

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 6600 NJ Atlantic-C Rainfall events imported from "NRCS-Rain.txt" for 7614 PA Chester-C Rainfall events imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C Rainfall events imported from "20240207_PartridgeFarmRd_HCAD_175SF RG.hcp"

Site 4_20240629

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Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year _Current	NOAA 24-hr	С	Default	24.00	1	3.34	2
2	2-Year _2100	NOAA 24-hr	С	Default	24.00	1	3.97	2
3	10-Year _Current	NOAA 24-hr	С	Default	24.00	1	5.16	2
4	10-Year _2100	NOAA 24-hr	С	Default	24.00	1	6.21	2
5	100-Year _Current	NOAA 24-hr	С	Default	24.00	1	8.95	2
6	100-Year _2100	NOAA 24-hr	С	Default	24.00	1	12.15	2

Rainfall Events Listing

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Area Listing (all nodes)

Area	CN	Description
(sq-ft)		(subcatchment-numbers)
58,960	79	50-75% Grass cover, Fair, HSG C (4S)
6,320	84	50-75% Grass cover, Fair, HSG D (4S)
13	86	<50% Grass cover, Poor, HSG C (4S)
1,980,617	74	>75% Grass cover, Good, HSG C (1S, 1Sa, 2S, 3S, 4S)
6,758	80	>75% Grass cover, Good, HSG D (4S)
423,399	65	Brush, Good, HSG C (1S, 1Sa, 2S, 3S, 4S)
25,533	73	Brush, Good, HSG D (3S, 4S)
647,837	98	Impervious (1S, 1Sa, 2S, 3S, 4S)
156,064	98	Impervious Drivways (other) (1Sc)
69,839	98	Roof - Building GIS Layer (1Sb)
90,808	73	Woods, Fair, HSG C (4S)
225,083	70	Woods, Good, HSG C (1S, 1Sa, 3S, 4S)
5,323	72	Woods/grass comb., Good, HSG C (4S)
3,696,554	78	TOTAL AREA

Soil Listing (all nodes)

Area	Soil	Subcatchment
(sq-ft)	Group	Numbers
0	HSG A	
0	HSG B	
2,784,203	HSG C	1S, 1Sa, 2S, 3S, 4S
38,611	HSG D	3S, 4S
873,740	Other	1S, 1Sa, 1Sb, 1Sc, 2S, 3S, 4S
3,696,554		TOTAL AREA

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Ground Covers (all nodes)											
HSG-A HSG-B HSG-C HSG-D Other Total Gr											
(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	Cover					
0	0	58,960	6,320	0	65,280	50-75% Grass					
						cover, Fair					
0	0	13	0	0	13	<50% Grass					
						cover, Poor					
0	0	1,980,617	6,758	0	1,987,375	>75% Grass					
						cover, Good					
0	0	423,399	25,533	0	448,932	Brush, Good					
0	0	0	0	647,837	647,837	Impervious					
0	0	0	0	156,064	156,064	Impervious					
						Drivways (other)					
0	0	0	0	69,839	69,839	Roof - Building					
						GIS Layer					
0	0	90,808	0	0	90,808	Woods, Fair					
0	0	225,083	0	0	225,083	Woods, Good					
0	0	5,323	0	0	5,323	Woods/grass					
						comb., Good					
0	0	2,784,203	38,611	873,740	3,696,554	TOTAL AREA					

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Pipe Listing (all nodes)

	Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
_			()	()	()	()		()	()	()
	1	1R	66.00	65.00	50.0	0.0200	0.013	0.0	48.0	0.0
	2	2R	62.00	60.50	75.0	0.0200	0.013	0.0	36.0	0.0
	3	1P	94.17	94.12	10.0	0.0050	0.020	0.0	6.0	0.0
	4	1P	94.33	94.17	32.0	0.0050	0.020	0.0	6.0	0.0

Site 4_20240629	NOAA 24-hr C 2-Year _Current Rainfall=3.34	4"
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Time span=0.00-150.00 hrs, dt=0.05 hrs, 3001 points Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: DA 1: All	Runoff Area=1,184,721 sf 30.92% Impervious Runoff Depth=1.74" Tc=25.2 min CN=74/98 Runoff=32.93 cfs 171,957 cf
Subcatchment1Sa: DA 1: CN w/ IC areas	Runoff Area=958,817 sf 14.64% Impervious Runoff Depth=1.42" Tc=25.2 min CN=74/98 Runoff=22.05 cfs 113,466 cf
Subcatchment1Sb: Roof	Runoff Area=69,839 sf 100.00% Impervious Runoff Depth=3.11" Tc=6.0 min CN=0/98 Runoff=5.49 cfs 18,082 cf
Subcatchment1Sc: Driveways (GIS -	Runoff Area=156,064 sf 100.00% Impervious Runoff Depth=3.11" Tc=6.0 min CN=0/98 Runoff=12.28 cfs 40,407 cf
Subcatchment2S: DA 2: CN w/ IC areas	Runoff Area=100,787 sf 8.36% Impervious Runoff Depth=1.30" Tc=15.5 min CN=74/98 Runoff=2.67 cfs 10,885 cf
Subcatchment 3S: DA 3: CN w/ IC areas Flo	Runoff Area=150,325 sf 10.26% Impervious Runoff Depth=1.28" w Length=329' Tc=17.3 min CN=73/98 Runoff=3.72 cfs 16,061 cf
Subcatchment4S: DA 4: CN w/ IC areas	Runoff Area=1,076,001 sf 10.91% Impervious Runoff Depth=1.15" Tc=24.2 min CN=70/98 Runoff=19.78 cfs 103,147 cf
	g. Flow Depth=0.74' Max Vel=9.46 fps Inflow=15.03 cfs 111,353 cf 0' S=0.0200 '/' Capacity=203.14 cfs Outflow=15.02 cfs 111,353 cf
	vg. Flow Depth=0.60' Max Vel=8.19 fps Inflow=8.18 cfs 102,920 cf '5.0' S=0.0200 '/' Capacity=94.33 cfs Outflow=8.18 cfs 102,920 cf
Pond 1P: Basic Rain Garden (w/ Primary=15.03 cfs 111,353 cf Secondary=	Peak Elev=96.77' Storage=15,633 cf Inflow=22.05 cfs 113,466 cf =0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=15.03 cfs 111,353 cf
Pond 2P: ROOF RG 750 SF Discarded=0.2	Peak Elev=99.53' Storage=8,878 cf Inflow=5.49 cfs 18,082 cf 24 cfs 18,082 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 18,082 cf
Pond 3P: Basic Porous Pavement Discarded=1.8	Peak Elev=99.46' Storage=11,399 cf Inflow=12.28 cfs 40,407 cf 81 cfs 40,407 cf Primary=0.00 cfs 0 cf Outflow=1.81 cfs 40,407 cf
Pond 4P: Municipal Property Basin 2100 Primary=8.18 cfs 102,920 cf Secondary	Peak Elev=66.23' Storage=43,551 cf Inflow=15.02 cfs 111,353 cf y=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=8.18 cfs 102,920 cf
Link 1L: Combined Flow	Inflow=15.03 cfs 111,353 cf Primary=15.03 cfs 111,353 cf
Link 2L: Offsite Flows	Inflow=25.26 cfs 130,093 cf Primary=25.26 cfs 130,093 cf

