#### **Exhibit E**



2800 Jefferson Street Napa, California 94558 707-253-1806 www.ppiengineering.com

#### **MEMORANDUM**

Date: September 2, 2020

To: Daniel Hornett, Napa County Planning, Building, and Environmental Services

From: Cody J. Corsetti, P.E.

Rachel L. Rosasco, E.I.T.

Cc: John McDowell, Napa County Planning, Building, and Environmental Services

Re: Shafer Blodgett Vineyard Track I ECP, #P20-00117-ECPA

5096 Silverado Trail

APNs 039-051-019, 039-051-021, 039-051-023, and 039-051-033

Revised Hydrologic Analysis

This memo transmits the findings of a revised hydrologic analysis for the above-referenced Track I Erosion Control Plan (ECP). The original analysis submitted in March 2020 was revised to address Napa County Engineering Division review comments. Specifically, all shallow concentrated flow segments have been revised to account for each surface type and corresponding roughness coefficient. Shallow concentrated flow types were segmented and updated according to the procedures outlined in Chapter 15 of the *National Engineering Handbook Part 630*. Additionally, all existing pasture, grassland, and range land use curve numbers were updated to the annual grass curve numbers that are specified in the Natural Resource Conservation Service *Engineering Field Handbook* Chapter 2-Supplement 1 "Estimating Runoff in California" per guidance from Napa County Engineering staff.

HydroCAD software was used to estimate pre- and post-project runoff from watersheds containing the proposed development areas. The software uses the Natural Resource Conservation Service (NRCS) TR-20 method to calculate runoff. The analysis uses the Type IA 24-hr storm distribution and includes site-specific National Oceanic and Atmospheric Administration (NOAA) point precipitation data for the ranch.

Eight (8) watersheds were delineated for the hydrologic modeling. All watersheds, excluding 5 and 6, flow into unnamed swales off the property where they eventually cross the Silverado Trail and thence make their way into the Napa River. Watershed 5 deposits it flows into a reservoir off the property before eventually flowing into the Napa River after crossing the Silverado Trail. Watershed 6 flows into an unnamed swale acting as a tributary of Soda Creek. Please see the attached figures for the location of each watershed.

Soils within the watersheds were obtained from the NRCS Web Soil Survey and are classified as the following:

Bale clay loam, 2-5% slopes (Map Unit Symbol 105)
Forward-Kidd complex, 50-75% slopes (Map Unit Symbol 141)
Haire loam, 2-9% slopes (Map Unit Symbol 146)
Hambright-Rock outcrop complex, 2-30% slopes (Map Unit Symbol 151)
Hambright rock-Outcrop complex, 30-75% slopes (Map Unit Symbol 152)
Perkins gravelly loam, 5-9% slopes (Map Unit Symbol 169)
Rock outcrop-Hambright complex, 50-75% slopes (Map Unit Symbol 176)
Sobrante loam, 5-30% slopes (Map Unit Symbol 178)
Sobrante loam, 30-50% slopes (Map Unit Symbol 179)

Please see the attached figures for soil type delineations within the vicinity of each watershed.

Land use areas were initially delineated based on Napa County orthophotos and both American Aerial, Inc. and Napa County contours. Site visits were conducted on January 18, 2019 and November 20, 2019 by Cody Corsetti and Samuel Moose of PPI Engineering to ground truth the orthophotos and determine the existing land use conditions. An additional site visit was conducted on May 14, 2020 with Daniel Hornett and Don Barella of Napa County Planning, Building, & Environmental Services (PBES), David Ilsley of Shafer Vineyards, and Cody Corsetti and Annalee Sanborn of PPI Engineering to verify the existing land use conditions. The land use hydrologic conditions were classified based on the respective covers as poor (less than 50% cover), fair (50%-75% cover), or good (greater than or equal to 75% cover). The HydroCAD software analyzes the land use data along with the corresponding soil HSGs to determine a weighted Curve Number (CN) for runoff calculations. Please see the attached figures for existing and proposed land use delineations.

The Time of Concentration (Tc) flow paths within the watersheds were determined using both American Aerial, Inc. two-foot and Napa County five-foot contours. The flow path was drafted from the hydrologically most distant point (longest travel time) in the watershed to the watershed outlet per NRCS standards. The Tc flow paths for Watersheds 2, 5, 6, and 7 did not change from pre-project to post-project. In Watersheds 1, 3, 4, and 8 the Tc flow paths changed in post-project conditions due to the addition of the proposed stormwater infrastructure and/or proposed changes in land use. Please see the attached figures for both the pre- and post-project Tc flow paths by watershed.

Pre- and post-project runoff calculations from the HydroCAD models for each watershed are summarized in Table 1. Runoff was calculated for the 2-, 10-, 50-, and 100-year storms respectively for each watershed.

**Table 1.** Hydrologic Analysis Summary

					Runoff (cfs)								
	Wa	Watershed 1			atershe	ed 2	Watershed 3			Watershed 4			
	Pre- Project	Post- Project	Increase/ Decrease										
2-Year Storm	21.36	20.38	0.98	11.01	11.01	0.00	15.32	14.35	0.97	13.06	13.00	0.06	
10-Year Storm	46.99	44.99	2.00	26.34	26.34	0.00	33.72	31.69	2.03	29.41	28.65	0.76	
50-Year Storm	75.65	72.52	3.13	44.00	44.00	0.00	54.36	51.16	3.20	47.82	46.16	1.66	
100-Year Storm	88.04	84.44	3.60	51.74	51.74	0.00	63.28	59.59	3.69	55.82	53.74	2.08	

**Table 1 (continued).** Hydrologic Analysis Summary

			·		Runoff (cfs)								
	Wa	atershed	15	Watershed 6			Watershed 7			Watershed 8			
	Pre- Project	Post- Project	Increase/ Decrease										
2-Year Storm	13.67	13.67	0.00	10.02	10.02	0.00	3.52	3.52	0.00	4.97	4.89	0.08	
10-Year Storm	31.58	31.58	0.00	25.75	25.75	0.00	7.52	7.52	0.00	9.79	9.67	0.12	
50-Year Storm	51.98	51.98	0.00	44.30	44.30	0.00	11.94	11.94	0.00	14.99	14.79	0.20	
100-Year Storm	60.86	60.86	0.00	52.52	52.52	0.00	13.84	13.84	0.00	17.20	16.97	0.23	

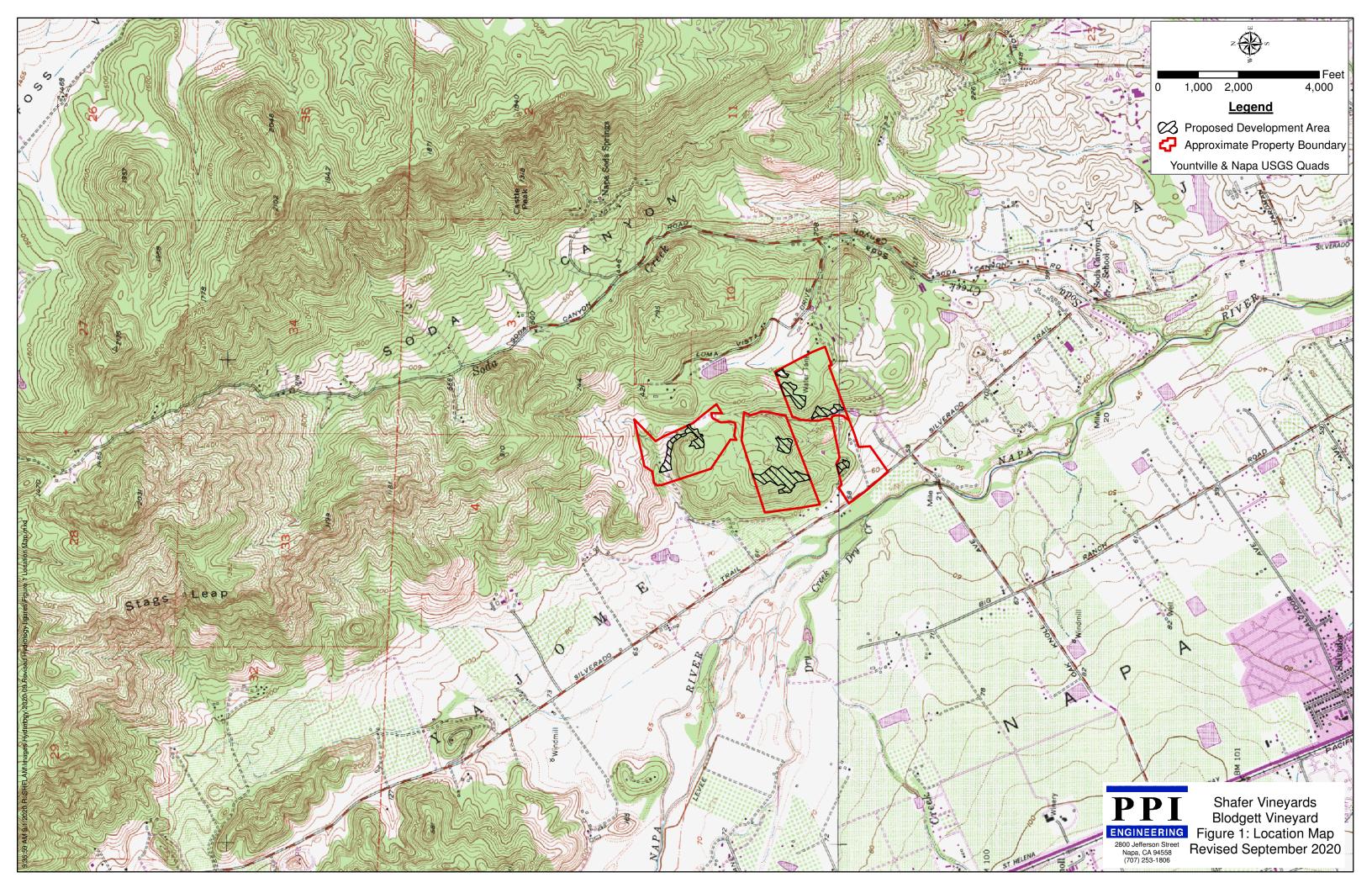
For Watersheds 2, 5, 6, and 7 the HydroCAD model predicts no net change in runoff from pre-to post-project conditions for all storm events. This is due to the fact that neither the CN nor the Tc changed for the post-project conditions within these watersheds. Watersheds 1, 3, and 4 predict a net decrease in runoff for all modeled storm events. These decreases were a result of changes in the Tc flow paths due to the addition of stormwater infrastructure included in the design. The increase in Tc for Watershed 4 mitigated the change in CN from pre- to post-project. The decrease in runoff found in Watershed 8 was also a result of increases in the Tc. The increase in Tc for Watershed 8 was a result of the change in land use from pre-project to post project.

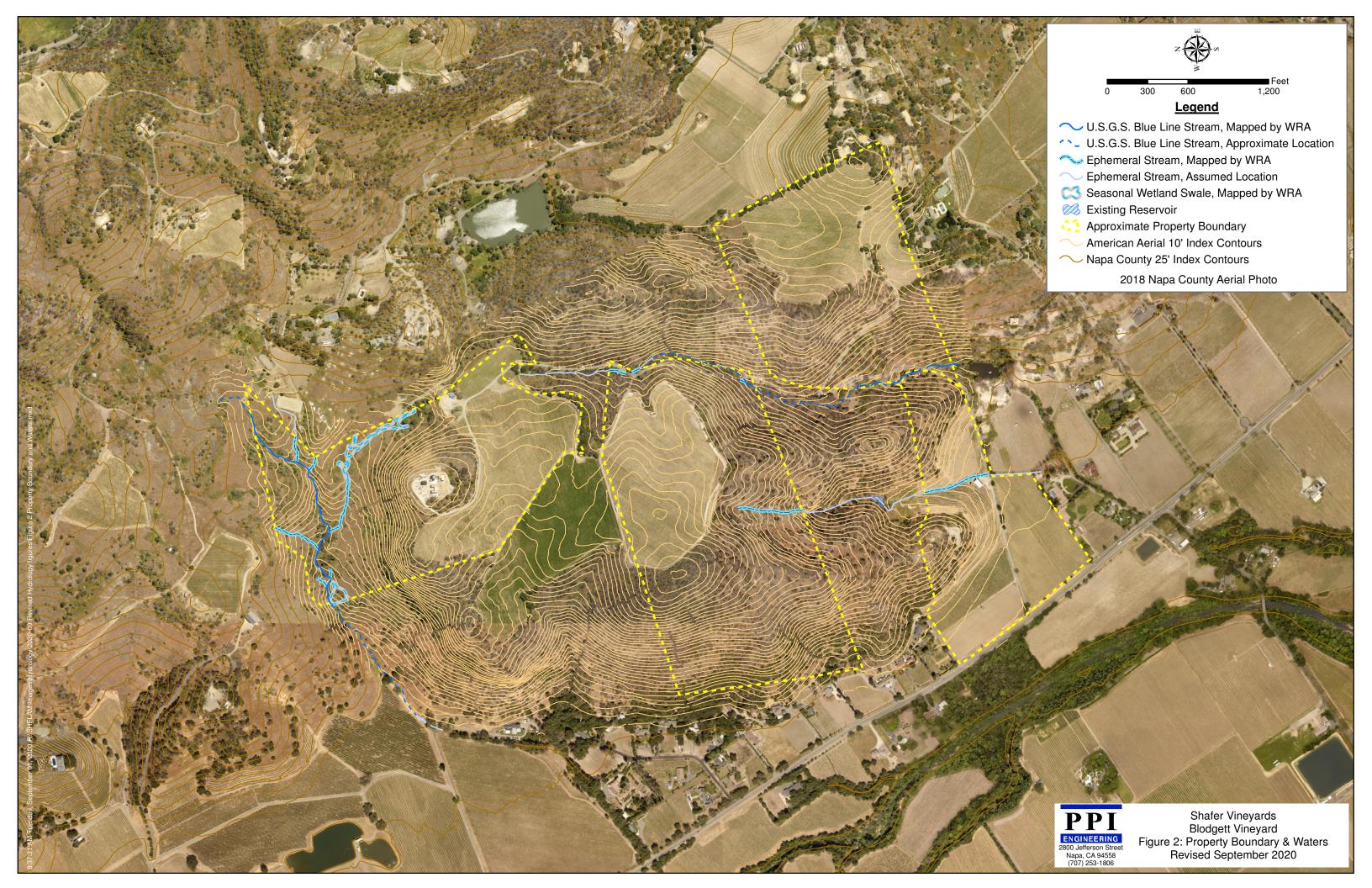
Please see the attached HydroCAD analyses for inputs, details, and summaries of the hydrologic modeling. Based on our analysis, there are no predicted net runoff increases, and no negative hydrologic impacts are expected as a result of this project. The project as proposed is in compliance with Napa County's General Plan policy requiring no net increase in runoff.

