ 13.12 hrs HW=954.00' (Free Discharge)

1=Culvert (Passes 1.25 cfs of 5.55 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.25 cfs @ 6.37 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Orifice Controls 5.91 cfs @ 4.81 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=952.00' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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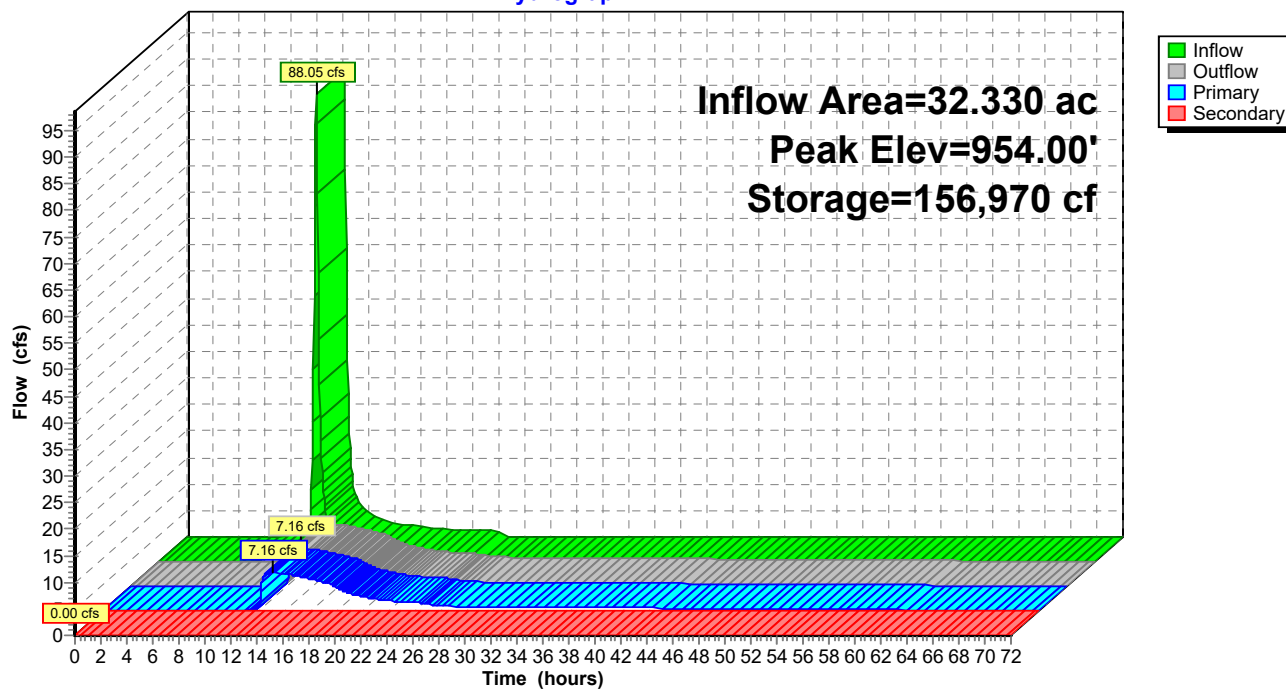
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Pond 35P: Basin B2

Hydrograph



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Summary for Pond 39P: Basin C

Inflow Area = 6.180 ac, 38.00% Impervious, Inflow Depth = 2.33" for 10-Year event
 Inflow = 17.38 cfs @ 12.09 hrs, Volume= 1.198 af
 Outflow = 8.32 cfs @ 12.28 hrs, Volume= 1.192 af, Atten= 52%, Lag= 11.4 min
 Primary = 8.32 cfs @ 12.28 hrs, Volume= 1.192 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 987.91' @ 12.28 hrs Surf.Area= 11,795 sf Storage= 18,840 cf

Plug-Flow detention time= 266.2 min calculated for 1.191 af (99% of inflow)
 Center-of-Mass det. time= 264.5 min (1,084.8 - 820.3)

Volume	Invert	Avail.Storage	Storage Description
#1	986.00'	48,247 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
986.00	8,024	0	0
987.00	9,955	8,990	8,990
988.00	11,986	10,971	19,960
989.00	14,118	13,052	33,012
990.00	16,352	15,235	48,247

Device	Routing	Invert	Outlet Devices
#1	Primary	986.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 986.00' / 984.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	986.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	987.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=8.30 cfs @ 12.28 hrs HW=987.90' (Free Discharge)

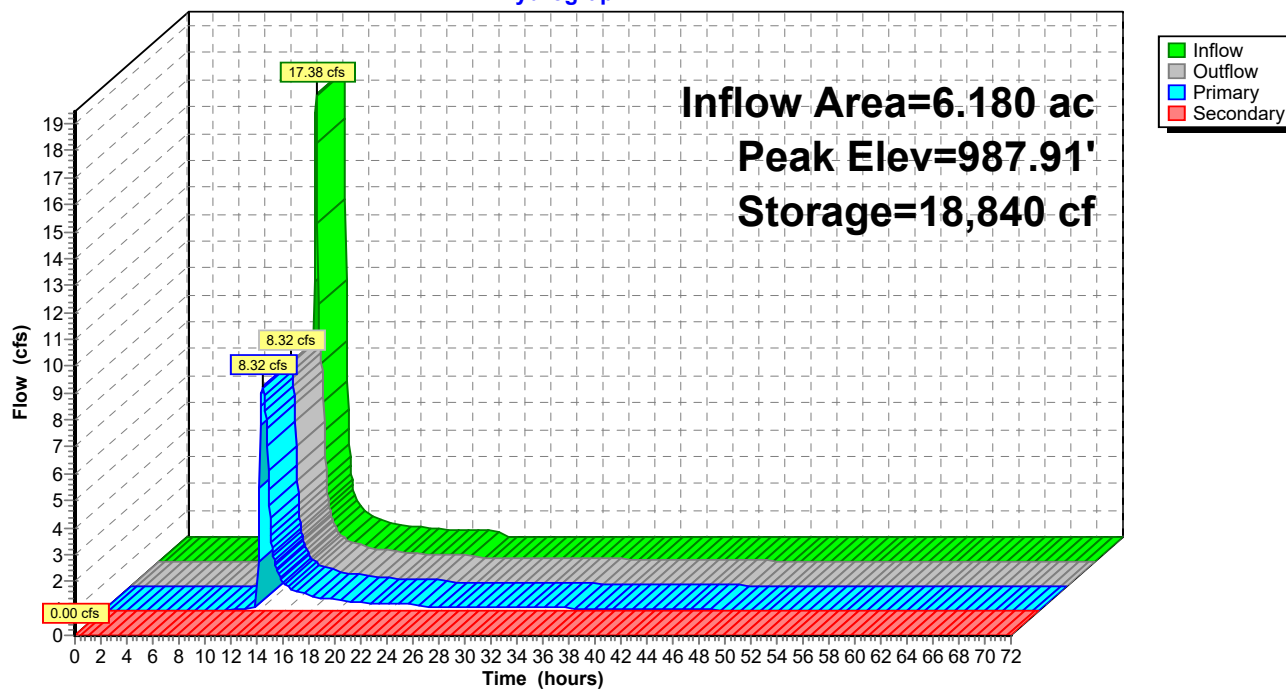
↑ **1=Culvert** (Passes 8.30 cfs of 8.35 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 6.46 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 8.08 cfs @ 4.57 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=986.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Basin C

Hydrograph



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Summary for Pond 41P: Basin A3

Inflow Area = 4.090 ac, 38.00% Impervious, Inflow Depth = 2.33" for 10-Year event
 Inflow = 11.14 cfs @ 12.10 hrs, Volume= 0.793 af
 Outflow = 6.98 cfs @ 12.25 hrs, Volume= 0.793 af, Atten= 37%, Lag= 8.9 min
 Primary = 6.98 cfs @ 12.25 hrs, Volume= 0.793 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 988.85' @ 12.25 hrs Surf.Area= 6,075 sf Storage= 9,188 cf

Plug-Flow detention time= 99.6 min calculated for 0.793 af (100% of inflow)
 Center-of-Mass det. time= 99.2 min (920.5 - 821.3)

Volume	Invert	Avail.Storage	Storage Description
#1	987.00'	16,986 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
987.00	3,824	0	0
988.00	4,979	4,402	4,402
989.00	6,266	5,623	10,024
990.00	7,657	6,962	16,986

Device	Routing	Invert	Outlet Devices
#1	Primary	987.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 987.00' / 986.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	987.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	988.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.98 cfs @ 12.25 hrs HW=988.85' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 6.98 cfs @ 5.69 fps)
 ↑ **2=Orifice/Grate** (Passes < 0.55 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 7.85 cfs potential flow)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=987.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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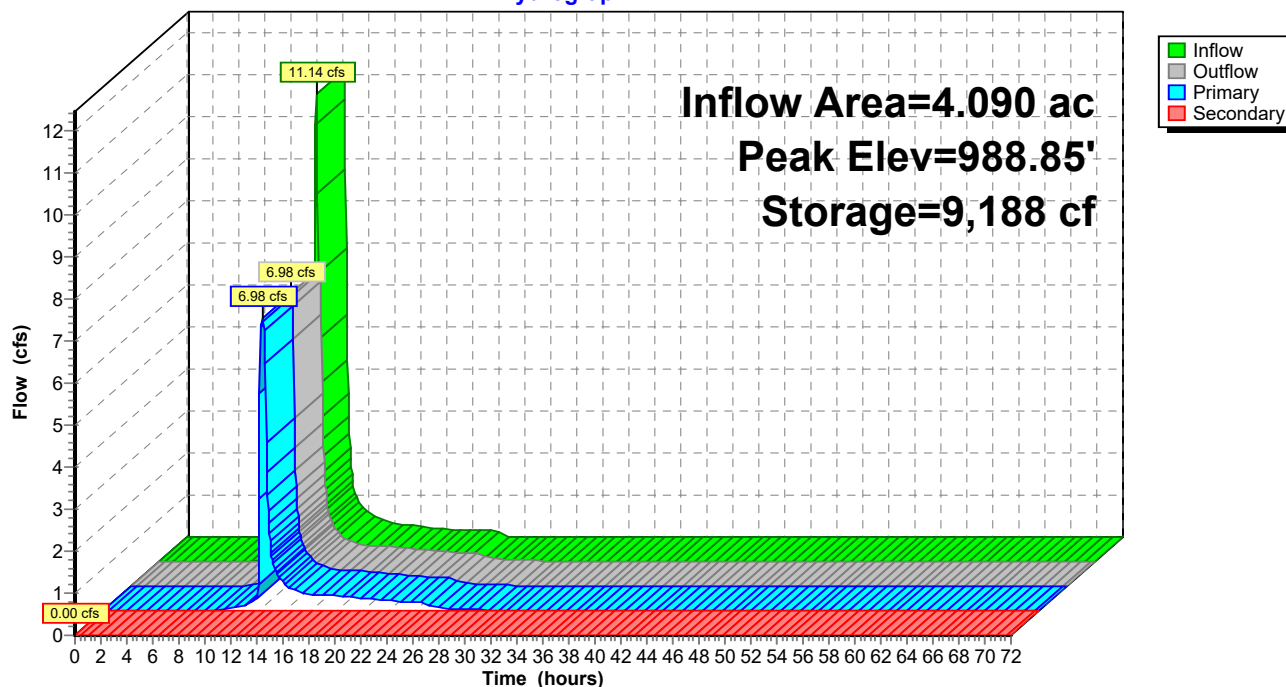
Type II 24-hr 10-Year Rainfall=3.66"

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Pond 41P: Basin A3

Hydrograph



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Summary for Pond 44P: Basin A1

Inflow Area = 30.810 ac, 38.00% Impervious, Inflow Depth = 2.33" for 10-Year event
 Inflow = 82.75 cfs @ 12.11 hrs, Volume= 5.974 af
 Outflow = 5.65 cfs @ 13.42 hrs, Volume= 5.778 af, Atten= 93%, Lag= 79.0 min
 Primary = 5.65 cfs @ 13.42 hrs, Volume= 5.778 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 985.11' @ 13.42 hrs Surf.Area= 77,016 sf Storage= 151,783 cf

Plug-Flow detention time= 454.8 min calculated for 5.778 af (97% of inflow)
 Center-of-Mass det. time= 435.4 min (1,257.1 - 821.7)

Volume	Invert	Avail.Storage	Storage Description
#1	983.00'	394,979 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
983.00	66,698	0	0
984.00	71,550	69,124	69,124
985.00	76,456	74,003	143,127
986.00	81,422	78,939	222,066
987.00	86,442	83,932	305,998
988.00	91,520	88,981	394,979

Device	Routing	Invert	Outlet Devices
#1	Primary	983.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 983.00' / 981.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	983.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.60'	12.0" Horiz. Orifice/Grate C= 0.600
#4	Device 1	987.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area)
#5	Secondary	987.00'	20.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.65 cfs @ 13.42 hrs HW=985.11' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 5.65 cfs @ 7.19 fps)
 ↑ **2=Orifice/Grate** (Passes < 1.29 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 4.65 cfs potential flow)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=983.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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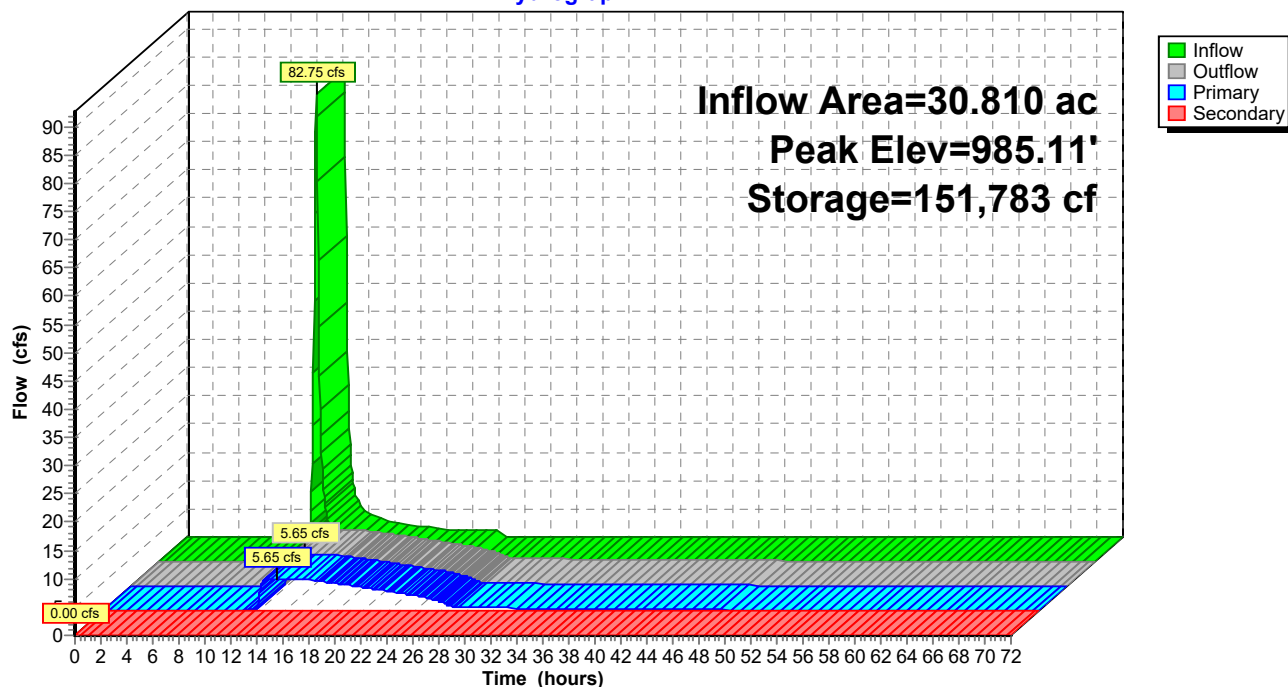
Type II 24-hr 10-Year Rainfall=3.66"

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Pond 44P: Basin A1

Hydrograph



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Summary for Link 26L: Total Watershed A Release

Inflow Area = 110.460 ac, 25.07% Impervious, Inflow Depth > 2.01" for 10-Year event

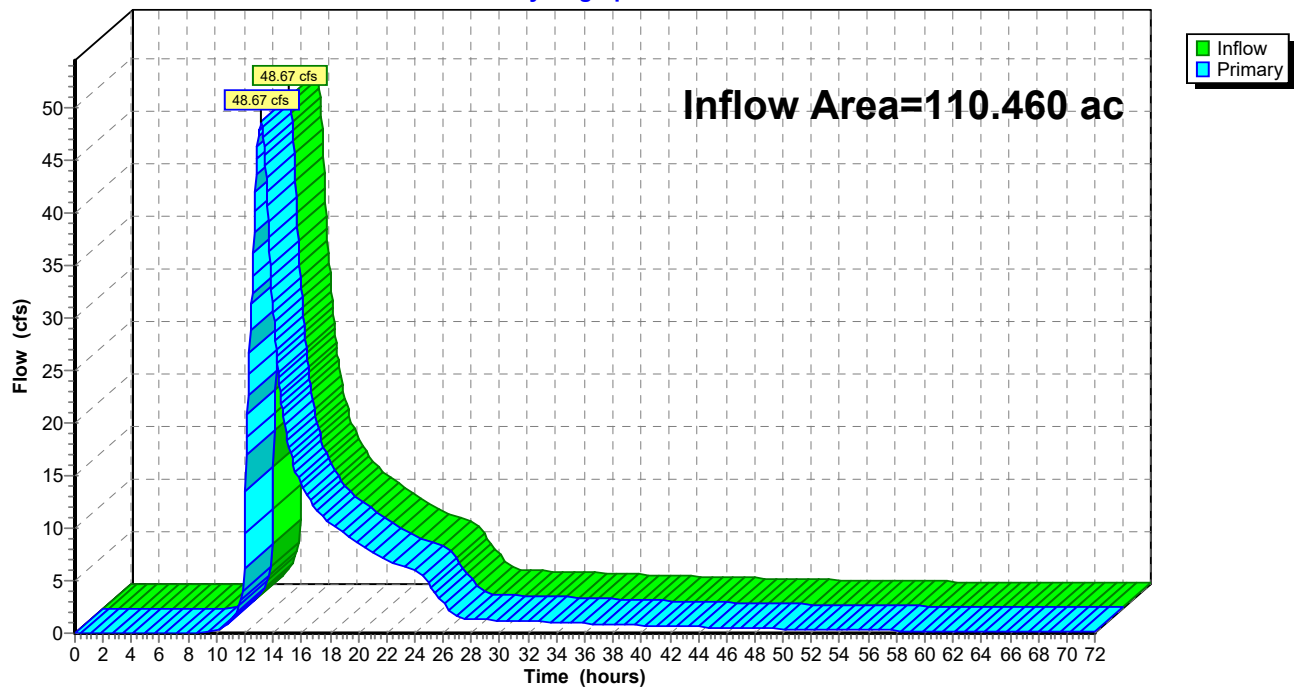
Inflow = 48.67 cfs @ 13.14 hrs, Volume= 18.520 af

Primary = 48.67 cfs @ 13.14 hrs, Volume= 18.520 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 26L: Total Watershed A Release

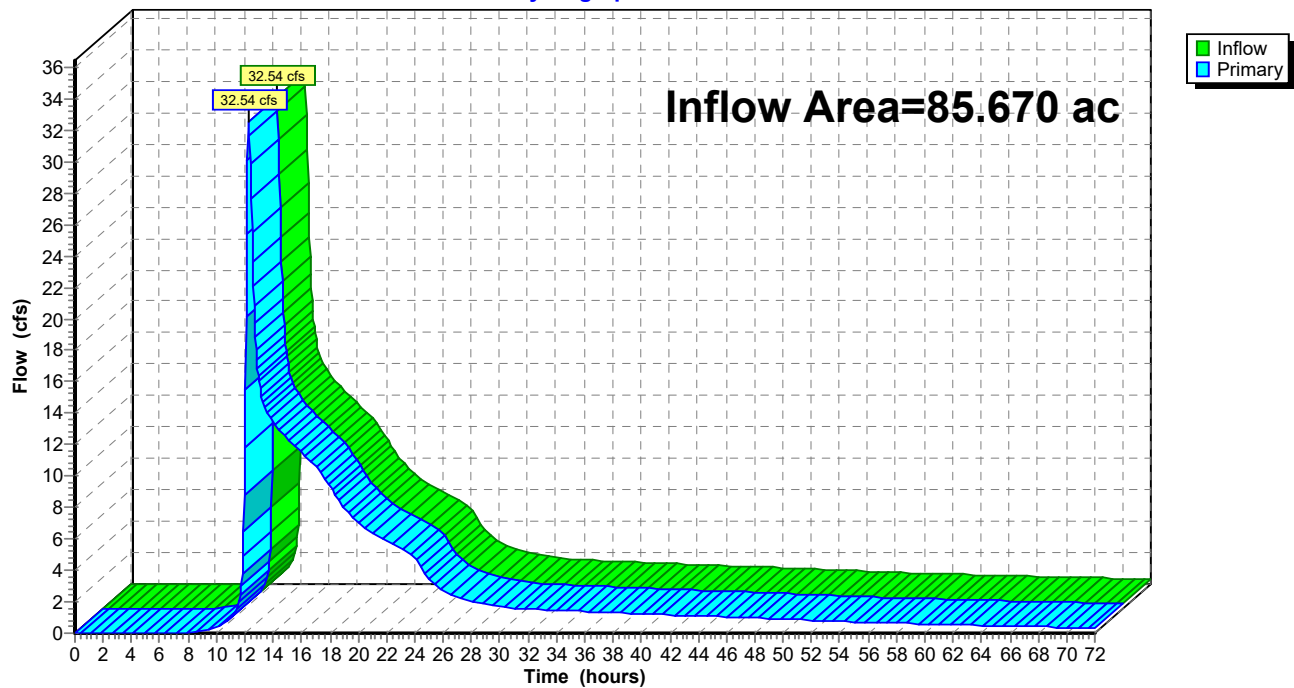
Hydrograph



Summary for Link 27L: Total Watershed B Release

Inflow Area = 85.670 ac, 29.72% Impervious, Inflow Depth > 2.09" for 10-Year event
Inflow = 32.54 cfs @ 12.29 hrs, Volume= 14.893 af
Primary = 32.54 cfs @ 12.29 hrs, Volume= 14.893 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 27L: Total Watershed B Release**Hydrograph**

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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 12S: Watershed A1 Proposed

[47] Hint: Peak is 789% of capacity of segment #2

Runoff = 104.26 cfs @ 12.10 hrs, Volume= 7.575 af, Depth= 2.95"

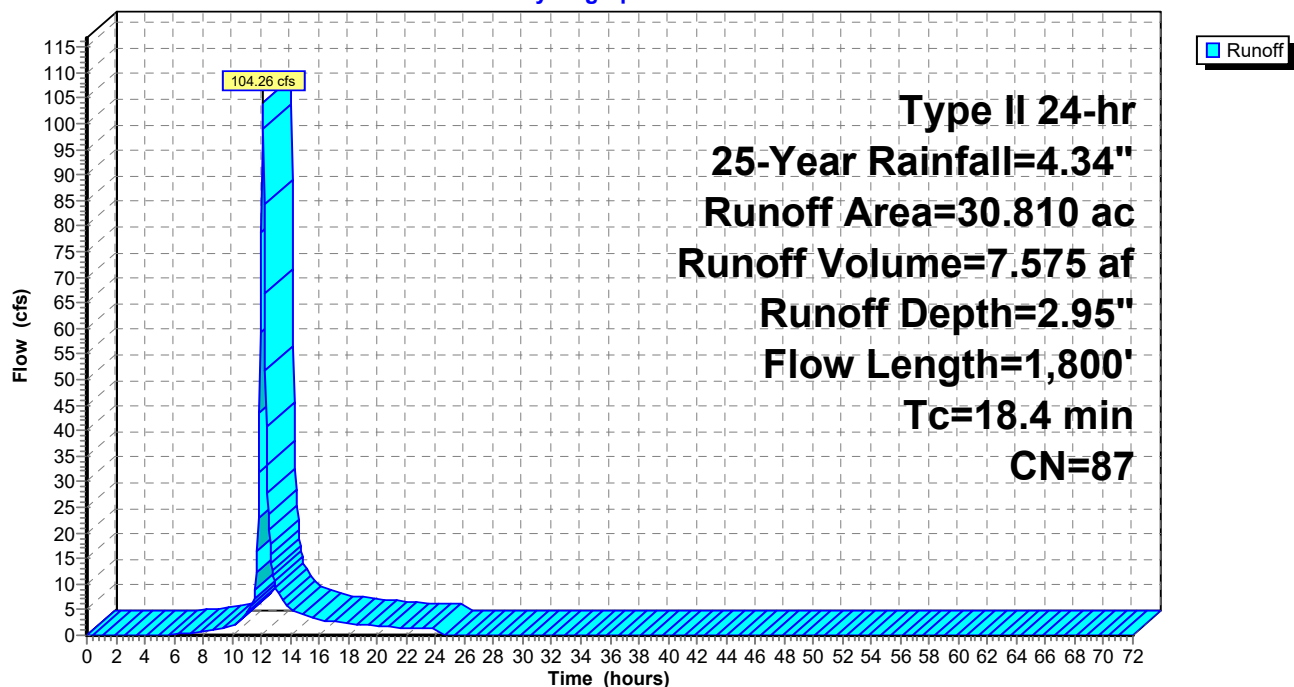
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
30.810	87	1/4 acre lots, 38% imp, HSG D
19.102		62.00% Pervious Area
11.708		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.8	1,700	0.0135	7.48	13.22	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
18.4	1,800	Total			

Subcatchment 12S: Watershed A1 Proposed

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 14S: Watershed C Proposed

[47] Hint: Peak is 802% of capacity of segment #2

Runoff = 21.88 cfs @ 12.09 hrs, Volume= 1.519 af, Depth= 2.95"

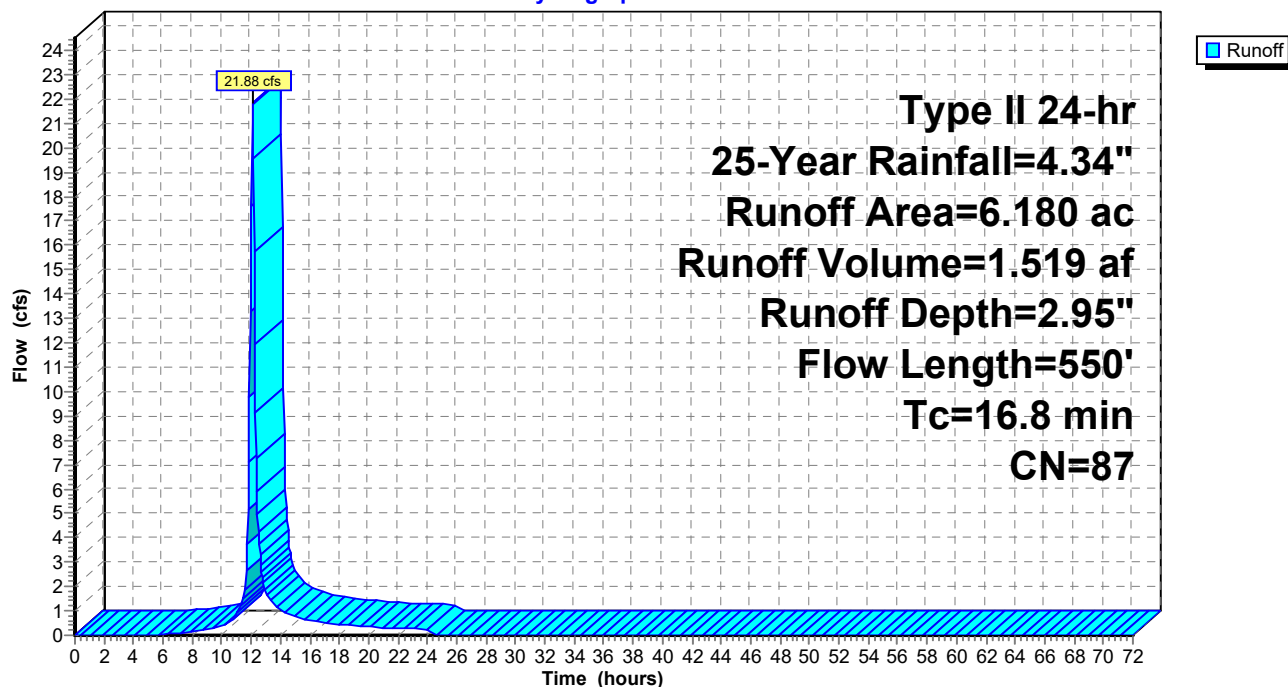
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
6.180	87	1/4 acre lots, 38% imp, HSG D
3.832		62.00% Pervious Area
2.348		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.2	450	0.0050	3.47	2.73	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.8	550	Total			

Subcatchment 14S: Watershed C Proposed

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 17S: Watershed A3 Proposed

[47] Hint: Peak is 183% of capacity of segment #2

Runoff = 14.03 cfs @ 12.10 hrs, Volume= 1.006 af, Depth= 2.95"

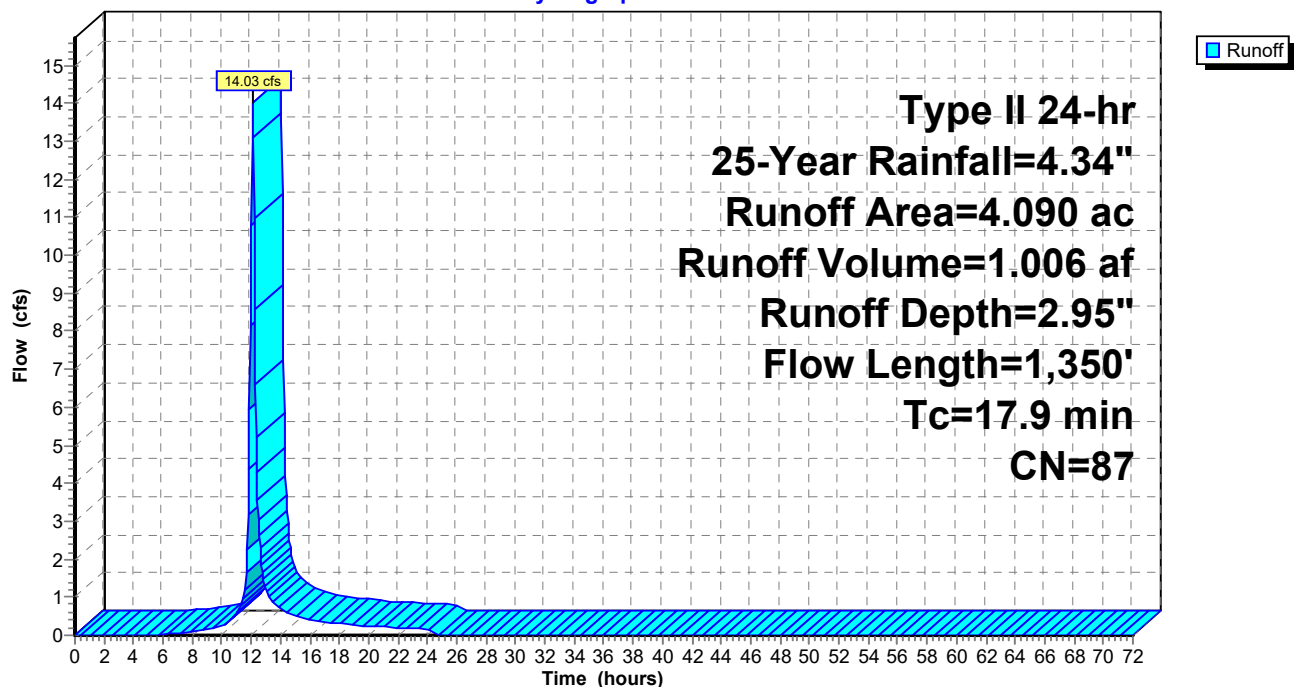
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
4.090	87	1/4 acre lots, 38% imp, HSG D
2.536		62.00% Pervious Area
1.554		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,250	0.0120	6.25	7.67	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
17.9	1,350	Total			

Subcatchment 17S: Watershed A3 Proposed

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 19S: Watershed A2 Proposed

[47] Hint: Peak is 1110% of capacity of segment #2

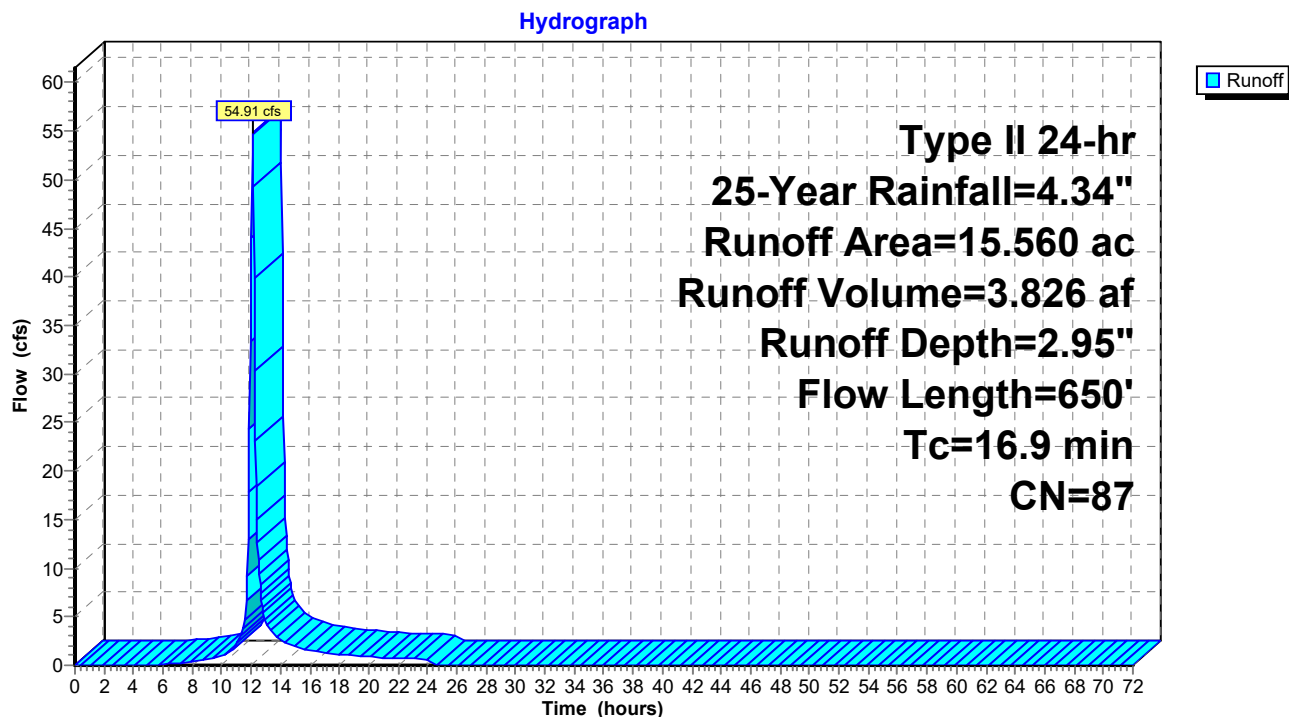
Runoff = 54.91 cfs @ 12.09 hrs, Volume= 3.826 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
15.560	87	1/4 acre lots, 38% imp, HSG D
9.647		62.00% Pervious Area
5.913		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	550	0.0050	4.03	4.95	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
16.9	650	Total			

