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March 27, 2019

Mr. David Buechl
Department of Public Works
City of Waukesha
130 Delafield Street
Waukesha, Wisconsin 53188

SUBJECT: ProHealth Care Waukesha Memorial Hospital
Stormwater Management Update

Dear David:

This letter is written on behalf of ProHealth Care and summarizes the final site plan conditions for both the American Avenue Parking Lot Reconstruction project and anticipated future conditions for the Fairview Avenue project located on the Waukesha Memorial Hospital campus at the address 725 American Avenue, in the City of Waukesha, Wisconsin. This letter also documents the stormwater related impacts as a result of the two projects and shows that the proposed developments will maintain compliance with the City of Waukesha and the Wisconsin Department of Natural Resources (WDNR) requirements for stormwater.

BACKGROUND

A previous Stormwater Mater Plan Report was prepared for the Hospital in November 2017 by GRAEF to document baseline conditions, identify current and future projects, and determine potential stormwater practices to meet the City of Waukesha and the WDNR stormwater management requirements. The stormwater regulations require that the post development peak stormwater discharge rates not exceed the existing conditions peak discharge rates for the 1, 2, 10, and 100-year, 24-hour design storms. Additionally, best management practices (BMPs) are required to reduce the total suspended solids (TSS) from parking areas and roads by 40 percent based on an average annual rainfall, compared to no runoff management controls.

BASELINE CONDITIONS

Baseline Conditions was determined in the previous Stormwater Master Plan Report as site conditions present in the year 2015. Sheet SW1 shows details of the 2015 Baseline Conditions, including land cover, grading, and drainage subarea boundaries for the campus. The following Table 1 presents the results of the hydrologic analysis for 2015 Baseline Conditions. Note that only recent developments (year 2015 to present), and proposed and potential future development areas presented in this letter report are included in this analysis. The remaining areas of the campus are densely developed and include several buildings that make up Waukesha Memorial Hospital and an existing parking structure that serves the Hospital. No future projects are anticipated in these areas at this time.

TABLE 1
2015 Baseline Conditions

Subarea or Junction	Description	Area	Impervious Area (ac)	Time of Cons.	Peak Flow Rate (cfs)			
					1-year	2-year	10-year	100-year
10S	Subarea	8.78 ac	7.03 ac	6 min	24.99	30.27	47.30	67.99
19S	Subarea	3.19 ac	1.43 ac	18 min	4.54	5.82	10.09	15.40
20S	Subarea	0.64 ac	0.44 ac	6 min	1.68	2.06	3.32	4.84
21S	Subarea	0.75 ac	0.61 ac	6 min	2.22	2.66	4.11	5.86
20L	**Total Baseline Runoff**	**13.36 acres**	**9.51 acres**	**-**	**31.62**	**38.59**	**61.21**	**88.83**

PROPOSED AND FUTURE CONDITIONS

The proposed American Avenue Parking Lot Reconstruction project impacts the existing parking lot area located north of the main hospital entrance. This project will disturb approximately 3.6 acres of land and will result in a net decrease in impervious surface area by approximately 0.03 acres. Stormwater from the parking lot reconstruction project will be collected via on-site storm inlets and directed to the existing underground detention system that was previously installed as part of the Heart and Vascular Building Expansion project constructed in 2018. Details of the proposed Parking Lot Reconstruction project are shown on Sheet SW2.

The future Fairview Avenue project includes a number of residential parcels in the neighborhood located north of Lawndale Avenue as well as the section of Fairview Avenue between Lawndale Avenue and Madison Street. The plan is to construct a new boulevard entrance to the hospital campus and provide additional overflow parking within the next 5 years. The proposed project will disturb approximately 3.2 acres of land and will result in a net decrease impervious surface area by approximately 0.51 acres. Refer to Sheet SW2 for details of the future Fairview Avenue project.

The following Table 2 presents the results of the hydrologic analysis for Proposed and Future Conditions.

TABLE 2
Proposed and Future Conditions

Subarea or Junction	Description	Area	Impervious Area (ac)	Time of Cons.	Peak Flow Rate (cfs)			
					1-year	2-year	10-year	100-year
10S	American Ave Parking Lot Reconstruction	5.47 ac	4.72 ac	6 min	16.71	19.96	30.40	43.13
15	Underground Detention System	-	-	-	11.20	16.45	28.10	33.90
16S	Heart & Vascular Development	2.81 ac	2.15 ac	6 min	8.00	9.69	15.14	21.76
17S	Heart & Vascular Building Expansion	0.23 ac	0.23 acres	6 min	0.74	0.87	1.31	1.84
18S	Access Drive	0.28 ac	0.15 acres	6 min	0.67	0.84	1.39	2.06
19S	Future Fairview Avenue Project	3.19 ac	0.92 ac	18 min	3.80	5.02	9.19	14.50
20S	Access Drive	0.63 ac	0.43 ac	6 min	1.65	2.03	3.26	4.76
21S	Central Utility Plant	0.75 ac	0.70 ac	6 min	2.36	2.80	4.22	5.95
20L	**Total Proposed Runoff**	**13.36 ac**	**9.30 ac**	**-**	**24.69**	**34.62**	**58.82**	**79.05**

DETENTION SYSTEM SUMMARY

The existing underground detention system was installed as part of the Heart and Vascular Building Expansion project that was constructed in 2018. The underground detention system was designed to manage stormwater runoff from both the Heart and Vascular development as well as the proposed American Avenue Parking Lot Reconstruction project presented in this letter report. A summary of the underground detention system's performance is included in Table 3 below.

TABLE 3
Detention System Routing Analysis Summary

	Normal Water Level	Overflow Elevation	1-Year Storm	2-Year Storm	10-Year Storm	100-Year Storm
Underground Detention System (15)	128.80	134.80	-	-	-	-
Peak Inflow	-	-	16.71 cfs	19.96 cfs	30.40 cfs	43.13 cfs
Peak Outflow	-	-	11.20 cfs	16.45 cfs	28.10 cfs	33.90 cfs
Max Water Surface Elevation	-	-	133.01	133.27	133.77	134.65
Maximum Storage Volume	-	0.48 ac-ft	0.34 ac-ft	0.36 ac-ft	0.40 ac-ft	0.47 ac-ft

PEAK DISCHARGE COMPARISON

The existing underground detention system in conjunction with the anticipated decrease in impervious area within future Fairview Avenue project site will reduce the proposed runoff rates to less than the 2015 Baseline Conditions for the 1, 2, 10, and 100-year, 24-hour storm events. This is in accordance with the City of Waukesha's stormwater management requirements. Table 4 compares the results of the analysis from a peak discharge standpoint.

TABLE 4
Comparison of Peak Discharge Rates

Junction	Description	1-year (cfs)		2-year (cfs)		10-year (cfs)		100-year (cfs)	
		2015 Baseline	Proposed/ Future	2015 Baseline	Proposed /Future	2015 Baseline	Proposed/ Future	2015 Baseline	Proposed/ Future
20L	Total Runoff	31.62	24.69	38.59	34.62	61.21	58.82	88.83	79.05

STORMWATER QUALITY

Stormwater quality was analyzed using WinSLAMM Version 10.4.0 software, developed by Robert Pitt and John Voorhees. The City Ordinance requires BMPs to be designed to control total suspended solids (TSS) carried by runoff from redevelopment sites by 40 percent based on an average annual rainfall, compared to no runoff management controls. The total TSS loading generated from parking lots, drives and roads as a result of the Central Utility Plant project, the Heart and Vascular development, and the proposed and future projects presented in this letter report is approximately 5075 lbs. Applying the 40 percent reduction criteria to this loading requires a minimum of 2030 lbs to be removed from the site.

Stormwater treatment practices for the campus include the existing underground detention system and three (3) existing sumped catch basins (installed as part of the Heart and Vascular development), as well as seven (7) proposed sumped catch basins to be installed as part of the future Fairview Avenue project. Based on the results of the WinSLAMM analysis, approximately 2195 lbs will be removed from the site, which exceeds the minimum loading requirement identified above. Refer to detailed WinSLAMM computations provided.

CONCLUSIONS

The proposed development will continue to maintain compliance with the City of Waukesha and the WDNR requirements for stormwater. Based on this, no additional stormwater management practices will be required to control stormwater runoff from the proposed American Avenue Parking Lot Reconstruction project and the future Fairview Avenue project. We request, on behalf of ProHealth Care, your approval of this stormwater management letter to allow for construction of the proposed developments. Should you have any questions, please feel free to contact me at (414) 266-9235.

Sincerely,

Jayme Sisel, P.E.
Project Engineer

Sheet SW1
Sheet SW2
2015 Baseline Conditions Hydrological Analysis
Proposed Conditions Hydrological Analysis
WinSLAMM Computations

LEGEND

- SUBAREA BOUNDARY
- SUBAREA BOUNDARY NOT IMPACTED
- REVISED DRAINAGE DIVIDE
- PERVIOUS

0 25' 50' 100'
SCALE: 1" = 50'

SUBAREA 19S

SUBAREA 10S

SUBAREA 20S

SUBAREA 21S

REVISED DRAINAGE DIVIDE

EXISTING UNDERGROUND DETENTION SYSTEM

LAWNDALE AVE.

FAIRVIEW AVENUE

FAIRMONT AVENUE

CALDWELL STREET

FOURTH STREET

WASHINGTON AVENUE

MOUNTAIN AVENUE

DOPP STREET

AMERICAN AVE.

NOTICE:
In accordance with Wisconsin statute 182.0175, damage to transmission facilities, excavator shall be solely responsible to provide advance notice to the designated "ONE CALL SYSTEM" not less than three working days prior to commencement of any excavation required to perform work contained on this drawing, and further, excavator shall comply with all other requirements of this statute relative to excavator's work.

DISCLAIMER:
The underground utilities shown have been located from field survey information and existing drawings. GRAEF makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. GRAEF further does not warrant that the underground utilities shown are in the exact location indicated. GRAEF has not physically located the underground utilities.

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CLIENT:

PROJECT TITLE:
WAUKESHA MEMORIAL HOSPITAL
PARKING LOT RECONSTRUCTION

725 AMERICAN AVE,
WAUKESHA, WI, 53188

ISSUE:

NO.	DATE	REVISIONS	BY

PROJECT STATUS

PROJECT INFORMATION:

PROJECT NUMBER:	2019-0001.00
DATE:	02/27/2019
DRAWN BY:	MMS
CHECKED BY:	KSB
APPROVED BY:	SJF
SCALE:	AS SHOWN

SHEET TITLE:
2015 BASELINE CONDITIONS PLAN

SHEET NUMBER:
SW1

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LEGEND
- SUBAREA BOUNDARY
- SUBAREA BOUNDARY NOT IMPACTED
- REVISED DRAINAGE DIVIDE
- PERVIOUS

0 25' 50' 100'
SCALE: 1" = 50'

FUTURE FAIRVIEW AVENUE (REQUIRES 4 SUMPED CATCH BASINS FOR TREATMENT)

SUBAREA 19S

FUTURE PARKING LOT (REQUIRES 3 SUMPED CATCH BASINS FOR TREATMENT)

PROPOSED PARKING LOT

PROP. FAIRVIEW AVE.

FAIRMONT AVENUE

CALDWELL STREET

FOURTH STREET

LAWNDALE AVE.

SUBAREA 18S

SUBAREA 10S

WASHINGTON AVENUE

EXISTING UNDERGROUND DETENTION SYSTEM 15

SUBAREA 16S
HEART AND VASCULAR BUILDING

SUBAREA 17S

EXISTING SUMPED CATCH BASINS

SUBAREA 20S

MOUNTAIN AVENUE

PROPOSED PARKING LOT RECONFIGURATION

REVISED DRAINAGE DIVIDE

EXISTING UNDERGROUND DETENTION SYSTEM

CENTRAL UTILITY PLANT

SUBAREA 21S

DOPP STREET

NOTICE:
In accordance with Wisconsin statute 182.0175, damage to transmission facilities, excavator shall be solely responsible to provide advance notice to the designated "ONE CALL SYSTEM" not less than three working days prior to commencement of any excavation required to perform work contained on this drawing, and further, excavator shall comply with all other requirements of this statute relative to excavator's work.

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725 AMERICAN AVE,
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NO. DATE REVISIONS BY

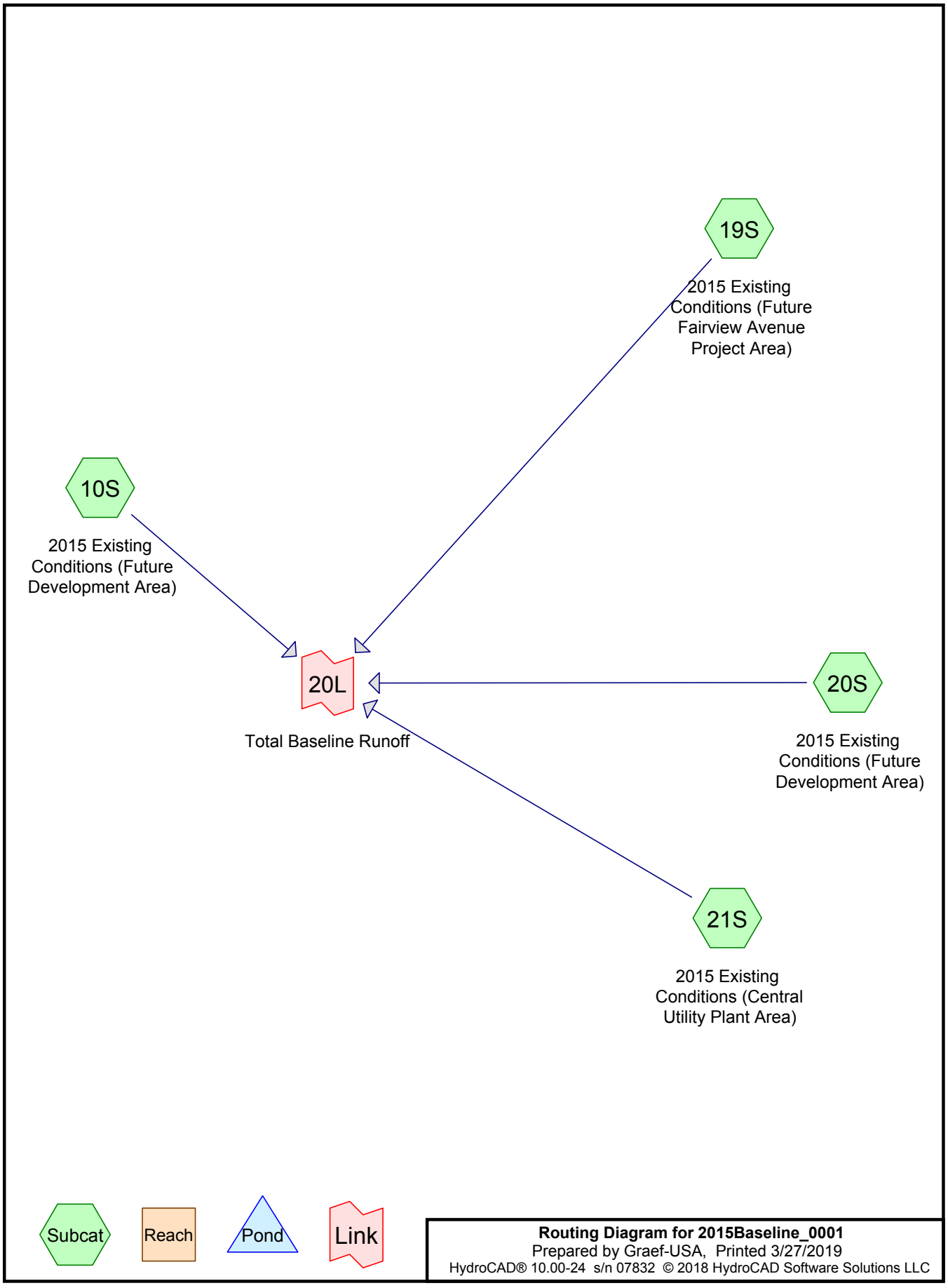
PROJECT STATUS

PROJECT INFORMATION:

PROJECT NUMBER:	2019-0001.00
DATE:	02/27/2019
DRAWN BY:	MMS
CHECKED BY:	KSB
APPROVED BY:	SJF
SCALE:	AS SHOWN

SHEET TITLE:
PROPOSED CONDITIONS PLAN

SHEET NUMBER:
SW2



Routing Diagram for 2015Baseline_0001
Prepared by Graef-USA, Printed 3/27/2019

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.510	98	impervious (10S, 19S, 20S, 21S)
3.850	80	pervious (10S, 19S, 20S, 21S)
13.360	**93**	**TOTAL AREA**

Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10S: 2015 Existing Runoff Area=8.780 ac 80.07% Impervious Runoff Depth>1.57"
Tc=6.0 min CN=94 Runoff=24.99 cfs 1.150 af

Subcatchment19S: 2015 Existing Runoff Area=3.190 ac 44.83% Impervious Runoff Depth>1.11"
Flow Length=380' Slope=0.0500 '/' Tc=18.2 min CN=88 Runoff=4.54 cfs 0.296 af

Subcatchment20S: 2015 Existing Runoff Area=0.640 ac 68.75% Impervious Runoff Depth>1.41"
Tc=6.0 min CN=92 Runoff=1.68 cfs 0.075 af

Subcatchment21S: 2015 Existing Runoff Area=0.750 ac 81.33% Impervious Runoff Depth>1.66"
Tc=6.0 min CN=95 Runoff=2.22 cfs 0.104 af

Link 20L: Total Baseline Runoff Inflow=31.62 cfs 1.625 af
Primary=31.62 cfs 1.625 af

Total Runoff Area = 13.360 ac Runoff Volume = 1.625 af Average Runoff Depth = 1.46"
28.82% Pervious = 3.850 ac 71.18% Impervious = 9.510 ac

Summary for Subcatchment 10S: 2015 Existing Conditions (Future Development Area)

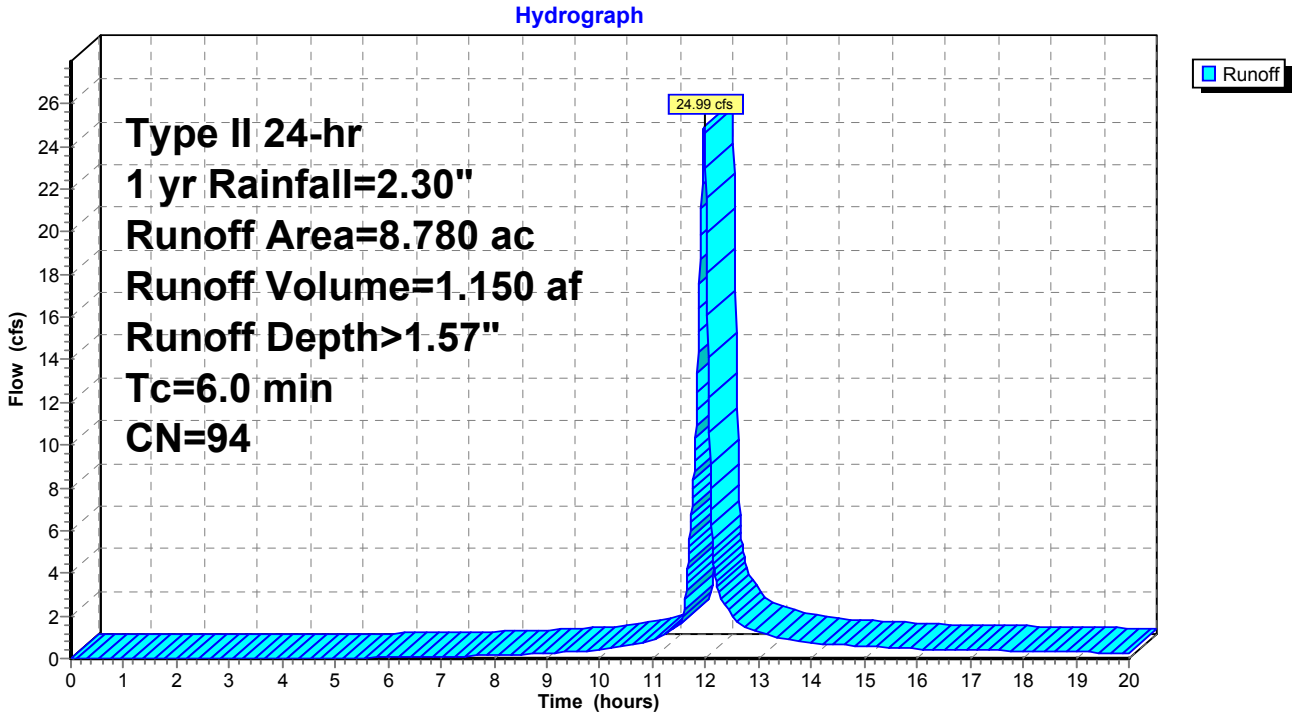
Runoff = 24.99 cfs @ 11.97 hrs, Volume= 1.150 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	7.030	98	impervious
*	1.750	80	pervious
	8.780	94	Weighted Average
	1.750		19.93% Pervious Area
	7.030		80.07% Impervious Area

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

Subcatchment 10S: 2015 Existing Conditions (Future Development Area)



Summary for Subcatchment 19S: 2015 Existing Conditions (Future Fairview Avenue Project Area)

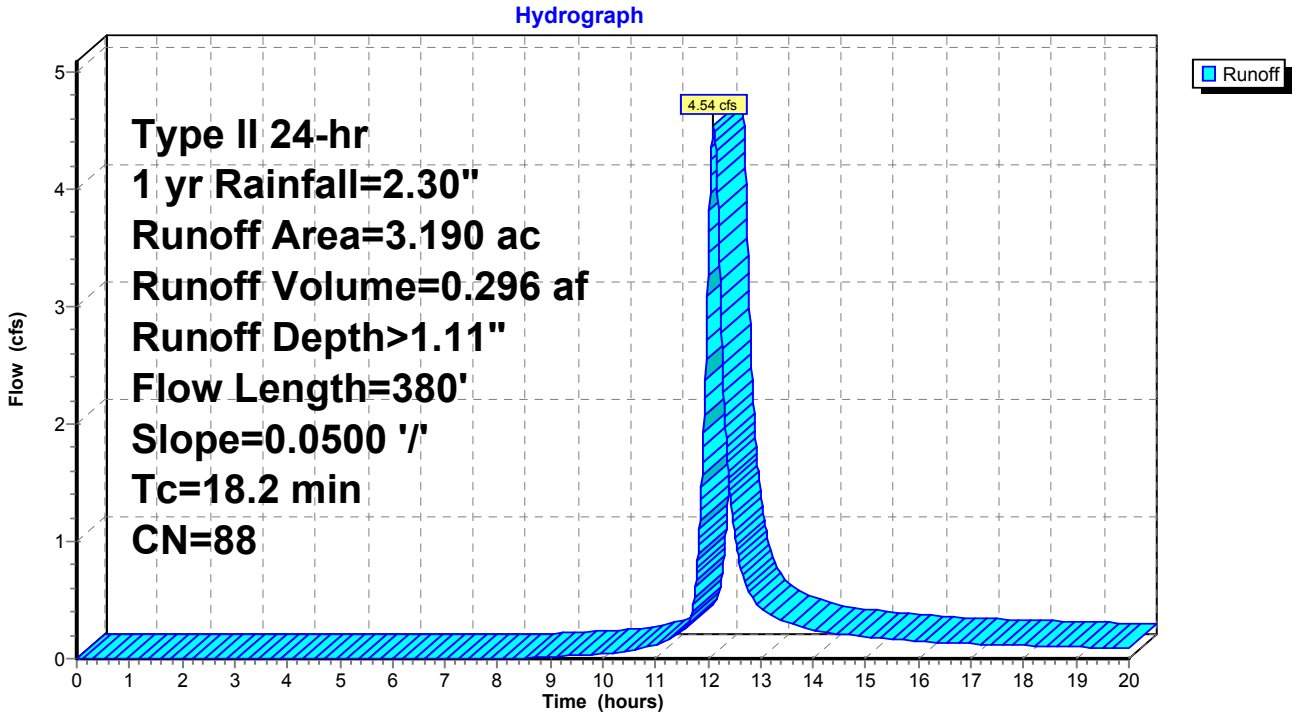
Runoff = 4.54 cfs @ 12.11 hrs, Volume= 0.296 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	1.430	98	impervious
*	1.760	80	pervious
	3.190	88	Weighted Average
	1.760		55.17% Pervious Area
	1.430		44.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	300	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.4	80	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.2	380	Total			

Subcatchment 19S: 2015 Existing Conditions (Future Fairview Avenue Project Area)



Summary for Subcatchment 20S: 2015 Existing Conditions (Future Development Area)

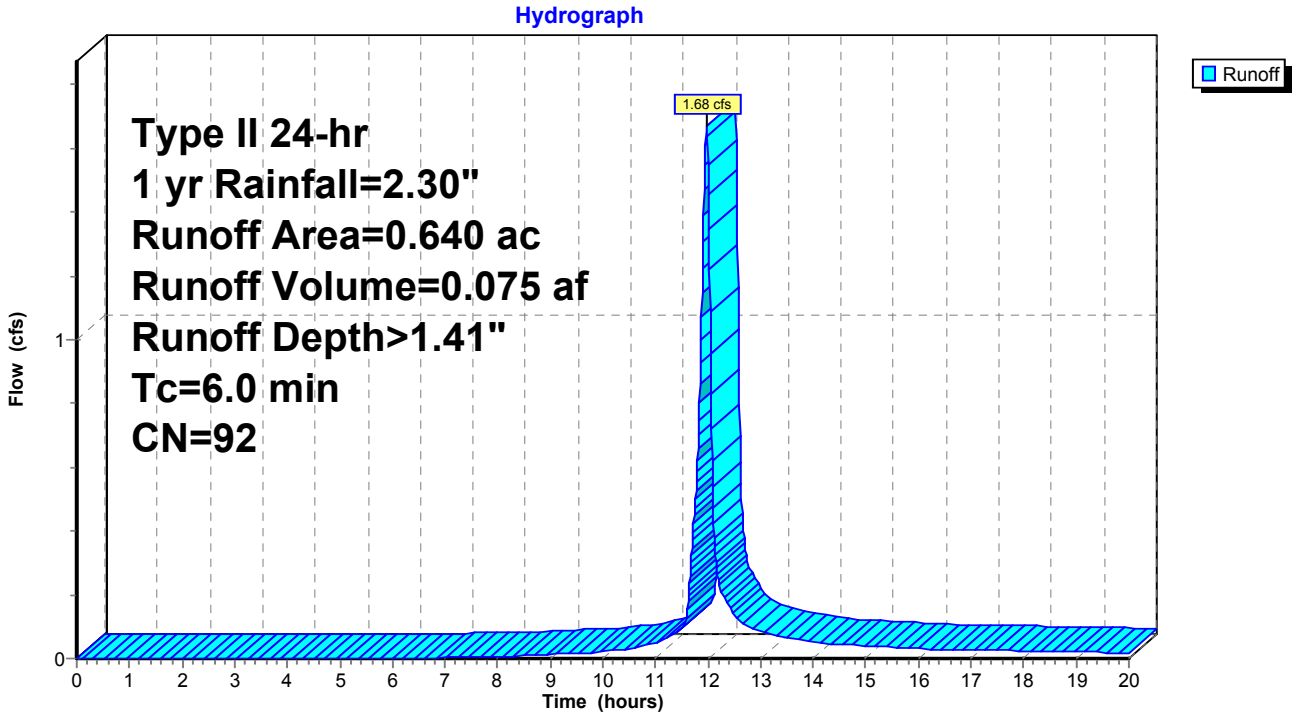
Runoff = 1.68 cfs @ 11.97 hrs, Volume= 0.075 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	0.440	98	impervious
*	0.200	80	pervious
	0.640	92	Weighted Average
	0.200		31.25% Pervious Area
	0.440		68.75% Impervious Area

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

Subcatchment 20S: 2015 Existing Conditions (Future Development Area)



Summary for Subcatchment 21S: 2015 Existing Conditions (Central Utility Plant Area)

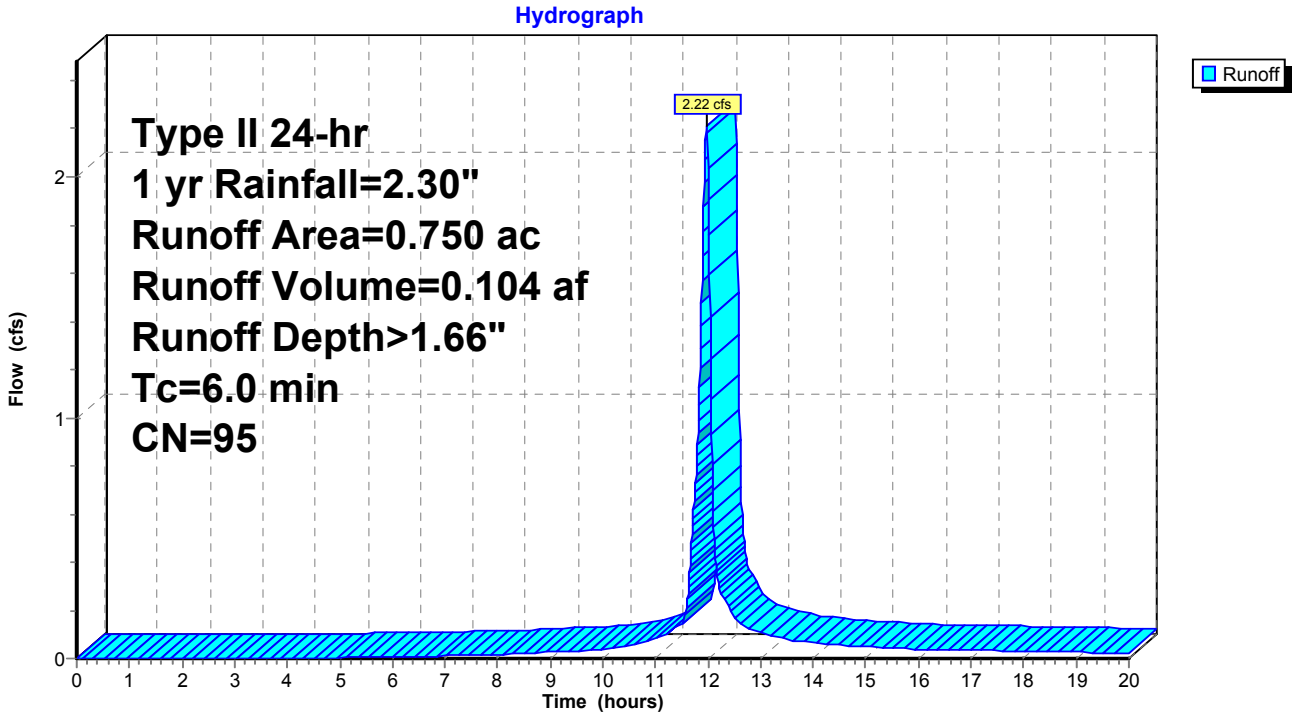
Runoff = 2.22 cfs @ 11.97 hrs, Volume= 0.104 af, Depth> 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	0.610	98	impervious
*	0.140	80	pervious
	0.750	95	Weighted Average
	0.140		18.67% Pervious Area
	0.610		81.33% Impervious Area