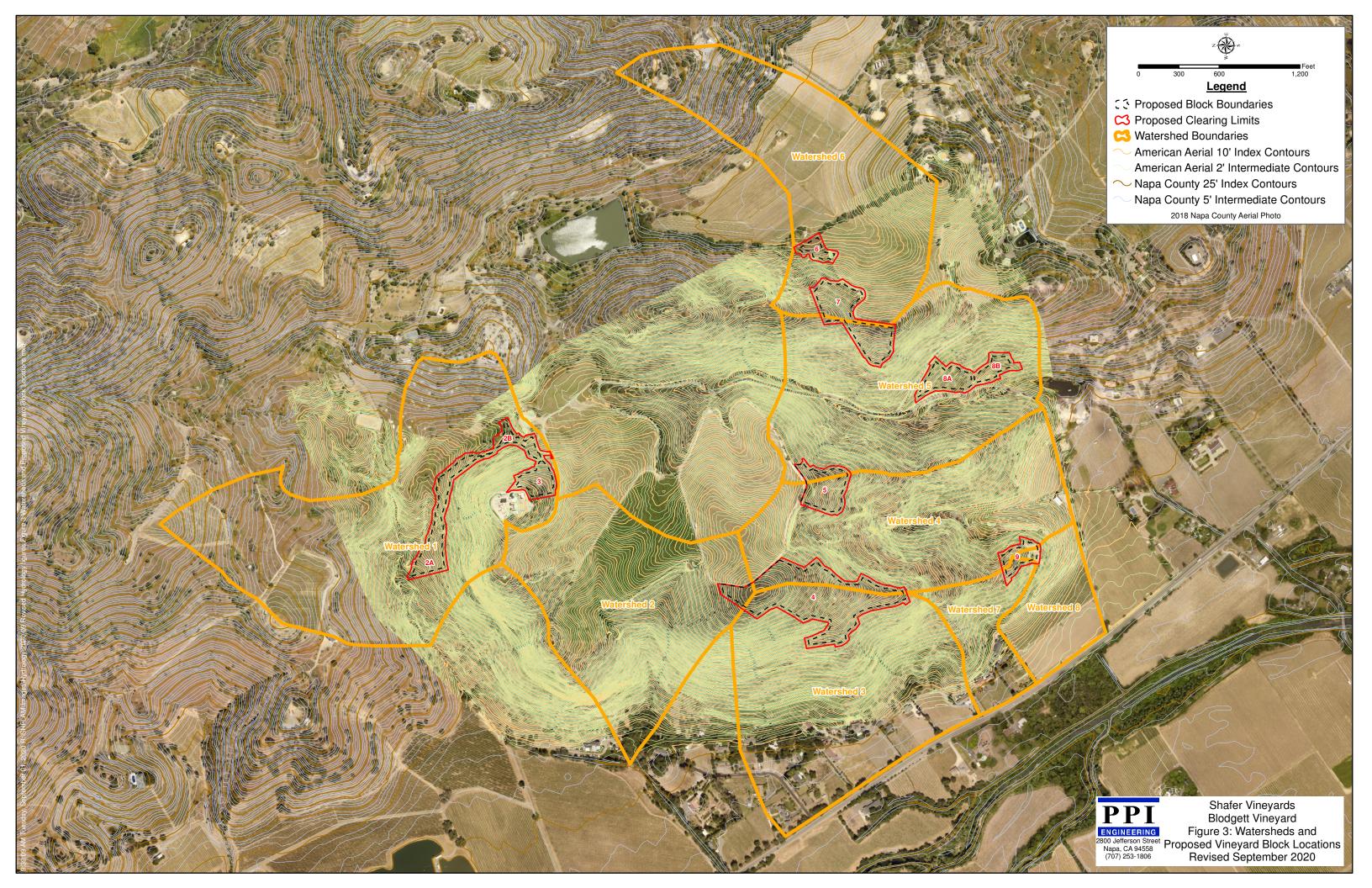


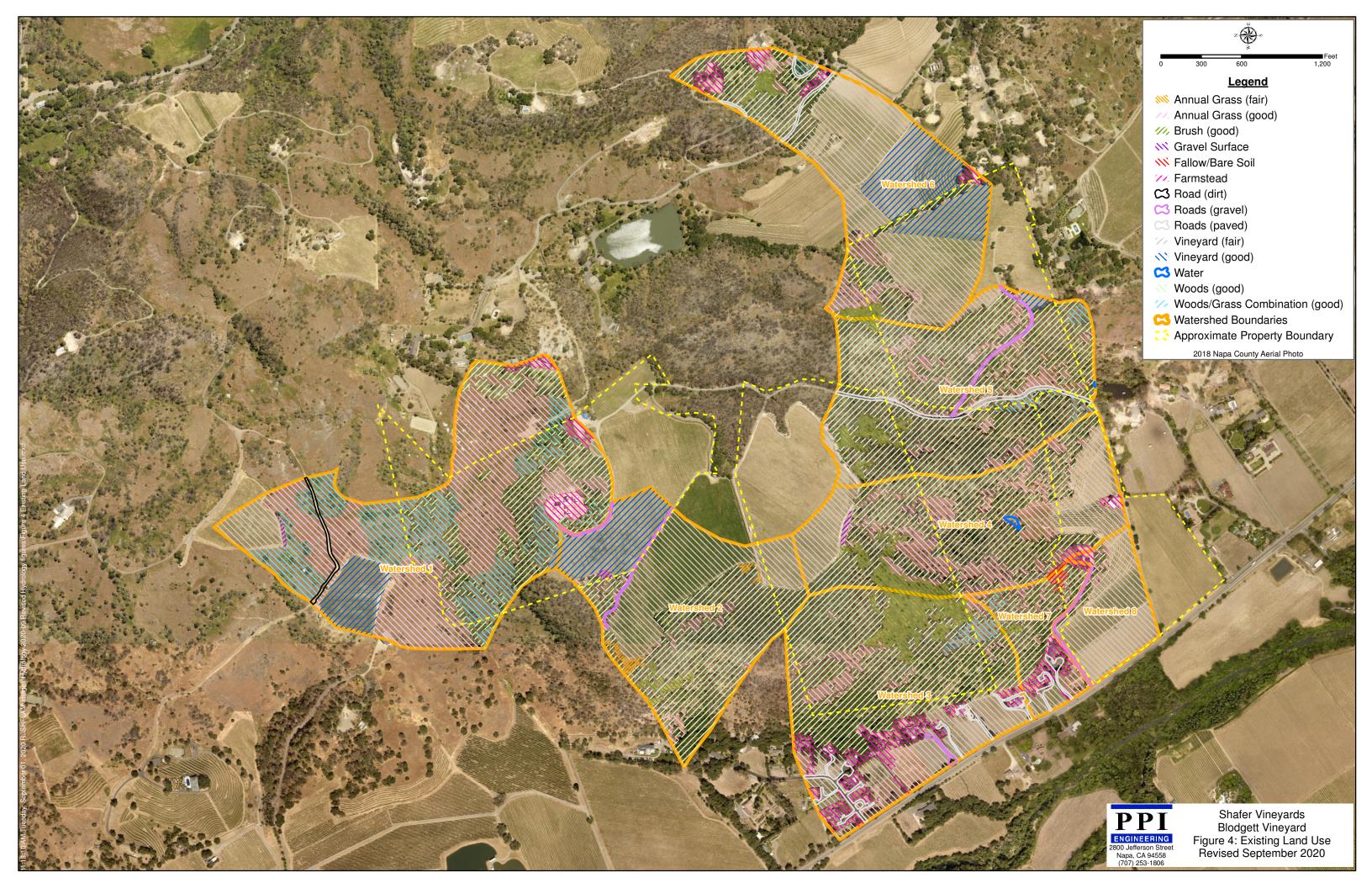
## ATTACHMENT A

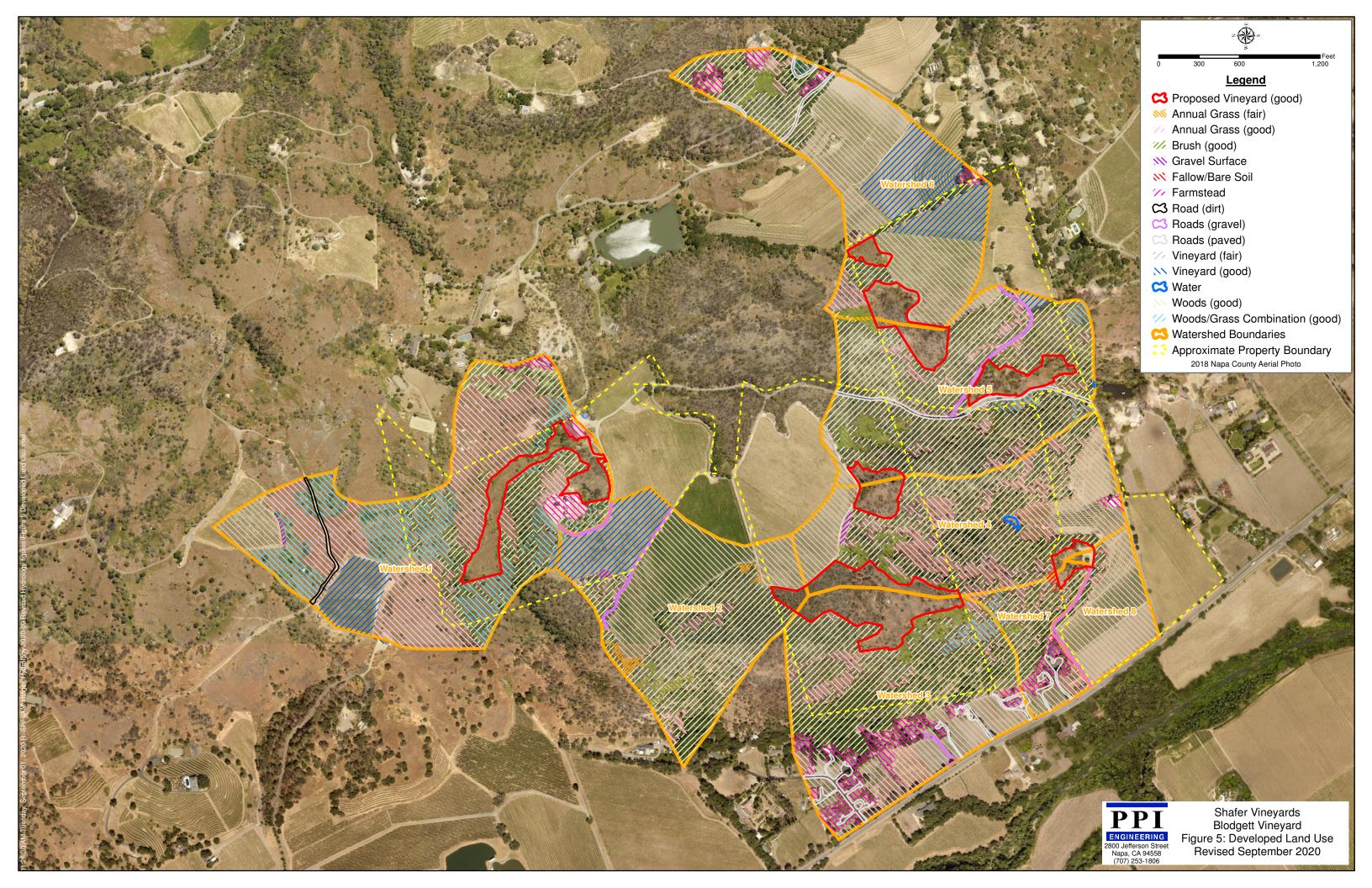
SUPPORTING FIGURES

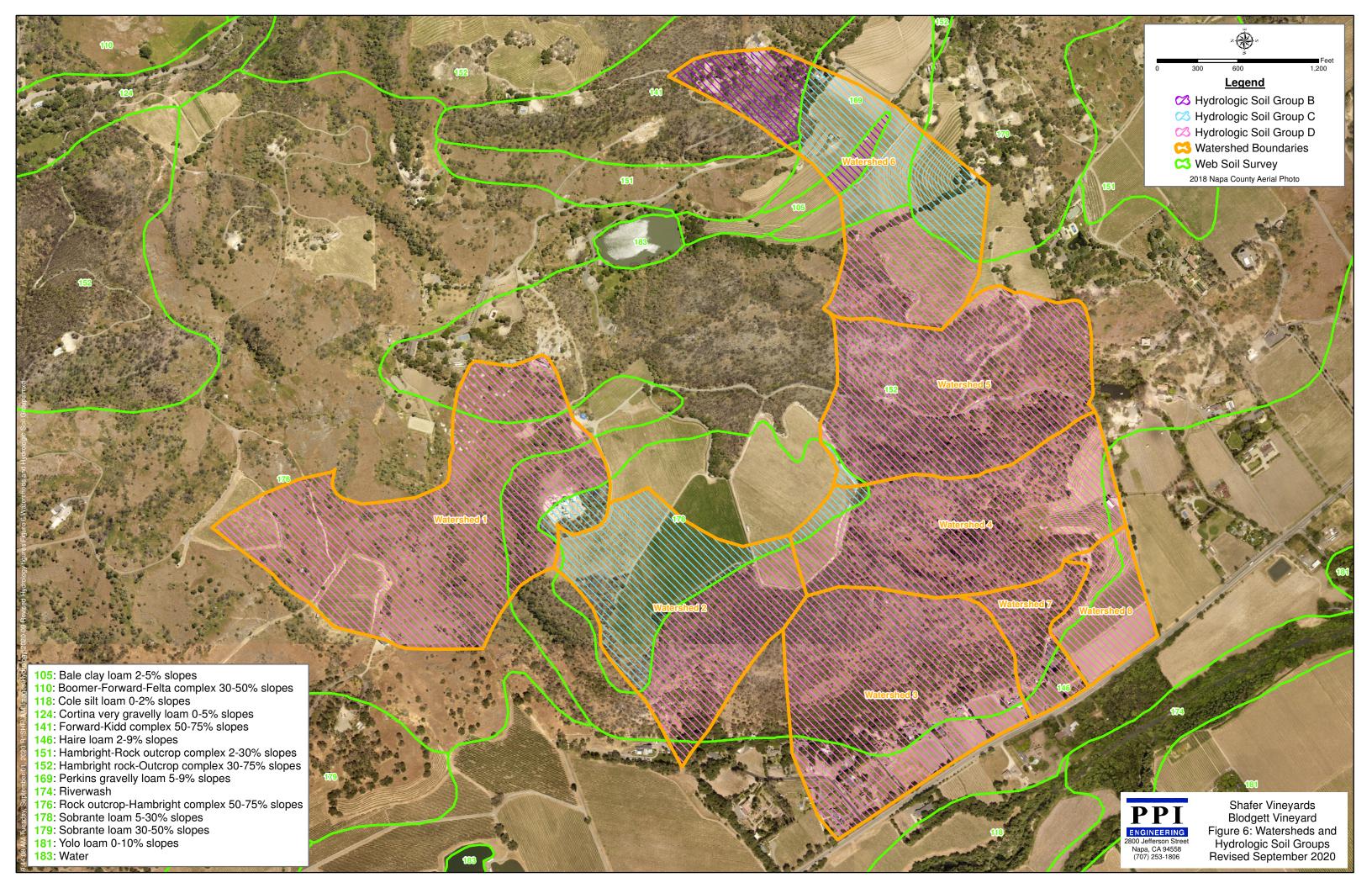


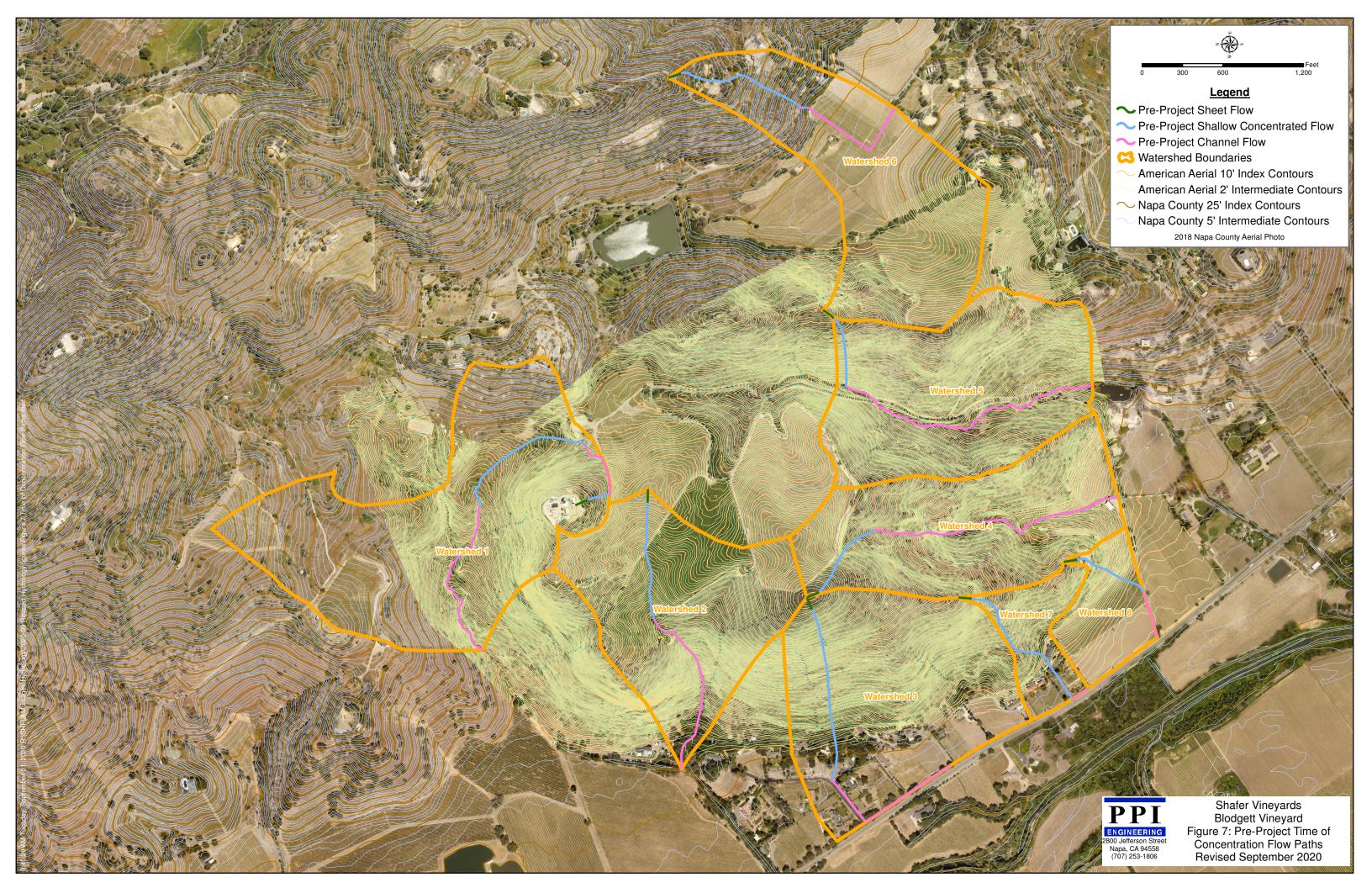


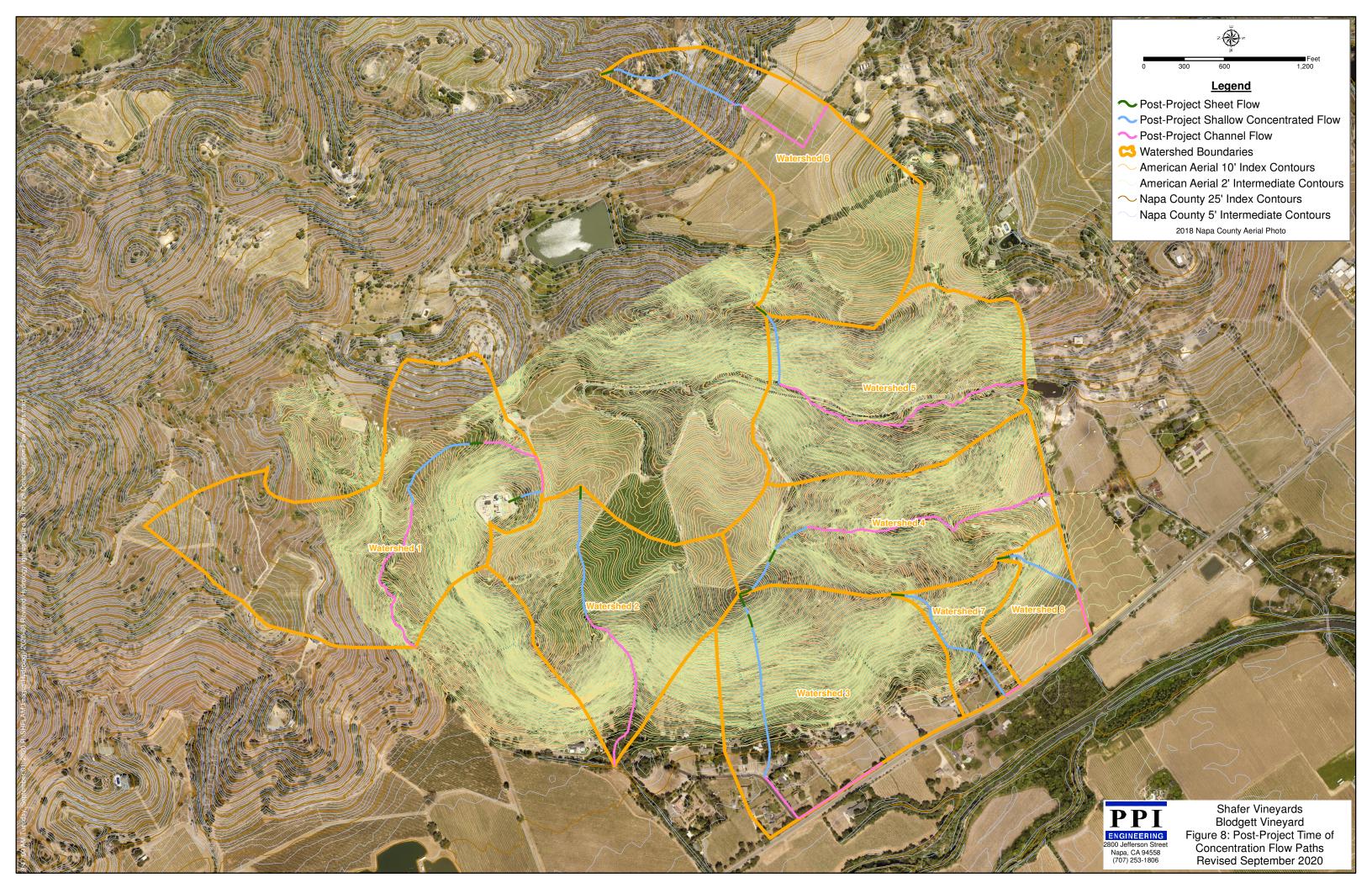






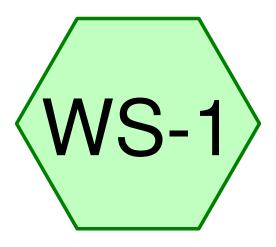






## ATTACHMENT B

**HYDROCAD ANALYSES** 



# Subcat WS-1









Prepared by PPI Engineering, Revised Sept. 2020, Printed 9/2/2020 HydroCAD® 10.00-24 s/n 09429 © 2018 HydroCAD Software Solutions LLC

21.2

3,138 Total

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### **Summary for Subcatchment WS-1: Subcat WS-1**

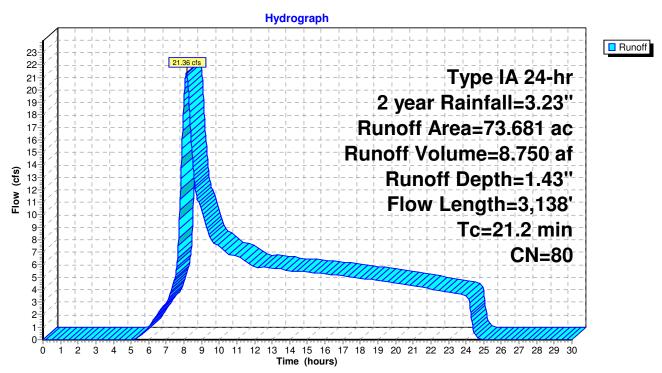
Runoff = 21.36 cfs @ 8.14 hrs, Volume= 8.750 af, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac) C	N Desc	cription						
*	0.	000	0 , HS							
*		000	0 , HS							
					Good, HSC					
				Annual Grass, Good, HSG D						
				roads, HS						
				nsteads, H						
				nsteads, H						
				el surface						
				yard, Fair,						
				yard, Goo						
				yard, Goo ds, Good,						
				ids, Good, ids, Good,						
					comb., Goo	d HSG C				
					comb., Goo					
				ghted Ave		<u>.,</u>				
		681		00% Pervi						
	Tc	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	<u>'</u>				
	6.9	100	0.1200	0.24		Sheet Flow, Sheet				
						Grass: Dense n= 0.240 P2= 3.23"				
	1.5	167	0.1400	1.87		Shallow Concentrated Flow, Shallow 1 - Woodlands				
						Woodland Kv= 5.0 fps				
	0.9	451	0.1200	8.60	17.20	Trap/Vee/Rect Channel Flow, Existing Ditch				
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'				
						n= 0.035				
	4.1	385	0.1000	1.58		Shallow Concentrated Flow, Shallow 2 - Woodlands				
	0.0	700	0.0700	4.05		Woodland Kv= 5.0 fps				
	6.6	736	0.0700	1.85		Shallow Concentrated Flow, Shallow 3 - Short Grass				
	0.3	421	0.1400	26.47	1 000 60	Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Channel 1				
	0.3	421	0.1400	20.47	1,088.62	Bot.W=6.50' D=3.50' Z= 1.5 '/' Top.W=17.00'				
						n= 0.035				
	0.9	878	0.0900	15.65	281.77	Trap/Vee/Rect Channel Flow, Channel 2				
	0.0	0.0	5.0000	10.00	201.77	Bot.W=6.00' D=2.00' Z= 1.5 '/' Top.W=12.00'				
						n= 0.035				
_										

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Page 4

## **Summary for Subcatchment WS-1: Subcat WS-1**

Runoff = 46.99 cfs @ 8.12 hrs, Volume= 17.228 af, Depth= 2.81"

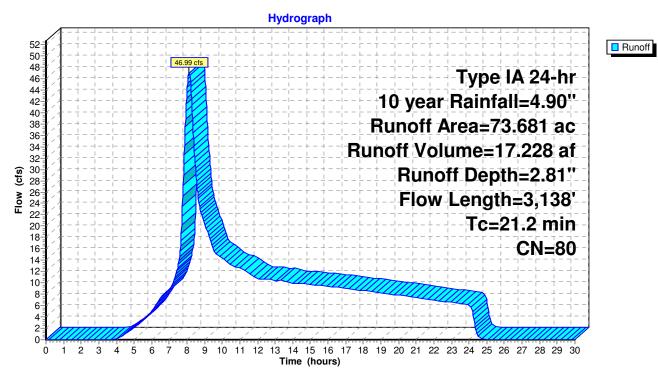
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area	(ac) C	N Desc	cription		
*	0.	000	0 , HS	G C		
*		000	0 , HS	G D		
	0.	151	75 Annı	ual Grass,	Good, HSC	G C
					Good, HSC	G D
				roads, HS		
				nsteads, H		
				nsteads, H		
				el surface	,	
				yard, Fair,		
				yard, Goo		
				yard, Good		
				ds, Good, ds, Good,		
					comb., Goo	4 H6C C
					comb., Goo	
_				ghted Ave		u, 1100 B
		681	,	00% Pervi		
	70.	001	100.	00 /0 T CIVI	003 / 11 00	
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	6.9	100	0.1200	0.24	,	Sheet Flow, Sheet
						Grass: Dense n= 0.240 P2= 3.23"
	1.5	167	0.1400	1.87		Shallow Concentrated Flow, Shallow 1 - Woodlands
						Woodland Kv= 5.0 fps
	0.9	451	0.1200	8.60	17.20	Trap/Vee/Rect Channel Flow, Existing Ditch
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
	4.1	385	0.1000	1.58		Shallow Concentrated Flow, Shallow 2 - Woodlands
		700				Woodland Kv= 5.0 fps
	6.6	736	0.0700	1.85		Shallow Concentrated Flow, Shallow 3 - Short Grass
	0.0	401	0 1 100	00.47	1 000 00	Short Grass Pasture Kv= 7.0 fps
	0.3	421	0.1400	26.47	1,088.62	Trap/Vee/Rect Channel Flow, Channel 1
						Bot.W=6.50' D=3.50' Z= 1.5 '/' Top.W=17.00' n= 0.035
	0.9	878	0.0900	15.65	281.77	Trap/Vee/Rect Channel Flow, Channel 2
	0.5	070	0.0300	13.03	201.77	Bot.W=6.00' D=2.00' Z= 1.5 '/' Top.W=12.00'
						n= 0.035
						0.000

21.2 3,138 Total

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## **Summary for Subcatchment WS-1: Subcat WS-1**

Runoff = 75.65 cfs @ 8.12 hrs, Volume= 26.623 af, Depth= 4.34"

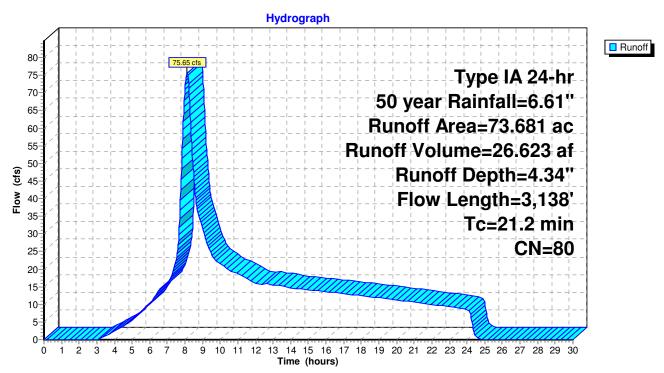
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

	Area	(ac) C	N Desc	cription		
*	0.	000	0 , HS	G C		
*		000	0 , HS	G D		
	0.	151	75 Annı	ual Grass,	Good, HSC	G C
					Good, HSC	G D
				roads, HS		
				nsteads, H		
				nsteads, H		
				el surface	,	
				yard, Fair,		
				yard, Goo		
				yard, Good		
				ds, Good, ds, Good,		
					comb., Goo	4 H6C C
					comb., Goo	
_				ghted Ave		u, 1100 B
		681	,	00% Pervi		
	70.	001	100.	00 /0 T CIVI	003 / 11 00	
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	6.9	100	0.1200	0.24	,	Sheet Flow, Sheet
						Grass: Dense n= 0.240 P2= 3.23"
	1.5	167	0.1400	1.87		Shallow Concentrated Flow, Shallow 1 - Woodlands
						Woodland Kv= 5.0 fps
	0.9	451	0.1200	8.60	17.20	Trap/Vee/Rect Channel Flow, Existing Ditch
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
	4.1	385	0.1000	1.58		Shallow Concentrated Flow, Shallow 2 - Woodlands
		700				Woodland Kv= 5.0 fps
	6.6	736	0.0700	1.85		Shallow Concentrated Flow, Shallow 3 - Short Grass
	0.0	401	0 1 100	00.47	1 000 00	Short Grass Pasture Kv= 7.0 fps
	0.3	421	0.1400	26.47	1,088.62	Trap/Vee/Rect Channel Flow, Channel 1
						Bot.W=6.50' D=3.50' Z= 1.5 '/' Top.W=17.00' n= 0.035
	0.9	878	0.0900	15.65	281.77	Trap/Vee/Rect Channel Flow, Channel 2
	0.5	070	0.0300	13.03	201.77	Bot.W=6.00' D=2.00' Z= 1.5 '/' Top.W=12.00'
						n= 0.035
						0.000

21.2 3,138 Total

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21.2

3,138 Total

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## **Summary for Subcatchment WS-1: Subcat WS-1**

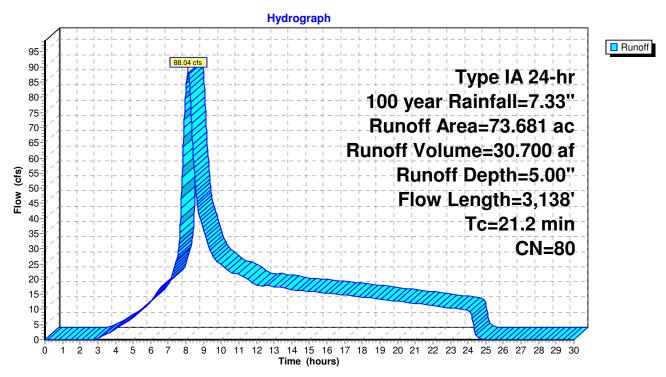
Runoff = 88.04 cfs @ 8.12 hrs, Volume= 30.700 af, Depth= 5.00"

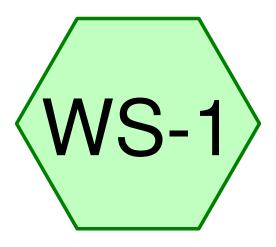
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area	(ac) C	N Desc	cription						
*	0.	000	0 , HS							
*		000	0 , HS							
					Good, HSC					
				Annual Grass, Good, HSG D						
				roads, HS						
				nsteads, H						
				nsteads, H						
				el surface						
				yard, Fair,						
				yard, Goo						
				yard, Goo ds, Good,						
				ids, Good, ids, Good,						
					comb., Goo	d HSG C				
					comb., Goo					
				ghted Ave		<u>.,</u>				
		681		00% Pervi						
	Tc	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	<u>'</u>				
	6.9	100	0.1200	0.24		Sheet Flow, Sheet				
						Grass: Dense n= 0.240 P2= 3.23"				
	1.5	167	0.1400	1.87		Shallow Concentrated Flow, Shallow 1 - Woodlands				
						Woodland Kv= 5.0 fps				
	0.9	451	0.1200	8.60	17.20	Trap/Vee/Rect Channel Flow, Existing Ditch				
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'				
						n= 0.035				
	4.1	385	0.1000	1.58		Shallow Concentrated Flow, Shallow 2 - Woodlands				
	0.0	700	0.0700	4.05		Woodland Kv= 5.0 fps				
	6.6	736	0.0700	1.85		Shallow Concentrated Flow, Shallow 3 - Short Grass				
	0.3	421	0.1400	26.47	1 000 60	Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Channel 1				
	0.3	421	0.1400	20.47	1,088.62	Bot.W=6.50' D=3.50' Z= 1.5 '/' Top.W=17.00'				
						n= 0.035				
	0.9	878	0.0900	15.65	281.77	Trap/Vee/Rect Channel Flow, Channel 2				
	0.0	0.0	5.0000	10.00	201.77	Bot.W=6.00' D=2.00' Z= 1.5 '/' Top.W=12.00'				
						n= 0.035				
_										

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# Subcat WS-1









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26.0

3,067 Total

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## Summary for Subcatchment WS-1: Subcat WS-1

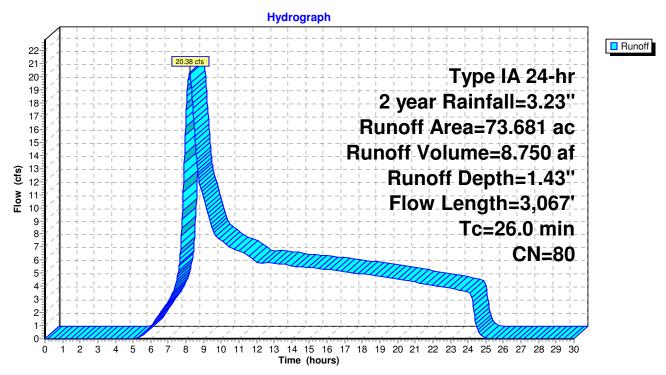
Runoff = 20.38 cfs @ 8.20 hrs, Volume= 8.750 af, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac) C	N Des	cription		
*	0.	000	0 , HS	G C		
*	0.	000	0 , HS	G D		
	0.	007		ual Grass,	Good, HSC	G C
	27.	171 8			Good, HSC	
	0.	481 8	39 Dirt	roads, HS	G D	
	0.	899 8		nsteads, H		
	1.			nsteads, H		
				vel surface		
	3.	082 8		yard, Fair,		
	0.	476		yard, Goo		
	10.	643 8	31 Vine	yard, Goo	d, HSG D	
	0.	875	70 Woo	ds, Good,	HSG C	
	10.	728	77 Woo	ds, Good,	HSG D	
	0.	735	72 Woo	ods/grass o	omb., Goo	d, HSG C
	17.	029	79 Woo	ods/grass o	omb., Goo	d, HSG D
	73.	681 8	30 Wei	ghted Aver	age	
	73.	681	100.	00% Pervi	ous Area	
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	·
	6.9	100	0.1200	0.24		Sheet Flow, Sheet 1
						Grass: Dense n= 0.240 P2= 3.23"
	1.1	167	0.1400	2.62		Shallow Concentrated Flow, Shallow 1 - Short Grass
						Short Grass Pasture Kv= 7.0 fps
	0.5	250	0.1000	7.85	15.70	Trap/Vee/Rect Channel Flow, Ditch
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
	0.6	431	0.1500	11.90	6.49	Pipe Channel, 10" SWCPP
						10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21'
						n= 0.017 PPI 10in CPP
	9.2	100	0.0600	0.18		Sheet Flow, Sheet 2
						Grass: Dense n= 0.240 P2= 3.23"
	6.5	720	0.0700	1.85		Shallow Concentrated Flow, Shallow 2 - Short Grass
						Short Grass Pasture Kv= 7.0 fps
	0.3	421	0.1400	26.47	1,088.62	Trap/Vee/Rect Channel Flow, Channel 1
						Bot.W=6.50' D=3.50' Z= 1.5 '/' Top.W=17.00'
						n= 0.035
	0.9	878	0.0900	15.65	281.77	Trap/Vee/Rect Channel Flow, Channel 2
						Bot.W=6.00' D=2.00' Z= 1.5 '/' Top.W=12.00'
_						n= 0.035

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26.0

3,067 Total

Printed 9/2/2020

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## **Summary for Subcatchment WS-1: Subcat WS-1**

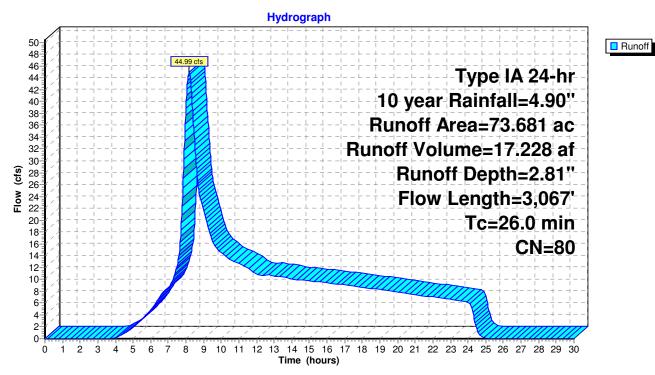
Runoff = 44.99 cfs @ 8.18 hrs, Volume= 17.228 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area	(ac) C	N Des	cription		
*	0.	000	0 , HS	G C		
*	0.	000	0 , HS	G D		
	0.	007	75 Annı	ual Grass,	Good, HSC	G C
	27.	171 8			Good, HSC	
	0.	481 8	39 Dirt	roads, HS0	G D	
	0.	899 8	32 Farn	nsteads, H	SG C	
	1.	425 8	36 Farn	nsteads, H	SG D	
	0.	130	96 Grav	el surface	, HSG D	
	3.	082 8	34 Vine	yard, Fair,	HSG D	
	0.	476	75 Vine	yard, Good	d, HSG C	
	10.	643 8	31 Vine	yard, Good	d, HSG D	
	0.	875	70 Woo	ds, Good,	HSG C	
				ds, Good,		
	0.	735	72 Woo	ds/grass d	comb., Goo	d, HSG C
_	17.	029	79 Woo	ds/grass c	omb., Goo	d, HSG D
	73.	681 8	30 Wei	ghted Aver	age	
	73.	681	100.	00% Pervi	ous Area	
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	6.9	100	0.1200	0.24		Sheet Flow, Sheet 1
						Grass: Dense n= 0.240 P2= 3.23"
	1.1	167	0.1400	2.62		Shallow Concentrated Flow, Shallow 1 - Short Grass
						Short Grass Pasture Kv= 7.0 fps
	0.5	250	0.1000	7.85	15.70	Trap/Vee/Rect Channel Flow, Ditch
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
	0.6	431	0.1500	11.90	6.49	Pipe Channel, 10" SWCPP
						10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21'
						n= 0.017 PPI 10in CPP
	9.2	100	0.0600	0.18		Sheet Flow, Sheet 2
						Grass: Dense n= 0.240 P2= 3.23"
	6.5	720	0.0700	1.85		Shallow Concentrated Flow, Shallow 2 - Short Grass
						Short Grass Pasture Kv= 7.0 fps
	0.3	421	0.1400	26.47	1,088.62	Trap/Vee/Rect Channel Flow, Channel 1
						Bot.W=6.50' D=3.50' Z= 1.5 '/' Top.W=17.00'
						n= 0.035
	0.9	878	0.0900	15.65	281.77	Trap/Vee/Rect Channel Flow, Channel 2
						Bot.W=6.00' D=2.00' Z= 1.5 '/' Top.W=12.00'
						n= 0.035