Total Runoff Area = 3,696,554 sf Runoff Volume = 474,006 cf Average Runoff Depth = 1.54" 76.36% Pervious = 2,822,814 sf 23.64% Impervious = 873,740 sf

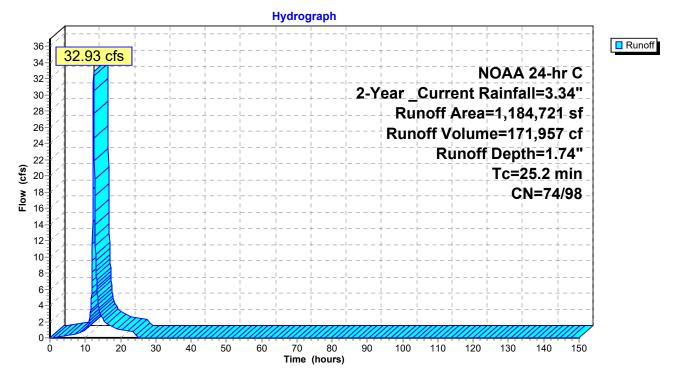
Summary for Subcatchment 1S: DA 1: All

Runoff = 32.93 cfs @ 12.36 hrs, Volume= 171,957 cf, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.00 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description				
*	366,258	98	Impervious				
	15,045	65	Brush, Good, HSG C				
	794,453	74	>75% Grass cover, Good, HSG C				
	8,965	70	Woods, Good, HSG C				
	1,184,721	81	Weighted Average				
818,463 74			69.08% Pervious Area				
	366,258	98	30.92% Impervious Area				
	Tc Length	Slop					
(min) (feet)	(ft/	/ft) (ft/sec) (cfs)				
	25.2		Direct Entry, Direct				

Subcatchment 1S: DA 1: All



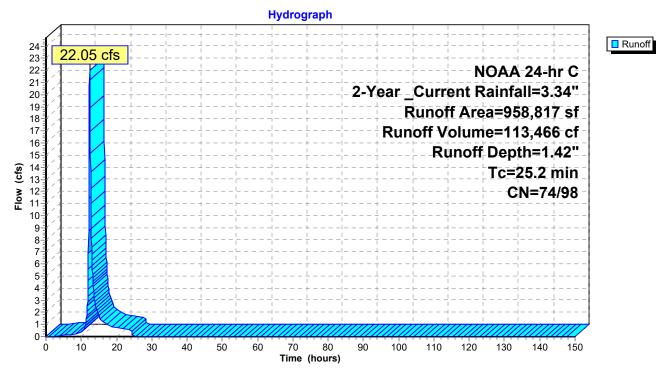
Summary for Subcatchment 1Sa: DA 1: CN w/ IC areas

Runoff = 22.05 cfs @ 12.37 hrs, Volume= 113,466 cf, Depth= 1.42" Routed to Pond 1P : Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	A	rea (sf)	CN	Description	l				
*	1	40,354	98	Impervious					
		15,045	65	Brush, Goo	d, HSG C				
	7	94,453	74	>75% Gras	s cover, Go	bod, HSG C			
		8,965	70	Woods, Go	od, HSG C				
	9	58,817	77	Weighted A	verage				
	8	18,463	74	85.36% Pervious Area					
	1	40,354	98	14.64% Impervious Area					
	_								
	Тс	Length	Slop		Capacity	Description			
(n	nin)	(feet)	(ft/f	t) (ft/sec)	(cfs)				
2	5.2					Direct Entry, Direct			

Subcatchment 1Sa: DA 1: CN w/ IC areas

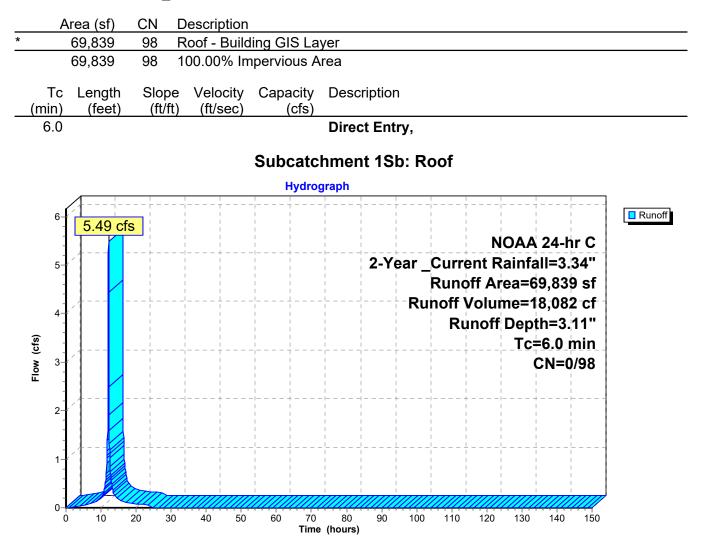


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Summary for Subcatchment 1Sb: Roof

Runoff = 5.49 cfs @ 12.13 hrs, Volume= 18,082 cf, Depth= 3.11" Routed to Pond 2P : ROOF RG 750 SF