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

Subcatchment 21S: 2015 Existing Conditions (Central Utility Plant Area)

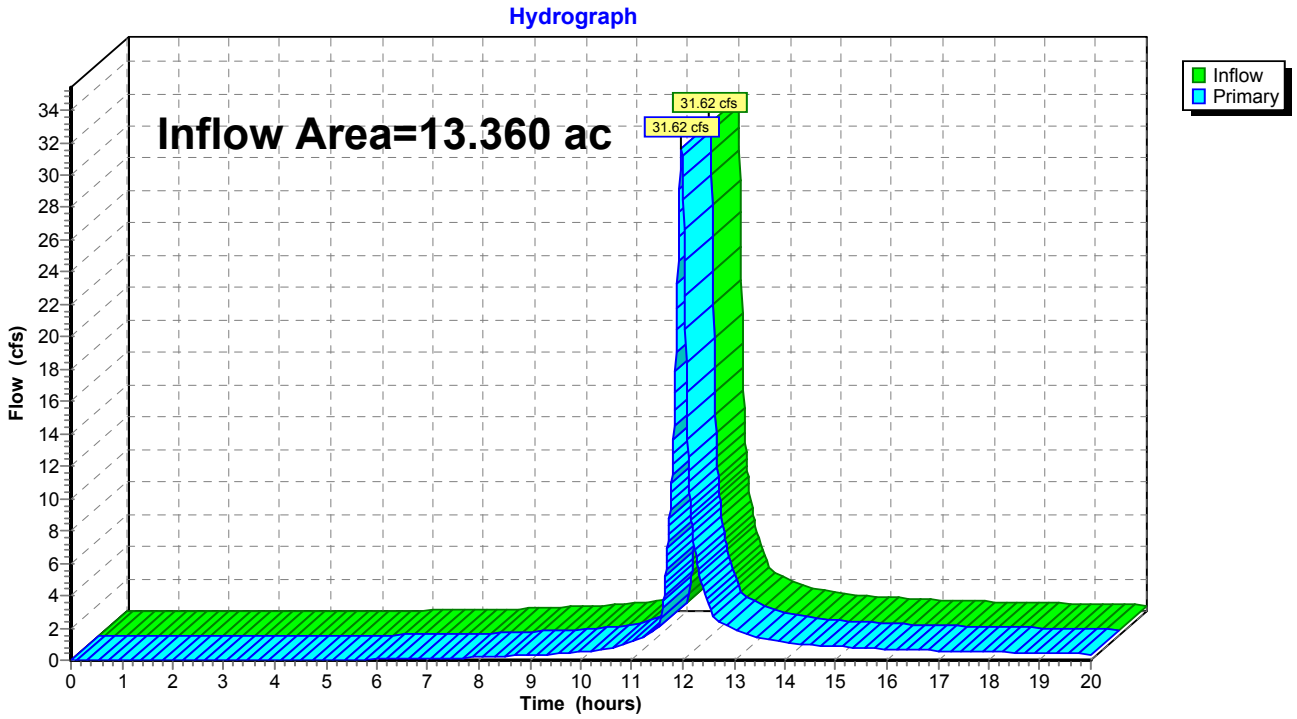


Summary for Link 20L: Total Baseline Runoff

Inflow Area = 13.360 ac, 71.18% Impervious, Inflow Depth > 1.46" for 1 yr event
Inflow = 31.62 cfs @ 11.97 hrs, Volume= 1.625 af
Primary = 31.62 cfs @ 11.97 hrs, Volume= 1.625 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Link 20L: Total Baseline Runoff



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10S: 2015 Existing Runoff Area=8.780 ac 80.07% Impervious Runoff Depth>1.93"
Tc=6.0 min CN=94 Runoff=30.27 cfs 1.415 af

Subcatchment19S: 2015 Existing Runoff Area=3.190 ac 44.83% Impervious Runoff Depth>1.43"
Flow Length=380' Slope=0.0500 '/' Tc=18.2 min CN=88 Runoff=5.82 cfs 0.381 af

Subcatchment20S: 2015 Existing Runoff Area=0.640 ac 68.75% Impervious Runoff Depth>1.76"
Tc=6.0 min CN=92 Runoff=2.06 cfs 0.094 af

Subcatchment21S: 2015 Existing Runoff Area=0.750 ac 81.33% Impervious Runoff Depth>2.03"
Tc=6.0 min CN=95 Runoff=2.66 cfs 0.127 af

Link 20L: Total Baseline Runoff Inflow=38.59 cfs 2.016 af
Primary=38.59 cfs 2.016 af

Total Runoff Area = 13.360 ac Runoff Volume = 2.016 af Average Runoff Depth = 1.81"
28.82% Pervious = 3.850 ac 71.18% Impervious = 9.510 ac

Summary for Subcatchment 10S: 2015 Existing Conditions (Future Development Area)

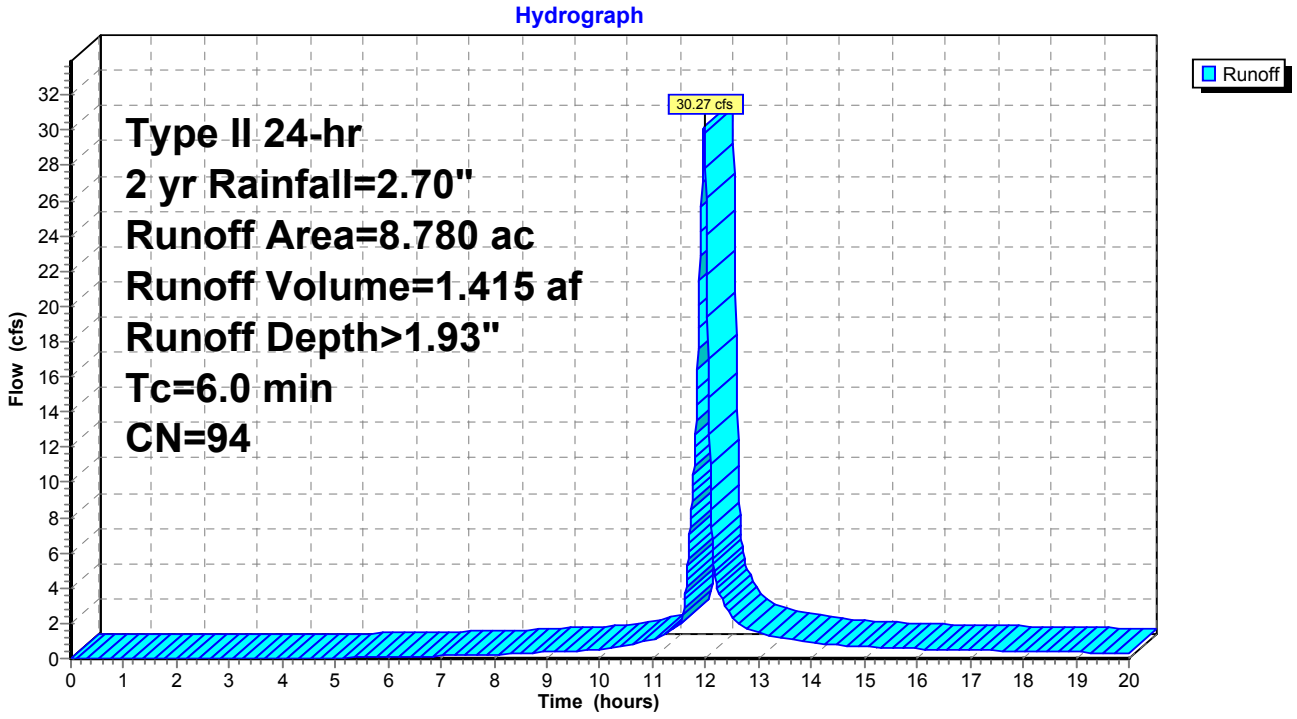
Runoff = 30.27 cfs @ 11.97 hrs, Volume= 1.415 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	7.030	98	impervious
*	1.750	80	pervious
	8.780	94	Weighted Average
	1.750		19.93% Pervious Area
	7.030		80.07% Impervious Area

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

Subcatchment 10S: 2015 Existing Conditions (Future Development Area)



Summary for Subcatchment 19S: 2015 Existing Conditions (Future Fairview Avenue Project Area)

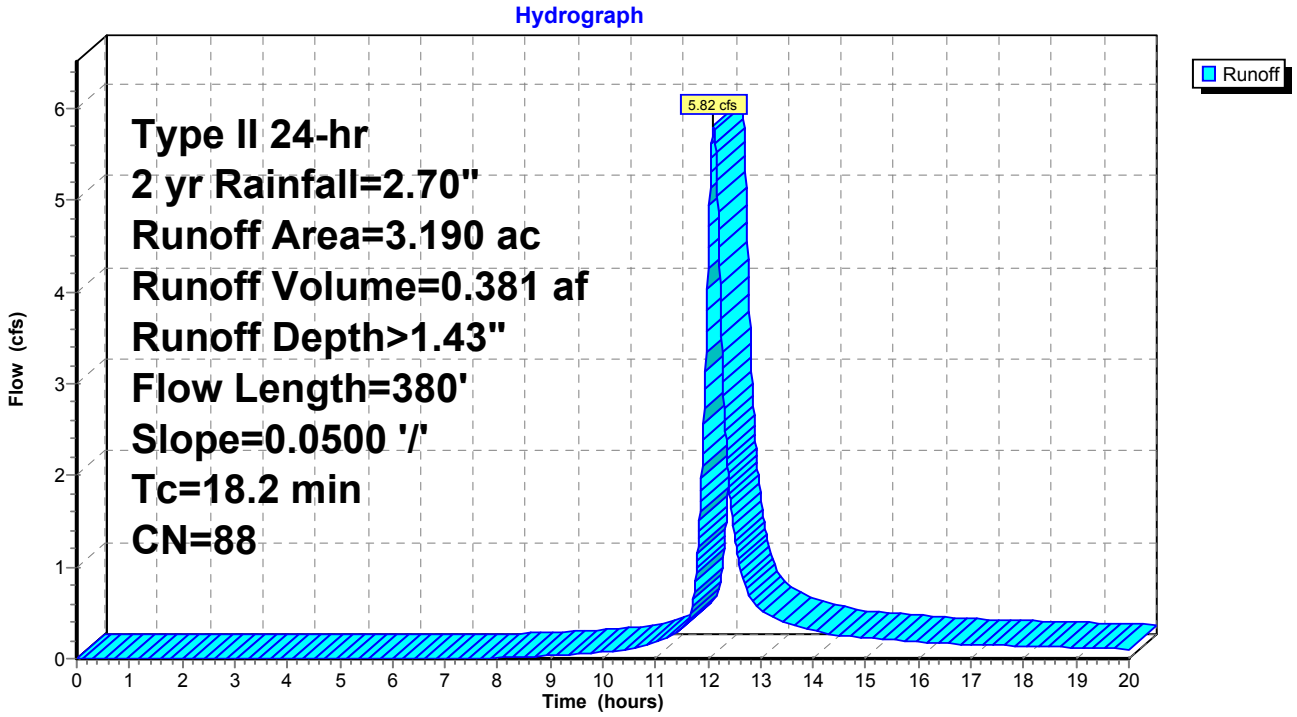
Runoff = 5.82 cfs @ 12.11 hrs, Volume= 0.381 af, Depth> 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	1.430	98	impervious
*	1.760	80	pervious
	3.190	88	Weighted Average
	1.760		55.17% Pervious Area
	1.430		44.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	300	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.4	80	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.2	380	Total			

Subcatchment 19S: 2015 Existing Conditions (Future Fairview Avenue Project Area)



Summary for Subcatchment 20S: 2015 Existing Conditions (Future Development Area)

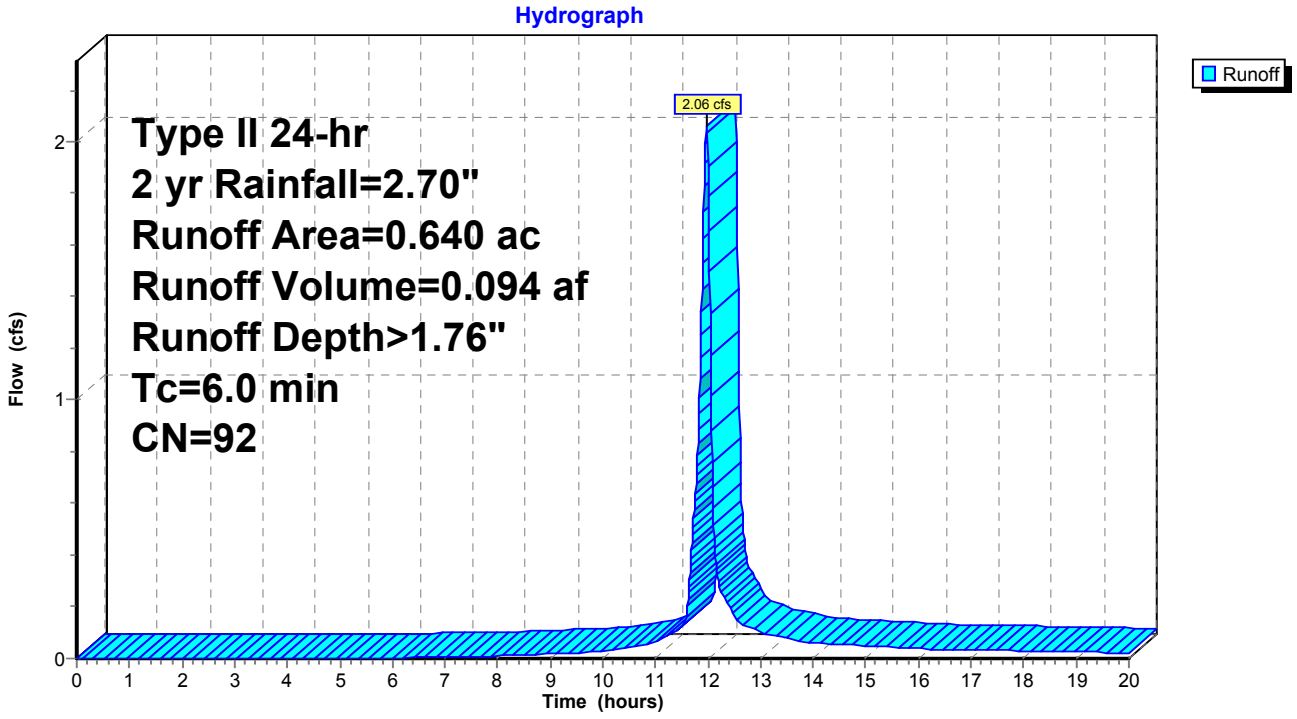
Runoff = 2.06 cfs @ 11.97 hrs, Volume= 0.094 af, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.440	98	impervious
*	0.200	80	pervious
	0.640	92	Weighted Average
	0.200		31.25% Pervious Area
	0.440		68.75% Impervious Area

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

Subcatchment 20S: 2015 Existing Conditions (Future Development Area)



Summary for Subcatchment 21S: 2015 Existing Conditions (Central Utility Plant Area)

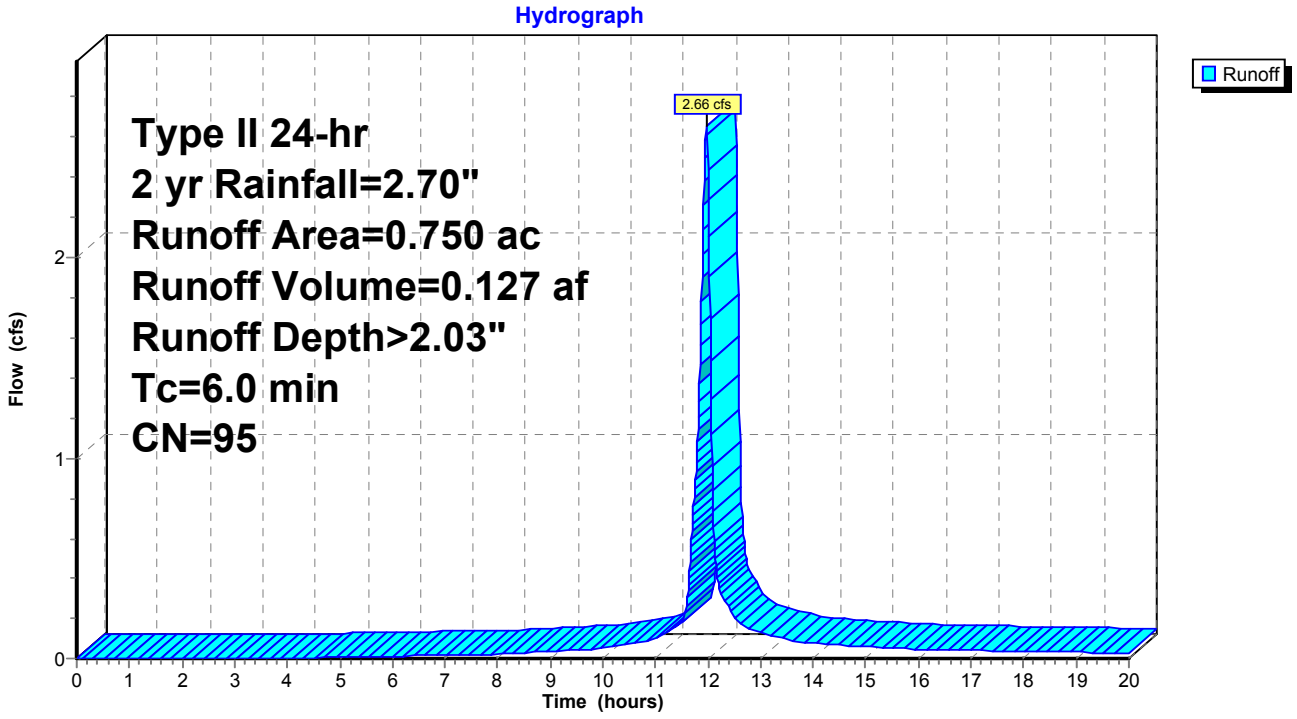
Runoff = 2.66 cfs @ 11.97 hrs, Volume= 0.127 af, Depth> 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.610	98	impervious
*	0.140	80	pervious
	0.750	95	Weighted Average
	0.140		18.67% Pervious Area
	0.610		81.33% Impervious Area

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

Subcatchment 21S: 2015 Existing Conditions (Central Utility Plant Area)

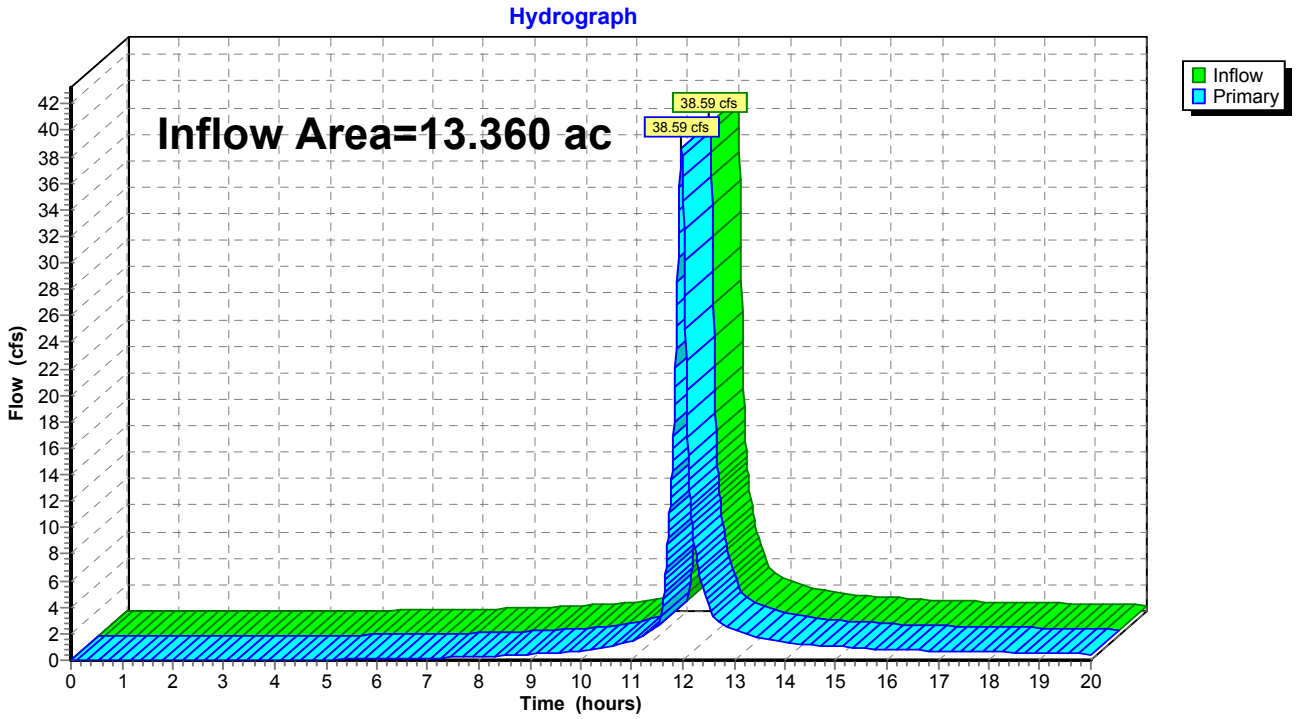


Summary for Link 20L: Total Baseline Runoff

Inflow Area = 13.360 ac, 71.18% Impervious, Inflow Depth > 1.81" for 2 yr event
Inflow = 38.59 cfs @ 11.97 hrs, Volume= 2.016 af
Primary = 38.59 cfs @ 11.97 hrs, Volume= 2.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Link 20L: Total Baseline Runoff



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10S: 2015 Existing Runoff Area=8.780 ac 80.07% Impervious Runoff Depth>3.13"
Tc=6.0 min CN=94 Runoff=47.30 cfs 2.291 af

Subcatchment19S: 2015 Existing Runoff Area=3.190 ac 44.83% Impervious Runoff Depth>2.54"
Flow Length=380' Slope=0.0500 '/' Tc=18.2 min CN=88 Runoff=10.09 cfs 0.675 af

Subcatchment20S: 2015 Existing Runoff Area=0.640 ac 68.75% Impervious Runoff Depth>2.93"
Tc=6.0 min CN=92 Runoff=3.32 cfs 0.156 af

Subcatchment21S: 2015 Existing Runoff Area=0.750 ac 81.33% Impervious Runoff Depth>3.24"
Tc=6.0 min CN=95 Runoff=4.11 cfs 0.202 af

Link 20L: Total Baseline Runoff Inflow=61.21 cfs 3.325 af
Primary=61.21 cfs 3.325 af

Total Runoff Area = 13.360 ac Runoff Volume = 3.325 af Average Runoff Depth = 2.99"
28.82% Pervious = 3.850 ac 71.18% Impervious = 9.510 ac

Summary for Subcatchment 10S: 2015 Existing Conditions (Future Development Area)

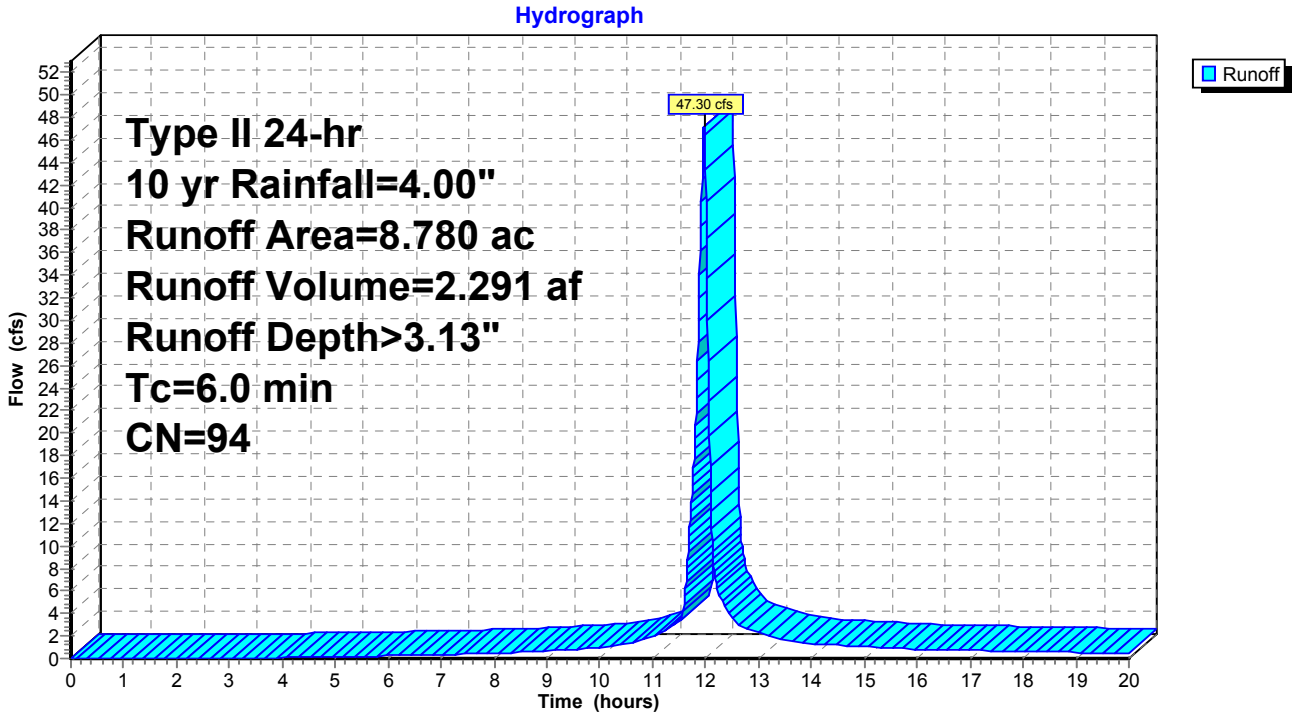
Runoff = 47.30 cfs @ 11.97 hrs, Volume= 2.291 af, Depth> 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	7.030	98	impervious
*	1.750	80	pervious
	8.780	94	Weighted Average
	1.750		19.93% Pervious Area
	7.030		80.07% Impervious Area

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

Subcatchment 10S: 2015 Existing Conditions (Future Development Area)



Summary for Subcatchment 19S: 2015 Existing Conditions (Future Fairview Avenue Project Area)

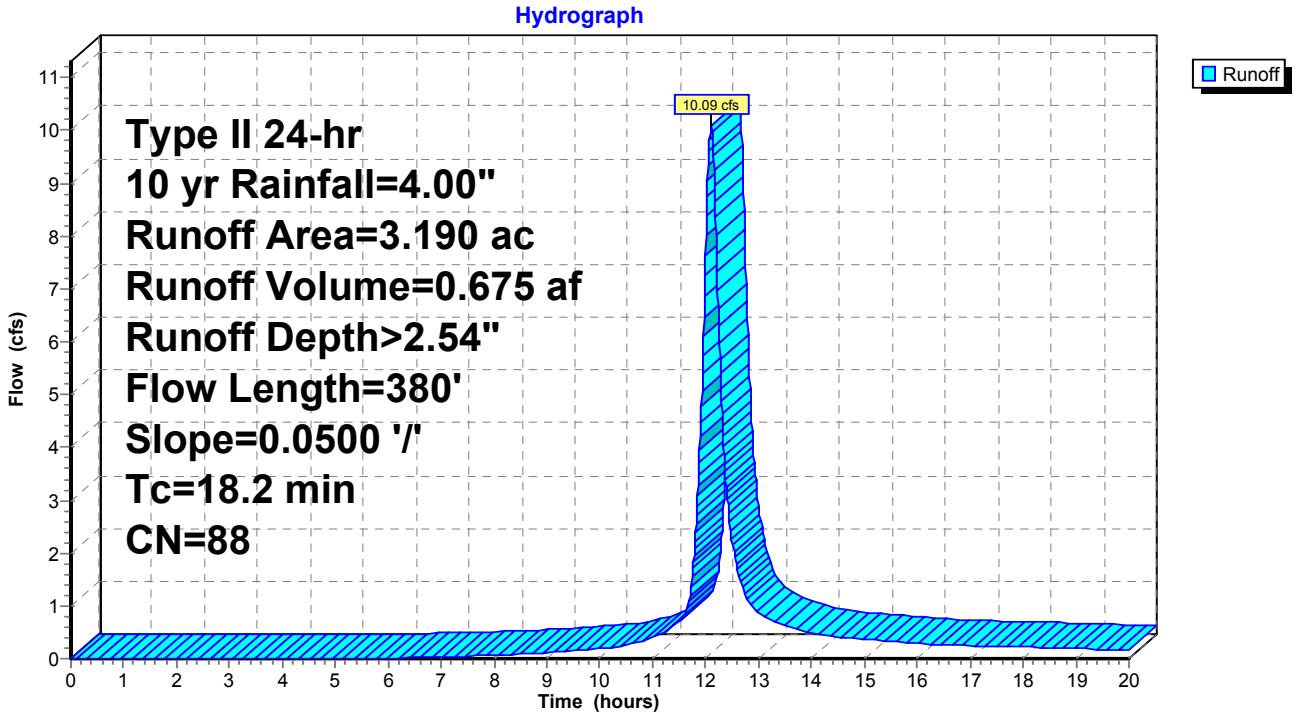
Runoff = 10.09 cfs @ 12.11 hrs, Volume= 0.675 af, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	1.430	98	impervious
*	1.760	80	pervious
	3.190	88	Weighted Average
	1.760		55.17% Pervious Area
	1.430		44.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	300	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.4	80	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.2	380	Total			

Subcatchment 19S: 2015 Existing Conditions (Future Fairview Avenue Project Area)



Summary for Subcatchment 20S: 2015 Existing Conditions (Future Development Area)