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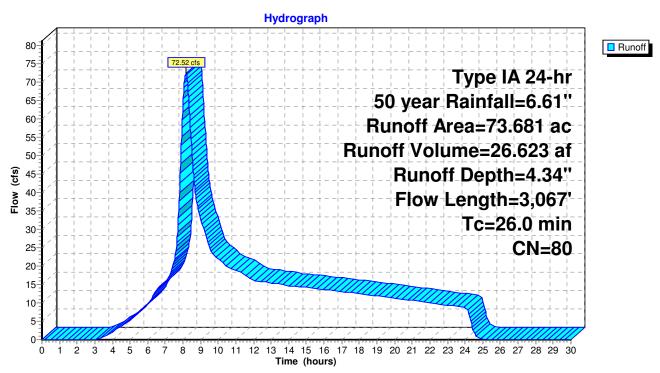
## **Summary for Subcatchment WS-1: Subcat WS-1**

Runoff 72.52 cfs @ 8.17 hrs, Volume= 26.623 af, Depth= 4.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

* 0.000 0 , HSG C * 0.000 0 , HSG D 0.007 75 Annual Grass, Good, HSG C 27.171 81 Annual Grass, Good, HSG D 0.481 89 Dirt roads, HSG D 0.899 82 Farmsteads, HSG C 1.425 86 Farmsteads, HSG D 0.130 96 Gravel surface, HSG D 3.082 84 Vineyard, Fair, HSG D 0.476 75 Vineyard, Good, HSG C 10.643 81 Vineyard, Good, HSG C 10.728 77 Woods, Good, HSG D 0.735 72 Woods/grass comb., Good, HSG C 17.029 79 Woods/grass comb., Good, HSG D	
<ul> <li>* 0.000</li></ul>	
0.007 75 Annual Grass, Good, HSG C 27.171 81 Annual Grass, Good, HSG D 0.481 89 Dirt roads, HSG D 0.899 82 Farmsteads, HSG C 1.425 86 Farmsteads, HSG D 0.130 96 Gravel surface, HSG D 3.082 84 Vineyard, Fair, HSG D 0.476 75 Vineyard, Good, HSG C 10.643 81 Vineyard, Good, HSG D 0.875 70 Woods, Good, HSG C 10.728 77 Woods, Good, HSG D 0.735 72 Woods/grass comb., Good, HSG C	
27.171       81       Annual Grass, Good, HSG D         0.481       89       Dirt roads, HSG D         0.899       82       Farmsteads, HSG C         1.425       86       Farmsteads, HSG D         0.130       96       Gravel surface, HSG D         3.082       84       Vineyard, Fair, HSG D         0.476       75       Vineyard, Good, HSG C         10.643       81       Vineyard, Good, HSG D         0.875       70       Woods, Good, HSG C         10.728       77       Woods, Good, HSG D         0.735       72       Woods/grass comb., Good, HSG C	
0.481 89 Dirt roads, HSG D 0.899 82 Farmsteads, HSG C 1.425 86 Farmsteads, HSG D 0.130 96 Gravel surface, HSG D 3.082 84 Vineyard, Fair, HSG D 0.476 75 Vineyard, Good, HSG C 10.643 81 Vineyard, Good, HSG D 0.875 70 Woods, Good, HSG C 10.728 77 Woods, Good, HSG D 0.735 72 Woods/grass comb., Good, HSG C	
0.899 82 Farmsteads, HSG C 1.425 86 Farmsteads, HSG D 0.130 96 Gravel surface, HSG D 3.082 84 Vineyard, Fair, HSG D 0.476 75 Vineyard, Good, HSG C 10.643 81 Vineyard, Good, HSG D 0.875 70 Woods, Good, HSG C 10.728 77 Woods, Good, HSG D 0.735 72 Woods/grass comb., Good, HSG C	
<ul> <li>1.425 86 Farmsteads, HSG D</li> <li>0.130 96 Gravel surface, HSG D</li> <li>3.082 84 Vineyard, Fair, HSG D</li> <li>0.476 75 Vineyard, Good, HSG C</li> <li>10.643 81 Vineyard, Good, HSG D</li> <li>0.875 70 Woods, Good, HSG C</li> <li>10.728 77 Woods, Good, HSG D</li> <li>0.735 72 Woods/grass comb., Good, HSG C</li> </ul>	
<ul> <li>0.130</li> <li>96</li> <li>Gravel surface, HSG D</li> <li>3.082</li> <li>84</li> <li>Vineyard, Fair, HSG D</li> <li>0.476</li> <li>75</li> <li>Vineyard, Good, HSG C</li> <li>10.643</li> <li>81</li> <li>Vineyard, Good, HSG D</li> <li>0.875</li> <li>70</li> <li>Woods, Good, HSG C</li> <li>10.728</li> <li>77</li> <li>Woods, Good, HSG D</li> <li>0.735</li> <li>72</li> <li>Woods/grass comb., Good, HSG C</li> </ul>	
3.082 84 Vineyard, Fair, HSG D 0.476 75 Vineyard, Good, HSG C 10.643 81 Vineyard, Good, HSG D 0.875 70 Woods, Good, HSG C 10.728 77 Woods, Good, HSG D 0.735 72 Woods/grass comb., Good, HSG C	
0.476 75 Vineyard, Good, HSG C 10.643 81 Vineyard, Good, HSG D 0.875 70 Woods, Good, HSG C 10.728 77 Woods, Good, HSG D 0.735 72 Woods/grass comb., Good, HSG C	
10.643 81 Vineyard, Good, HSG D 0.875 70 Woods, Good, HSG C 10.728 77 Woods, Good, HSG D 0.735 72 Woods/grass comb., Good, HSG C	
0.875 70 Woods, Good, HSG C 10.728 77 Woods, Good, HSG D 0.735 72 Woods/grass comb., Good, HSG C	
10.728 77 Woods, Good, HSG D 0.735 72 Woods/grass comb., Good, HSG C	
0.735 72 Woods/grass comb., Good, HSG C	
73.681 100.00% Pervious Area	
To Longth Clare Velocity Conscity Description	
Tc Length Slope Velocity Capacity Description	
(min) (feet) (ft/ft) (ft/sec) (cfs)	
6.9 100 0.1200 0.24 <b>Sheet Flow, Sheet 1</b>	
Grass: Dense n= 0.240 P2= 3.23"	
1.1 167 0.1400 2.62 Shallow Concentrated Flow, Shallow 1 - Short G	ass
Short Grass Pasture Kv= 7.0 fps	
0.5 250 0.1000 7.85 15.70 <b>Trap/Vee/Rect Channel Flow, Ditch</b>	
Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'	
n= 0.035	
0.6 431 0.1500 11.90 6.49 <b>Pipe Channel, 10'' SWCPP</b>	
10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21'	
n= 0.017 PPI 10in CPP	
9.2 100 0.0600 0.18 <b>Sheet Flow, Sheet 2</b>	
Grass: Dense n= 0.240 P2= 3.23"	
6.5 720 0.0700 1.85 Shallow Concentrated Flow, Shallow 2 - Short G	ass
Short Grass Pasture Kv= 7.0 fps	
0.3 421 0.1400 26.47 1,088.62 Trap/Vee/Rect Channel Flow, Channel 1	
Bot.W=6.50' D=3.50' Z= 1.5 '/' Top.W=17.00'	
n= 0.035	
0.9 878 0.0900 15.65 281.77 Trap/Vee/Rect Channel Flow, Channel 2	
Bot.W=6.00' D=2.00' Z= 1.5 '/' Top.W=12.00'	
n= 0.035	
26.0 3,067 Total	

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26.0

3,067 Total

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## **Summary for Subcatchment WS-1: Subcat WS-1**

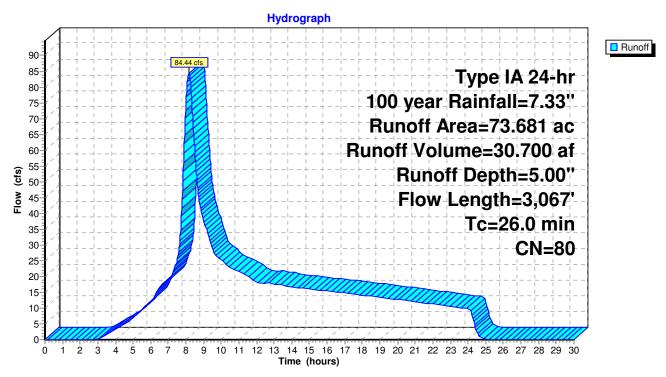
Runoff = 84.44 cfs @ 8.17 hrs, Volume= 30.700 af, Depth= 5.00"

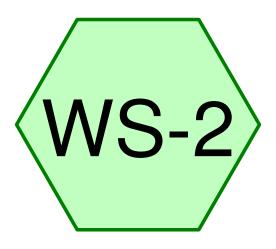
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area	(ac) C	N Des	cription		
*	0.	000	0 , HS	G C		
*	0.	000	0 , HS	G D		
	0.	007	75 Annı	ual Grass,	Good, HSC	G C
	27.	171 8			Good, HSC	
	0.	481 8	39 Dirt	roads, HS0	G D	
	0.	899 8	32 Farn	nsteads, H	SG C	
			36 Farn	nsteads, H	SG D	
	0.	130	96 Grav	el surface	, HSG D	
	3.	082 8	34 Vine	yard, Fair,	HSG D	
	0.	476	75 Vine	yard, Good	d, HSG C	
	10.	643 8	31 Vine	yard, Good	d, HSG D	
	0.	875	70 Woo	ds, Good,	HSG C	
				ds, Good,		
	0.	735	72 Woo	ds/grass d	comb., Goo	d, HSG C
_	17.	029	79 Woo	ds/grass c	omb., Goo	d, HSG D
	73.	681 8	30 Wei	ghted Aver	age	
	73.	681	100.	00% Pervi	ous Area	
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	6.9	100	0.1200	0.24		Sheet Flow, Sheet 1
						Grass: Dense n= 0.240 P2= 3.23"
	1.1	167	0.1400	2.62		Shallow Concentrated Flow, Shallow 1 - Short Grass
						Short Grass Pasture Kv= 7.0 fps
	0.5	250	0.1000	7.85	15.70	Trap/Vee/Rect Channel Flow, Ditch
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
	0.6	431	0.1500	11.90	6.49	Pipe Channel, 10" SWCPP
						10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21'
						n= 0.017 PPI 10in CPP
	9.2	100	0.0600	0.18		Sheet Flow, Sheet 2
						Grass: Dense n= 0.240 P2= 3.23"
	6.5	720	0.0700	1.85		Shallow Concentrated Flow, Shallow 2 - Short Grass
						Short Grass Pasture Kv= 7.0 fps
	0.3	421	0.1400	26.47	1,088.62	Trap/Vee/Rect Channel Flow, Channel 1
						Bot.W=6.50' D=3.50' Z= 1.5 '/' Top.W=17.00'
						n= 0.035
	0.9	878	0.0900	15.65	281.77	Trap/Vee/Rect Channel Flow, Channel 2
						Bot.W=6.00' D=2.00' Z= 1.5 '/' Top.W=12.00'
						n= 0.035

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## Subcat WS-2









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## **Summary for Subcatchment WS-2: Subcat WS-2**

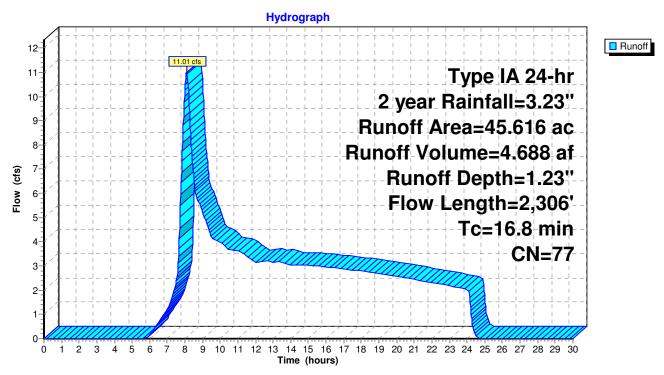
Runoff = 11.01 cfs @ 8.10 hrs, Volume= 4.688 af, Depth= 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac)	CN	Desc	ription								
*	0.	000	0	, HS	G C								
	0.	501	79	Annu	Annual Grass, Fair, HSG C								
	0.	159	84	Annu	Annual Grass, Fair, HSG D								
	0.	556	75			Good, HSC							
		424	81	Annu	al Grass,	Good, HSC	G D						
		160											
	0.611 73 Brush, Good, HSG D												
		485	89		el Roads,								
		131	96		el surface								
		081	79		/ard, Fair,								
		043	84		/ard, Fair,								
		851	75		ard, Goo								
		182	81		ard, Goo								
		890	70		ds, Good,								
		486	77		ds, Good,		1.1100.0						
_		056	72			comb., Goo	d, HSG C						
		616	77		hted Aver								
	45.	616		100.0	00% Pervi	ous Area							
	<b>-</b>		ı.	01	M-19	0	Describer.						
	Tc	Lengt		Slope	Velocity	Capacity	Description						
	(min)	(feet		(ft/ft)	(ft/sec)	(cfs)							
	9.2	10	0 0	.0600	0.18		Sheet Flow, Sheet						
				4000	0.04		Grass: Dense n= 0.240 P2= 3.23"						
	6.6	87	9 0	.1000	2.21		Shallow Concentrated Flow, Shallow - Short Grass						
		4 00		4=00	00.70	10100	Short Grass Pasture Kv= 7.0 fps						
	1.0	1,32	7 0	.1700	22.73	404.80	Trap/Vee/Rect Channel Flow, Channel						
							Bot.W=4.00' D=2.50' Z= 1.5 & 1.0 '/' Top.W=10.25'						
_	10.5						n= 0.035						
	16.8	2,30	b l	otal									

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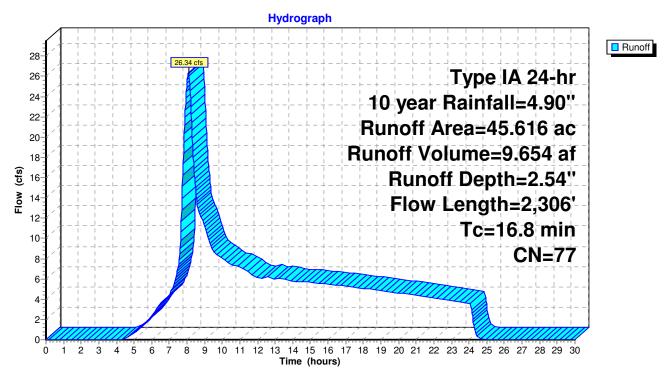
## **Summary for Subcatchment WS-2: Subcat WS-2**

Runoff = 26.34 cfs @ 8.08 hrs, Volume= 9.654 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area	(ac)	CN	Desc	ription						
*	0.	000	0	, HS	G C						
	0.	501	79	Annu	ıal Grass,	Fair, HSG	C				
	0.	159	84	Annı	ıal Grass,	Fair, HSG	D				
	0.	556	56 75 Annual Grass, Good, HSG C								
	1.	424	G D								
		160	65		h, Good, F						
		611	73		h, Good, F						
		485	89		el Roads,						
		131	96		el surface						
		081	79		yard, Fair,						
		043	84		yard, Fair,						
		851	75		yard, Good						
		182	81		yard, Goo						
		890	70		ds, Good,						
		486	77		ds, Good,		1 1100 0				
		056	72			comb., Goo	0, HSG C				
		616	77		hted Aver						
	45.	616		100.0	100.00% Pervious Area						
	т.	المصما	. (	Olama	Valaaitu	Conneity	December				
	Tc	Length		Slope	Velocity	Capacity	Description				
_	(min)	(feet		(ft/ft)	(ft/sec)	(cfs)	Ohast Floor Ohast				
	9.2	100	) ().	.0600	0.18		Sheet Flow, Sheet				
	0.0	070		1000	0.01		Grass: Dense n= 0.240 P2= 3.23"				
	6.6	879	9 0.	.1000	2.21		Shallow Concentrated Flow, Shallow - Short Grass				
	1.0	1,327	7 0	.1700	22.73	404.80	Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Poet Channel Flow Channel				
	1.0	1,32	0.	.1700	22.73	404.60	Trap/Vee/Rect Channel Flow, Channel Bot.W=4.00' D=2.50' Z= 1.5 & 1.0 '/' Top.W=10.25'				
							n= 0.035				
_	16.8	2,306	; T	otal			11- 0.000				
	10.0	۷,500	, 11	otai							

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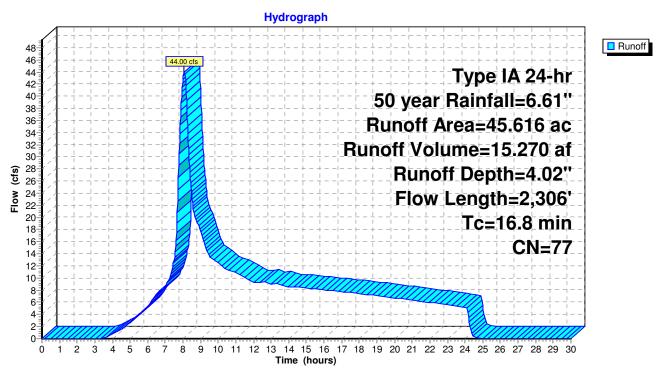
# **Summary for Subcatchment WS-2: Subcat WS-2**

Runoff = 44.00 cfs @ 8.07 hrs, Volume= 15.270 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

	Area	(ac)	CN	Desc	ription				
*	0.	000	0	, HS	G C				
	0.	501	79	Annu	ıal Grass,	Fair, HSG	C		
	0.	159	84	Annı	ıal Grass,	Fair, HSG	D		
0.556 75 Annual Grass, Good, HSG C									
1.424 81 Annual Grass, Good, HSG D									
0.160 65 Brush, Good, HSG C									
		611	73		h, Good, F				
		485	89		el Roads,				
		131	96		el surface				
		081	79		yard, Fair,				
		043	84		yard, Fair,				
		851	75		yard, Good				
		182	81		yard, Goo				
		890	70		ds, Good,				
		486	77		ds, Good,		1 1100 0		
		056	72			comb., Goo	0, HSG C		
		616	77		hted Aver				
	45.	616		100.0	00% Pervi	ous Area			
	т.	المصما	. (	Olama	Valaaitu	Canasitu	December		
	Tc	Length		Slope	Velocity	Capacity	Description		
_	(min)	(feet		(ft/ft)	(ft/sec)	(cfs)	Ohast Floor Ohast		
	9.2	100	) ().	.0600	0.18		Sheet Flow, Sheet		
	0.0	070		1000	0.01		Grass: Dense n= 0.240 P2= 3.23"		
	6.6	879	9 0.	.1000	2.21		Shallow Concentrated Flow, Shallow - Short Grass		
	1.0	1,327	7 0	.1700	22.73	404.80	Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Poet Channel Flow Channel		
	1.0	1,32	0.	.1700	22.73	404.60	Trap/Vee/Rect Channel Flow, Channel Bot.W=4.00' D=2.50' Z= 1.5 & 1.0 '/' Top.W=10.25'		
							n= 0.035		
_	16.8	2,306	; T	otal			11- 0.000		
	10.0	۷,500	, 11	otai					

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## **Summary for Subcatchment WS-2: Subcat WS-2**

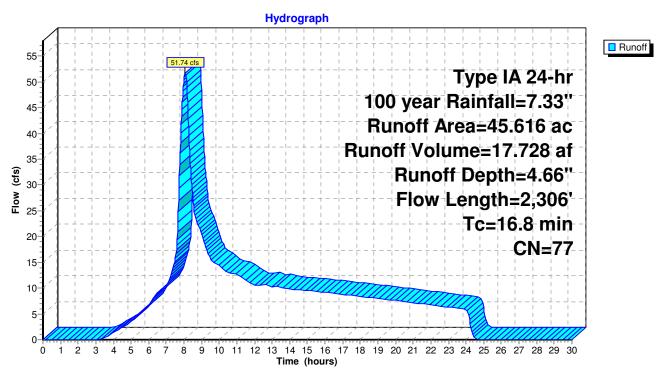
Runoff = 51.74 cfs @ 8.07 hrs, Volume= 17.728 af, Depth= 4.66"

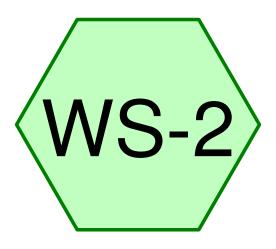
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area	(ac)	CN	Desc	ription				
*	0.	000	0	, HS	G C				
	0.	501	79	Annu	ıal Grass,	Fair, HSG	C		
0.159 84 Annual Grass, Fair, HSG D									
0.556 75 Annual Grass, Good, HSG C									
1.424 81 Annual Grass, Good, HSG D									
0.160 65 Brush, Good, HSG C									
	0.	611	73		h, Good, F				
		485	89	Grav	el Roads,	HSG C			
		131	96		el surface	,			
		081	79		yard, Fair,				
		043	84		yard, Fair,				
		851	75		yard, Goo				
		182	81		yard, Goo				
		890	70		ds, Good,				
		486	77		ds, Good,				
		056	72			comb., Goo	d, HSG C		
		616	77		hted Aver				
	45.	616		100.0	00% Pervi	ous Area			
	_		_						
	Tc	Lengtl		Slope	Velocity	Capacity	Description		
_	(min)	(feet		(ft/ft)	(ft/sec)	(cfs)			
	9.2	100	0.	0600	0.18		Sheet Flow, Sheet		
							Grass: Dense n= 0.240 P2= 3.23"		
	6.6	879	0.	1000	2.21		Shallow Concentrated Flow, Shallow - Short Grass		
							Short Grass Pasture Kv= 7.0 fps		
	1.0	1,32	70.	1700	22.73	404.80	Trap/Vee/Rect Channel Flow, Channel		
							Bot.W=4.00' D=2.50' Z= 1.5 & 1.0 '/' Top.W=10.25'		
_							n= 0.035		
	16.8	2,300	3 To	otal					

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# Subcat WS-2









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# **Summary for Subcatchment WS-2: Subcat WS-2**

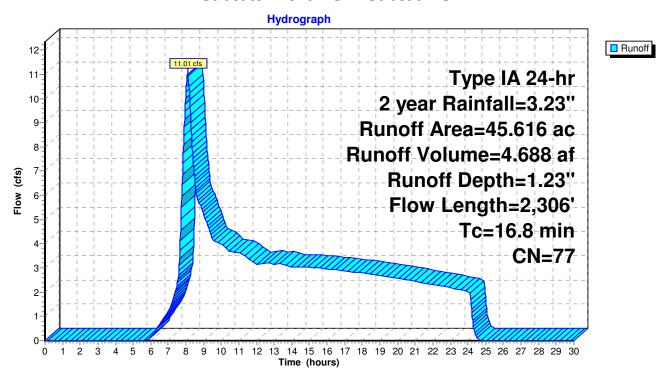
Runoff = 11.01 cfs @ 8.10 hrs, Volume= 4.688 af, Depth= 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac)	10	N Desc	ription		
*	0.	000		0 , HS	G C		
*	0.	000		0 , HS	G D		
	0.	501	7	9 Annı	ıal Grass,	Fair, HSG	C
	0.	159	8	4 Annι	D		
	0.	556	7	5 Annı	ial Grass,	G C	
	1.	424	8	1 Annı	ial Grass,	Good, HSC	G D
	0.	160	6	5 Brus	h, Good, F	HSG C	
	0.	611	7	3 Brus	h, Good, F	HSG D	
	0.	485	8	9 Grav	el Roads,	HSG C	
	0.	131	9	6 Grav	el surface	, HSG C	
	12.	081	7	9 Vine	yard, Fair,	HSG C	
	2.	027	8	4 Vine	yard, Fair,	HSG D	
		851	7		yard, Good	d, HSG C	
		879	8		yard, Goo		
		890	7		ds, Good,		
		805	7		ds, Good,		
_	0.	056	7	2 Woo	ds/grass c	comb., Goo	d, HSG C
	45.	616	7	7 Weig	ghted Aver	age	
	45.	616		100.0	00% Pervi	ous Area	
	Tc	Leng	th	Slope	Velocity	Capacity	Description
	(min)	(fee	et)	(ft/ft)	(ft/sec)	(cfs)	
	9.2	10	00	0.0600	0.18		Sheet Flow, Sheet
							Grass: Dense n= 0.240 P2= 3.23"
	6.6	87	79	0.1000	2.21		Shallow Concentrated Flow, Shallow - Short Grass
							Short Grass Pasture Kv= 7.0 fps
	1.0	1,32	27	0.1700	22.73	404.80	Trap/Vee/Rect Channel Flow, Channel
							Bot.W=4.00' D=2.50' Z= 1.5 & 1.0 '/' Top.W=10.25'
							n= 0.035
	16.8	2,30	)6	Total			

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# **Summary for Subcatchment WS-2: Subcat WS-2**

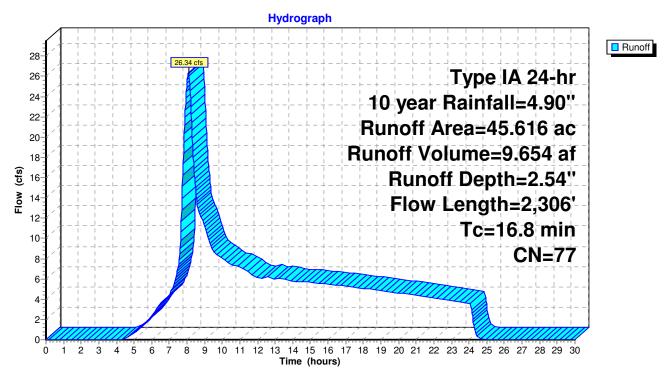
Runoff = 26.34 cfs @ 8.08 hrs, Volume= 9.654 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area	(ac)	CN	l Desc	ription		
*	0.	000	0	, HS	G C		
*	0.	000	0	, HS	G D		
	0.	501	79	Annu	ıal Grass,	Fair, HSG	C
	0.	159	84	Annu	ıal Grass,	Fair, HSG	D
	0.	556	75	. Annı	G C		
	1.	424	81			Good, HSC	G D
		160	65	Brus	h, Good, F	HSG C	
		611	73		h, Good, F		
		485	89		el Roads,		
		131	96		el surface	•	
		081	79		yard, Fair,		
		027	84		yard, Fair,		
		851	75		yard, Good	•	
		879	81		yard, Goo		
		890	70		ds, Good,		
		805	77		ds, Good,		1.1100.0
		056	72			omb., Goo	d, HSG C
		616	77		hted Aver	•	
	45.	616		100.0	00% Pervi	ous Area	
	т.		ı.	01	Mala - 2	0	Describer.
	Tc	Lengt		Slope	Velocity	Capacity	Description
_	(min)	(fee		(ft/ft)	(ft/sec)	(cfs)	
	9.2	10	0	0.0600	0.18		Sheet Flow, Sheet
					0.04		Grass: Dense n= 0.240 P2= 3.23"
	6.6	87	9	0.1000	2.21		Shallow Concentrated Flow, Shallow - Short Grass
			_		00.70	10100	Short Grass Pasture Kv= 7.0 fps
	1.0	1,32	. /	0.1700	22.73	404.80	Trap/Vee/Rect Channel Flow, Channel
							Bot.W=4.00' D=2.50' Z= 1.5 & 1.0 '/' Top.W=10.25'
_	40.6			<del>-</del>			n= 0.035
	16.8	2,30	6	Total			

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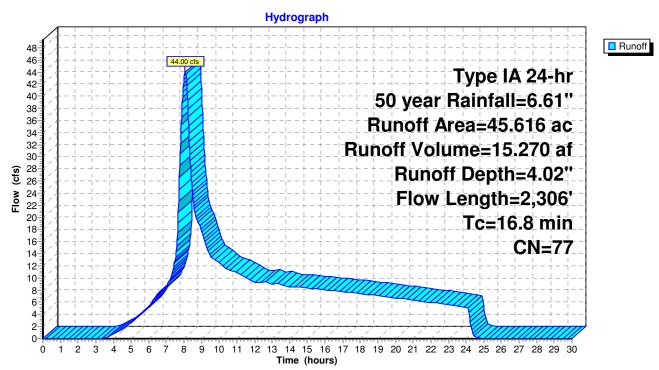
# **Summary for Subcatchment WS-2: Subcat WS-2**

Runoff = 44.00 cfs @ 8.07 hrs, Volume= 15.270 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