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _Current Rainfall=3.34"



Summary for Subcatchment 1Sc: Driveways (GIS - other)

Runoff = 12.28 cfs @ 12.13 hrs, Volume= 40,407 cf, Depth= 3.11" Routed to Pond 3P : Basic Porous Pavement (infiltration only)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

А	rea (sf)		Description										
1	56,064	98 li	mpervious	Drivways (other)								
1	56,064	98 1	00.00% In	npervious A	rea								
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Descr	iption	l						
6.0					Direc	t Enti	۳ y ,						
			Subcatc	hment 15	Sc: Dri	vew	avs	(GIS	- otł	ner)			
				Hydro				•		,			
ſ		+	 		 + -	+						 +	Runoff
13	12.28 cfs	S								 			
12											24-ľ		
11						2-Ye		Curr					
10								unof					
9		+ 				+	Ru	noff					
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Flow (cfs)	, 	 	 	 	$\frac{1}{1}$ $\frac{1}{1}$ $\frac{1}{1}$	+ 1					CN=0)/98 -	
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2	, -	+	, , +			+				- 	 	, , ,	
1-1													
0	10 2	20 30	40 50	60 70 Time	80 (hours)	90	100	110	120	130	140	150	

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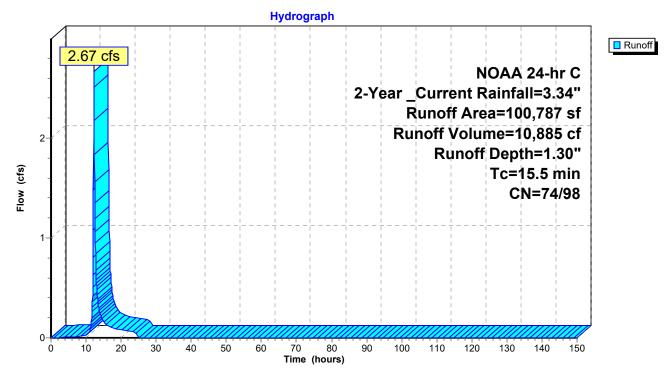
Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 2.67 cfs @ 12.25 hrs, Volume= 10,885 cf, Depth= 1.30" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description		
*	8,425	98	Impervious		
	86	65	Brush, Goo	d, HSG C	
	92,276	74	>75% Gras	s cover, Go	bod, HSG C
	100,787	76 Weighted Average			
	92,362	74 91.64% Pervious Area			3
	8,425	98	8.36% Impe	ervious Area	a
T (mir	c Length n) (feet)	Slop (ft/f	,	Capacity (cfs)	Description
15.	5				Direct Entry, Direct

Subcatchment 2S: DA 2: CN w/ IC areas



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Summary for Subcatchment 3S: DA 3: CN w/ IC areas

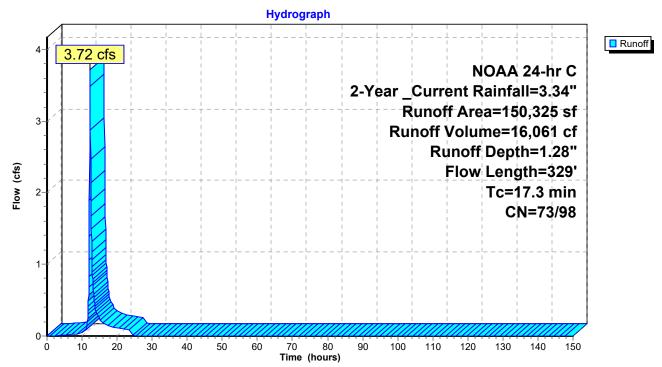
Runoff = 3.72 cfs @ 12.27 hrs, Volume= 16,061 cf, Depth= 1.28" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	A	rea (sf)	CN I	Description		
*		15,427	98	mpervious		
		17,213	65 I	Brush, Goo	d, HSG C	
		11,427	73 I	Brush, Goo	d, HSG D	
		99,487	74 >	>75% Gras	s cover, Go	bod, HSG C
_		6,771	70	<u>Woods, Go</u>	od, HSG C	
	150,325 75 Weighted Average				verage	
	1	34,898	73 8	39.74% Pei	rvious Area	
		15,427	98 ⁻	10.26% Imp	pervious Are	ea
	_					
	Tc	Length	Slope		Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	12.5	100	0.0103	0.13		Sheet Flow, Sheetflow
						Grass: Short n= 0.150 P2= 3.34"
	4.8	229	0.0129	0.80		Shallow Concentrated Flow, SCF - Grass
_						Short Grass Pasture Kv= 7.0 fps
	47.0	200	Tatal			

17.3 329 Total

Subcatchment 3S: DA 3: CN w/ IC areas



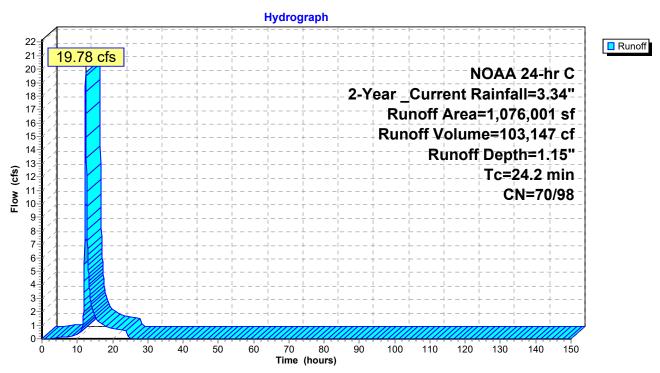
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Summary for Subcatchment 4S: DA 4: CN w/ IC areas

Runoff = 19.78 cfs @ 12.37 hrs, Volume= 103,147 cf, Depth= 1.15" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