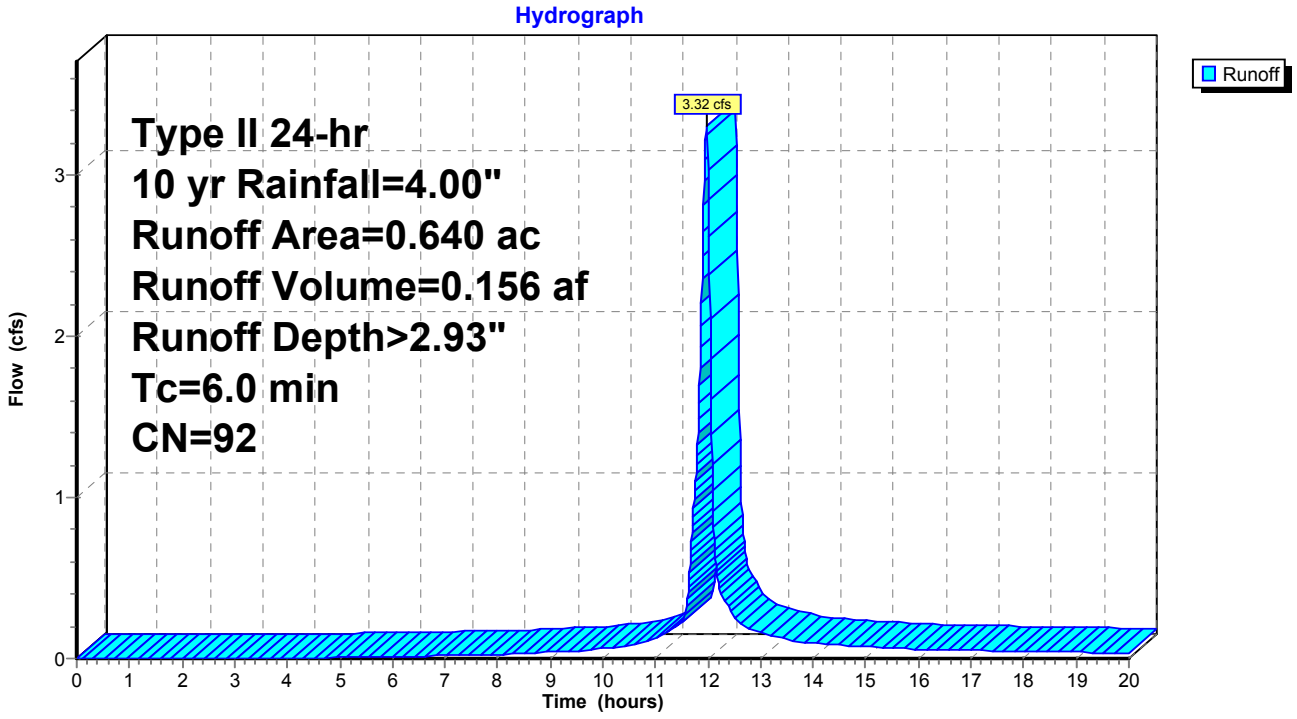
Runoff = 3.32 cfs @ 11.97 hrs, Volume= 0.156 af, Depth> 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	0.440	98	impervious
*	0.200	80	pervious
	0.640	92	Weighted Average
	0.200		31.25% Pervious Area
	0.440		68.75% Impervious Area

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

Subcatchment 20S: 2015 Existing Conditions (Future Development Area)



Summary for Subcatchment 21S: 2015 Existing Conditions (Central Utility Plant Area)

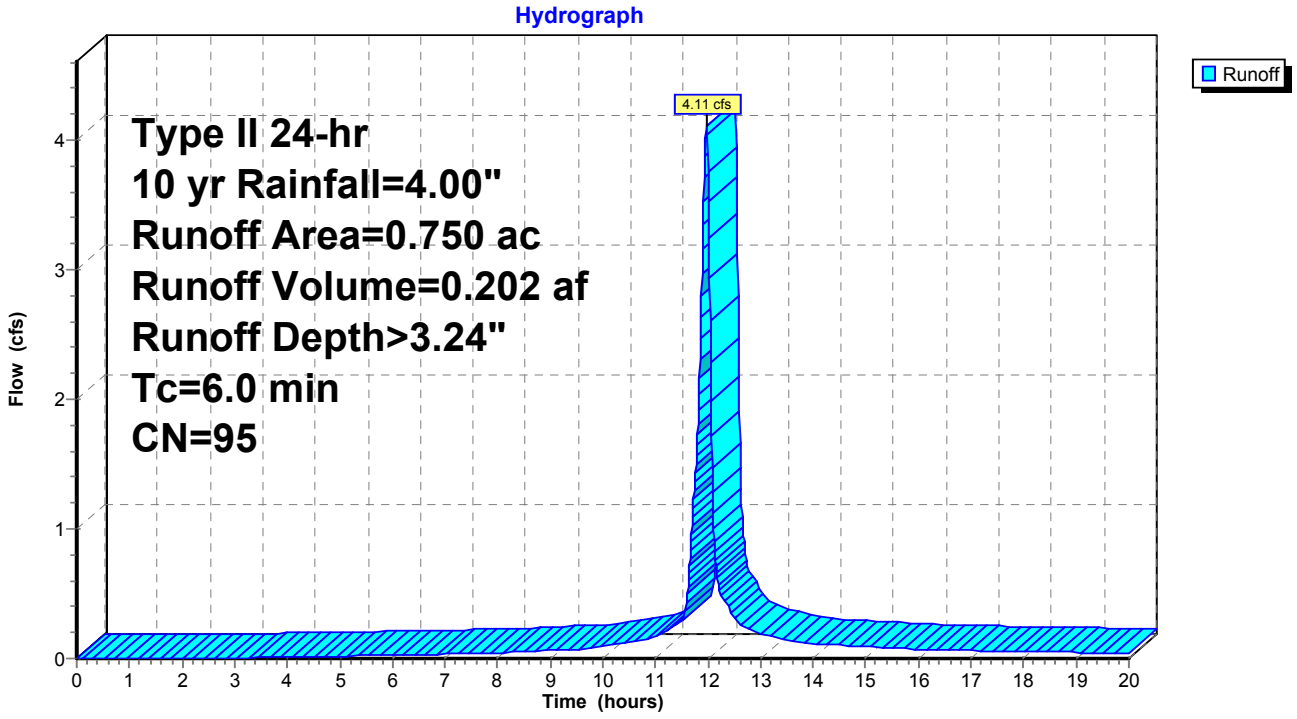
Runoff = 4.11 cfs @ 11.97 hrs, Volume= 0.202 af, Depth> 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	0.610	98	impervious
*	0.140	80	pervious
	0.750	95	Weighted Average
	0.140		18.67% Pervious Area
	0.610		81.33% Impervious Area

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

Subcatchment 21S: 2015 Existing Conditions (Central Utility Plant Area)

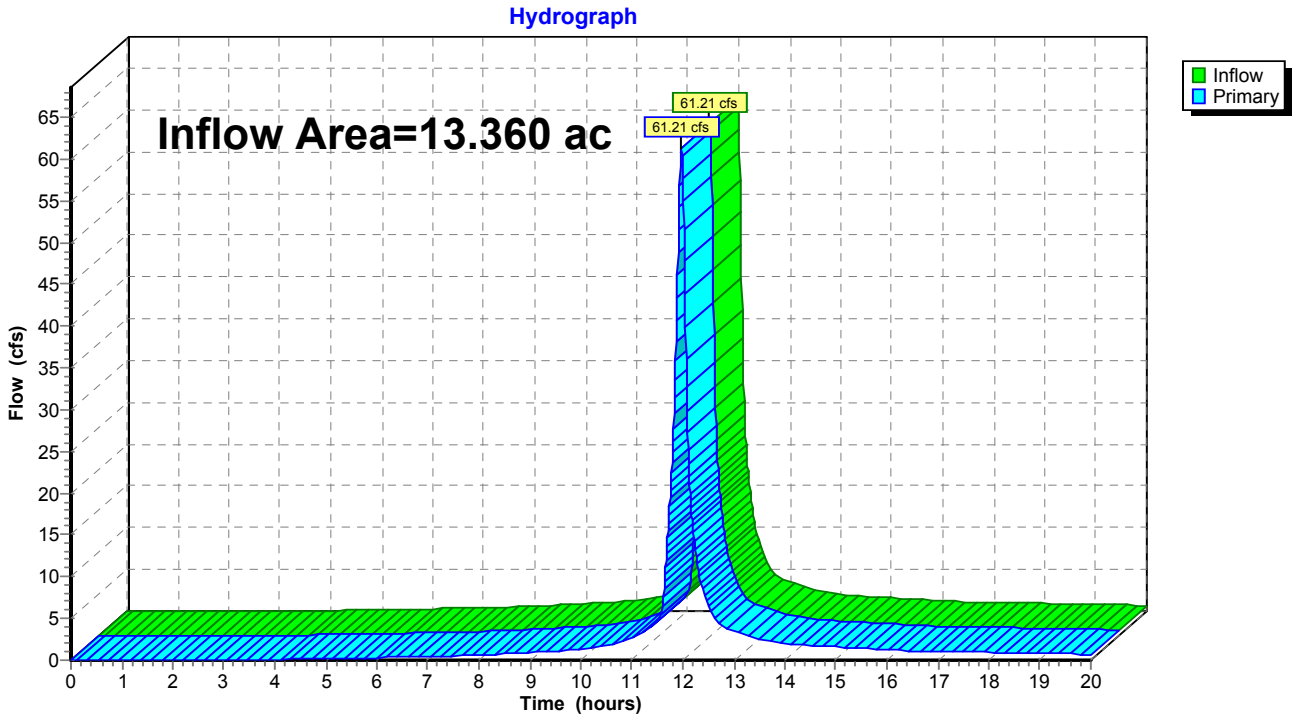


Summary for Link 20L: Total Baseline Runoff

Inflow Area = 13.360 ac, 71.18% Impervious, Inflow Depth > 2.99" for 10 yr event
Inflow = 61.21 cfs @ 11.97 hrs, Volume= 3.325 af
Primary = 61.21 cfs @ 11.97 hrs, Volume= 3.325 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Link 20L: Total Baseline Runoff



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10S: 2015 Existing Runoff Area=8.780 ac 80.07% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=94 Runoff=67.99 cfs 3.387 af

Subcatchment19S: 2015 Existing Runoff Area=3.190 ac 44.83% Impervious Runoff Depth>3.96"
Flow Length=380' Slope=0.0500 '/' Tc=18.2 min CN=88 Runoff=15.40 cfs 1.054 af

Subcatchment20S: 2015 Existing Runoff Area=0.640 ac 68.75% Impervious Runoff Depth>4.41"
Tc=6.0 min CN=92 Runoff=4.84 cfs 0.235 af

Subcatchment21S: 2015 Existing Runoff Area=0.750 ac 81.33% Impervious Runoff Depth>4.74"
Tc=6.0 min CN=95 Runoff=5.86 cfs 0.296 af

Link 20L: Total Baseline Runoff Inflow=88.83 cfs 4.972 af
Primary=88.83 cfs 4.972 af

Total Runoff Area = 13.360 ac Runoff Volume = 4.972 af Average Runoff Depth = 4.47"
28.82% Pervious = 3.850 ac 71.18% Impervious = 9.510 ac

Summary for Subcatchment 10S: 2015 Existing Conditions (Future Development Area)

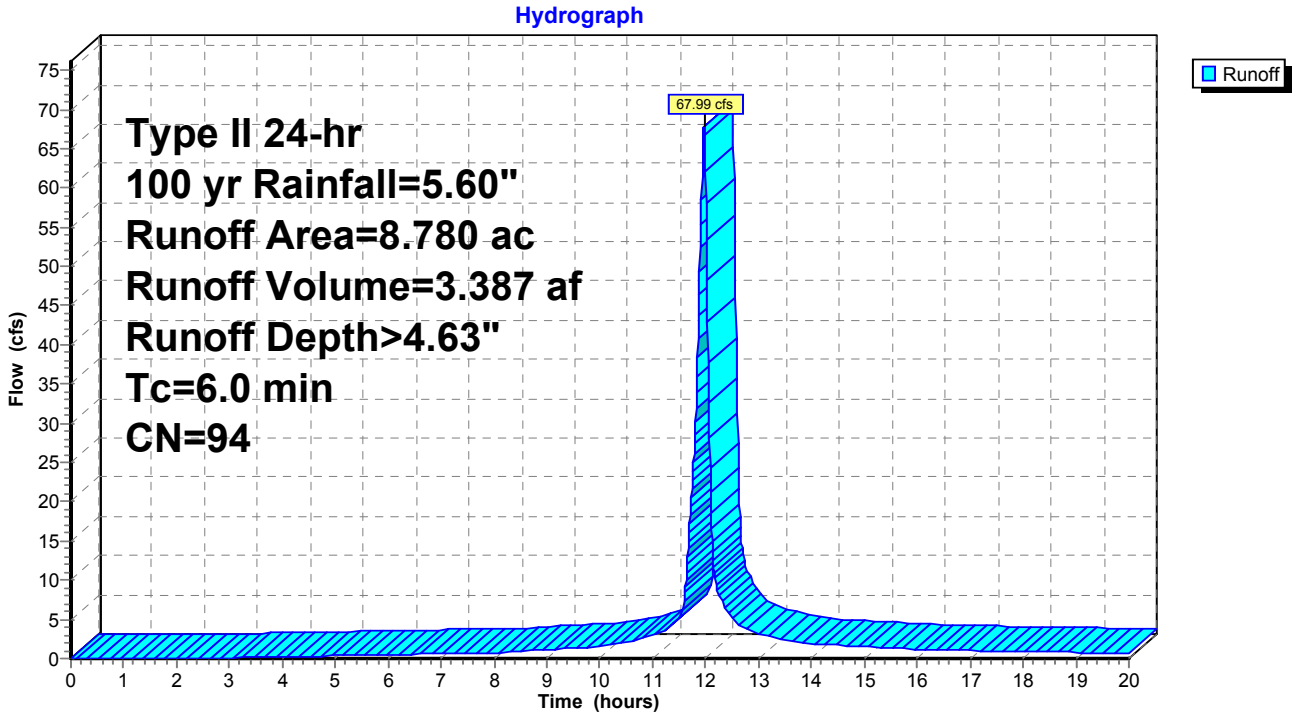
Runoff = 67.99 cfs @ 11.97 hrs, Volume= 3.387 af, Depth> 4.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	7.030	98	impervious
*	1.750	80	pervious
	8.780	94	Weighted Average
	1.750		19.93% Pervious Area
	7.030		80.07% Impervious Area

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

Subcatchment 10S: 2015 Existing Conditions (Future Development Area)



Summary for Subcatchment 19S: 2015 Existing Conditions (Future Fairview Avenue Project Area)

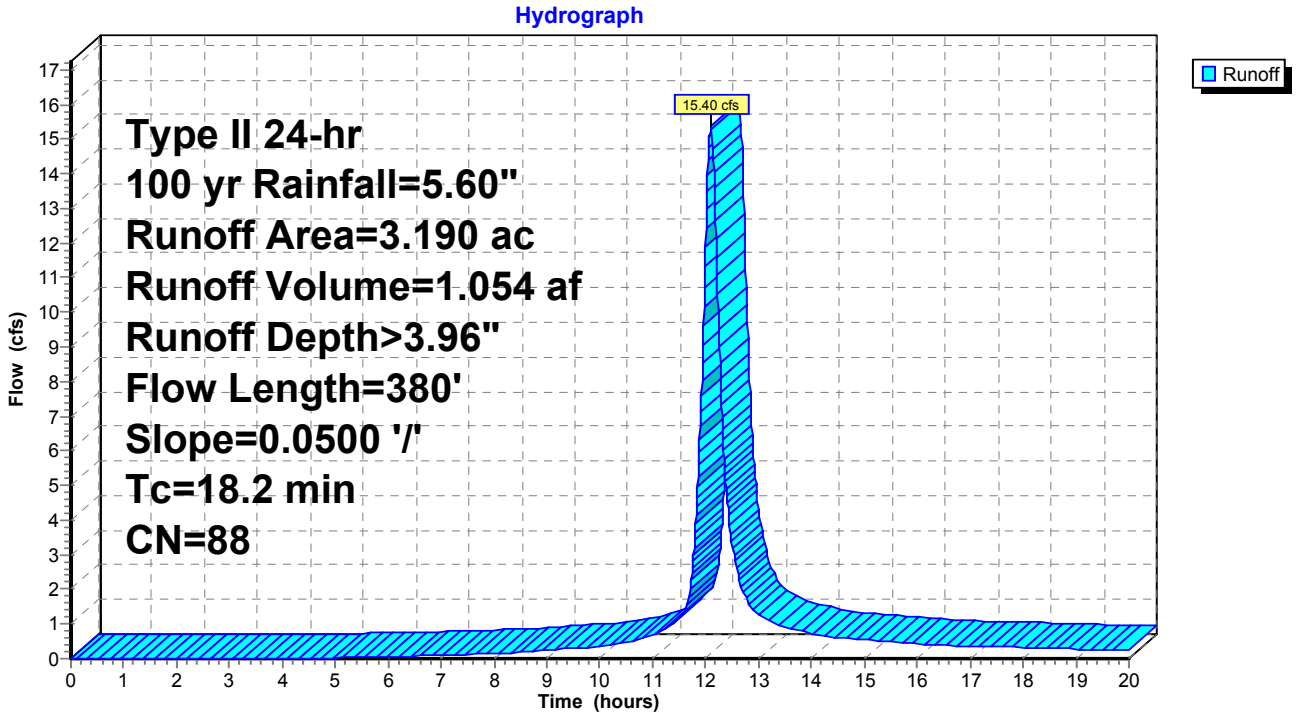
Runoff = 15.40 cfs @ 12.10 hrs, Volume= 1.054 af, Depth> 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	1.430	98	impervious
*	1.760	80	pervious
	3.190	88	Weighted Average
	1.760		55.17% Pervious Area
	1.430		44.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	300	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.4	80	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.2	380	Total			

Subcatchment 19S: 2015 Existing Conditions (Future Fairview Avenue Project Area)



Summary for Subcatchment 20S: 2015 Existing Conditions (Future Development Area)

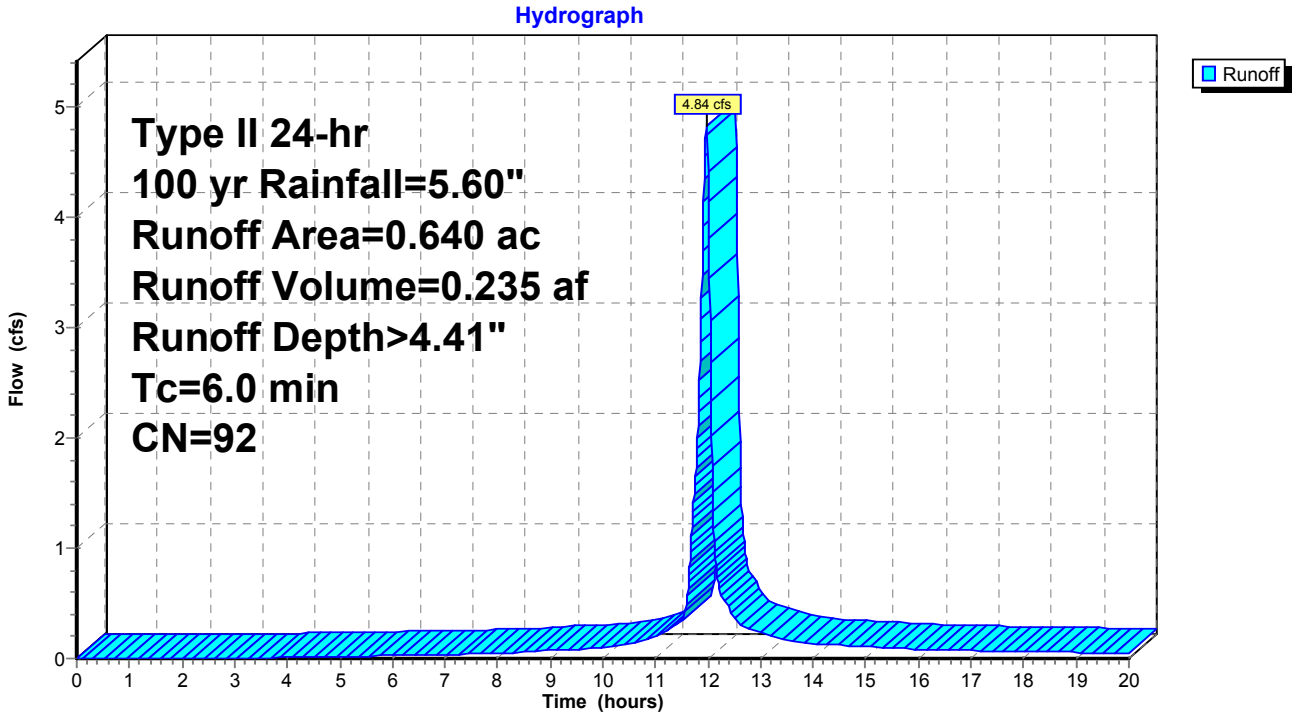
Runoff = 4.84 cfs @ 11.97 hrs, Volume= 0.235 af, Depth> 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	0.440	98	impervious
*	0.200	80	pervious
	0.640	92	Weighted Average
	0.200		31.25% Pervious Area
	0.440		68.75% Impervious Area

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

Subcatchment 20S: 2015 Existing Conditions (Future Development Area)



Summary for Subcatchment 21S: 2015 Existing Conditions (Central Utility Plant Area)

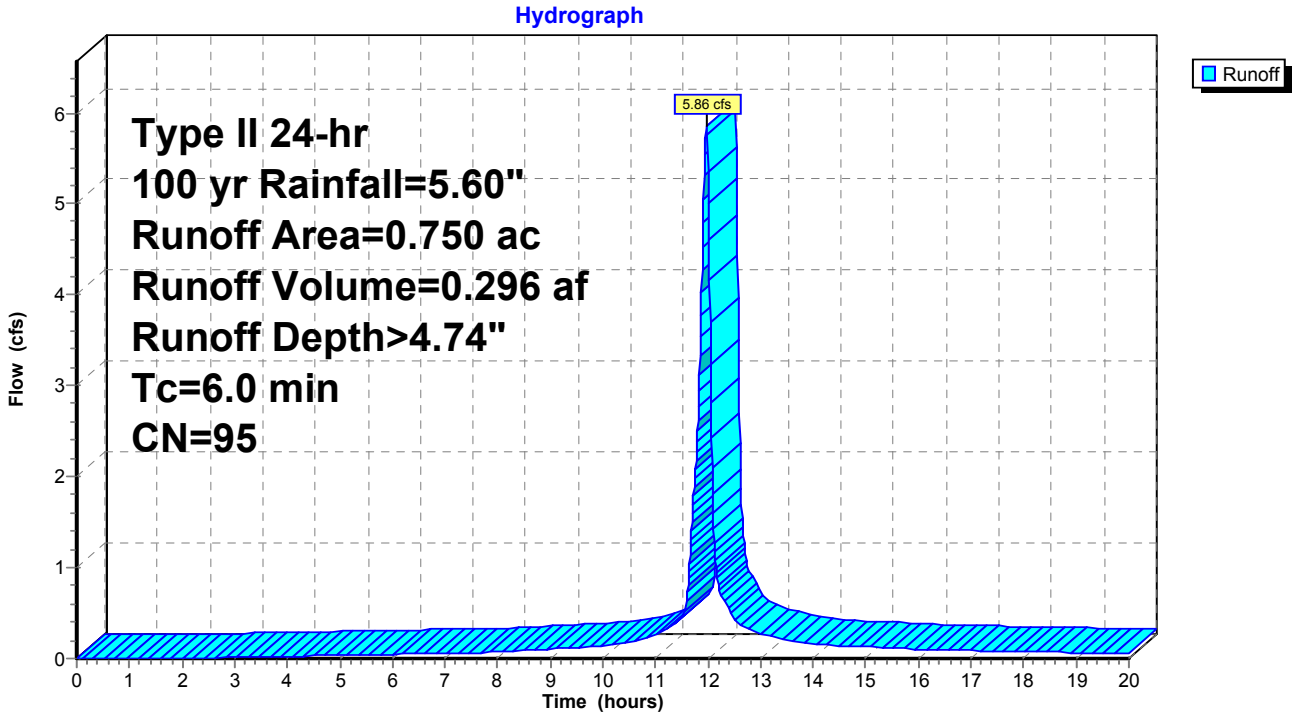
Runoff = 5.86 cfs @ 11.97 hrs, Volume= 0.296 af, Depth> 4.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	0.610	98	impervious
*	0.140	80	pervious
	0.750	95	Weighted Average
	0.140		18.67% Pervious Area
	0.610		81.33% Impervious Area

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

Subcatchment 21S: 2015 Existing Conditions (Central Utility Plant Area)

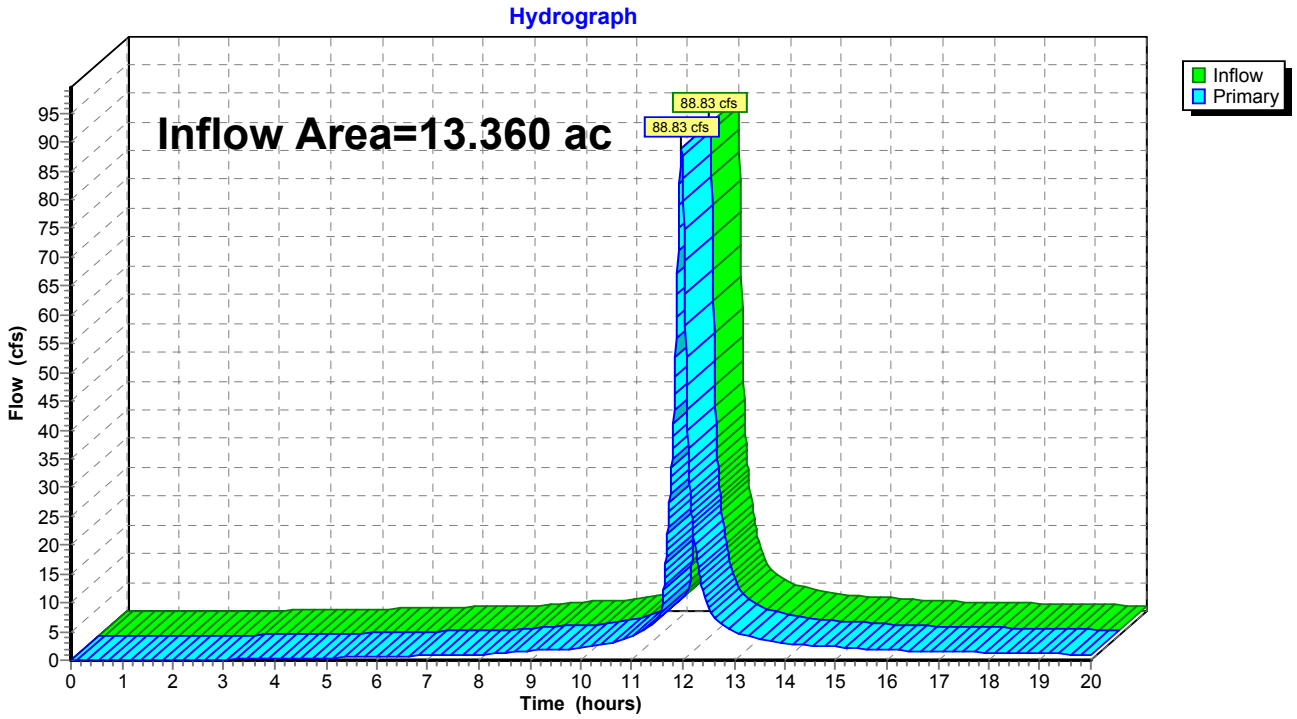


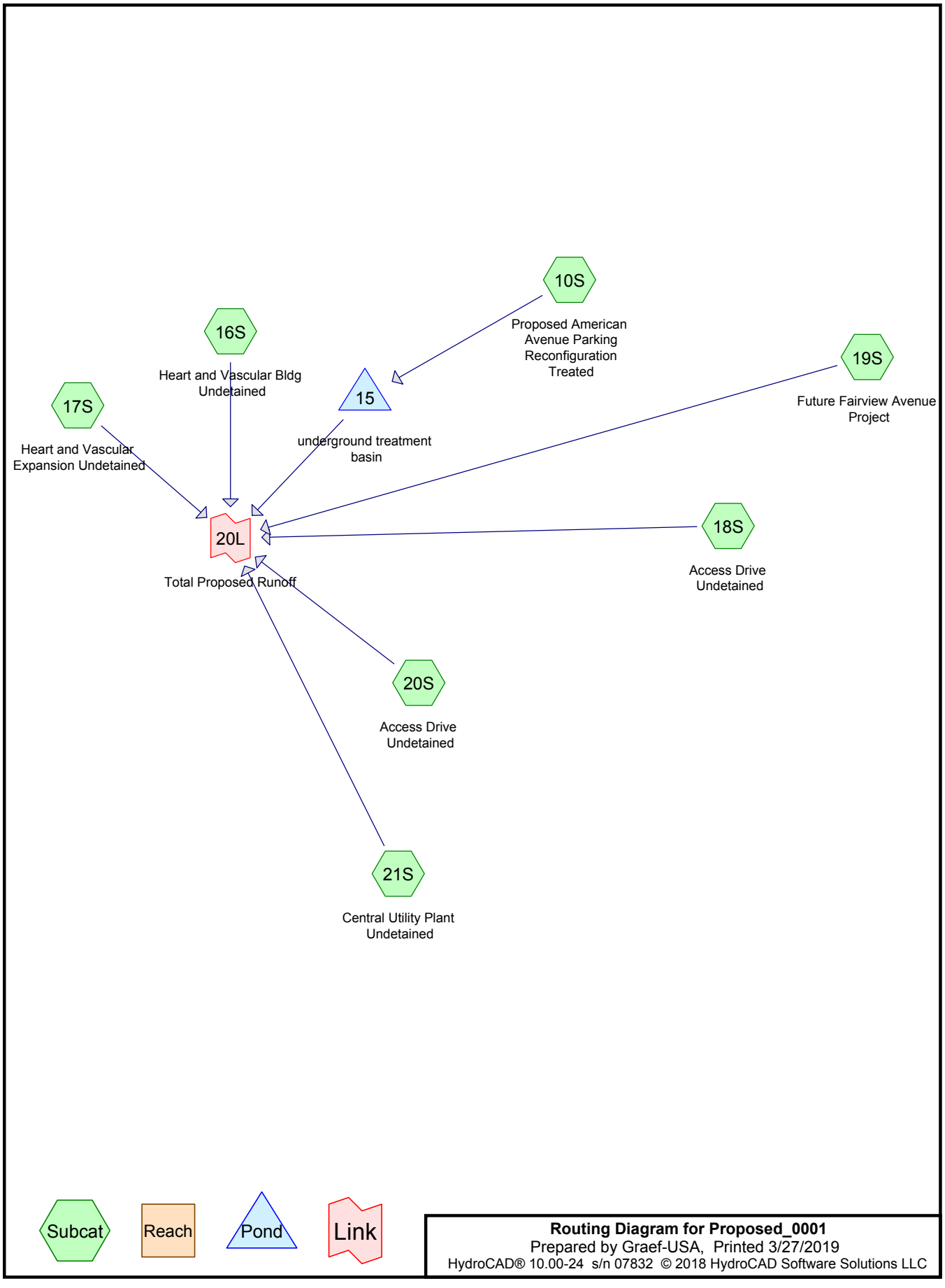
Summary for Link 20L: Total Baseline Runoff

Inflow Area = 13.360 ac, 71.18% Impervious, Inflow Depth > 4.47" for 100 yr event
Inflow = 88.83 cfs @ 11.97 hrs, Volume= 4.972 af
Primary = 88.83 cfs @ 11.97 hrs, Volume= 4.972 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Link 20L: Total Baseline Runoff





Routing Diagram for Proposed_0001
Prepared by Graef-USA, Printed 3/27/2019

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.300	98	impervious (10S, 16S, 17S, 18S, 19S, 20S, 21S)
4.060	80	pervious (10S, 16S, 18S, 19S, 20S, 21S)
13.360	**93**	**TOTAL AREA**

Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10S: Proposed American Runoff Area=5.470 ac 86.29% Impervious Runoff Depth>1.76"
Tc=6.0 min CN=96 Runoff=16.71 cfs 0.800 af

Subcatchment16S: Heart and Vascular Runoff Area=2.810 ac 76.51% Impervious Runoff Depth>1.57"
Tc=6.0 min CN=94 Runoff=8.00 cfs 0.368 af

Subcatchment17S: Heart and Vascular Runoff Area=0.230 ac 100.00% Impervious Runoff Depth>1.96"
Tc=6.0 min CN=98 Runoff=0.74 cfs 0.038 af

Subcatchment18S: Access Drive Runoff Area=0.280 ac 53.57% Impervious Runoff Depth>1.25"
Tc=6.0 min CN=90 Runoff=0.67 cfs 0.029 af

Subcatchment19S: Future Fairview Runoff Area=3.190 ac 28.84% Impervious Runoff Depth>0.93"
Flow Length=360' Slope=0.0500 '/' Tc=18.1 min CN=85 Runoff=3.80 cfs 0.247 af

Subcatchment20S: Access Drive Runoff Area=0.630 ac 68.25% Impervious Runoff Depth>1.41"
Tc=6.0 min CN=92 Runoff=1.65 cfs 0.074 af

Subcatchment21S: Central Utility Plant Runoff Area=0.750 ac 93.33% Impervious Runoff Depth>1.86"
Tc=6.0 min CN=97 Runoff=2.36 cfs 0.116 af

Pond 15: underground treatment basin Peak Elev=133.01' Storage=0.336 af Inflow=16.71 cfs 0.800 af
Outflow=11.20 cfs 0.602 af

Link 20L: Total Proposed Runoff Inflow=24.69 cfs 1.474 af
Primary=24.69 cfs 1.474 af

Total Runoff Area = 13.360 ac Runoff Volume = 1.672 af Average Runoff Depth = 1.50"
30.39% Pervious = 4.060 ac 69.61% Impervious = 9.300 ac

Summary for Subcatchment 10S: Proposed American Avenue Parking Reconfiguration Treated

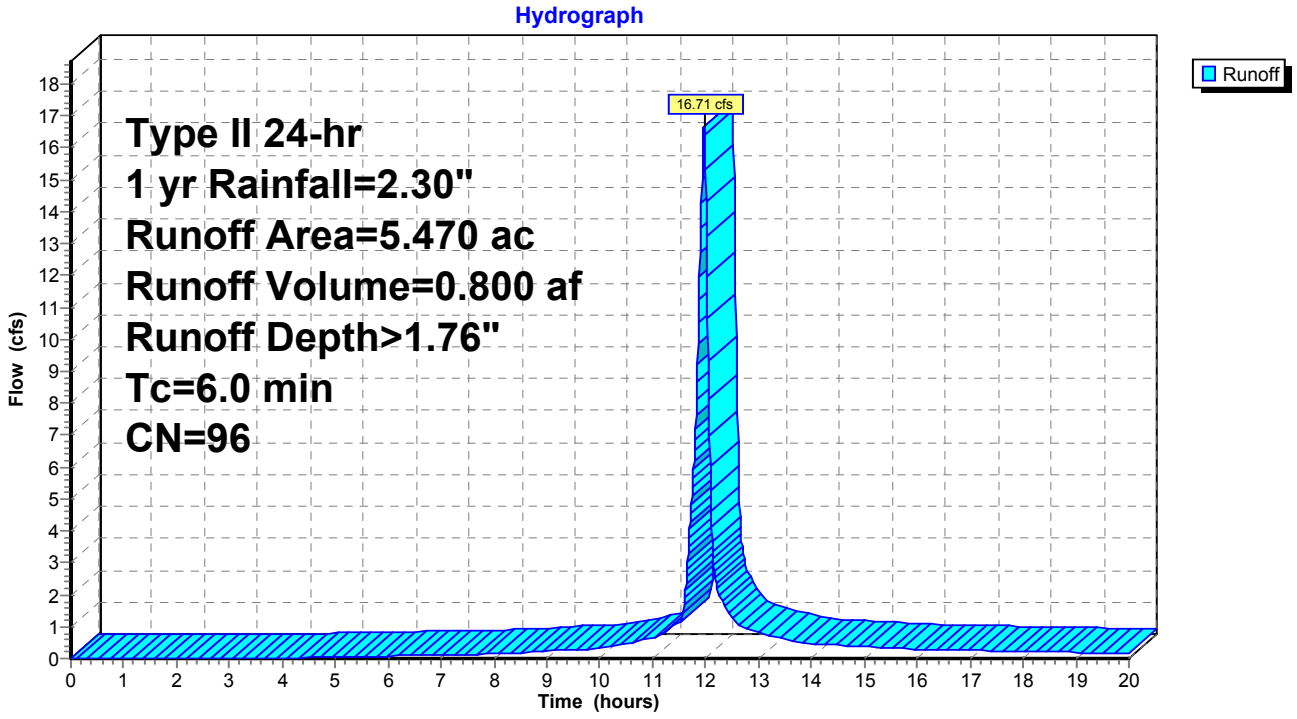
Runoff = 16.71 cfs @ 11.97 hrs, Volume= 0.800 af, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	4.720	98	impervious
*	0.750	80	pervious
	5.470	96	Weighted Average
	0.750		13.71% Pervious Area
	4.720		86.29% Impervious Area

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

Subcatchment 10S: Proposed American Avenue Parking Reconfiguration Treated



Summary for Subcatchment 16S: Heart and Vascular Bldg Undetained

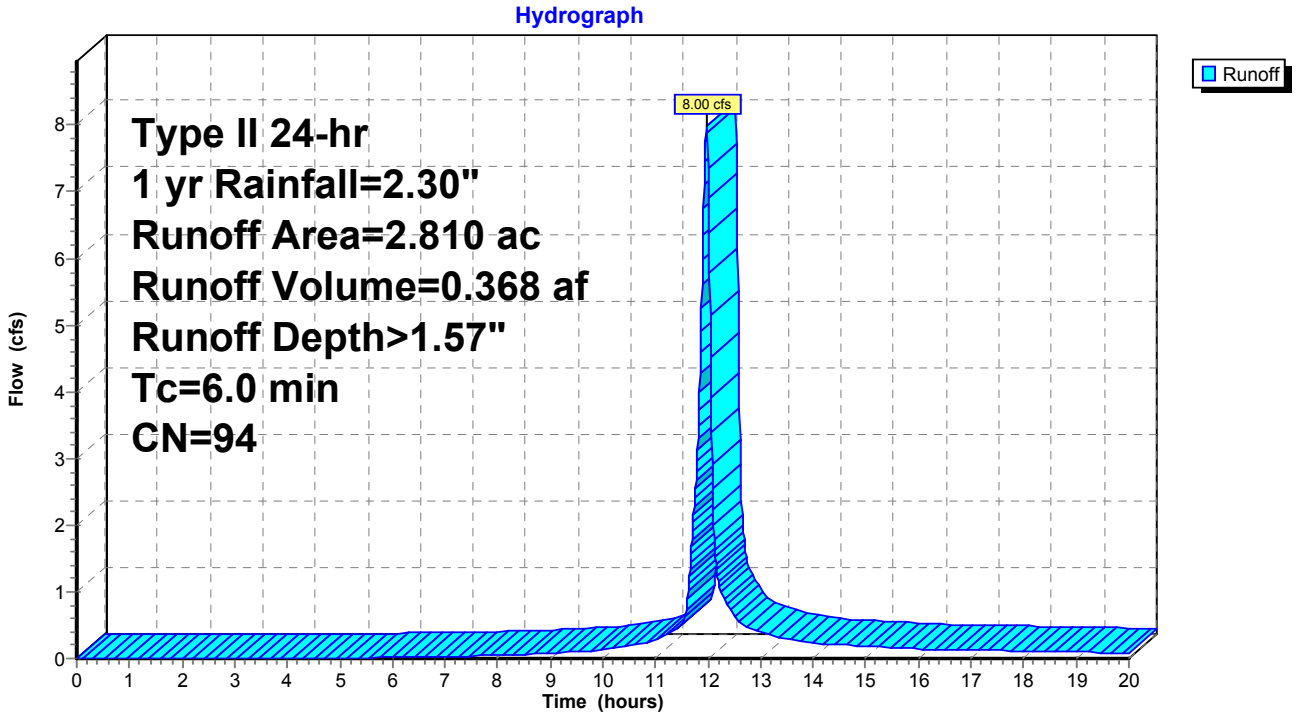
Runoff = 8.00 cfs @ 11.97 hrs, Volume= 0.368 af, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	2.150	98	impervious
*	0.660	80	pervious
	2.810	94	Weighted Average
	0.660		23.49% Pervious Area
	2.150		76.51% Impervious Area

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

Subcatchment 16S: Heart and Vascular Bldg Undetained



Summary for Subcatchment 17S: Heart and Vascular Expansion Undetained

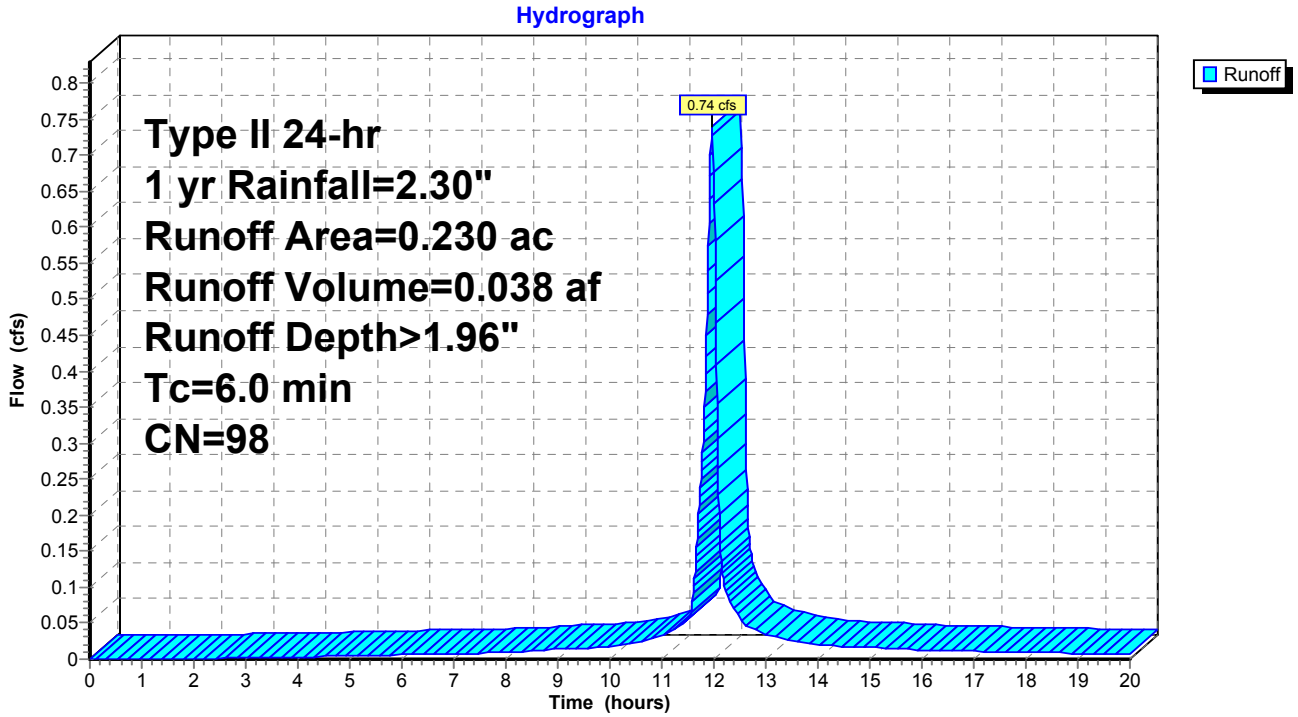
Runoff = 0.74 cfs @ 11.97 hrs, Volume= 0.038 af, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	0.230	98	impervious
	0.230		100.00% Impervious Area

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

Subcatchment 17S: Heart and Vascular Expansion Undetained



Summary for Subcatchment 18S: Access Drive Undetained

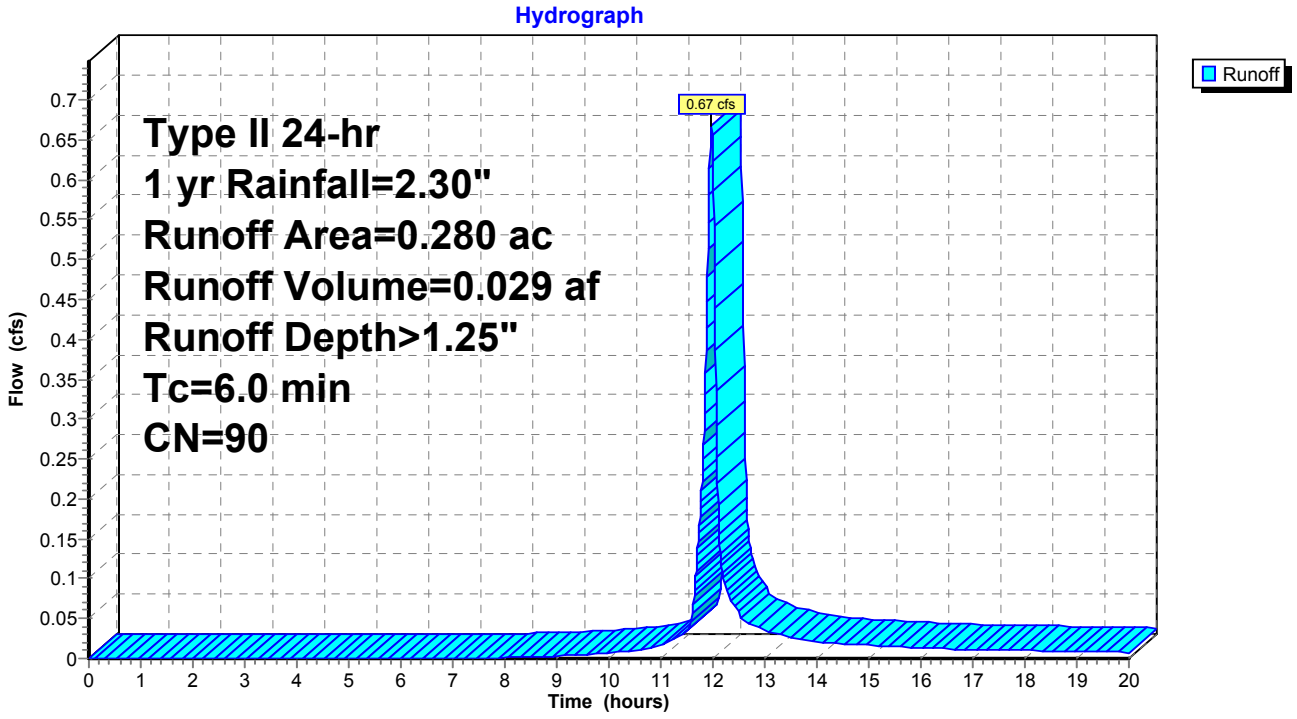
Runoff = 0.67 cfs @ 11.97 hrs, Volume= 0.029 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	0.150	98	impervious
*	0.130	80	pervious
	0.280	90	Weighted Average
	0.130		46.43% Pervious Area
	0.150		53.57% Impervious Area

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

Subcatchment 18S: Access Drive Undetained



Summary for Subcatchment 19S: Future Fairview Avenue Project

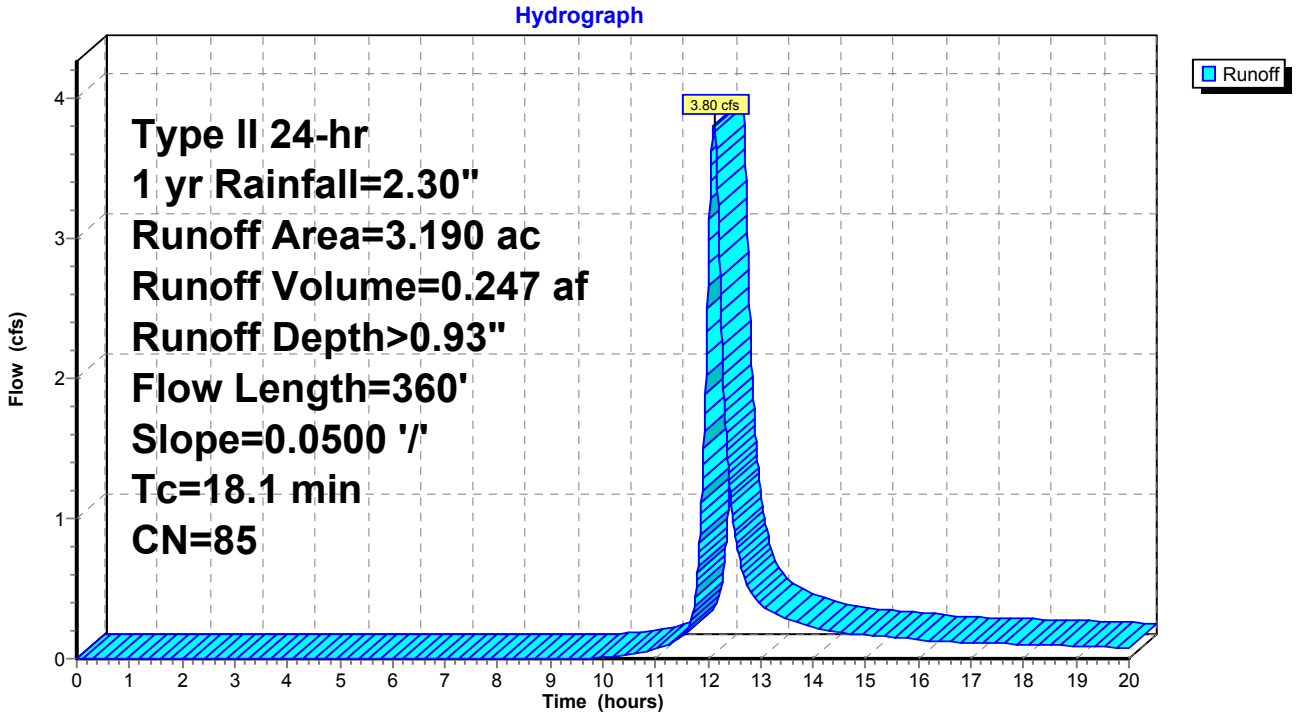
Runoff = 3.80 cfs @ 12.11 hrs, Volume= 0.247 af, Depth> 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	0.920	98	impervious
*	2.270	80	pervious
	3.190	85	Weighted Average
	2.270		71.16% Pervious Area
	0.920		28.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	300	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.3	60	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.1	360	Total			

Subcatchment 19S: Future Fairview Avenue Project



Summary for Subcatchment 20S: Access Drive Undetained

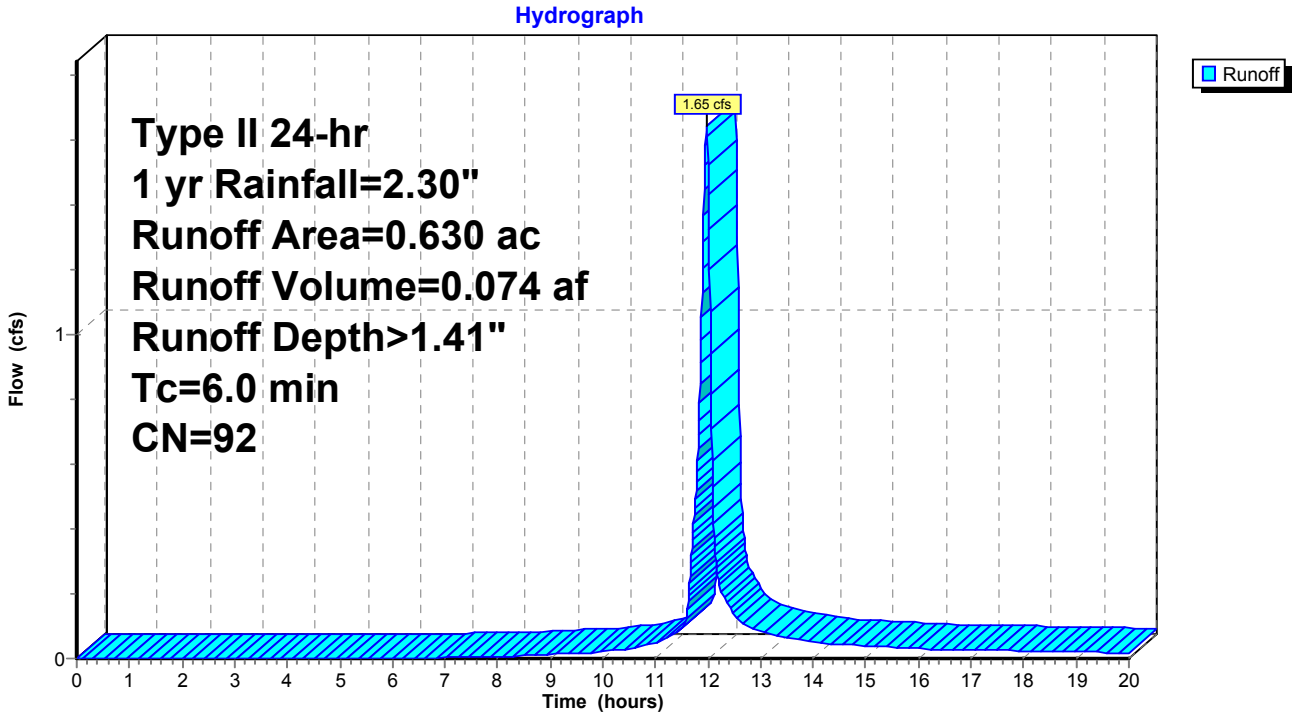
Runoff = 1.65 cfs @ 11.97 hrs, Volume= 0.074 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	0.430	98	impervious
*	0.200	80	pervious
	0.630	92	Weighted Average
	0.200		31.75% Pervious Area
	0.430		68.25% Impervious Area

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

Subcatchment 20S: Access Drive Undetained



Summary for Subcatchment 21S: Central Utility Plant Undetained

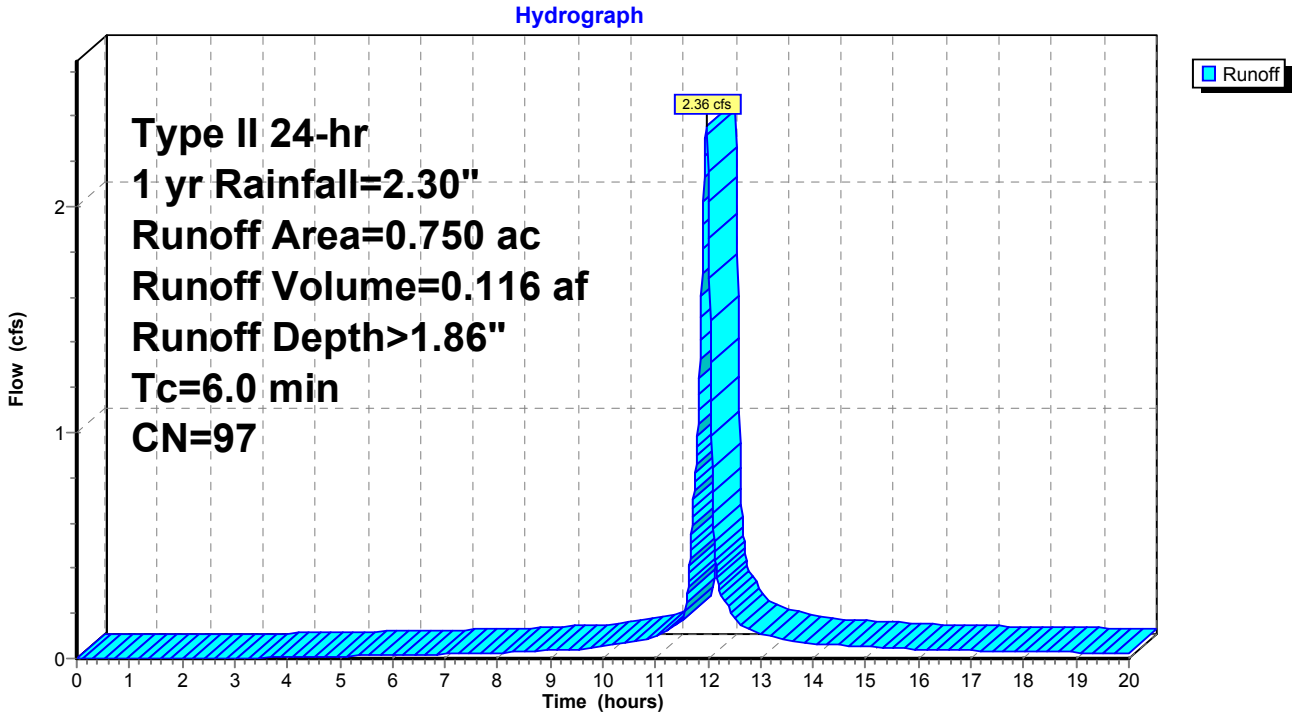
Runoff = 2.36 cfs @ 11.97 hrs, Volume= 0.116 af, Depth> 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.30"

	Area (ac)	CN	Description
*	0.700	98	impervious
*	0.050	80	pervious
	0.750	97	Weighted Average
	0.050		6.67% Pervious Area
	0.700		93.33% Impervious Area

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

Subcatchment 21S: Central Utility Plant Undetained



Summary for Pond 15: underground treatment basin

Inflow Area = 5.470 ac, 86.29% Impervious, Inflow Depth > 1.76" for 1 yr event
Inflow = 16.71 cfs @ 11.97 hrs, Volume= 0.800 af
Outflow = 11.20 cfs @ 12.04 hrs, Volume= 0.602 af, Atten= 33%, Lag= 4.1 min
Primary = 11.20 cfs @ 12.04 hrs, Volume= 0.602 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 133.01' @ 12.04 hrs Surf.Area= 0.080 ac Storage= 0.336 af

Plug-Flow detention time= 131.3 min calculated for 0.602 af (75% of inflow)
Center-of-Mass det. time= 70.8 min (817.6 - 746.9)

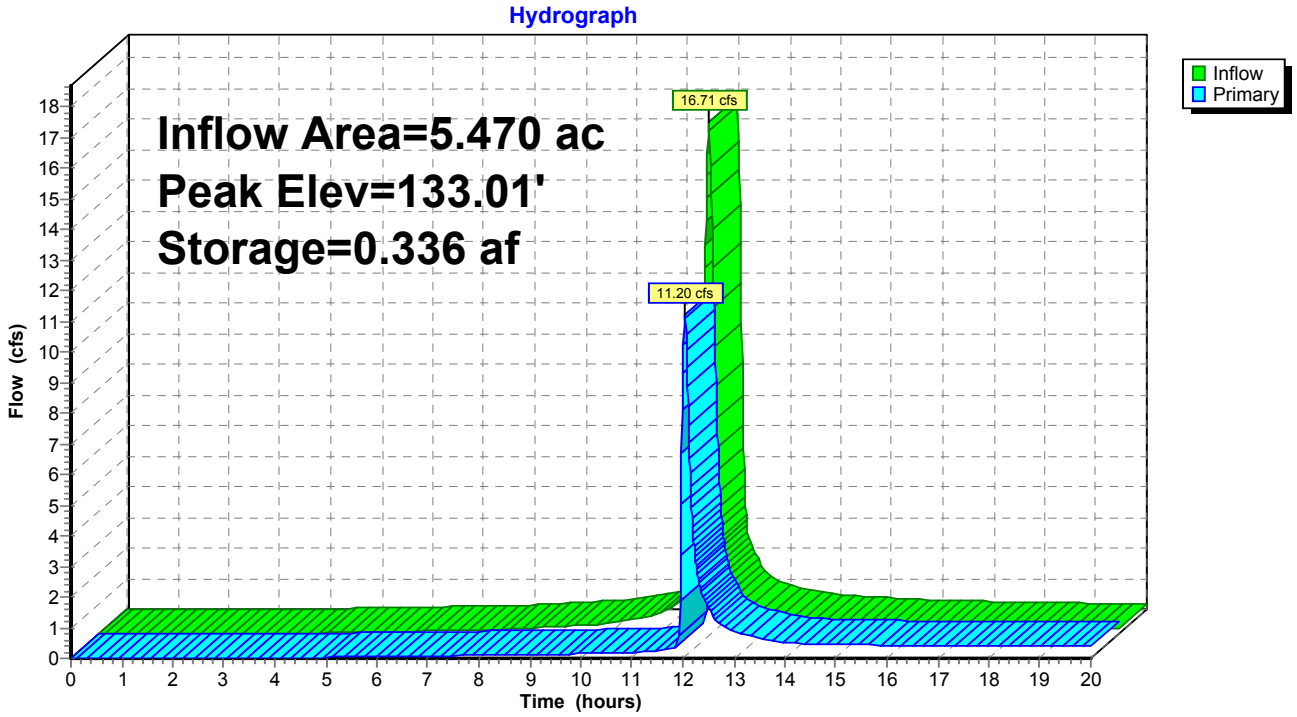
Volume	Invert	Avail.Storage	Storage Description
#1	128.80'	0.480 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.80	0.080	0.000	0.000
129.00	0.080	0.016	0.016
130.00	0.080	0.080	0.096
131.00	0.080	0.080	0.176
132.00	0.080	0.080	0.256
133.00	0.080	0.080	0.336
134.00	0.080	0.080	0.416
134.80	0.080	0.064	0.480

Device	Routing	Invert	Outlet Devices
#1	Primary	128.63'	**24.0" Round Culvert** L= 22.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.63' / 128.40' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Device 1	128.63'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	132.13'	**4.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=11.17 cfs @ 12.04 hrs HW=133.00' (Free Discharge)
└**1=Culvert** (Passes 11.17 cfs of 27.78 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.49 cfs @ 9.92 fps)
  └**3=Sharp-Crested Rectangular Weir** (Weir Controls 10.68 cfs @ 3.06 fps)