	Area	(ac)	CN	l Desc	ription		
*	0.	000	0	) , HS	G C		
*	0.	000	0	, HS	G D		
	0.	501	79	Annı A	ıal Grass,	Fair, HSG	C
	0.	159	D				
	0.	556	75	5 Annu	G C		
		424	81		ıal Grass,	Good, HSC	G D
	_	160	65		h, Good, F	HSG C	
		611	73		h, Good, F		
		485	89		el Roads,	HSG C	
		131	96		el surface	,	
		081	79		yard, Fair,		
		027	84		yard, Fair,		
		851	75		yard, Good		
		879	81		yard, Good		
		890	70		ds, Good,		
		805	77		ds, Good,		
_		056	72			comb., Goo	d, HSG C
		616	77		hted Aver	•	
	45.	616		100.0	00% Pervi	ous Area	
	_			01			<b>D</b> 1.0
	Tc	Lengt		Slope	Velocity	Capacity	Description
	(min)	(fee		(ft/ft)	(ft/sec)	(cfs)	
	9.2	10	0	0.0600	0.18		Sheet Flow, Sheet
			_				Grass: Dense n= 0.240 P2= 3.23"
	6.6	87	9	0.1000	2.21		Shallow Concentrated Flow, Shallow - Short Grass
			_				Short Grass Pasture Kv= 7.0 fps
	1.0	1,32	7	0.1700	22.73	404.80	Trap/Vee/Rect Channel Flow, Channel
							Bot.W=4.00' D=2.50' Z= 1.5 & 1.0 '/' Top.W=10.25'
			_				n= 0.035
	16.8	2,30	6	Total			

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# **Summary for Subcatchment WS-2: Subcat WS-2**

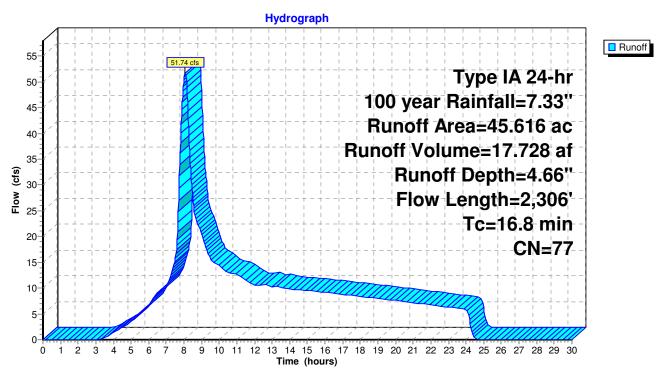
Runoff = 51.74 cfs @ 8.07 hrs, Volume= 17.728 af, Depth= 4.66"

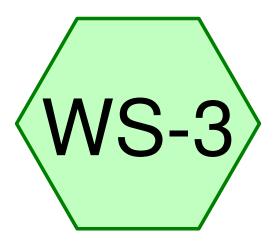
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area (	(ac)	CN	Desc	ription		
*	0.0	000	0	, HS	G C		
*	0.0	000	0	, HS	G D		
	0.	501	79	Annu	al Grass,	Fair, HSG	C
	0.	159	84	Annu	D		
	0.	556	75	Annu	al Grass,	Good, HSC	G C
	1.4	424	81	Annu	al Grass,	Good, HSC	G D
	0.	160	65	Brus	h, Good, F	HSG C	
	0.0	611	73	Brus	h, Good, F	HSG D	
	0.4	485	89	Grav	el Roads,	HSG C	
	0.	131	96	Grav	el surface	, HSG C	
	12.	081	79	Vine	ard, Fair,	HSG C	
	2.	027	84	Vine	/ard, Fair,	HSG D	
	6.8	851	75	Vine	ard, Good	d, HSG C	
	0.8	879	81	Vine	ard, Good	d, HSG D	
	2.	890	70		ds, Good,		
	16.	805	77		ds, Good,	HSG D	
	0.	056	72	Woo	ds/grass c	omb., Goo	d, HSG C
	45.	616	77	Weig	hted Aver	age	
	45.	616		100.0	00% Pervi	ous Area	
	Tc	Lengt	h	Slope	Velocity	Capacity	Description
	(min)	(feet	:)	(ft/ft)	(ft/sec)	(cfs)	
	9.2	10	0 0	0.0600	0.18		Sheet Flow, Sheet
							Grass: Dense n= 0.240 P2= 3.23"
	6.6	87	9 0	0.1000	2.21		Shallow Concentrated Flow, Shallow - Short Grass
							Short Grass Pasture Kv= 7.0 fps
	1.0	1,32	7 C	).1700	22.73	404.80	Trap/Vee/Rect Channel Flow, Channel
							Bot.W=4.00' D=2.50' Z= 1.5 & 1.0 '/' Top.W=10.25'
							n= 0.035
-	16.8	2,30	6 T	Γotal			

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# Subcat WS-3









Prepared by PPI Engineering, Revised Sept. 2020, Printed 9/2/2020 HydroCAD® 10.00-24 s/n 09429 © 2018 HydroCAD Software Solutions LLC

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## **Summary for Subcatchment WS-3: Subcat WS-3**

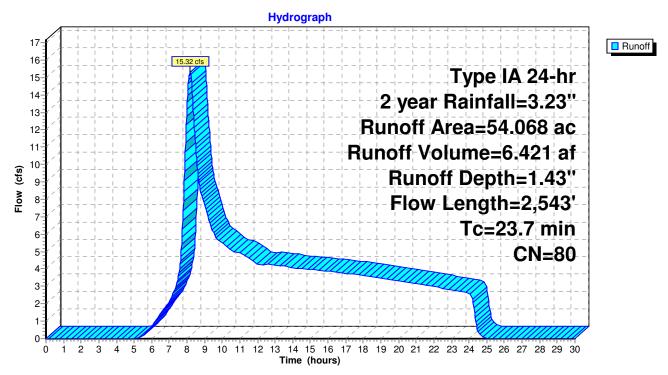
Runoff = 15.32 cfs @ 8.17 hrs, Volume= 6.421 af, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac) C	N Desc	cription							
*	0.	000	0 , HS	G D							
	5.	641	31 Annı	ual Grass,	Good, HS0	G D					
	4.	713	73 Brus	Brush, Good, HSG D							
	-			Farmsteads, HSG D							
				Gravel Roads, HSG D							
				Paved roads w/open ditches, 50% imp, HSG D							
				yard, Fair,							
				ds, Good,		1 1100 B					
					comb., Goo	d, HSG D					
				ghted Aver							
		348		7% Pervio							
	0.	720	1.33	% Impervi	ous Area						
	То	Length	Slope	Velocity	Capacity	Description					
	Tc (min)	(feet)	Slope (ft/ft)	(ft/sec)	(cfs)	Description					
	9.4	38	0.0900	0.07	(013)	Sheet Flow, Sheet					
	3.4	30	0.0900	0.07		Woods: Dense underbrush n= 0.800 P2= 3.23"					
	6.9	1,168	0.3200	2.83		Shallow Concentrated Flow, Shallow - Woodlands					
	0.0	1,100	0.0200	2.00		Woodland Kv= 5.0 fps					
	2.0	186	0.0500	1.57		Shallow Concentrated Flow, Shallow - Short Grass					
			0.0000			Short Grass Pasture Kv= 7.0 fps					
	1.9	407	0.0200	3.51	7.02	· •					
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'					
						n= 0.035					
	3.5	744	0.0200	3.51	7.02	Trap/Vee/Rect Channel Flow, Ditch 2					
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'					
						n= 0.035					
	23.7	2,543	Total								

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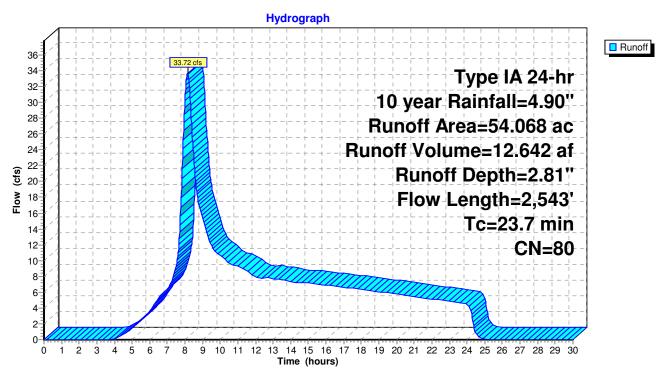
# **Summary for Subcatchment WS-3: Subcat WS-3**

Runoff = 33.72 cfs @ 8.15 hrs, Volume= 12.642 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area	(ac)	CN	Desc	ription					
*	0.	000	0	, HS	G D					
	5.	641	81	Annı	ıal Grass,	Good, HSC	G D			
		713	73		h, Good, F					
		924	86		nsteads, H					
	_	165	91		el Roads,					
		439	93			v/open ditches, 50% imp, HSG D				
		413	84		Vineyard, Fair, HSG D					
		596	77		ds, Good,		1 1100 B			
		177	79			omb., Goo	d, HSG D			
		068	80		hted Aver					
		348			7% Pervio					
	0.	720		1.33	% Impervi	ous Area				
	Тс	Longth	, (	Slope	Volocity	Canacity	Description			
	(min)	Length (feet		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
	9.4	38		.0900	0.07	(013)	Sheet Flow, Sheet			
	9.4	30	5 U.	.0900	0.07		Woods: Dense underbrush n= 0.800 P2= 3.23"			
	6.9	1,168	a n	.3200	2.83		Shallow Concentrated Flow, Shallow - Woodlands			
	0.5	1,100	J 0.	.0200	2.00		Woodland Kv= 5.0 fps			
	2.0	186	3 0	.0500	1.57		Shallow Concentrated Flow, Shallow - Short Grass			
				.0000			Short Grass Pasture Kv= 7.0 fps			
	1.9	407	7 0	.0200	3.51	7.02	•			
							Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
							n= 0.035			
	3.5	744	4 0.	.0200	3.51	7.02	Trap/Vee/Rect Channel Flow, Ditch 2			
							Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
_							n= 0.035			
	23.7	2,543	3 T	otal						

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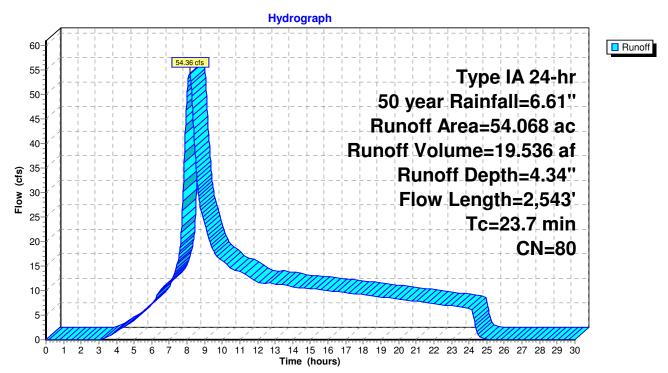
## **Summary for Subcatchment WS-3: Subcat WS-3**

Runoff = 54.36 cfs @ 8.14 hrs, Volume= 19.536 af, Depth= 4.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

	Area	(ac) C	N Desc	cription						
*	0.	000	0 , HS	G D						
	5.	641	31 Annı	ual Grass,	Good, HSC	G D				
	4.	713	73 Brus	Brush, Good, HSG D						
	_			Farmsteads, HSG D						
				Gravel Roads, HSG D						
				Paved roads w/open ditches, 50% imp, HSG D						
				yard, Fair,						
				ds, Good,						
					comb., Goo	d, HSG D				
				ghted Aver						
		348		7% Pervio						
	0.	720	1.33	% Impervi	ous Area					
	т.	1	Olama	Malaalt.	0	Description				
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
_					(015)	Chast Flow Chast				
	9.4	38	0.0900	0.07		Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23"				
	6.9	1,168	0.3200	2.83		Shallow Concentrated Flow, Shallow - Woodlands				
	0.9	1,100	0.3200	2.00		Woodland Kv= 5.0 fps				
	2.0	186	0.0500	1.57		Shallow Concentrated Flow, Shallow - Short Grass				
	2.0	100	0.0000	1.07		Short Grass Pasture Kv= 7.0 fps				
	1.9	407	0.0200	3.51	7.02	· · · · · · · · · · · · · · · · · · ·				
			0.0_00	0.0.		Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'				
						n= 0.035				
	3.5	744	0.0200	3.51	7.02					
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'				
						n= 0.035				
	23.7	2,543	Total							

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# **Summary for Subcatchment WS-3: Subcat WS-3**

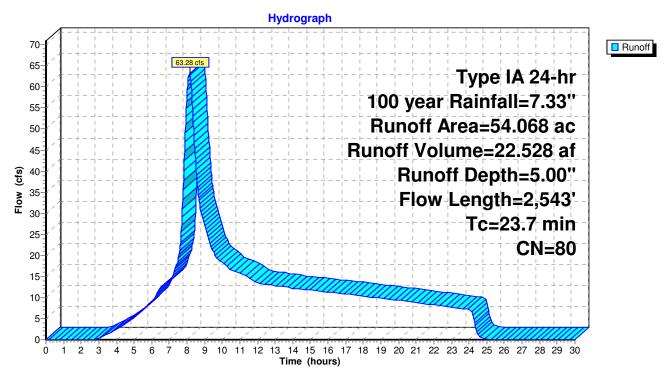
Runoff = 63.28 cfs @ 8.14 hrs, Volume= 22.528 af, Depth= 5.00"

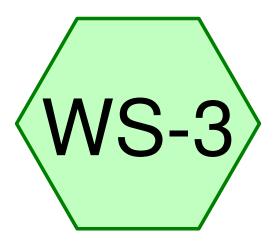
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area	(ac)	CN	Desc	ription					
*	0.	000	0	, HS	G D					
	5.	641	81			Good, HSC	G D			
		713	73		h, Good, F					
	_	924	86		nsteads, H					
		165			Gravel Roads, HSG D					
		439	93				ies, 50% imp, HSG D			
		413	84		yard, Fair,					
		596	77		ds, Good,		1 1100 B			
		177	79			omb., Goo	d, HSG D			
		068	80		hted Aver					
		348			7% Pervio					
	0.	720		1.33	% Impervi	ous Area				
	т.	المصمطا		Nama	Valaaitu	Canaaitu	December			
	Tc (min)	Length (feet		Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
						(CIS)	Chast Flow Chast			
	9.4	38	0.0	0900	0.07		Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23"			
	6.9	1,168	· ^	3200	2.83		Shallow Concentrated Flow, Shallow - Woodlands			
	0.9	1,100	) U.,	3200	2.00		Woodland Kv= 5.0 fps			
	2.0	186	. 0	0500	1.57		Shallow Concentrated Flow, Shallow - Short Grass			
	2.0	100	, 0.	0300	1.57		Short Grass Pasture Kv= 7.0 fps			
	1.9	407	7 0	0200	3.51	7.02				
		.07	0.	0_00	0.01	7.02	Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
							n= 0.035			
	3.5	744	0.0	0200	3.51	7.02				
							Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
							n= 0.035			
	23.7	2,543	3 Тс	otal						

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# Subcat WS-3









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## **Summary for Subcatchment WS-3: Subcat WS-3**

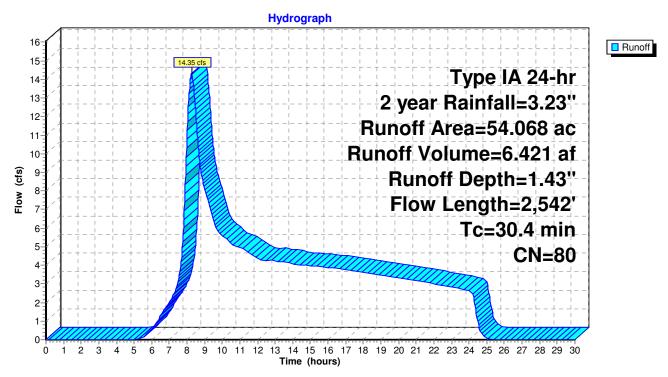
Runoff = 14.35 cfs @ 8.26 hrs, Volume= 6.421 af, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac) C	N Desc	cription					
*	0.	000	0 , HS	G D					
	5.	505 8	31 Annı	ual Grass,	Good, HSC	G D			
	1.	667 7	'3 Brus	h, Good, F	HSG D				
	6.	924 8	6 Farm	Farmsteads, HSG D					
	0.	165 9		Gravel Roads, HSG D					
						es, 50% imp, HSG D			
				yard, Fair,					
				yard, Good					
				ds, Good,					
_					comb., Goo	d, HSG D			
				ghted Aver					
		348		7% Pervio					
	0.	720	1.33	% Impervi	ous Area				
	Тс	Length	Slope	Velocity	Capacity	Description			
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Description			
_	7.8	100	0.0900	0.21	(010)	Sheet Flow, Sheet 1			
	7.0	100	0.0000	0.21		Grass: Dense n= 0.240 P2= 3.23"			
	0.3								
		63	0.2700	3.64		Shallow Concentrated Flow, Shallow 1 - Short Grass			
		63	0.2700	3.64		Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps			
	9.3	63 73	0.2700 0.3400	3.64 0.13		Short Grass Pasture Kv= 7.0 fps			
						Short Grass Pasture Kv= 7.0 fps  Sheet Flow, Sheet 2			
	9.3	73	0.3400	0.13		Short Grass Pasture Kv= 7.0 fps  Sheet Flow, Sheet 2  Woods: Dense underbrush n= 0.800 P2= 3.23"			
	9.3	73	0.3400	0.13		Short Grass Pasture Kv= 7.0 fps  Sheet Flow, Sheet 2  Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 2 - Woodlands			
	9.3 5.6 2.0	73 969 186	0.3400 0.3300 0.0500	0.13 2.87 1.57		Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps			
	9.3 5.6	73 969	0.3400 0.3300	0.13 2.87	7.02	Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Ditch 1			
	9.3 5.6 2.0	73 969 186	0.3400 0.3300 0.0500	0.13 2.87 1.57	7.02	Short Grass Pasture Kv= 7.0 fps  Sheet Flow, Sheet 2  Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 2 - Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 3 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Ditch 1  Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
	9.3 5.6 2.0 1.9	73 969 186 407	0.3400 0.3300 0.0500 0.0200	0.13 2.87 1.57 3.51		Short Grass Pasture Kv= 7.0 fps  Sheet Flow, Sheet 2  Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 2 - Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 3 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Ditch 1  Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.035			
	9.3 5.6 2.0	73 969 186	0.3400 0.3300 0.0500	0.13 2.87 1.57	7.02 7.02	Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Ditch 1 Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.035 Trap/Vee/Rect Channel Flow, Ditch 2			
	9.3 5.6 2.0 1.9	73 969 186 407	0.3400 0.3300 0.0500 0.0200	0.13 2.87 1.57 3.51		Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Ditch 1 Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.035 Trap/Vee/Rect Channel Flow, Ditch 2 Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
	9.3 5.6 2.0 1.9	73 969 186 407	0.3400 0.3300 0.0500 0.0200	0.13 2.87 1.57 3.51		Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Ditch 1 Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.035 Trap/Vee/Rect Channel Flow, Ditch 2			

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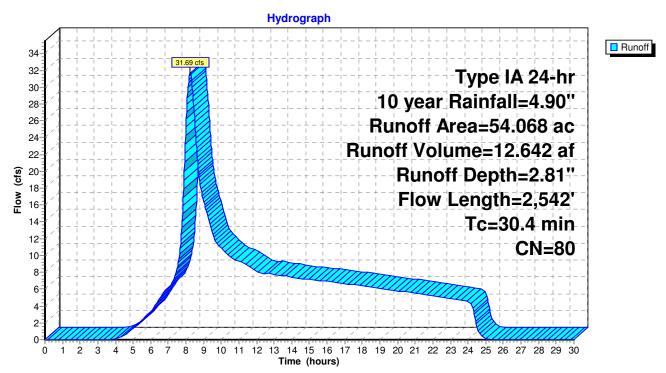
## **Summary for Subcatchment WS-3: Subcat WS-3**

Runoff = 31.69 cfs @ 8.23 hrs, Volume= 12.642 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area (	(ac) (	ON Des	cription					
*	0.0	000	0 , HS	G D					
	5.	505	81 Anni	ual Grass,	Good, HS0	G D			
	1.0	667	73 Brus	h, Good, F	HSG D				
	6.9	924	86 Farn	Farmsteads, HSG D					
				Gravel Roads, HSG D					
						nes, 50% imp, HSG D			
				Vineyard, Fair, HSG D					
				yard, Goo					
				ds, Good,					
					comb., Goo	d, HSG D			
				ghted Aver					
		348		7% Pervio					
	0.	720	1.33	% Impervi	ous Area				
	т.	1 41-	01	Malaa!4	0	Description			
	Tc	Length		Velocity	Capacity	Description			
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Chast Flow Obset 4			
	7.8	100	0.0900	0.21		Sheet Flow, Sheet 1			
	0.3	63	0.2700	3.64		Grass: Dense n= 0.240 P2= 3.23"  Shallow Concentrated Flow, Shallow 1 - Short Grass			
	0.3	03	0.2700	3.04		Short Grass Pasture Kv= 7.0 fps			
	9.3	73	0.3400	0.13		Sheet Flow, Sheet 2			
	5.5	70	0.0+00	0.10		Woods: Dense underbrush n= 0.800 P2= 3.23"			
	5.6	969	0.3300	2.87		Shallow Concentrated Flow, Shallow 2 - Woodlands			
	0.0	000	0.0000	2.07		Woodland Kv= 5.0 fps			
	2.0	186	0.0500	1.57		Shallow Concentrated Flow, Shallow 3 - Short Grass			
						Short Grass Pasture Kv= 7.0 fps			
	1.9	407	0.0200	3.51	7.02				
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
						n= 0.035			
	3.5	744	0.0200	3.51	7.02	Trap/Vee/Rect Channel Flow, Ditch 2			
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
_						n= 0.035			
	30.4	2,542	Total						

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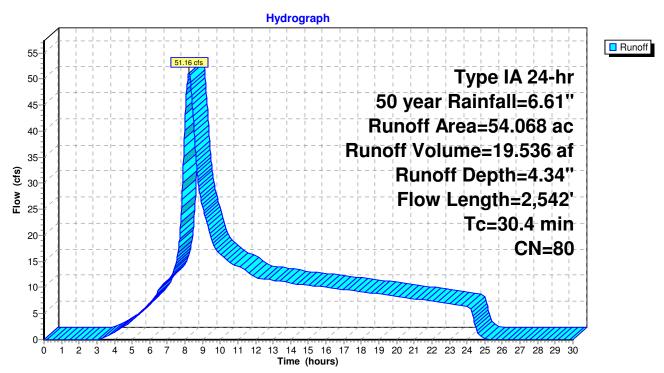
## **Summary for Subcatchment WS-3: Subcat WS-3**

Runoff = 51.16 cfs @ 8.22 hrs, Volume= 19.536 af, Depth= 4.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

A	rea (	ac) C	N Desc	cription		
*	0.0	000	0 , HS	G D		
	5.5	505 8	31 Annı	ual Grass,	Good, HSC	G D
	1.6	667 7		h, Good, I		
				nsteads, H		
				el Roads,		
						es, 50% imp, HSG D
				yard, Fair,		
				yard, Goo		
	23.3			ds, Good,		
					comb., Goo	d, HSG D
	54.0			ghted Ave		
	53.3			7% Pervio		
	0.7	720	1.33	% Impervi	ous Area	
	То	Longth	Clopo	Volocity	Consoity	Description
	Tc nin)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	7.8	100	0.0900	0.21	(013)	Sheet Flow, Sheet 1
,	7.0	100	0.0900	0.21		Grass: Dense n= 0.240 P2= 3.23"
(	0.3	63	0.2700	3.64		Shallow Concentrated Flow, Shallow 1 - Short Grass
`	0.0	00	0.2700	0.01		Short Grass Pasture Kv= 7.0 fps
9	9.3	73	0.3400	0.13		Sheet Flow, Sheet 2
		. •	0.0.00	00		Woods: Dense underbrush n= 0.800 P2= 3.23"
į	5.6	969	0.3300	2.87		Shallow Concentrated Flow, Shallow 2 - Woodlands
						Woodland Kv= 5.0 fps
2	2.0	186	0.0500	1.57		Shallow Concentrated Flow, Shallow 3 - Short Grass
						Short Grass Pasture Kv= 7.0 fps
	1.9	407	0.0200	3.51	7.02	• •
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
					7 00	Tron/Voc/Post Channal Flow Ditch 2
;	3.5	744	0.0200	3.51	7.02	Trap/Vee/Rect Channel Flow, Ditch 2
(	3.5	744	0.0200	3.51	7.02	Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
	3.5 0.4	2,542	0.0200 Total	3.51	7.02	

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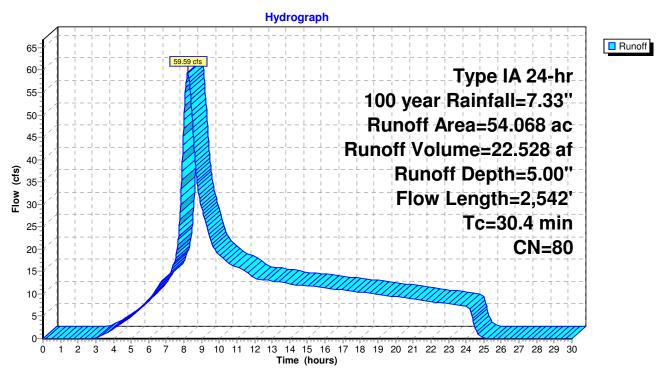
# **Summary for Subcatchment WS-3: Subcat WS-3**

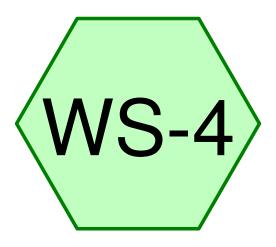
Runoff = 59.59 cfs @ 8.22 hrs, Volume= 22.528 af, Depth= 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area	(ac) C	N Desc	cription		
*	0.	000	0 , HS	G D		
	5.	505 8	31 Annı	ual Grass,	Good, HSC	G D
	1.	667 7	'3 Brus	h, Good, F	HSG D	
	6.	924 8	6 Farm	nsteads, H	SG D	
	0.	165 9		el Roads,		
						ies, 50% imp, HSG D
				yard, Fair,		
				yard, Good		
				ds, Good,		
_					comb., Goo	d, HSG D
				ghted Aver		
		348		7% Pervio		
	0.	720	1.33	% Impervi	ous Area	
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Description
_	7.8	100	0.0900	0.21	(010)	Sheet Flow, Sheet 1
	7.0	100	0.0000	0.21		Grass: Dense n= 0.240 P2= 3.23"
	0.3					
		63	0.2700	3.64		
		63	0.2700	3.64		Shallow Concentrated Flow, Shallow 1 - Short Grass
	9.3	63 73	0.2700 0.3400	3.64 0.13		Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps
	9.3					Shallow Concentrated Flow, Shallow 1 - Short Grass
	9.3 5.6					Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2
		73	0.3400	0.13		Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23"
		73	0.3400	0.13		Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands
	5.6 2.0	73 969 186	0.3400 0.3300 0.0500	0.13 2.87 1.57		Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps
	5.6	73 969	0.3400 0.3300	0.13 2.87	7.02	Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Ditch 1
	5.6 2.0	73 969 186	0.3400 0.3300 0.0500	0.13 2.87 1.57	7.02	Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Ditch 1 Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
	5.6 2.0 1.9	73 969 186 407	0.3400 0.3300 0.0500 0.0200	0.13 2.87 1.57 3.51		Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Ditch 1 Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.035
	5.6 2.0	73 969 186	0.3400 0.3300 0.0500	0.13 2.87 1.57	7.02 7.02	Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Ditch 1 Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.035 Trap/Vee/Rect Channel Flow, Ditch 2
	5.6 2.0 1.9	73 969 186 407	0.3400 0.3300 0.0500 0.0200	0.13 2.87 1.57 3.51		Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Ditch 1 Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.035 Trap/Vee/Rect Channel Flow, Ditch 2 Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
	5.6 2.0 1.9	73 969 186 407	0.3400 0.3300 0.0500 0.0200	0.13 2.87 1.57 3.51		Shallow Concentrated Flow, Shallow 1 - Short Grass Short Grass Pasture Kv= 7.0 fps Sheet Flow, Sheet 2 Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 2 - Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Ditch 1 Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.035 Trap/Vee/Rect Channel Flow, Ditch 2

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# Subcat WS-4









Prepared by PPI Engineering, Revised Sept. 2020, Printed 9/2/2020 HydroCAD® 10.00-24 s/n 09429 © 2018 HydroCAD Software Solutions LLC

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# Summary for Subcatchment WS-4: Subcat WS-4