A	rea (sf)	CN	Description			
* 1	17,373	98	Impervious			
3	876,010	65	Brush, Good, HSG C			
	14,106	73	Brush, Good, HSG D			
	58,960	79	50-75% Grass cover, Fair, HSG C			
	6,320	84	50-75% Grass cover, Fair, HSG D			
1	99,948	74	>75% Grass cover, Good, HSG C			
	6,758	80	>75% Grass cover, Good, HSG D			
	13	86	<50% Grass cover, Poor, HSG C			
	5,323	72	Woods/grass comb., Good, HSG C			
	90,808	73	Woods, Fair, HSG C			
2	200,382	70	Woods, Good, HSG C			
1,0	076,001	73	Weighted Average			
ç	958,628	70	89.09% Pervious Area			
1	17,373	98	10.91% Impervious Area			
Тс	Length	Slop	Slope Velocity Capacity Description			
(min)	(feet)	(ft/1				
24.2			Direct Entry, Direct			



Subcatchment 4S: DA 4: CN w/ IC areas

Summary for Reach 1R: INLET PIPE

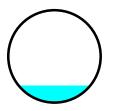
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 1.13" for 2-Year _Current event Inflow = 15.03 cfs @ 12.61 hrs, Volume= 111,353 cf Outflow = 15.02 cfs @ 12.61 hrs, Volume= 111,353 cf, Atten= 0%, Lag= 0.2 min Routed to Pond 4P : Municipal Property Basin 2100

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 9.46 fps, Min. Travel Time= 0.1 min Avg. Velocity = 3.67 fps, Avg. Travel Time= 0.2 min

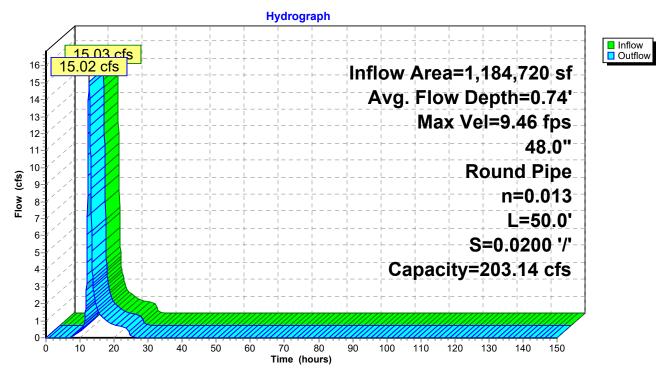
Peak Storage= 79 cf @ 12.61 hrs Average Depth at Peak Storage= 0.74', Surface Width= 3.10' Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 203.14 cfs

48.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 50.0' Slope= 0.0200 '/' Inlet Invert= 66.00', Outlet Invert= 65.00'



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Reach 1R: INLET PIPE



Summary for Reach 2R: OUTFLOW PIPE

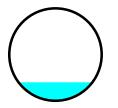
[52] Hint: Inlet/Outlet conditions not evaluated

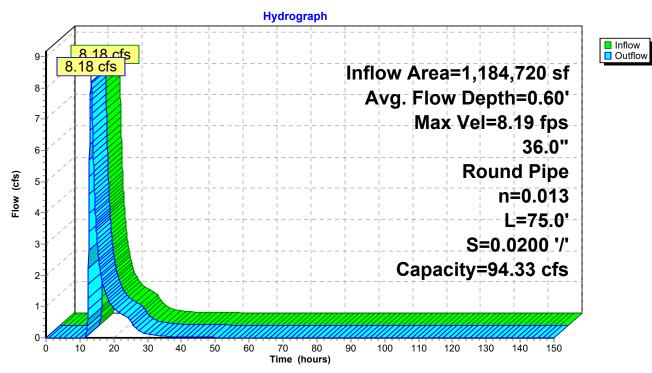
Inflow Are	a =	1,184,720 sf, 30.92% Impervious, Inflow Depth = 1.04" for 2-Year _Current event
Inflow	=	8.18 cfs @ 13.30 hrs, Volume= 102,920 cf
Outflow	=	8.18 cfs @ 13.30 hrs, Volume= 102,920 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Max. Velocity= 8.19 fps, Min. Travel Time= 0.2 min Avg. Velocity = 1.73 fps, Avg. Travel Time= 0.7 min

Peak Storage= 75 cf @ 13.30 hrs Average Depth at Peak Storage= 0.60', Surface Width= 2.40' Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 94.33 cfs

36.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 75.0' Slope= 0.0200 '/' Inlet Invert= 62.00', Outlet Invert= 60.50'





Reach 2R: OUTFLOW PIPE

Summary for Pond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Inflow Area =	958,817 sf, 14.64% Impervious,	Inflow Depth = 1.42" for 2-Year _Current event
Inflow =	22.05 cfs @ 12.37 hrs, Volume=	113,466 cf
Outflow =	15.03 cfs @ 12.61 hrs, Volume=	111,353 cf, Atten= 32%, Lag= 14.2 min
Primary =	15.03 cfs @ 12.61 hrs, Volume=	111,353 cf
Routed to Link	< 1L : Combined Flow	
Secondary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf
Routed to Link	< 1L : Combined Flow	
Tertiary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf
Routed to Link	< 1L : Combined Flow	

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 3 Peak Elev= 96.77' @ 12.61 hrs Surf.Area= 9,099 sf Storage= 15,633 cf

Plug-Flow detention time= 32.6 min calculated for 111,316 cf (98% of inflow) Center-of-Mass det. time= 21.6 min (868.3 - 846.7)

Volume	Invert	Avail.Storage	Storage Description
#1	97.75'	497 cf	Custom Stage Data (Conic)Listed below (Recalc)
#2A	93.75'	689 cf	15.75'W x 32.10'L x 4.50'H Field A
			2,275 cf Overall - 551 cf Embedded = 1,724 cf x 40.0% Voids
#3A	95.25'	551 cf	ADS_StormTech SC-740 +Cap x 12 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			12 Chambers in 3 Rows
		1 737 cf	x 18 00 - 31 271 cf. Total Available Storage

1,737 cf x 18.00 = 31,271 cf Total Available Storage

Storage Group A created with Chamber Wizard

0.900
a= 0.20 sf
e= 0.500
0.900
a= 0.20 sf
Veir X 18.00
1.80 2.00
2.89 2.88
a= ∋=). a= V

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#4 Tertiary 100.50' **6.0' long Sharp-Crested Rectangular Weir X 18.00** 2 End Contraction(s)