Pond 15: underground treatment basin



Stage-Discharge for Pond 15: underground treatment basin

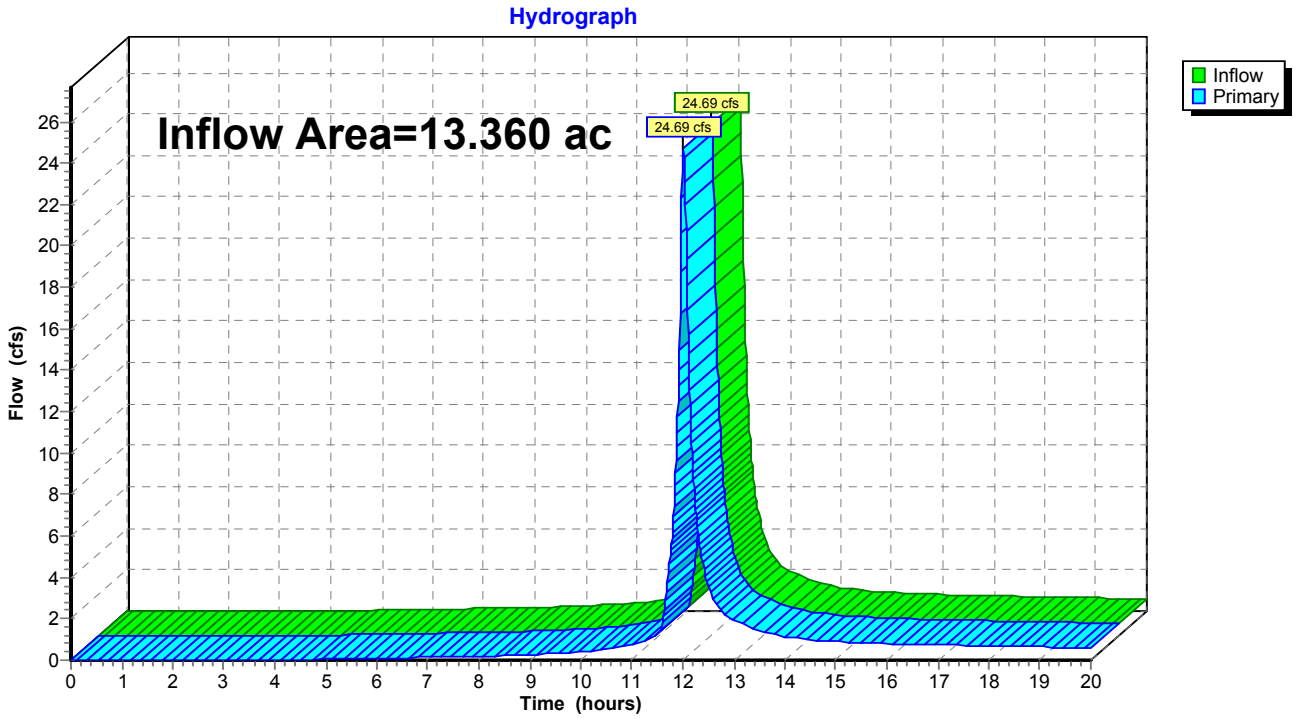
Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
128.80	0.00	130.88	0.34	132.96	10.38
128.84	0.07	130.92	0.35	133.00	11.10
128.88	0.08	130.96	0.35	133.04	11.84
128.92	0.10	131.00	0.35	133.08	12.60
128.96	0.11	131.04	0.36	133.12	13.38
129.00	0.12	131.08	0.36	133.16	14.17
129.04	0.13	131.12	0.36	133.20	14.98
129.08	0.13	131.16	0.37	133.24	15.80
129.12	0.14	131.20	0.37	133.28	16.63
129.16	0.15	131.24	0.37	133.32	17.48
129.20	0.16	131.28	0.38	133.36	18.35
129.24	0.16	131.32	0.38	133.40	19.23
129.28	0.17	131.36	0.38	133.44	20.12
129.32	0.18	131.40	0.38	133.48	21.03
129.36	0.18	131.44	0.39	133.52	21.95
129.40	0.19	131.48	0.39	133.56	22.89
129.44	0.20	131.52	0.39	133.60	23.83
129.48	0.20	131.56	0.40	133.64	24.79
129.52	0.21	131.60	0.40	133.68	25.77
129.56	0.21	131.64	0.40	133.72	26.75
129.60	0.22	131.68	0.40	133.76	27.75
129.64	0.22	131.72	0.41	133.80	28.76
129.68	0.23	131.76	0.41	133.84	29.78
129.72	0.23	131.80	0.41	133.88	30.82
129.76	0.24	131.84	0.42	133.92	31.33
129.80	0.24	131.88	0.42	133.96	31.48
129.84	0.25	131.92	0.42	134.00	31.62
129.88	0.25	131.96	0.42	134.04	31.77
129.92	0.26	132.00	0.43	134.08	31.91
129.96	0.26	132.04	0.43	134.12	32.05
130.00	0.26	132.08	0.43	134.16	32.20
130.04	0.27	132.12	0.43	134.20	32.34
130.08	0.27	132.16	0.50	134.24	32.48
130.12	0.28	132.20	0.68	134.28	32.62
130.16	0.28	132.24	0.92	134.32	32.76
130.20	0.28	132.28	1.20	134.36	32.90
130.24	0.29	132.32	1.53	134.40	33.04
130.28	0.29	132.36	1.89	134.44	33.18
130.32	0.30	132.40	2.29	134.48	33.31
130.36	0.30	132.44	2.71	134.52	33.45
130.40	0.30	132.48	3.16	134.56	33.59
130.44	0.31	132.52	3.64	134.60	33.72
130.48	0.31	132.56	4.15	134.64	33.86
130.52	0.31	132.60	4.68	134.68	33.99
130.56	0.32	132.64	5.23	134.72	34.13
130.60	0.32	132.68	5.80	134.76	34.26
130.64	0.32	132.72	6.40	134.80	**34.39**
130.68	0.33	132.76	7.01		
130.72	0.33	132.80	7.65		
130.76	0.33	132.84	8.30		
130.80	0.34	132.88	8.98		
130.84	0.34	132.92	9.67		

Summary for Link 20L: Total Proposed Runoff

Inflow Area = 13.360 ac, 69.61% Impervious, Inflow Depth > 1.32" for 1 yr event
Inflow = 24.69 cfs @ 12.01 hrs, Volume= 1.474 af
Primary = 24.69 cfs @ 12.01 hrs, Volume= 1.474 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Link 20L: Total Proposed Runoff



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10S: Proposed American Runoff Area=5.470 ac 86.29% Impervious Runoff Depth>2.13"
Tc=6.0 min CN=96 Runoff=19.96 cfs 0.970 af

Subcatchment16S: Heart and Vascular Runoff Area=2.810 ac 76.51% Impervious Runoff Depth>1.93"
Tc=6.0 min CN=94 Runoff=9.69 cfs 0.453 af

Subcatchment17S: Heart and Vascular Runoff Area=0.230 ac 100.00% Impervious Runoff Depth>2.34"
Tc=6.0 min CN=98 Runoff=0.87 cfs 0.045 af

Subcatchment18S: Access Drive Runoff Area=0.280 ac 53.57% Impervious Runoff Depth>1.59"
Tc=6.0 min CN=90 Runoff=0.84 cfs 0.037 af

Subcatchment19S: Future Fairview Runoff Area=3.190 ac 28.84% Impervious Runoff Depth>1.23"
Flow Length=360' Slope=0.0500 '/' Tc=18.1 min CN=85 Runoff=5.02 cfs 0.326 af

Subcatchment20S: Access Drive Runoff Area=0.630 ac 68.25% Impervious Runoff Depth>1.76"
Tc=6.0 min CN=92 Runoff=2.03 cfs 0.092 af

Subcatchment21S: Central Utility Plant Runoff Area=0.750 ac 93.33% Impervious Runoff Depth>2.23"
Tc=6.0 min CN=97 Runoff=2.80 cfs 0.139 af

Pond 15: underground treatment basin Peak Elev=133.27' Storage=0.358 af Inflow=19.96 cfs 0.970 af
Outflow=16.45 cfs 0.755 af

Link 20L: Total Proposed Runoff Inflow=34.62 cfs 1.847 af
Primary=34.62 cfs 1.847 af

Total Runoff Area = 13.360 ac Runoff Volume = 2.062 af Average Runoff Depth = 1.85"
30.39% Pervious = 4.060 ac 69.61% Impervious = 9.300 ac

Summary for Subcatchment 10S: Proposed American Avenue Parking Reconfiguration Treated

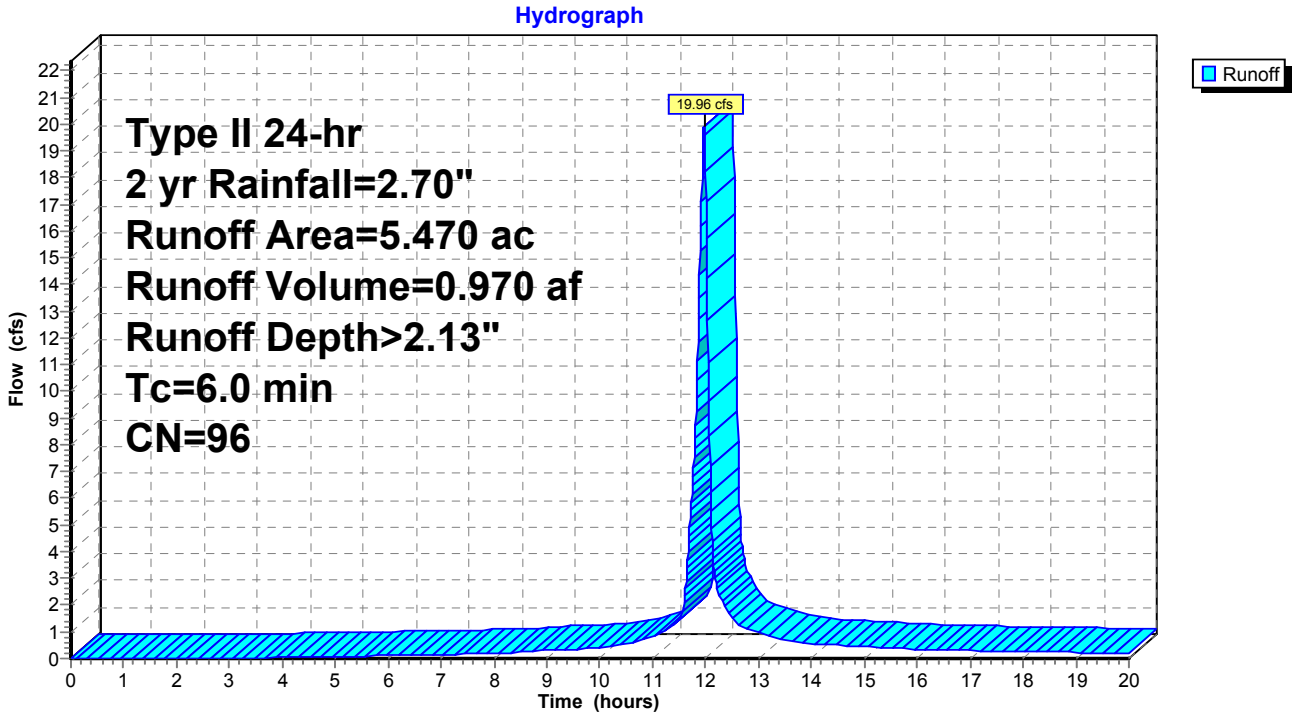
Runoff = 19.96 cfs @ 11.97 hrs, Volume= 0.970 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	4.720	98	impervious
*	0.750	80	pervious
	5.470	96	Weighted Average
	0.750		13.71% Pervious Area
	4.720		86.29% Impervious Area

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

Subcatchment 10S: Proposed American Avenue Parking Reconfiguration Treated



Summary for Subcatchment 16S: Heart and Vascular Bldg Undetained

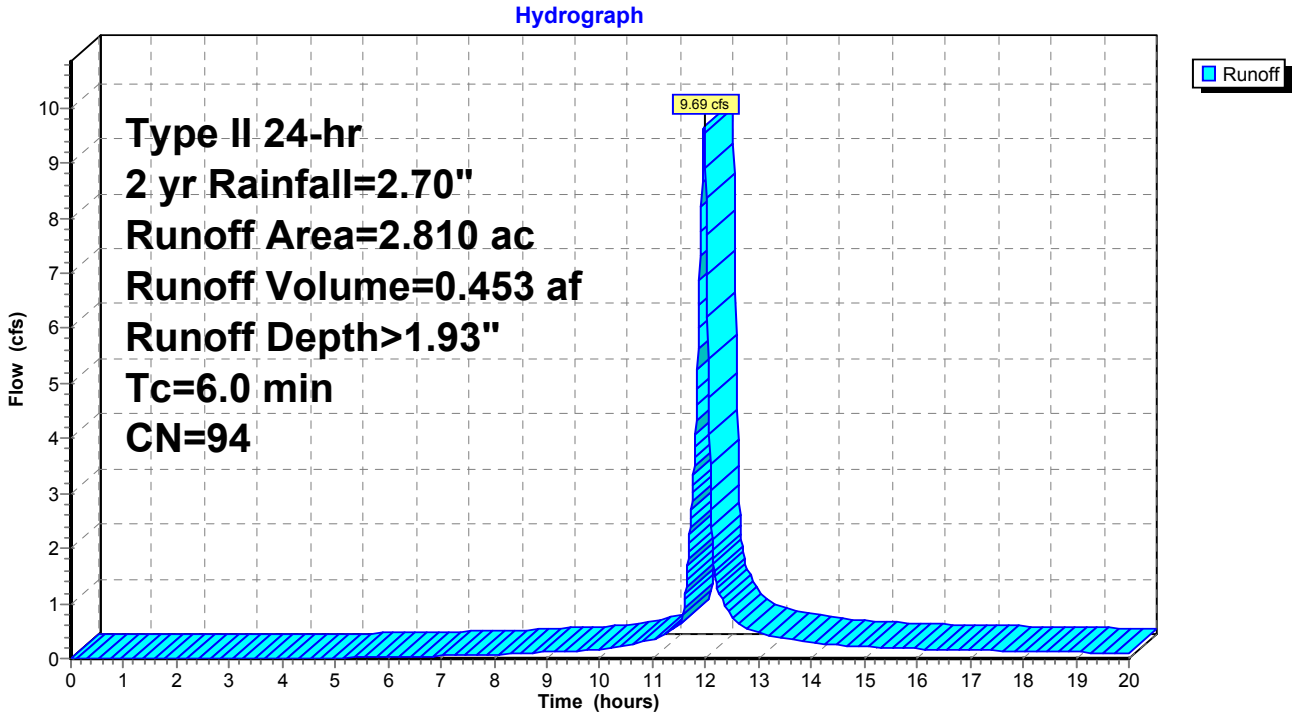
Runoff = 9.69 cfs @ 11.97 hrs, Volume= 0.453 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	2.150	98	impervious
*	0.660	80	pervious
	2.810	94	Weighted Average
	0.660		23.49% Pervious Area
	2.150		76.51% Impervious Area

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

Subcatchment 16S: Heart and Vascular Bldg Undetained



Summary for Subcatchment 17S: Heart and Vascular Expansion Undetained

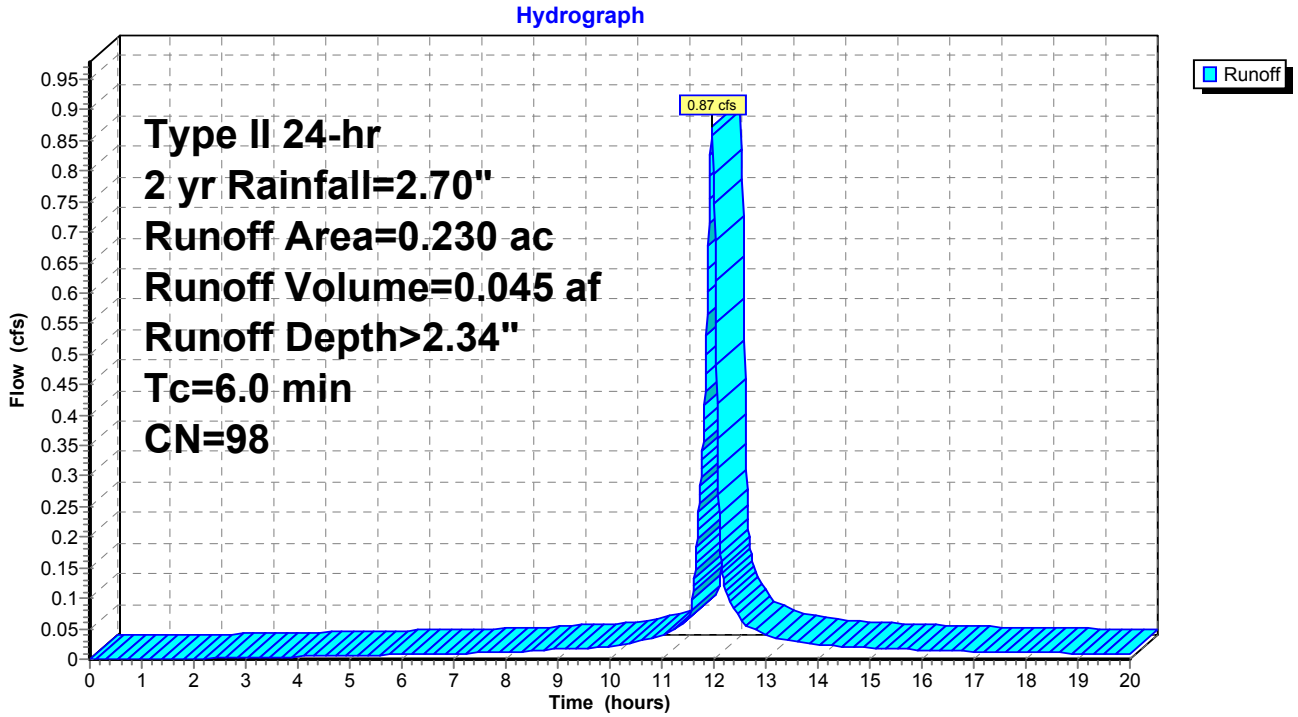
Runoff = 0.87 cfs @ 11.97 hrs, Volume= 0.045 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.230	98	impervious
	0.230		100.00% Impervious Area

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

Subcatchment 17S: Heart and Vascular Expansion Undetained



Summary for Subcatchment 18S: Access Drive Undetained

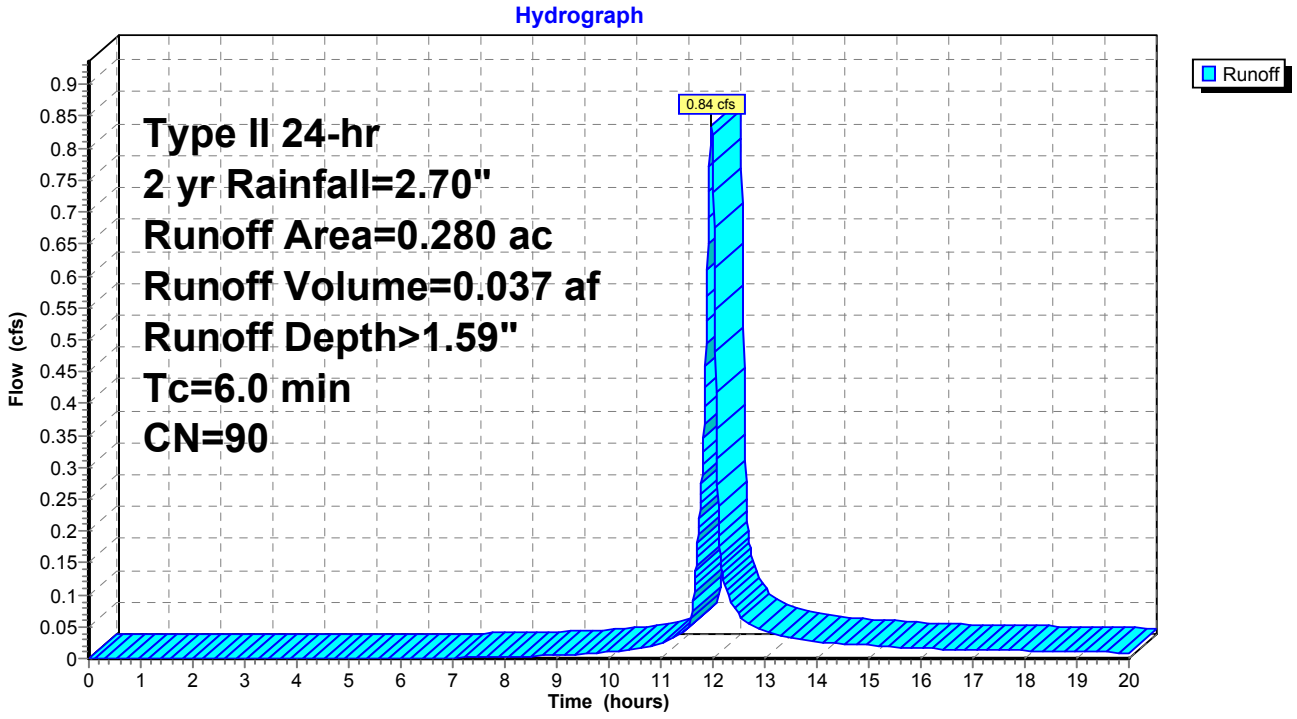
Runoff = 0.84 cfs @ 11.97 hrs, Volume= 0.037 af, Depth> 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.150	98	impervious
*	0.130	80	pervious
	0.280	90	Weighted Average
	0.130		46.43% Pervious Area
	0.150		53.57% Impervious Area

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

Subcatchment 18S: Access Drive Undetained



Summary for Subcatchment 19S: Future Fairview Avenue Project

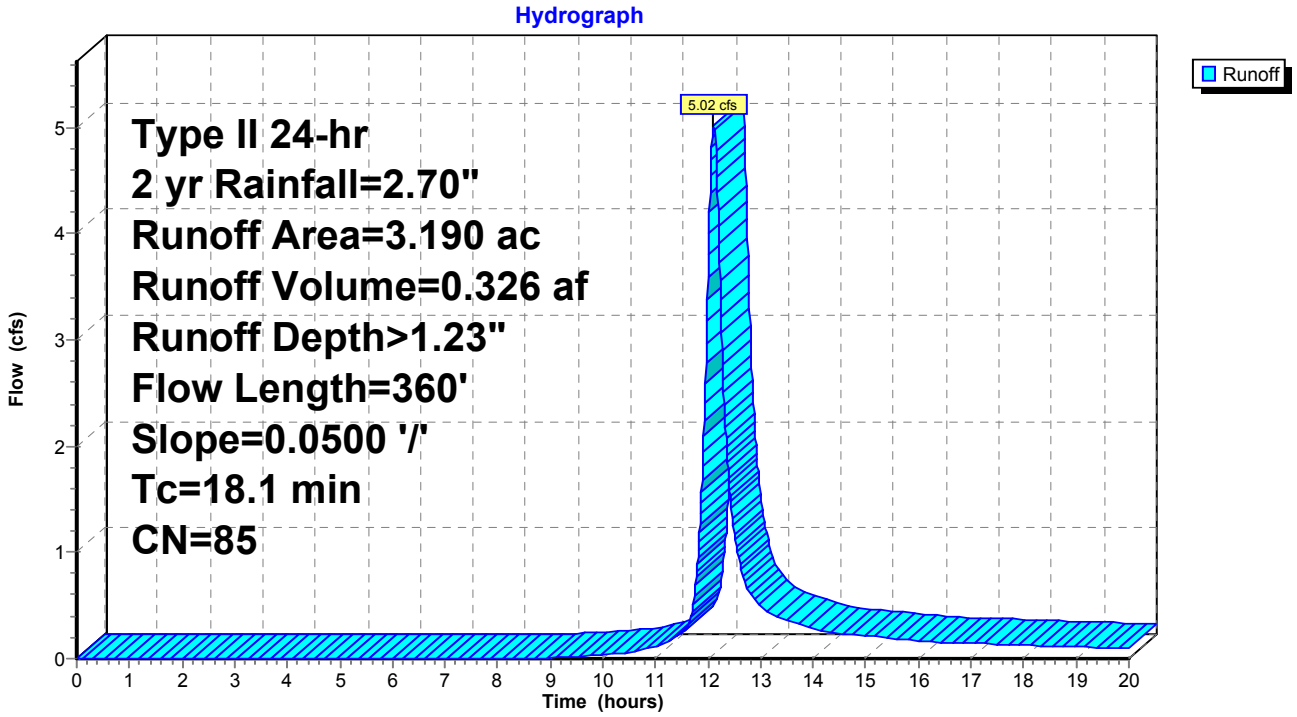
Runoff = 5.02 cfs @ 12.11 hrs, Volume= 0.326 af, Depth> 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.920	98	impervious
*	2.270	80	pervious
	3.190	85	Weighted Average
	2.270		71.16% Pervious Area
	0.920		28.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	300	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.3	60	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.1	360	Total			

Subcatchment 19S: Future Fairview Avenue Project



Summary for Subcatchment 20S: Access Drive Undetained

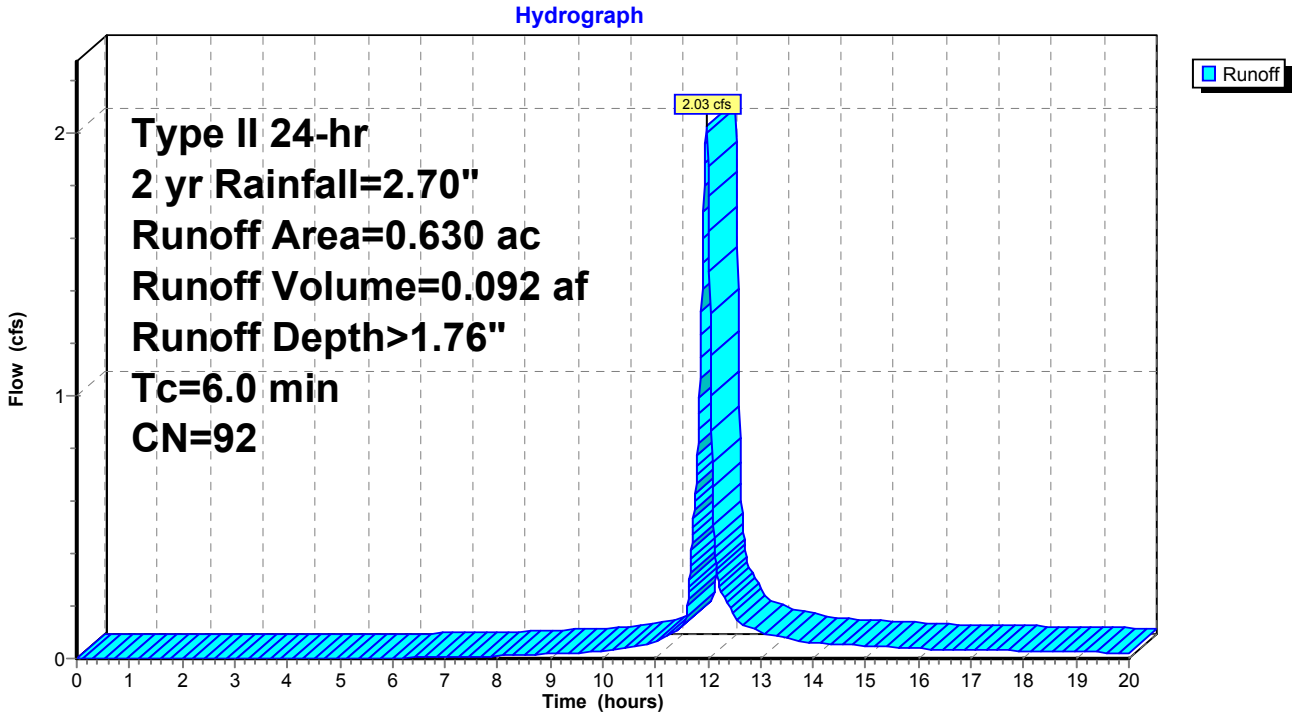
Runoff = 2.03 cfs @ 11.97 hrs, Volume= 0.092 af, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.430	98	impervious
*	0.200	80	pervious
	0.630	92	Weighted Average
	0.200		31.75% Pervious Area
	0.430		68.25% Impervious Area

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

Subcatchment 20S: Access Drive Undetained



Summary for Subcatchment 21S: Central Utility Plant Undetained

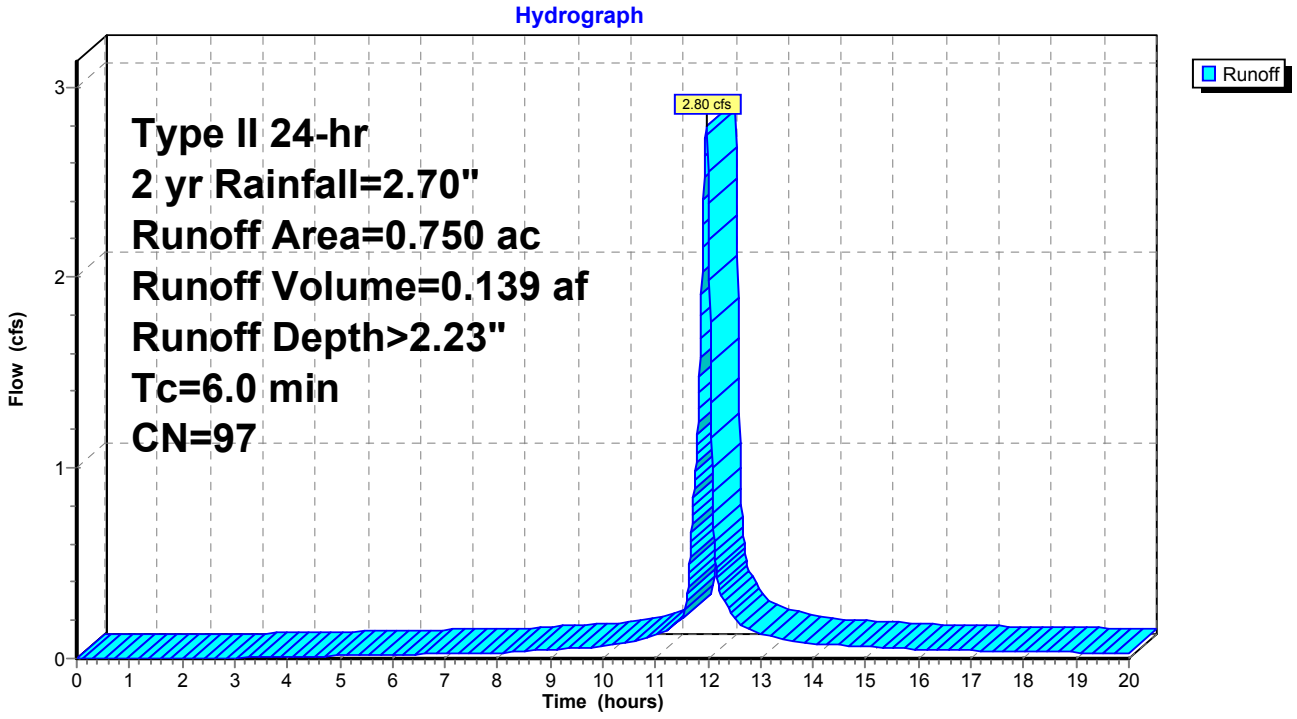
Runoff = 2.80 cfs @ 11.97 hrs, Volume= 0.139 af, Depth> 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 yr Rainfall=2.70"

	Area (ac)	CN	Description
*	0.700	98	impervious
*	0.050	80	pervious
	0.750	97	Weighted Average
	0.050		6.67% Pervious Area
	0.700		93.33% Impervious Area