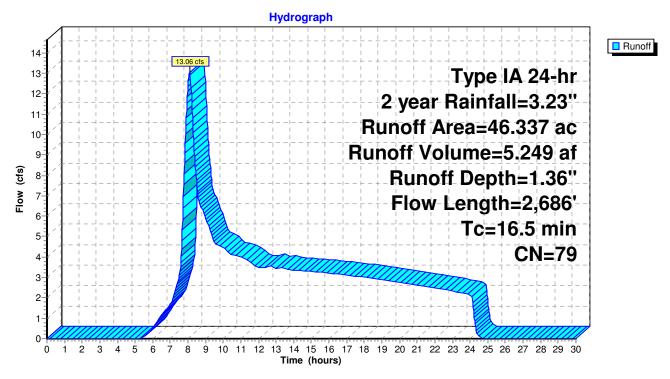
Runoff = 13.06 cfs @ 8.09 hrs, Volume= 5.249 af, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac) C	N Des	cription		
*	0.	000	0 , HS	G D		
	0.	025 7	'5 Ann	ual Grass,	Good, HSC	G C
	10.	075 8	31 Ann	ual Grass,	Good, HSC	G D
	2.	545 7	'3 Brus	sh, Good, I	HSG D	
			4 Fallo	ow, bare so	oil, HSG D	
				nsteads, H		
				vel surface		
				yard, Fair,		
				yard, Fair,		
				er Surface		
				ods, Good,		
				ods, Good,		
_					comb., Goo	d, HSG D
				ghted Avei		
		234		'8% Pervio		
	0.	103	0.22	% Impervi	ous Area	
	_					
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	9.4	18	0.0200	0.03		Sheet Flow, Sheet
						Woods: Dense underbrush n= 0.800 P2= 3.23"
	4.6	646	0.2200	2.35		Shallow Concentrated Flow, Shallow 1- Woodlands
	٥.5	7.1	0.4.00	0.00		Woodland Kv= 5.0 fps
	0.5	71	0.1400	2.62		Shallow Concentrated Flow, Shallow 2 - Short Grass
		4 400	0.4500	40.50	000.40	Short Grass Pasture Kv= 7.0 fps
	1.1	1,106	0.1500	16.56	239.12	Trap/Vee/Rect Channel Flow, Stream 1
						Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'
	0.1	444	0.1000	13.91	105.65	n= 0.035
	0.1	114	0.1000	13.91	135.65	Trap/Vee/Rect Channel Flow, Pond Overflow Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'
						n= 0.035
	0.8	731	0.0600	15.00	337.57	Trap/Vee/Rect Channel Flow, Stream 2
	0.0	751	0.0000	13.00	337.37	
						BOLVV-4 50 11-3 00 7-10 / 100 W-10 50
						Bot.W=4.50' D=3.00' Z= 1.0 '/' Top.W=10.50'
	16.5	2,686	Total			n= 0.035

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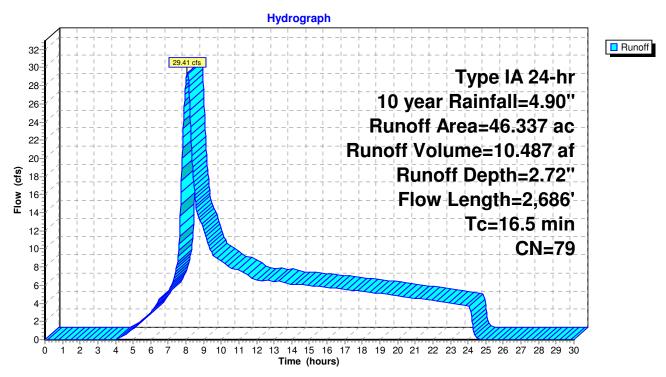
# Summary for Subcatchment WS-4: Subcat WS-4

Runoff = 29.41 cfs @ 8.08 hrs, Volume= 10.487 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area	(ac) C	N Desc	cription		
*		`	0 , HS			
	0.	025 7	,		Good, HSC	G C
	10.	075 8			Good, HSC	
	2.	545 7	3 Brus	h, Good, F	HSG D	
					oil, HSG D	
				nsteads, H		
				el surface	,	
				yard, Fair,		
				yard, Fair,		
				er Surface		
				ds, Good,		
				ds, Good,		4 1100 D
					comb., Goo	0, HSG D
				ghted Aver		
		234		8% Pervio		
	0.	103	0.22	% Impervi	ous Area	
	Тс	Length	Slope	Velocity	Capacity	Description
(	min)	, c · · · ·				
	111111)	(feet)	(ft/ft)	(ft/sec)	(cfs)	·
	9.4	(feet) 18	(ft/ft) 0.0200	(ft/sec) 0.03	(cfs)	Sheet Flow, Sheet
					(cfs)	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23"
					(cfs)	Woods: Dense underbrush n= 0.800 P2= 3.23" <b>Shallow Concentrated Flow, Shallow 1- Woodlands</b>
	9.4 4.6	18 646	0.0200	0.03 2.35	(cfs)	Woods: Dense underbrush n= 0.800 P2= 3.23" <b>Shallow Concentrated Flow, Shallow 1- Woodlands</b> Woodland Kv= 5.0 fps
	9.4	18	0.0200	0.03	(cfs)	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass
	9.4 4.6 0.5	18 646 71	0.0200 0.2200 0.1400	0.03 2.35 2.62		Woods: Dense underbrush n= 0.800 P2= 3.23" <b>Shallow Concentrated Flow, Shallow 1- Woodlands</b> Woodland Kv= 5.0 fps <b>Shallow Concentrated Flow, Shallow 2 - Short Grass</b> Short Grass Pasture Kv= 7.0 fps
	9.4 4.6	18 646	0.0200	0.03 2.35	(cfs) 239.12	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1
	9.4 4.6 0.5	18 646 71	0.0200 0.2200 0.1400	0.03 2.35 2.62		Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500	0.03 2.35 2.62 16.56	239.12	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035
	9.4 4.6 0.5	18 646 71 1,106	0.0200 0.2200 0.1400	0.03 2.35 2.62		Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500	0.03 2.35 2.62 16.56	239.12	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow  Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500 0.1000	0.03 2.35 2.62 16.56 13.91	239.12 135.65	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow  Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00' n= 0.035
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500	0.03 2.35 2.62 16.56	239.12	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'  n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow  Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'  n= 0.035  Trap/Vee/Rect Channel Flow, Stream 2
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500 0.1000	0.03 2.35 2.62 16.56 13.91	239.12 135.65	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow  Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00' n= 0.035  Trap/Vee/Rect Channel Flow, Stream 2  Bot.W=4.50' D=3.00' Z= 1.0 '/' Top.W=10.50'
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500 0.1000	0.03 2.35 2.62 16.56 13.91	239.12 135.65	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'  n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow  Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'  n= 0.035  Trap/Vee/Rect Channel Flow, Stream 2

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# Summary for Subcatchment WS-4: Subcat WS-4

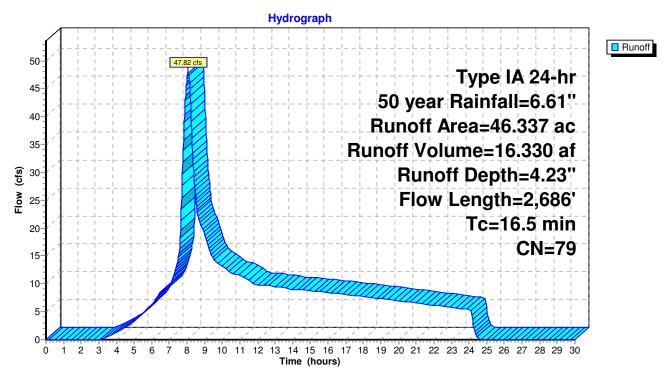
Runoff = 47.82 cfs @ 8.07 hrs, Volume= 16.330 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

	Area	(ac) C	N Desc	cription					
*		`	0 , HS						
			,	Annual Grass, Good, HSG C					
	10.	075 8		Annual Grass, Good, HSG D					
	2.	545 7	3 Brus	Brush, Good, HSG D					
				w, bare so					
				nsteads, H					
				el surface	,				
				yard, Fair,					
				yard, Fair,					
				er Surface					
				ds, Good,					
				ds, Good,		4 1100 D			
					comb., Goo	0, HSG D			
				ghted Aver					
		234		8% Pervio					
	0.	103	0.22	% Impervi	ous Area				
	Тс	Length	Slope	Velocity	Capacity	Description			
(	min)	_							
	111111)	(feet)	(ft/ft)	(ft/sec)	(cfs)	<u>'</u>			
	9.4	(feet) 18	(ft/ft) 0.0200	(ft/sec) 0.03		Sheet Flow, Sheet			
						<u> </u>			
						Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands			
	9.4 4.6	18 646	0.0200	0.03 2.35		Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps			
	9.4	18	0.0200	0.03		Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass			
	9.4 4.6 0.5	18 646 71	0.0200 0.2200 0.1400	0.03 2.35 2.62	(cfs)	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps			
	9.4 4.6	18 646	0.0200	0.03 2.35		Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Stream 1			
	9.4 4.6 0.5	18 646 71	0.0200 0.2200 0.1400	0.03 2.35 2.62	(cfs)	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Stream 1 Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'			
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500	0.03 2.35 2.62 16.56	(cfs) 239.12	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Stream 1 Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035			
	9.4 4.6 0.5	18 646 71 1,106	0.0200 0.2200 0.1400	0.03 2.35 2.62	(cfs)	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Stream 1 Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035 Trap/Vee/Rect Channel Flow, Pond Overflow			
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500	0.03 2.35 2.62 16.56	(cfs) 239.12	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Stream 1 Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035 Trap/Vee/Rect Channel Flow, Pond Overflow Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'			
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500 0.1000	0.03 2.35 2.62 16.56 13.91	239.12 135.65	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Stream 1 Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035 Trap/Vee/Rect Channel Flow, Pond Overflow Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00' n= 0.035			
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500	0.03 2.35 2.62 16.56	(cfs) 239.12	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Stream 1 Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035 Trap/Vee/Rect Channel Flow, Pond Overflow Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00' n= 0.035 Trap/Vee/Rect Channel Flow, Stream 2			
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500 0.1000	0.03 2.35 2.62 16.56 13.91	239.12 135.65	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Stream 1 Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035 Trap/Vee/Rect Channel Flow, Pond Overflow Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00' n= 0.035 Trap/Vee/Rect Channel Flow, Stream 2 Bot.W=4.50' D=3.00' Z= 1.0 '/' Top.W=10.50'			
	9.4 4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500 0.1000	0.03 2.35 2.62 16.56 13.91	239.12 135.65	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23" Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps Trap/Vee/Rect Channel Flow, Stream 1 Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035 Trap/Vee/Rect Channel Flow, Pond Overflow Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00' n= 0.035 Trap/Vee/Rect Channel Flow, Stream 2			

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# Summary for Subcatchment WS-4: Subcat WS-4

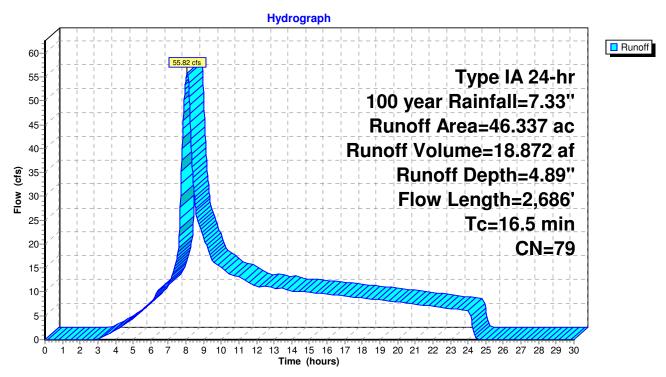
Runoff = 55.82 cfs @ 8.07 hrs, Volume= 18.872 af, Depth= 4.89"

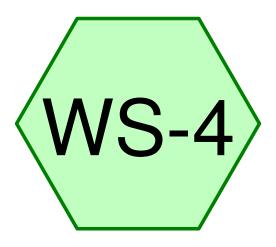
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

F	Area (	ac) C	N Desc	cription					
*			0 , HS						
			,	Annual Grass, Good, HSG C					
	10.0			Annual Grass, Good, HSG D					
	2.5	545 7		Brush, Good, HSG D					
	0.1	127 9	4 Fallo	w, bare so	oil, HSG D				
	0.7	711 8	6 Farm	nsteads, H	SG D				
				el surface					
				yard, Fair,					
				yard, Fair,					
				er Surface					
				ds, Good,					
	22.0			ds, Good,		1 1100 B			
					comb., Goo	0, HSG D			
	46.3			ghted Aver					
	46.2			8% Pervio					
	0.	103	0.22	% Impervi	ous Area				
	Тс	Length	Slope	Velocity	Capacity	Description			
(r	nin)	(feet)		(ft/sec)		·			
		(100)	(ft/ft)	(11/500)	(cfs)				
	9.4	18	0.0200	0.03	(CIS)	Sheet Flow, Sheet			
	9.4				(CIS)	Sheet Flow, Sheet Woods: Dense underbrush n= 0.800 P2= 3.23"			
	<ul><li>9.4</li><li>4.6</li></ul>				(CTS)	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands			
	4.6	18 646	0.0200	0.03 2.35	(CIS)	Woods: Dense underbrush n= 0.800 P2= 3.23" <b>Shallow Concentrated Flow, Shallow 1- Woodlands</b> Woodland Kv= 5.0 fps			
		18	0.0200	0.03	(CIS)	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass			
	4.6 0.5	18 646 71	0.0200 0.2200 0.1400	0.03 2.35 2.62		Woods: Dense underbrush n= 0.800 P2= 3.23" <b>Shallow Concentrated Flow, Shallow 1- Woodlands</b> Woodland Kv= 5.0 fps <b>Shallow Concentrated Flow, Shallow 2 - Short Grass</b> Short Grass Pasture Kv= 7.0 fps			
	4.6	18 646	0.0200	0.03 2.35	(CIS) 239.12	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1			
	4.6 0.5	18 646 71	0.0200 0.2200 0.1400	0.03 2.35 2.62		Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'			
	4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500	0.03 2.35 2.62 16.56	239.12	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035			
	4.6 0.5	18 646 71 1,106	0.0200 0.2200 0.1400	0.03 2.35 2.62		Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow			
	4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500	0.03 2.35 2.62 16.56	239.12	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow  Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'			
	4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500 0.1000	0.03 2.35 2.62 16.56 13.91	239.12 135.65	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'  n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow  Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'  n= 0.035			
	4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500	0.03 2.35 2.62 16.56	239.12	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00' n= 0.035  Trap/Vee/Rect Channel Flow, Stream 2			
	4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500 0.1000	0.03 2.35 2.62 16.56 13.91	239.12 135.65	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00' n= 0.035  Trap/Vee/Rect Channel Flow, Stream 2  Bot.W=4.50' D=3.00' Z= 1.0 '/' Top.W=10.50'			
	4.6 0.5 1.1	18 646 71 1,106	0.0200 0.2200 0.1400 0.1500 0.1000	0.03 2.35 2.62 16.56 13.91	239.12 135.65	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1- Woodlands Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Short Grass Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Stream 1  Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75' n= 0.035  Trap/Vee/Rect Channel Flow, Pond Overflow Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00' n= 0.035  Trap/Vee/Rect Channel Flow, Stream 2			

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# Subcat WS-4









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## Summary for Subcatchment WS-4: Subcat WS-4

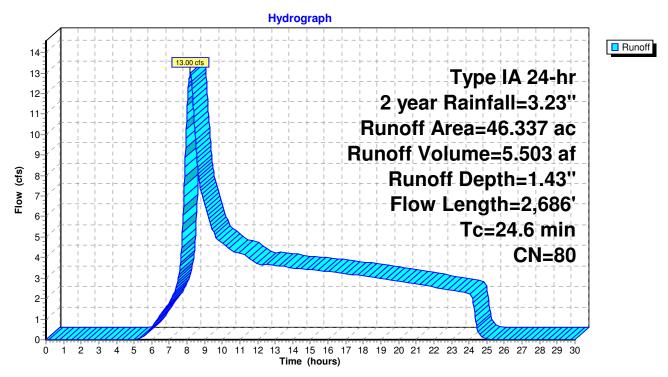
Runoff = 13.00 cfs @ 8.18 hrs, Volume= 5.503 af, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

Area	(ac) C	N Des	cription						
* 0.	000	0 , HS	G D						
				Good, HSC					
			Annual Grass, Good, HSG D						
			Brush, Good, HSG D						
			Fallow, bare soil, HSG D						
			Farmsteads, HSG D						
			Gravel surface, HSG D						
			Vineyard, Fair, HSG C						
			Vineyard, Fair, HSG D						
			yard, Good						
			yard, Good						
			er Surface	•					
			ods, Good,						
			ods, Good,	กอัน ม comb., Goo	4 H&C D				
			_		u, 113G D				
	337 8 234		ghted Aver						
	234 103		99.78% Pervious Area 0.22% Impervious Area						
0.	103	0.22	76 IIIIþei vii	ous Alea					
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
9.3	59	0.0200	0.11	· /	Sheet Flow, Sheet 1				
0.0		0.0_00	• • • • • • • • • • • • • • • • • • • •		Grass: Dense n= 0.240 P2= 3.23"				
1.8	281	0.1400	2.62		Shallow Concentrated Flow, Shallow 1 - Short Grass				
					Short Grass Pasture Kv= 7.0 fps				
9.3	70	0.3100	0.12		Sheet Flow, Sheet 2				
					Woods: Dense underbrush n= 0.800 P2= 3.23"				
1.7	254	0.2500	2.50		Shallow Concentrated Flow, Shallow 2 - Woodlands				
					Woodland Kv= 5.0 fps				
0.5	71	0.1400	2.62		Shallow Concentrated Flow, Shallow 3 - Short Grass				
					Short Grass Pasture Kv= 7.0 fps				
1.1	1,106	0.1500	16.56	239.12	Trap/Vee/Rect Channel Flow, Stream 1				
					Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'				
•		0.4000	40.04	405.05	n= 0.035				
0.1	114	0.1000	13.91	135.65	Trap/Vee/Rect Channel Flow, Pond Overflow				
					Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'				
0.0	701	0.0000	15.00	007.57	n= 0.035				
0.8	731	0.0600	15.00	337.57	Trap/Vee/Rect Channel Flow, Stream 2				
					Bot.W=4.50' D=3.00' Z= 1.0 '/' Top.W=10.50' n= 0.035				
04.0	0.000	Total			II= U.UJJ				
24.6	2,686	Total							

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# Summary for Subcatchment WS-4: Subcat WS-4

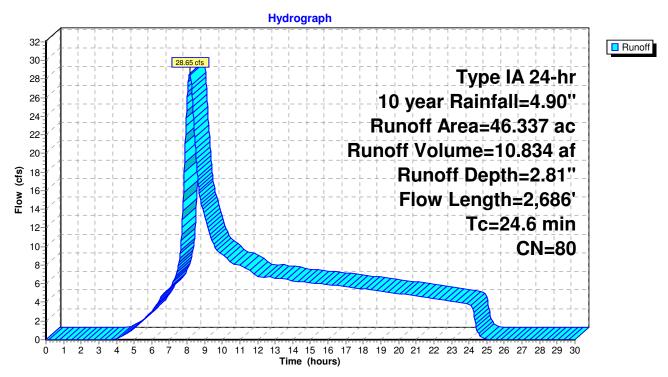
Runoff = 28.65 cfs @ 8.17 hrs, Volume= 10.834 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

Area	(ac) C	N Desc	cription						
* 0	.000	0 , HS	G D						
0	.001	75 Annı	Annual Grass, Good, HSG C						
9	.729	31 Annı	, ,						
1	.348	73 Brus							
			Fallow, bare soil, HSG D						
			Farmsteads, HSG D						
			Gravel surface, HSG D						
			Vineyard, Fair, HSG C						
			yard, Fair,						
			yard, Good						
			yard, Good						
			er Surface						
			ds, Good, ds, Good,						
				omb., Goo	A HSG D				
			ghted Aver		u, 1184 B				
	5.234		8% Pervio						
	.103		0.22% Impervious Area						
· ·	.100	0.22	70 IIIIpci vii	Jus Alica					
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
9.3	59	0.0200	0.11	, ,	Sheet Flow, Sheet 1				
					Grass: Dense n= 0.240 P2= 3.23"				
1.8	281	0.1400	2.62		Shallow Concentrated Flow, Shallow 1 - Short Grass				
					Short Grass Pasture Kv= 7.0 fps				
9.3	70	0.3100	0.12		Sheet Flow, Sheet 2				
					Woods: Dense underbrush n= 0.800 P2= 3.23"				
1.7	254	0.2500	2.50		Shallow Concentrated Flow, Shallow 2 - Woodlands				
					Woodland Kv= 5.0 fps				
0.5	71	0.1400	2.62		Shallow Concentrated Flow, Shallow 3 - Short Grass				
		0.4500	40.50	000.40	Short Grass Pasture Kv= 7.0 fps				
1.1	1,106	0.1500	16.56	239.12	Trap/Vee/Rect Channel Flow, Stream 1				
					Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'				
0.1	444	0.1000	10.01	105.65	n= 0.035				
0.1	114	0.1000	13.91	135.65	Trap/Vee/Rect Channel Flow, Pond Overflow Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'				
					n= 0.035				
0.8	731	0.0600	15.00	337.57	Trap/Vee/Rect Channel Flow, Stream 2				
0.0	751	0.0000	13.00	001.01	Bot.W=4.50' D=3.00' Z= 1.0 '/' Top.W=10.50'				
					n= 0.035				
24.6	2,686	Total			0.000				
۷-۲.0	٠,٥٥٥	iolai							

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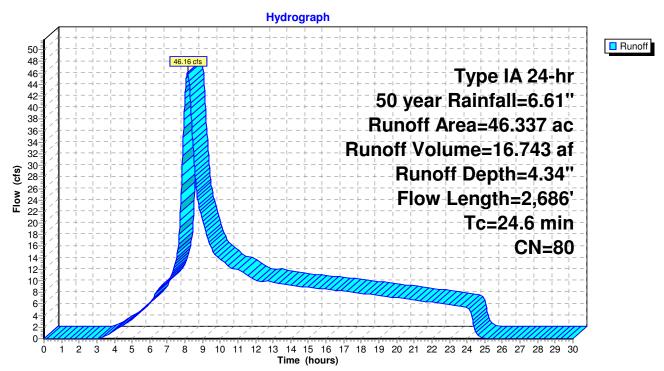
## **Summary for Subcatchment WS-4: Subcat WS-4**

Runoff = 46.16 cfs @ 8.16 hrs, Volume= 16.743 af, Depth= 4.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

Area	(ac)	CN	Desc	cription						
* 0	.000	0	, HS	G D						
0	.001	75	Annı	ual Grass,	Good, HSC	G C				
9	.729	81	Annual Grass, Good, HSG D							
	.348	73		h, Good, F						
0	.060	94	Fallow, bare soil, HSG D							
	.353	86	Farmsteads, HSG D							
	.217	96	Gravel surface, HSG D							
	.767	79		Vineyard, Fair, HSG C						
	3.471	84		Vineyard, Fair, HSG D						
	.264	75		yard, Good						
	.075	81		yard, Good						
	.103	98		er Surface						
	.019	70		ds, Good,						
	3.924	77		ds, Good,						
	.007	79			omb., Goo	d, HSG D				
46	3.337	80		ghted Aver						
	5.234			99.78% Pervious Area						
0	.103		0.22% Impervious Area							
_		_	_							
Tc	Lengtl		lope	Velocity	Capacity	Description				
<u>(min)</u>	(feet		(ft/ft)	(ft/sec)	(cfs)					
9.3	59	9.0	0200	0.11		Sheet Flow, Sheet 1				
						Grass: Dense n= 0.240 P2= 3.23"				
1.8	28	1 0.1	1400	2.62		Shallow Concentrated Flow, Shallow 1 - Short Grass				
						Short Grass Pasture Kv= 7.0 fps				
9.3	70	0.0	3100	0.12		Sheet Flow, Sheet 2				
						Woods: Dense underbrush n= 0.800 P2= 3.23"				
1.7	254	4 0.2	2500	2.50		Shallow Concentrated Flow, Shallow 2 - Woodlands				
						Woodland Kv= 5.0 fps				
0.5	7	1 0.1	1400	2.62		Shallow Concentrated Flow, Shallow 3 - Short Grass				
						Short Grass Pasture Kv= 7.0 fps				
1.1	1,106	6 O.	1500	16.56	239.12	Trap/Vee/Rect Channel Flow, Stream 1				
						Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'				
						n= 0.035				
0.1	114	4 0.	1000	13.91	135.65	Trap/Vee/Rect Channel Flow, Pond Overflow				
						Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'				
						n= 0.035				
8.0	73	1 0.0	0600	15.00	337.57	Trap/Vee/Rect Channel Flow, Stream 2				
						Bot.W=4.50' D=3.00' Z= 1.0 '/' Top.W=10.50'				
						n= 0.035				
24.6	2,686	3 To	tal							

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## **Summary for Subcatchment WS-4: Subcat WS-4**

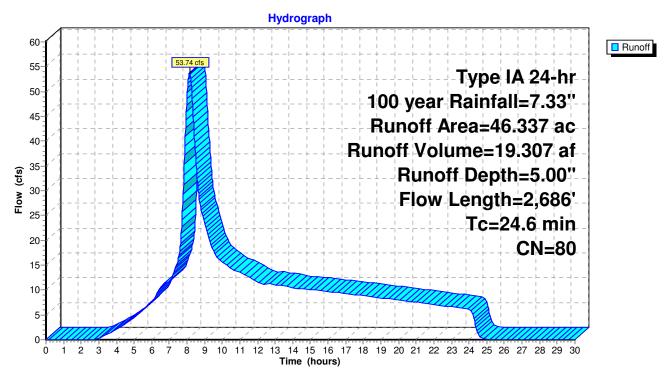
Runoff = 53.74 cfs @ 8.15 hrs, Volume= 19.307 af, Depth= 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area (	(ac) C	N Desc	cription						
*		000	0 , HS							
				Annual Grass, Good, HSG C						
				Annual Grass, Good, HSG D						
	1.3	348 7	'3 Brus	Brush, Good, HSG D						
	0.0	060	4 Fallo	Fallow, bare soil, HSG D						
				Farmsteads, HSG D						
				Gravel surface, HSG D						
				Vineyard, Fair, HSG C						
				yard, Fair,						
				yard, Good						
				yard, Good						
				er Surface						
				ds, Good,						
				ds, Good,	กรับ comb., Goo	4 H6C D				
_				hted Aver		u, 1130 b				
		234		8% Pervio						
	_	103		% Impervi						
	0.	100	0.22	70 IIIIpci vii	Jus Alica					
	Tc	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	9.3	59	0.0200	0.11	,	Sheet Flow, Sheet 1				
						Grass: Dense n= 0.240 P2= 3.23"				
	1.8	281	0.1400	2.62		Shallow Concentrated Flow, Shallow 1 - Short Grass				
						Short Grass Pasture Kv= 7.0 fps				
	9.3	70	0.3100	0.12		Sheet Flow, Sheet 2				
						Woods: Dense underbrush n= 0.800 P2= 3.23"				
	1.7	254	0.2500	2.50		Shallow Concentrated Flow, Shallow 2 - Woodlands				
	0.5	74	0.4400	0.00		Woodland Kv= 5.0 fps				
	0.5	71	0.1400	2.62		Shallow Concentrated Flow, Shallow 3 - Short Grass Short Grass Pasture Kv= 7.0 fps				
	1.1	1,106	0.1500	16.56	239.12	Trap/Vee/Rect Channel Flow, Stream 1				
	1.1	1,100	0.1300	10.50	233.12	Bot.W=5.50' D=1.50' Z= 2.5 & 3.0 '/' Top.W=13.75'				
						n= 0.035				
	0.1	114	0.1000	13.91	135.65	Trap/Vee/Rect Channel Flow, Pond Overflow				
	0.1	1 1 <del>-T</del>	3.1000	10.01	100.00	Bot.W=5.00' D=1.50' Z= 1.0 '/' Top.W=8.00'				
						n= 0.035				
	8.0	731	0.0600	15.00	337.57	Trap/Vee/Rect Channel Flow, Stream 2				
	-					Bot.W=4.50' D=3.00' Z= 1.0 '/' Top.W=10.50'				
_						n= 0.035				
	24.6	2,686	Total							

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# Subcat WS-5









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# **Summary for Subcatchment WS-5: Subcat WS-5**