Primary OutFlow Max=15.02 cfs @ 12.61 hrs HW=96.77' (Free Discharge) 1=Culvert (Passes 15.02 cfs of 22.66 cfs potential flow) 2=6" HDPE Underdrain (Barrel Controls 15.02 cfs @ 4.25 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.75' (Free Discharge) —3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.75' (Free Discharge) **4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs) Site 4_20240629NOAA 24-hr C 2-Year _Current Rainfall=3.34"Prepared by Rutgers Cooperative Extension Water Resources ProgramPrinted 6/29/2024HydroCAD® 10.10-7c s/n 03601 © 2022 HydroCAD Software Solutions LLCPage 22

ond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration) - Chamber Wizard Fi

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech® SC-740 with cap length) Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

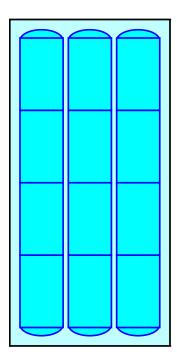
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length 3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width 18.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.50' Field Height

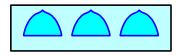
12 Chambers x 45.9 cf = 551.3 cf Chamber Storage

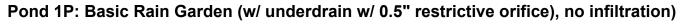
2,274.9 cf Field - 551.3 cf Chambers = 1,723.6 cf Stone x 40.0% Voids = 689.4 cf Stone Storage

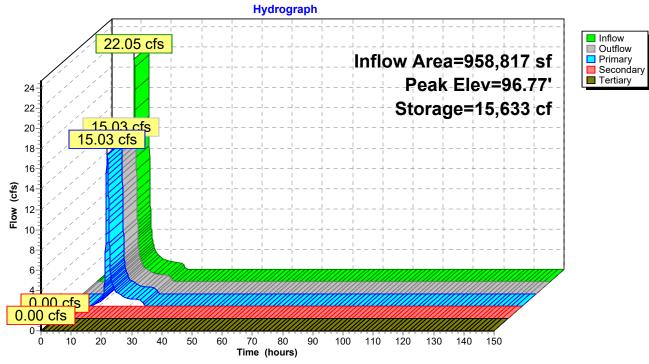
Chamber Storage + Stone Storage = 1,240.7 cf = 0.028 af Overall Storage Efficiency = 54.5%Overall System Size = $32.10' \times 15.75' \times 4.50'$

12 Chambers 84.3 cy Field 63.8 cy Stone









Summary for Pond 2P: ROOF RG 750 SF

Assumes infiltration through media is non-limiting.

Inflow Area =	69,839 sf,100.00% Impervious,	Inflow Depth = 3.11" for 2-Year Current event					
Inflow =	5.49 cfs @ 12.13 hrs, Volume=	18,082 cf					
Outflow =	0.24 cfs @ 14.06 hrs, Volume=	18,082 cf, Atten= 96%, Lag= 115.7 min					
Discarded =	0.24 cfs @ 14.06 hrs, Volume=	18,082 cf					
Primary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf					
Routed to Link 1L : Combined Flow							

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 99.53' @ 14.06 hrs Surf.Area= 20,575 sf Storage= 8,878 cf

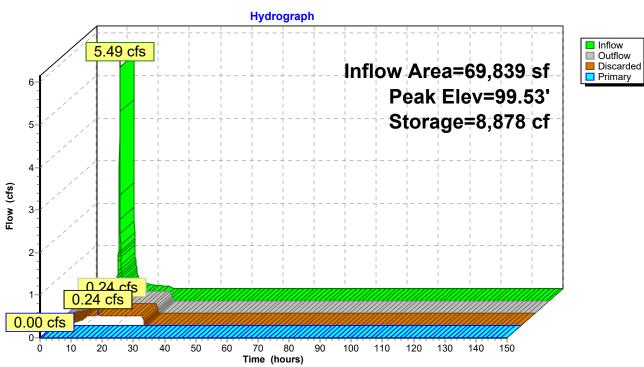
Plug-Flow detention time= 317.5 min calculated for 18,082 cf (100% of inflow) Center-of-Mass det. time= 317.4 min (1,074.1 - 756.6)

Invert	Avai	.Storage	Storage Descrip	tion		
98.25'		735 cf	Custom Stage	Data (Conic)Listed	below (Recalc)	
		735 cf	x 37.00 = 27,2	09 cf Total Availat	ble Storage	
Su	(sq-ft) 546	Voids (%) 0.0	Inc.Store (cubic-feet) 0	Cum.Store (cubic-feet) 0	Wet.Area (sq-ft) 546	
					629 650	
	546 750 750	25.0 100.0 100.0	34 323 188	225 548 735	650 858 883	
Q		-				
minary	100.	Hea 2.50 Coe	d (feet) 0.20 0.4 3.00 3.50 4.00 f. (English) 2.44	0 0.60 0.80 1.00 4.50 2.58 2.68 2.67 2	1.20 1.40 1.60 1.80 2.00	
	98.25'	98.25' Surf.Area (sq-ft) 546 546 546 750 750 Routing Inv Discarded 98	98.25' 735 cf 735 cf 735 cf Surf.Area Voids (sq-ft) (%) 546 0.0 546 35.0 546 25.0 750 100.0 750 100.0 Primary 100.00' 2.50 Coer	98.25' 735 cf Custom Stage 735 cf x 37.00 = 27,2 Surf.Area Voids Inc.Store (sq-ft) (%) (cubic-feet) 546 0.0 0 546 35.0 191 546 25.0 34 750 100.0 323 750 100.0 188 Routing Invert Outlet Devices Discarded 98.25' 0.500 in/hr Exfiltration Orimary 100.00' 2.0' long x 3.0' bread Head (feet) 0.20 0.4 2.50 3.00 3.50 4.00 Coef. (English) 2.44 0.20 0.4	98.25' 735 cf Custom Stage Data (Conic)Listed 735 cf x 37.00 = 27,209 cf Total Availal Surf.Area Voids Inc.Store Cum.Store (sq-ft) (%) (cubic-feet) (cubic-feet) 546 0.0 0 0 546 35.0 191 191 546 25.0 34 225 750 100.0 323 548 750 100.0 188 735 Routing Invert Outlet Devices 0.500 in/hr Exfiltration over Surface and surf	

Discarded OutFlow Max=0.24 cfs @ 14.06 hrs HW=99.53' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.25' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Site 4 20240629