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

Subcatchment 21S: Central Utility Plant Undetained



Summary for Pond 15: underground treatment basin

Inflow Area = 5.470 ac, 86.29% Impervious, Inflow Depth > 2.13" for 2 yr event
Inflow = 19.96 cfs @ 11.97 hrs, Volume= 0.970 af
Outflow = 16.45 cfs @ 12.02 hrs, Volume= 0.755 af, Atten= 18%, Lag= 2.8 min
Primary = 16.45 cfs @ 12.02 hrs, Volume= 0.755 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 133.27' @ 12.02 hrs Surf.Area= 0.080 ac Storage= 0.358 af

Plug-Flow detention time= 113.8 min calculated for 0.755 af (78% of inflow)
Center-of-Mass det. time= 56.1 min (798.4 - 742.4)

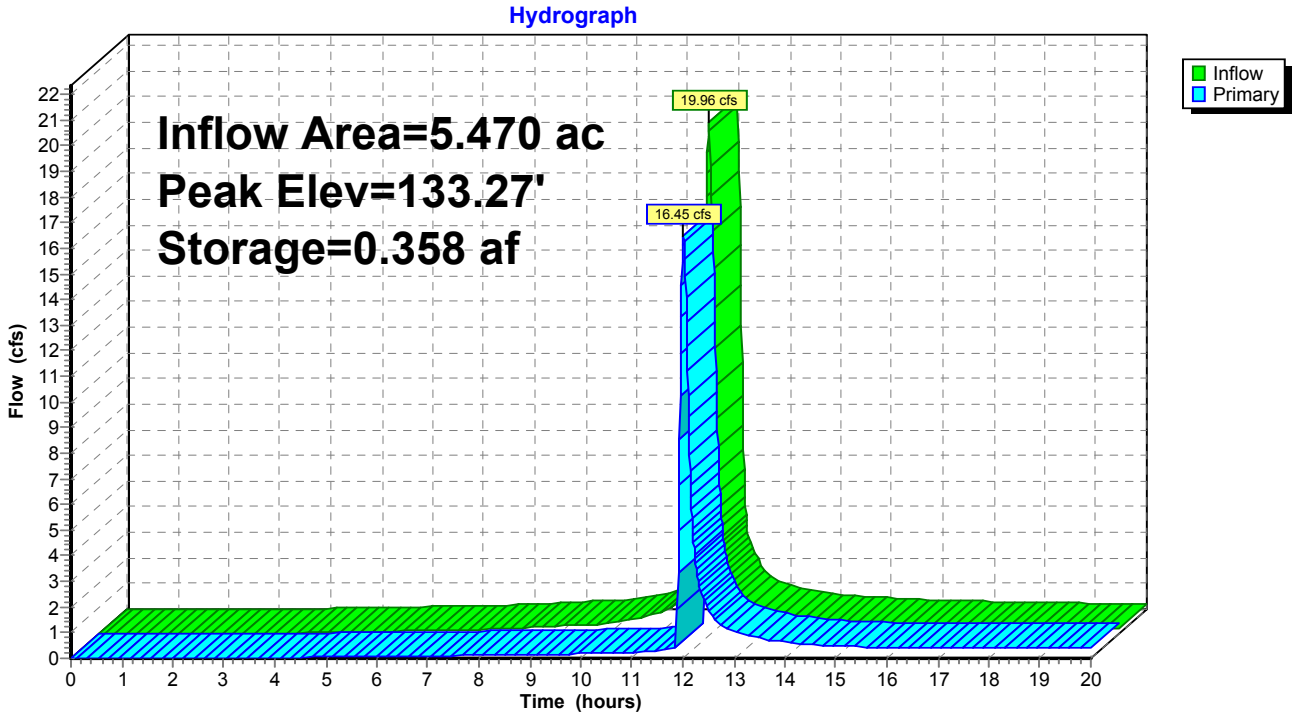
Volume	Invert	Avail.Storage	Storage Description
#1	128.80'	0.480 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.80	0.080	0.000	0.000
129.00	0.080	0.016	0.016
130.00	0.080	0.080	0.096
131.00	0.080	0.080	0.176
132.00	0.080	0.080	0.256
133.00	0.080	0.080	0.336
134.00	0.080	0.080	0.416
134.80	0.080	0.064	0.480

Device	Routing	Invert	Outlet Devices
#1	Primary	128.63'	**24.0" Round Culvert** L= 22.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.63' / 128.40' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Device 1	128.63'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	132.13'	**4.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=16.41 cfs @ 12.02 hrs HW=133.27' (Free Discharge)
└**1=Culvert** (Passes 16.41 cfs of 28.86 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.50 cfs @ 10.23 fps)
  └**3=Sharp-Crested Rectangular Weir** (Weir Controls 15.90 cfs @ 3.49 fps)

Pond 15: underground treatment basin



Stage-Discharge for Pond 15: underground treatment basin

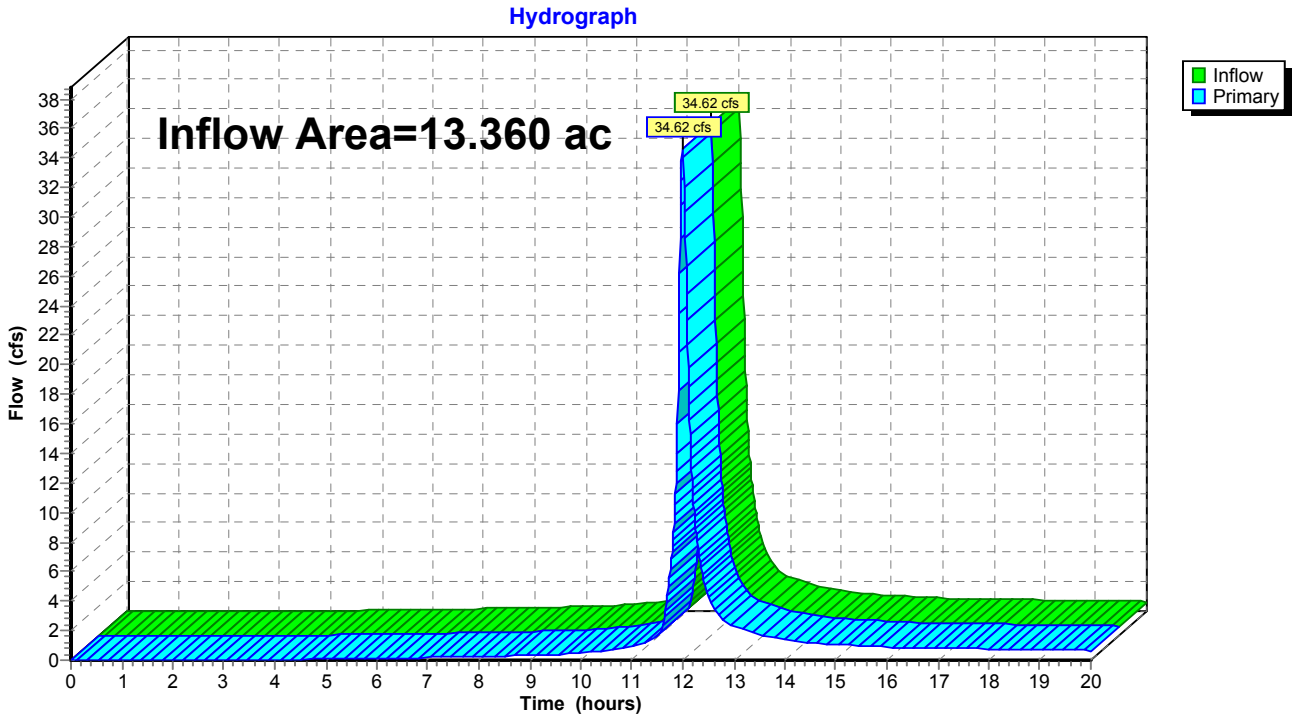
Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
128.80	0.00	130.88	0.34	132.96	10.38
128.84	0.07	130.92	0.35	133.00	11.10
128.88	0.08	130.96	0.35	133.04	11.84
128.92	0.10	131.00	0.35	133.08	12.60
128.96	0.11	131.04	0.36	133.12	13.38
129.00	0.12	131.08	0.36	133.16	14.17
129.04	0.13	131.12	0.36	133.20	14.98
129.08	0.13	131.16	0.37	133.24	15.80
129.12	0.14	131.20	0.37	133.28	16.63
129.16	0.15	131.24	0.37	133.32	17.48
129.20	0.16	131.28	0.38	133.36	18.35
129.24	0.16	131.32	0.38	133.40	19.23
129.28	0.17	131.36	0.38	133.44	20.12
129.32	0.18	131.40	0.38	133.48	21.03
129.36	0.18	131.44	0.39	133.52	21.95
129.40	0.19	131.48	0.39	133.56	22.89
129.44	0.20	131.52	0.39	133.60	23.83
129.48	0.20	131.56	0.40	133.64	24.79
129.52	0.21	131.60	0.40	133.68	25.77
129.56	0.21	131.64	0.40	133.72	26.75
129.60	0.22	131.68	0.40	133.76	27.75
129.64	0.22	131.72	0.41	133.80	28.76
129.68	0.23	131.76	0.41	133.84	29.78
129.72	0.23	131.80	0.41	133.88	30.82
129.76	0.24	131.84	0.42	133.92	31.33
129.80	0.24	131.88	0.42	133.96	31.48
129.84	0.25	131.92	0.42	134.00	31.62
129.88	0.25	131.96	0.42	134.04	31.77
129.92	0.26	132.00	0.43	134.08	31.91
129.96	0.26	132.04	0.43	134.12	32.05
130.00	0.26	132.08	0.43	134.16	32.20
130.04	0.27	132.12	0.43	134.20	32.34
130.08	0.27	132.16	0.50	134.24	32.48
130.12	0.28	132.20	0.68	134.28	32.62
130.16	0.28	132.24	0.92	134.32	32.76
130.20	0.28	132.28	1.20	134.36	32.90
130.24	0.29	132.32	1.53	134.40	33.04
130.28	0.29	132.36	1.89	134.44	33.18
130.32	0.30	132.40	2.29	134.48	33.31
130.36	0.30	132.44	2.71	134.52	33.45
130.40	0.30	132.48	3.16	134.56	33.59
130.44	0.31	132.52	3.64	134.60	33.72
130.48	0.31	132.56	4.15	134.64	33.86
130.52	0.31	132.60	4.68	134.68	33.99
130.56	0.32	132.64	5.23	134.72	34.13
130.60	0.32	132.68	5.80	134.76	34.26
130.64	0.32	132.72	6.40	134.80	**34.39**
130.68	0.33	132.76	7.01		
130.72	0.33	132.80	7.65		
130.76	0.33	132.84	8.30		
130.80	0.34	132.88	8.98		
130.84	0.34	132.92	9.67		

Summary for Link 20L: Total Proposed Runoff

Inflow Area = 13.360 ac, 69.61% Impervious, Inflow Depth > 1.66" for 2 yr event
Inflow = 34.62 cfs @ 12.00 hrs, Volume= 1.847 af
Primary = 34.62 cfs @ 12.00 hrs, Volume= 1.847 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Link 20L: Total Proposed Runoff



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10S: Proposed American Runoff Area=5.470 ac 86.29% Impervious Runoff Depth>3.35"
Tc=6.0 min CN=96 Runoff=30.40 cfs 1.525 af

Subcatchment16S: Heart and Vascular Runoff Area=2.810 ac 76.51% Impervious Runoff Depth>3.13"
Tc=6.0 min CN=94 Runoff=15.14 cfs 0.733 af

Subcatchment17S: Heart and Vascular Runoff Area=0.230 ac 100.00% Impervious Runoff Depth>3.57"
Tc=6.0 min CN=98 Runoff=1.31 cfs 0.068 af

Subcatchment18S: Access Drive Runoff Area=0.280 ac 53.57% Impervious Runoff Depth>2.73"
Tc=6.0 min CN=90 Runoff=1.39 cfs 0.064 af

Subcatchment19S: Future Fairview Runoff Area=3.190 ac 28.84% Impervious Runoff Depth>2.27"
Flow Length=360' Slope=0.0500 '/' Tc=18.1 min CN=85 Runoff=9.19 cfs 0.604 af

Subcatchment20S: Access Drive Runoff Area=0.630 ac 68.25% Impervious Runoff Depth>2.93"
Tc=6.0 min CN=92 Runoff=3.26 cfs 0.154 af

Subcatchment21S: Central Utility Plant Runoff Area=0.750 ac 93.33% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=97 Runoff=4.22 cfs 0.216 af

Pond 15: underground treatment basin Peak Elev=133.77' Storage=0.398 af Inflow=30.40 cfs 1.525 af
Outflow=28.10 cfs 1.273 af

Link 20L: Total Proposed Runoff Inflow=58.82 cfs 3.113 af
Primary=58.82 cfs 3.113 af

Total Runoff Area = 13.360 ac Runoff Volume = 3.365 af Average Runoff Depth = 3.02"
30.39% Pervious = 4.060 ac 69.61% Impervious = 9.300 ac

Summary for Subcatchment 10S: Proposed American Avenue Parking Reconfiguration Treated

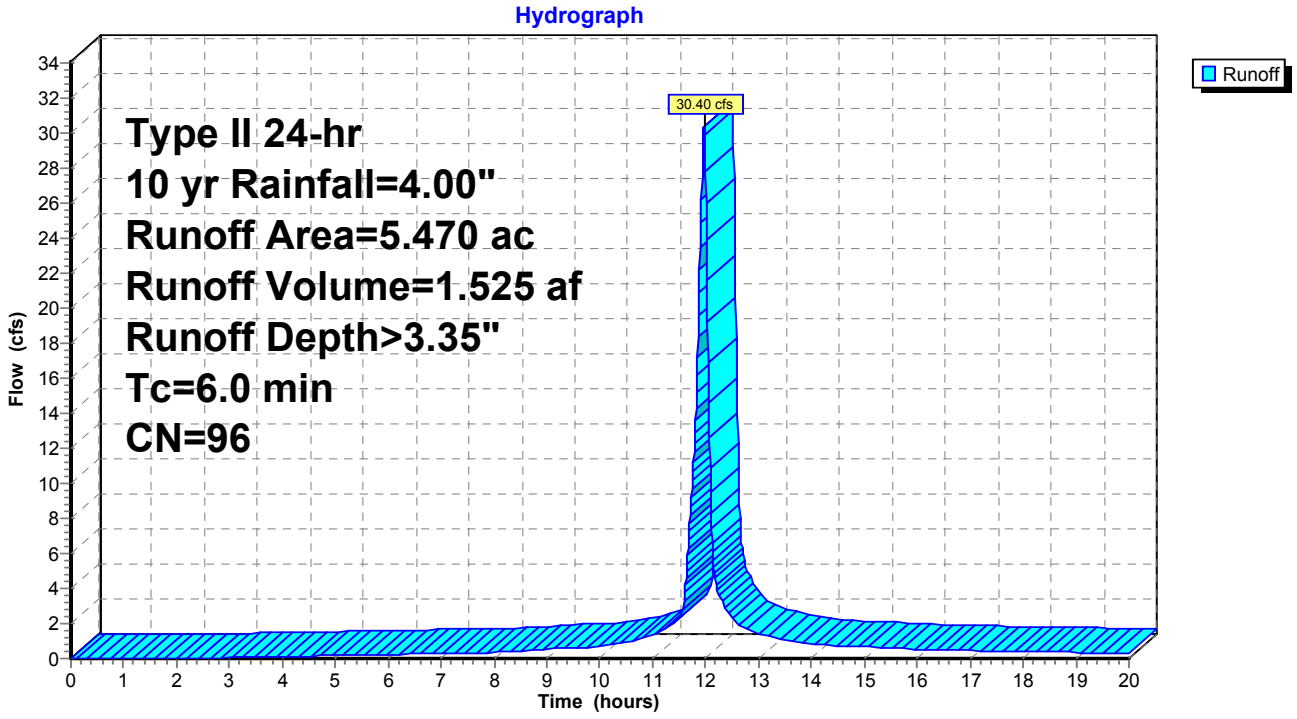
Runoff = 30.40 cfs @ 11.97 hrs, Volume= 1.525 af, Depth> 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	4.720	98	impervious
*	0.750	80	pervious
	5.470	96	Weighted Average
	0.750		13.71% Pervious Area
	4.720		86.29% Impervious Area

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

Subcatchment 10S: Proposed American Avenue Parking Reconfiguration Treated



Summary for Subcatchment 16S: Heart and Vascular Bldg Undetained

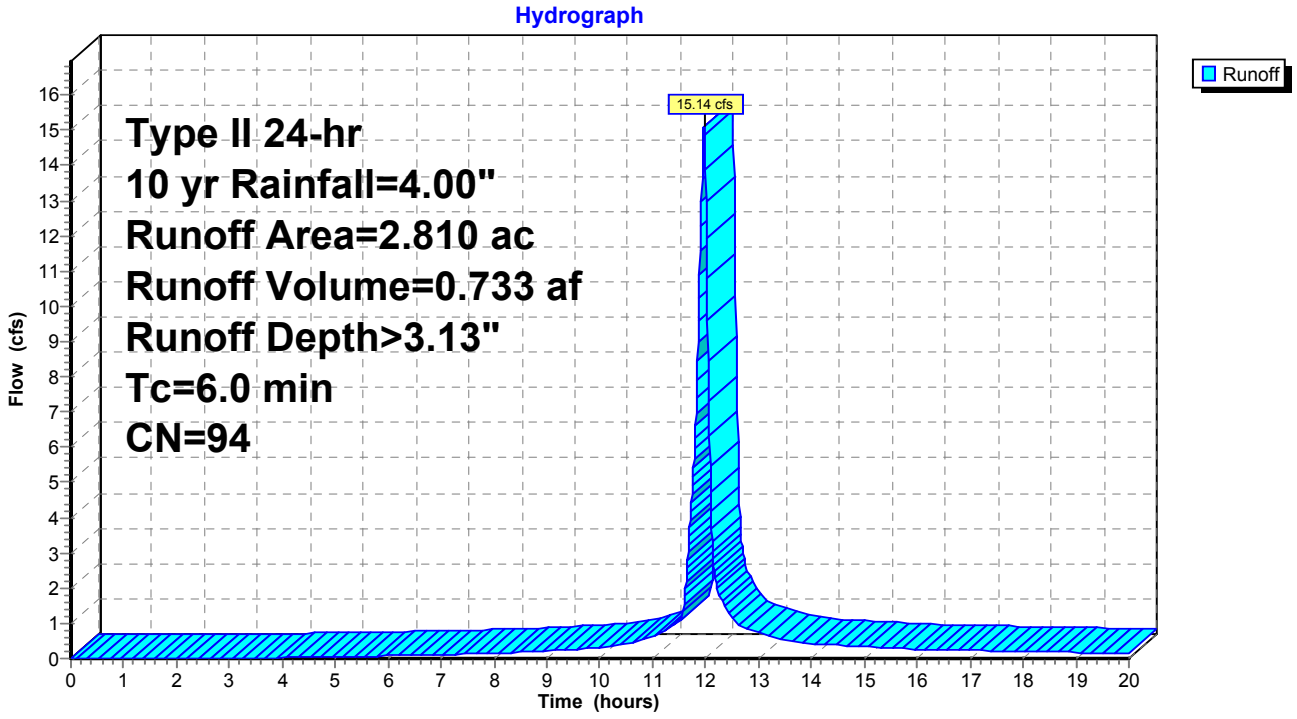
Runoff = 15.14 cfs @ 11.97 hrs, Volume= 0.733 af, Depth> 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	2.150	98	impervious
*	0.660	80	pervious
	2.810	94	Weighted Average
	0.660		23.49% Pervious Area
	2.150		76.51% Impervious Area

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

Subcatchment 16S: Heart and Vascular Bldg Undetained



Summary for Subcatchment 17S: Heart and Vascular Expansion Undetained

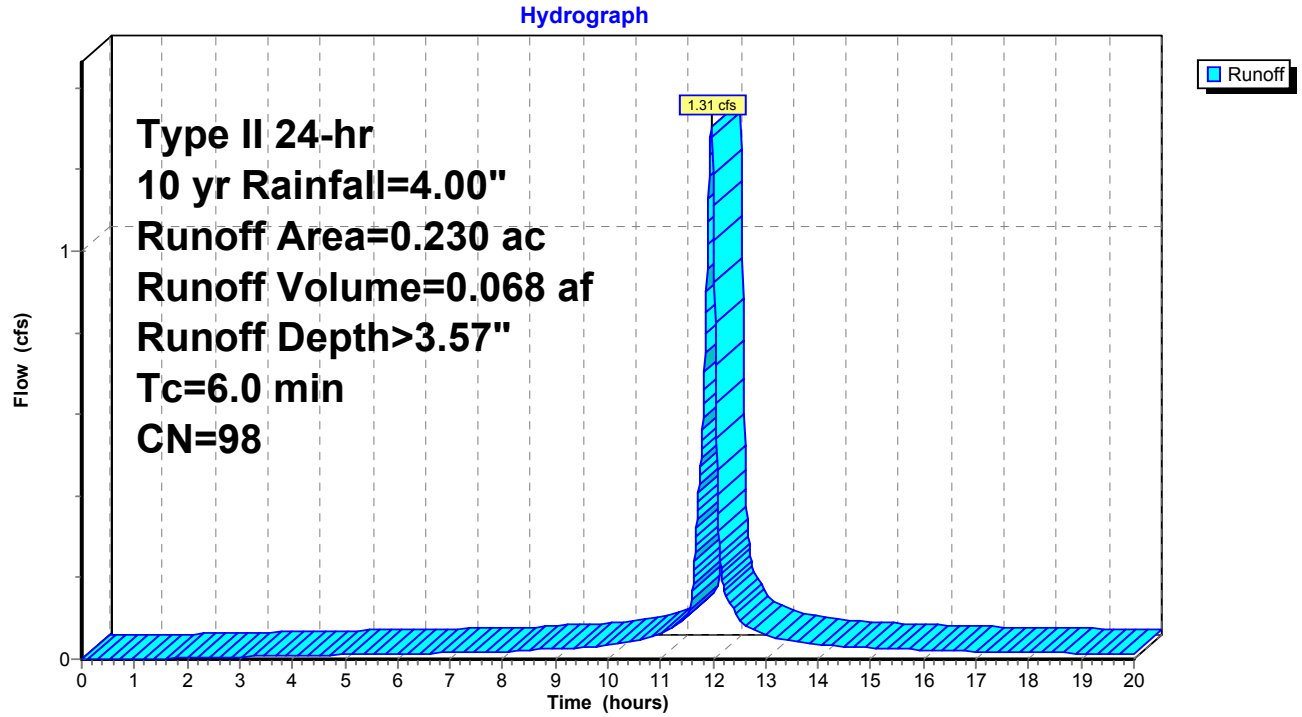
Runoff = 1.31 cfs @ 11.97 hrs, Volume= 0.068 af, Depth> 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	0.230	98	impervious
	0.230		100.00% Impervious Area

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

Subcatchment 17S: Heart and Vascular Expansion Undetained



Summary for Subcatchment 18S: Access Drive Undetained

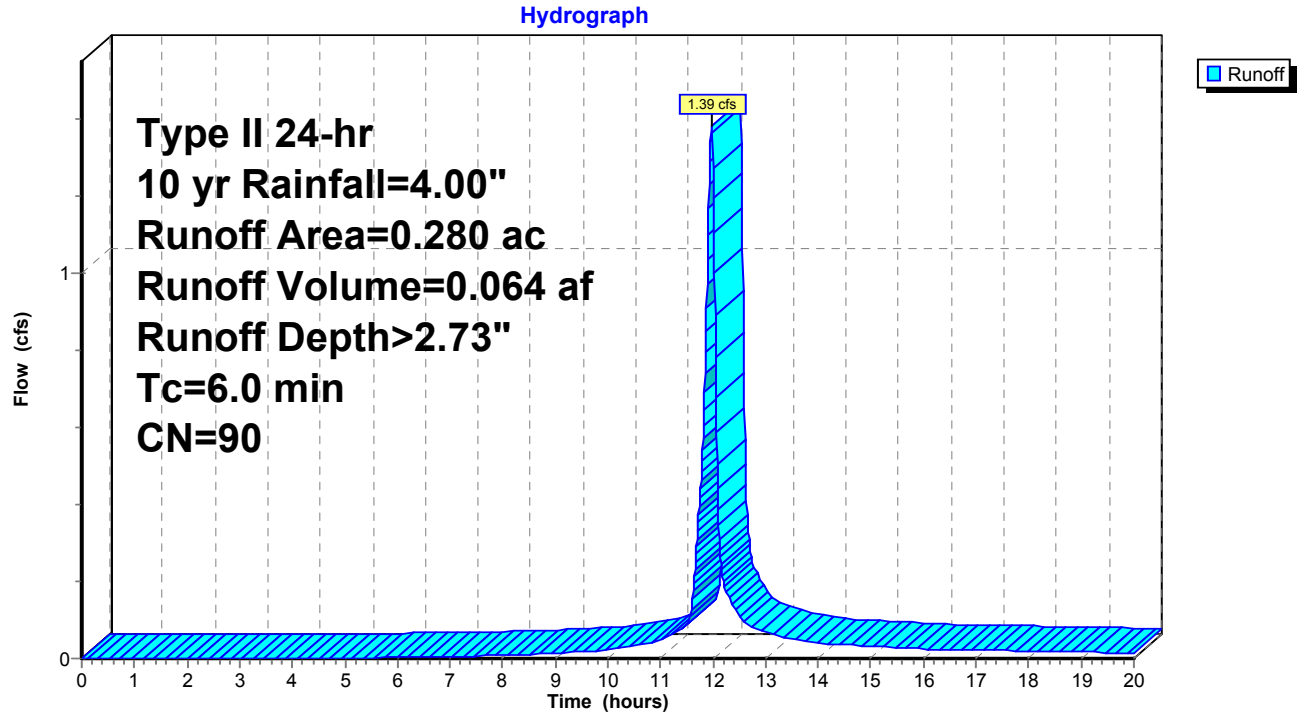
Runoff = 1.39 cfs @ 11.97 hrs, Volume= 0.064 af, Depth> 2.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	0.150	98	impervious
*	0.130	80	pervious
	0.280	90	Weighted Average
	0.130		46.43% Pervious Area
	0.150		53.57% Impervious Area

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

Subcatchment 18S: Access Drive Undetained



Summary for Subcatchment 19S: Future Fairview Avenue Project

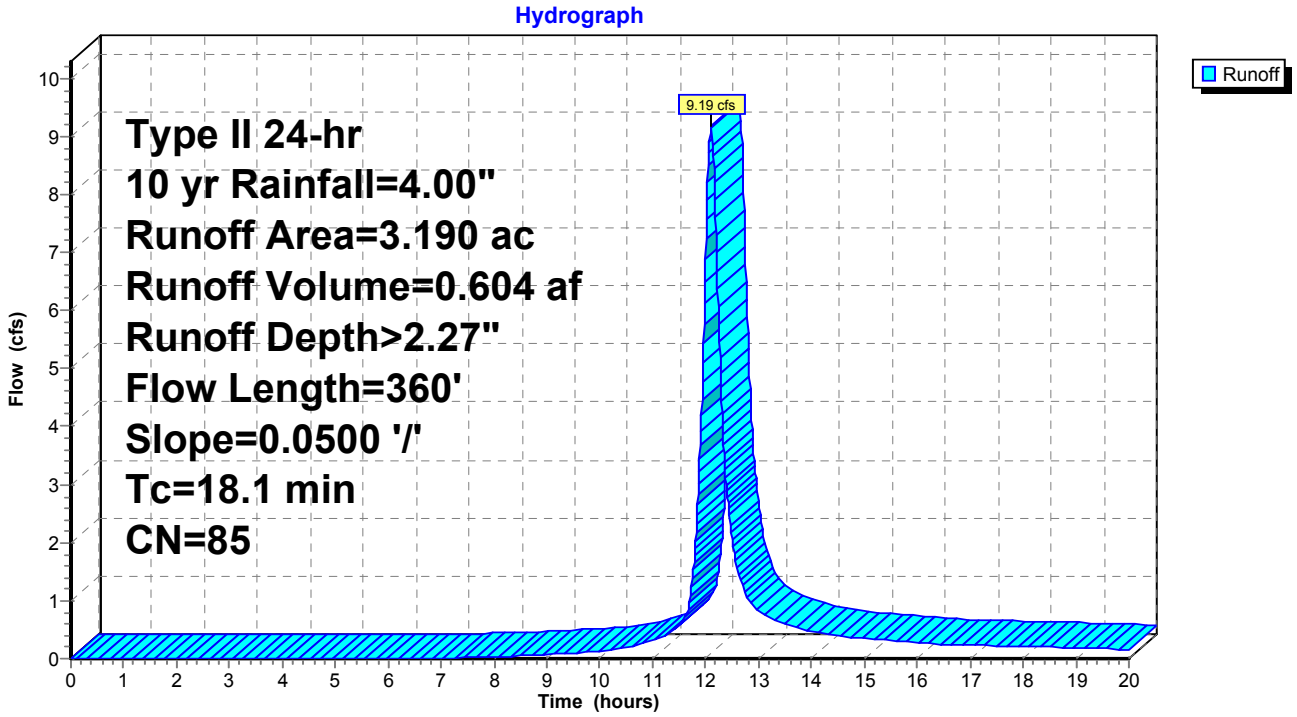
Runoff = 9.19 cfs @ 12.10 hrs, Volume= 0.604 af, Depth> 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	0.920	98	impervious
*	2.270	80	pervious
	3.190	85	Weighted Average
	2.270		71.16% Pervious Area
	0.920		28.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	300	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.3	60	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.1	360	Total			