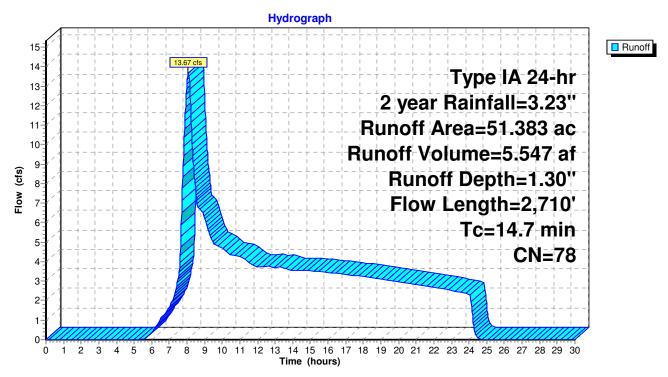
Runoff = 13.67 cfs @ 8.08 hrs, Volume= 5.547 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

Area	(ac) C	N Des	cription						
* 0.	.000	0 , HS	G D						
5.	234	31 Ann	ual Grass,	Good, HSC	G D				
0.	0.028 65 Brush, Good, HSG C								
2.	2.050 73 Brush, Good, HSG D								
0.	484	91 Grav	vel Roads,	HSG D					
1.	038	93 Pav	ed roads w	/open ditch	nes, 50% imp, HSG D				
0.	674	79 Vine	yard, Fair,	HSG C	·				
1.	081	34 Vine	yard, Fair,	HSG D					
0.	442	31 Vine	yard, Goo	d, HSG D					
0.	004	98 Wat	er Surface	, HSG D					
0.	024	70 Woo	ods, Good,	HSG C					
38.	798	77 Woo	ods, Good,	HSG D					
1.	525	79 Woo	ods/grass o	comb., Goo	d, HSG D				
51.	383	78 Wei	ghted Avei	rage					
50.	860	98.9	8% Pervio	us Area					
0.	523	1.02	1.02% Impervious Area						
Tc	Length	Slope	Velocity		Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
9.2	35	0.0800	0.06		Sheet Flow, Sheet				
					Woods: Dense underbrush n= 0.800 P2= 3.23"				
3.4	600	0.3400	2.92		Shallow Concentrated Flow, Shallow - Woodlands				
					Woodland Kv= 5.0 fps				
2.1	2,075	0.0600	16.63	798.43	Trap/Vee/Rect Channel Flow, Stream				
					Bot.W=10.00' D=3.00' Z= 1.0 & 3.0 '/' Top.W=22.00'				
					n= 0.035				
14.7	2,710	Total							

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# **Summary for Subcatchment WS-5: Subcat WS-5**

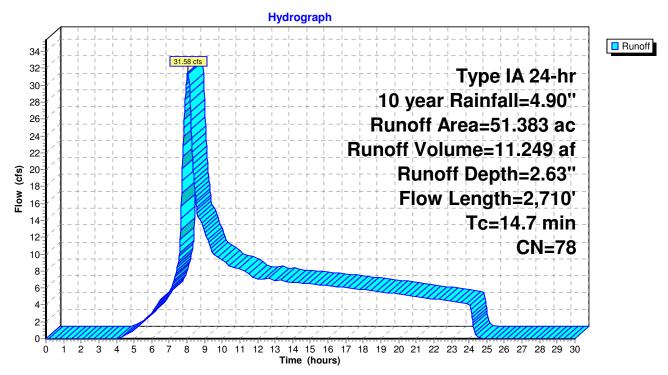
Runoff = 31.58 cfs @ 8.06 hrs, Volume= 11.249 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area	(ac)	CN	Desc	ription			
*	0.	000	0	, HS	G D			
	5.	234	81	Annı	ıal Grass,	Good, HSC	G D	
	0.	028	65		h, Good, F			
	2.	050	73	Brus	h, Good, F	HSG D		
	0.	484	91	Grav	el Roads,	HSG D		
	1.	038	93	Pave	ed roads w	open ditch	ies, 50% imp, HSG D	
	0.	674	79	Vine	yard, Fair,	HSG C		
	1.	081	84		yard, Fair,			
	0.	442	81		yard, Good			
		004	98		er Surface	•		
		024	70		ds, Good,			
		798	77		ds, Good,			
_	1.	525	79	Woo	ds/grass c	comb., Goo	d, HSG D	
	51.	383	78	Weig	hted Aver	age		
		860		98.98	3% Pervio	us Area		
	0.	523		1.02% Impervious Area				
	_							
	Тс	Length		Slope	Velocity	Capacity	Description	
	(min)	(feet		(ft/ft)	(ft/sec)	(cfs)		
	9.2	35	5 0.	.0800	0.06		Sheet Flow, Sheet	
							Woods: Dense underbrush n= 0.800 P2= 3.23"	
	3.4	600	0.	.3400	2.92		Shallow Concentrated Flow, Shallow - Woodlands	
							Woodland Kv= 5.0 fps	
	2.1	2,075	5 0.	.0600	16.63	798.43	Trap/Vee/Rect Channel Flow, Stream	
							Bot.W=10.00' D=3.00' Z= 1.0 & 3.0 '/' Top.W=22.00'	
							n= 0.035	
	14.7	2,710	) T	otal				

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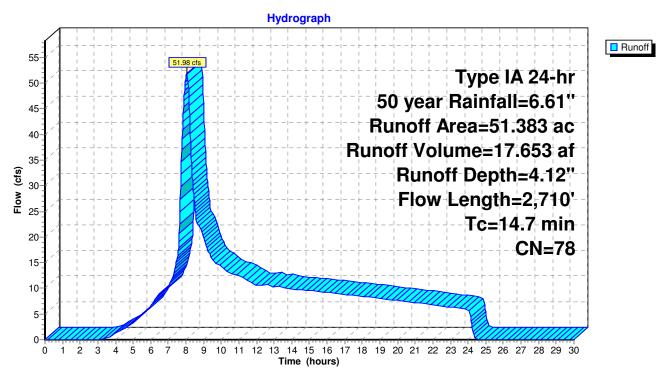
## **Summary for Subcatchment WS-5: Subcat WS-5**

Runoff = 51.98 cfs @ 8.05 hrs, Volume= 17.653 af, Depth= 4.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

Area	(ac) (	ON I	Desc	cription				
* 0.	000	0,	HS	G D				
5.	234	81 /	4nnι	ual Grass,	Good, HSC	G D		
0.028 65 Brush, Good, HSG C								
	050			h, Good, F				
				el Roads,				
						nes, 50% imp, HSG D		
_	674			yard, Fair,				
				yard, Fair,				
				yard, Good	•			
				er Surface	•			
				ds, Good,				
				ds, Good,		4 1100 D		
	525				comb., Goo	0, HSG D		
			•	ghted Aver	•			
	860			8% Pervio				
0.	523		1.02% Impervious Area					
Tc	Length		ре	Velocity	Capacity	Description		
(min)	(feet)	(f1	t/ft)	(ft/sec)	(cfs)			
9.2	35	0.08	300	0.06		Sheet Flow, Sheet		
						Woods: Dense underbrush n= 0.800 P2= 3.23"		
3.4	600	0.34	100	2.92		Shallow Concentrated Flow, Shallow - Woodlands		
						Woodland Kv= 5.0 fps		
2.1	2,075	0.06	00	16.63	798.43	Trap/Vee/Rect Channel Flow, Stream		
						Bot.W=10.00' D=3.00' Z= 1.0 & 3.0 '/' Top.W=22.00'		
	0.740	<b>T</b>	. 1			n= 0.035		
14.7	2,710	Tota	al .					

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## **Summary for Subcatchment WS-5: Subcat WS-5**

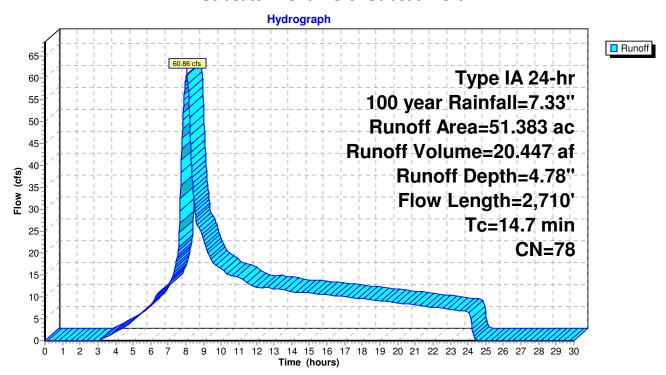
Runoff = 60.86 cfs @ 8.05 hrs, Volume= 20.447 af, Depth= 4.78"

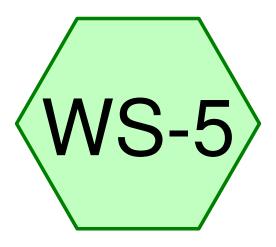
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area	(ac)	CN	Desc	ription						
*	0.	000	0	, HS	G D						
	5.	234	81	Annu	ial Grass,	G D					
	0.	028	65 Brush, Good, HSG C								
	2.	050	73	Brus	h, Good, F	ISG D					
	0.	484	91	Grav	el Roads,	HSG D					
	1.	038	93	Pave	d roads w	open ditch	ies, 50% imp, HSG D				
	0.	674	79	Vine	yard, Fair,	HSG C					
	1.	081	84		yard, Fair,						
	0.	442	81		yard, Good						
		004	98		er Surface						
		024	70		ds, Good,						
		798	77		ds, Good,						
	1.	525	79	Woo	ds/grass c	omb., Goo	d, HSG D				
	51.	383	78	Weig	hted Aver	age					
		860			3% Pervio						
	0.	523		1.029	1.02% Impervious Area						
	Тс	Lengtl	<b>.</b>	Slope	Velocity	Capacity	Description				
	(min)	(feet		(ft/ft)	(ft/sec)	(cfs)	Description				
	9.2	3!		.0800	0.06	(010)	Sheet Flow, Sheet				
	9.2	٥.	5 0	.0000	0.00		Woods: Dense underbrush n= 0.800 P2= 3.23"				
	3.4	600	n n	.3400	2.92		Shallow Concentrated Flow, Shallow - Woodlands				
	0.4	000	, ,	.0400	2.52		Woodland Kv= 5.0 fps				
	2.1	2,07	5 0	.0600	16.63	798.43	Trap/Vee/Rect Channel Flow, Stream				
	<b></b> ·	2,07	, ,	.0000	10.00	7 0010	Bot.W=10.00' D=3.00' Z= 1.0 & 3.0 '/' Top.W=22.00'				
							n= 0.035				
	14.7	2,710	) T	otal							

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# Subcat WS-5









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# **Summary for Subcatchment WS-5: Subcat WS-5**

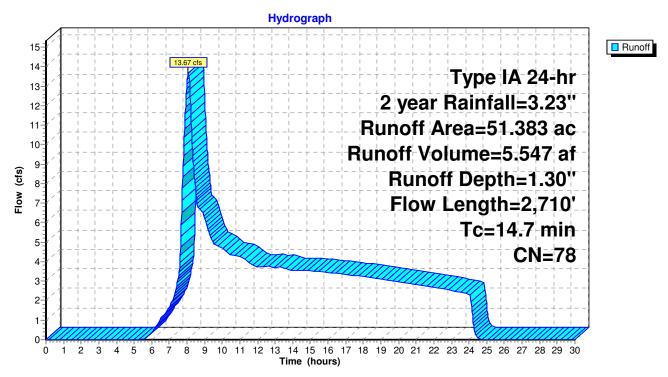
Runoff = 13.67 cfs @ 8.08 hrs, Volume= 5.547 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac)	CN	Desc	ription				
*	0.	000	0	, HS	G D				
	3.	640	81	Annı	ıal Grass,	Good, HSC	G D		
	0.	000	65		h, Good, F				
	1.	903	73	Brus	h, Good, F	HSG D			
	0.	479	91	Grav	el Roads,	HSG D			
	1.	017	93	Pave	ed roads w	/open ditch	ies, 50% imp, HSG D		
	0.	647	79	Vine	yard, Fair,	HSG C			
	1.	064	84		yard, Fair,				
	0.	079	75		yard, Good				
		209	81		yard, Goo				
		004	98		er Surface				
		816	77		ds, Good,				
_	1.	525	79	Woo	ds/grass c	comb., Goo	d, HSG D		
	51.	383	78	Weig	ghted Aver	age			
		870			0% Pervio				
	0.	513		1.00	1.00% Impervious Area				
	_			01			B		
	Tc	Lengtl		Slope	Velocity	Capacity	Description		
	(min)	(feet		(ft/ft)	(ft/sec)	(cfs)			
	9.2	3	5 0	.0800	0.06		Sheet Flow, Sheet		
				0.400			Woods: Dense underbrush n= 0.800 P2= 3.23"		
	3.4	600	) ()	.3400	2.92		Shallow Concentrated Flow, Shallow - Woodlands		
	0.4	0.07/	- ^	0000	40.00	700.40	Woodland Kv= 5.0 fps		
	2.1	2,07	o 0	.0600	16.63	798.43	Trap/Vee/Rect Channel Flow, Stream		
							Bot.W=10.00' D=3.00' Z= 1.0 & 3.0 '/' Top.W=22.00' n= 0.035		
	117	0.71/	<u> </u>	otal			11= 0.000		
	14.7	2,710	J	otal					

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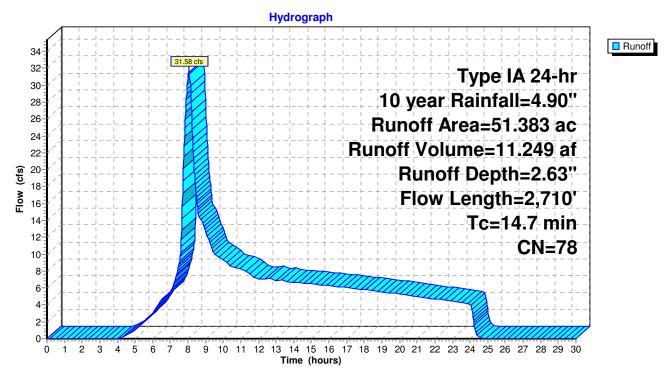
## **Summary for Subcatchment WS-5: Subcat WS-5**

Runoff = 31.58 cfs @ 8.06 hrs, Volume= 11.249 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

Area	(ac) (	CN	Desc	ription					
* 0.	000	0	, HS	G D					
3.	640	81	Annu	ıal Grass,	Good, HSC	G D			
0.	0.000 65 Brush, Good, HSG C								
	903			h, Good, F					
	479			el Roads,					
						es, 50% imp, HSG D			
	647			yard, Fair,					
				yard, Fair,					
	079			yard, Goo					
				yard, Good					
				er Surface					
	816			ds, Good,					
_	525				omb., Goo	d, HSG D			
	383			ghted Aver					
	870			0% Pervio					
0.	513		1.00% Impervious Area						
Tc	Length	SI	ope	Velocity	Capacity	Description			
(min)	(feet)		ft/ft)	(ft/sec)	(cfs)	Becompact			
9.2	35		800	0.06	(010)	Sheet Flow, Sheet			
0.2	00	0.0	000	0.00		Woods: Dense underbrush n= 0.800 P2= 3.23"			
3.4	600	0.3	400	2.92		Shallow Concentrated Flow, Shallow - Woodlands			
0	000	0.0		2.02		Woodland Kv= 5.0 fps			
2.1	2,075	0.0	600	16.63	798.43	Trap/Vee/Rect Channel Flow, Stream			
· •	_,					Bot.W=10.00' D=3.00' Z= 1.0 & 3.0 '/' Top.W=22.00'			
						n= 0.035			
14.7	2,710	Tot	tal						

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# **Summary for Subcatchment WS-5: Subcat WS-5**

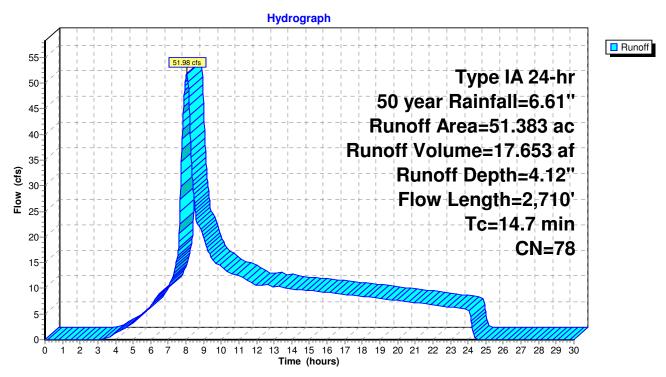
Runoff = 51.98 cfs @ 8.05 hrs, Volume= 17.653 af, Depth= 4.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

	Area	(ac)	CN	Desc	ription					
*	* 0.000 0 , HSG D									
	3.640 81 Annual Grass, Good, HSG						G D			
	0.	000	65		h, Good, F					
	1.	903	73	Brus	h, Good, F	HSG D				
	0.	479	91	Grav	el Roads,	HSG D				
	1.017 93 Paved roads w/open ditche						ies, 50% imp, HSG D			
	0.	647	79	Vine	Vineyard, Fair, HSG C					
	1.064 84				Vineyard, Fair, HSG D					
	0.	079	75		Vineyard, Good, HSG C					
		209	81		yard, Goo					
		004	98		er Surface					
34.816 77 Woods, Good, HSG D										
	1.525 79 Woods/grass comb., Good, HSG D									
51.383 78 Weighted Average										
50.870 99.00% Pervious Area										
0.513			1.009	1.00% Impervious Area						
	_									
	Tc	Lengtl		Slope	Velocity	Capacity	Description			
	(min)	(feet		(ft/ft)	(ft/sec)	(cfs)				
	9.2	3	5 0	.0800	0.06		Sheet Flow, Sheet			
							Woods: Dense underbrush n= 0.800 P2= 3.23"			
	3.4	600	0 0	.3400	2.92		Shallow Concentrated Flow, Shallow - Woodlands			
							Woodland Kv= 5.0 fps			
	2.1	2,07	5 0	.0600	16.63	798.43	Trap/Vee/Rect Channel Flow, Stream			
							Bot.W=10.00' D=3.00' Z= 1.0 & 3.0 '/' Top.W=22.00'			
							n= 0.035			
	14.7	2,710	) T	otal						

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# **Summary for Subcatchment WS-5: Subcat WS-5**

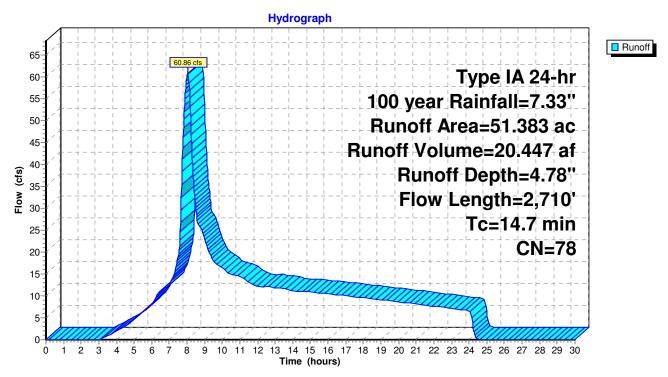
Runoff = 60.86 cfs @ 8.05 hrs, Volume= 20.447 af, Depth= 4.78"

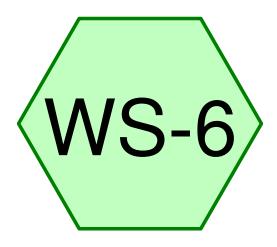
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

Area	(ac)	CN	Desc	ription				
* 0.	000	0	, HS	G D				
3.	640	81	Annı	ıal Grass,	Good, HSC	G D		
0.	000	65	Brus	h, Good, F	HSG C			
	903	73		h, Good, F				
	479	91		el Roads,				
1.017 93 Paved roads w/open ditcl						nes, 50% imp, HSG D		
	647	79	Vineyard, Fair, HSG C					
	064	84	Vineyard, Fair, HSG D					
	079	75	Vineyard, Good, HSG C					
6.209 81 Vineyard, Good, HSG D								
0.004 98 Water Surface, HSG D								
	816	77		ds, Good,				
_	1.525 79 Woods/grass comb., Good, HSG D							
51.383 78 Weighted Average								
	870			0% Pervio				
0.513			1.00% Impervious Area					
Tc	Length	ı S	Slope	Velocity	Capacity	Description		
(min)	(feet)		(ft/ft)	(ft/sec)	(cfs)	'		
9.2	35	0.0	0800	0.06		Sheet Flow, Sheet		
						Woods: Dense underbrush n= 0.800 P2= 3.23"		
3.4	600	0.3	3400	2.92		Shallow Concentrated Flow, Shallow - Woodlands		
						Woodland Kv= 5.0 fps		
2.1	2,075	0.0	0600	16.63	798.43	Trap/Vee/Rect Channel Flow, Stream		
						Bot.W=10.00' D=3.00' Z= 1.0 & 3.0 '/' Top.W=22.00'		
						n= 0.035		
14.7	2,710	То	tal					

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# Subcat WS-6









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# Summary for Subcatchment WS-6: Subcat WS-6

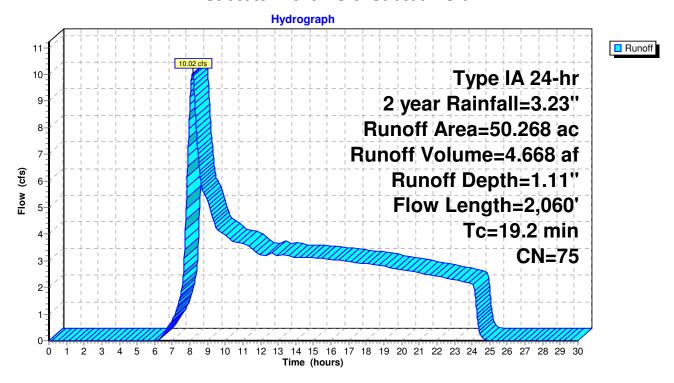
Runoff = 10.02 cfs @ 8.14 hrs, Volume= 4.668 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac) C	N Des	cription					
*	0.	000	0 , HS	G B					
*		000		G C					
			•		Good, HSC	3 B			
					Good, HSC				
					Good, HSC				
				sh, Good, F					
				sh, Good, F					
				nsteads, H					
				nsteads, HSG C					
				Paved roads w/open ditches, 50% imp, HSG B					
				Paved roads w/open ditches, 50% imp, HSG C					
				Vineyard, Fair, HSG B					
				yard, Fair,					
				yard, Fair,					
				yard, Goo					
				yard, Goo					
				ds, Good,					
				ods, Good,					
	3.			ods, Good,					
					comb., Goo	d, HSG B			
	0.	001	72 Woo	ods/grass o	comb., Goo	d, HSG C			
	50.	268	75 Wei	ghted Aver	age				
	50.	045	99.5	6% Pervio	us Area				
	0.	223	0.44	% Impervi	ous Area				
	Tc	Length	Slope	Velocity	Capacity	Description			
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	9.4	63	0.2500	0.11		Sheet Flow, Sheet			
						Woods: Dense underbrush n= 0.800 P2= 3.23"			
	6.8	1,002	0.2400	2.45		Shallow Concentrated Flow, Shallow 1 - Woodlands			
						Woodland Kv= 5.0 fps			
	0.0	23	0.2200	11.06	8.69	Pipe Channel, Culvert			
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'			
						n= 0.025			
	0.3	43	0.3000	2.74		Shallow Concentrated Flow, Shallow 2 - Woodlands			
						Woodland Kv= 5.0 fps			
	1.4	566	0.0600	6.89	2.40				
						8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17'			
						n= 0.016 PPI 8in CPP			
	1.3	363	0.0200	4.63	3.64				
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'			
						n= 0.018			

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2,060 Total

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# **Summary for Subcatchment WS-6: Subcat WS-6**

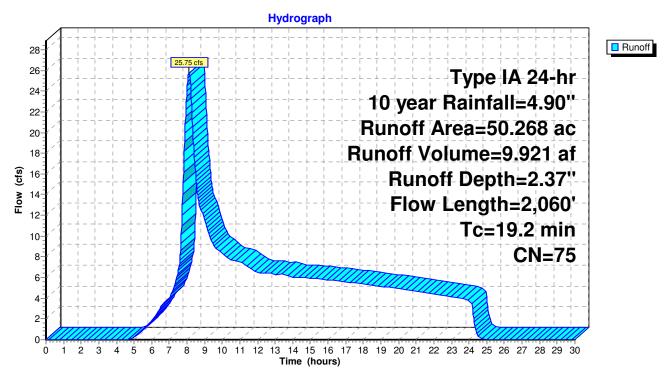
Runoff = 25.75 cfs @ 8.11 hrs, Volume= 9.921 af, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area	(ac) C	N Des	cription					
*	0.	000	0 , HS	G B					
*		000		G C					
			•		Good, HSC	3 B			
					Good, HSC				
					Good, HSC				
				sh, Good, F					
				sh, Good, F					
				nsteads, H					
				nsteads, HSG C					
				Paved roads w/open ditches, 50% imp, HSG B					
				Paved roads w/open ditches, 50% imp, HSG C					
				Vineyard, Fair, HSG B					
				yard, Fair,					
				yard, Fair,					
				yard, Goo					
				yard, Goo					
				ds, Good,					
				ods, Good,					
	3.			ods, Good,					
					comb., Goo	d, HSG B			
	0.	001	72 Woo	ods/grass o	comb., Goo	d, HSG C			
	50.	268	75 Wei	ghted Aver	age				
	50.	045	99.5	6% Pervio	us Area				
	0.	223	0.44	% Impervi	ous Area				
	Tc	Length	Slope	Velocity	Capacity	Description			
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	9.4	63	0.2500	0.11		Sheet Flow, Sheet			
						Woods: Dense underbrush n= 0.800 P2= 3.23"			
	6.8	1,002	0.2400	2.45		Shallow Concentrated Flow, Shallow 1 - Woodlands			
						Woodland Kv= 5.0 fps			
	0.0	23	0.2200	11.06	8.69	Pipe Channel, Culvert			
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'			
						n= 0.025			
	0.3	43	0.3000	2.74		Shallow Concentrated Flow, Shallow 2 - Woodlands			
						Woodland Kv= 5.0 fps			
	1.4	566	0.0600	6.89	2.40				
						8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17'			
						n= 0.016 PPI 8in CPP			
	1.3	363	0.0200	4.63	3.64				
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'			
						n= 0.018			

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## **Summary for Subcatchment WS-6: Subcat WS-6**

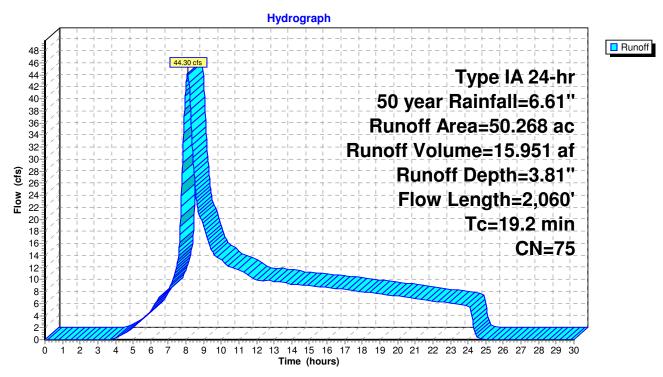
Runoff = 44.30 cfs @ 8.10 hrs, Volume= 15.951 af, Depth= 3.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