Pond 2P: ROOF RG 750 SF

Summary for Pond 3P: Basic Porous Pavement (infiltration only)

156,064 sf,100.00% Impervious, Inflow Depth = 3.11" for 2-Year Current event Inflow Area = Inflow = 12.28 cfs @ 12.13 hrs, Volume= 40.407 cf 1.81 cfs @ 11.65 hrs, Volume= 40,407 cf, Atten= 85%, Lag= 0.0 min Outflow = 1.81 cfs @ 11.65 hrs, Volume= Discarded = 40.407 cf Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to Link 1L : Combined Flow

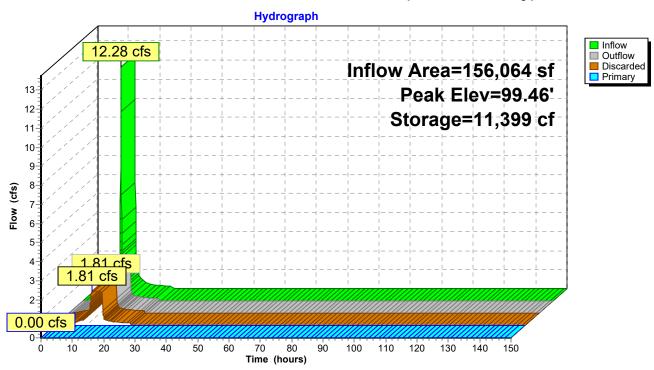
Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 99.46' @ 12.62 hrs Surf.Area= 156,064 sf Storage= 11,399 cf

Plug-Flow detention time= 38.4 min calculated for 40,394 cf (100% of inflow) Center-of-Mass det. time= 38.4 min (795.1 - 756.6)

Volume	Inve	ert Ava	il.Storage	Storage Descri	ption	
#1	99.2	5'	72,180 cf	Custom Stage	e Data (Prismatic)	Listed below (Recalc)
Elevatio (fee 99.2 99.7 99.8 100.0 100.2	et) 25 75 83 00	Surf.Area (sq-ft) 156,064 156,064 156,064 156,064 156,064	Voids (%) 0.0 35.0 15.0 15.0 100.0	Inc.Store (cubic-feet) 0 27,311 1,873 3,980 39,016	Cum.Store (cubic-feet) 0 27,311 29,184 33,164 72,180	
Device	Routing	In	vert Ou	tlet Devices		
#1 #2	Discardeo Primary		0.00' 15 . He 2.5 Co	0' long x 1.0' br ad (feet) 0.20 0.4 0 3.00	40 0.60 0.80 1.0	area rous Asphalt X 37.00 0 1.20 1.40 1.60 1.80 2.00 2.98 3.08 3.20 3.28 3.31

Discarded OutFlow Max=1.81 cfs @ 11.65 hrs HW=99.26' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 1.81 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=99.25' (Free Discharge) ←2=Edge of Porous Asphalt (Controls 0.00 cfs)



Pond 3P: Basic Porous Pavement (infiltration only)

Summary for Pond 4P: Municipal Property Basin 2100

[62] Hint: Exceeded Reach 1R OUTLET depth by 0.78' @ 13.60 hrs

Inflow Area =	1,184,720 sf, 30.92% Impervious,	Inflow Depth = 1.13" for 2-Year _Current event						
Inflow =	15.02 cfs @ 12.61 hrs, Volume=	111,353 cf						
Outflow =	8.18 cfs @ 13.30 hrs, Volume=	102,920 cf, Atten= 46%, Lag= 41.2 min						
Primary =	8.18 cfs @ 13.30 hrs, Volume=	102,920 cf						
Routed to Rea	ach 2R : OUTFLOW PIPE							
Secondary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf						
Routed to Reach 2R : OUTFLOW PIPE								
Tertiary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf						
Routed to Reach 2R : OUTFLOW PIPE								

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Peak Elev= 66.23' @ 13.30 hrs Surf.Area= 37,839 sf Storage= 43,551 cf

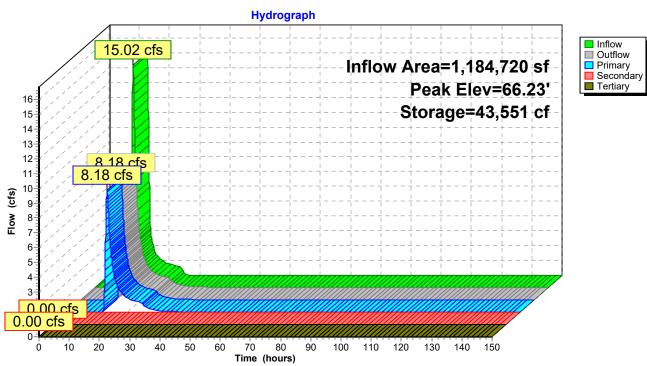
Plug-Flow detention time= 209.3 min calculated for 102,886 cf (92% of inflow) Center-of-Mass det. time= 170.4 min (1,038.9 - 868.6)

Volume	Invert	Avail.Stor	age Storage [Description	
#1	65.00'	213,10	05 cf Custom	Stage Data (Pri	i smatic) Listed below (Recalc)
Elevatio (fee 65.0 70.0	et) 00 3	f.Area (sq-ft) 33,242 52,000	Inc.Store (cubic-feet) 0 213,105	Cum.Store (cubic-feet) 0 213,105	
Device	Routing	Invert	Outlet Devices		
#1	Primary	65.25'		w Flow Orifice	X 2.00 C= 0.600
#2	Secondary	67.25'	24.0" W x 18.0		Orifice X 3.00 C= 0.600
#3	Tertiary	69.50'	48.0" x 48.0" l	Horiz. Orifice/G	rate C= 0.600

Primary OutFlow Max=8.18 cfs @ 13.30 hrs HW=66.23' (Free Discharge) —1=Low Flow Orifice (Orifice Controls 8.18 cfs @ 3.36 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=65.00' (Free Discharge) 2=2-YR Orifice (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=65.00' (Free Discharge) **-3=Orifice/Grate** (Controls 0.00 cfs)