Subcatchment 19S: Future Fairview Avenue Project



Summary for Subcatchment 20S: Access Drive Undetained

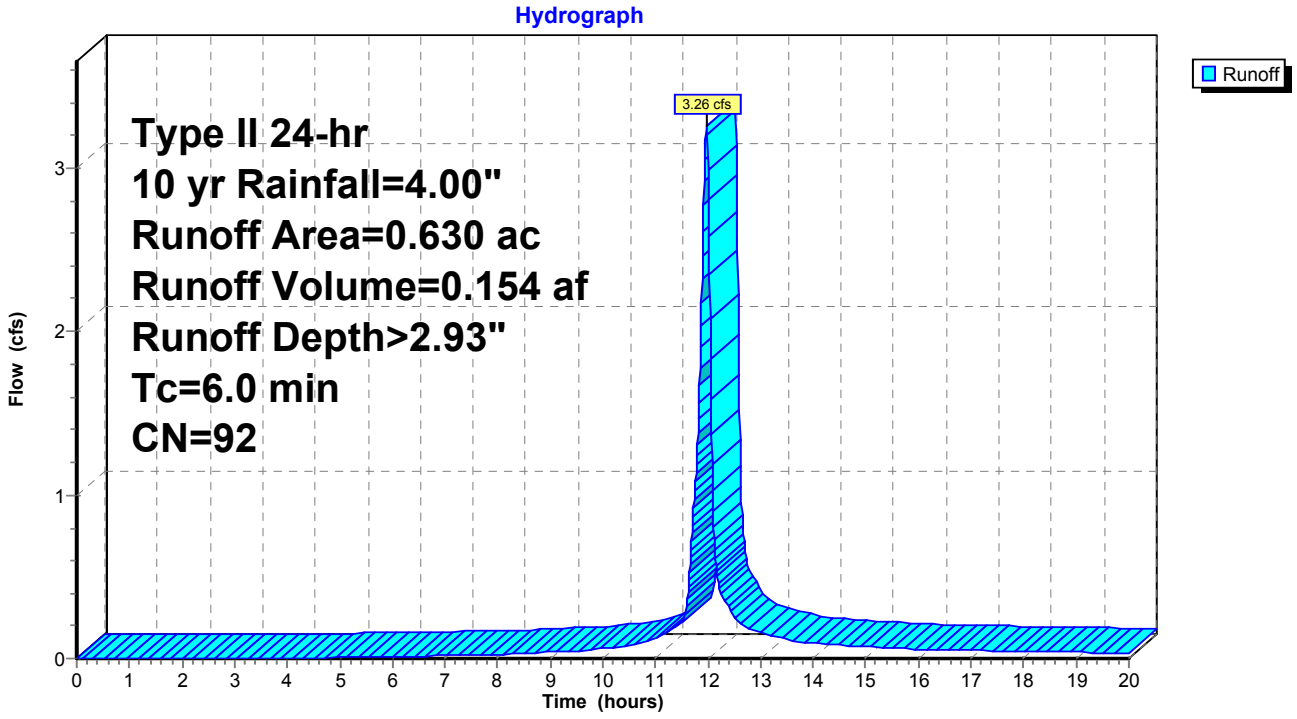
Runoff = 3.26 cfs @ 11.97 hrs, Volume= 0.154 af, Depth> 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	0.430	98	impervious
*	0.200	80	pervious
	0.630	92	Weighted Average
	0.200		31.75% Pervious Area
	0.430		68.25% Impervious Area

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

Subcatchment 20S: Access Drive Undetained



Summary for Subcatchment 21S: Central Utility Plant Undetained

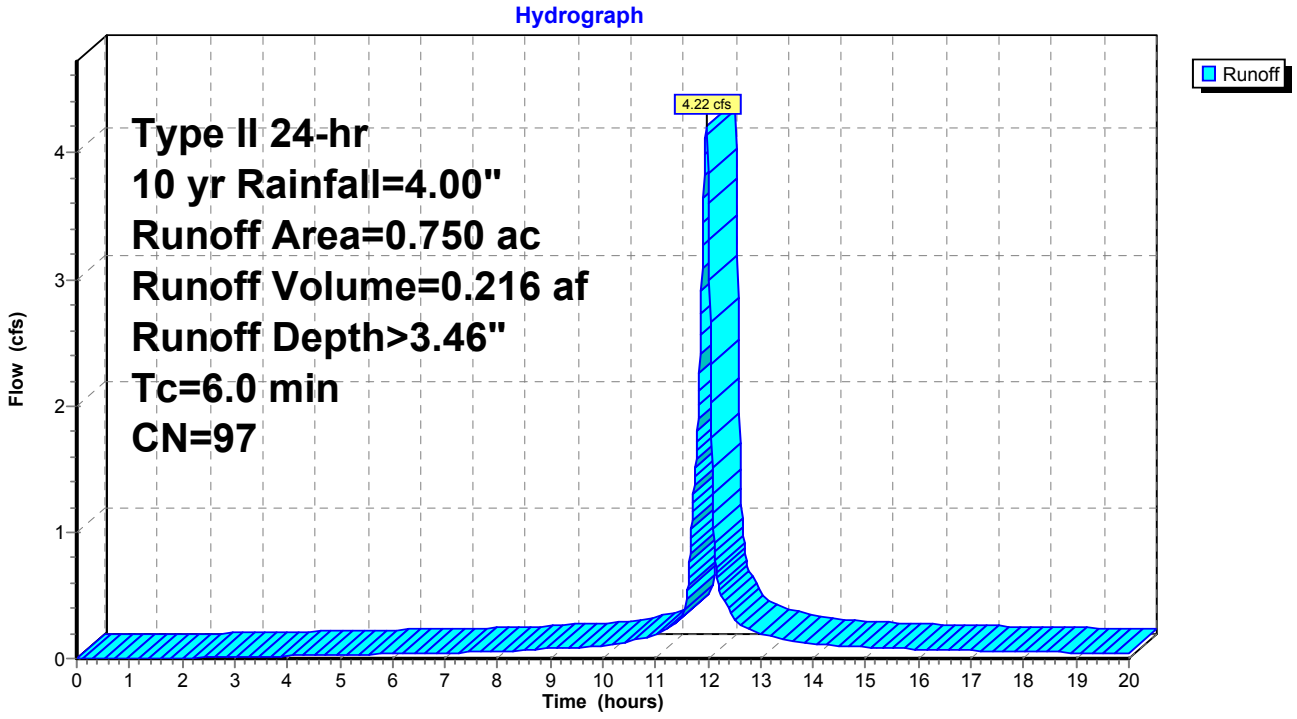
Runoff = 4.22 cfs @ 11.97 hrs, Volume= 0.216 af, Depth> 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 yr Rainfall=4.00"

	Area (ac)	CN	Description
*	0.700	98	impervious
*	0.050	80	pervious
	0.750	97	Weighted Average
	0.050		6.67% Pervious Area
	0.700		93.33% Impervious Area

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

Subcatchment 21S: Central Utility Plant Undetained



Summary for Pond 15: underground treatment basin

Inflow Area = 5.470 ac, 86.29% Impervious, Inflow Depth > 3.35" for 10 yr event
Inflow = 30.40 cfs @ 11.97 hrs, Volume= 1.525 af
Outflow = 28.10 cfs @ 12.00 hrs, Volume= 1.273 af, Atten= 8%, Lag= 1.8 min
Primary = 28.10 cfs @ 12.00 hrs, Volume= 1.273 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 133.77' @ 12.00 hrs Surf.Area= 0.080 ac Storage= 0.398 af

Plug-Flow detention time= 86.1 min calculated for 1.273 af (83% of inflow)
Center-of-Mass det. time= 36.4 min (768.4 - 732.0)

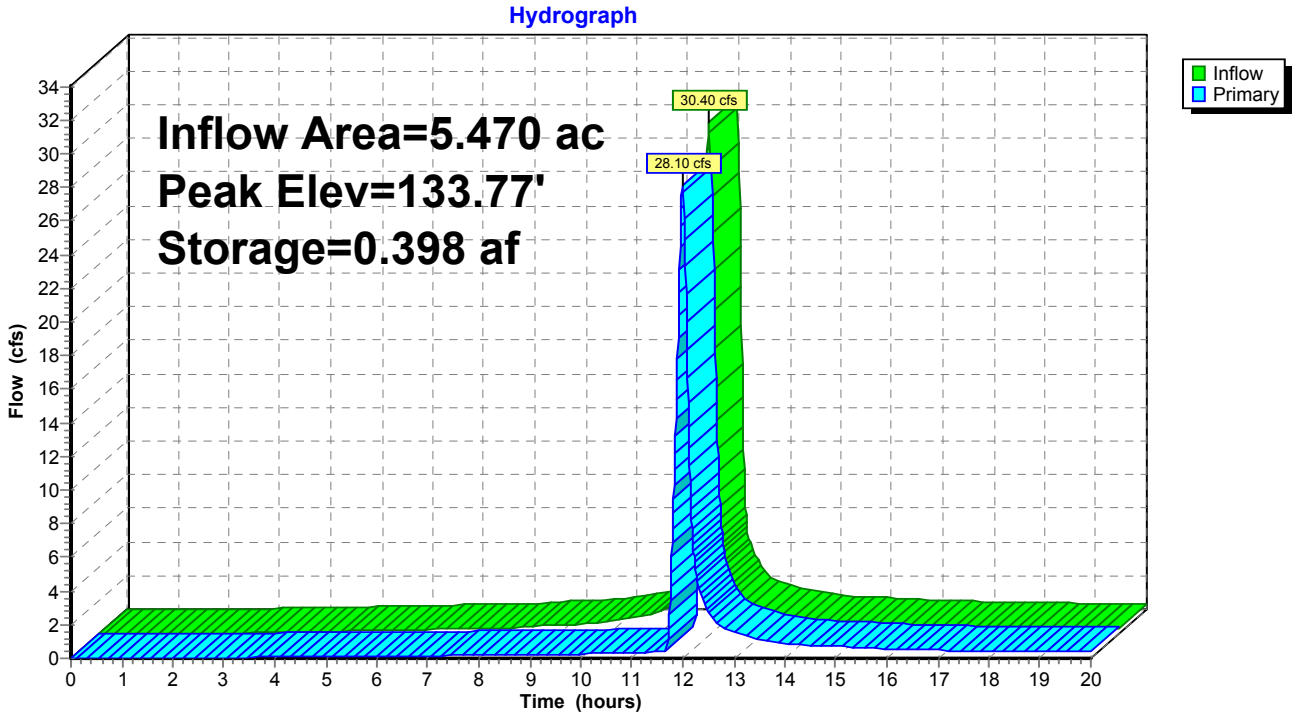
Volume	Invert	Avail.Storage	Storage Description
#1	128.80'	0.480 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.80	0.080	0.000	0.000
129.00	0.080	0.016	0.016
130.00	0.080	0.080	0.096
131.00	0.080	0.080	0.176
132.00	0.080	0.080	0.256
133.00	0.080	0.080	0.336
134.00	0.080	0.080	0.416
134.80	0.080	0.064	0.480

Device	Routing	Invert	Outlet Devices
#1	Primary	128.63'	**24.0" Round Culvert** L= 22.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.63' / 128.40' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Device 1	128.63'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	132.13'	**4.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=28.06 cfs @ 12.00 hrs HW=133.77' (Free Discharge)
└**1=Culvert** (Passes 28.06 cfs of 30.79 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.53 cfs @ 10.79 fps)
  └**3=Sharp-Crested Rectangular Weir** (Weir Controls 27.54 cfs @ 4.19 fps)

Pond 15: underground treatment basin



Stage-Discharge for Pond 15: underground treatment basin

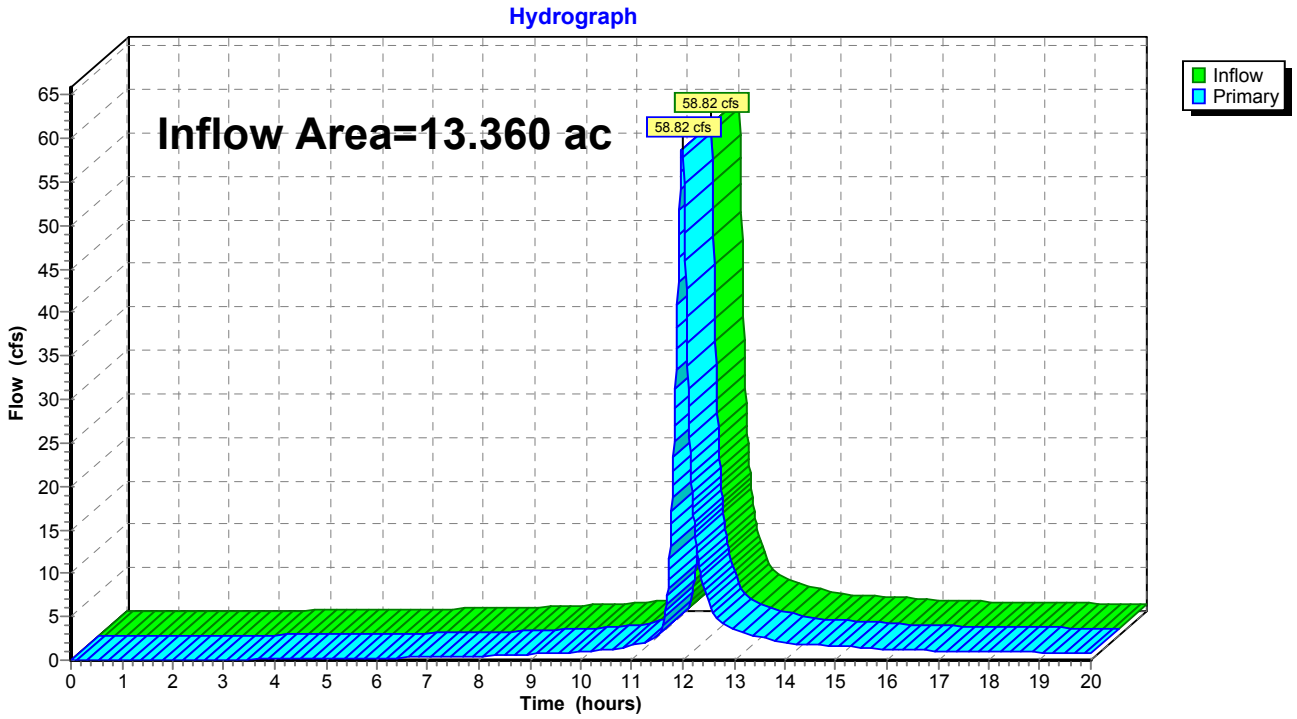
Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
128.80	0.00	130.88	0.34	132.96	10.38
128.84	0.07	130.92	0.35	133.00	11.10
128.88	0.08	130.96	0.35	133.04	11.84
128.92	0.10	131.00	0.35	133.08	12.60
128.96	0.11	131.04	0.36	133.12	13.38
129.00	0.12	131.08	0.36	133.16	14.17
129.04	0.13	131.12	0.36	133.20	14.98
129.08	0.13	131.16	0.37	133.24	15.80
129.12	0.14	131.20	0.37	133.28	16.63
129.16	0.15	131.24	0.37	133.32	17.48
129.20	0.16	131.28	0.38	133.36	18.35
129.24	0.16	131.32	0.38	133.40	19.23
129.28	0.17	131.36	0.38	133.44	20.12
129.32	0.18	131.40	0.38	133.48	21.03
129.36	0.18	131.44	0.39	133.52	21.95
129.40	0.19	131.48	0.39	133.56	22.89
129.44	0.20	131.52	0.39	133.60	23.83
129.48	0.20	131.56	0.40	133.64	24.79
129.52	0.21	131.60	0.40	133.68	25.77
129.56	0.21	131.64	0.40	133.72	26.75
129.60	0.22	131.68	0.40	133.76	27.75
129.64	0.22	131.72	0.41	133.80	28.76
129.68	0.23	131.76	0.41	133.84	29.78
129.72	0.23	131.80	0.41	133.88	30.82
129.76	0.24	131.84	0.42	133.92	31.33
129.80	0.24	131.88	0.42	133.96	31.48
129.84	0.25	131.92	0.42	134.00	31.62
129.88	0.25	131.96	0.42	134.04	31.77
129.92	0.26	132.00	0.43	134.08	31.91
129.96	0.26	132.04	0.43	134.12	32.05
130.00	0.26	132.08	0.43	134.16	32.20
130.04	0.27	132.12	0.43	134.20	32.34
130.08	0.27	132.16	0.50	134.24	32.48
130.12	0.28	132.20	0.68	134.28	32.62
130.16	0.28	132.24	0.92	134.32	32.76
130.20	0.28	132.28	1.20	134.36	32.90
130.24	0.29	132.32	1.53	134.40	33.04
130.28	0.29	132.36	1.89	134.44	33.18
130.32	0.30	132.40	2.29	134.48	33.31
130.36	0.30	132.44	2.71	134.52	33.45
130.40	0.30	132.48	3.16	134.56	33.59
130.44	0.31	132.52	3.64	134.60	33.72
130.48	0.31	132.56	4.15	134.64	33.86
130.52	0.31	132.60	4.68	134.68	33.99
130.56	0.32	132.64	5.23	134.72	34.13
130.60	0.32	132.68	5.80	134.76	34.26
130.64	0.32	132.72	6.40	134.80	**34.39**
130.68	0.33	132.76	7.01		
130.72	0.33	132.80	7.65		
130.76	0.33	132.84	8.30		
130.80	0.34	132.88	8.98		
130.84	0.34	132.92	9.67		

Summary for Link 20L: Total Proposed Runoff

Inflow Area = 13.360 ac, 69.61% Impervious, Inflow Depth > 2.80" for 10 yr event
Inflow = 58.82 cfs @ 11.99 hrs, Volume= 3.113 af
Primary = 58.82 cfs @ 11.99 hrs, Volume= 3.113 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Link 20L: Total Proposed Runoff



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10S: Proposed American Runoff Area=5.470 ac 86.29% Impervious Runoff Depth>4.86"
Tc=6.0 min CN=96 Runoff=43.13 cfs 2.213 af

Subcatchment16S: Heart and Vascular Runoff Area=2.810 ac 76.51% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=94 Runoff=21.76 cfs 1.084 af

Subcatchment17S: Heart and Vascular Runoff Area=0.230 ac 100.00% Impervious Runoff Depth>5.09"
Tc=6.0 min CN=98 Runoff=1.84 cfs 0.098 af

Subcatchment18S: Access Drive Runoff Area=0.280 ac 53.57% Impervious Runoff Depth>4.19"
Tc=6.0 min CN=90 Runoff=2.06 cfs 0.098 af

Subcatchment19S: Future Fairview Runoff Area=3.190 ac 28.84% Impervious Runoff Depth>3.66"
Flow Length=360' Slope=0.0500 '/' Tc=18.1 min CN=85 Runoff=14.50 cfs 0.972 af

Subcatchment20S: Access Drive Runoff Area=0.630 ac 68.25% Impervious Runoff Depth>4.41"
Tc=6.0 min CN=92 Runoff=4.76 cfs 0.231 af

Subcatchment21S: Central Utility Plant Runoff Area=0.750 ac 93.33% Impervious Runoff Depth>4.97"
Tc=6.0 min CN=97 Runoff=5.95 cfs 0.311 af

Pond 15: underground treatment basin Peak Elev=134.65' Storage=0.468 af Inflow=43.13 cfs 2.213 af
Outflow=33.90 cfs 1.947 af

Link 20L: Total Proposed Runoff Inflow=79.05 cfs 4.740 af
Primary=79.05 cfs 4.740 af

Total Runoff Area = 13.360 ac Runoff Volume = 5.006 af Average Runoff Depth = 4.50"
30.39% Pervious = 4.060 ac 69.61% Impervious = 9.300 ac

Summary for Subcatchment 10S: Proposed American Avenue Parking Reconfiguration Treated

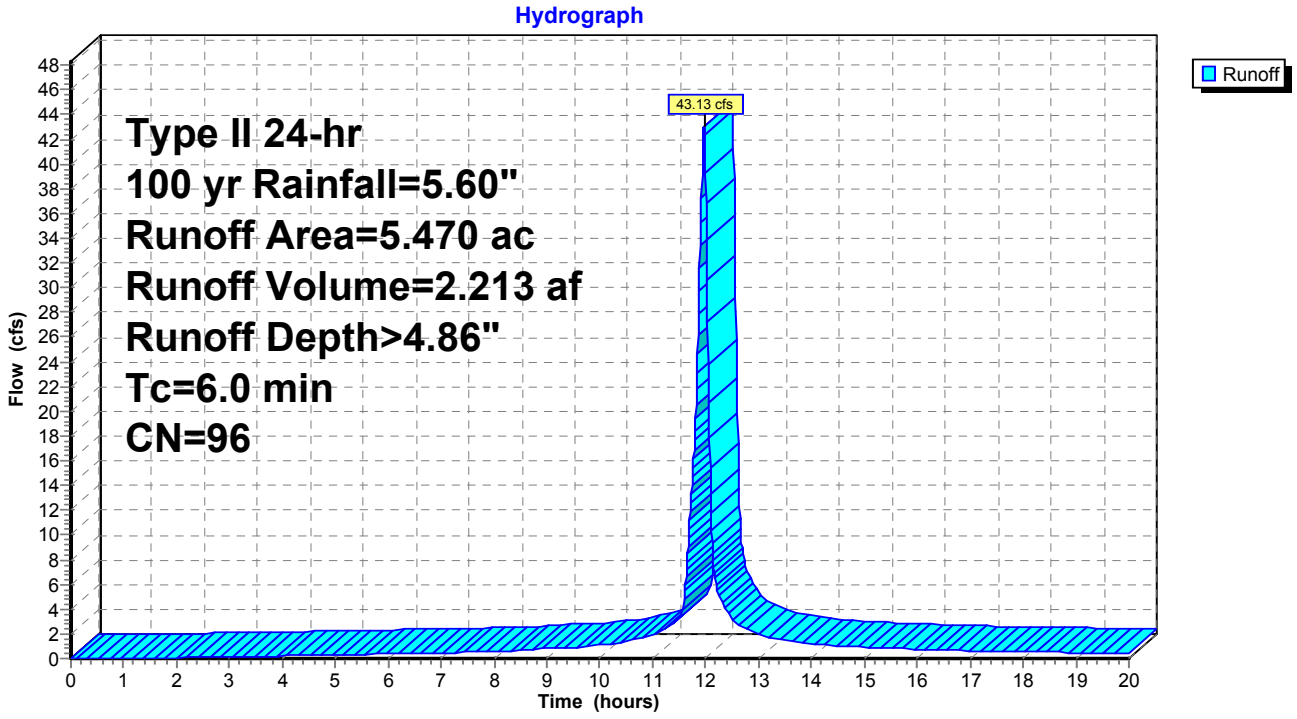
Runoff = 43.13 cfs @ 11.97 hrs, Volume= 2.213 af, Depth> 4.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	4.720	98	impervious
*	0.750	80	pervious
	5.470	96	Weighted Average
	0.750		13.71% Pervious Area
	4.720		86.29% Impervious Area

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

Subcatchment 10S: Proposed American Avenue Parking Reconfiguration Treated



Summary for Subcatchment 16S: Heart and Vascular Bldg Undetained

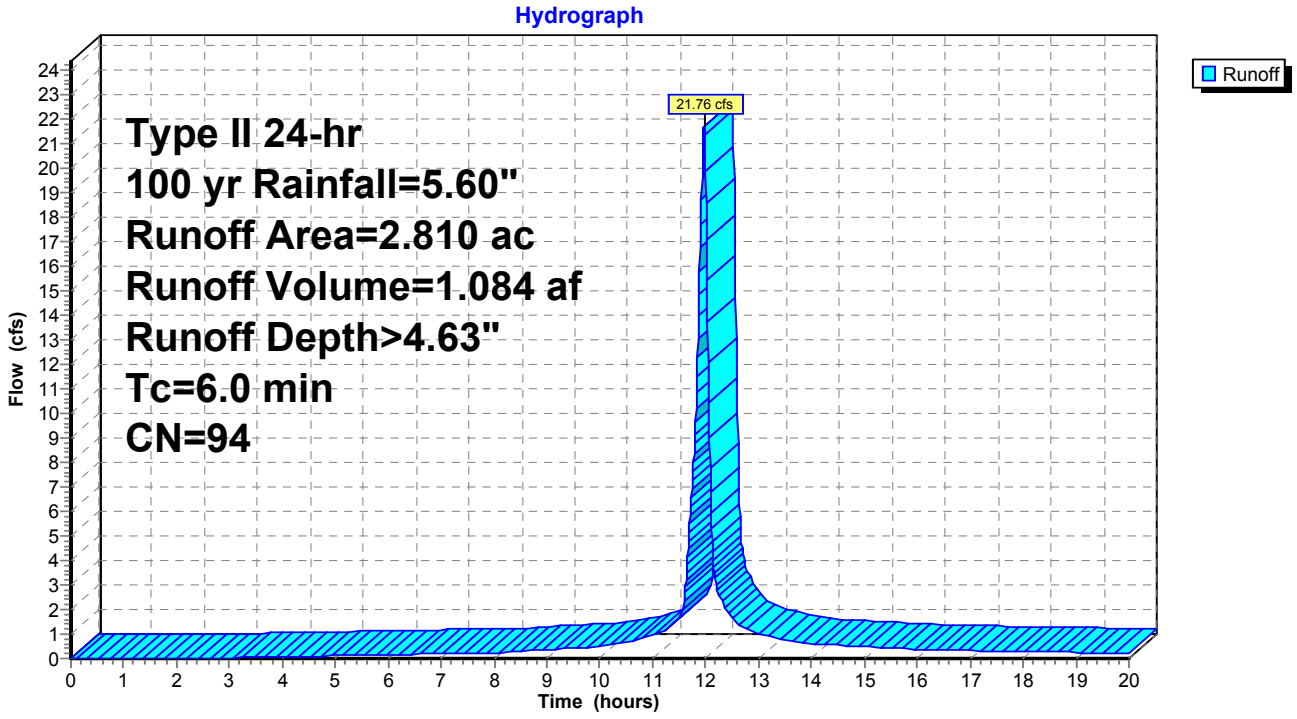
Runoff = 21.76 cfs @ 11.97 hrs, Volume= 1.084 af, Depth> 4.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	2.150	98	impervious
*	0.660	80	pervious
	2.810	94	Weighted Average
	0.660		23.49% Pervious Area
	2.150		76.51% Impervious Area

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

Subcatchment 16S: Heart and Vascular Bldg Undetained



Summary for Subcatchment 17S: Heart and Vascular Expansion Undetained

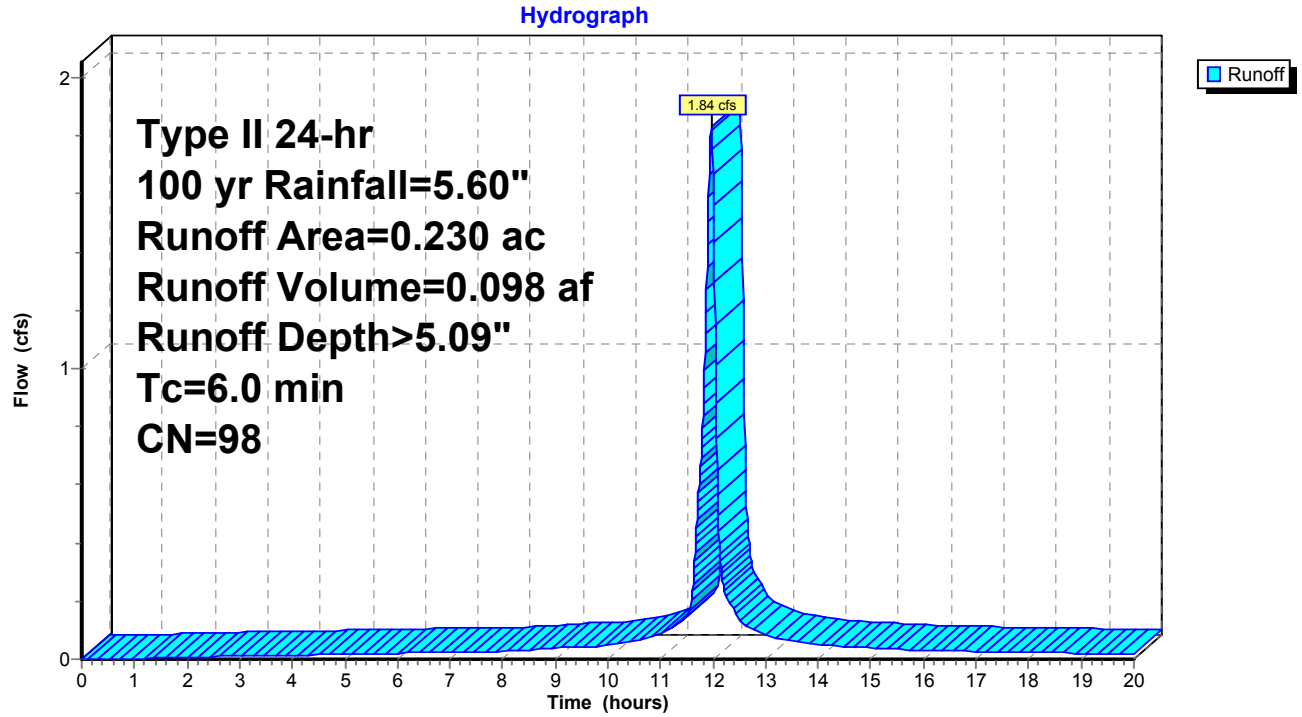
Runoff = 1.84 cfs @ 11.97 hrs, Volume= 0.098 af, Depth> 5.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	0.230	98	impervious
	0.230		100.00% Impervious Area

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

Subcatchment 17S: Heart and Vascular Expansion Undetained



Summary for Subcatchment 18S: Access Drive Undetained

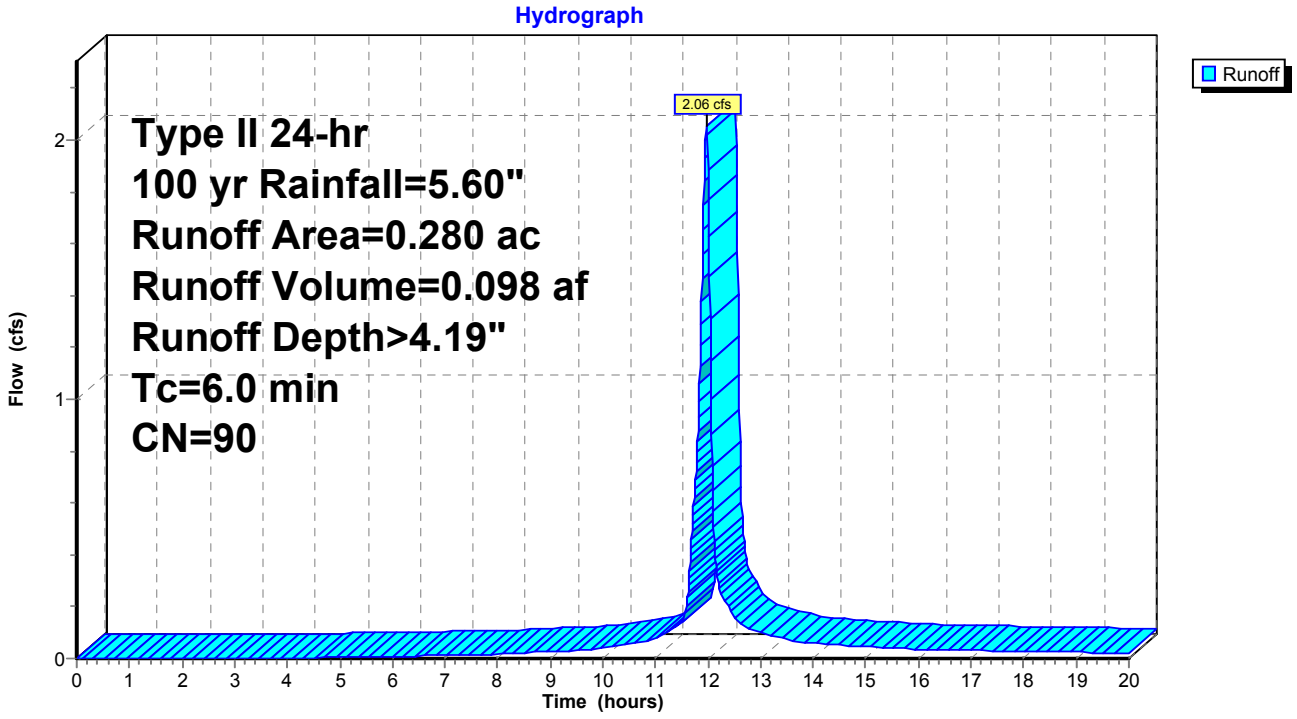
Runoff = 2.06 cfs @ 11.97 hrs, Volume= 0.098 af, Depth> 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	0.150	98	impervious
*	0.130	80	pervious
	0.280	90	Weighted Average
	0.130		46.43% Pervious Area
	0.150		53.57% Impervious Area