Subcatchment 19S: Watershed A2 Proposed



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 20S: Watershed B1 Proposed

[47] Hint: Peak is 725% of capacity of segment #2

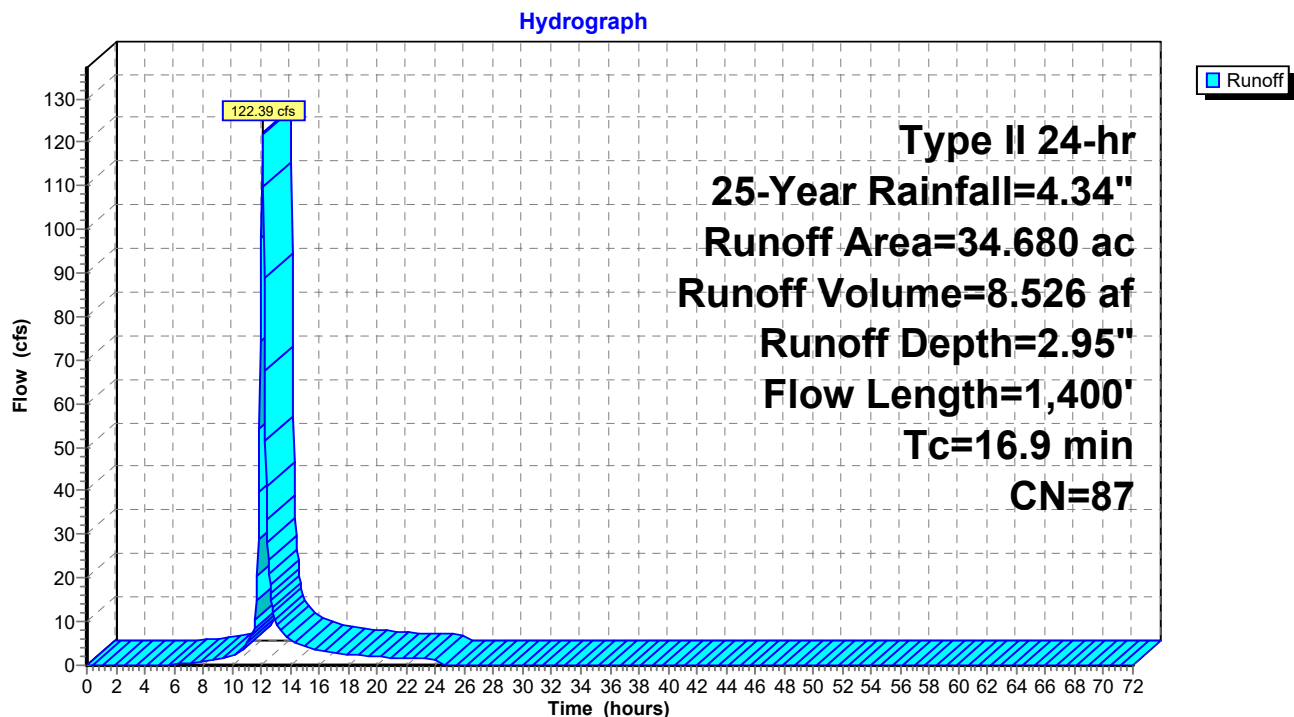
Runoff = 122.39 cfs @ 12.09 hrs, Volume= 8.526 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
34.680	87	1/4 acre lots, 38% imp, HSG D
21.502		62.00% Pervious Area
13.178		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	1,300	0.0220	9.55	16.88	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
16.9	1,400	Total			

Subcatchment 20S: Watershed B1 Proposed



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Summary for Subcatchment 28S: Watershed B1 Offsite

Runoff = 5.94 cfs @ 12.56 hrs, Volume= 0.876 af, Depth= 2.08"

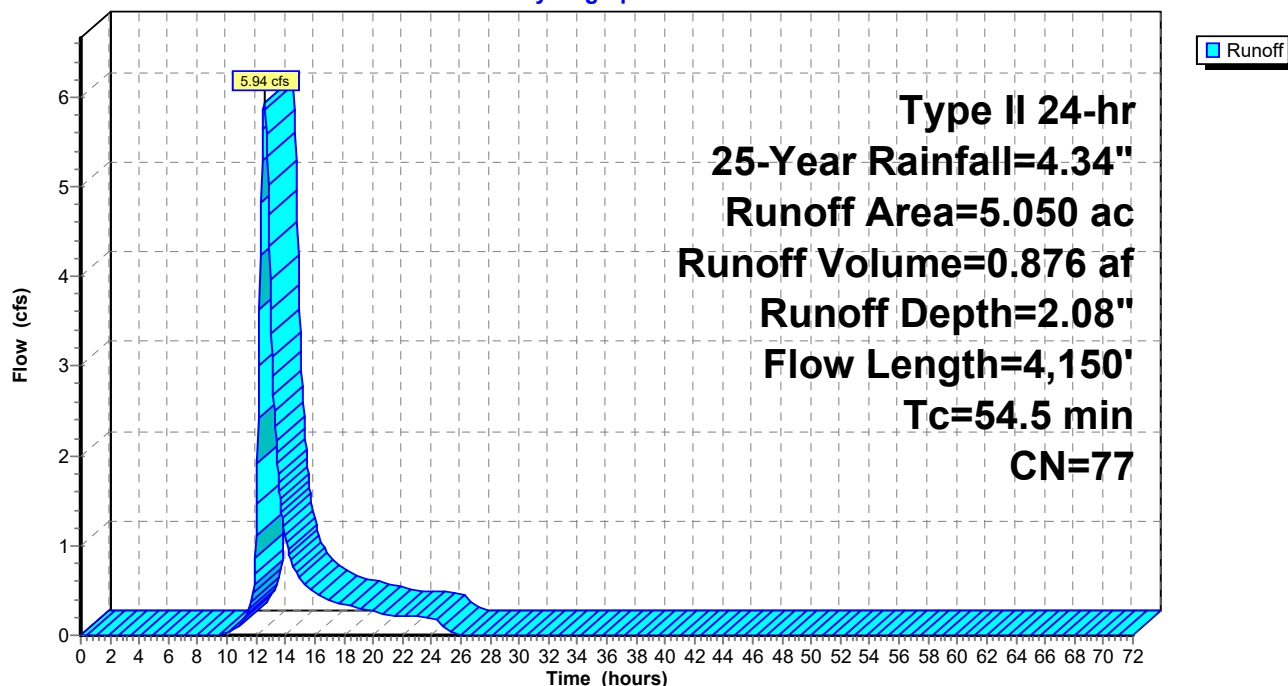
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 28S: Watershed B1 Offsite

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 37S: Watershed B2 Proposed

[47] Hint: Peak is 771% of capacity of segment #2

Runoff = 110.91 cfs @ 12.10 hrs, Volume= 7.948 af, Depth= 2.95"

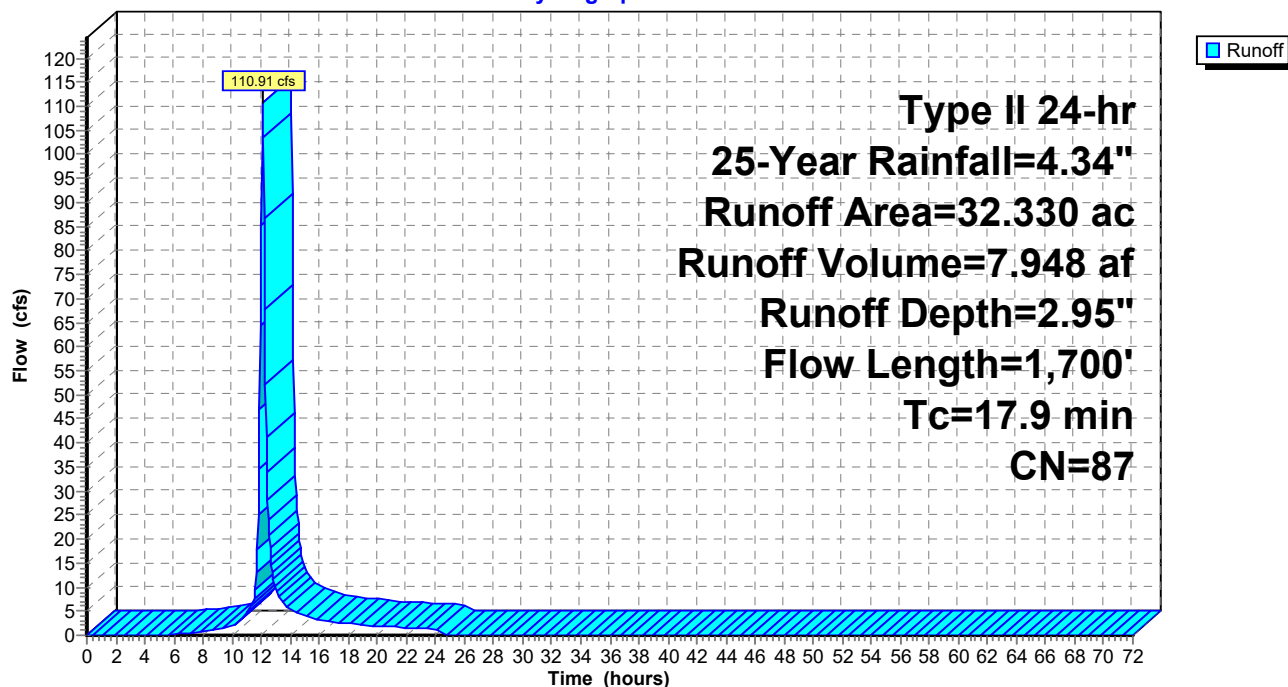
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
32.330	87	1/4 acre lots, 38% imp, HSG D
20.045		62.00% Pervious Area
12.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,600	0.0160	8.15	14.39	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
17.9	1,700	Total			

Subcatchment 37S: Watershed B2 Proposed

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 44S: Watershed A1 Offsite

Runoff = 53.49 cfs @ 13.13 hrs, Volume= 12.051 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

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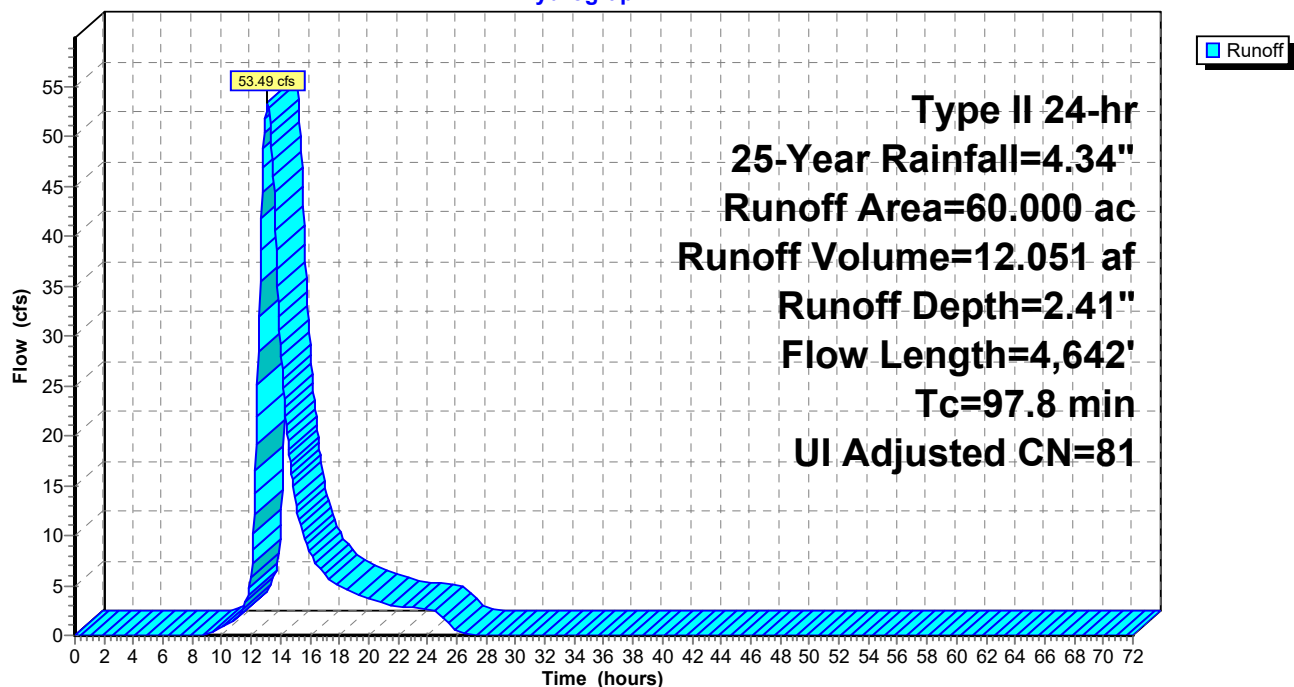
Type II 24-hr 25-Year Rainfall=4.34"

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Subcatchment 44S: Watershed A1 Offsite

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 48S: Watershed B2 Offsite

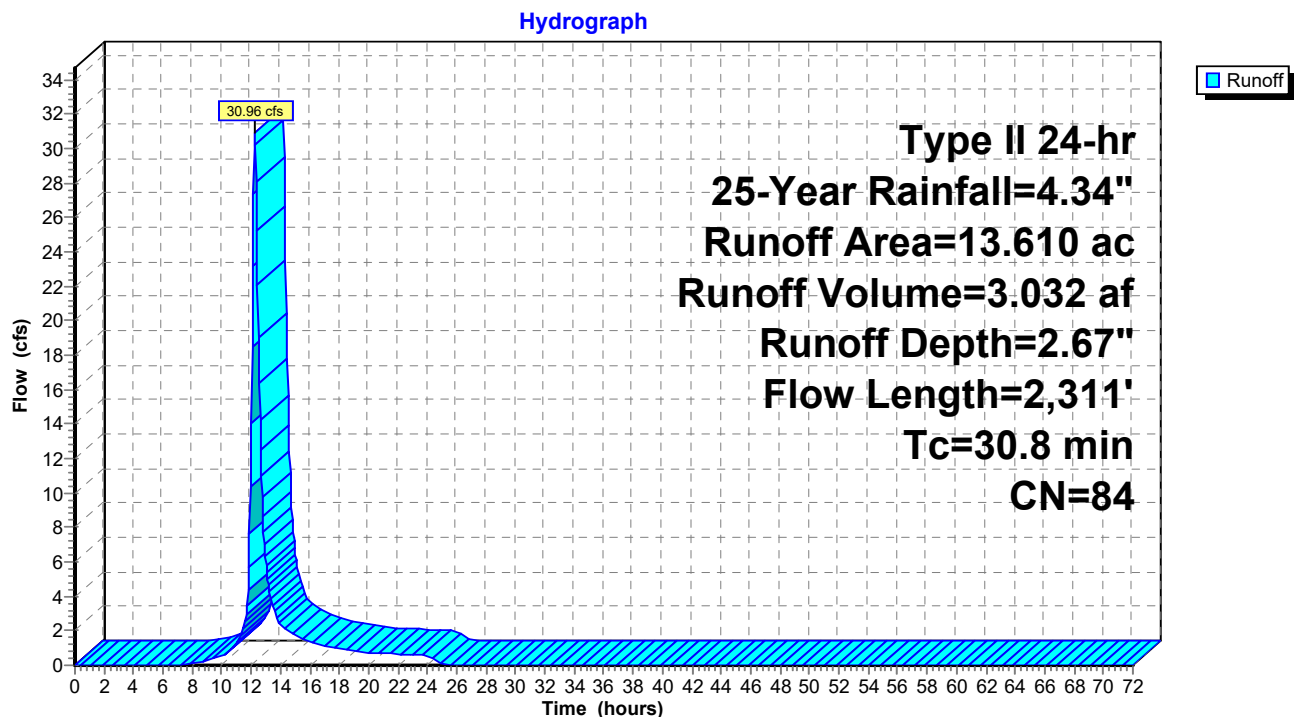
Runoff = 30.96 cfs @ 12.25 hrs, Volume= 3.032 af, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 48S: Watershed B2 Offsite



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Pond 4P: Basin A2

Inflow Area = 15.560 ac, 38.00% Impervious, Inflow Depth = 2.95" for 25-Year event
 Inflow = 54.91 cfs @ 12.09 hrs, Volume= 3.826 af
 Outflow = 3.41 cfs @ 13.45 hrs, Volume= 3.557 af, Atten= 94%, Lag= 81.7 min
 Primary = 3.41 cfs @ 13.45 hrs, Volume= 3.557 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 983.40' @ 13.45 hrs Surf.Area= 78,266 sf Storage= 103,319 cf

Plug-Flow detention time= 804.6 min calculated for 3.554 af (93% of inflow)
 Center-of-Mass det. time= 767.7 min (1,581.3 - 813.6)

Volume	Invert	Avail.Storage	Storage Description
#1	982.00'	328,816 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
982.00	69,352	0	0
983.00	75,690	72,521	72,521
984.00	82,128	78,909	151,430
985.00	88,668	85,398	236,828
986.00	95,308	91,988	328,816

Device	Routing	Invert	Outlet Devices
#1	Primary	982.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 982.00' / 980.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	982.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	985.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	985.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.41 cfs @ 13.45 hrs HW=983.40' (Free Discharge)

↑ **1=Culvert** (Passes 3.41 cfs of 4.48 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 1.01 cfs @ 5.16 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 2.39 cfs @ 3.05 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=982.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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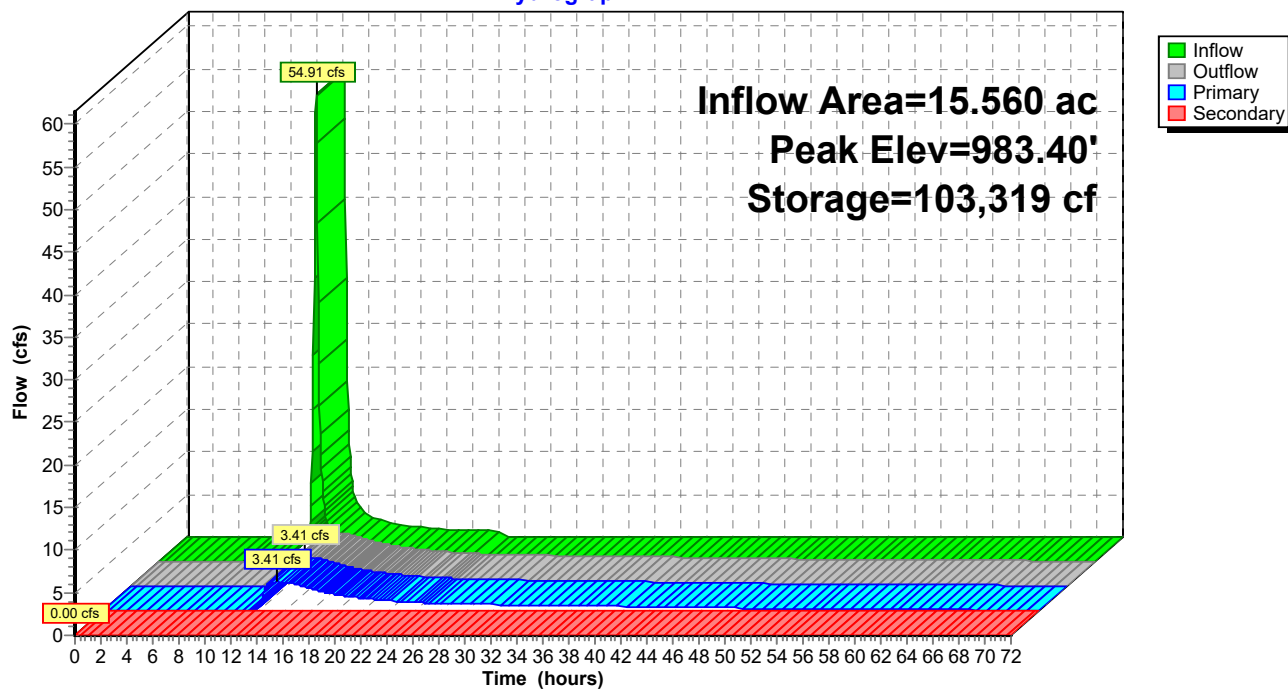
Type II 24-hr 25-Year Rainfall=4.34"

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Pond 4P: Basin A2

Hydrograph



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Summary for Pond 34P: Basin B1

Inflow Area = 39.730 ac, 33.17% Impervious, Inflow Depth = 2.84" for 25-Year event
 Inflow = 124.20 cfs @ 12.09 hrs, Volume= 9.402 af
 Outflow = 5.60 cfs @ 14.52 hrs, Volume= 8.535 af, Atten= 95%, Lag= 146.1 min
 Primary = 5.60 cfs @ 14.52 hrs, Volume= 8.535 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 962.27' @ 14.52 hrs Surf.Area= 124,290 sf Storage= 264,824 cf

Plug-Flow detention time= 811.9 min calculated for 8.535 af (91% of inflow)
 Center-of-Mass det. time= 763.8 min (1,583.4 - 819.6)

Volume	Invert	Avail.Storage	Storage Description
#1	960.00'	490,366 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
960.00	109,496	0	0
961.00	115,956	112,726	112,726
962.00	122,516	119,236	231,962
963.00	129,177	125,847	357,809
964.00	135,938	132,558	490,366

Device	Routing	Invert	Outlet Devices
#1	Primary	960.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 960.00' / 958.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	960.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	961.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	963.00'	1.0" x 12.0" Horiz. Orifice/Grate X 5.00 C= 0.600 in 12.0" x 12.0" Grate (42% open area) Limited to weir flow at low heads
#5	Secondary	963.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=5.60 cfs @ 14.52 hrs HW=962.27' (Free Discharge)

↑ **1=Culvert** (Passes 5.60 cfs of 5.79 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 1.34 cfs @ 6.84 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 4.26 cfs @ 5.42 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=960.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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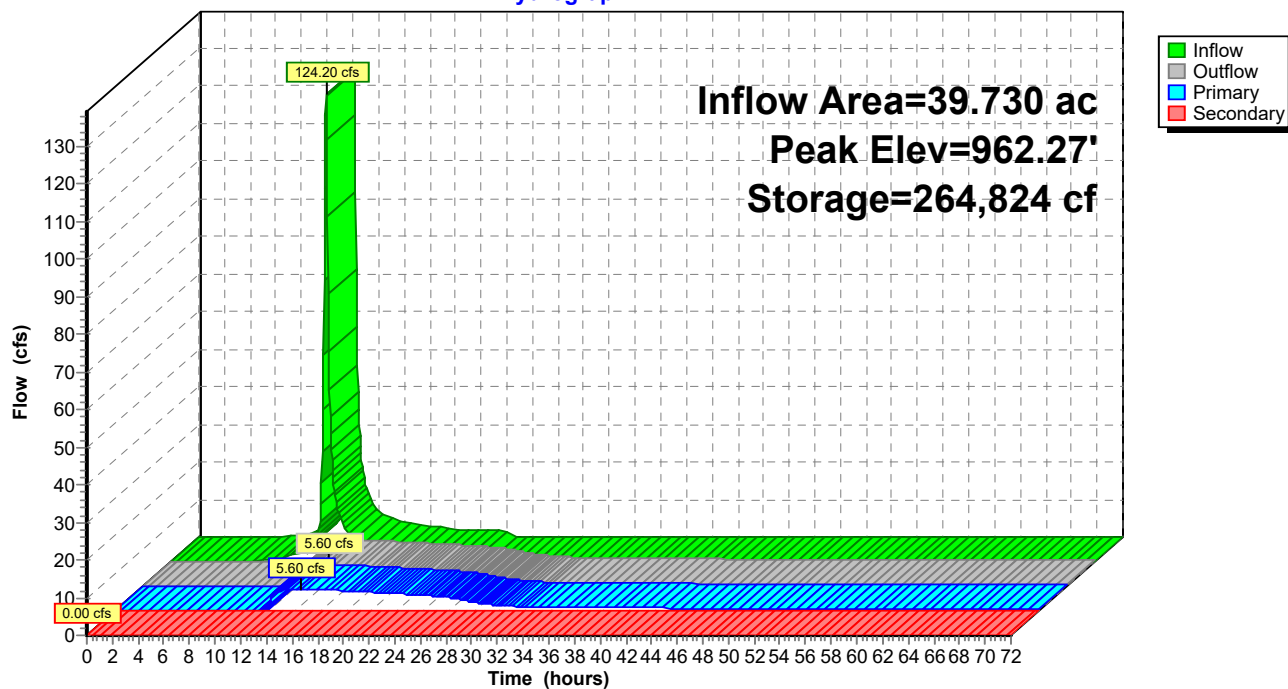
Type II 24-hr 25-Year Rainfall=4.34"

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Pond 34P: Basin B1

Hydrograph



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Summary for Pond 35P: Basin B2

Inflow Area = 32.330 ac, 38.00% Impervious, Inflow Depth = 2.95" for 25-Year event
 Inflow = 110.91 cfs @ 12.10 hrs, Volume= 7.948 af
 Outflow = 8.72 cfs @ 13.13 hrs, Volume= 7.639 af, Atten= 92%, Lag= 61.6 min
 Primary = 8.72 cfs @ 13.13 hrs, Volume= 7.639 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 954.52' @ 13.13 hrs Surf.Area= 88,030 sf Storage= 202,234 cf

Plug-Flow detention time= 524.2 min calculated for 7.634 af (96% of inflow)
 Center-of-Mass det. time= 503.0 min (1,317.5 - 814.5)

Volume	Invert	Avail.Storage	Storage Description
#1	952.00'	339,139 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
952.00	72,332	0	0
953.00	78,470	75,401	75,401
954.00	84,709	81,590	156,991
955.00	91,049	87,879	244,870
956.00	97,489	94,269	339,139

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 952.00' / 950.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	952.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	953.00'	15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	955.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	955.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=8.72 cfs @ 13.13 hrs HW=954.52' (Free Discharge)

1=Culvert (Passes 1.43 cfs of 6.01 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.43 cfs @ 7.26 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Orifice Controls 7.29 cfs @ 5.94 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=952.00' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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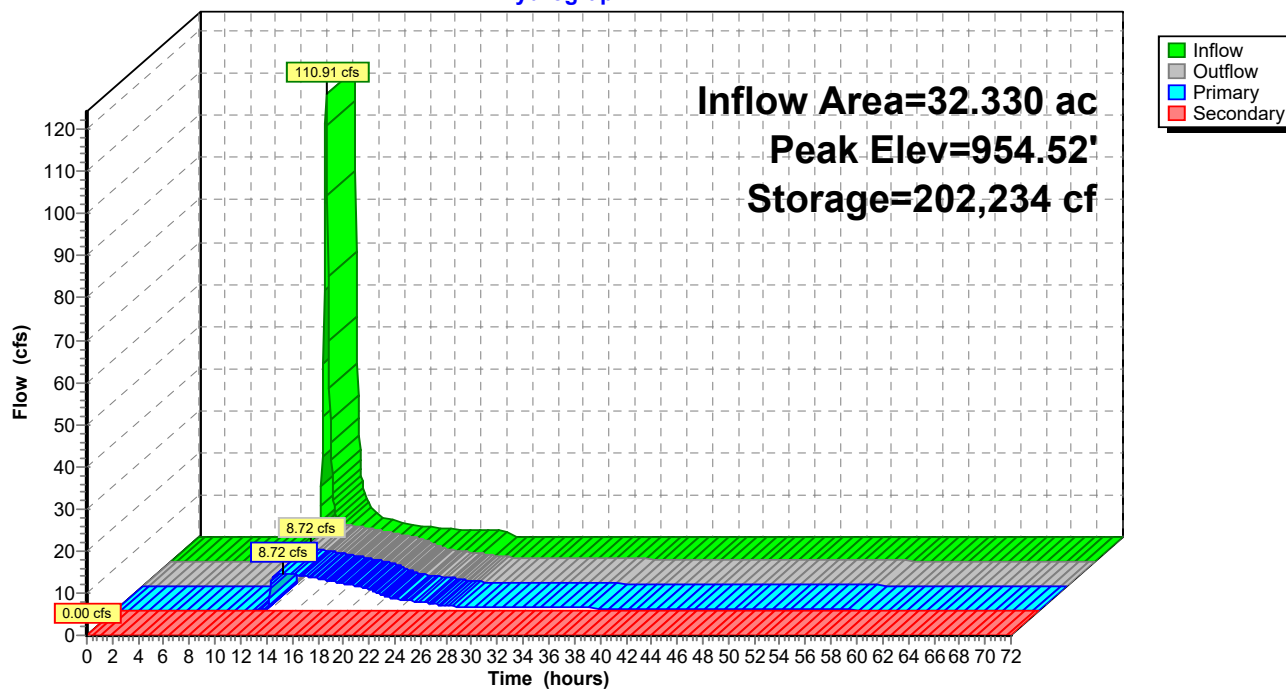
Type II 24-hr 25-Year Rainfall=4.34"

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Pond 35P: Basin B2

Hydrograph



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Summary for Pond 39P: Basin C

Inflow Area = 6.180 ac, 38.00% Impervious, Inflow Depth = 2.95" for 25-Year event
 Inflow = 21.88 cfs @ 12.09 hrs, Volume= 1.519 af
 Outflow = 9.58 cfs @ 12.30 hrs, Volume= 1.513 af, Atten= 56%, Lag= 12.5 min
 Primary = 9.58 cfs @ 12.30 hrs, Volume= 1.513 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 988.31' @ 12.30 hrs Surf.Area= 12,638 sf Storage= 23,725 cf

Plug-Flow detention time= 219.8 min calculated for 1.512 af (99% of inflow)
 Center-of-Mass det. time= 218.8 min (1,032.3 - 813.5)

Volume	Invert	Avail.Storage	Storage Description
#1	986.00'	48,247 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
986.00	8,024	0	0
987.00	9,955	8,990	8,990
988.00	11,986	10,971	19,960
989.00	14,118	13,052	33,012
990.00	16,352	15,235	48,247

Device	Routing	Invert	Outlet Devices
#1	Primary	986.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 986.00' / 984.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	986.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	987.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.57 cfs @ 12.30 hrs HW=988.30' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 9.57 cfs @ 7.80 fps)
 ↑ **2=Orifice/Grate** (Passes < 0.24 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 9.72 cfs potential flow)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=986.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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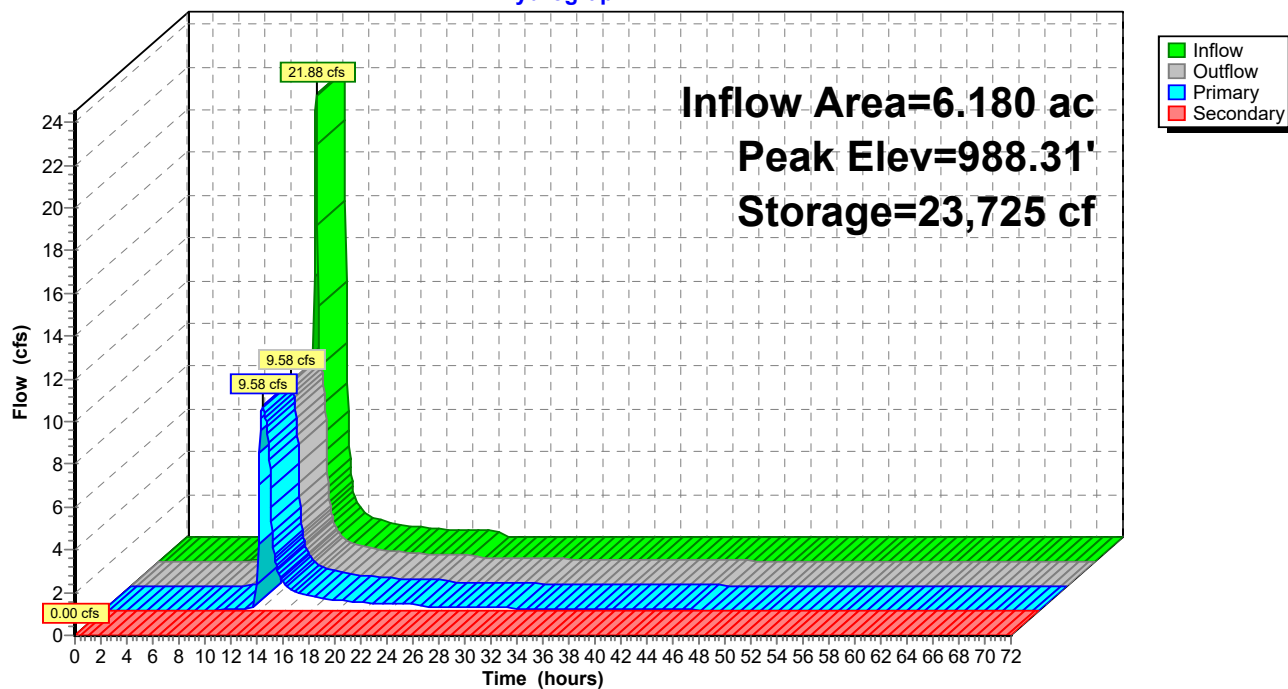
Type II 24-hr 25-Year Rainfall=4.34"

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Pond 39P: Basin C

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Pond 41P: Basin A3

Inflow Area = 4.090 ac, 38.00% Impervious, Inflow Depth = 2.95" for 25-Year event
 Inflow = 14.03 cfs @ 12.10 hrs, Volume= 1.006 af
 Outflow = 10.28 cfs @ 12.22 hrs, Volume= 1.005 af, Atten= 27%, Lag= 7.3 min
 Primary = 7.59 cfs @ 12.22 hrs, Volume= 0.975 af
 Secondary = 2.68 cfs @ 12.22 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 989.14' @ 12.22 hrs Surf.Area= 6,466 sf Storage= 11,026 cf

Plug-Flow detention time= 88.4 min calculated for 1.004 af (100% of inflow)
 Center-of-Mass det. time= 89.7 min (904.2 - 814.5)

Volume	Invert	Avail.Storage	Storage Description
#1	987.00'	16,986 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
987.00	3,824	0	0
988.00	4,979	4,402	4,402
989.00	6,266	5,623	10,024
990.00	7,657	6,962	16,986

Device	Routing	Invert	Outlet Devices
#1	Primary	987.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 987.00' / 986.00' S= 0.0100 ' /' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	987.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	988.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.57 cfs @ 12.22 hrs HW=989.13' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 7.57 cfs @ 6.17 fps)
 ↑ **2=Orifice/Grate** (Passes < 0.59 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 9.06 cfs potential flow)
 ↑ **4=Orifice/Grate** (Passes < 0.64 cfs potential flow)

Secondary OutFlow Max=2.45 cfs @ 12.22 hrs HW=989.13' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Weir Controls 2.45 cfs @ 0.91 fps)

Homestead at Scotts Farm - Preliminary

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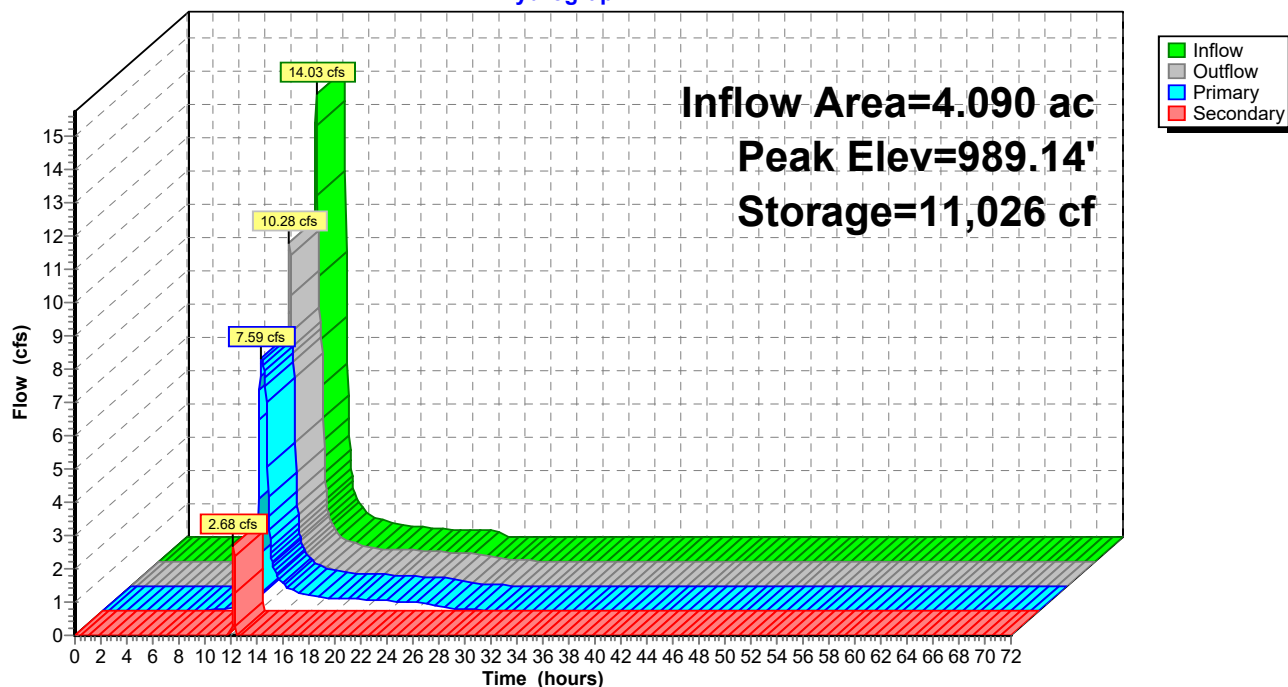
Type II 24-hr 25-Year Rainfall=4.34"