	Area	(ac) C	N Des	cription						
*	0.	000	0 , HS	G B						
*	0.	000	0 , HS	GC						
	0.	599	61 Annı	ual Grass,	Good, HSC	3 B				
					Good, HSC					
					Good, HSC					
				sh, Good, F						
				sh, Good, F						
					ads, HSG B					
				nsteads, H						
				,		nes 50% imp HSG B				
				Paved roads w/open ditches, 50% imp, HSG B Paved roads w/open ditches, 50% imp, HSG C						
				Vineyard, Fair, HSG B						
				Vineyard, Fair, HSG C						
				Vineyard, Fair, HSG D						
				yard, Fair, yard, Goo						
				yard, Goo						
				ds, Good,						
				ds, Good, ds, Good,						
				ods, Good,		4 HCC D				
				•	comb., Goo					
_					comb., Goo	u, 113d C				
50.268 75 Weighted Average 50.045 99.56% Pervious Area										
		223		% Impervi						
	0.	220	0.44	70 IIIIpci VI	543 / 11 Ca					
	Tc	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
_	9.4	63	0.2500	0.11	(0.0)	Sheet Flow, Sheet				
	5.4	00	0.2000	0.11		Woods: Dense underbrush n= 0.800 P2= 3.23"				
	6.8	1,002	0.2400	2.45		Shallow Concentrated Flow, Shallow 1 - Woodlands				
	0.0	1,002	0.2700	2.40		Woodland Kv= 5.0 fps				
	0.0	23	0.2200	11.06	8.69	Pipe Channel, Culvert				
	0.0	23	0.2200	11.00	0.09	12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'				
						n= 0.025				
	0.0	40	0.0000	0.74						
	0.3	43	0.3000	2.74		Shallow Concentrated Flow, Shallow 2 - Woodlands				
	4.4	F00	0.0000	0.00	0.40	Woodland Kv= 5.0 fps				
	1.4	566	0.0600	6.89	2.40	Pipe Channel, Pipe 1				
						8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17'				
	4.0	202	0.0000	4.00	2.21	n= 0.016 PPI 8in CPP				
	1.3	363	0.0200	4.63	3.64					
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'				
_						n= 0.018				

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2,060 Total

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## **Summary for Subcatchment WS-6: Subcat WS-6**

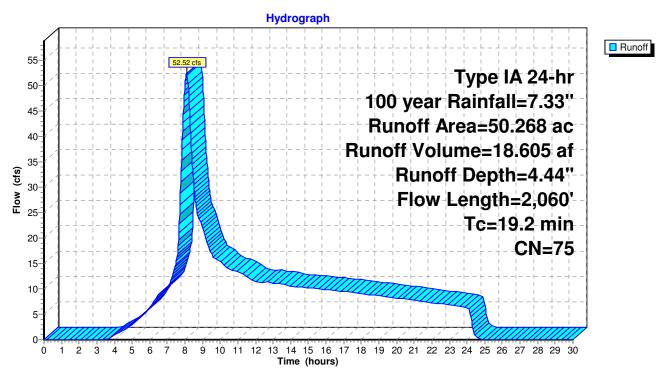
Runoff = 52.52 cfs @ 8.10 hrs, Volume= 18.605 af, Depth= 4.44"

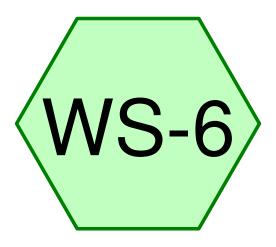
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area	(ac) C	N Des	cription		
*	0.	000	0 , HS	G B		
*		000	0 , HS			
					Good, HSC	3 B
					Good, HSC	
					Good, HSC	
				sh, Good, F		<del>-</del>
				sh, Good, F		
				nsteads, H		
				nsteads, H		
				•		nes, 50% imp, HSG B
						nes, 50% imp, HSG C
				yard, Fair,	•	163, 30 % Imp, 1164 0
				yard, Fair, yard, Fair,		
				yard, Fair, yard, Fair,		
				yard, Fair, yard, Goo		
				yard, Goo		
				ods, Good,		
				ods, Good,		
				ods, Good,		
					comb., Goo	A HSG B
					comb., Goo	
_			75 Wei	4,1104.0		
		045		6% Pervio		
		223		% Impervi		
				•		
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	•
	9.4	63	0.2500	0.11	,	Sheet Flow, Sheet
	• • •		0.200	• • • • • • • • • • • • • • • • • • • •		Woods: Dense underbrush n= 0.800 P2= 3.23"
	6.8	1,002	0.2400	2.45		Shallow Concentrated Flow, Shallow 1 - Woodlands
	0.0	.,00=	0.2.00	20		Woodland Kv= 5.0 fps
	0.0	23	0.2200	11.06	8.69	Pipe Channel, Culvert
	0.0	_0	0.2200		0.00	12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
						n= 0.025
	0.3	43	0.3000	2.74		Shallow Concentrated Flow, Shallow 2 - Woodlands
	0.0	70	0.0000	<b>L.</b> 1- <b>T</b>		Woodland Kv= 5.0 fps
	1.4	566	0.0600	6.89	2.40	Pipe Channel, Pipe 1
	1.7	500	0.0000	0.03	2.70	8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17'
						n= 0.016 PPI 8in CPP
	1.3	363	0.0200	4.63	3.64	
	1.0	303	0.0200	4.00	5.04	12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
						n= 0.018
	40.0					11- 0.010

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# Subcat WS-6









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# Summary for Subcatchment WS-6: Subcat WS-6

Runoff = 10.02 cfs @ 8.14 hrs, Volume= 4.668 af, Depth= 1.11"

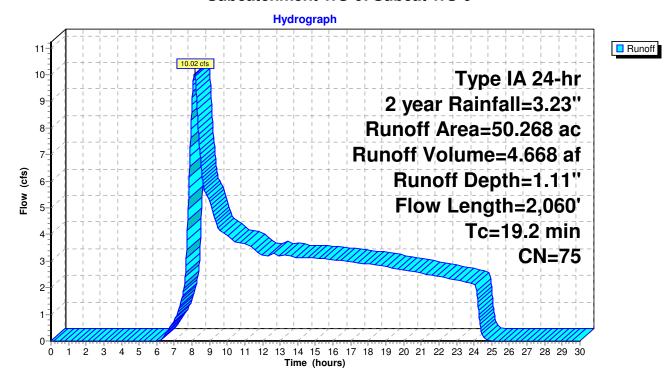
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac) (	ON Des	cription							
*		000		SG B							
*		000		SG C							
*		000	0 , HSG D								
		2 B									
					Good, HS0						
					Good, HS0	ט ט					
				sh, Good, I							
				sh, Good, I							
				msteads, H							
				msteads, H							
						nes, 50% imp, HSG B					
					s w/open ditches, 50% imp, HSG C						
			69 Vine	Vineyard, Fair, HSG B							
	9.	731	79 Vine	Vineyard, Fair, HSG C							
	8.	518	84 Vine	eyard, Fair,	HSG D						
	10.	292	75 Vine	eyard, Goo	d, HSG C						
	3.	939	81 Vine	eyard, Goo	d, HSG D						
	6.	310	55 Wo	ods, Good,	HSG B						
	1.	127	70 Wo	ods, Good,	HSG C						
	1.	742	77 Wo	ods, Good,	HSG D						
	0.	369	58 Wo	ods/grass o	comb., Goo	d, HSG B					
_	0.	001		ods/grass o	comb., Goo	d, HSG C					
				ighted Avei							
		045		56% Pervio							
	0.	223	0.44	1% Impervi	ous Area						
	Тс	Length	Slope	Velocity	Capacity	Description					
	(min)	(feet)	•	(ft/sec)	(cfs)	Description					
	9.4	63	, ,	0.11	(010)	Sheet Flow, Sheet					
	J. <del>4</del>	00	0.2300	0.11		Woods: Dense underbrush n= 0.800 P2= 3.23"					
	6.8	1,002	0.2400	2.45		Shallow Concentrated Flow, Shallow 1 - Woodlands					
	0.0	1,002	0.2400	2.43		Woodland Kv= 5.0 fps					
	0.0	23	0.2200	11.06	8.69	Pipe Channel, Culvert					
	0.0		0.2200	11.00	0.00	12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'					
						n= 0.025					
	0.3	43	0.3000	2.74		Shallow Concentrated Flow, Shallow 2 - Woodlands					
	0.5	70	0.0000	2.17		Woodland Kv= 5.0 fps					
	1.4	566	0.0600	6.89	2.40	•					
	1.4	500	0.0000	0.09	2.40	8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17'					
	4.0	000	0.0000	4.00	0.04	n= 0.016 PPI 8in CPP					
	1.3	363	0.0200	4.63	3.64						
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'					
						n= 0.018					

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19.2 2,060 Total



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## **Summary for Subcatchment WS-6: Subcat WS-6**

Runoff = 25.75 cfs @ 8.11 hrs, Volume= 9.921 af, Depth= 2.37"

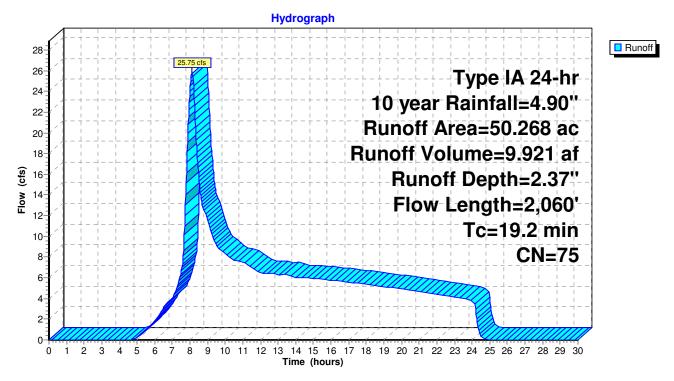
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area (	(ac)	CN D	escription								
*	0.0	000	0 ,	HSG B								
*		000		HSG C								
*		000		, HSG D								
		599		G B								
		103		nnual Grass								
		603		nnual Grass								
		641		rush, Good,								
		413		rush, Good,								
		552		armsteads, l								
		809		armsteads, l								
		314		,		nes, 50% imp, HSG B						
		132				nes, 50% imp, HSG C						
		072		ineyard, Fai		······································						
		731		ineyard, Fai								
		518		ineyard, Fai								
		292		ineyard, Go								
	3.9	939		ineyard, God								
	6.3	310		oods, Good								
	1.	127	70 W	oods, Good	i, HSG C							
	1.	742	77 W	oods, Good	i, HSG D							
	0.3	369	58 W	oods/grass	comb., Goo	d, HSG B						
		001		oods/grass		d, HSG C						
		268		eighted Ave								
		045		9.56% Pervi								
	0.3	223	0	44% Imperv	rious Area							
	Тс	Length	Slop	e Velocity	Capacity	Description						
	(min)	(feet)				·						
	9.4	63	0.250	0.11		Sheet Flow, Sheet						
						Woods: Dense underbrush n= 0.800 P2= 3.23"						
	6.8	1,002	0.240	00 2.45		Shallow Concentrated Flow, Shallow 1 - Woodlands						
						Woodland Kv= 5.0 fps						
	0.0	23	0.220	00 11.06	8.69	Pipe Channel, Culvert						
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'						
						n= 0.025						
	0.3	43	0.300	00 2.74		Shallow Concentrated Flow, Shallow 2 - Woodlands						
						Woodland Kv= 5.0 fps						
	1.4	566	0.060	00 6.89	2.40	1 ' 1						
						8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17'						
						n= 0.016 PPI 8in CPP						
	1.3	363	0.020	00 4.63	3.64	• • • • • • • • • • • • • • • • • • • •						
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'						
_						n= 0.018						

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19.2 2,060 Total



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# **Summary for Subcatchment WS-6: Subcat WS-6**

Runoff = 44.30 cfs @ 8.10 hrs, Volume= 15.951 af, Depth= 3.81"

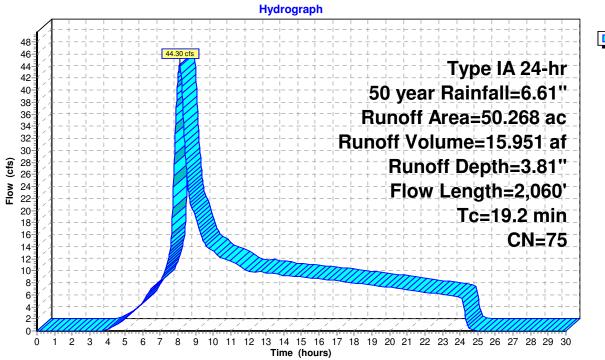
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

	Area	(ac) (	CN Des	cription								
*	0.	000	0 , HS	G B								
*		000	0 , HS									
*		000		0 , HSG D								
	G B											
				,	Good, HSC							
	1.	603			Good, HSC							
				sh, Good, É								
	0.	413		sh, Good, F								
	1.	552	74 Farn	nsteads, H	SG B							
	0.	809	82 Farn	nsteads, H	SG C							
	0.	314	89 Pave	ed roads w	/open ditch	nes, 50% imp, HSG B						
	0.	132	92 Pave	ed roads w	/open ditch	nes, 50% imp, HSG C						
			69 Vine	Vineyard, Fair, HSG B								
				yard, Fair,								
				yard, Fair,								
				yard, Goo								
				yard, Goo								
				ds, Good,								
				ds, Good,								
				ods, Good,		4 LICO D						
					comb., Goo comb., Goo							
_				ghted Aver		4, 1104 0						
	50.045 99.56% Pervious Area											
	0.	223	0.44	% Impervi	ous Area							
	_		01									
	Tc	Length	•	Velocity	Capacity	Description						
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)							
	9.4	63	0.2500	0.11		Sheet Flow, Sheet						
	0.0	1 000	0.0400	0.45		Woods: Dense underbrush n= 0.800 P2= 3.23"						
	6.8	1,002	0.2400	2.45		Shallow Concentrated Flow, Shallow 1 - Woodlands Woodland Kv= 5.0 fps						
	0.0	23	0.2200	11.06	8.69	Pipe Channel, Culvert						
	0.0	20	0.2200	11.00	0.03	12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'						
						n= 0.025						
	0.3	43	0.3000	2.74		Shallow Concentrated Flow, Shallow 2 - Woodlands						
	0.0	.0	0.000	, 1		Woodland Kv= 5.0 fps						
	1.4	566	0.0600	6.89	2.40	•						
					-	8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17'						
						n= 0.016 PPI 8in CPP						
	1.3	363	0.0200	4.63	3.64	Pipe Channel, Pipe 2						
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'						
						n= 0.018						

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19.2 2,060 Total





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## **Summary for Subcatchment WS-6: Subcat WS-6**

Runoff = 52.52 cfs @ 8.10 hrs, Volume= 18.605 af, Depth= 4.44"

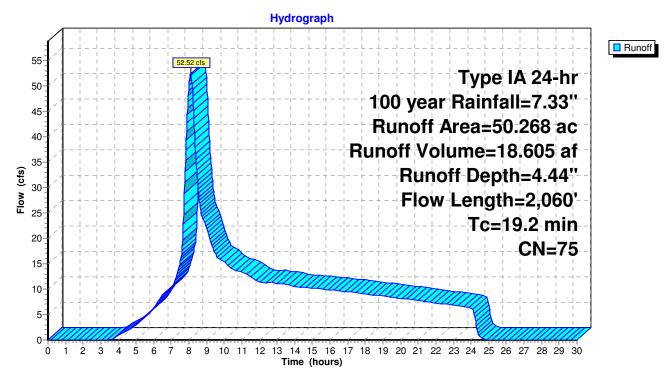
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area (	(ac)	CN D	escription								
*	0.0	000	0 ,	HSG B								
*		000		HSG C								
*		000		, HSG D								
		599		G B								
		103		nnual Grass								
		603		nnual Grass								
		641		rush, Good,								
		413		rush, Good,								
		552		armsteads, l								
		809		armsteads, l								
		314		,		nes, 50% imp, HSG B						
		132				nes, 50% imp, HSG C						
		072		ineyard, Fai		······································						
		731		ineyard, Fai								
		518		ineyard, Fai								
		292		ineyard, Go								
	3.9	939		ineyard, God								
	6.3	310		oods, Good								
	1.	127	70 W	oods, Good	i, HSG C							
	1.	742	77 W	oods, Good	i, HSG D							
	0.3	369	58 W	oods/grass	comb., Goo	d, HSG B						
		001		oods/grass		d, HSG C						
		268		eighted Ave								
		045		9.56% Pervi								
	0.3	223	0	44% Imperv	rious Area							
	Тс	Length	Slop	e Velocity	Capacity	Description						
	(min)	(feet)				·						
	9.4	63	0.250	0.11		Sheet Flow, Sheet						
						Woods: Dense underbrush n= 0.800 P2= 3.23"						
	6.8	1,002	0.240	00 2.45		Shallow Concentrated Flow, Shallow 1 - Woodlands						
						Woodland Kv= 5.0 fps						
	0.0	23	0.220	00 11.06	8.69	Pipe Channel, Culvert						
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'						
						n= 0.025						
	0.3	43	0.300	00 2.74		Shallow Concentrated Flow, Shallow 2 - Woodlands						
						Woodland Kv= 5.0 fps						
	1.4	566	0.060	00 6.89	2.40	1 ' 1						
						8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17'						
						n= 0.016 PPI 8in CPP						
	1.3	363	0.020	00 4.63	3.64	• • • • • • • • • • • • • • • • • • • •						
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'						
_						n= 0.018						

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19.2 2,060 Total





# Subcat WS-7









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## **Summary for Subcatchment WS-7: Subcat WS-7**

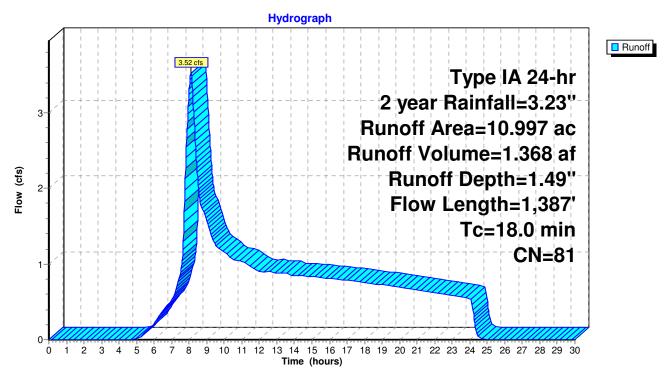
Runoff = 3.52 cfs @ 8.10 hrs, Volume= 1.368 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

Area	(ac) C	N Des	cription					
* 0	.000	0 , HS	, HSG D					
1	.542 8	31 Annı	Annual Grass, Good, HSG D					
0	.193	<sup>7</sup> 3 Brus	h, Good, F	HSG D				
0	.308	94 Fallo	w, bare so	oil, HSG D				
1	.894 8	36 Farn	Farmsteads, HSG D					
0	.488 9	3 Pave	Paved roads w/open ditches, 50% imp, HSG D					
0	.878 8	34 Vine	Vineyard, Fair, HSG D					
	5.254 77		Woods, Good, HSG D					
0.439 79 Woods/grass comb., Good, HSG D								
		31 Wei	ghted Aver	age				
10	.753	97.7	8% Pervio	us Area				
0	0.244		% Impervi	ous Area				
_								
Tc	Length	Slope	Velocity	Capacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
9.4	52	0.1700	0.09		Sheet Flow, Sheet			
					Woods: Dense underbrush n= 0.800 P2= 3.23"			
5.1	786	0.2600	2.55		Shallow Concentrated Flow, Shallow 1 - Woodlands			
					Woodland Kv= 5.0 fps			
0.5	213	0.1100	6.73		Shallow Concentrated Flow, Shallow 2 - Paved			
					Paved Kv= 20.3 fps			
2.3	193	0.0400	1.40		Shallow Concentrated Flow, Shallow 3 - Short Grass			
					Short Cross Bosture Ky / () tos			
0.7	4.40	0.0000	0.54	7.00	Short Grass Pasture Kv= 7.0 fps			
0.7	143	0.0200	3.51	7.02	Trap/Vee/Rect Channel Flow, Ditch			
0.7	143	0.0200	3.51	7.02	Trap/Vee/Rect Channel Flow, Ditch Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
0.7	1,387	0.0200 Total	3.51	7.02	Trap/Vee/Rect Channel Flow, Ditch			

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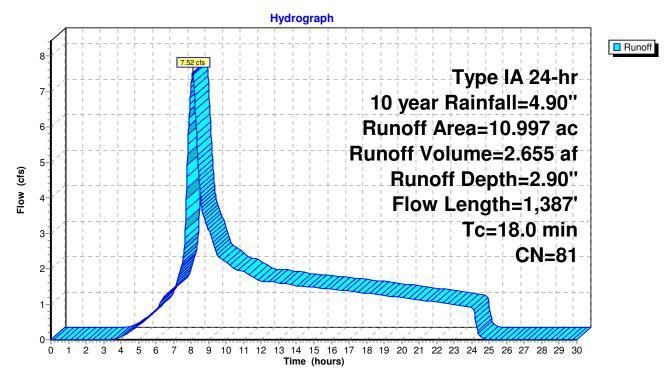
## **Summary for Subcatchment WS-7: Subcat WS-7**

Runoff = 7.52 cfs @ 8.09 hrs, Volume= 2.655 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

Are	a (ac)	CI	N Desc	cription					
*	0.000	(	0 , HS	, HSG D					
	1.542 81		1 Annເ	Annual Grass, Good, HSG D					
	0.193	7		h, Good, F					
	0.308	94			oil, HSG D				
	1.894	80		Farmsteads, HSG D					
	0.488	93		Paved roads w/open ditches, 50% imp, HSG D					
	0.878	84		Vineyard, Fair, HSG D					
	5.254	7		ds, Good,					
	0.439	79			comb., Goo	d, HSG D			
	0.997	8		ghted Aver					
	10.753			97.78% Pervious Area					
	0.244		2.22	% Impervi	ous Area				
-	<b>-</b>		01			D. The			
T(	_		Slope	Velocity	Capacity	Description			
(min			(ft/ft)	(ft/sec)	(cfs)				
9.4		52	0.1700	0.09		Sheet Flow, Sheet			
-	_	00	0.0000	0.55		Woods: Dense underbrush n= 0.800 P2= 3.23"			
5.1	/ /	86	0.2600	2.55		Shallow Concentrated Flow, Shallow 1 - Woodlands			
0.5		13	0.1100	6.73		Woodland Kv= 5.0 fps  Shallow Concentrated Flow Shallow 2 Poved			
0.0	) 2	13	0.1100	0.73		Shallow Concentrated Flow, Shallow 2 - Paved Paved Kv= 20.3 fps			
2.3	1 1	93	0.0400	1.40		Shallow Concentrated Flow, Shallow 3 - Short Grass			
۷.٠	, 1,	33	0.0400	1.40		Short Grass Pasture Kv= 7.0 fps			
0.7	7 1,	43	0.0200	3.51	7.02	Trap/Vee/Rect Channel Flow, Ditch			
0.7		.0	0.0200	0.01	7.02	Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
						n= 0.035			
18.0	1,3	87	Total						
10.0	, 1,0	0,	rotai						

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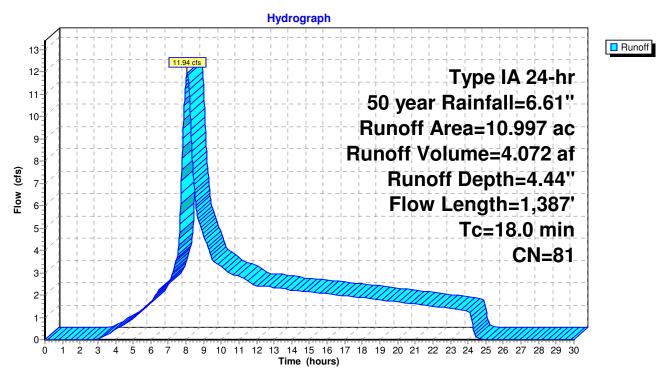
## **Summary for Subcatchment WS-7: Subcat WS-7**

Runoff = 11.94 cfs @ 8.08 hrs, Volume= 4.072 af, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

<ul> <li>* 0.000 0 , HSG D</li> <li>1.542 81 Annual Grass, Good, HSG D</li> <li>0.193 73 Brush, Good, HSG D</li> <li>0.308 94 Fallow, bare soil, HSG D</li> <li>1.894 86 Farmsteads, HSG D</li> <li>0.488 93 Paved roads w/open ditches, 50% imp, HSG D</li> <li>0.878 84 Vineyard, Fair, HSG D</li> <li>5.254 77 Woods, Good, HSG D</li> <li>0.439 79 Woods/grass comb., Good, HSG D</li> </ul>						
0.193 73 Brush, Good, HSG D 0.308 94 Fallow, bare soil, HSG D 1.894 86 Farmsteads, HSG D 0.488 93 Paved roads w/open ditches, 50% imp, HSG D 0.878 84 Vineyard, Fair, HSG D 5.254 77 Woods, Good, HSG D	, HSG D					
0.308 94 Fallow, bare soil, HSG D 1.894 86 Farmsteads, HSG D 0.488 93 Paved roads w/open ditches, 50% imp, HSG D 0.878 84 Vineyard, Fair, HSG D 5.254 77 Woods, Good, HSG D	Annual Grass, Good, HSG D					
1.894 86 Farmsteads, HSG D 0.488 93 Paved roads w/open ditches, 50% imp, HSG D 0.878 84 Vineyard, Fair, HSG D 5.254 77 Woods, Good, HSG D						
0.488 93 Paved roads w/open ditches, 50% imp, HSG D 0.878 84 Vineyard, Fair, HSG D 5.254 77 Woods, Good, HSG D						
0.878 84 Vineyard, Fair, HSG D 5.254 77 Woods, Good, HSG D						
5.254 77 Woods, Good, HSG D						
0.439 79 Woods/grass comb., Good, HSG D						
10.997 81 Weighted Average						
	97.78% Pervious Area					
0.244 2.22% Impervious Area						
T						
Tc Length Slope Velocity Capacity Description						
(min) (feet) (ft/ft) (ft/sec) (cfs)						
9.4 52 0.1700 0.09 <b>Sheet Flow, Sheet</b>						
Woods: Dense underbrush n= 0.800 P2= 3.23"	.1.					
5.1 786 0.2600 2.55 Shallow Concentrated Flow, Shallow 1 - Woodland	JS					
Woodland Kv= 5.0 fps 0.5 213 0.1100 6.73 Shallow Concentrated Flow. Shallow 2 - Paved						
0.5 213 0.1100 6.73 Shallow Concentrated Flow, Shallow 2 - Paved Paved Kv= 20.3 fps						
2.3 193 0.0400 1.40 Shallow Concentrated Flow, Shallow 3 - Short Gra	166					
Short Grass Pasture Kv= 7.0 fps	133					
0.7 143 0.0200 3.51 7.02 <b>Trap/Vee/Rect Channel Flow, Ditch</b>						
Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'						
n= 0.035						
18.0 1,387 Total						

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18.0

1,387 Total

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# **Summary for Subcatchment WS-7: Subcat WS-7**

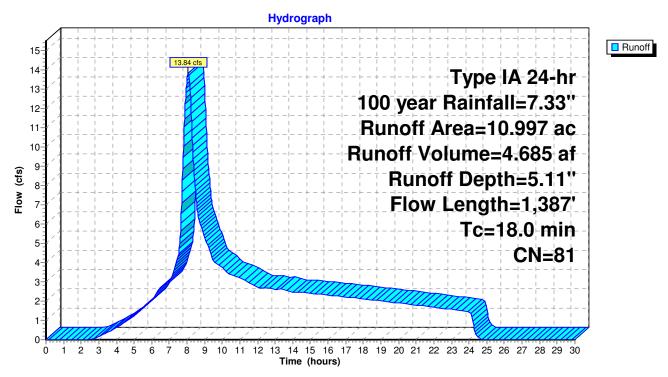
Runoff = 13.84 cfs @ 8.08 hrs, Volume= 4.685 af, Depth= 5.11"

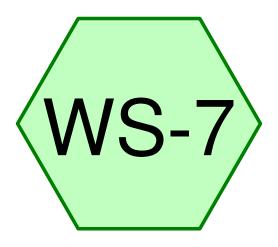
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area	(ac)	CN	Desc	ription						
*	0.	000	0	, HS	G D						
	1.	542	81	Annı	ial Grass,	Good, HSC	G D				
	0.	193	73	Brus	Brush, Good, HSG D						
	0.	308	94	Fallo	Fallow, bare soil, HSG D						
	1.	894	86	Farm	Farmsteads, HSG D						
	0.488 93			Pave	Paved roads w/open ditches, 50% imp, HSG D						
	0.878 84				Vineyard, Fair, HSG D						
	5.	254	77	Woo	ds, Good,	HSG D					
	0.	439	79	Woo	ds/grass d	omb., Goo	d, HSG D				
10.997 81 Weighted Average											
	10.	753		_	8% Pervio	•					
	0.244		2.229	% Impervi	ous Area						
					·						
	Tc	Length	1 5	Slope	Velocity	Capacity	Description				
	(min)	(feet	)	(ft/ft)	(ft/sec)	(cfs)					
	9.4	52	2 0.	1700	0.09		Sheet Flow, Sheet				
							Woods: Dense underbrush n= 0.800 P2= 3.23"				
	5.1	786	0.	2600	2.55		Shallow Concentrated Flow, Shallow 1 - Woodlands				
							Woodland Kv= 5.0 fps				
	0.5	213	0.	1100	6.73		Shallow Concentrated Flow, Shallow 2 - Paved				
							Paved Kv= 20.3 fps				
	2.3	193	3 0.	0400	1.40		Shallow Concentrated Flow, Shallow 3 - Short Grass				
							Short Grass Pasture Kv= 7.0 fps				
	0.7	143	3 0.	0200	3.51	7.02	Trap/Vee/Rect Channel Flow, Ditch				
							Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'				
_							n= 0.035				