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

Subcatchment 18S: Access Drive Undetained



Summary for Subcatchment 19S: Future Fairview Avenue Project

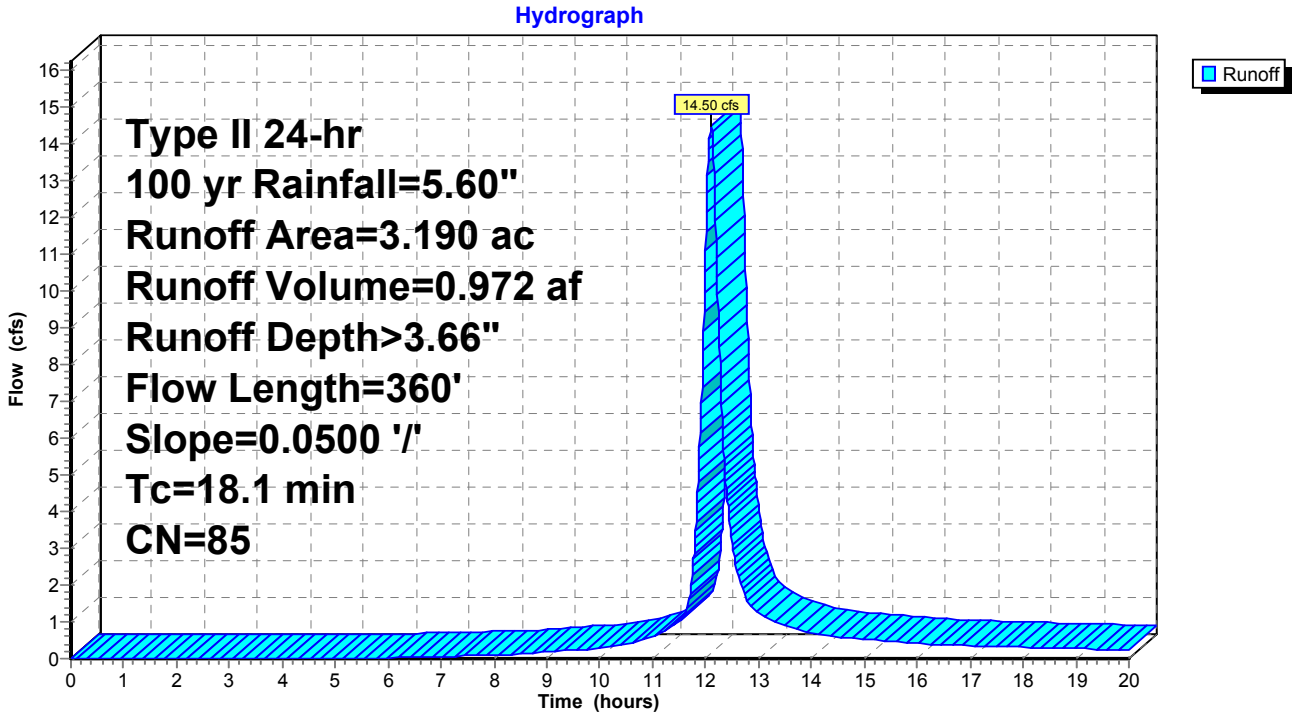
Runoff = 14.50 cfs @ 12.10 hrs, Volume= 0.972 af, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	0.920	98	impervious
*	2.270	80	pervious
	3.190	85	Weighted Average
	2.270		71.16% Pervious Area
	0.920		28.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	300	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.3	60	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.1	360	Total			

Subcatchment 19S: Future Fairview Avenue Project



Summary for Subcatchment 20S: Access Drive Undetained

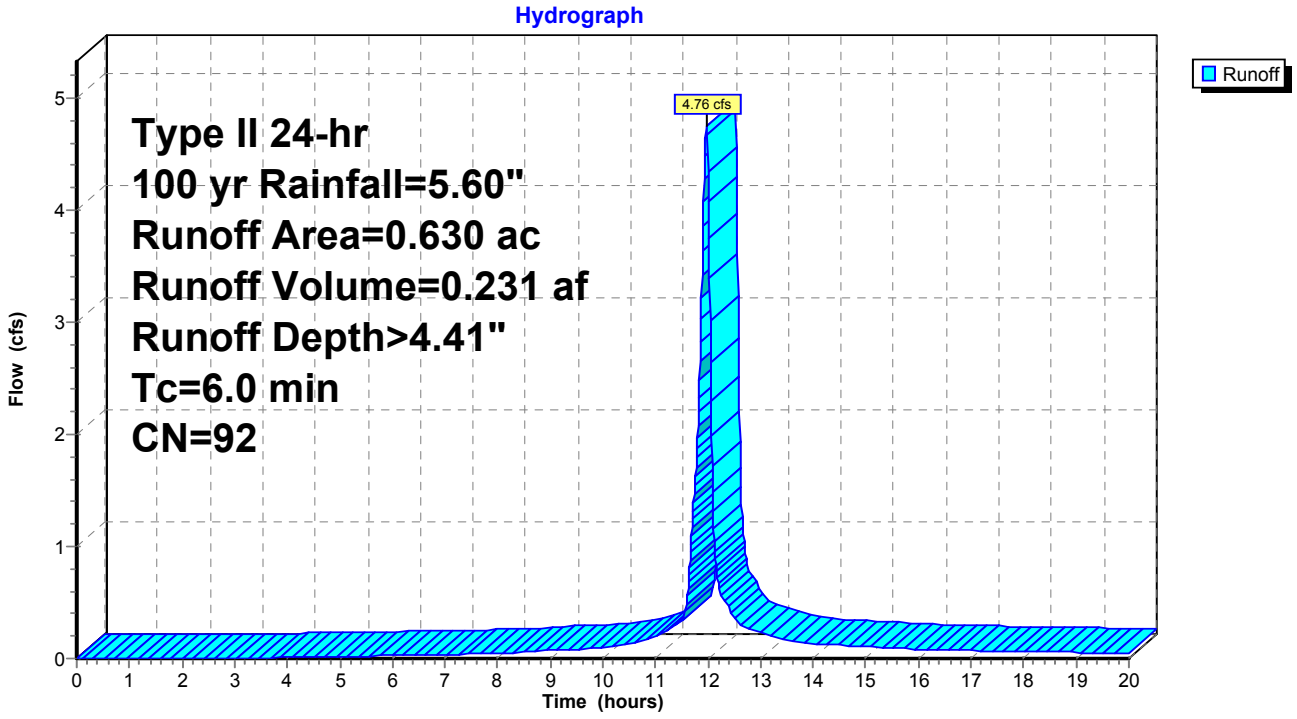
Runoff = 4.76 cfs @ 11.97 hrs, Volume= 0.231 af, Depth> 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	0.430	98	impervious
*	0.200	80	pervious
	0.630	92	Weighted Average
	0.200		31.75% Pervious Area
	0.430		68.25% Impervious Area

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

Subcatchment 20S: Access Drive Undetained



Summary for Subcatchment 21S: Central Utility Plant Undetained

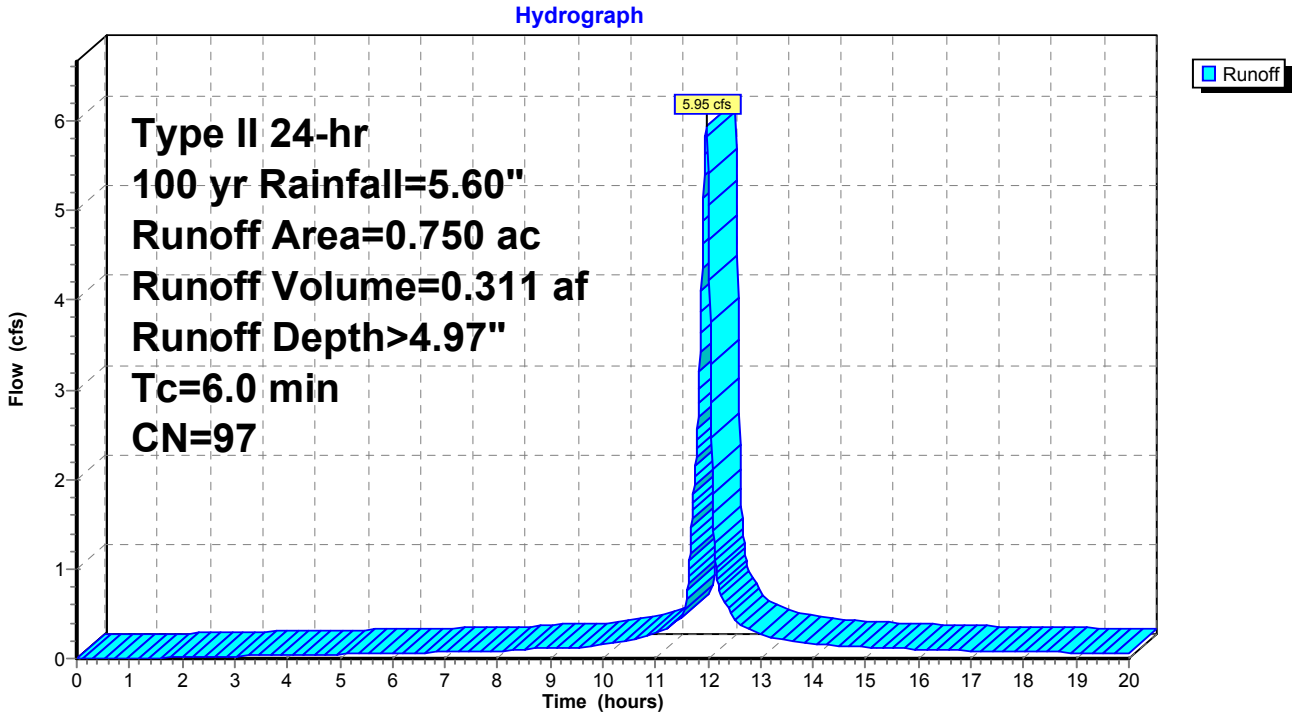
Runoff = 5.95 cfs @ 11.97 hrs, Volume= 0.311 af, Depth> 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 yr Rainfall=5.60"

	Area (ac)	CN	Description
*	0.700	98	impervious
*	0.050	80	pervious
	0.750	97	Weighted Average
	0.050		6.67% Pervious Area
	0.700		93.33% Impervious Area

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

Subcatchment 21S: Central Utility Plant Undetained



Summary for Pond 15: underground treatment basin

Inflow Area = 5.470 ac, 86.29% Impervious, Inflow Depth > 4.86" for 100 yr event
Inflow = 43.13 cfs @ 11.97 hrs, Volume= 2.213 af
Outflow = 33.90 cfs @ 12.02 hrs, Volume= 1.947 af, Atten= 21%, Lag= 3.1 min
Primary = 33.90 cfs @ 12.02 hrs, Volume= 1.947 af

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 134.65' @ 12.02 hrs Surf.Area= 0.080 ac Storage= 0.468 af

Plug-Flow detention time= 73.7 min calculated for 1.946 af (88% of inflow)
Center-of-Mass det. time= 32.7 min (756.8 - 724.2)

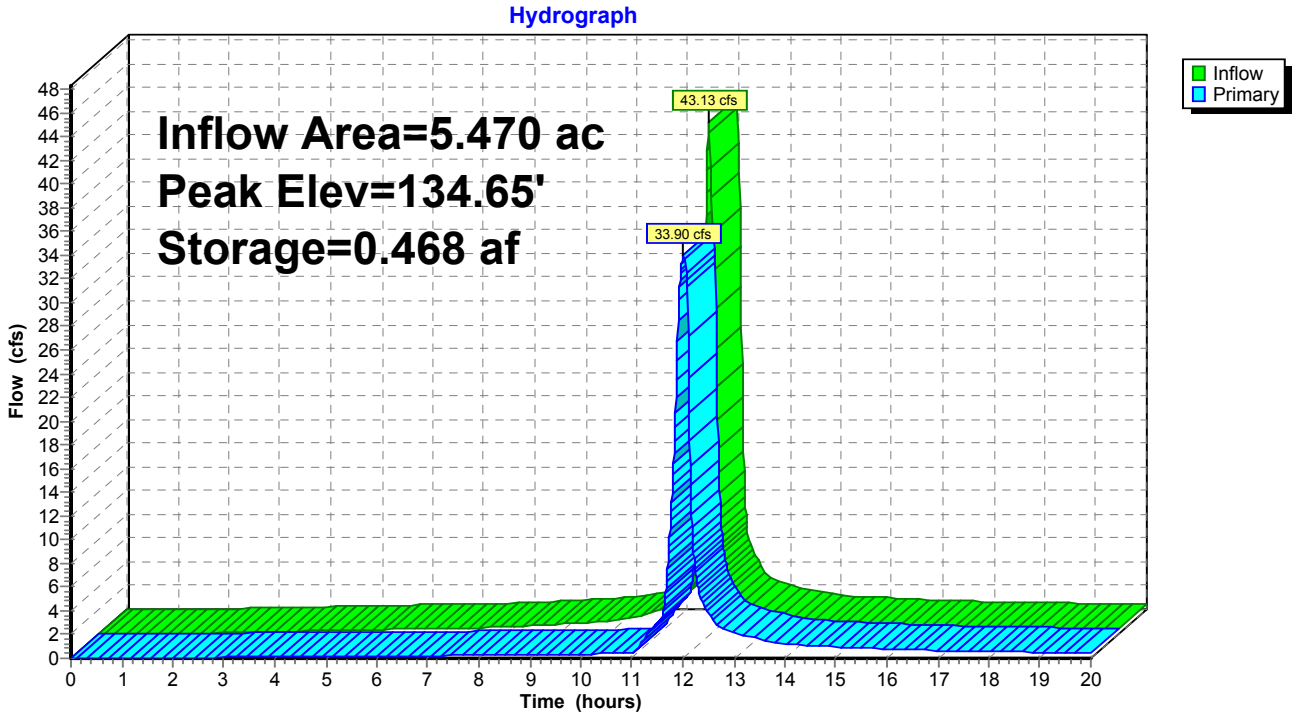
Volume	Invert	Avail.Storage	Storage Description
#1	128.80'	0.480 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
128.80	0.080	0.000	0.000
129.00	0.080	0.016	0.016
130.00	0.080	0.080	0.096
131.00	0.080	0.080	0.176
132.00	0.080	0.080	0.256
133.00	0.080	0.080	0.336
134.00	0.080	0.080	0.416
134.80	0.080	0.064	0.480

Device	Routing	Invert	Outlet Devices
#1	Primary	128.63'	**24.0" Round Culvert** L= 22.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 128.63' / 128.40' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 3.14 sf
#2	Device 1	128.63'	**3.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	132.13'	**4.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=33.90 cfs @ 12.02 hrs HW=134.65' (Free Discharge)
└**1=Culvert** (Inlet Controls 33.90 cfs @ 10.79 fps)
  ├**2=Orifice/Grate** (Passes < 0.57 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Passes < 52.43 cfs potential flow)

Pond 15: underground treatment basin



Stage-Discharge for Pond 15: underground treatment basin

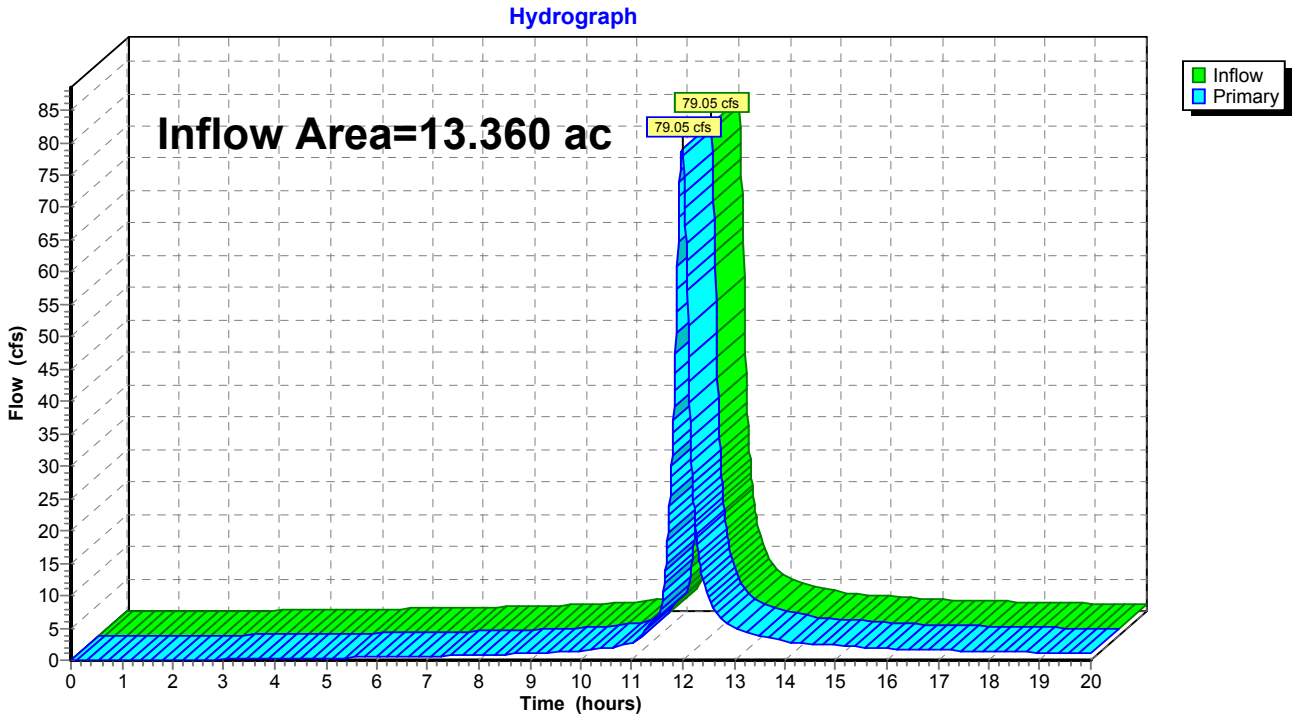
Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
128.80	0.00	130.88	0.34	132.96	10.38
128.84	0.07	130.92	0.35	133.00	11.10
128.88	0.08	130.96	0.35	133.04	11.84
128.92	0.10	131.00	0.35	133.08	12.60
128.96	0.11	131.04	0.36	133.12	13.38
129.00	0.12	131.08	0.36	133.16	14.17
129.04	0.13	131.12	0.36	133.20	14.98
129.08	0.13	131.16	0.37	133.24	15.80
129.12	0.14	131.20	0.37	133.28	16.63
129.16	0.15	131.24	0.37	133.32	17.48
129.20	0.16	131.28	0.38	133.36	18.35
129.24	0.16	131.32	0.38	133.40	19.23
129.28	0.17	131.36	0.38	133.44	20.12
129.32	0.18	131.40	0.38	133.48	21.03
129.36	0.18	131.44	0.39	133.52	21.95
129.40	0.19	131.48	0.39	133.56	22.89
129.44	0.20	131.52	0.39	133.60	23.83
129.48	0.20	131.56	0.40	133.64	24.79
129.52	0.21	131.60	0.40	133.68	25.77
129.56	0.21	131.64	0.40	133.72	26.75
129.60	0.22	131.68	0.40	133.76	27.75
129.64	0.22	131.72	0.41	133.80	28.76
129.68	0.23	131.76	0.41	133.84	29.78
129.72	0.23	131.80	0.41	133.88	30.82
129.76	0.24	131.84	0.42	133.92	31.33
129.80	0.24	131.88	0.42	133.96	31.48
129.84	0.25	131.92	0.42	134.00	31.62
129.88	0.25	131.96	0.42	134.04	31.77
129.92	0.26	132.00	0.43	134.08	31.91
129.96	0.26	132.04	0.43	134.12	32.05
130.00	0.26	132.08	0.43	134.16	32.20
130.04	0.27	132.12	0.43	134.20	32.34
130.08	0.27	132.16	0.50	134.24	32.48
130.12	0.28	132.20	0.68	134.28	32.62
130.16	0.28	132.24	0.92	134.32	32.76
130.20	0.28	132.28	1.20	134.36	32.90
130.24	0.29	132.32	1.53	134.40	33.04
130.28	0.29	132.36	1.89	134.44	33.18
130.32	0.30	132.40	2.29	134.48	33.31
130.36	0.30	132.44	2.71	134.52	33.45
130.40	0.30	132.48	3.16	134.56	33.59
130.44	0.31	132.52	3.64	134.60	33.72
130.48	0.31	132.56	4.15	134.64	33.86
130.52	0.31	132.60	4.68	134.68	33.99
130.56	0.32	132.64	5.23	134.72	34.13
130.60	0.32	132.68	5.80	134.76	34.26
130.64	0.32	132.72	6.40	134.80	**34.39**
130.68	0.33	132.76	7.01		
130.72	0.33	132.80	7.65		
130.76	0.33	132.84	8.30		
130.80	0.34	132.88	8.98		
130.84	0.34	132.92	9.67		

Summary for Link 20L: Total Proposed Runoff

Inflow Area = 13.360 ac, 69.61% Impervious, Inflow Depth > 4.26" for 100 yr event
Inflow = 79.05 cfs @ 11.98 hrs, Volume= 4.740 af
Primary = 79.05 cfs @ 11.98 hrs, Volume= 4.740 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Link 20L: Total Proposed Runoff



SLAMM Analysis Results

FOR: Waukesha Memorial Hospital
LOCATION: 725 American Avenue, Waukesha

Land Use	Particulate Solids (lbs)							BMP		Total	% Removed	
	Parking	Driveway	Street	Sidewalk	Building	Landscape	Total	lbs IN	lbs OUT			
Subarea 10S - Treated	1496.0	627.8		133.1	184.6	80.0	2521.5	2521.5	904.2	904.2	64%	underground detention system
Subarea 16S	305.5	162.5					468.0			468.0		
Subarea 16S - Treated	199.5	125.6					325.1	325.1	251.6	251.6	23%	sumped catch basins (3)
Subarea 17S							0.0			0.0		
Subarea 18S		103.4					103.4			103.4		
Subarea 19S - Treated	261.9		1028.0				1289.9	1289.9	785.6	785.6	39%	sumped catch basins (7)
Subarea 20S		214.2					214.2			214.2		
Subarea 21S	12.5	73.9	463.8				550.1			550.1		
Total	**2275.4**	**1307.4**	**1491.8**	133.1	184.6	80.0	5472.2	--	--	3277.1	40%	

NR151.122 TSS Removal Summary

lbs from parking areas and roads: **5074.53** lbs
Required removal rate: 40%
Requided lbs to be removed: 2029.81 lbs

Overall lbs removed from site: **2195.09** ≥ 2029.81

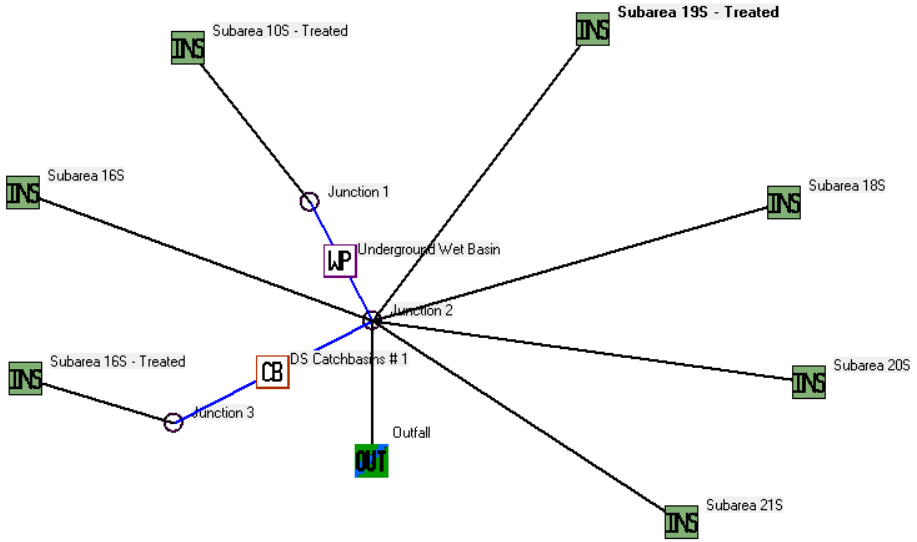
WinSLAMM Analysis

File Current File Data Pollutants Tools Run Utilities Help

Control Practice:
SA Device, LU# 4 ,SA# 13

Land Use #	Land Use Type	Land Use Label	Land Use Area (acres)
1	Institutional	Subarea 10S - Treated	5.470
2	Institutional	Subarea 16S	0.710
3	Institutional	Subarea 18S	0.140
4	Institutional	Subarea 19S - Treated	0.810
5	Institutional	Subarea 20S	0.290
6	Institutional	Subarea 21S	0.370
7	Institutional	Subarea 16S - Treated	0.490

CP #	Control Practice Type	Control Practice Name or Location
1	Wet Detention Pond	Underground Wet Basin
2	Catchbasin Cleaning	SA Device, LU# 4 ,SA# 37
3	**Catchbasin Cleaning**	**SA Device, LU# 4 ,SA# 13**
4	Catchbasin Cleaning	DS Catchbasins # 1



SLAMM for Windows Version 10.4.0

Data file name: X:\ML\2019\20190001\Project_Information\Calcs\SLAMM\BMPs_0001.mdb
Data file description: Proposed Treated Areas
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 03-27-2019 Time of run: 12:56:17
Total Area Modeled (acres): 8.280
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	596275	-	147.0	5473	-
Outfall Total with Controls:	596675	-0.07%	87.97	3277	40.12%
Annualized Total After Outfall Controls:	604962			3322	

Data file name: X:\ML\2019\20190001\Project_Information\Calcs\SLAMM\BMPs_0001.mdb
WinSLAMM Version 10.4.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 03-27-2019 Time: 12:56:34
Site information:
Proposed Treated Areas
LU# 1 - Institutional: Subarea 10S - Treated Total area (ac): 5.470
     1 - Roofs 1: 1.100 ac. Flat Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     13 - Paved Parking 1: 2.400 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 0.850 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.370 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 0.750 ac. Normal Clayey Medium/High Density No Alleys Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 2 - Institutional: Subarea 16S Total area (ac): 0.710
     13 - Paved Parking 1: 0.490 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 0.220 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 3 - Institutional: Subarea 18S Total area (ac): 0.140
     25 - Driveways 1: 0.140 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 4 - Institutional: Subarea 19S - Treated Total area (ac): 0.810
     13 - Paved Parking 1: 0.420 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz CB-CP#3
     37 - Streets 1: 0.390 ac. Smooth Street Length = 0.306 curb-mi Street Width (assuming two curb-mi per street mile) = 21.02941 ft

Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz CB-CP#2
LU# 5 - Institutional: Subarea 20S Total area (ac): 0.290
25 - Driveways 1: 0.290 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 6 - Institutional: Subarea 21S Total area (ac): 0.370
13 - Paved Parking 1: 0.020 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.100 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.250 ac. Smooth Street Length = 0.138 curb-mi Street Width (assuming two curb-mi per street mile) = 29.89131 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 7 - Institutional: Subarea 16S - Treated Total area (ac): 0.490
13 - Paved Parking 1: 0.320 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.170 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - Underground Wet Basin
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 4
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Sharp Crested Weir
1. Sharp crested weir length (ft): 4
2. Sharp crested weir height from invert: 2.67
3. Sharp crested weir invert elevation above datum (ft): 7.33
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.25
2. Number of orifices: 1
3. Invert elevation above datum (ft): 3.83
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 4
3. Height from datum to bottom of weir opening: 9.99
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	1.00	0.0800	0.00	0.00

2	2.00	0.0800	0.00	0.00
3	3.00	0.0800	0.00	0.00
4	4.00	0.0800	0.00	0.00
5	5.00	0.0800	0.00	0.00
6	6.00	0.0800	0.00	0.00
7	7.00	0.0800	0.00	0.00
8	8.00	0.0800	0.00	0.00
9	9.00	0.0800	0.00	0.00
10	10.00	0.0800	0.00	0.00

Control Practice 2: Catchbasin Cleaning CP# 1 (SA) - SA Device, LU# 4 ,SA# 37

1. Fraction of area served by catchbasins = 1.00
2. Number of catchbasins = 4
3. Average sump depth below catchbasin outlet invert (feet) = 2
4. Depth of sediment in catchbasin sump at beginning of study period (ft) = 0
5. Typical outlet pipe diameter (ft) = 1
6. Typical outlet pipe Mannings n = 0.013
7. Typical outlet pipe slope (ft/ft) = 0.02
8. Typical catchbasin sump surface area (square feet) = 16
9. Total catchbasin depth (feet) = 8
10. Inflow hydrograph peak to average flow ratio = 3.8
11. Leakage rate through sump bottom (in/hr) = 0
12. Catchbasin Critical Particle Size File Name: Not needed - calculated by program
13. Catchbasin cleaning frequency: Semi-annually

Control Practice 3: Catchbasin Cleaning CP# 2 (SA) - SA Device, LU# 4 ,SA# 13

1. Fraction of area served by catchbasins = 1.00
2. Number of catchbasins = 3
3. Average sump depth below catchbasin outlet invert (feet) = 2
4. Depth of sediment in catchbasin sump at beginning of study period (ft) = 0
5. Typical outlet pipe diameter (ft) = 1
6. Typical outlet pipe Mannings n = 0.013
7. Typical outlet pipe slope (ft/ft) = 0.02
8. Typical catchbasin sump surface area (square feet) = 16
9. Total catchbasin depth (feet) = 8
10. Inflow hydrograph peak to average flow ratio = 3.8
11. Leakage rate through sump bottom (in/hr) = 0
12. Catchbasin Critical Particle Size File Name: Not needed - calculated by program

13. Catchbasin cleaning frequency: Semi-annually

Control Practice 4: Catchbasin Cleaning CP# 3 (DS) - DS Catchbasins # 1

1. Fraction of area served by catchbasins = 1.00
2. Number of catchbasins = 3
3. Average sump depth below catchbasin outlet invert (feet) = 2
4. Depth of sediment in catchbasin sump at beginning of study period (ft) = 0
5. Typical outlet pipe diameter (ft) = 1
6. Typical outlet pipe Mannings n = 0.013
7. Typical outlet pipe slope (ft/ft) = 0.02
8. Typical catchbasin sump surface area (square feet) = 6
9. Total catchbasin depth (feet) = 8
10. Inflow hydrograph peak to average flow ratio = 3.8
11. Leakage rate through sump bottom (in/hr) = 0
12. Catchbasin Critical Particle Size File Name: Not needed - calculated by program
13. Catchbasin cleaning frequency: Semi-annually