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Pond 41P: Basin A3

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Pond 44P: Basin A1

Inflow Area = 30.810 ac, 38.00% Impervious, Inflow Depth = 2.95" for 25-Year event
 Inflow = 104.26 cfs @ 12.10 hrs, Volume= 7.575 af
 Outflow = 6.17 cfs @ 13.64 hrs, Volume= 7.369 af, Atten= 94%, Lag= 92.2 min
 Primary = 6.17 cfs @ 13.64 hrs, Volume= 7.369 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 985.72' @ 13.64 hrs Surf.Area= 80,028 sf Storage= 199,413 cf

Plug-Flow detention time= 481.2 min calculated for 7.369 af (97% of inflow)
 Center-of-Mass det. time= 464.8 min (1,279.8 - 815.0)

Volume	Invert	Avail.Storage	Storage Description
#1	983.00'	394,979 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
983.00	66,698	0	0
984.00	71,550	69,124	69,124
985.00	76,456	74,003	143,127
986.00	81,422	78,939	222,066
987.00	86,442	83,932	305,998
988.00	91,520	88,981	394,979

Device	Routing	Invert	Outlet Devices
#1	Primary	983.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 983.00' / 981.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	983.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.60'	12.0" Horiz. Orifice/Grate C= 0.600
#4	Device 1	987.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area)
#5	Secondary	987.00'	20.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.17 cfs @ 13.64 hrs HW=985.72' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 6.17 cfs @ 7.86 fps)
 ↑ **2=Orifice/Grate** (Passes < 1.49 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 5.51 cfs potential flow)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=983.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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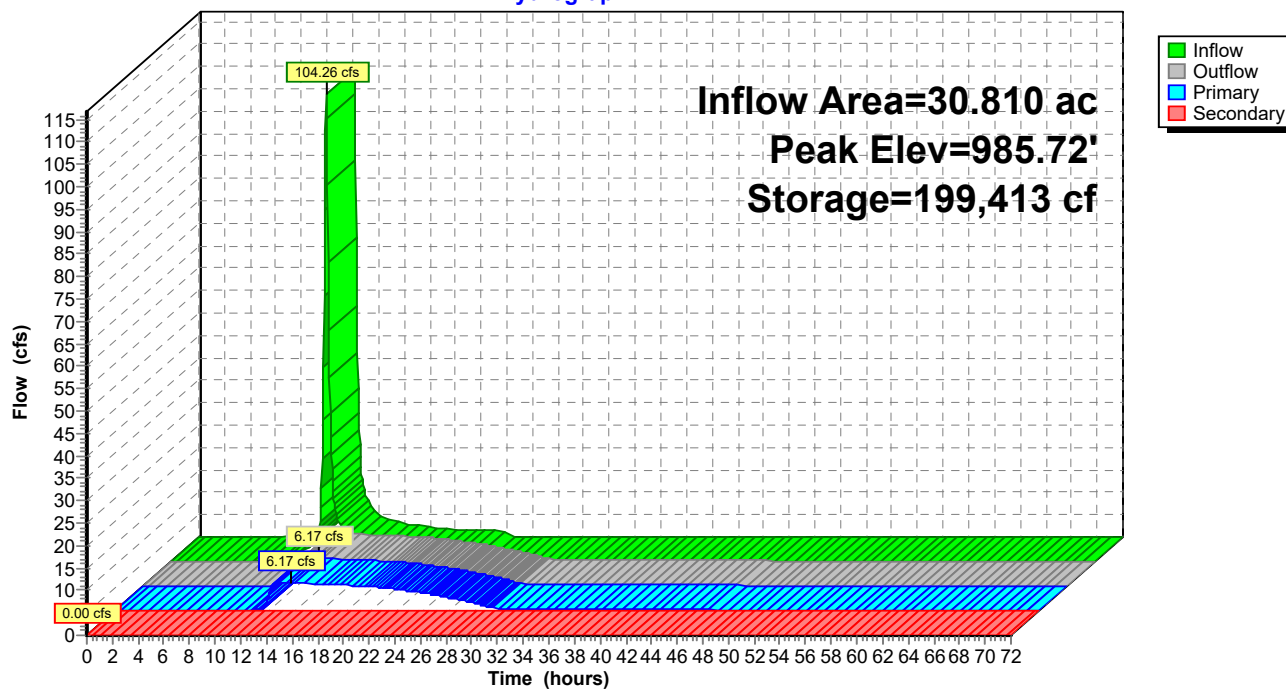
Type II 24-hr 25-Year Rainfall=4.34"

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Pond 44P: Basin A1

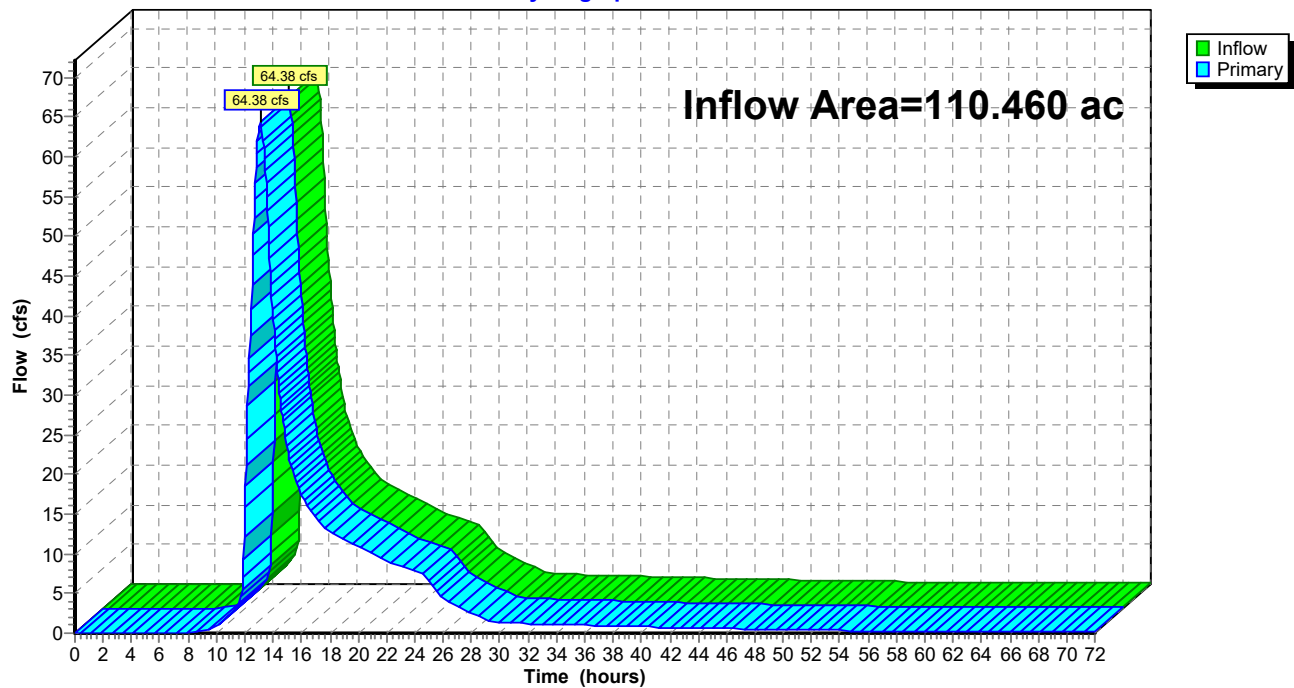
Hydrograph



Summary for Link 26L: Total Watershed A Release

Inflow Area = 110.460 ac, 25.07% Impervious, Inflow Depth > 2.61" for 25-Year event
Inflow = 64.38 cfs @ 13.13 hrs, Volume= 23.983 af
Primary = 64.38 cfs @ 13.13 hrs, Volume= 23.983 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 26L: Total Watershed A Release**Hydrograph**

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Type II 24-hr 25-Year Rainfall=4.34"

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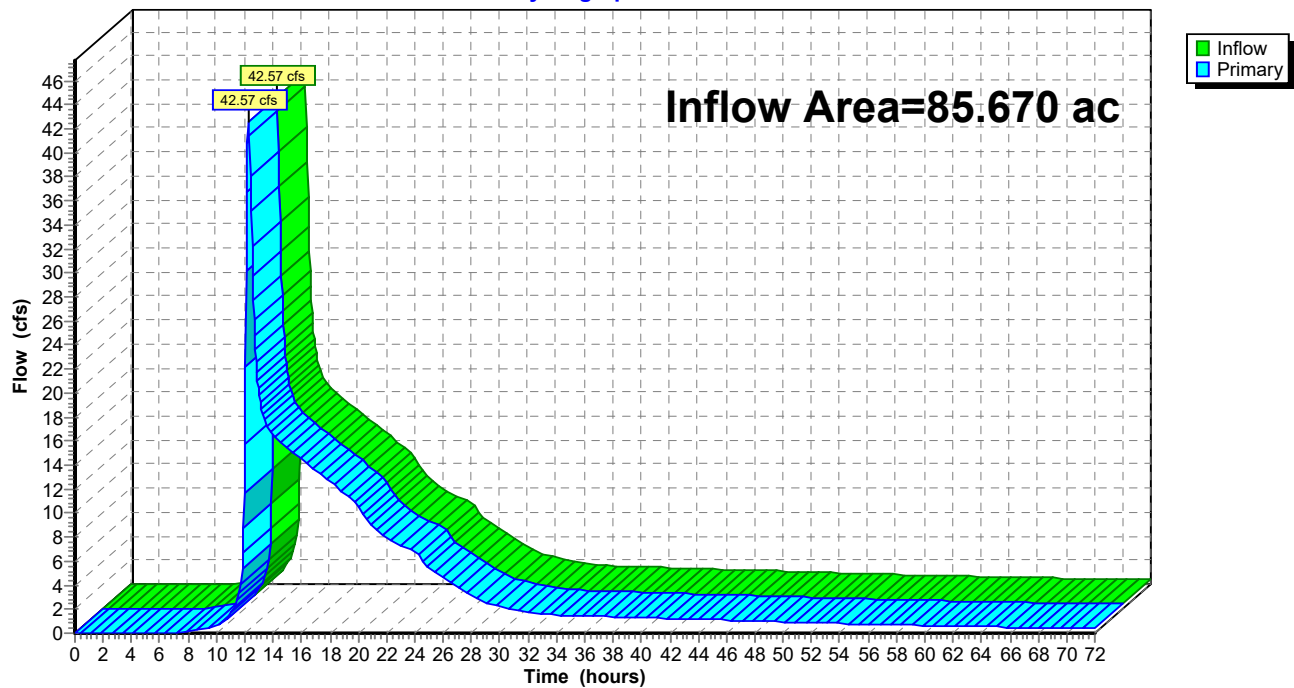
Summary for Link 27L: Total Watershed B Release

Inflow Area = 85.670 ac, 29.72% Impervious, Inflow Depth > 2.69" for 25-Year event
Inflow = 42.57 cfs @ 12.27 hrs, Volume= 19.206 af
Primary = 42.57 cfs @ 12.27 hrs, Volume= 19.206 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 27L: Total Watershed B Release

Hydrograph



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 12S: Watershed A1 Proposed

[47] Hint: Peak is 923% of capacity of segment #2

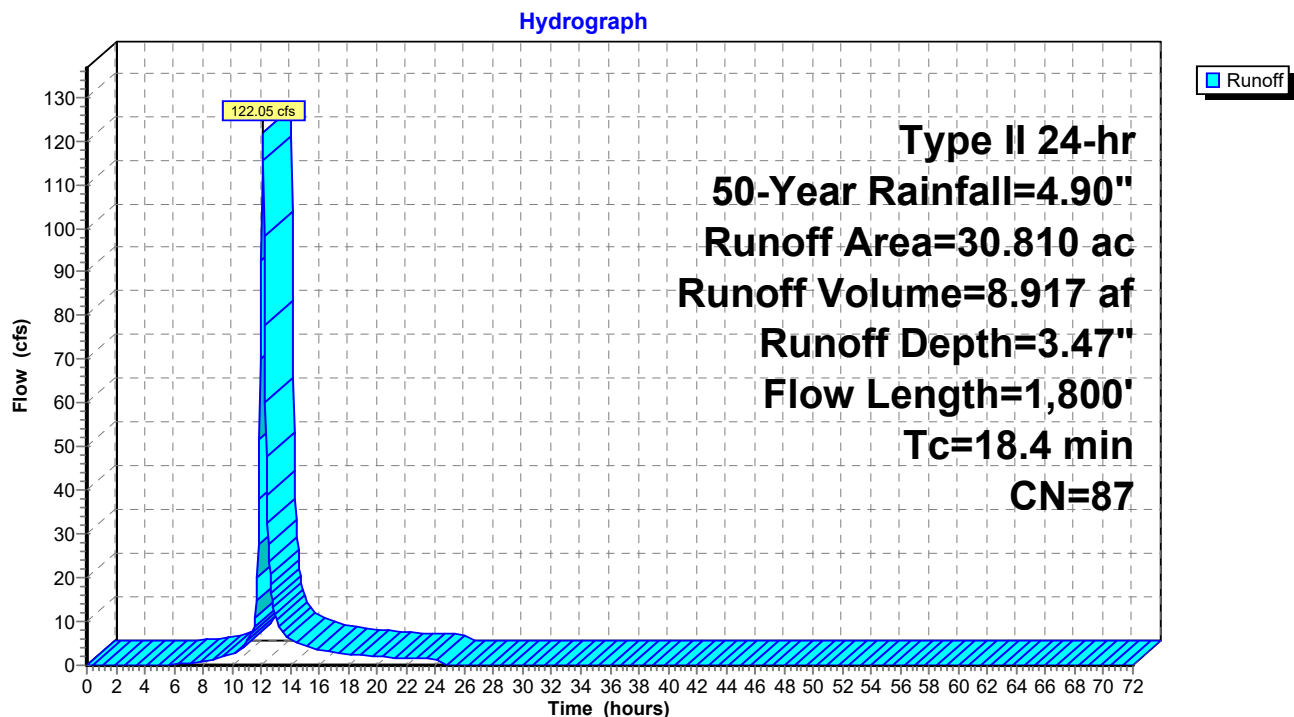
Runoff = 122.05 cfs @ 12.10 hrs, Volume= 8.917 af, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
30.810	87	1/4 acre lots, 38% imp, HSG D
19.102		62.00% Pervious Area
11.708		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.8	1,700	0.0135	7.48	13.22	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
18.4	1,800	Total			

Subcatchment 12S: Watershed A1 Proposed



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 14S: Watershed C Proposed

[47] Hint: Peak is 938% of capacity of segment #2

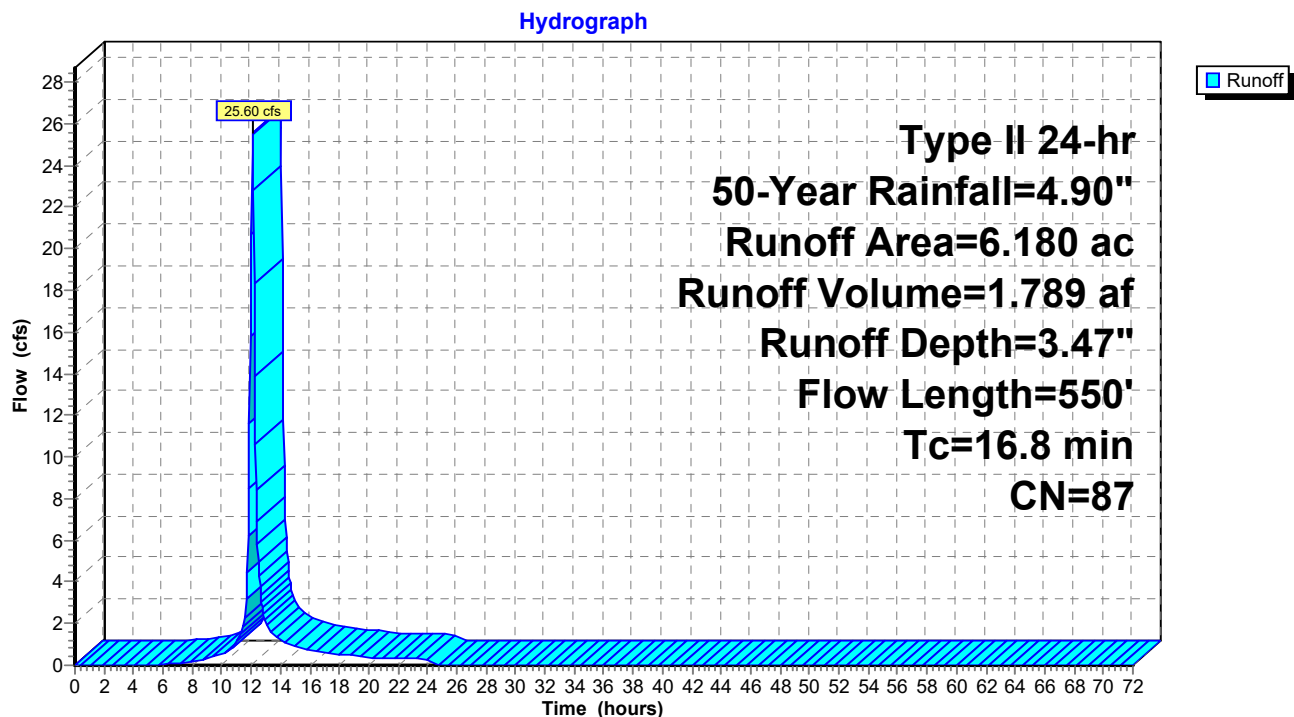
Runoff = 25.60 cfs @ 12.09 hrs, Volume= 1.789 af, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
6.180	87	1/4 acre lots, 38% imp, HSG D
3.832		62.00% Pervious Area
2.348		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.2	450	0.0050	3.47	2.73	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.8	550	Total			

Subcatchment 14S: Watershed C Proposed



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 17S: Watershed A3 Proposed

[47] Hint: Peak is 214% of capacity of segment #2

Runoff = 16.42 cfs @ 12.10 hrs, Volume= 1.184 af, Depth= 3.47"

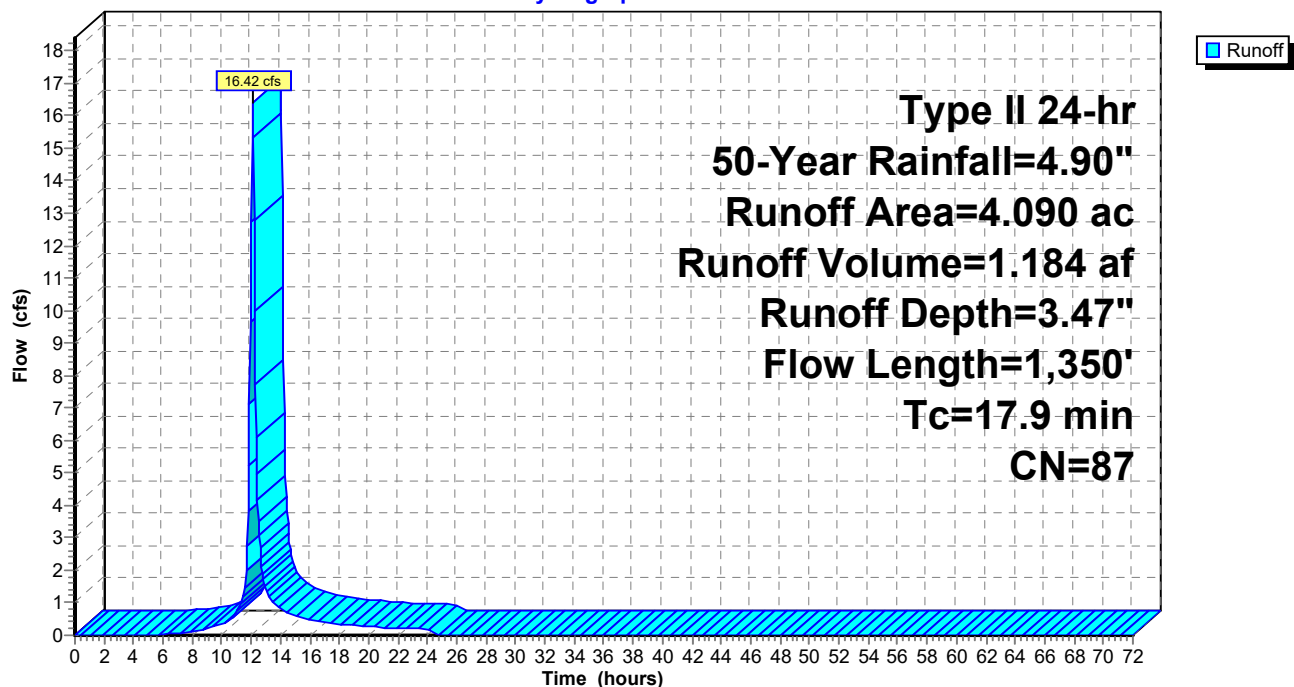
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
4.090	87	1/4 acre lots, 38% imp, HSG D
2.536		62.00% Pervious Area
1.554		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,250	0.0120	6.25	7.67	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
17.9	1,350	Total			

Subcatchment 17S: Watershed A3 Proposed

Hydrograph



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 19S: Watershed A2 Proposed

[47] Hint: Peak is 1299% of capacity of segment #2

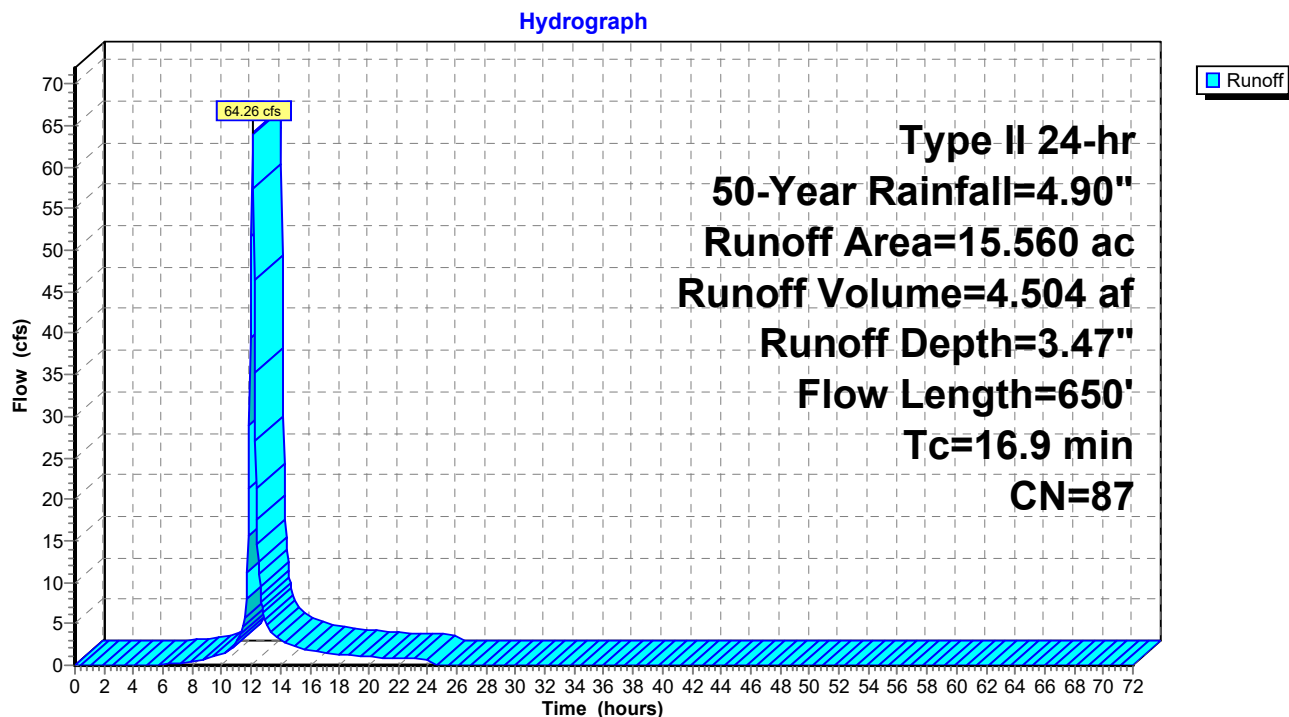
Runoff = 64.26 cfs @ 12.09 hrs, Volume= 4.504 af, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
15.560	87	1/4 acre lots, 38% imp, HSG D
9.647		62.00% Pervious Area
5.913		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	550	0.0050	4.03	4.95	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
16.9	650	Total			

Subcatchment 19S: Watershed A2 Proposed



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 20S: Watershed B1 Proposed

[47] Hint: Peak is 849% of capacity of segment #2

Runoff = 143.22 cfs @ 12.09 hrs, Volume= 10.038 af, Depth= 3.47"

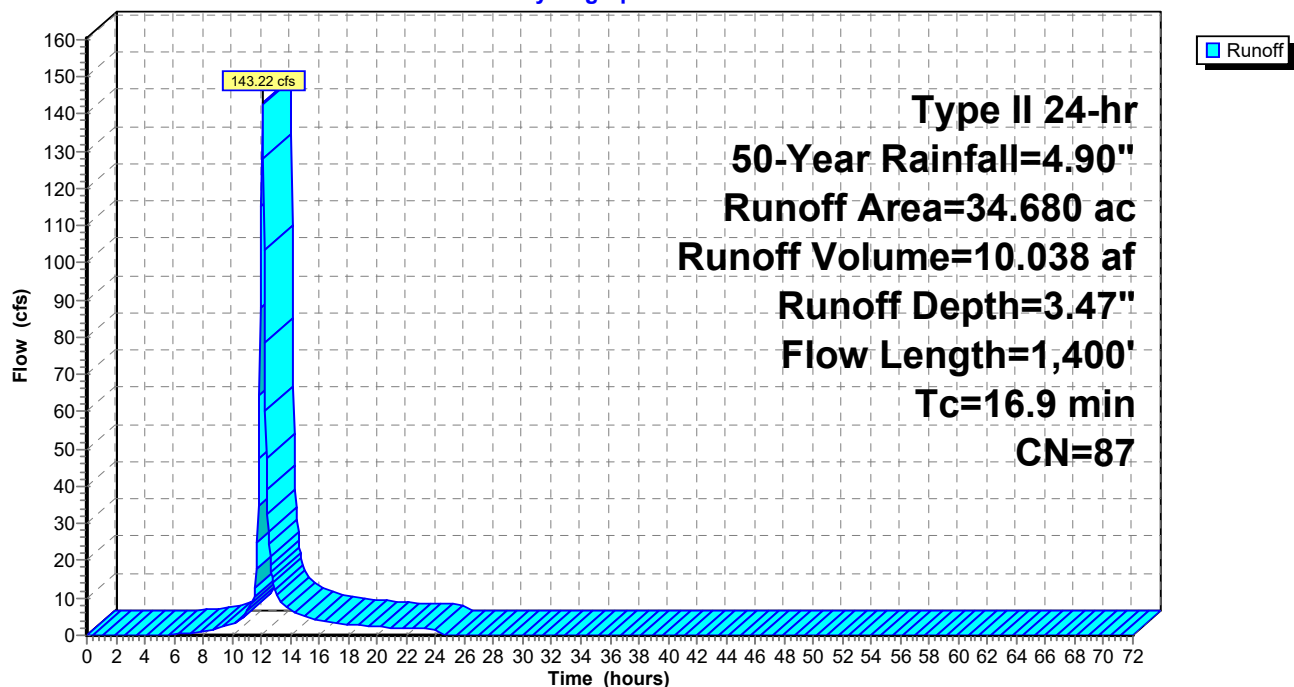
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
34.680	87	1/4 acre lots, 38% imp, HSG D
21.502		62.00% Pervious Area
13.178		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	1,300	0.0220	9.55	16.88	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
16.9	1,400	Total			

Subcatchment 20S: Watershed B1 Proposed

Hydrograph



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 28S: Watershed B1 Offsite

Runoff = 7.31 cfs @ 12.56 hrs, Volume= 1.069 af, Depth= 2.54"

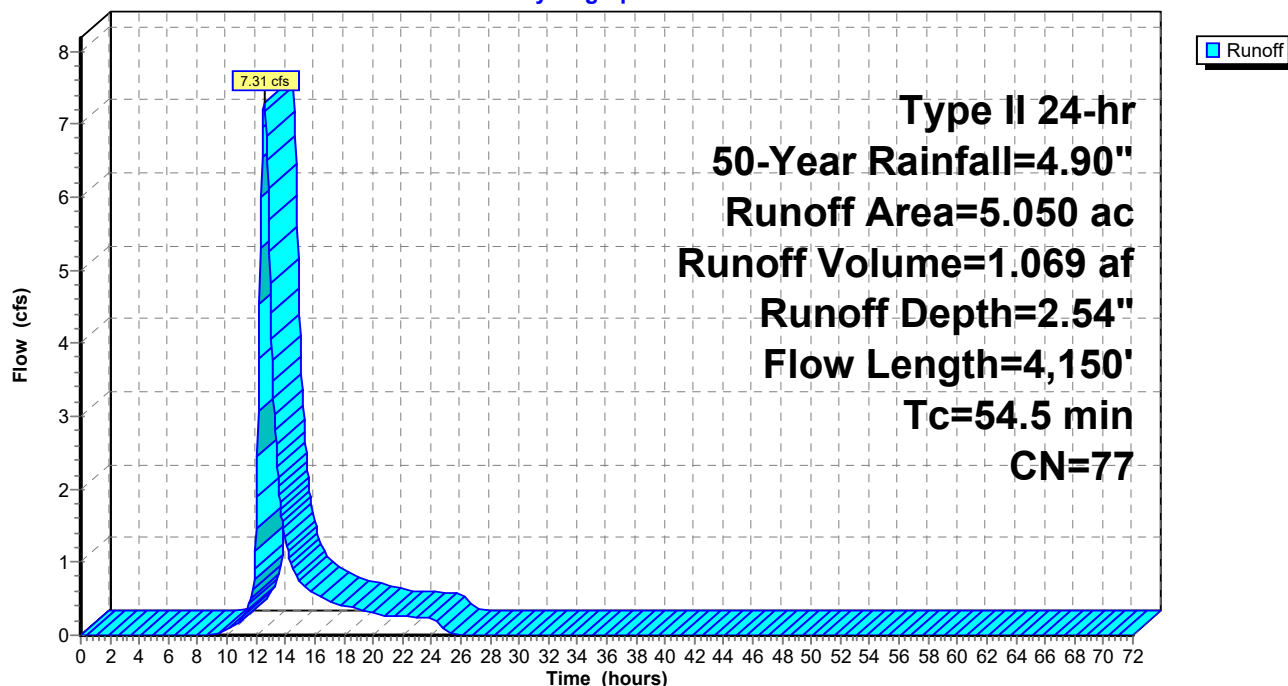
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 28S: Watershed B1 Offsite

Hydrograph



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 37S: Watershed B2 Proposed

[47] Hint: Peak is 902% of capacity of segment #2

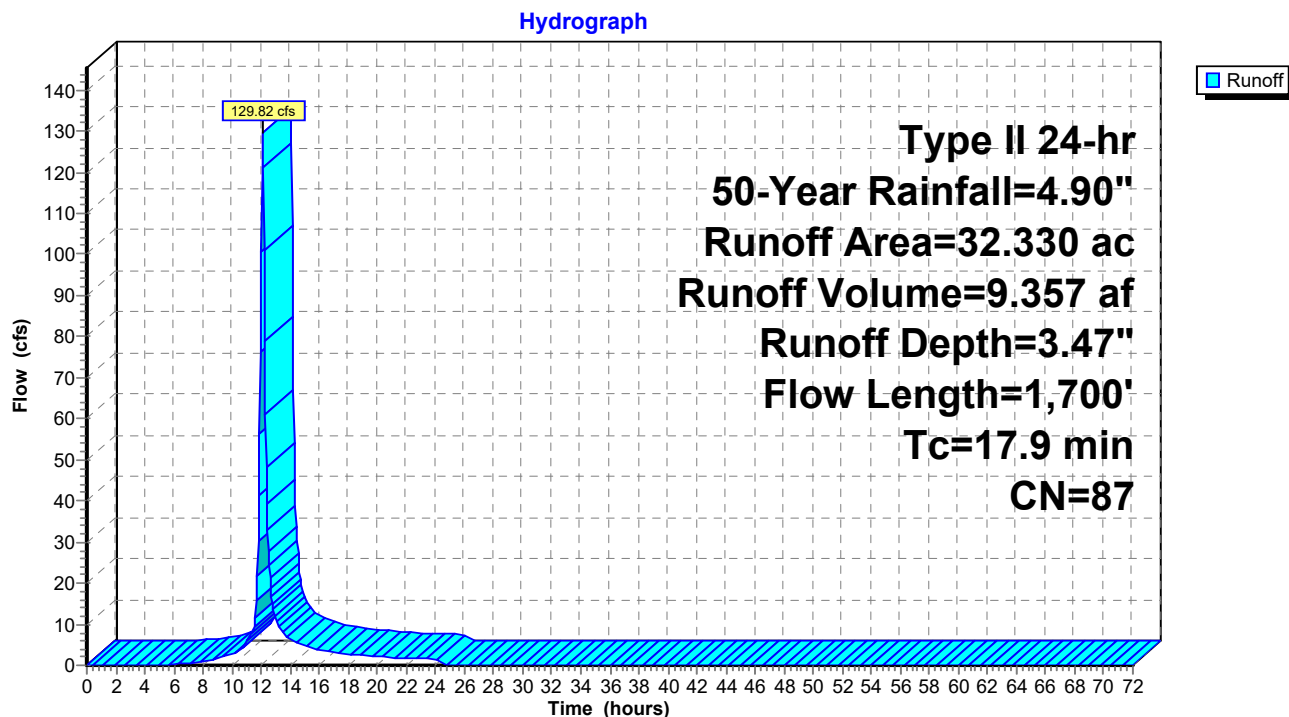
Runoff = 129.82 cfs @ 12.10 hrs, Volume= 9.357 af, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
32.330	87	1/4 acre lots, 38% imp, HSG D
20.045		62.00% Pervious Area
12.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,600	0.0160	8.15	14.39	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
17.9	1,700	Total			

Subcatchment 37S: Watershed B2 Proposed



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 44S: Watershed A1 Offsite

Runoff = 64.52 cfs @ 13.13 hrs, Volume= 14.486 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