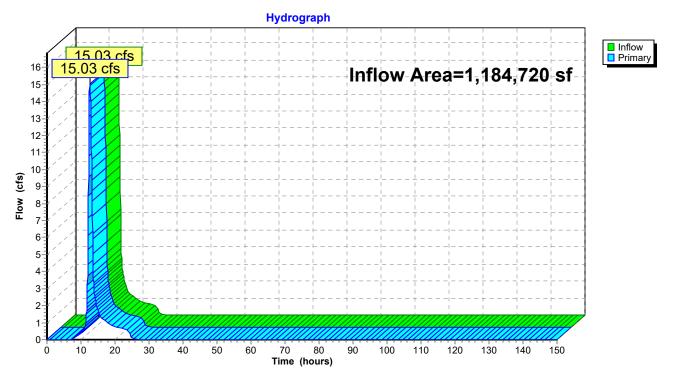
Pond 4P: Municipal Property Basin 2100

Site 4_20240629	NOAA 24-hr C 2-Year _Current Rainfall=3.34"	'
Prepared by Rutgers Cooperative Extension Wate	er Resources Program Printed 6/29/2024	
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Summary for Link 1L: Combined Flow

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 1.13" for 2-Year _Current event Inflow = 15.03 cfs @ 12.61 hrs, Volume= 111,353 cf Primary = 15.03 cfs @ 12.61 hrs, Volume= 111,353 cf, Atten= 0%, Lag= 0.0 min Routed to Reach 1R : INLET PIPE

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs



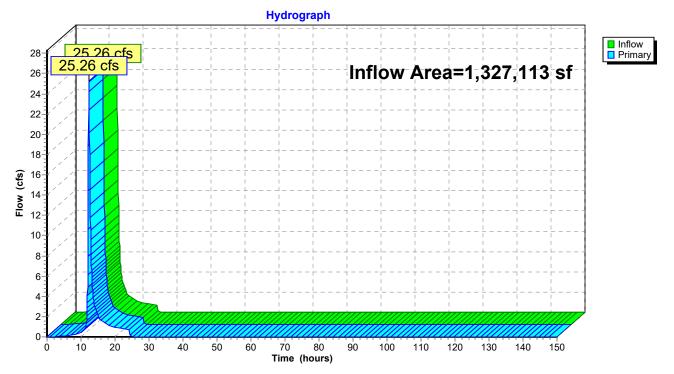
Link 1L: Combined Flow

Site 4_20240629	NOAA 24-hr C 2-Year _Current Rainfall=3.34"
Prepared by Rutgers Cooperative Extension Wate	er Resources Program Printed 6/29/2024
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Summary for Link 2L: Offsite Flows

Inflow Are	a =	1,327,113 sf, 10.64% Impervious, Inflow Depth = 1.18" for 2-Year _Current event
Inflow	=	25.26 cfs @ 12.34 hrs, Volume= 130,093 cf
Primary	=	25.26 cfs @ 12.34 hrs, Volume= 130,093 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs



Link 2L: Offsite Flows

Site 4_20240629	NOAA 24-hr C 2-Year_	2100 Rainfall=3.97"
Prepared by Rutgers Cooperative Extension Water	Resources Program	Printed 6/29/2024
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Time span=0.00-150.00 hrs, dt=0.05 hrs, 3001 points Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: DA 1: All	Runoff Area=1,184,721 sf 30.92% Impervious Runoff Depth=2.24" Tc=25.2 min CN=74/98 Runoff=42.90 cfs 221,381 cf
Subcatchment1Sa: DA 1: CN w/ IC areas	s Runoff Area=958,817 sf 14.64% Impervious Runoff Depth=1.89" Tc=25.2 min CN=74/98 Runoff=29.91 cfs 151,065 cf
Subcatchment1Sb: Roof	Runoff Area=69,839 sf 100.00% Impervious Runoff Depth=3.74" Tc=6.0 min CN=0/98 Runoff=6.55 cfs 21,738 cf
Subcatchment1Sc: Driveways (GIS -	Runoff Area=156,064 sf 100.00% Impervious Runoff Depth=3.74" Tc=6.0 min CN=0/98 Runoff=14.64 cfs 48,577 cf
Subcatchment2S: DA 2: CN w/ IC areas	Runoff Area=100,787 sf 8.36% Impervious Runoff Depth=1.75" Tc=15.5 min CN=74/98 Runoff=3.68 cfs 14,740 cf
Subcatchment 3S: DA 3: CN w/ IC areas Flo	Runoff Area=150,325 sf 10.26% Impervious Runoff Depth=1.73" w Length=329' Tc=17.3 min CN=73/98 Runoff=5.15 cfs 21,731 cf
Subcatchment4S: DA 4: CN w/ IC areas	Runoff Area=1,076,001 sf 10.91% Impervious Runoff Depth=1.57" Tc=24.2 min CN=70/98 Runoff=27.99 cfs 141,160 cf
	. Flow Depth=0.84' Max Vel=10.22 fps Inflow=19.58 cfs 148,967 cf 0' S=0.0200 '/' Capacity=203.14 cfs Outflow=19.57 cfs 148,968 cf
	g. Flow Depth=0.71' Max Vel=9.07 fps Inflow=11.63 cfs 140,539 cf 5.0' S=0.0200 '/' Capacity=94.33 cfs Outflow=11.63 cfs 140,539 cf
Pond 1P: Basic Rain Garden (w/ Primary=19.58 cfs 148,967 cf Secondary	Peak Elev=98.24' Storage=22,845 cf Inflow=29.91 cfs 151,065 cf =0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=19.58 cfs 148,967 cf
Pond 2P: ROOF RG 750 SF Discarded=0.	Peak Elev=99.63' Storage=11,163 cf Inflow=6.55 cfs 21,738 cf 26 cfs 21,738 cf Primary=0.00 cfs 0 cf Outflow=0.26 cfs 21,738 cf
Pond 3P: Basic Porous Pavement Discarded=1.	Peak Elev=99.52' Storage=14,922 cf Inflow=14.64 cfs 48,577 cf 81 cfs 48,577 cf Primary=0.00 cfs 0 cf Outflow=1.81 cfs 48,577 cf
	Peak Elev=66.47' Storage=53,072 cf Inflow=19.57 cfs 148,968 cf =0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=11.63 cfs 140,539 cf
Link 1L: Combined Flow	Inflow=19.58 cfs 148,967 cf Primary=19.58 cfs 148,967 cf
Link 2L: Offsite Flows	Inflow=35.59 cfs 177,631 cf Primary=35.59 cfs 177,631 cf