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# Subcat WS-7









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## **Summary for Subcatchment WS-7: Subcat WS-7**

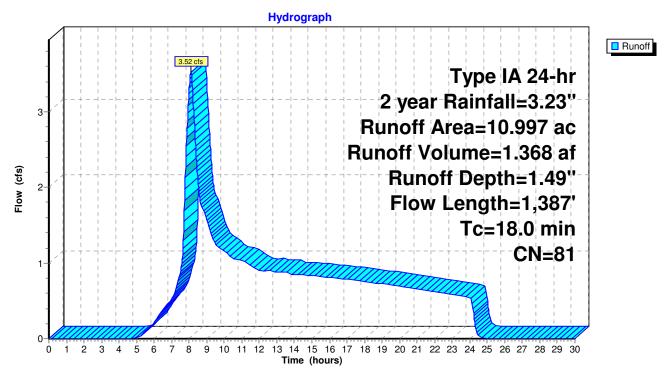
Runoff = 3.52 cfs @ 8.10 hrs, Volume= 1.368 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac) (	CN	Desc	cription						
*	0.	000	0	, HS	G D						
	1.	1.539 81			Annual Grass, Good, HSG D						
	0.	193	73	Brus	Brush, Good, HSG D						
	0.	151	94	Fallo	w, bare so	il, HSG D					
		766	86		Farmsteads, HSG D						
	0.	488	93	Paved roads w/open ditches, 50% imp, HSG D							
		878	84		Vineyard, Fair, HSG D						
			81		yard, Goo						
	5.111 77				ds, Good,		1 1100 B				
0.439 79 Woods/grass comb., Good,							d, HSG D				
10.997 81 Weighted Average 10.753 97.78% Pervious Area											
	10.753			-							
	0.244			2.22	% Impervi	ous Area					
	Тс	Length	S	lope	Velocity	Capacity	Description				
	(min)	(feet)		(ft/ft)	(ft/sec)	(cfs)	Description				
	9.4	52		700	0.09	(010)	Sheet Flow, Sheet				
	0.4	02	0.1	700	0.00		Woods: Dense underbrush n= 0.800 P2= 3.23"				
	5.1	786	0.2	2600	2.55		Shallow Concentrated Flow, Shallow 1 - Woodlands				
			-				Woodland Kv= 5.0 fps				
	0.5	213	0.1	1100	6.73		Shallow Concentrated Flow, Shallow 2 - Paved				
							Paved Kv= 20.3 fps				
	2.3	193	0.0	)400	1.40		Shallow Concentrated Flow, Shallow 3 - Short Grass				
							Short Grass Pasture Kv= 7.0 fps				
	0.7	143	0.0	)200	3.51	7.02	,				
							Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'				
_							n= 0.035				
	18.0	1,387	To	tal							

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18.0

1,387 Total

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# **Summary for Subcatchment WS-7: Subcat WS-7**

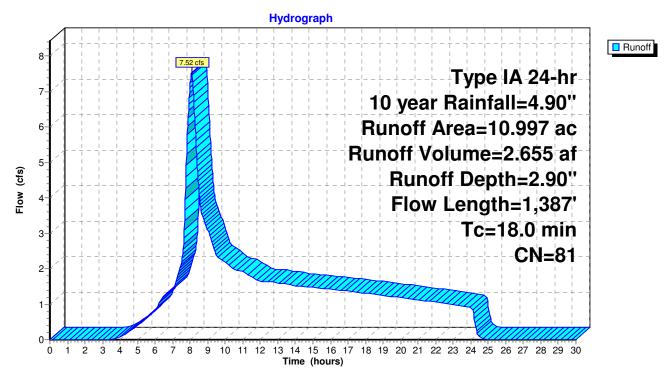
Runoff = 7.52 cfs @ 8.09 hrs, Volume= 2.655 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area	(ac) C	N Desc	cription					
*	0.	000	0 , HS	G D					
	1.	539	31 Annı	ual Grass,	Good, HS0	G D			
				Brush, Good, HSG D					
				Fallow, bare soil, HSG D					
				nsteads, H					
						nes, 50% imp, HSG D			
				yard, Fair,					
			31 Vine 77 Woo						
		111	1 1100 B						
					comb., Goo	d, HSG D			
	10.997 81 Weighted Average								
	10.753		-	8% Pervio					
	0.244		2.22	% Impervi	ous Area				
	Тс	Longth	Slope	Velocity	Capacity	Description			
	(min)	Length (feet)	Slope (ft/ft)	(ft/sec)	Capacity (cfs)	Description			
_	9.4	52	0.1700	0.09	(013)	Sheet Flow, Sheet			
	3.4	52	0.1700	0.09		Woods: Dense underbrush n= 0.800 P2= 3.23"			
	5.1	786	0.2600	2.55		Shallow Concentrated Flow, Shallow 1 - Woodlands			
	5.1	700	0.2000	2.00		Woodland Kv= 5.0 fps			
	0.5	213	0.1100	6.73		Shallow Concentrated Flow, Shallow 2 - Paved			
	0.0		011100	0.70		Paved Kv= 20.3 fps			
	2.3	193	0.0400	1.40		Shallow Concentrated Flow, Shallow 3 - Short Grass			
	_					Short Grass Pasture Kv= 7.0 fps			
	0.7	143	0.0200	3.51	7.02	· · · · · · · · · · · · · · · · · · ·			
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'			
						n= 0.035			
_									

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18.0

1,387 Total

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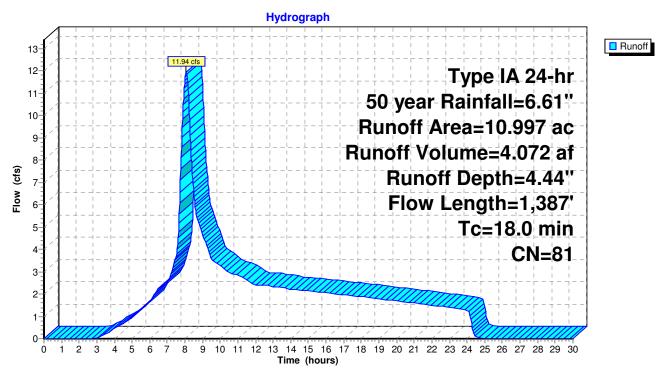
# **Summary for Subcatchment WS-7: Subcat WS-7**

Runoff = 11.94 cfs @ 8.08 hrs, Volume= 4.072 af, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

Area	(ac)	CN De	scription							
* 0	.000	0 , H	, HSG D							
1	.539	81 An	Annual Grass, Good, HSG D							
0	.193	73 Br	Brush, Good, HSG D							
0	.151		Fallow, bare soil, HSG D							
1	.766	86 Fa	6 Farmsteads, HSG D							
0.488 93 Paved roads w/open ditches, 50% imp, HSG D										
0.878 84 Vineyard, Fair, HSG D										
0.432 81 Vineyard, Good, HSG D										
	.111		ods, Good,							
0	.439	79 W	ods/grass (	comb., Goo	d, HSG D					
10	.997	81 W	eighted Ave	rage						
10	.753	97	78% Pervio	us Area						
0	.244	2.2	2% Impervi	ous Area						
_				_						
Tc	Length		•		Description					
(min)	(feet)			(cfs)						
9.4	52	0.170	0.09		Sheet Flow, Sheet					
					Woods: Dense underbrush n= 0.800 P2= 3.23"					
5.1	786	0.260	2.55		Shallow Concentrated Flow, Shallow 1 - Woodlands					
					Woodland Kv= 5.0 fps					
0.5	213	0.110	6.73		Shallow Concentrated Flow, Shallow 2 - Paved					
					Paved Kv= 20.3 fps					
2.3	193	0.040	1.40		Shallow Concentrated Flow, Shallow 3 - Short Grass					
		0.055		<b>-</b>	Short Grass Pasture Kv= 7.0 fps					
0.7	143	0.020	3.51	7.02	Trap/Vee/Rect Channel Flow, Ditch					
					Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'					
					n= 0.035					

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18.0

1,387 Total

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### **Summary for Subcatchment WS-7: Subcat WS-7**

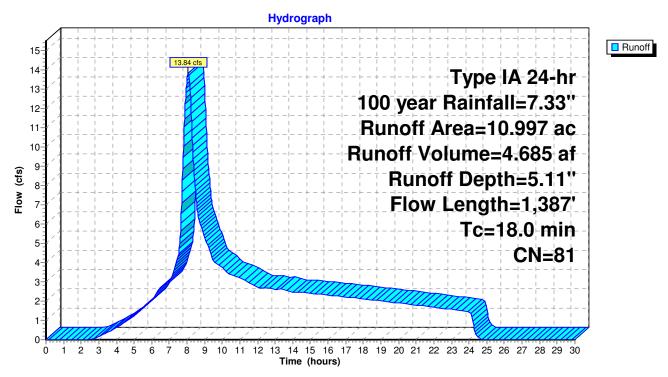
Runoff = 13.84 cfs @ 8.08 hrs, Volume= 4.685 af, Depth= 5.11"

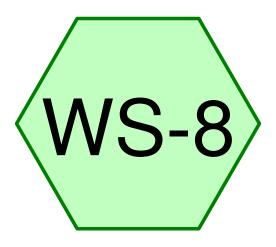
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area	(ac) C	N Desc	cription						
*	0.	0.000 0 , HSG D								
	1.	539 8	31 Annı							
	0.	193	73 Brus							
0.151 94 Fallow, bare soil, HSG D 1.766 86 Farmsteads, HSG D										
	1.									
0.488 93 Paved roads w/open ditches, 50%						nes, 50% imp, HSG D				
				yard, Fair,						
				yard, Goo						
				ds, Good,						
				_	comb., Goo	d, HSG D				
				ghted Ave						
		753	•	8% Pervio						
	0.	244	2.22	% Impervi	ous Area					
	Тс	Longth	Slope	Volocity	Canacity	Description				
	(min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
_		(1001)								
		<u> </u>			(0.0)	Chaot Flow Chaot				
	9.4	52	0.1700	0.09	(0.0)	Sheet Flow, Sheet Woods: Dongs underbrush n 0 900 P2 2 22"				
			0.1700	0.09	(6.6)	Woods: Dense underbrush n= 0.800 P2= 3.23"				
	5.1	52 786			(0.0)	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1 - Woodlands				
	5.1	786	0.1700 0.2600	0.09 2.55	(6.6)	Woods: Dense underbrush n= 0.800 P2= 3.23" <b>Shallow Concentrated Flow, Shallow 1 - Woodlands</b> Woodland Kv= 5.0 fps				
			0.1700	0.09	(0.0)	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1 - Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Paved				
	5.1 0.5	786 213	0.1700 0.2600 0.1100	0.09 2.55 6.73	(6.6)	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1 - Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Paved  Paved Kv= 20.3 fps				
	5.1	786	0.1700 0.2600	0.09 2.55	(6.6)	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1 - Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Paved  Paved Kv= 20.3 fps  Shallow Concentrated Flow, Shallow 3 - Short Grass				
	5.1 0.5	786 213	0.1700 0.2600 0.1100	0.09 2.55 6.73	7.02	Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1 - Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Paved  Paved Kv= 20.3 fps  Shallow Concentrated Flow, Shallow 3 - Short Grass  Short Grass Pasture Kv= 7.0 fps				
	5.1 0.5 2.3	786 213 193	0.1700 0.2600 0.1100 0.0400	0.09 2.55 6.73 1.40		Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1 - Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Paved  Paved Kv= 20.3 fps  Shallow Concentrated Flow, Shallow 3 - Short Grass  Short Grass Pasture Kv= 7.0 fps				
	5.1 0.5 2.3	786 213 193	0.1700 0.2600 0.1100 0.0400	0.09 2.55 6.73 1.40		Woods: Dense underbrush n= 0.800 P2= 3.23"  Shallow Concentrated Flow, Shallow 1 - Woodlands  Woodland Kv= 5.0 fps  Shallow Concentrated Flow, Shallow 2 - Paved  Paved Kv= 20.3 fps  Shallow Concentrated Flow, Shallow 3 - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Ditch				

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# Subcat WS-8









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## **Summary for Subcatchment WS-8: Subcat WS-8**

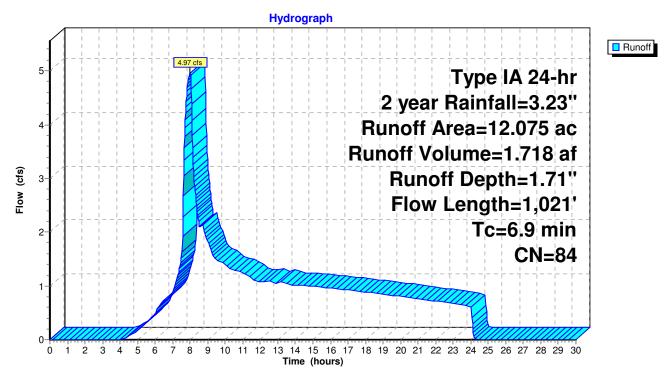
Runoff = 4.97 cfs @ 7.98 hrs, Volume= 1.718 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

	Area	(ac) C	N Des	cription		
*		000		G D		
			•		Good, HSC	a D
				nsteads, H	,	, <u>-</u>
	0.410 91 Gravel Roads, HSG D					
	10.120 84 Vineyard, Fair, HSG D					
	0.809 77 Woods, Good, HSG D					
_				ghted Ave		
		075 075		.00% Pervi	•	
		0.0				
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	1.8	100	0.1600	0.95	,	Sheet Flow, Sheet
			01.000	0.00		Fallow n= 0.050 P2= 3.23"
	0.5	122	0.1700	4.12		Shallow Concentrated Flow, Shallow 1 - Nearly Bare & Untilled
						Nearly Bare & Untilled Kv= 10.0 fps
	2.3	450	0.2100	3.21		Shallow Concentrated Flow, Shallow 2 - Short Grass
						Short Grass Pasture Kv= 7.0 fps
	2.3	349	0.0100	2.48	4.97	Trap/Vee/Rect Channel Flow, Ditch
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
	6.9	1,021	Total			

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6.9

1,021 Total

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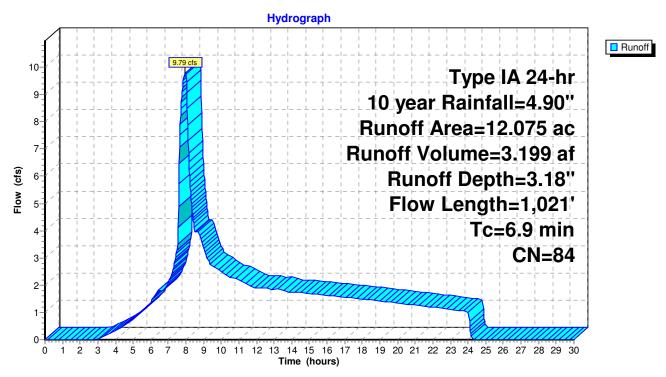
## **Summary for Subcatchment WS-8: Subcat WS-8**

Runoff = 9.79 cfs @ 7.95 hrs, Volume= 3.199 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

	Area	(ac) C	N Des	cription		
*	0.	000	0 , HS	G D		
	0.385 81 Annual Grass, Good, HSG					G D
	0.350 86 Farmsteads, HSG D					
	0.	410	1 Grav	el Roads,	HSG D	
10.120 84 Vineyard, Fair, HSG D						
	0.	809	77 Woo	ds, Good,	HSG D	
	12.	075 8	34 Wei	ghted Aver	age	·
	12.	075	100.	00% Pervi	ous Area	
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	1.8	100	0.1600	0.95		Sheet Flow, Sheet
						Fallow n= 0.050 P2= 3.23"
	0.5	122	0.1700	4.12		Shallow Concentrated Flow, Shallow 1 - Nearly Bare & Untille
						Nearly Bare & Untilled Kv= 10.0 fps
	2.3	450	0.2100	3.21		Shallow Concentrated Flow, Shallow 2 - Short Grass
						Short Grass Pasture Kv= 7.0 fps
	2.3	349	0.0100	2.48	4.97	Trap/Vee/Rect Channel Flow, Ditch
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
						n= 0.035

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6.9

1,021 Total

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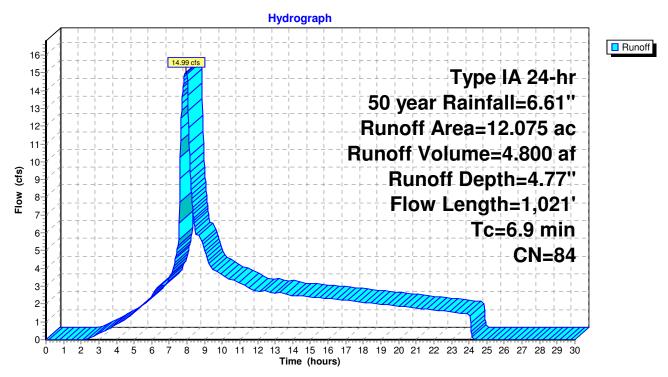
# **Summary for Subcatchment WS-8: Subcat WS-8**

Runoff = 14.99 cfs @ 7.93 hrs, Volume= 4.800 af, Depth= 4.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

	Area	(ac) C	N Des	cription		
*		·				
		000	0 , HS		0 1 1100	
					Good, HSC	á D
	0.			nsteads, H		
	0.	410	91 Grav	el Roads,	HSG D	
	10.	120 8	34 Vine	yard, Fair,	HSG D	
	0.	809	77 Woo	ds, Good,	HSG D	
12.075 84 Weighted Average						
	12.	075	100.	00% Pervi	ous Area	
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	'
	1.8	100	0.1600	0.95	, ,	Sheet Flow, Sheet
						Fallow n= 0.050 P2= 3.23"
	0.5	122	0.1700	4.12		Shallow Concentrated Flow, Shallow 1 - Nearly Bare & Untilled
						Nearly Bare & Untilled Kv= 10.0 fps
	2.3	450	0.2100	3.21		Shallow Concentrated Flow, Shallow 2 - Short Grass
		100	0.2100	0.21		Short Grass Pasture Kv= 7.0 fps
	2.3	3/10	0.0100	2.48	4.97	Trap/Vee/Rect Channel Flow, Ditch
	۷.5	J <del>1</del> 3	0.0100	2.40	4.37	
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
_						n= 0.035

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## **Pre-Project WS8**

6.9

1,021 Total

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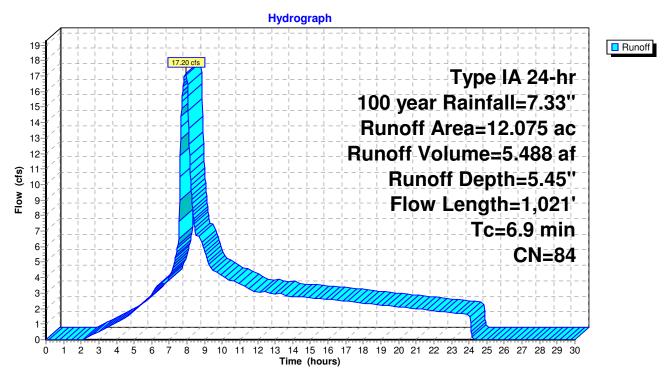
## **Summary for Subcatchment WS-8: Subcat WS-8**

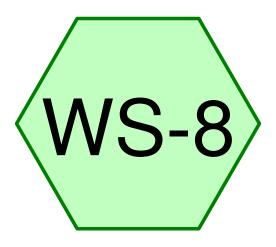
Runoff = 17.20 cfs @ 7.93 hrs, Volume= 5.488 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area (	(ac) C	N Desc	cription		
*		000	0 , HS			
	_		,		Good, HSC	J D
				nsteads, H	•	
				el Roads,		
	10.120 84 Vineyard, Fair, HSG D					
				ds, Good,		
				ghted Avei		
		075	,	00% Pervi	0	
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	<u> </u>
	1.8	100	0.1600	0.95		Sheet Flow, Sheet
						Fallow n= 0.050 P2= 3.23"
	0.5	122	0.1700	4.12		Shallow Concentrated Flow, Shallow 1 - Nearly Bare & Untilled
						Nearly Bare & Untilled Kv= 10.0 fps
	2.3	450	0.2100	3.21		Shallow Concentrated Flow, Shallow 2 - Short Grass
						Short Grass Pasture Kv= 7.0 fps
	2.3	349	0.0100	2.48	4.97	Trap/Vee/Rect Channel Flow, Ditch
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
_						n= 0.035

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# Subcat WS-8









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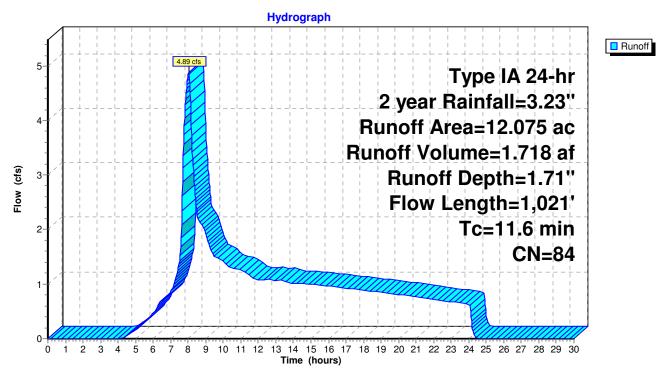
# **Summary for Subcatchment WS-8: Subcat WS-8**

Runoff = 4.89 cfs @ 8.03 hrs, Volume= 1.718 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 2 year Rainfall=3.23"

Area	(ac)	ON Des	cription					
0.385 81 Annual Grass, Good, HSG					G D			
0.017 86 Farmsteads, HSG D								
0	.410		Gravel Roads, HSG D					
10	.120		Vineyard, Fair, HSG D					
0			eyard, Goo					
0	.809		ods, Good,					
12	.075	84 We	ighted Ave	rage				
	.075		100.00% Pervious Area					
Tc	Length	Slope	Velocity	Capacity	Description			
(min)	(feet)	•	(ft/sec)	(cfs)				
6.2	100			( )	Sheet Flow, Sheet			
0.2	100	0.1000	0.27					
3.1	572	0 1900	3.05					
0.1	0,2	0.1000	0.00		· · · · · · · · · · · · · · · · · · ·			
23	349	0.0100	2 48	4 97				
2.0	0.10	0.0100	2.40	7.07	•			
					· • • • • • • • • • • • • • • • • • • •			
3.1 2.3	572 349			4.97	Grass: Dense n= 0.240 P2= 3.23"  Shallow Concentrated Flow, Shallow - Short Grass  Short Grass Pasture Kv= 7.0 fps  Trap/Vee/Rect Channel Flow, Ditch  Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.035			

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## **Summary for Subcatchment WS-8: Subcat WS-8**

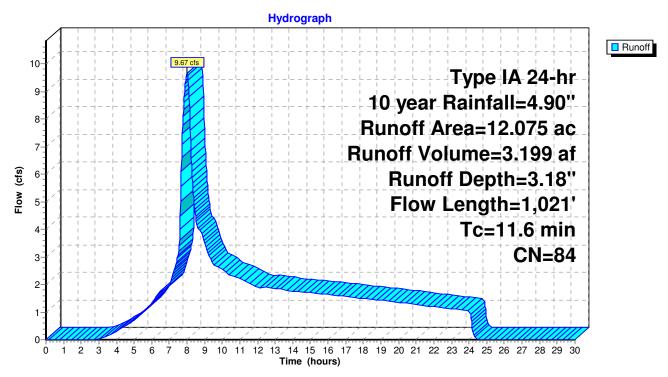
Runoff = 9.67 cfs @ 8.01 hrs, Volume= 3.199 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 10 year Rainfall=4.90"

Area	(ac) C	N Des	cription		
0.385 81 Annual Grass, Good, HSG					G D
0.	.017	36 Farn	nsteads, H	SG D	
0.	.410	91 Grav	el Roads,	HSG D	
10.	.120	34 Vine	yard, Fair,	HSG D	
0.	.333	31 Vine	yard, Goo	d, HSG D	
0.	.809	77 Woo	ds, Good,	HSG D	
12.	.075	34 Wei	ghted Aver	age	
12.	.075		00% Pervi		
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	•
6.2	100	0.1600	0.27	,	Sheet Flow, Sheet
					Grass: Dense n= 0.240 P2= 3.23"
3.1	572	0.1900	3.05		Shallow Concentrated Flow, Shallow - Short Grass
	• • •				Short Grass Pasture Kv= 7.0 fps
2.3	349	0.0100	2.48	4.97	Trap/Vee/Rect Channel Flow, Ditch
					Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
					n= 0.035

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## **Summary for Subcatchment WS-8: Subcat WS-8**

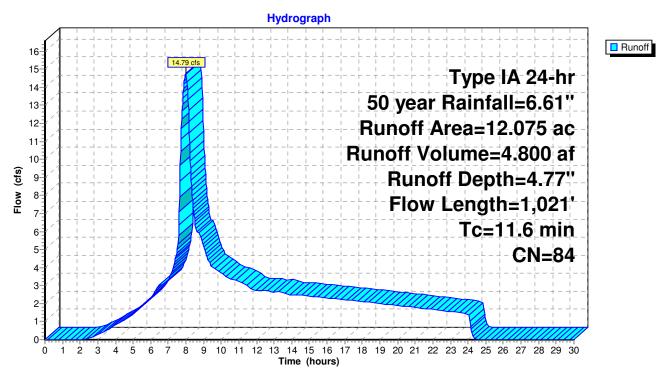
Runoff = 14.79 cfs @ 8.00 hrs, Volume= 4.800 af, Depth= 4.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 50 year Rainfall=6.61"

	Area	(ac) (	ON De	escription		
0.385 81 Annual Grass, Good, HSG						G D
	0.	017	86 Fa	rmsteads, F	HSG D	
	0.	410	91 Gr	avel Roads	, HSG D	
	10.	120	84 Vii	neyard, Fair	, HSG D	
	0.	333	81 Vii	neyard, God	d, HSG D	
	0.	809	77 W	oods, Good	, HSG D	
	12.	075	84 W	eighted Ave	rage	
	12.	075		0.00% Perv		
	Tc	Length	Slop	e Velocity	Capacity	Description
	(min)	(feet)			(cfs)	·
	6.2	100	0.160	0 0.27	,	Sheet Flow, Sheet
						Grass: Dense n= 0.240 P2= 3.23"
	3.1	572	0.190	0 3.05		Shallow Concentrated Flow, Shallow - Short Grass
	_					Short Grass Pasture Kv= 7.0 fps
	2.3	349	0.010	0 2.48	4.97	• • • • • • • • • • • • • • • • • • •
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
		4 004	<del>-</del>			

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## **Post-Project WS8**

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# **Summary for Subcatchment WS-8: Subcat WS-8**

Runoff = 16.97 cfs @ 8.00 hrs, Volume= 5.488 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs Type IA 24-hr 100 year Rainfall=7.33"

	Area	(ac) (	ON De	escription		
0.385 81 Annual Grass, Good, HSG						G D
	0.	017	86 Fa	rmsteads, F	HSG D	
	0.	410	91 Gr	avel Roads	, HSG D	
	10.	120	84 Vii	neyard, Fair	, HSG D	
	0.	333	81 Vii	neyard, God	d, HSG D	
	0.	809	77 W	oods, Good	, HSG D	
	12.	075	84 W	eighted Ave	rage	
	12.	075		0.00% Perv		
	Tc	Length	Slop	e Velocity	Capacity	Description
	(min)	(feet)			(cfs)	·
	6.2	100	0.160	0 0.27	,	Sheet Flow, Sheet
						Grass: Dense n= 0.240 P2= 3.23"
	3.1	572	0.190	0 3.05		Shallow Concentrated Flow, Shallow - Short Grass
	_					Short Grass Pasture Kv= 7.0 fps
	2.3	349	0.010	0 2.48	4.97	• • • • • • • • • • • • • • • • • • •
						Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00'
						n= 0.035
		4 004	<del>-</del>			

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