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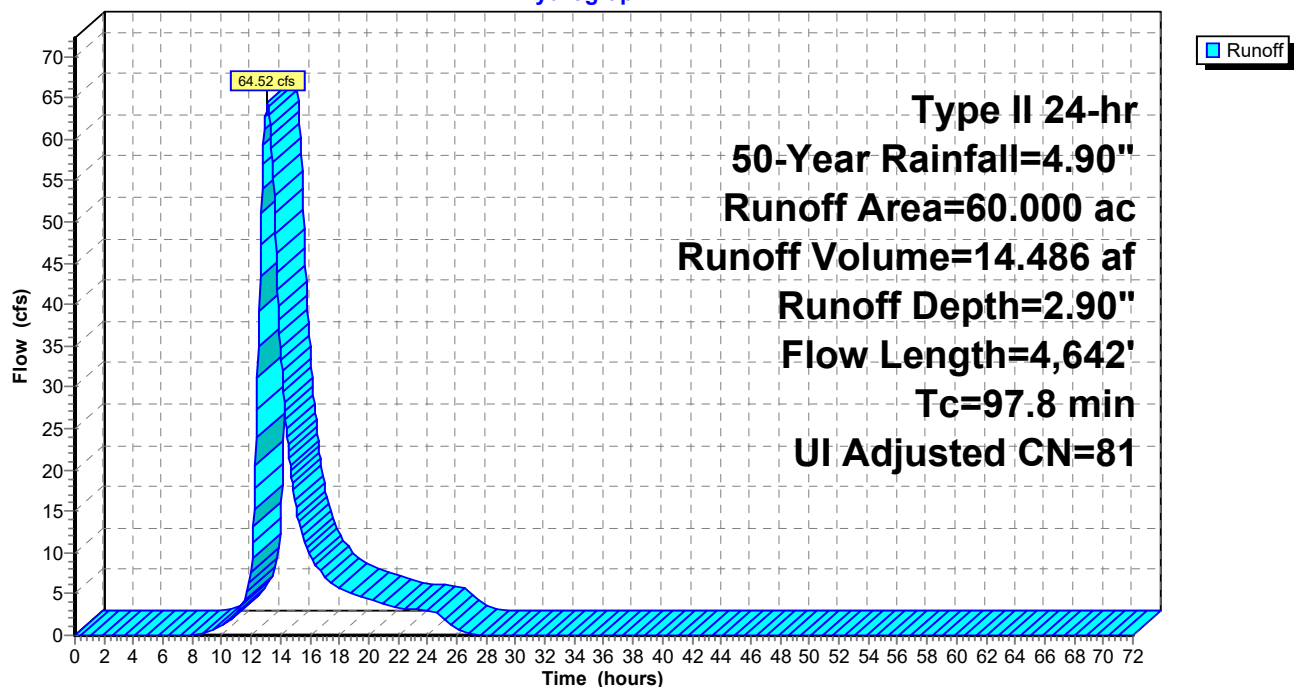
Type II 24-hr 50-Year Rainfall=4.90"

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Subcatchment 44S: Watershed A1 Offsite

Hydrograph



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Subcatchment 48S: Watershed B2 Offsite

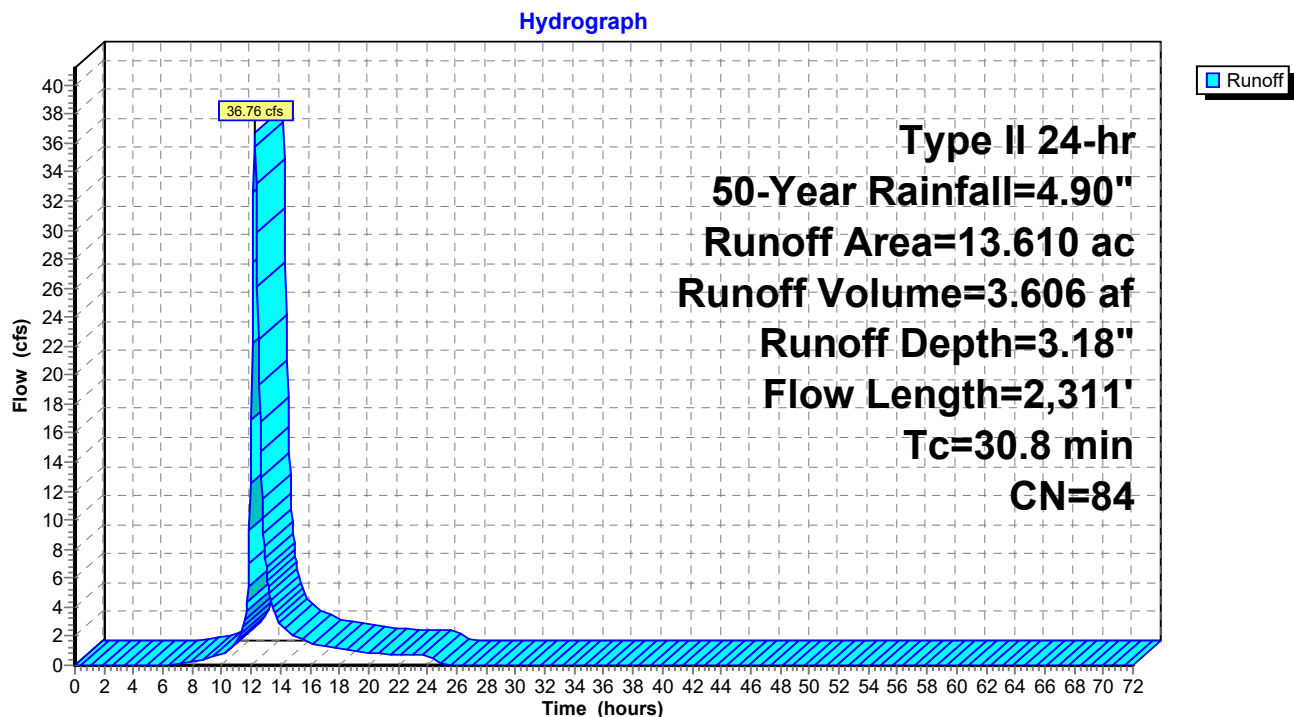
Runoff = 36.76 cfs @ 12.25 hrs, Volume= 3.606 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=4.90"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 48S: Watershed B2 Offsite



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Pond 4P: Basin A2

Inflow Area = 15.560 ac, 38.00% Impervious, Inflow Depth = 3.47" for 50-Year event
 Inflow = 64.26 cfs @ 12.09 hrs, Volume= 4.504 af
 Outflow = 4.09 cfs @ 13.37 hrs, Volume= 4.231 af, Atten= 94%, Lag= 76.9 min
 Primary = 4.09 cfs @ 13.37 hrs, Volume= 4.231 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 983.62' @ 13.37 hrs Surf.Area= 79,699 sf Storage= 120,907 cf

Plug-Flow detention time= 727.1 min calculated for 4.228 af (94% of inflow)
 Center-of-Mass det. time= 694.7 min (1,503.7 - 809.0)

Volume	Invert	Avail.Storage	Storage Description
#1	982.00'	328,816 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
982.00	69,352	0	0
983.00	75,690	72,521	72,521
984.00	82,128	78,909	151,430
985.00	88,668	85,398	236,828
986.00	95,308	91,988	328,816

Device	Routing	Invert	Outlet Devices
#1	Primary	982.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 982.00' / 980.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	982.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	985.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	985.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.09 cfs @ 13.37 hrs HW=983.62' (Free Discharge)

↑ **1=Culvert** (Passes 4.09 cfs of 5.01 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 1.11 cfs @ 5.64 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 2.98 cfs @ 3.80 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=982.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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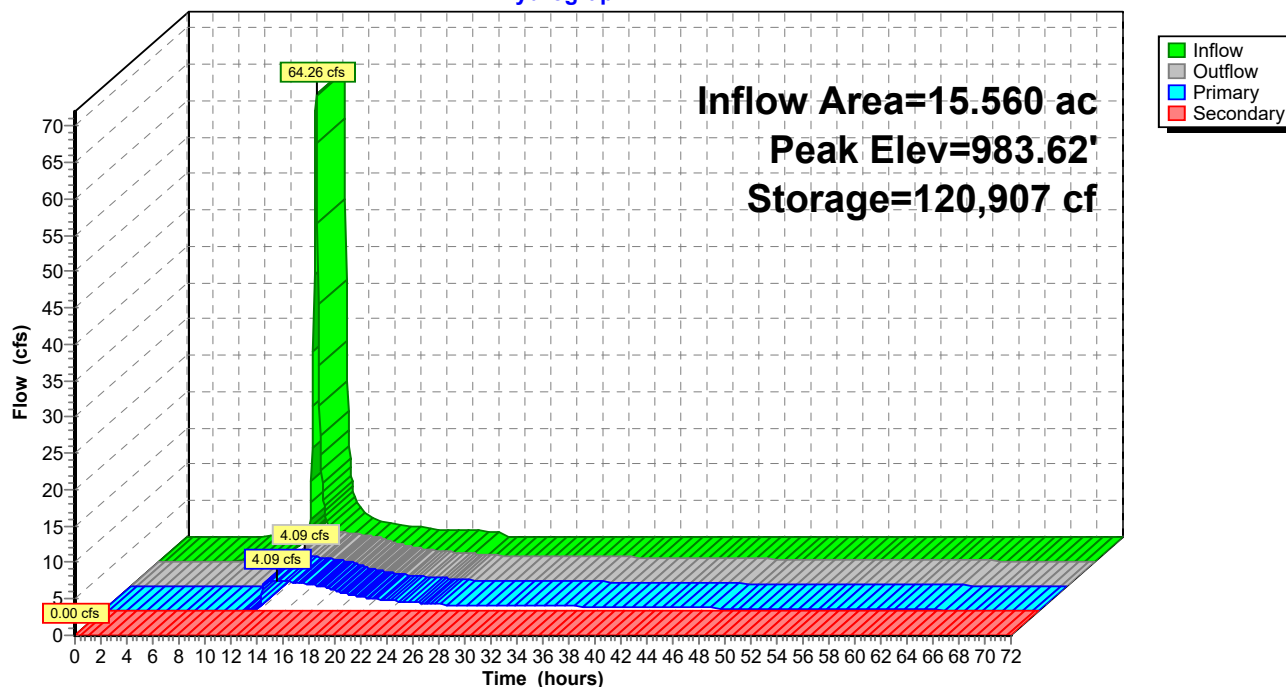
Type II 24-hr 50-Year Rainfall=4.90"

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Pond 4P: Basin A2

Hydrograph



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Pond 34P: Basin B1

Inflow Area = 39.730 ac, 33.17% Impervious, Inflow Depth = 3.35" for 50-Year event
 Inflow = 145.53 cfs @ 12.09 hrs, Volume= 11.106 af
 Outflow = 6.15 cfs @ 14.73 hrs, Volume= 10.177 af, Atten= 96%, Lag= 158.2 min
 Primary = 6.15 cfs @ 14.73 hrs, Volume= 10.177 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 962.69' @ 14.73 hrs Surf.Area= 127,089 sf Storage= 317,640 cf

Plug-Flow detention time= 804.7 min calculated for 10.177 af (92% of inflow)
 Center-of-Mass det. time= 760.2 min (1,575.2 - 815.1)

Volume	Invert	Avail.Storage	Storage Description
#1	960.00'	490,366 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
960.00	109,496	0	0
961.00	115,956	112,726	112,726
962.00	122,516	119,236	231,962
963.00	129,177	125,847	357,809
964.00	135,938	132,558	490,366

Device	Routing	Invert	Outlet Devices
#1	Primary	960.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 960.00' / 958.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	960.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	961.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	963.00'	1.0" x 12.0" Horiz. Orifice/Grate X 5.00 C= 0.600 in 12.0" x 12.0" Grate (42% open area) Limited to weir flow at low heads
#5	Secondary	963.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.15 cfs @ 14.73 hrs HW=962.69' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 6.15 cfs @ 7.83 fps)
 ↑ **2=Orifice/Grate** (Passes < 1.48 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 4.91 cfs potential flow)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=960.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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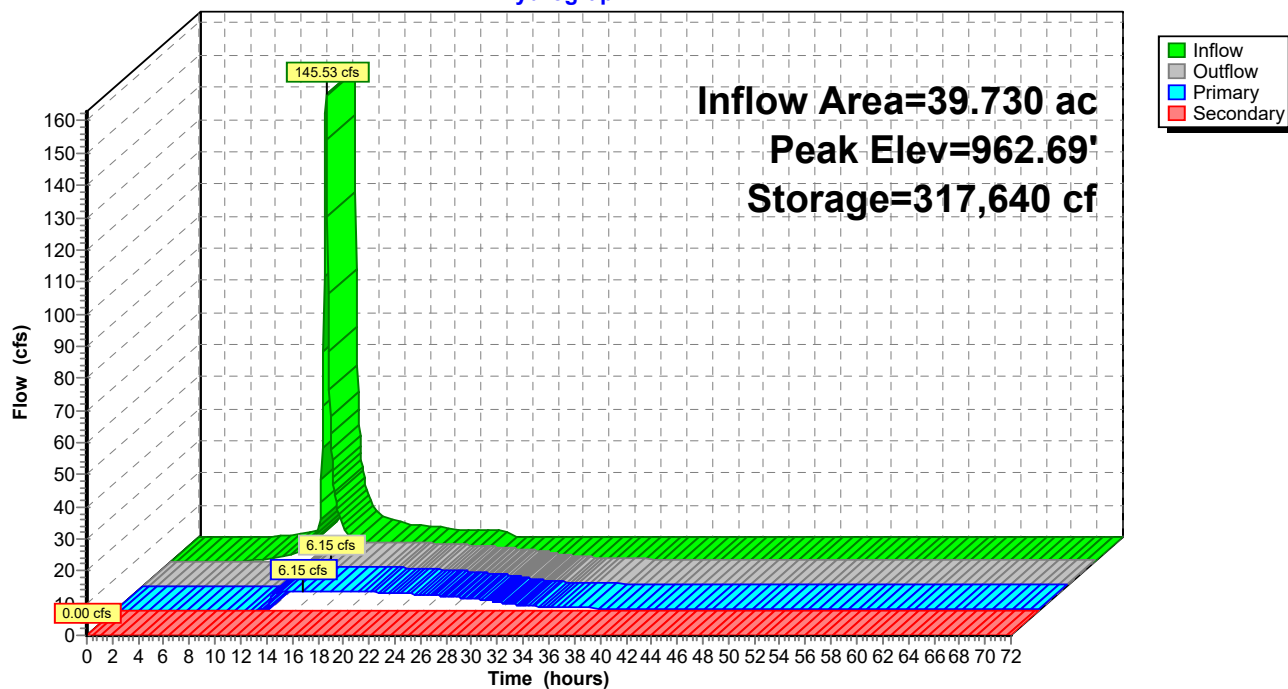
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Pond 34P: Basin B1

Hydrograph



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Summary for Pond 35P: Basin B2

Inflow Area = 32.330 ac, 38.00% Impervious, Inflow Depth = 3.47" for 50-Year event
 Inflow = 129.82 cfs @ 12.10 hrs, Volume= 9.357 af
 Outflow = 9.83 cfs @ 13.16 hrs, Volume= 9.043 af, Atten= 92%, Lag= 63.5 min
 Primary = 9.83 cfs @ 13.16 hrs, Volume= 9.043 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 954.96' @ 13.16 hrs Surf.Area= 90,793 sf Storage= 241,197 cf

Plug-Flow detention time= 502.3 min calculated for 9.043 af (97% of inflow)
 Center-of-Mass det. time= 482.2 min (1,292.1 - 809.9)

Volume	Invert	Avail.Storage	Storage Description
#1	952.00'	339,139 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
952.00	72,332	0	0
953.00	78,470	75,401	75,401
954.00	84,709	81,590	156,991
955.00	91,049	87,879	244,870
956.00	97,489	94,269	339,139

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 952.00' / 950.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	952.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	953.00'	15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	955.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	955.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.83 cfs @ 13.16 hrs HW=954.96' (Free Discharge)

1=Culvert (Passes 1.56 cfs of 6.37 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.56 cfs @ 7.93 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Orifice Controls 8.27 cfs @ 6.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=952.00' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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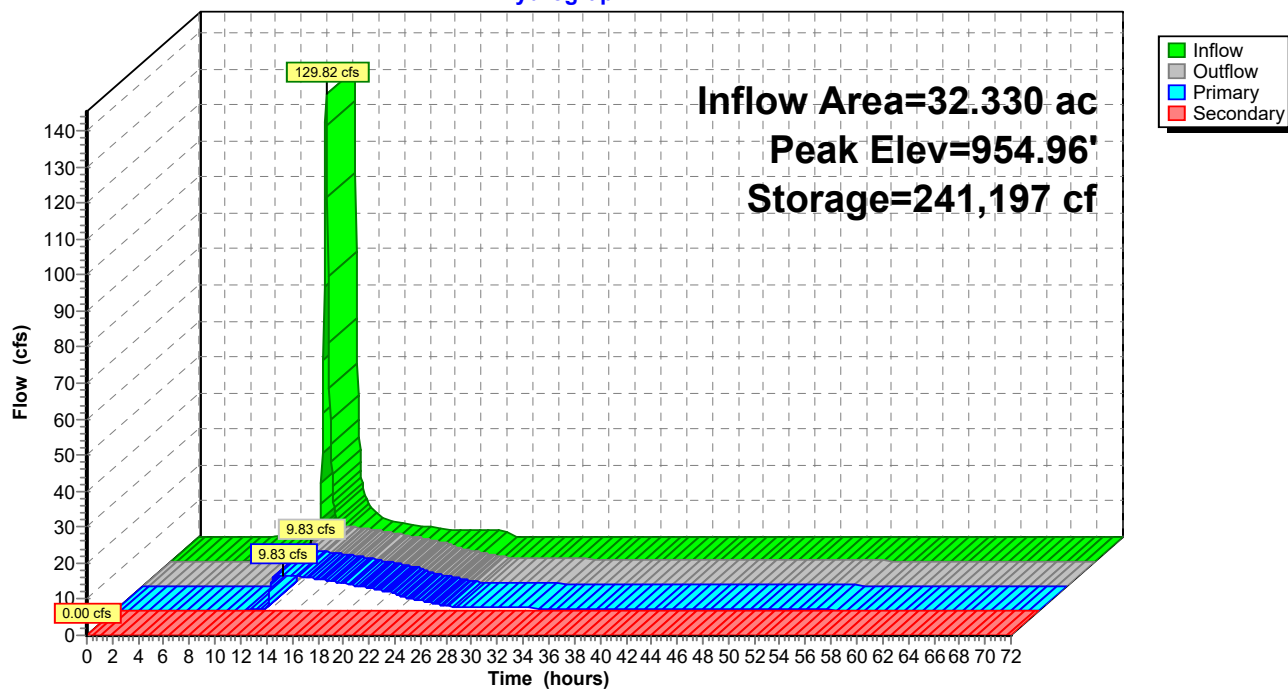
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Pond 35P: Basin B2

Hydrograph



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Summary for Pond 39P: Basin C

Inflow Area = 6.180 ac, 38.00% Impervious, Inflow Depth = 3.47" for 50-Year event
 Inflow = 25.60 cfs @ 12.09 hrs, Volume= 1.789 af
 Outflow = 10.16 cfs @ 12.31 hrs, Volume= 1.782 af, Atten= 60%, Lag= 13.6 min
 Primary = 10.16 cfs @ 12.31 hrs, Volume= 1.782 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 988.64' @ 12.31 hrs Surf.Area= 13,358 sf Storage= 28,116 cf

Plug-Flow detention time= 194.4 min calculated for 1.781 af (100% of inflow)
 Center-of-Mass det. time= 193.8 min (1,002.6 - 808.9)

Volume	Invert	Avail.Storage	Storage Description
#1	986.00'	48,247 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
986.00	8,024	0	0
987.00	9,955	8,990	8,990
988.00	11,986	10,971	19,960
989.00	14,118	13,052	33,012
990.00	16,352	15,235	48,247

Device	Routing	Invert	Outlet Devices
#1	Primary	986.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 986.00' / 984.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	986.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	987.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=10.16 cfs @ 12.31 hrs HW=988.64' (Free Discharge)

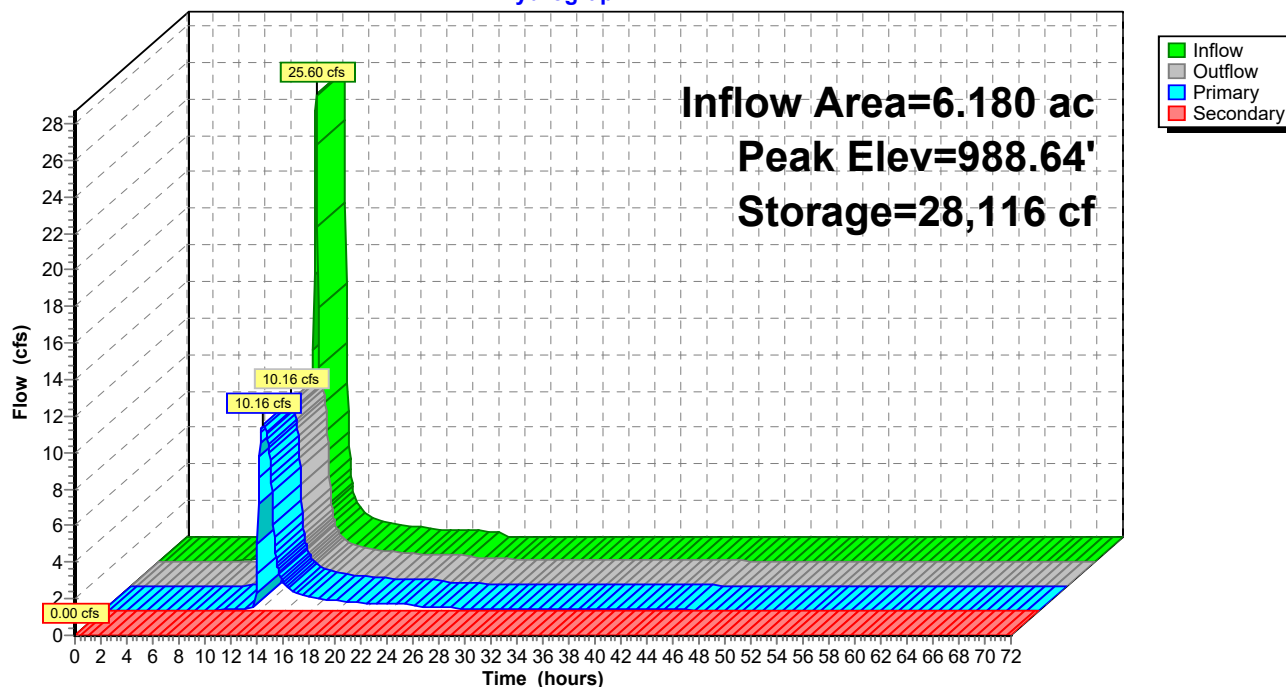
- ↑ **1=Culvert** (Barrel Controls 10.16 cfs @ 8.28 fps)
- ↑ **2=Orifice/Grate** (Passes < 0.26 cfs potential flow)
- ↑ **3=Orifice/Grate** (Passes < 10.90 cfs potential flow)
- ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=986.00' (Free Discharge)

- ↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Basin C

Hydrograph



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Type II 24-hr 50-Year Rainfall=4.90"

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Summary for Pond 41P: Basin A3

Inflow Area = 4.090 ac, 38.00% Impervious, Inflow Depth = 3.47" for 50-Year event
 Inflow = 16.42 cfs @ 12.10 hrs, Volume= 1.184 af
 Outflow = 13.68 cfs @ 12.19 hrs, Volume= 1.183 af, Atten= 17%, Lag= 5.6 min
 Primary = 7.78 cfs @ 12.19 hrs, Volume= 1.098 af
 Secondary = 5.90 cfs @ 12.19 hrs, Volume= 0.085 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 989.24' @ 12.19 hrs Surf.Area= 6,600 sf Storage= 11,695 cf

Plug-Flow detention time= 82.0 min calculated for 1.183 af (100% of inflow)
 Center-of-Mass det. time= 83.3 min (893.2 - 809.9)

Volume	Invert	Avail.Storage	Storage Description
#1	987.00'	16,986 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
987.00	3,824	0	0
988.00	4,979	4,402	4,402
989.00	6,266	5,623	10,024
990.00	7,657	6,962	16,986

Device	Routing	Invert	Outlet Devices
#1	Primary	987.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 987.00' / 986.00' S= 0.0100 ' /' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	987.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	988.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.77 cfs @ 12.19 hrs HW=989.24' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 7.77 cfs @ 6.34 fps)
 ↑ **2=Orifice/Grate** (Passes < 0.60 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 9.46 cfs potential flow)
 ↑ **4=Orifice/Grate** (Passes < 1.17 cfs potential flow)

Secondary OutFlow Max=5.75 cfs @ 12.19 hrs HW=989.24' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Weir Controls 5.75 cfs @ 1.22 fps)

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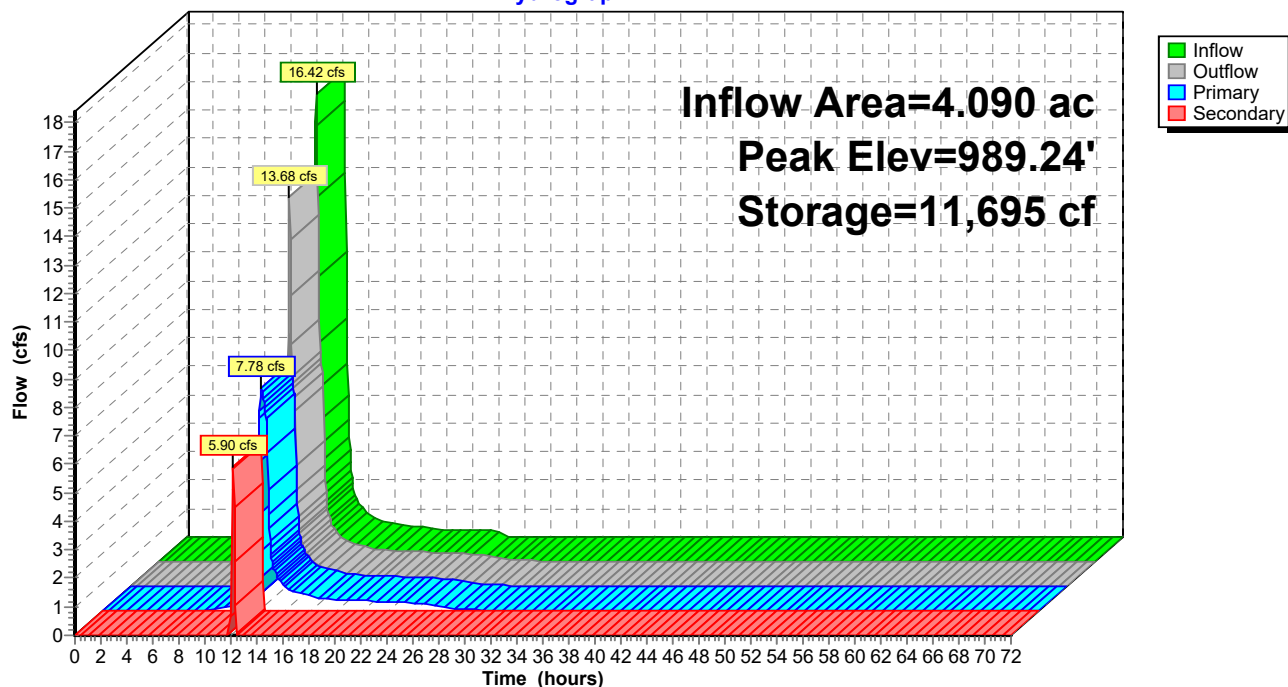
Type II 24-hr 50-Year Rainfall=4.90"

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Pond 41P: Basin A3

Hydrograph



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Summary for Pond 44P: Basin A1

Inflow Area = 30.810 ac, 38.00% Impervious, Inflow Depth = 3.47" for 50-Year event
 Inflow = 122.05 cfs @ 12.10 hrs, Volume= 8.917 af
 Outflow = 6.57 cfs @ 13.79 hrs, Volume= 8.703 af, Atten= 95%, Lag= 101.4 min
 Primary = 6.57 cfs @ 13.79 hrs, Volume= 8.703 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 986.22' @ 13.79 hrs Surf.Area= 82,510 sf Storage= 239,825 cf

Plug-Flow detention time= 511.8 min calculated for 8.703 af (98% of inflow)
 Center-of-Mass det. time= 497.1 min (1,307.4 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	983.00'	394,979 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
983.00	66,698	0	0
984.00	71,550	69,124	69,124
985.00	76,456	74,003	143,127
986.00	81,422	78,939	222,066
987.00	86,442	83,932	305,998
988.00	91,520	88,981	394,979

Device	Routing	Invert	Outlet Devices
#1	Primary	983.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 983.00' / 981.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	983.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.60'	12.0" Horiz. Orifice/Grate C= 0.600
#4	Device 1	987.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area)
#5	Secondary	987.00'	20.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.57 cfs @ 13.79 hrs HW=986.22' (Free Discharge)

- ↑ **1=Culvert** (Barrel Controls 6.57 cfs @ 8.37 fps)
- ↑ **2=Orifice/Grate** (Passes < 1.63 cfs potential flow)
- ↑ **3=Orifice/Grate** (Passes < 6.12 cfs potential flow)
- ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=983.00' (Free Discharge)

- ↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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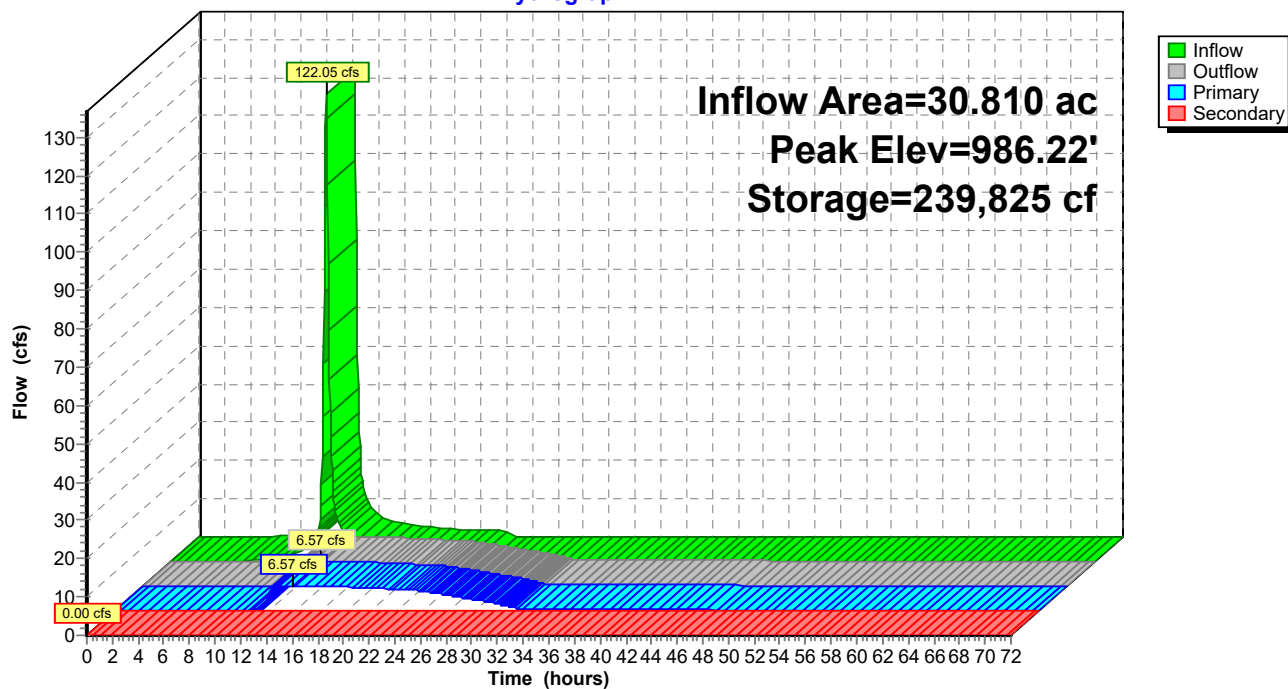
Type II 24-hr 50-Year Rainfall=4.90"

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Pond 44P: Basin A1

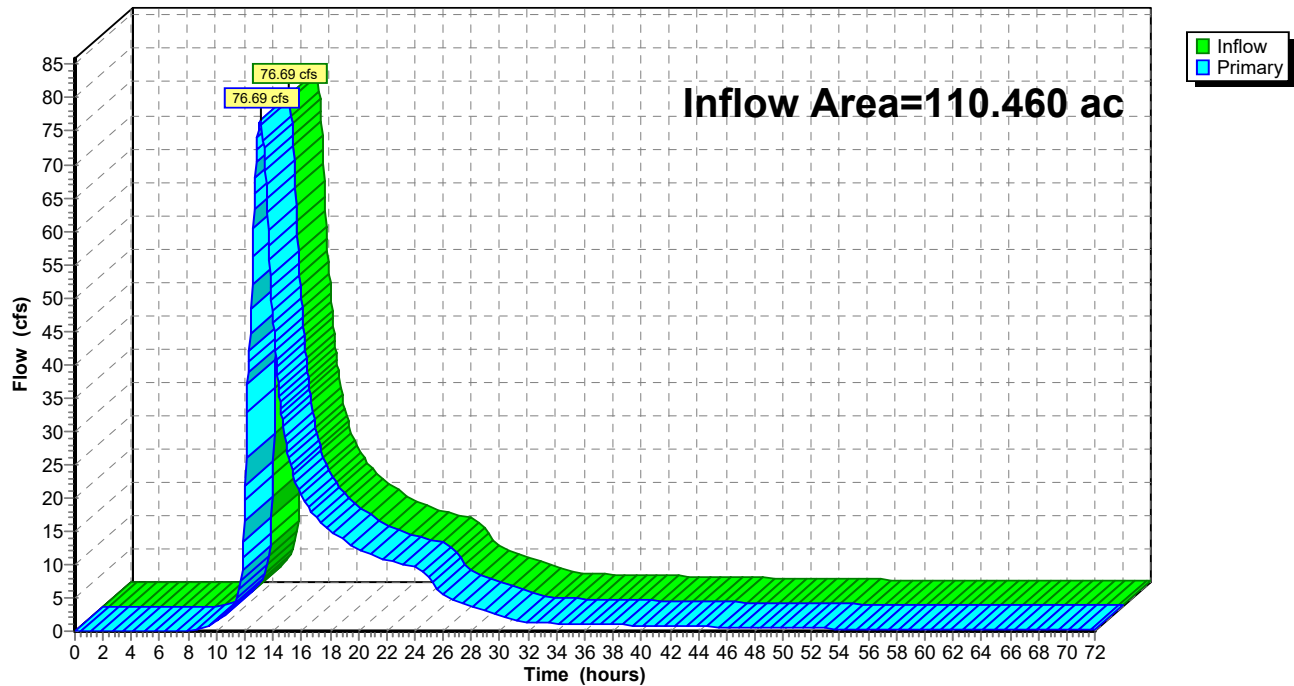
Hydrograph



Summary for Link 26L: Total Watershed A Release

Inflow Area = 110.460 ac, 25.07% Impervious, Inflow Depth > 3.11" for 50-Year event
Inflow = 76.69 cfs @ 13.13 hrs, Volume= 28.603 af
Primary = 76.69 cfs @ 13.13 hrs, Volume= 28.603 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 26L: Total Watershed A Release**Hydrograph**

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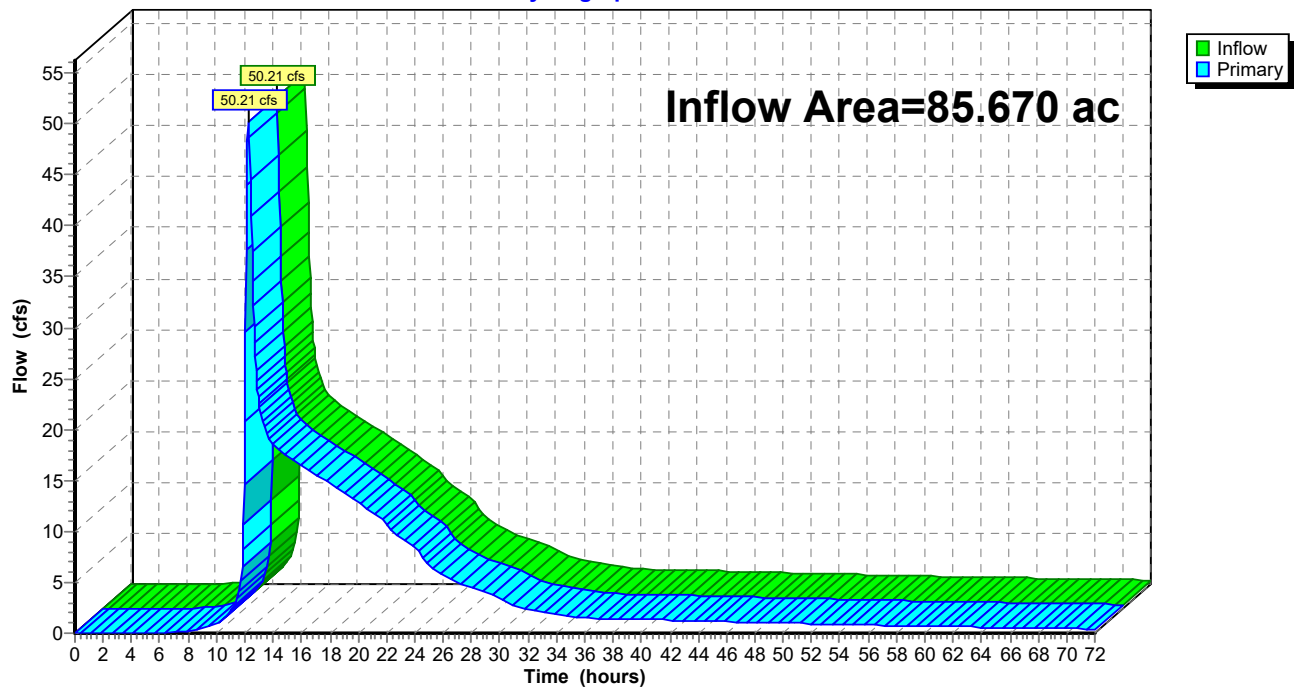
Summary for Link 27L: Total Watershed B Release

Inflow Area = 85.670 ac, 29.72% Impervious, Inflow Depth > 3.20" for 50-Year event
Inflow = 50.21 cfs @ 12.26 hrs, Volume= 22.826 af
Primary = 50.21 cfs @ 12.26 hrs, Volume= 22.826 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 27L: Total Watershed B Release

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 12S: Watershed A1 Proposed

[47] Hint: Peak is 1063% of capacity of segment #2

Runoff = 140.49 cfs @ 12.10 hrs, Volume= 10.325 af, Depth= 4.02"

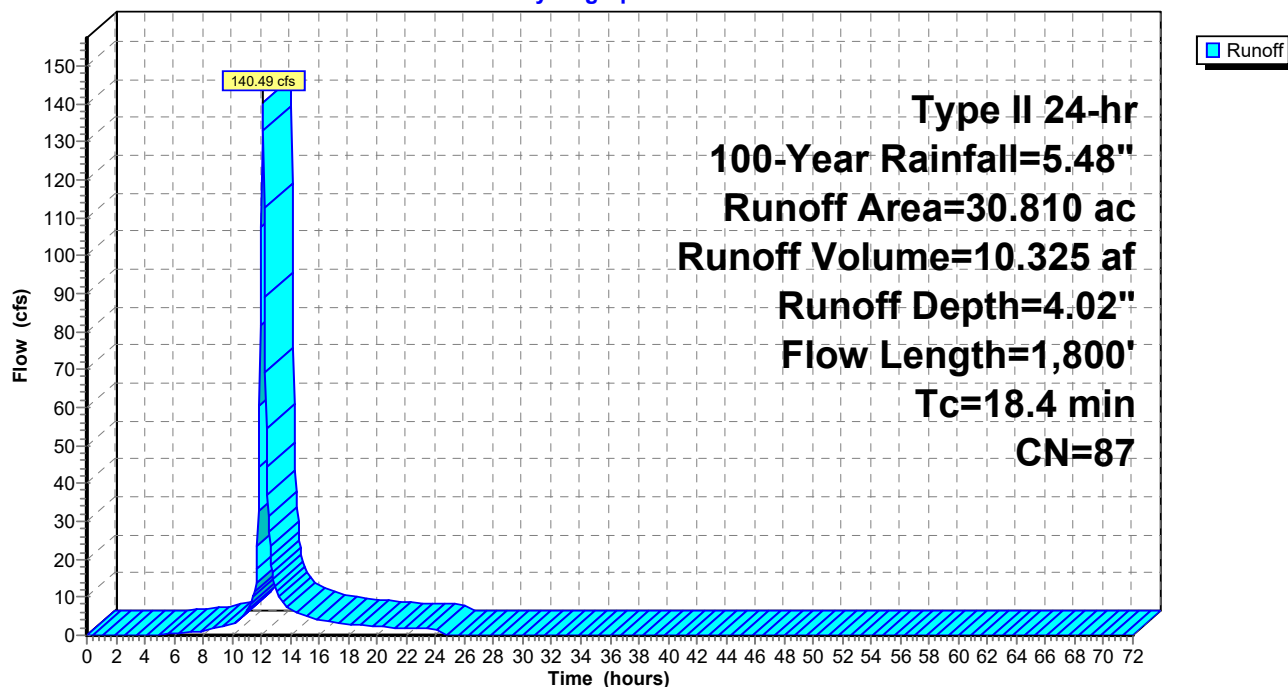
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
30.810	87	1/4 acre lots, 38% imp, HSG D
19.102		62.00% Pervious Area
11.708		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.8	1,700	0.0135	7.48	13.22	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
18.4	1,800	Total			

Subcatchment 12S: Watershed A1 Proposed

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 14S: Watershed C Proposed

[47] Hint: Peak is 1079% of capacity of segment #2

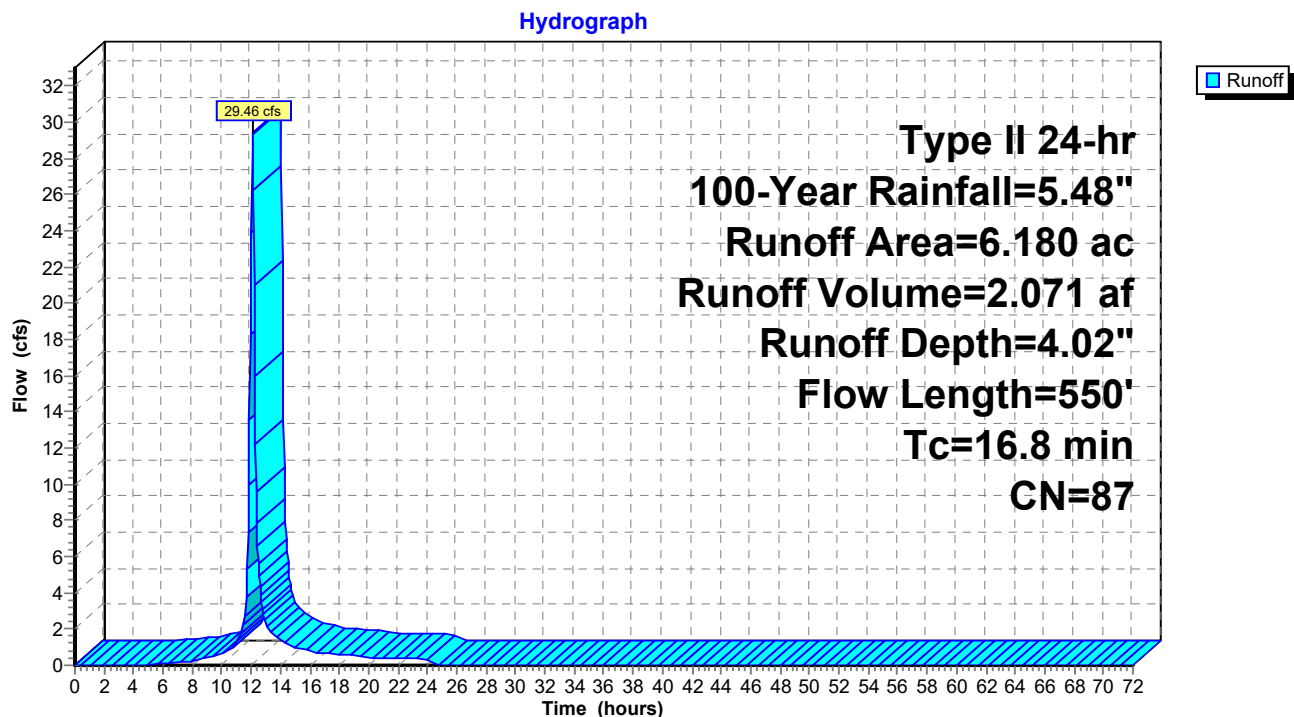
Runoff = 29.46 cfs @ 12.09 hrs, Volume= 2.071 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
6.180	87	1/4 acre lots, 38% imp, HSG D
3.832		62.00% Pervious Area
2.348		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.2	450	0.0050	3.47	2.73	Pipe Channel, 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
16.8	550	Total			

Subcatchment 14S: Watershed C Proposed



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Summary for Subcatchment 17S: Watershed A3 Proposed

[47] Hint: Peak is 247% of capacity of segment #2

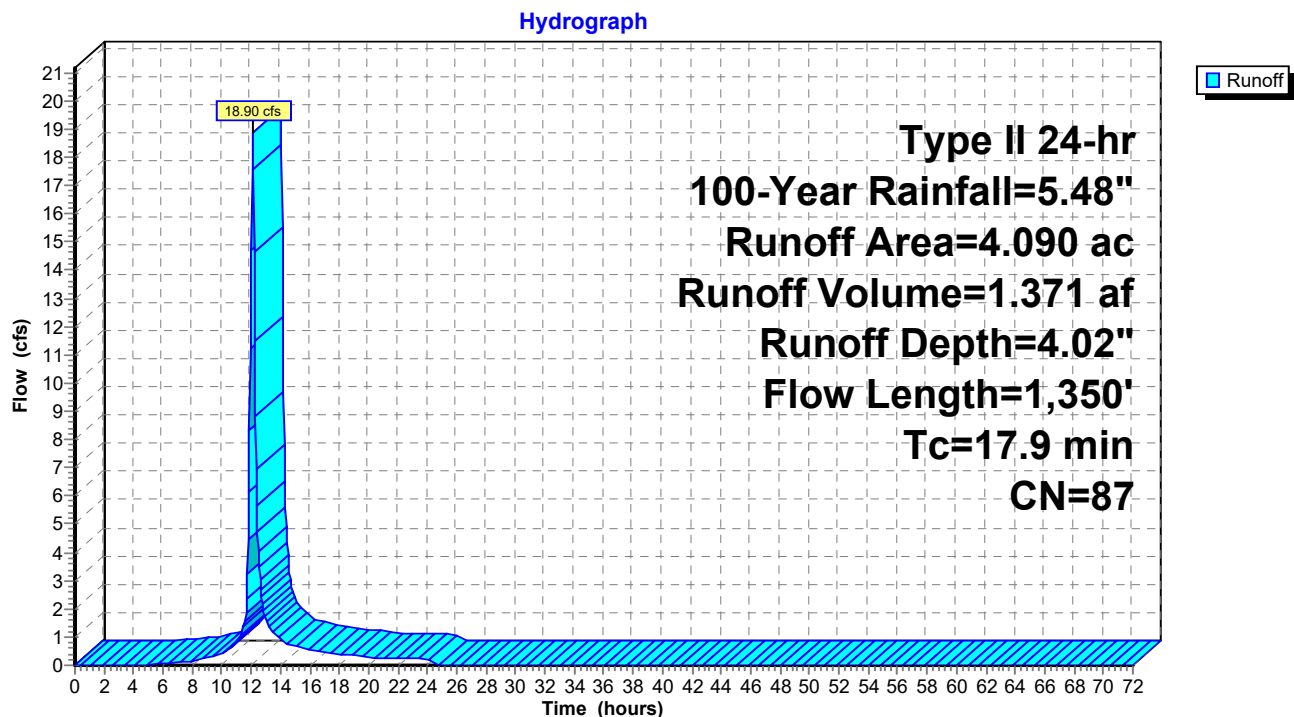
Runoff = 18.90 cfs @ 12.10 hrs, Volume= 1.371 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
4.090	87	1/4 acre lots, 38% imp, HSG D
2.536		62.00% Pervious Area
1.554		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,250	0.0120	6.25	7.67	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
17.9	1,350	Total			

Subcatchment 17S: Watershed A3 Proposed



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 19S: Watershed A2 Proposed

[47] Hint: Peak is 1494% of capacity of segment #2

Runoff = 73.95 cfs @ 12.09 hrs, Volume= 5.214 af, Depth= 4.02"

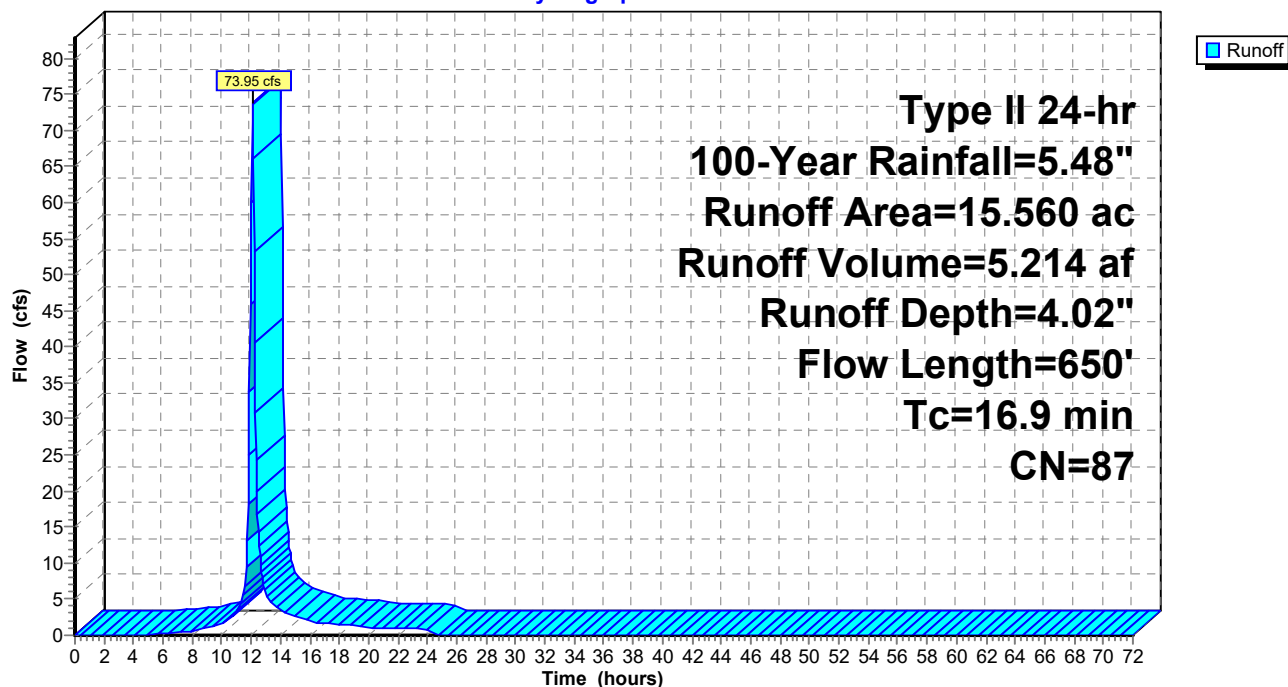
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
15.560	87	1/4 acre lots, 38% imp, HSG D
9.647		62.00% Pervious Area
5.913		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	550	0.0050	4.03	4.95	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
16.9	650	Total			

Subcatchment 19S: Watershed A2 Proposed

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 20S: Watershed B1 Proposed

[47] Hint: Peak is 976% of capacity of segment #2

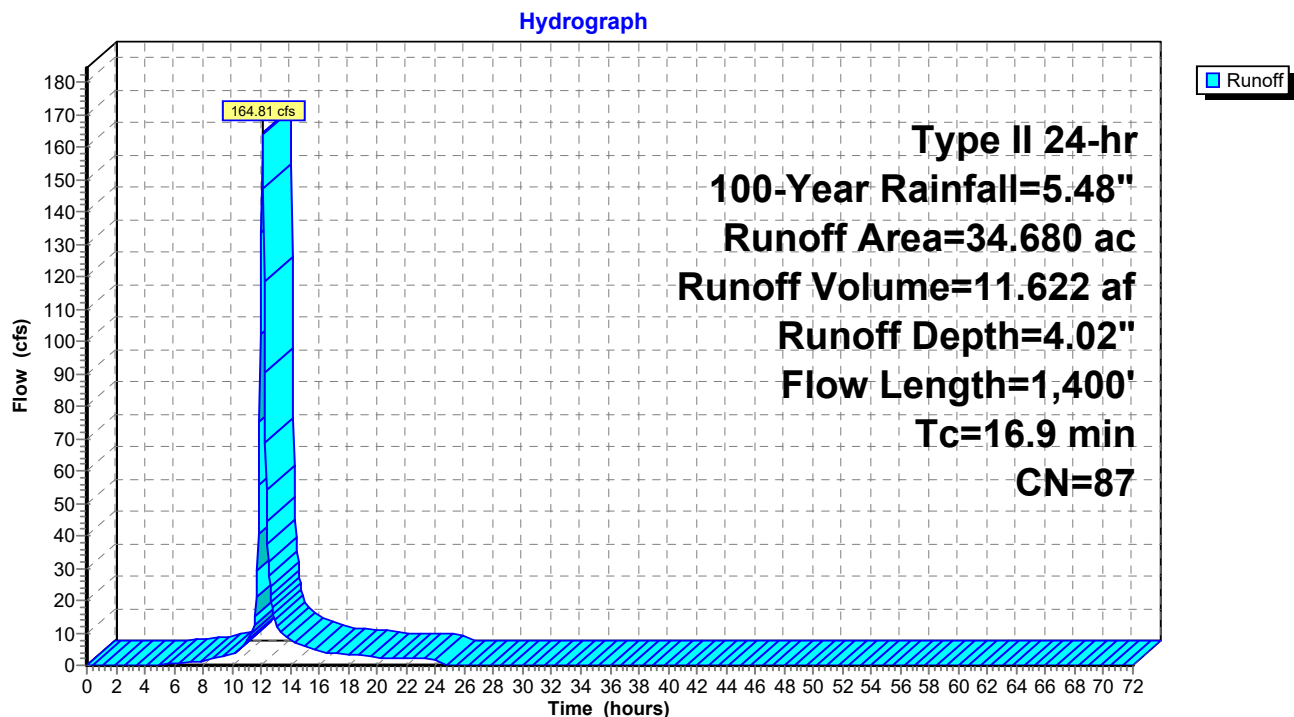
Runoff = 164.81 cfs @ 12.09 hrs, Volume= 11.622 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
34.680	87	1/4 acre lots, 38% imp, HSG D
21.502		62.00% Pervious Area
13.178		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
2.3	1,300	0.0220	9.55	16.88	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
16.9	1,400	Total			

Subcatchment 20S: Watershed B1 Proposed



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Summary for Subcatchment 28S: Watershed B1 Offsite

Runoff = 8.76 cfs @ 12.55 hrs, Volume= 1.275 af, Depth= 3.03"

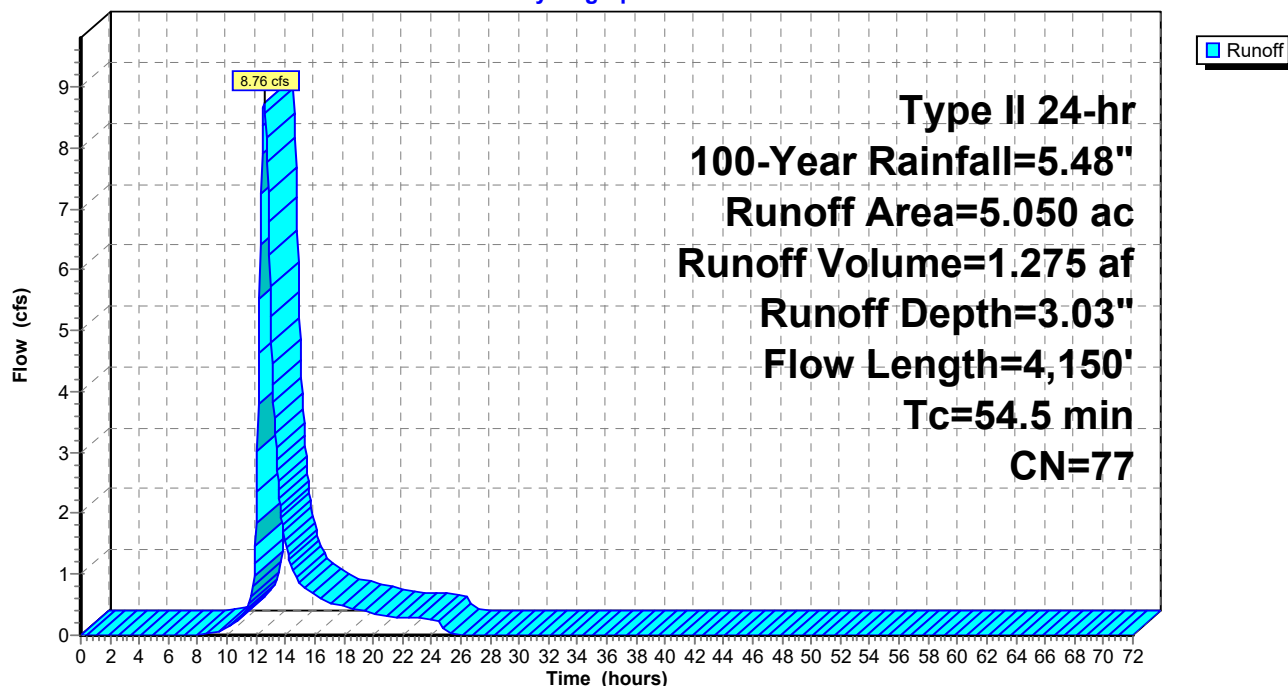
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 28S: Watershed B1 Offsite

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 37S: Watershed B2 Proposed

[47] Hint: Peak is 1038% of capacity of segment #2

Runoff = 149.41 cfs @ 12.10 hrs, Volume= 10.834 af, Depth= 4.02"

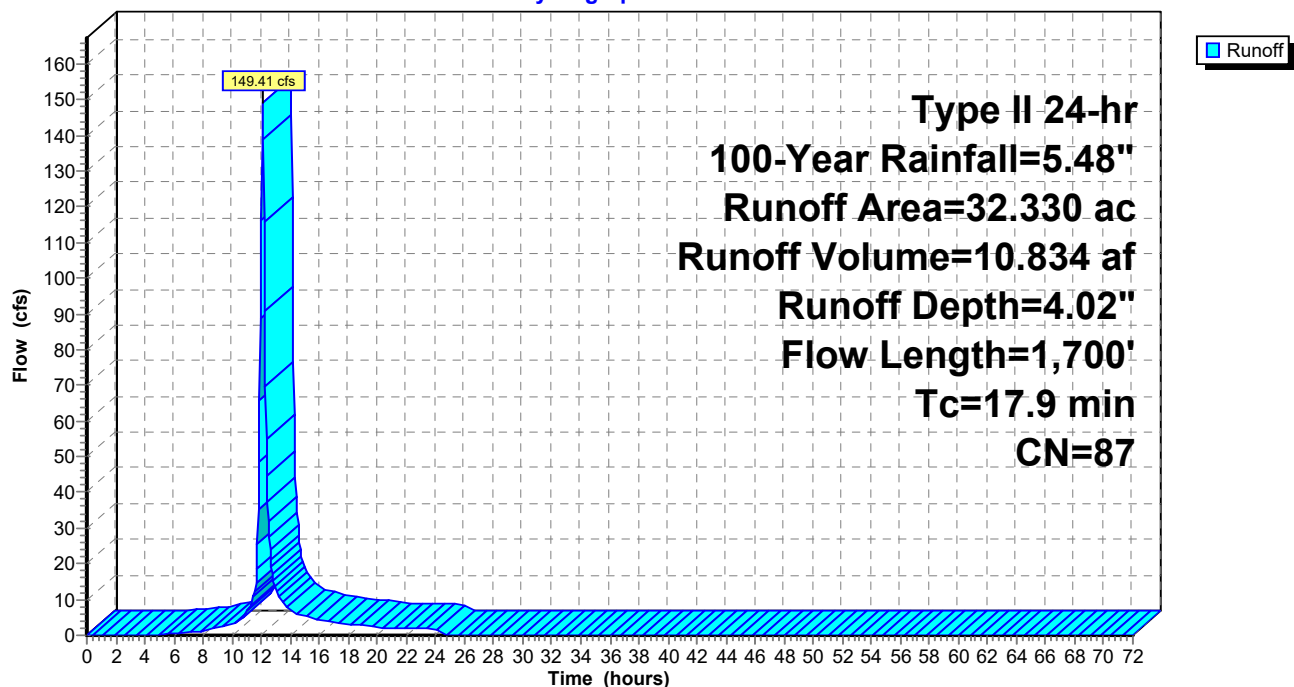
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
32.330	87	1/4 acre lots, 38% imp, HSG D
20.045		62.00% Pervious Area
12.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,600	0.0160	8.15	14.39	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
17.9	1,700	Total			

Subcatchment 37S: Watershed B2 Proposed

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 44S: Watershed A1 Offsite

Runoff = 76.13 cfs @ 13.13 hrs, Volume= 17.066 af, Depth= 3.41"

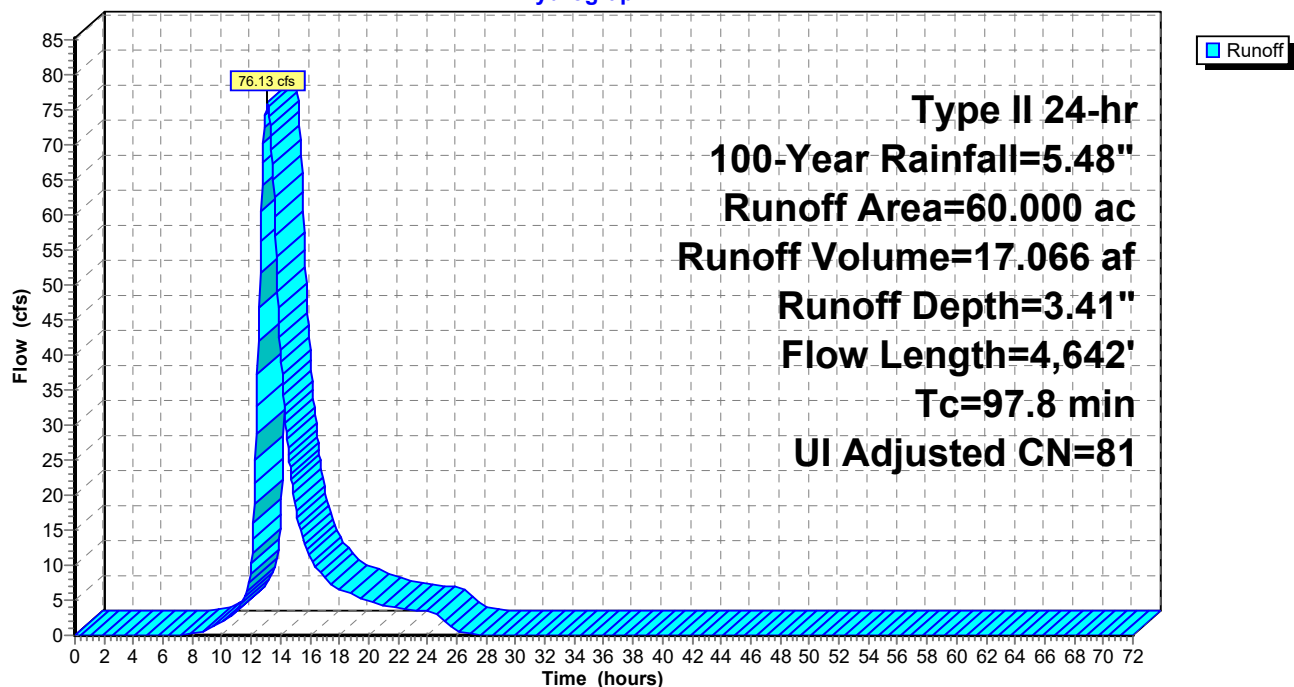
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Adj	Description
3.440	98		Water Surface, HSG D
19.960	77		Woods, Good, HSG D
31.520	80		>75% Grass cover, Good, HSG D
5.080	98		Unconnected roofs, HSG D
60.000	82	81	Weighted Average, UI Adjusted
51.480			85.80% Pervious Area
8.520			14.20% Impervious Area
5.080			59.62% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 44S: Watershed A1 Offsite

Hydrograph



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Summary for Subcatchment 48S: Watershed B2 Offsite

Runoff = 42.81 cfs @ 12.25 hrs, Volume= 4.210 af, Depth= 3.71"

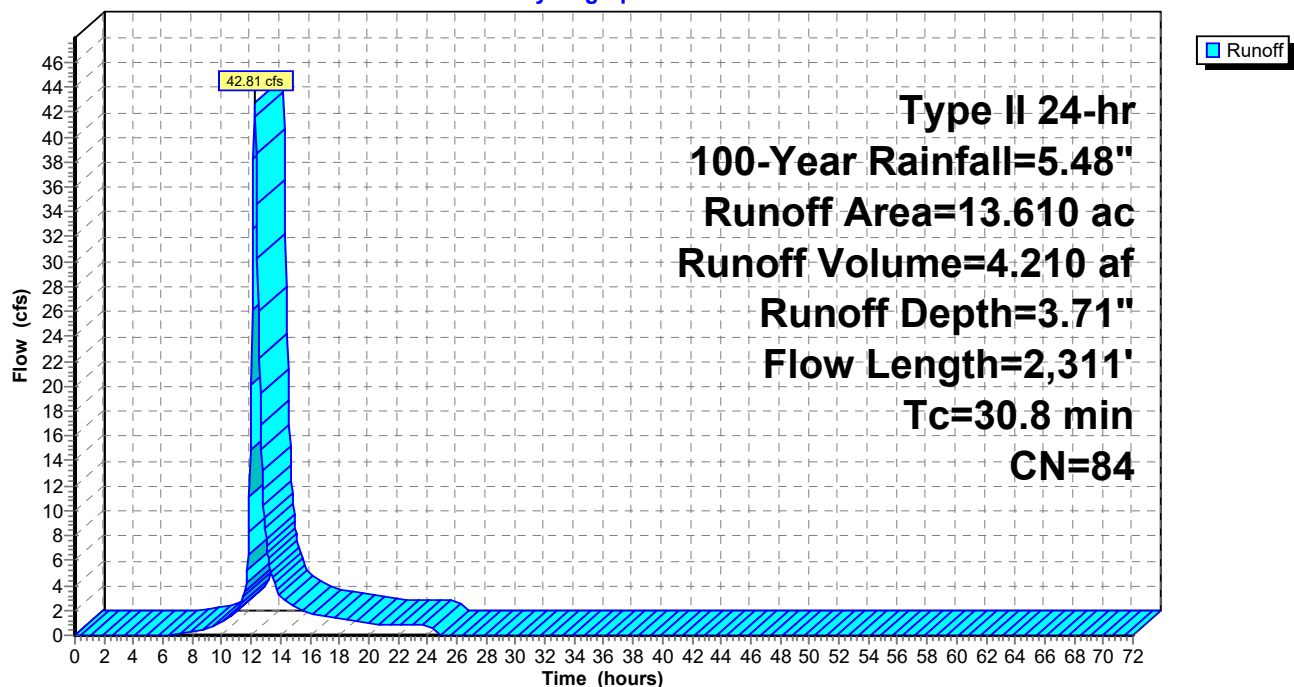
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
1.980	77	Brush, Fair, HSG D
11.630	85	Legumes, straight row, Good, HSG D
13.610	84	Weighted Average
13.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0129	0.26		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.50"
10.2	885	0.0257	1.44		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
14.3	1,326	0.0106	1.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
30.8	2,311	Total			

Subcatchment 48S: Watershed B2 Offsite

Hydrograph



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Summary for Pond 4P: Basin A2

Inflow Area = 15.560 ac, 38.00% Impervious, Inflow Depth = 4.02" for 100-Year event
 Inflow = 73.95 cfs @ 12.09 hrs, Volume= 5.214 af
 Outflow = 4.72 cfs @ 13.34 hrs, Volume= 4.937 af, Atten= 94%, Lag= 75.3 min
 Primary = 4.72 cfs @ 13.34 hrs, Volume= 4.937 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 983.86' @ 13.34 hrs Surf.Area= 81,259 sf Storage= 140,400 cf

Plug-Flow detention time= 678.2 min calculated for 4.937 af (95% of inflow)
 Center-of-Mass det. time= 647.7 min (1,452.5 - 804.8)

Volume	Invert	Avail.Storage	Storage Description
#1	982.00'	328,816 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
982.00	69,352	0	0
983.00	75,690	72,521	72,521
984.00	82,128	78,909	151,430
985.00	88,668	85,398	236,828
986.00	95,308	91,988	328,816

Device	Routing	Invert	Outlet Devices
#1	Primary	982.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 982.00' / 980.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	982.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	985.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	985.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.72 cfs @ 13.34 hrs HW=983.86' (Free Discharge)

↑ **1=Culvert** (Passes 4.72 cfs of 5.42 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 1.20 cfs @ 6.12 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 3.52 cfs @ 4.48 fps)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=982.00' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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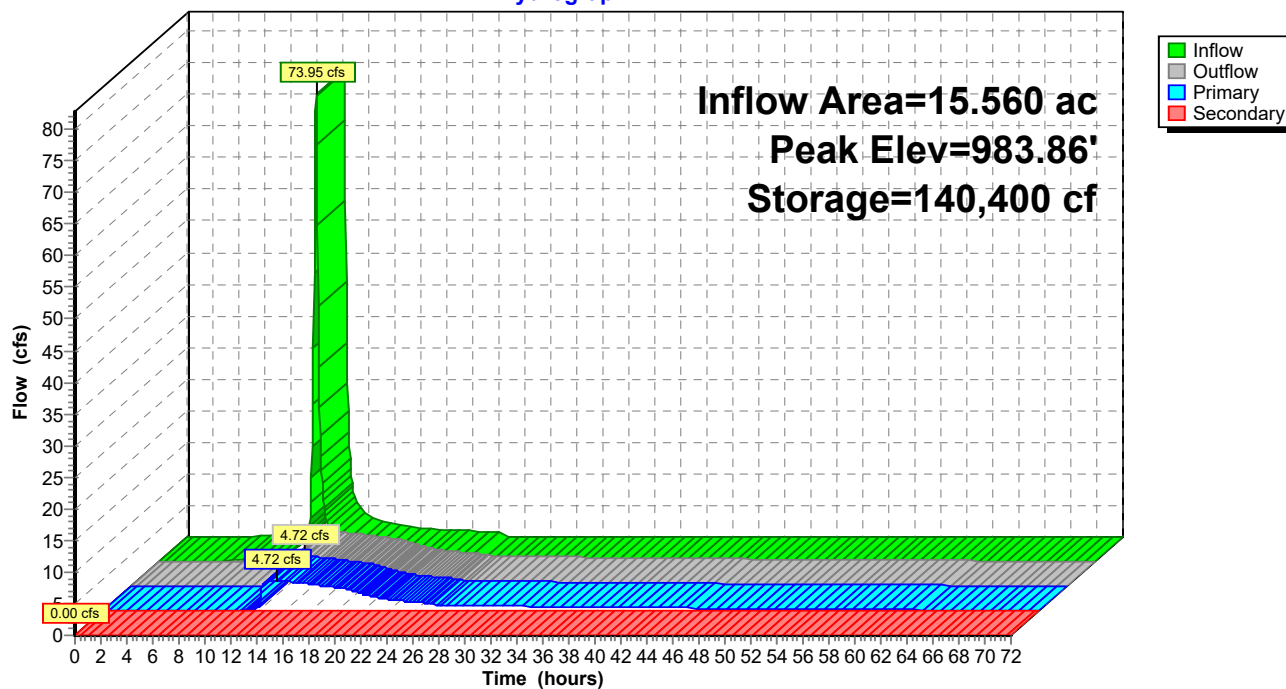
Type II 24-hr 100-Year Rainfall=5.48"

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Pond 4P: Basin A2

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Pond 34P: Basin B1

Inflow Area = 39.730 ac, 33.17% Impervious, Inflow Depth = 3.90" for 100-Year event
 Inflow = 167.66 cfs @ 12.09 hrs, Volume= 12.897 af
 Outflow = 8.04 cfs @ 14.24 hrs, Volume= 11.903 af, Atten= 95%, Lag= 129.1 min
 Primary = 6.48 cfs @ 14.24 hrs, Volume= 11.643 af
 Secondary = 1.55 cfs @ 14.24 hrs, Volume= 0.259 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 963.10' @ 14.24 hrs Surf.Area= 129,841 sf Storage= 370,519 cf

Plug-Flow detention time= 801.5 min calculated for 11.894 af (92% of inflow)
 Center-of-Mass det. time= 761.4 min (1,572.4 - 811.0)

Volume	Invert	Avail.Storage	Storage Description
#1	960.00'	490,366 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
960.00	109,496	0	0
961.00	115,956	112,726	112,726
962.00	122,516	119,236	231,962
963.00	129,177	125,847	357,809
964.00	135,938	132,558	490,366

Device	Routing	Invert	Outlet Devices
#1	Primary	960.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 960.00' / 958.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	960.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	961.00'	12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	963.00'	1.0" x 12.0" Horiz. Orifice/Grate X 5.00 C= 0.600 in 12.0" x 12.0" Grate (42% open area) Limited to weir flow at low heads
#5	Secondary	963.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.48 cfs @ 14.24 hrs HW=963.10' (Free Discharge)

- ↑ **1=Culvert** (Barrel Controls 6.48 cfs @ 8.25 fps)
- ↑ **2=Orifice/Grate** (Passes < 1.60 cfs potential flow)
- ↑ **3=Orifice/Grate** (Passes < 5.48 cfs potential flow)
- ↑ **4=Orifice/Grate** (Passes < 0.40 cfs potential flow)

Secondary OutFlow Max=1.53 cfs @ 14.24 hrs HW=963.10' (Free Discharge)

- ↑ **5=Broad-Crested Rectangular Weir** (Weir Controls 1.53 cfs @ 0.78 fps)

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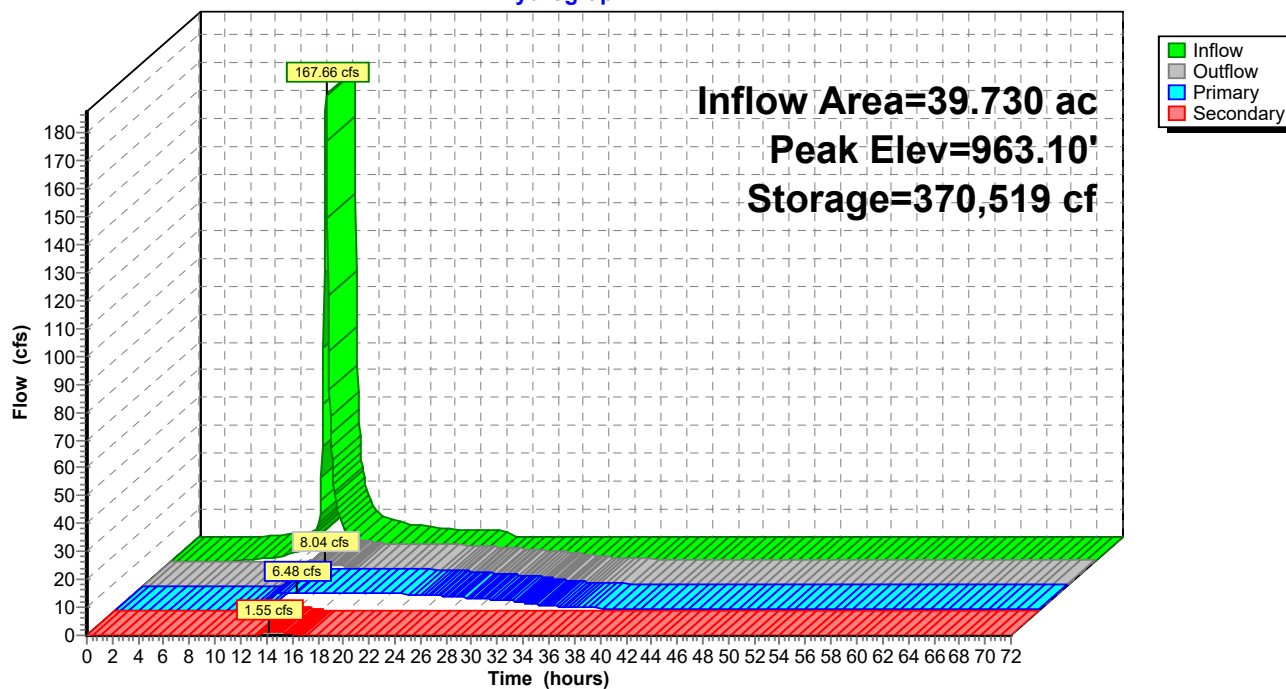
Type II 24-hr 100-Year Rainfall=5.48"

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Pond 34P: Basin B1

Hydrograph



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Summary for Pond 35P: Basin B2

Inflow Area = 32.330 ac, 38.00% Impervious, Inflow Depth = 4.02" for 100-Year event
 Inflow = 149.41 cfs @ 12.10 hrs, Volume= 10.834 af
 Outflow = 18.91 cfs @ 12.71 hrs, Volume= 10.517 af, Atten= 87%, Lag= 36.5 min
 Primary = 11.80 cfs @ 12.71 hrs, Volume= 9.962 af
 Secondary = 7.11 cfs @ 12.71 hrs, Volume= 0.554 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 955.27' @ 12.71 hrs Surf.Area= 92,794 sf Storage= 269,778 cf

Plug-Flow detention time= 463.5 min calculated for 10.517 af (97% of inflow)
 Center-of-Mass det. time= 445.7 min (1,251.4 - 805.8)

Volume	Invert	Avail.Storage	Storage Description
#1	952.00'	339,139 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
952.00	72,332	0	0
953.00	78,470	75,401	75,401
954.00	84,709	81,590	156,991
955.00	91,049	87,879	244,870
956.00	97,489	94,269	339,139

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 952.00' / 950.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	952.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	953.00'	15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	955.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	955.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=11.80 cfs @ 12.71 hrs HW=955.27' (Free Discharge)

1=Culvert (Passes 2.90 cfs of 6.62 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.64 cfs @ 8.37 fps)
 4=Orifice/Grate (Orifice Controls 1.25 cfs @ 2.51 fps)
 3=Orifice/Grate (Orifice Controls 8.90 cfs @ 7.26 fps)

Secondary OutFlow Max=7.09 cfs @ 12.71 hrs HW=955.27' (Free Discharge)

5=Broad-Crested Rectangular Weir (Weir Controls 7.09 cfs @ 1.31 fps)

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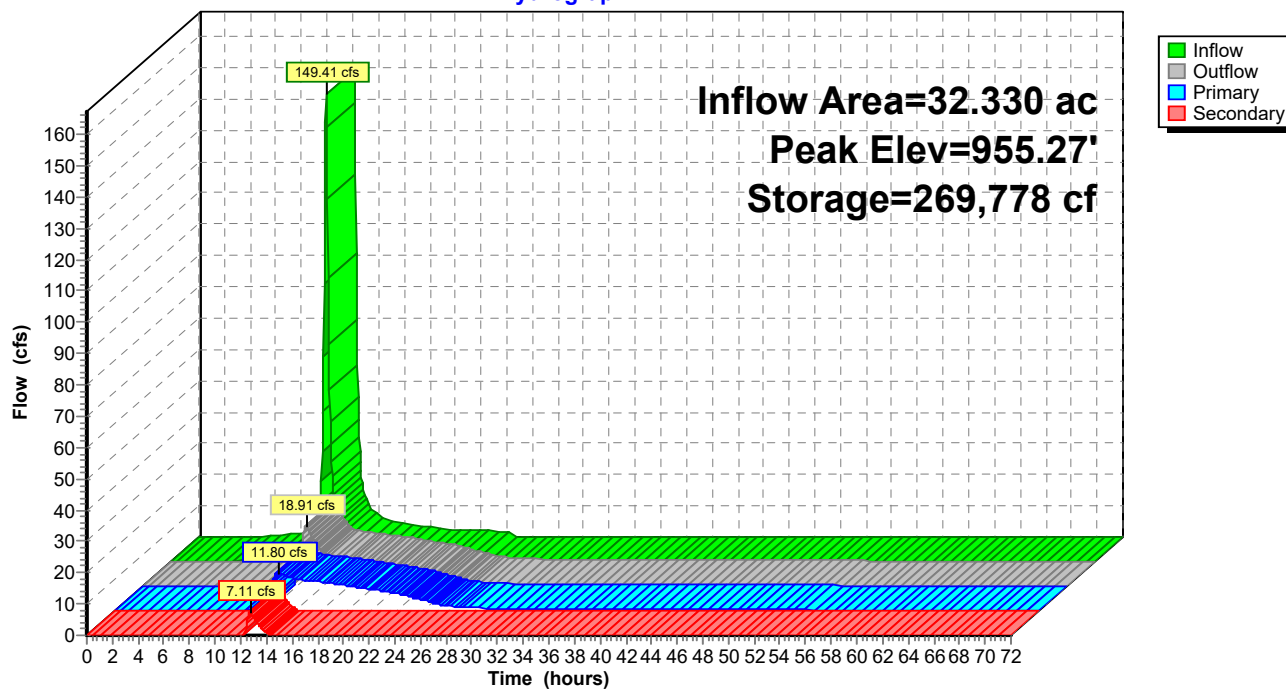
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Pond 35P: Basin B2

Hydrograph



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Summary for Pond 39P: Basin C

Inflow Area = 6.180 ac, 38.00% Impervious, Inflow Depth = 4.02" for 100-Year event
 Inflow = 29.46 cfs @ 12.09 hrs, Volume= 2.071 af
 Outflow = 10.66 cfs @ 12.33 hrs, Volume= 2.064 af, Atten= 64%, Lag= 14.7 min
 Primary = 10.66 cfs @ 12.33 hrs, Volume= 2.064 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 988.98' @ 12.33 hrs Surf.Area= 14,079 sf Storage= 32,754 cf

Plug-Flow detention time= 175.4 min calculated for 2.063 af (100% of inflow)
 Center-of-Mass det. time= 175.1 min (979.9 - 804.7)

Volume	Invert	Avail.Storage	Storage Description
#1	986.00'	48,247 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
986.00	8,024	0	0
987.00	9,955	8,990	8,990
988.00	11,986	10,971	19,960
989.00	14,118	13,052	33,012
990.00	16,352	15,235	48,247

Device	Routing	Invert	Outlet Devices
#1	Primary	986.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 986.00' / 984.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	986.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	987.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=10.65 cfs @ 12.33 hrs HW=988.98' (Free Discharge)

- ↑ **1=Culvert** (Barrel Controls 10.65 cfs @ 8.68 fps)
- ↑ **2=Orifice/Grate** (Passes < 0.28 cfs potential flow)
- ↑ **3=Orifice/Grate** (Passes < 11.97 cfs potential flow)
- ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=986.00' (Free Discharge)

- ↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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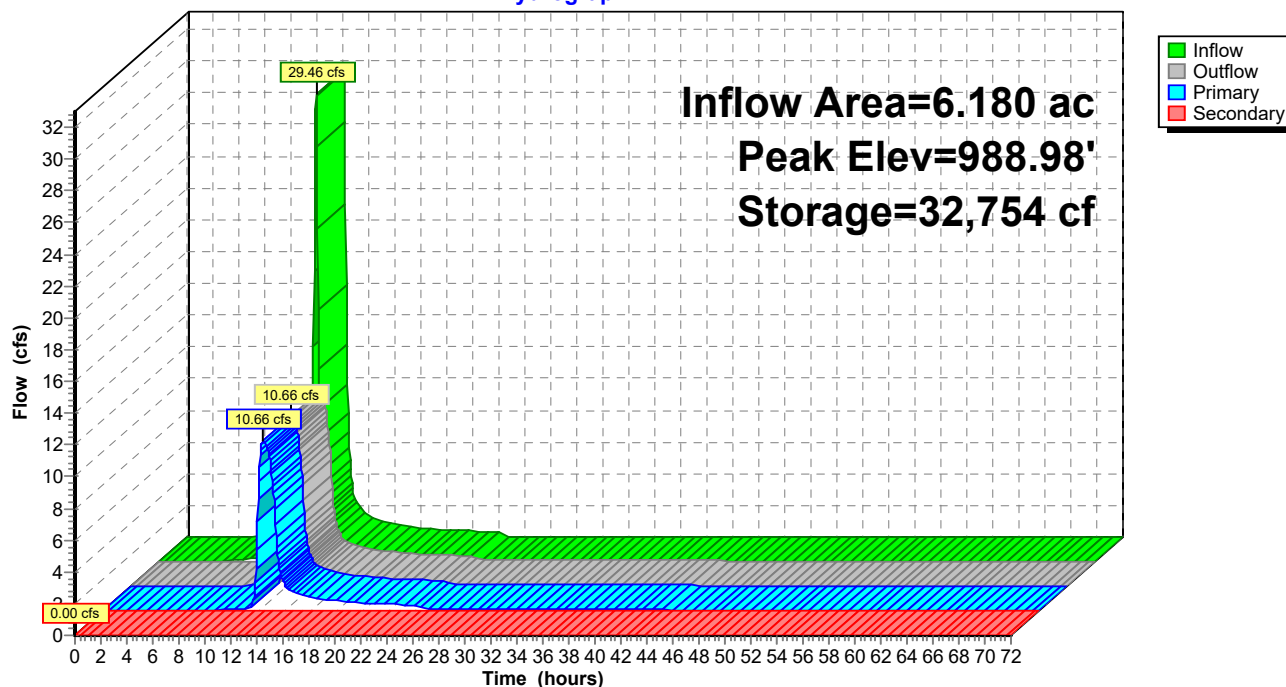
Type II 24-hr 100-Year Rainfall=5.48"

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Pond 39P: Basin C

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Pond 41P: Basin A3

Inflow Area = 4.090 ac, 38.00% Impervious, Inflow Depth = 4.02" for 100-Year event
 Inflow = 18.90 cfs @ 12.10 hrs, Volume= 1.371 af
 Outflow = 17.10 cfs @ 12.17 hrs, Volume= 1.370 af, Atten= 10%, Lag= 4.2 min
 Primary = 7.94 cfs @ 12.17 hrs, Volume= 1.222 af
 Secondary = 9.17 cfs @ 12.17 hrs, Volume= 0.148 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 989.32' @ 12.17 hrs Surf.Area= 6,712 sf Storage= 12,256 cf

Plug-Flow detention time= 76.4 min calculated for 1.369 af (100% of inflow)
 Center-of-Mass det. time= 77.6 min (883.4 - 805.8)

Volume	Invert	Avail.Storage	Storage Description
#1	987.00'	16,986 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
987.00	3,824	0	0
988.00	4,979	4,402	4,402
989.00	6,266	5,623	10,024
990.00	7,657	6,962	16,986

Device	Routing	Invert	Outlet Devices
#1	Primary	987.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 987.00' / 986.00' S= 0.0100 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	987.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	988.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.92 cfs @ 12.17 hrs HW=989.31' (Free Discharge)

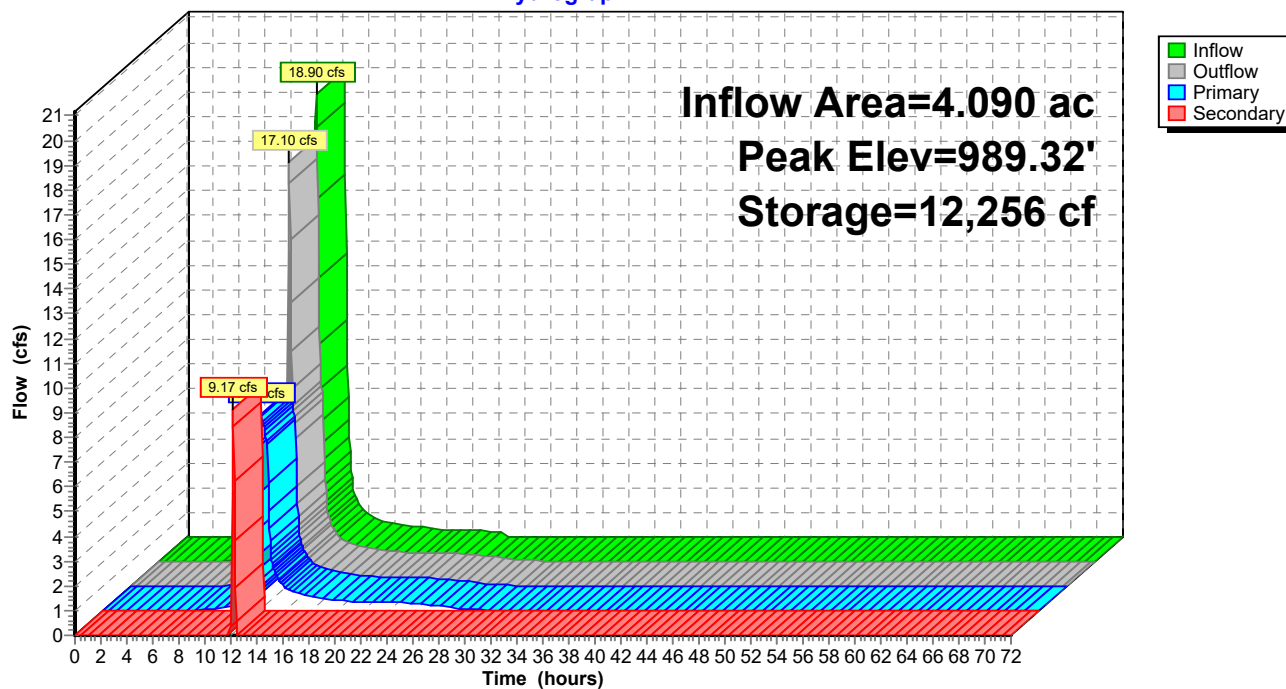
↑ **1=Culvert** (Barrel Controls 7.92 cfs @ 6.45 fps)
 ↑ **2=Orifice/Grate** (Passes < 0.62 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 9.74 cfs potential flow)
 ↑ **4=Orifice/Grate** (Passes < 1.34 cfs potential flow)

Secondary OutFlow Max=8.73 cfs @ 12.17 hrs HW=989.31' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Weir Controls 8.73 cfs @ 1.41 fps)

Pond 41P: Basin A3

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Pond 44P: Basin A1

Inflow Area = 30.810 ac, 38.00% Impervious, Inflow Depth = 4.02" for 100-Year event
 Inflow = 140.49 cfs @ 12.10 hrs, Volume= 10.325 af
 Outflow = 6.96 cfs @ 13.94 hrs, Volume= 10.101 af, Atten= 95%, Lag= 110.3 min
 Primary = 6.96 cfs @ 13.94 hrs, Volume= 10.101 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 986.72' @ 13.94 hrs Surf.Area= 85,049 sf Storage= 282,210 cf

Plug-Flow detention time= 544.2 min calculated for 10.094 af (98% of inflow)
 Center-of-Mass det. time= 532.4 min (1,338.6 - 806.2)

Volume	Invert	Avail.Storage	Storage Description
#1	983.00'	394,979 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
983.00	66,698	0	0
984.00	71,550	69,124	69,124
985.00	76,456	74,003	143,127
986.00	81,422	78,939	222,066
987.00	86,442	83,932	305,998
988.00	91,520	88,981	394,979

Device	Routing	Invert	Outlet Devices
#1	Primary	983.00'	12.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 983.00' / 981.00' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	983.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	983.60'	12.0" Horiz. Orifice/Grate C= 0.600
#4	Device 1	987.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area)
#5	Secondary	987.00'	20.0' long x 15.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.96 cfs @ 13.94 hrs HW=986.72' (Free Discharge)

- ↑ **1=Culvert** (Barrel Controls 6.96 cfs @ 8.86 fps)
- ↑ **2=Orifice/Grate** (Passes < 1.76 cfs potential flow)
- ↑ **3=Orifice/Grate** (Passes < 6.68 cfs potential flow)
- ↑ **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=983.00' (Free Discharge)

- ↑ **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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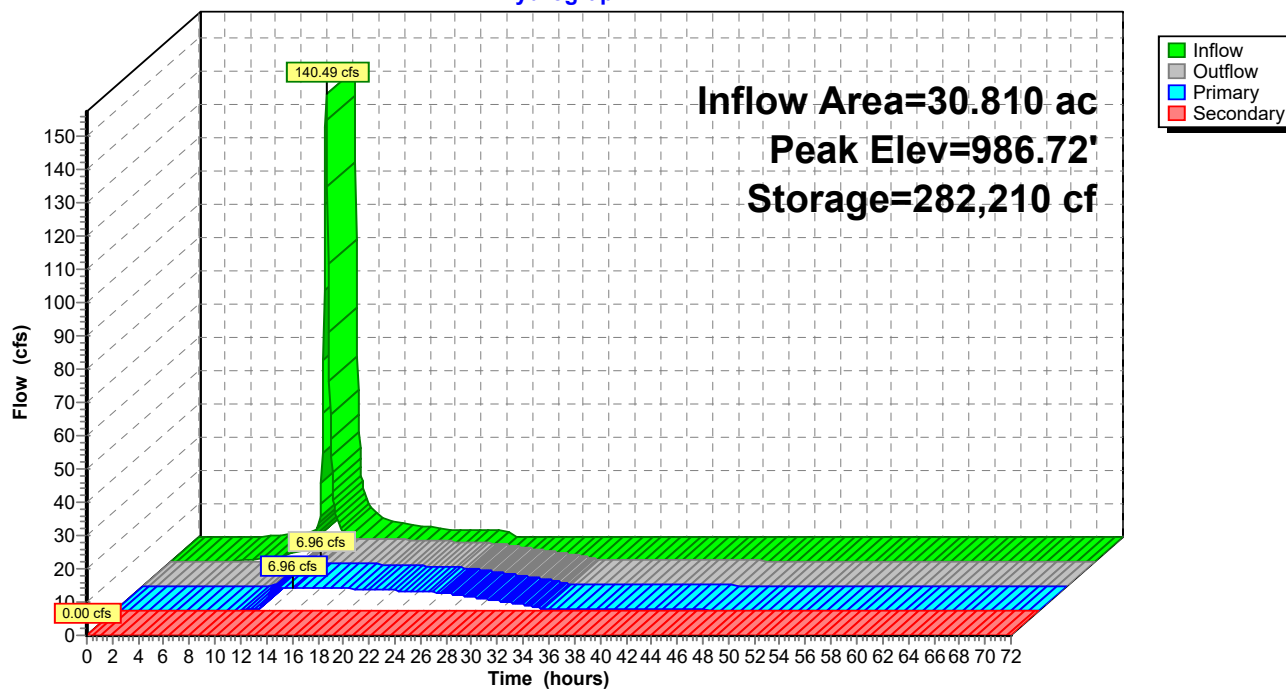
Type II 24-hr 100-Year Rainfall=5.48"

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Pond 44P: Basin A1

Hydrograph



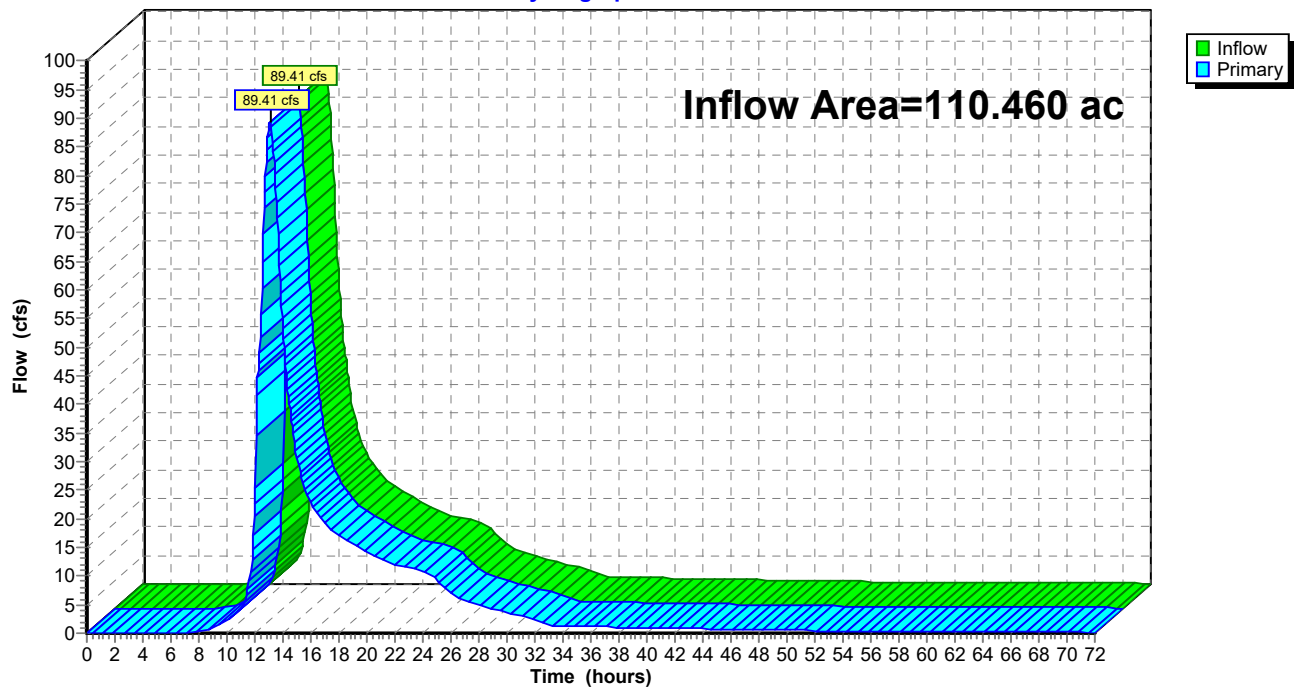
Summary for Link 26L: Total Watershed A Release

Inflow Area = 110.460 ac, 25.07% Impervious, Inflow Depth > 3.64" for 100-Year event

Inflow = 89.41 cfs @ 13.11 hrs, Volume= 33.473 af

Primary = 89.41 cfs @ 13.11 hrs, Volume= 33.473 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 26L: Total Watershed A Release**Hydrograph**

Summary for Link 27L: Total Watershed B Release

Inflow Area = 85.670 ac, 29.72% Impervious, Inflow Depth > 3.73" for 100-Year event
Inflow = 57.93 cfs @ 12.26 hrs, Volume= 26.630 af
Primary = 57.93 cfs @ 12.26 hrs, Volume= 26.630 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

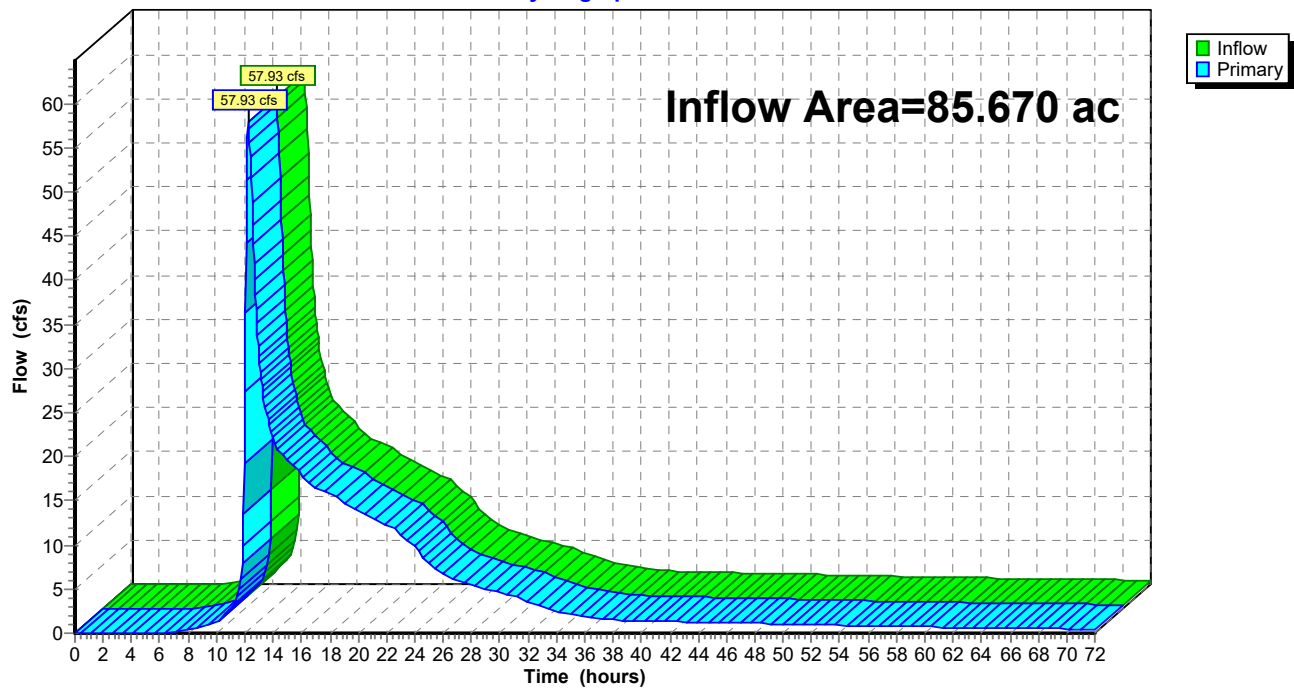
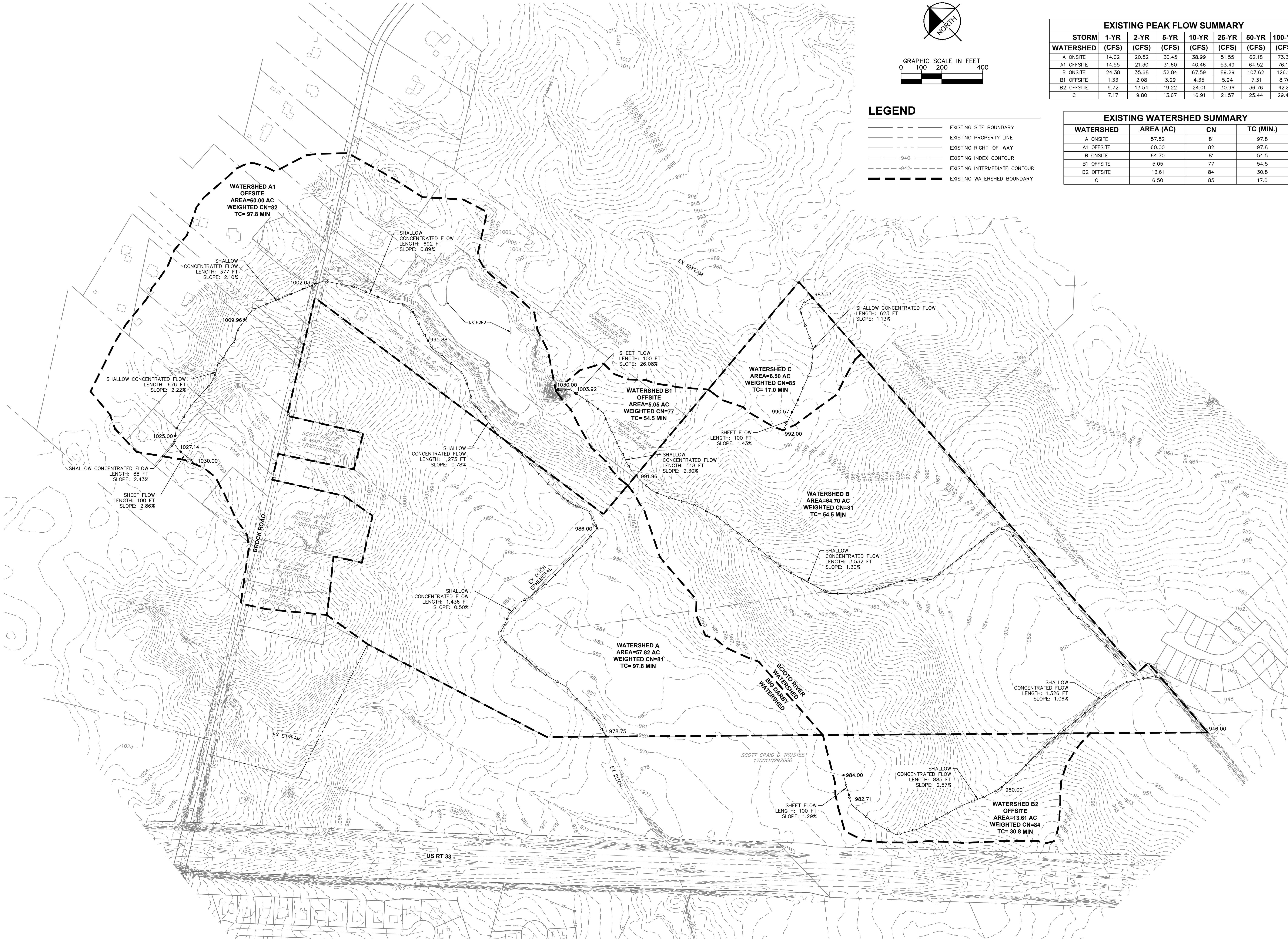
Link 27L: Total Watershed B Release**Hydrograph**



Exhibit 4 – Pre-Development Tributary Map



Drawing name: K:\CIB_LDEV\190013014_Pulte_Scott Property_Union County_OH_V2 Design\CAD\Exhibits\Drainage\Pre-Developed Trib Map.dwg Layout1 Aug 05, 2021 3:04pm by Sarah Vecchiare
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SCALE:
DESIGNED BY: SMV
DRAWN BY: NSM
CHECKED BY: KDK

AS NOTED

HOMESTEAD AT
SCOTT'S FARM

JEROME TOWNSHIP
UNION COUNTY, OHIO

PRE-DEVELOPED TRIBUTARY MAP

ORIGINAL ISSUE:
05/25/2021

KHA PROJECT NO.
190013014

SHEET NUMBER

23

OF 29

REVISIONS

DATE

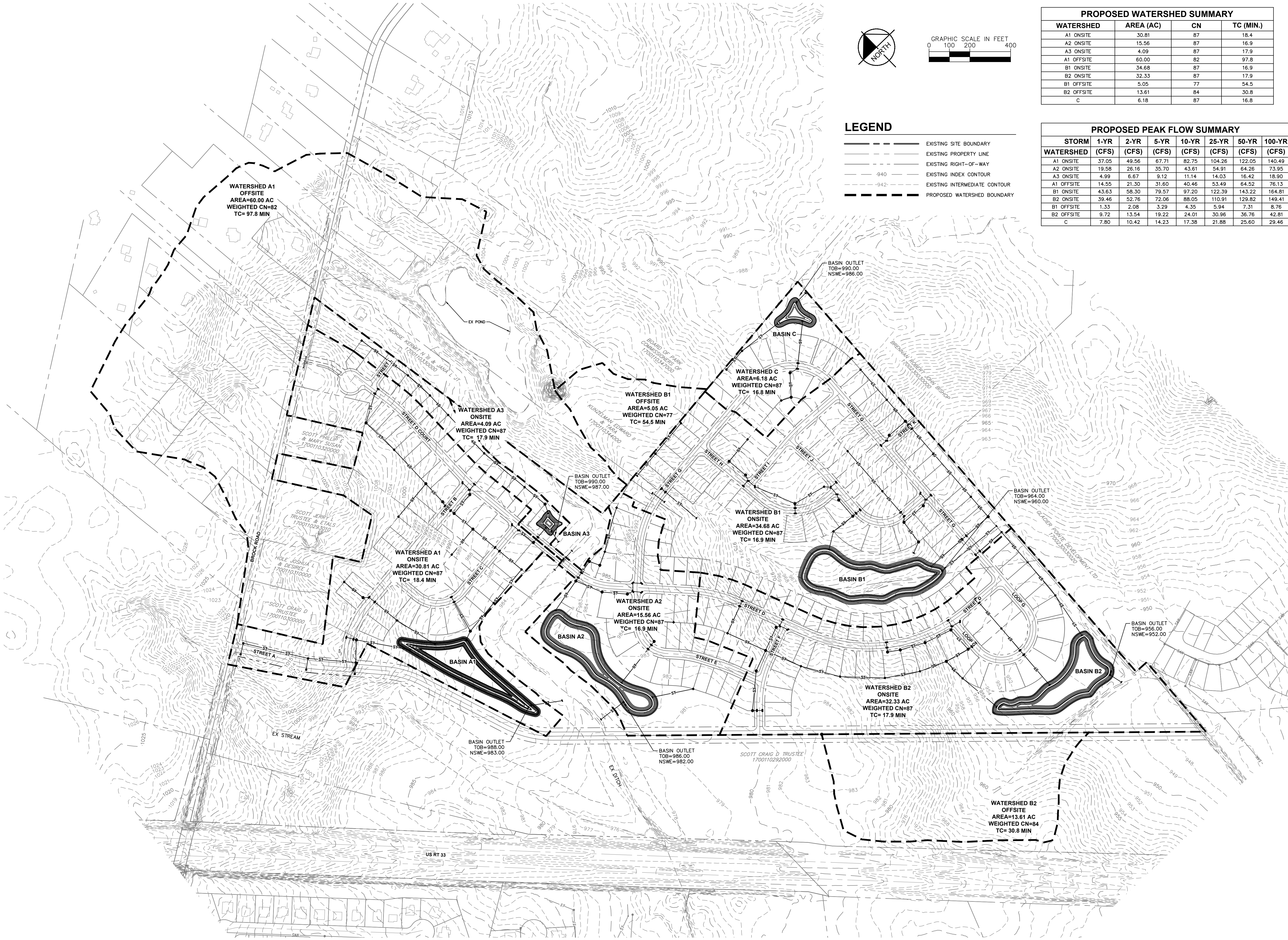
BY



Exhibit 5 – Post-Development Tributary Map



Drawing name: K:\CIB_LDEV\190013014_Pulte_Scott_Property_Union County_OH_V2 Design\CAD\Exhibits\Drainage\Post-Developed Trib Map.dwg Layout1 Aug 05, 2021 5:05pm by Sarah Vecchiore
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SCALE:

AS NOTED
DESIGNED BY: SMV
DRAWN BY: NSM
CHECKED BY: KOK

HOMESTEAD AT
SCOTTS FARM

JEROME TOWNSHIP
UNION COUNTY, OHIO

POST-DEVELOPED TRIBUTARY MAP

ORIGINAL ISSUE:
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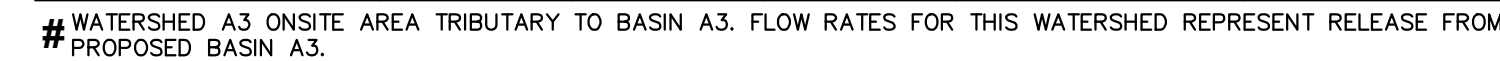
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BY



Exhibit 6 – Culvert Calculations





BY

Homestead at Scotts Farm - Preliminary

Prepared by Kimley-Horn

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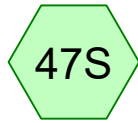
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25-Year Event

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- 3 Subcat 38S: Watershed B1 Offsite
- 4 Subcat 47S: Watershed A1 Offsite
- 6 Pond 36P: Basin A3
- 8 Link 29L: Total Release at Culvert 1
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- 12 Subcat 47S: Watershed A1 Offsite
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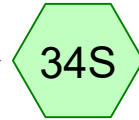
Watershed A1 Offsite



Total Release at Culvert
1



Basin A3



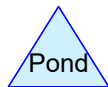
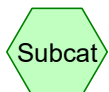
Watershed A3 Proposed



Watershed B1 Offsite



Total Release at Culvert
2



Routing Diagram for Homestead at Scotts Farm - Preliminary
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Homestead at Scotts Farm - Preliminary

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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 34S: Watershed A3 Proposed

[47] Hint: Peak is 183% of capacity of segment #2

Runoff = 14.03 cfs @ 12.10 hrs, Volume= 1.006 af, Depth= 2.95"

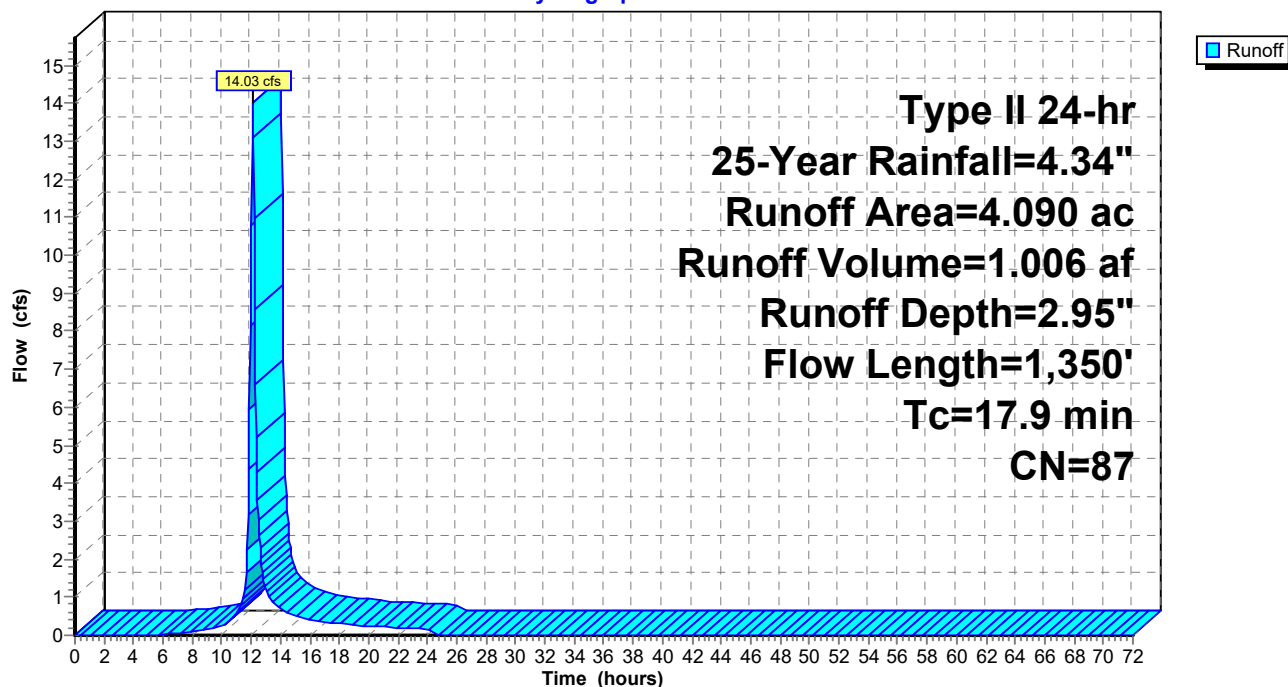
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
4.090	87	1/4 acre lots, 38% imp, HSG D
2.536		62.00% Pervious Area
1.554		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,250	0.0120	6.25	7.67	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
17.9	1,350	Total			

Subcatchment 34S: Watershed A3 Proposed

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 38S: Watershed B1 Offsite

Runoff = 5.94 cfs @ 12.56 hrs, Volume= 0.876 af, Depth= 2.08"

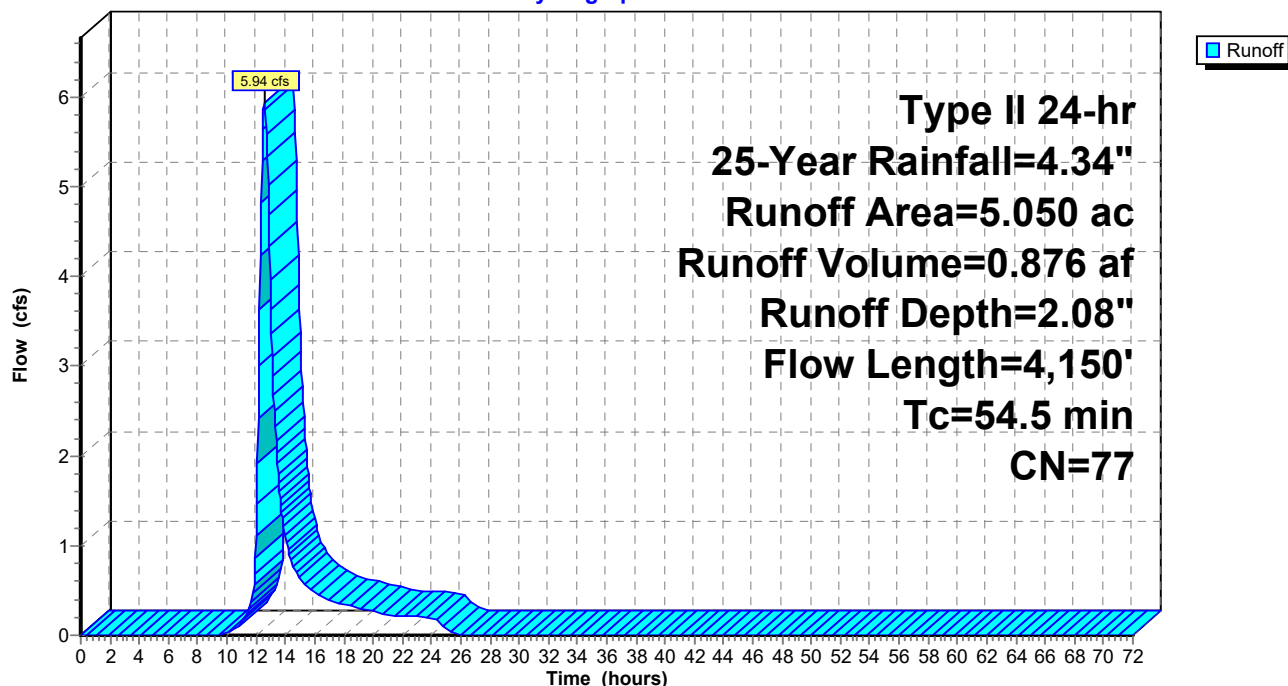
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 38S: Watershed B1 Offsite

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Subcatchment 47S: Watershed A1 Offsite

Runoff = 46.91 cfs @ 13.13 hrs, Volume= 10.567 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.34"

Area (ac)	CN	Adj	Description
3.430	98		Water Surface, HSG D
15.960	77		Woods, Good, HSG D
29.460	80		>75% Grass cover, Good, HSG D
3.760	98		Unconnected roofs, HSG D
52.610	82	81	Weighted Average, UI Adjusted
45.420			86.33% Pervious Area
7.190			13.67% Impervious Area
3.760			52.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Homestead at Scotts Farm - Preliminary

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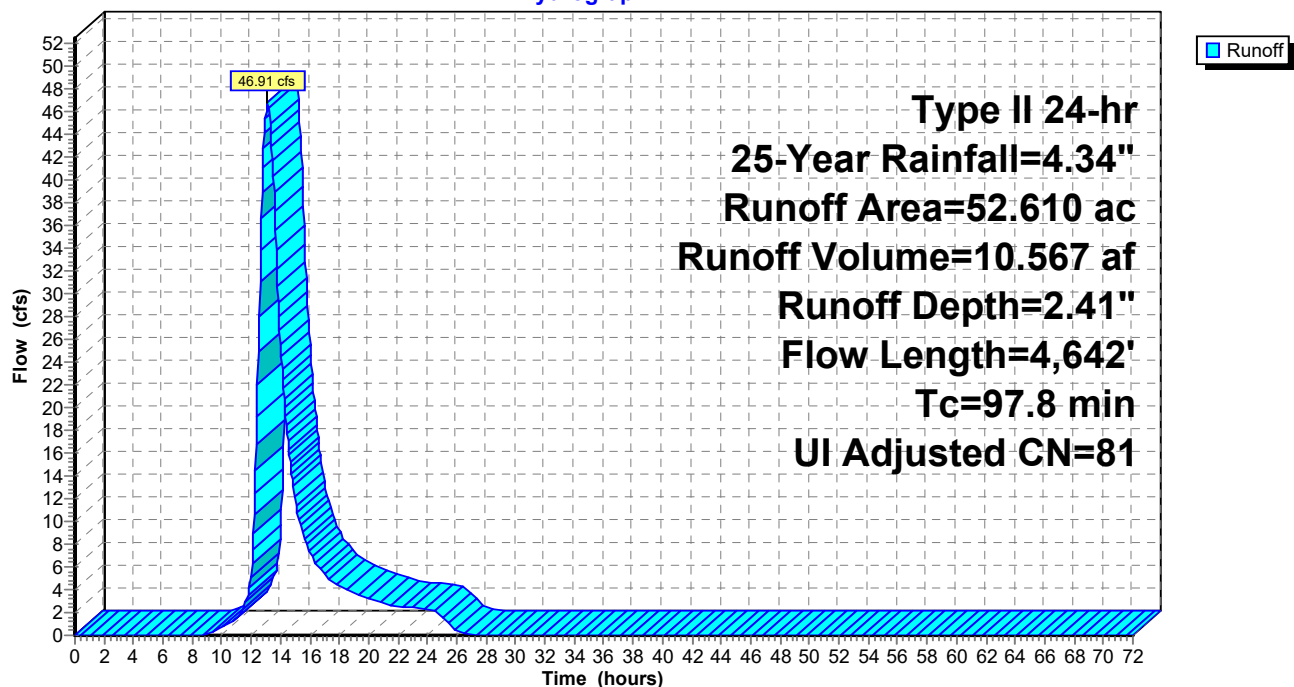
Type II 24-hr 25-Year Rainfall=4.34"

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Subcatchment 47S: Watershed A1 Offsite

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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Summary for Pond 36P: Basin A3

Inflow Area = 4.090 ac, 38.00% Impervious, Inflow Depth = 2.95" for 25-Year event
 Inflow = 14.03 cfs @ 12.10 hrs, Volume= 1.006 af
 Outflow = 10.28 cfs @ 12.22 hrs, Volume= 1.005 af, Atten= 27%, Lag= 7.3 min
 Primary = 7.59 cfs @ 12.22 hrs, Volume= 0.975 af
 Secondary = 2.68 cfs @ 12.22 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 989.14' @ 12.22 hrs Surf.Area= 6,466 sf Storage= 11,026 cf

Plug-Flow detention time= 88.4 min calculated for 1.004 af (100% of inflow)
 Center-of-Mass det. time= 89.7 min (904.2 - 814.5)

Volume	Invert	Avail.Storage	Storage Description
#1	987.00'	16,986 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
987.00	3,824	0	0
988.00	4,979	4,402	4,402
989.00	6,266	5,623	10,024
990.00	7,657	6,962	16,986

Device	Routing	Invert	Outlet Devices
#1	Primary	987.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 987.00' / 986.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	987.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	988.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.57 cfs @ 12.22 hrs HW=989.13' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 7.57 cfs @ 6.17 fps)
 ↑ **2=Orifice/Grate** (Passes < 0.59 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 9.06 cfs potential flow)
 ↑ **4=Orifice/Grate** (Passes < 0.64 cfs potential flow)

Secondary OutFlow Max=2.45 cfs @ 12.22 hrs HW=989.13' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Weir Controls 2.45 cfs @ 0.91 fps)

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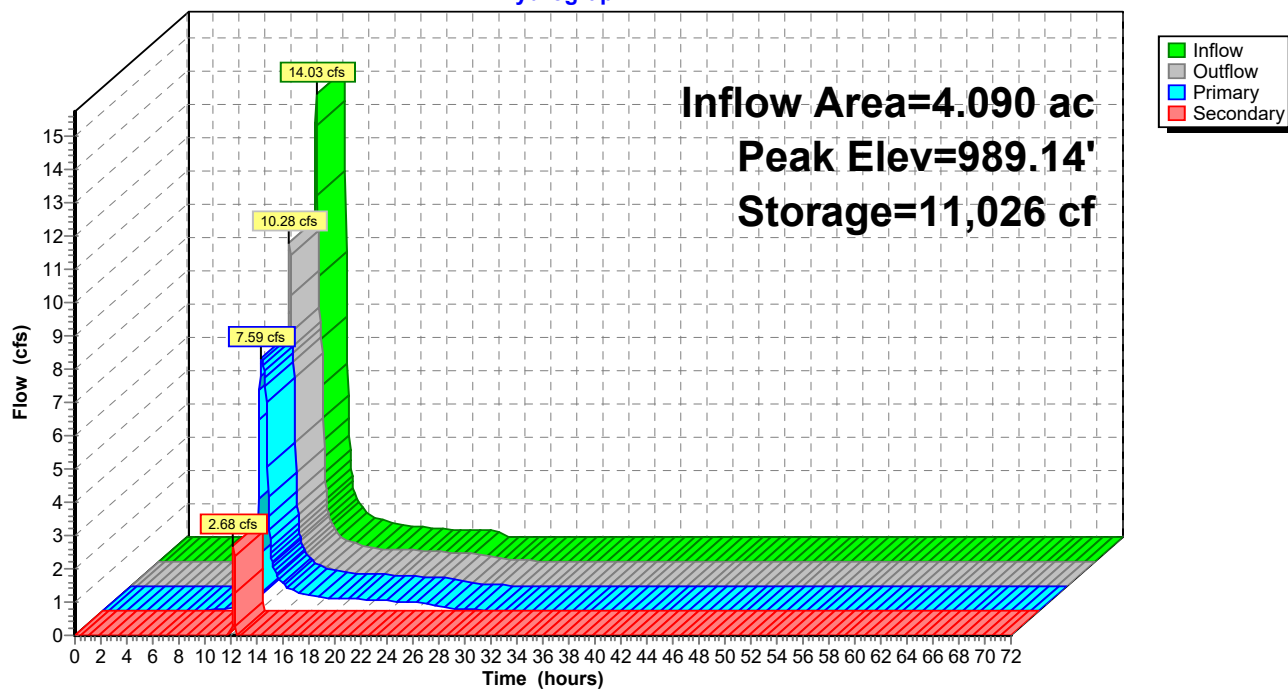
Type II 24-hr 25-Year Rainfall=4.34"

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Pond 36P: Basin A3

Hydrograph



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Type II 24-hr 25-Year Rainfall=4.34"

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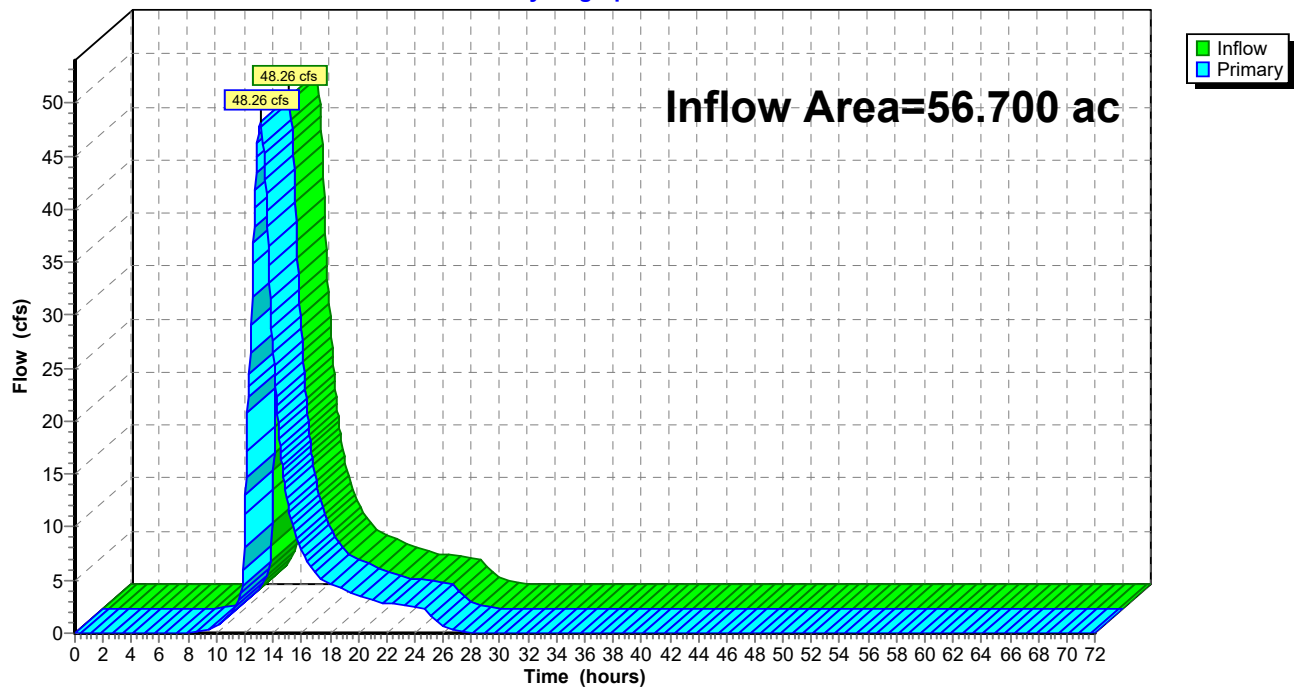
Summary for Link 29L: Total Release at Culvert 1

Inflow Area = 56.700 ac, 15.42% Impervious, Inflow Depth = 2.45" for 25-Year event
Inflow = 48.26 cfs @ 13.13 hrs, Volume= 11.572 af
Primary = 48.26 cfs @ 13.13 hrs, Volume= 11.572 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 29L: Total Release at Culvert 1

Hydrograph



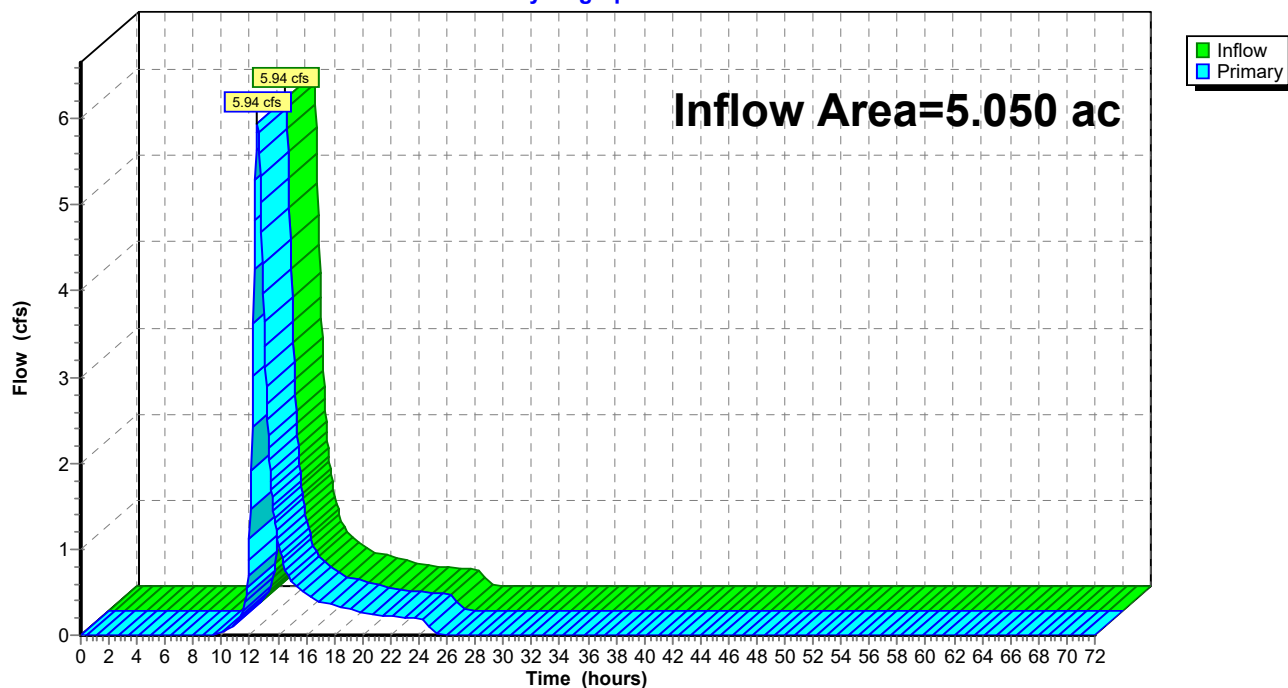
Summary for Link 30L: Total Release at Culvert 2

Inflow Area = 5.050 ac, 0.00% Impervious, Inflow Depth = 2.08" for 25-Year event
Inflow = 5.94 cfs @ 12.56 hrs, Volume= 0.876 af
Primary = 5.94 cfs @ 12.56 hrs, Volume= 0.876 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 30L: Total Release at Culvert 2

Hydrograph



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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 34S: Watershed A3 Proposed

[47] Hint: Peak is 247% of capacity of segment #2

Runoff = 18.90 cfs @ 12.10 hrs, Volume= 1.371 af, Depth= 4.02"

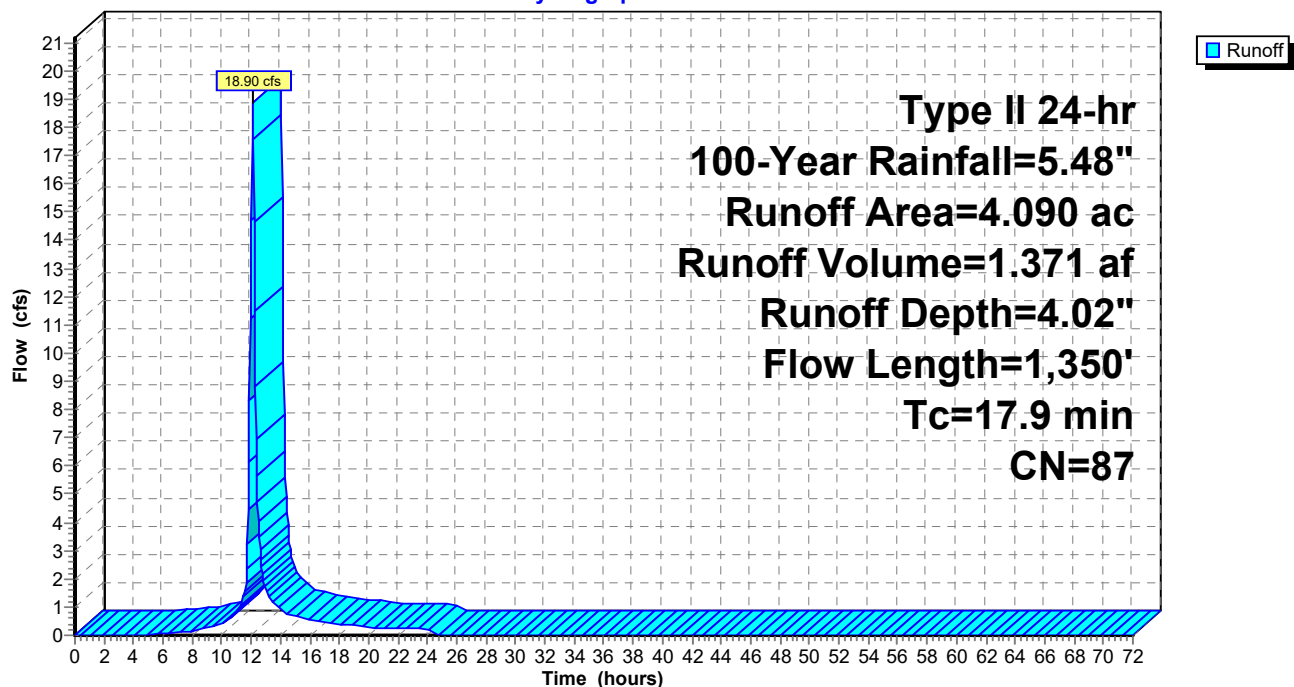
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
4.090	87	1/4 acre lots, 38% imp, HSG D
2.536		62.00% Pervious Area
1.554		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 2.50"
3.3	1,250	0.0120	6.25	7.67	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
17.9	1,350	Total			

Subcatchment 34S: Watershed A3 Proposed

Hydrograph



Homestead at Scotts Farm - Preliminary

Prepared by Kimley-Horn

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Type II 24-hr 100-Year Rainfall=5.48"

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Summary for Subcatchment 38S: Watershed B1 Offsite

Runoff = 8.76 cfs @ 12.55 hrs, Volume= 1.275 af, Depth= 3.03"

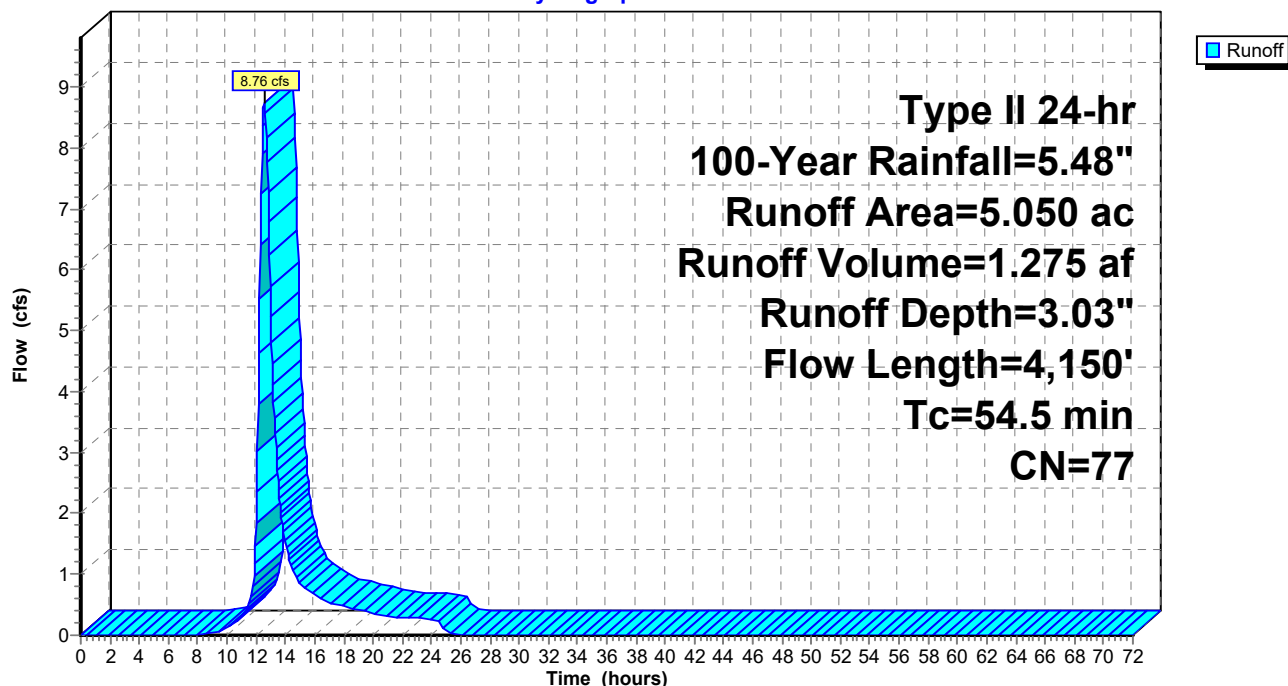
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Description
5.050	77	Woods, Good, HSG D
5.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.2608	0.19		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
11.4	518	0.0230	0.76		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
34.4	3,532	0.0130	1.71		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
54.5	4,150	Total			

Subcatchment 38S: Watershed B1 Offsite

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 100-Year Rainfall=5.48"

Prepared by Kimley-Horn

Printed 8/5/2021

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Summary for Subcatchment 47S: Watershed A1 Offsite

Runoff = 66.76 cfs @ 13.13 hrs, Volume= 14.964 af, Depth= 3.41"

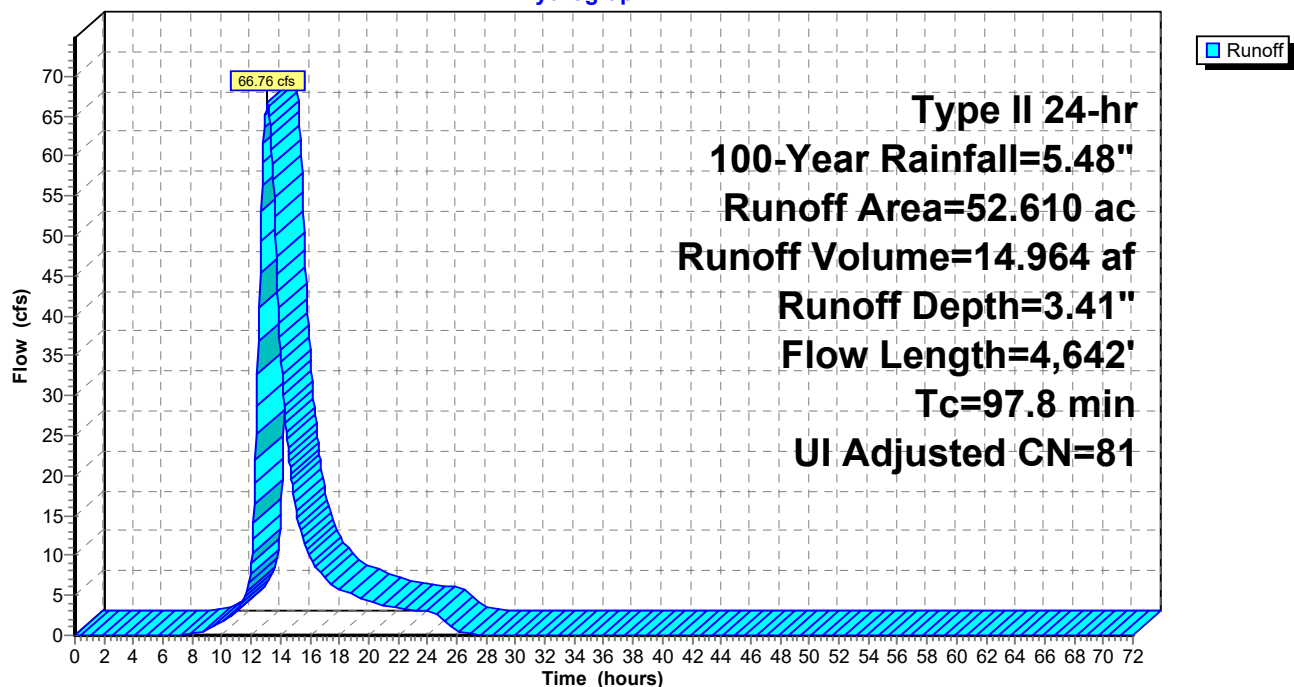
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.48"

Area (ac)	CN	Adj	Description
3.430	98		Water Surface, HSG D
15.960	77		Woods, Good, HSG D
29.460	80		>75% Grass cover, Good, HSG D
3.760	98		Unconnected roofs, HSG D
52.610	82	81	Weighted Average, UI Adjusted
45.420			86.33% Pervious Area
7.190			13.67% Impervious Area
3.760			52.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	100	0.0286	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50"
1.9	88	0.0243	0.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
10.8	676	0.0222	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.7	377	0.0210	0.72		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	692	0.0089	0.66		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
15.2	1,273	0.0780	1.40		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
22.6	1,436	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
97.8	4,642	Total			

Subcatchment 47S: Watershed A1 Offsite

Hydrograph



Homestead at Scotts Farm - Preliminary

Type II 24-hr 100-Year Rainfall=5.48"

Prepared by Kimley-Horn

Printed 8/5/2021

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Summary for Pond 36P: Basin A3

Inflow Area = 4.090 ac, 38.00% Impervious, Inflow Depth = 4.02" for 100-Year event
 Inflow = 18.90 cfs @ 12.10 hrs, Volume= 1.371 af
 Outflow = 17.10 cfs @ 12.17 hrs, Volume= 1.370 af, Atten= 10%, Lag= 4.2 min
 Primary = 7.94 cfs @ 12.17 hrs, Volume= 1.222 af
 Secondary = 9.17 cfs @ 12.17 hrs, Volume= 0.148 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 989.32' @ 12.17 hrs Surf.Area= 6,712 sf Storage= 12,256 cf

Plug-Flow detention time= 76.4 min calculated for 1.369 af (100% of inflow)
 Center-of-Mass det. time= 77.6 min (883.4 - 805.8)

Volume	Invert	Avail.Storage	Storage Description
#1	987.00'	16,986 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
987.00	3,824	0	0
988.00	4,979	4,402	4,402
989.00	6,266	5,623	10,024
990.00	7,657	6,962	16,986

Device	Routing	Invert	Outlet Devices
#1	Primary	987.00'	15.0" Round Culvert L= 100.0' Ke= 0.200 Inlet / Outlet Invert= 987.00' / 986.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	987.00'	4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	988.00'	18.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	989.00'	1.0" x 12.0" Horiz. Orifice/Grate X 6.00 C= 0.600 in 12.0" x 12.0" Grate (50% open area) Limited to weir flow at low heads
#5	Secondary	989.00'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.92 cfs @ 12.17 hrs HW=989.31' (Free Discharge)

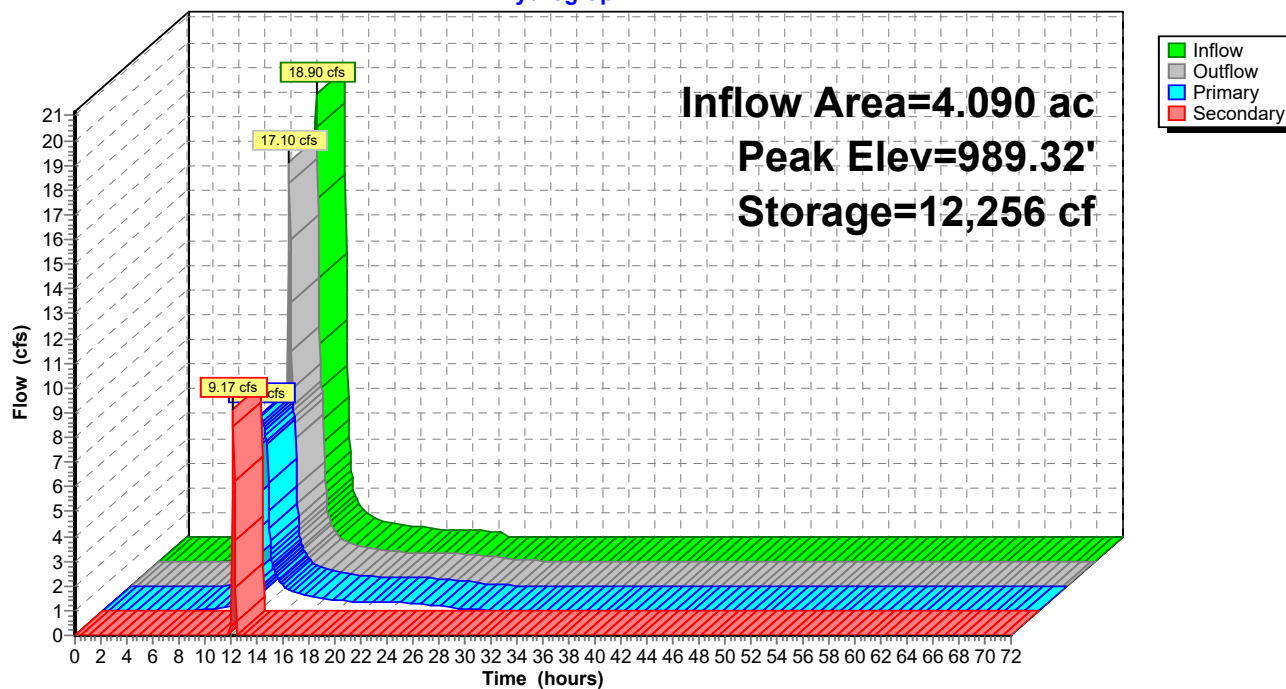
↑ **1=Culvert** (Barrel Controls 7.92 cfs @ 6.45 fps)
 ↑ **2=Orifice/Grate** (Passes < 0.62 cfs potential flow)
 ↑ **3=Orifice/Grate** (Passes < 9.74 cfs potential flow)
 ↑ **4=Orifice/Grate** (Passes < 1.34 cfs potential flow)

Secondary OutFlow Max=8.73 cfs @ 12.17 hrs HW=989.31' (Free Discharge)

↑ **5=Broad-Crested Rectangular Weir** (Weir Controls 8.73 cfs @ 1.41 fps)

Pond 36P: Basin A3

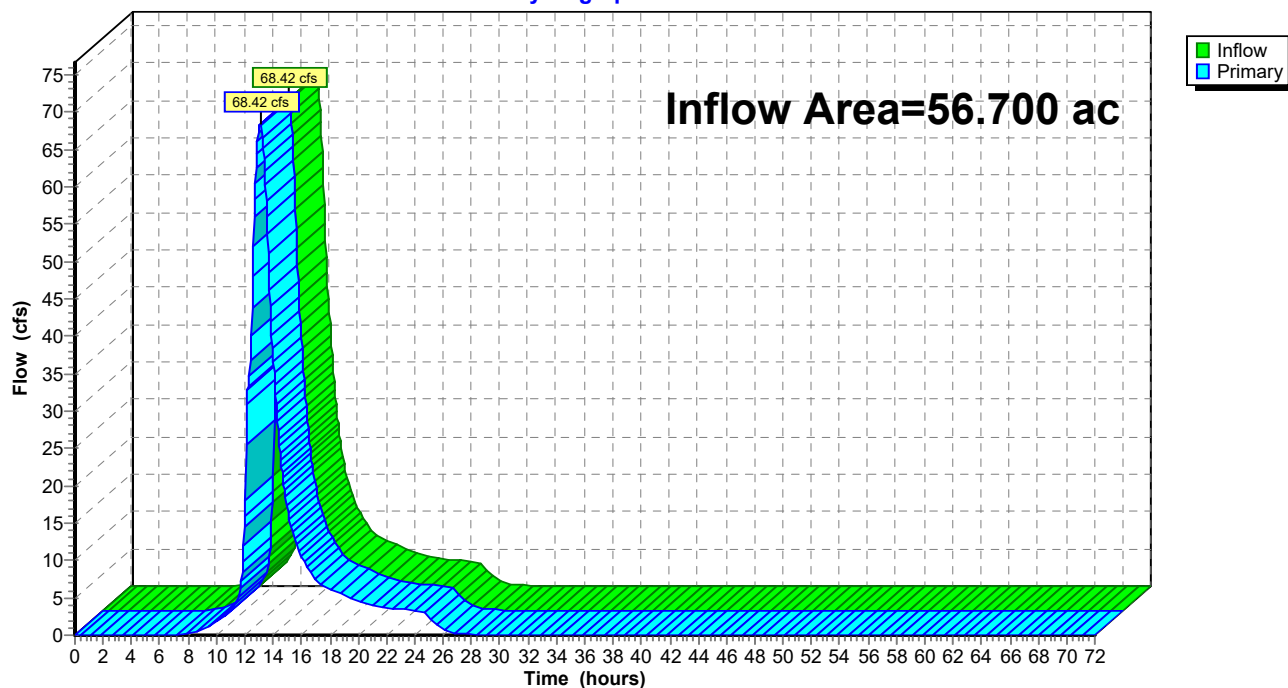
Hydrograph



Summary for Link 29L: Total Release at Culvert 1

Inflow Area = 56.700 ac, 15.42% Impervious, Inflow Depth = 3.46" for 100-Year event
Inflow = 68.42 cfs @ 13.11 hrs, Volume= 16.334 af
Primary = 68.42 cfs @ 13.11 hrs, Volume= 16.334 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 29L: Total Release at Culvert 1**Hydrograph**

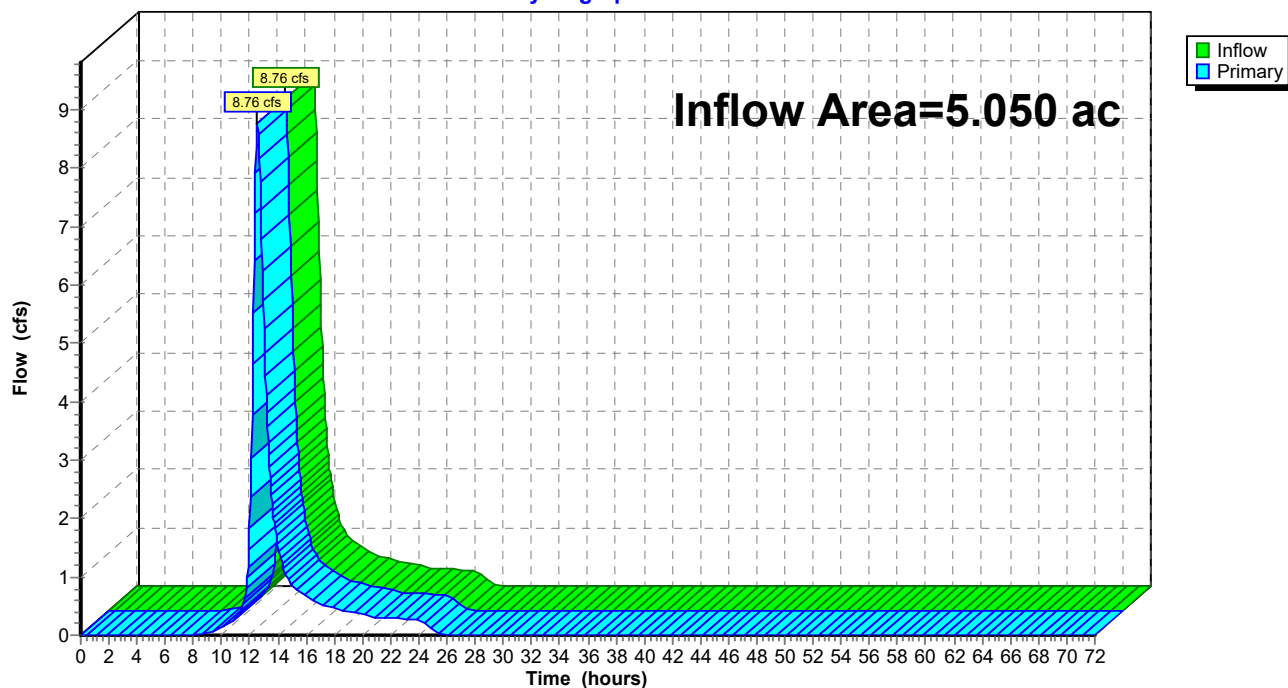
Summary for Link 30L: Total Release at Culvert 2

Inflow Area = 5.050 ac, 0.00% Impervious, Inflow Depth = 3.03" for 100-Year event
Inflow = 8.76 cfs @ 12.55 hrs, Volume= 1.275 af
Primary = 8.76 cfs @ 12.55 hrs, Volume= 1.275 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 30L: Total Release at Culvert 2

Hydrograph





UNIVERSAL CULVERT DESIGN

PID : 190013014 **Date :** 08/05/2021 **Project :** Homestead at Scotts Farm **Location :** Union County

Description : Culvert 1 Design

Designer : SMV

HEADWATER CONTROL CODES: INLET - Inlet Control.
 OUTLET - Outlet Control.
 OUTLET* - Outlet Control with backwater curve used to compute headwater. See Figure III - 7E in HDS 5 for type flow.
 OUTLET** - Outlet Control - See Figure III - 7D in HDS 5 for type flow.
 N/A - Flow is supercritical with low headwater and low tailwater. Control Section is at the inlet.

Inlet Invert Elevation (ft.) : 984.00 **Outlet Invert Elevation (ft.) :** 983.00 **Tailwater Elevation (ft.) :** 983.00 **Overflow Elevation (ft.) :** 990.00
Allowable Headwater Elevation (ft.) : 989.00 **or Diameter + 0 ft.** *(whichever is less)*
Pipe Length (ft.) : 230.00 **Culvert Slope (ft./ft.) :** 0.0043 **Design Manning 'n' :** 0.0120 **Buried Manning 'n' :** 0.0000
Design Discharge (cfs) : 57.19 **@ 25 yrs.** **Flood Discharge (cfs) :** 83.86 **@ 100 yrs.**

	FLOW (cfs.)	PIPE #	CULVERT SIZE	HWI (ft.)	HWO (ft.)	FLOW TYPE	VELOCITY (fps.)	DN (ft.)	DC (ft.)	MANNING N	HEADWATER CONTROL	OVER FLOW (cfs.)	DESIGN CODE	BURIAL DEPTH (ft.)
CULVERT TYPE : CIRCULAR SMOOTH				Entrance Type : Square Edge with Headwall						Entrance Loss (Ke) : 0.50				
	57.19	1	48 in.	987.40	N/A	1 - C	8.39	2.13	2.28	0.0120	INLET	0.00	D	0.00
	57.19	1	42 in.	987.76	N/A	1 - C	8.29	2.36	2.37	0.0120	INLET	0.00	D - 1	0.00
	57.19	1	36 in.	988.61	988.68	2 - F	9.25	3.00	2.45	0.0120	OUTLET**	0.00	D - 2	0.00
	57.19	1	54 in.	987.17	N/A	1 - C	8.38	2.00	2.19	0.0120	INLET	0.00	D + 1	0.00
	83.86	1	48 in.	988.46	N/A	1 - C	9.11	2.75	2.77	0.0120	INLET	0.00	F	0.00
	83.86	1	42 in.	989.36	989.30	2 - E	8.72	3.50	2.85	0.0120	INLET	0.00	F - 1	0.00
	67.96	1	36 in.	991.61	992.26	2 - F	10.35	3.00	2.63	0.0120	OUTLET**	15.90	F - 2	0.00
	83.86	1	54 in.	988.06	N/A	1 - C	9.22	2.50	2.68	0.0120	INLET	0.00	F + 1	0.00
CULVERT TYPE : CIRCULAR CORRUGATED				Entrance Type : Headwall						Entrance Loss (Ke) : 0.25				
Corrugated Metal Pipe (2 2/3 x 1/2 in. corrugations)														
	57.19	1	48 in.	987.37	987.76	1 - A	7.74	3.65	2.28	0.0235	OUTLET*	0.00	D	0.00



UNIVERSAL CULVERT DESIGN

FLOW (cfs.)	PIPE #	CULVERT SIZE	HWI (ft.)	HWO (ft.)	FLOW TYPE	VELOCITY (fps.)	DN (ft.)	DC (ft.)	MANNING N	HEADWATER CONTROL	OVER FLOW (cfs.)	DESIGN CODE	BURIAL DEPTH (ft.)
57.19	1	42 in.	987.71	989.08	2 - F	8.26	3.50	2.37	0.0237	OUTLET**	0.00	D - 1	0.00
45.19	1	36 in.	988.54	992.77	2 - F	8.18	3.00	2.19	0.0241	OUTLET**	12.00	D - 2	0.00
57.19	1	54 in.	987.15	987.45	1 - A	7.42	3.02	2.19	0.0233	OUTLET*	0.00	D + 1	0.00
83.86	1	48 in.	988.40	989.80	2 - F	9.02	4.00	2.77	0.0235	OUTLET**	0.00	F	0.00
64.46	1	42 in.	989.29	992.93	2 - F	8.71	3.50	2.52	0.0237	OUTLET**	19.40	F - 1	0.00
45.16	1	36 in.	991.40	1001.0	2 - F	8.17	3.00	2.19	0.0241	OUTLET**	38.70	F - 2	0.00
83.86	1	54 in.	988.02	988.45	1 - A	8.49	4.11	2.68	0.0233	OUTLET*	0.00	F + 1	0.00
Corrugated Metal Pipe (3 x 1 in. corrugations)													
57.19	1	54 in.	987.15	987.63	1 - A	7.42	3.42	2.19	0.0273	OUTLET*	0.00	D	0.00
57.19	1	48 in.	987.37	988.03	1 - A	7.74	3.65	2.28	0.0275	OUTLET*	0.00	D - 1	0.00
57.19	1	42 in.	987.71	990.00	2 - F	8.26	3.50	2.37	0.0278	OUTLET**	0.00	D - 2	0.00
57.19	1	60 in.	986.99	987.38	1 - A	7.20	3.07	2.12	0.0271	OUTLET*	0.00	D + 1	0.00
83.86	1	54 in.	988.02	988.96	1 - A	8.49	4.11	2.68	0.0273	OUTLET**	0.00	F	0.00
76.96	1	48 in.	988.40	990.74	2 - F	8.69	4.00	2.66	0.0275	OUTLET**	6.90	F - 1	0.00
57.16	1	42 in.	989.29	994.92	2 - F	8.25	3.50	2.37	0.0278	OUTLET**	26.70	F - 2	0.00
83.86	1	60 in.	987.77	988.29	1 - A	8.14	4.18	2.60	0.0271	OUTLET*	0.00	F + 1	0.00
Corrugated Metal Pipe (6 x 2 in. corrugations)													
57.19	1	60 in.	986.99	987.61	1 - A	7.20	3.54	2.12	0.0332	OUTLET*	0.00	D	0.00
57.19	1	66 in.	986.87	987.42	1 - A	7.02	3.25	2.06	0.0330	OUTLET*	0.00	D + 1	0.00
83.86	1	60 in.	987.77	988.64	1 - A	8.14	4.57	2.60	0.0332	OUTLET*	0.00	F	0.00
83.86	1	66 in.	987.58	988.30	1 - A	7.90	4.33	2.52	0.0330	OUTLET*	0.00	F + 1	0.00
Corrugated Metal Pipe (6 x 2 in. corrugations, Field Paved Invert)													
57.19	1	60 in.	986.99	987.35	1 - A	7.20	2.98	2.12	0.0260	OUTLET*	0.00	D	0.00
57.19	1	66 in.	986.87	987.20	1 - A	7.02	2.80	2.06	0.0260	OUTLET*	0.00	D + 1	0.00



UNIVERSAL CULVERT DESIGN

FLOW (cfs.)	PIPE #	CULVERT SIZE	HWI (ft.)	HWO (ft.)	FLOW TYPE	VELOCITY (fps.)	DN (ft.)	DC (ft.)	MANNING N	HEADWATER CONTROL	OVER FLOW (cfs.)	DESIGN CODE	BURIAL DEPTH (ft.)
83.86	1	60 in.	987.77	988.22	1 - A	8.14	4.00	2.60	0.0260	OUTLET*	0.00	F	0.00
83.86	1	66 in.	987.58	987.98	1 - A	7.90	3.58	2.52	0.0260	OUTLET*	0.00	F + 1	0.00



UNIVERSAL CULVERT DESIGN

PID : 190013014 **Date :** 08/05/2021 **Project :** Homestead at Scotts Farm **Location :** Union County
Description : Culvert 2 Design **Designer :** SMV

HEADWATER CONTROL CODES: INLET - Inlet Control.
 OUTLET - Outlet Control.
 OUTLET* - Outlet Control with backwater curve used to compute headwater. See Figure III - 7E in HDS 5 for type flow.
 OUTLET** - Outlet Control - See Figure III - 7D in HDS 5 for type flow.
 N/A - Flow is supercritical with low headwater and low tailwater. Control Section is at the inlet.

Inlet Invert Elevation (ft.) : 989.00 **Outlet Invert Elevation (ft.) :** 987.00 **Tailwater Elevation (ft.) :** 987.00 **Overflow Elevation (ft.) :** 994.10
Allowable Headwater Elevation (ft.) : 993.10 **or Diameter + 0 ft.** *(whichever is less)*
Pipe Length (ft.) : 100.00 **Culvert Slope (ft./ft.) :** 0.0200 **Design Manning 'n' :** 0.0120 **Buried Manning 'n' :** 0.0000
Design Discharge (cfs) : 5.94 **@ 25 yrs.** **Flood Discharge (cfs) :** 8.76 **@ 100 yrs.**

	FLOW (cfs.)	PIPE #	CULVERT SIZE	HWI (ft.)	HWO (ft.)	FLOW TYPE	VELOCITY (fps.)	DN (ft.)	DC (ft.)	MANNING N	HEADWATER CONTROL	OVER FLOW (cfs.)	DESIGN CODE	BURIAL DEPTH (ft.)
CULVERT TYPE : CIRCULAR SMOOTH				Entrance Type : Square Edge with Headwall						Entrance Loss (Ke) : 0.50				
	5.94	1	18 in.	990.44	N/A	1 - C	8.42	0.63	0.94	0.0120	INLET	0.00	D	0.00
	5.94	1	15 in.	990.76	989.38	2 - E	8.44	0.70	0.99	0.0120	INLET	0.00	D - 1	0.00
	5.94	1	12 in.	991.94	991.66	2 - E	7.56	1.00	0.95	0.0120	INLET	0.00	D - 2	0.00
	5.94	1	21 in.	990.29	N/A	1 - C	8.32	0.59	0.90	0.0120	INLET	0.00	D + 1	0.00
	8.76	1	18 in.	990.97	989.48	2 - E	9.30	0.79	1.15	0.0120	INLET	0.00	F	0.00
	8.76	1	15 in.	991.85	990.94	2 - E	9.10	0.91	1.15	0.0120	INLET	0.00	F - 1	0.00
	7.56	1	12 in.	994.61	996.01	2 - F	9.67	1.00	0.98	0.0120	OUTLET**	1.20	F - 2	0.00
	8.76	1	21 in.	990.68	N/A	1 - C	9.27	0.73	1.10	0.0120	INLET	0.00	F + 1	0.00
CULVERT TYPE : CIRCULAR CORRUGATED				Entrance Type : Headwall						Entrance Loss (Ke) : 0.25				
Corrugated Metal Pipe (2 2/3 x 1/2 in. corrugations)														
	5.94	1	18 in.	990.42	990.43	1 - A	5.09	0.98	0.94	0.0249	OUTLET*	0.00	D	0.00



UNIVERSAL CULVERT DESIGN

FLOW (cfs.)	PIPE #	CULVERT SIZE	HWI (ft.)	HWO (ft.)	FLOW TYPE	VELOCITY (fps.)	DN (ft.)	DC (ft.)	MANNING N	HEADWATER CONTROL	OVER FLOW (cfs.)	DESIGN CODE	BURIAL DEPTH (ft.)
5.94	1	15 in.	990.74	991.68	2 - F	5.72	1.25	0.99	0.0250	OUTLET**	0.00	D - 1	0.00
4.34	1	12 in.	991.85	999.39	2 - F	5.96	1.00	0.87	0.0251	OUTLET**	1.60	D - 2	0.00
5.94	1	21 in.	990.29	N/A	1 - C	4.90	0.88	0.90	0.0248	INLET	0.00	D + 1	0.00
8.76	1	18 in.	990.95	991.34	2 - F	6.05	1.50	1.15	0.0249	OUTLET**	0.00	F	0.00
7.56	1	15 in.	991.78	995.95	2 - F	6.64	1.25	1.09	0.0250	OUTLET**	1.20	F - 1	0.00
4.36	1	12 in.	994.39	1012.8	2 - F	5.98	1.00	0.88	0.0251	OUTLET**	4.40	F - 2	0.00
8.76	1	21 in.	990.66	990.68	1 - A	5.50	1.13	1.10	0.0248	OUTLET*	0.00	F + 1	0.00
Corrugated Metal Pipe (3 x 1 in. corrugations)													
5.94	1	36 in.	990.01	N/A	1 - C	4.32	0.75	0.77	0.0281	INLET	0.00	D	0.00
5.94	1	42 in.	989.96	N/A	1 - C	4.28	0.71	0.73	0.0278	INLET	0.00	D + 1	0.00
8.76	1	36 in.	990.25	N/A	1 - C	4.82	0.91	0.93	0.0281	INLET	0.00	F	0.00
8.76	1	42 in.	990.18	N/A	1 - C	4.80	0.86	0.89	0.0278	INLET	0.00	F + 1	0.00
Corrugated Metal Pipe (6 x 2 in. corrugations)													
5.94	1	60 in.	989.84	989.94	1 - A	3.83	0.69	0.66	0.0332	OUTLET*	0.00	D	0.00
5.94	1	66 in.	989.82	989.92	1 - A	3.78	0.67	0.65	0.0330	OUTLET*	0.00	D + 1	0.00
8.76	1	60 in.	990.04	990.15	1 - A	4.24	0.84	0.81	0.0332	OUTLET*	0.00	F	0.00
8.76	1	66 in.	990.01	990.12	1 - A	4.18	0.81	0.79	0.0330	OUTLET*	0.00	F + 1	0.00
Corrugated Metal Pipe (6 x 2 in. corrugations, Field Paved Invert)													
5.94	1	60 in.	989.84	N/A	1 - C	4.28	0.62	0.66	0.0260	INLET	0.00	D	0.00
5.94	1	66 in.	989.82	N/A	1 - C	3.78	0.60	0.65	0.0260	INLET	0.00	D + 1	0.00
8.76	1	60 in.	990.04	N/A	1 - C	4.82	0.74	0.81	0.0260	INLET	0.00	F	0.00
8.76	1	66 in.	990.01	N/A	1 - C	4.18	0.72	0.79	0.0260	INLET	0.00	F + 1	0.00

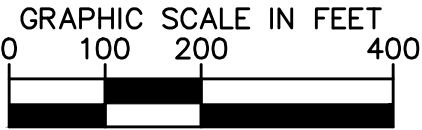
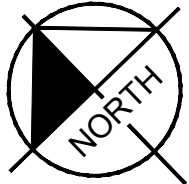
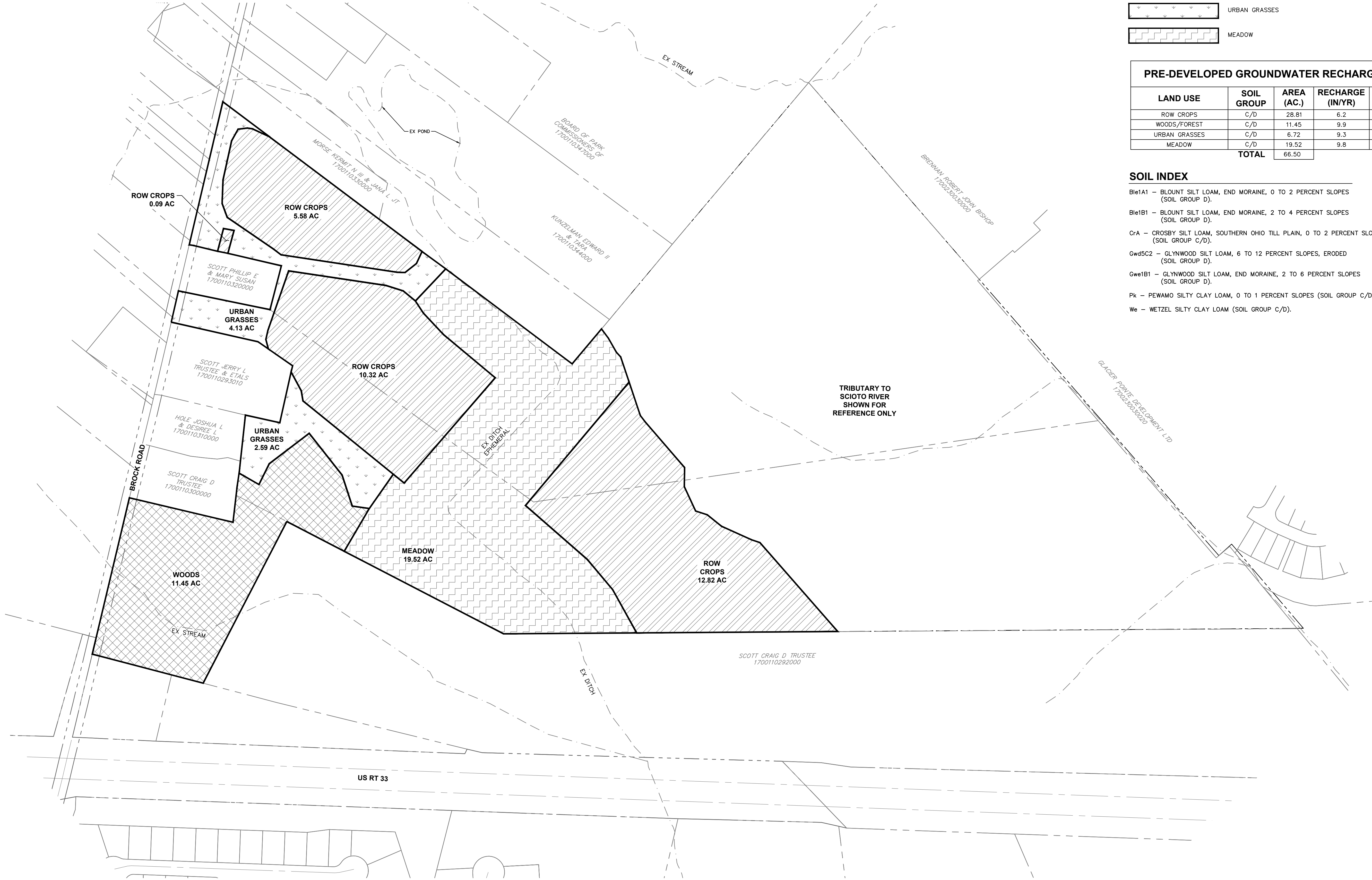


Exhibit 7 – Groundwater Recharge Calculations



Drawing name: K:\CIB_LDEV\190013014_Pulte_Scott_Property_Union County_OH_V2 Design\CAD\Exhibits\Pre-Developed Groundwater Recharge.dwg Layout1 Aug 05, 2021 2:38pm by Sarah Vecchione

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LEGEND

	ROW CROPS
	FOREST
	URBAN GRASSES
	MEADOW

PRE-DEVELOPED GROUNDWATER RECHARGE SUMMARY TABLE 2

LAND USE	SOIL GROUP	AREA (AC.)	RECHARGE (IN/YR)	CONVERSION	VOLUME (AC-FT/YR)
ROW CROPS	C/D	28.81	6.2	0.52	14.89
WOODS/FOREST	C/D	11.45	9.9	0.83	9.45
URBAN GRASSES	C/D	6.72	9.3	0.78	5.21
MEADOW	C/D	19.52	9.8	0.82	15.94
TOTAL		66.50			45.48

SOIL INDEX

Ble1A1 – BLOUNT SILT LOAM, END MORaine, 0 TO 2 PERCENT SLOPES (SOIL GROUP D).

Ble1B1 – BLOUNT SILT LOAM, END MORaine, 2 TO 4 PERCENT SLOPES (SOIL GROUP D).

CrA – CROSBY SILT LOAM, SOUTHERN OHIO TILL PLAIN, 0 TO 2 PERCENT SLOPES (SOIL GROUP C/D).

Gwd5C2 – GLYNWOOD SILT LOAM, 6 TO 12 PERCENT SLOPES, ERODED (SOIL GROUP D).

Gwe1B1 – GLYNWOOD SILT LOAM, END MORaine, 2 TO 6 PERCENT SLOPES (SOIL GROUP D).

Pk – PEWAMO SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPES (SOIL GROUP C/D).

We – WETZEL SILTY CLAY LOAM (SOIL GROUP C/D).

ORIGINAL ISSUE:
05/25/2021
KHA PROJECT NO.
190013014
SHEET NUMBER

HOMESTEAD AT
SCOTT'S FARM
JEROME TOWNSHIP
UNION COUNTY, OHIO

PRE-DEVELOPED
GROUNDWATER RECHARGE

SCALE:
AS NOTED
DESIGNED BY: SMV
DRAWN BY: NSM
CHECKED BY: KDK

Kimley»Horn
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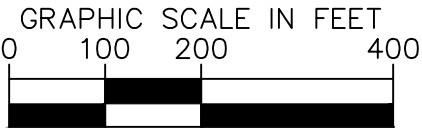
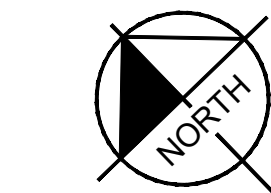
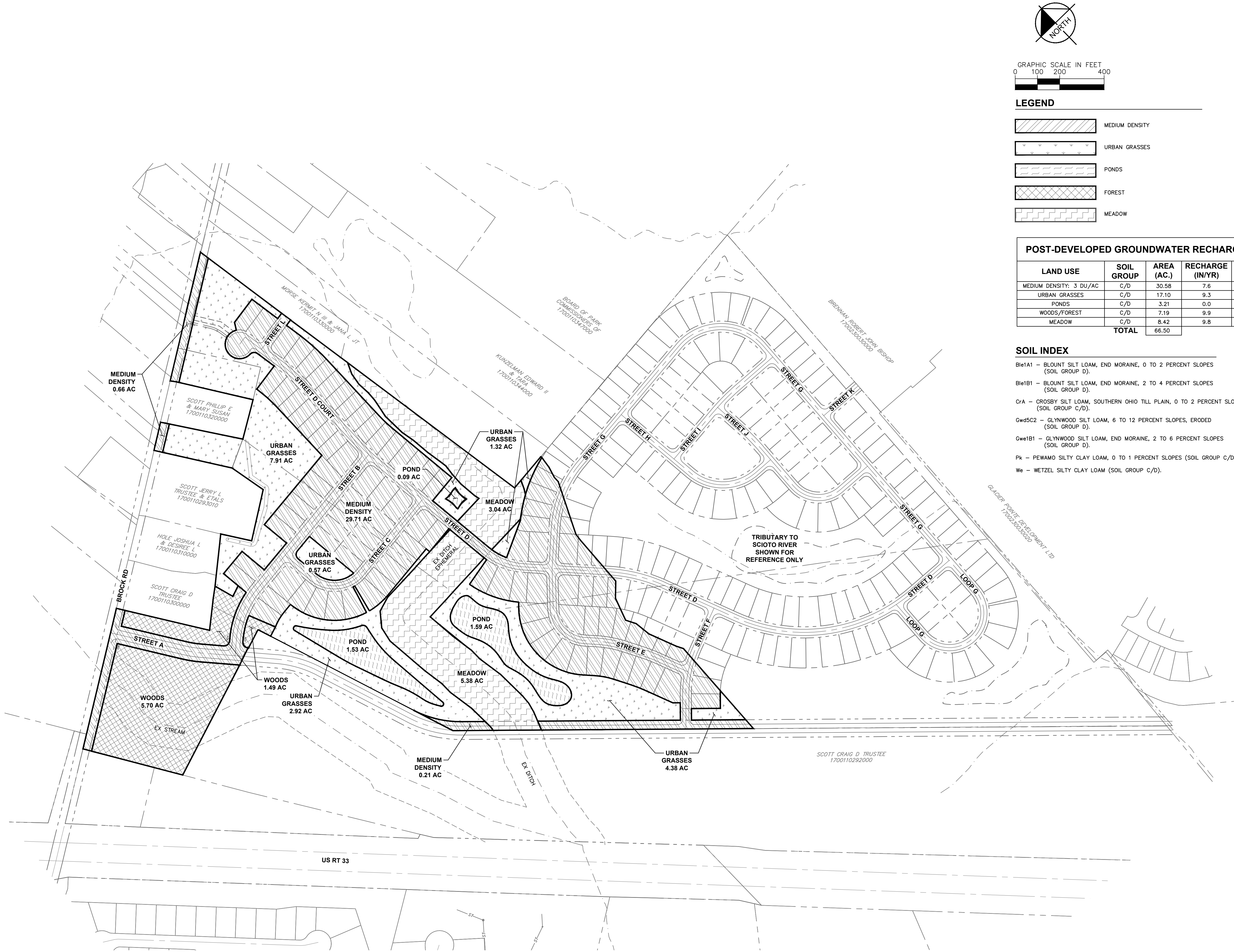
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DATE BY

EX 7A

Drawing name: K:\CLB_LDEV\190013014_Pulte_Scott_Property_Union County_OH_V2_Design\CAD\Exhibits\Post-Developed Groundwater Recharge.dwg Layout1 Aug 05, 2021 2:39pm by: Sarah.Wedmore
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LEGEND

	MEDIUM DENSITY
	URBAN GRASSES
	PONDS
	FOREST
	MEADOW

POST-DEVELOPED GROUNDWATER RECHARGE SUMMARY TABLE 2

LAND USE	SOIL GROUP	AREA (AC.)	RECHARGE (IN/YR)	CONVERSION	VOLUME (AC-FT/YR)
MEDIUM DENSITY: 3 DU/AC	C/D	30.58	7.6	0.63	19.37
URBAN GRASSES	C/D	17.10	9.3	0.78	13.25
PONDS	C/D	3.21	0.0	0.00	0.00
WOODS/FOREST	C/D	7.19	9.9	0.83	5.93
MEADOW	C/D	8.42	9.8	0.82	6.88
TOTAL		66.50			45.43

SOIL INDEX

- Ble1A1 – BLOUNT SILT LOAM, END MORaine, 0 TO 2 PERCENT SLOPES (SOIL GROUP D).
- Ble1B1 – BLOUNT SILT LOAM, END MORaine, 2 TO 4 PERCENT SLOPES (SOIL GROUP D).
- CrA – CROSBY SILT LOAM, SOUTHERN OHIO TILL PLAIN, 0 TO 2 PERCENT SLOPES (SOIL GROUP C/D).
- GwdSC2 – GLYNWOOD SILT LOAM, 6 TO 12 PERCENT SLOPES, ERODED (SOIL GROUP D).
- Gwe1B1 – GLYNWOOD SILT LOAM, END MORaine, 2 TO 6 PERCENT SLOPES (SOIL GROUP D).
- Pk – PEWAMO SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPES (SOIL GROUP C/D).
- We – WETZEL SILTY CLAY LOAM (SOIL GROUP C/D).

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AS NOTED

DESIGNED BY: SNV

DRAWN BY: NSM

CHECKED BY: KDK

HOMESTEAD AT
SCOTTS FARM

JEROME TOWNSHIP
UNION COUNTY, OHIO

ORIGINAL ISSUE:
05/25/2021

KHA PROJECT NO.
190013014

SHEET NUMBER

POST-DEVELOPED
GROUNDWATER RECHARGE

EX 7B

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