Total Runoff Area = 3,696,554 sf Runoff Volume = 620,392 cf Average Runoff Depth = 2.01" 76.36% Pervious = 2,822,814 sf 23.64% Impervious = 873,740 sf

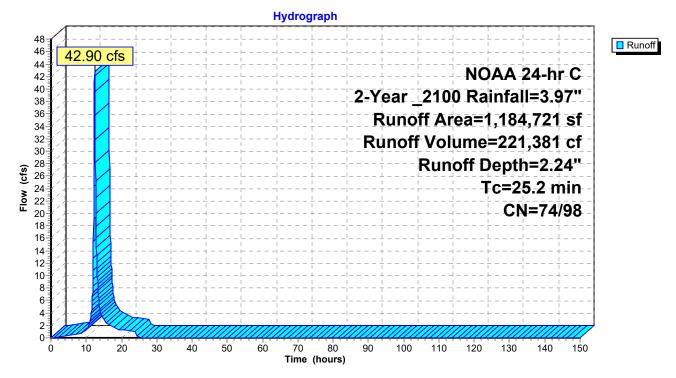
Summary for Subcatchment 1S: DA 1: All

Runoff = 42.90 cfs @ 12.36 hrs, Volume= 221,381 cf, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.00 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	366,258	98	Impervious
	15,045	65	Brush, Good, HSG C
	794,453	74	>75% Grass cover, Good, HSG C
	8,965	70	Woods, Good, HSG C
	1,184,721	81	Weighted Average
	818,463	74	69.08% Pervious Area
	366,258	98	30.92% Impervious Area
	-		
	Tc Length	Slop	
	(min) (feet)	(ft/	ft) (ft/sec) (cfs)
	25.2		Direct Entry, Direct





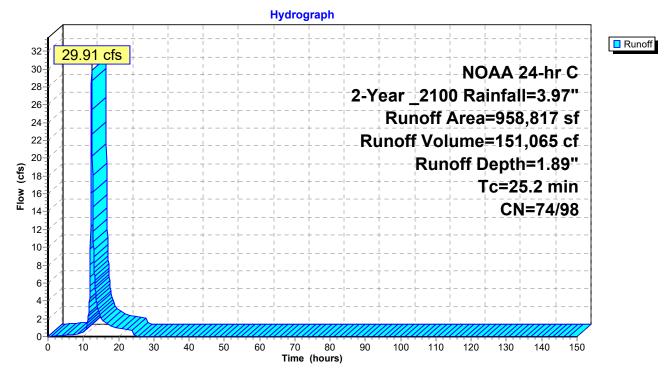
Summary for Subcatchment 1Sa: DA 1: CN w/ IC areas

Runoff = 29.91 cfs @ 12.37 hrs, Volume= 151,065 cf, Depth= 1.89" Routed to Pond 1P : Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description		
*	140,354	98	Impervious		
	15,045	65	Brush, Goo	d, HSG C	
	794,453	74	>75% Gras	s cover, Go	ood, HSG C
	8,965	70	Woods, Go	od, HSG C	
	958,817	77	Weighted A	verage	
	818,463	74	85.36% Pe	vious Area	3
140,354 98 14.64% Impervious Are				pervious Ar	rea
	Tc Lengt			Capacity	Description
(m	nin) (fee	t) (ft/	ft) (ft/sec)	(cfs)	
2	5.2				Direct Entry, Direct

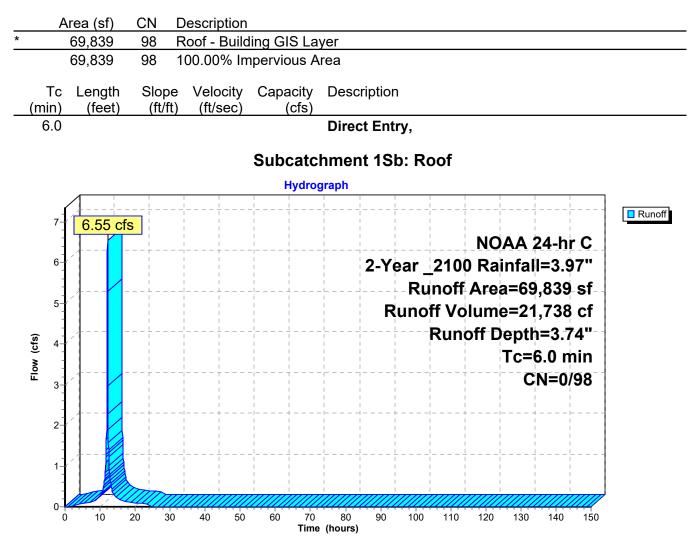
Subcatchment 1Sa: DA 1: CN w/ IC areas



Summary for Subcatchment 1Sb: Roof

Runoff = 6.55 cfs @ 12.13 hrs, Volume= 21,738 cf, Depth= 3.74" Routed to Pond 2P : ROOF RG 750 SF

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"



Summary for Subcatchment 1Sc: Driveways (GIS - other)

Runoff = 14.64 cfs @ 12.13 hrs, Volume= 48,577 cf, Depth= 3.74" Routed to Pond 3P : Basic Porous Pavement (infiltration only)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

А	rea (sf)	CN [Description										
1	56,064	98 I	mpervious	Drivways (other)								
1	56,064	98 1	100.00% In	pervious A	Area								
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)		riptio							
6.0					Dire	ct Ent	t ry ,						
			Subcatc	hmont 19		rivov	ave		- oth	nor)			
			Oubcalc			IVEN	ays		- 00				
		1	II	Hydro	graph	·				I			
16		+		 	 	 						 	Runoff
15	14.64 cfs	<mark>S</mark> 	i i !	i i !!		 				AA	21-h		
14		+	ı ı l l l	 	-+			646		I I			
13		+	 +	 	+	2-Y				infal		+	
12-		 	 	' 		' 	Rur	noff /	Area	=156	6,064	sf_	
11-	,·	+	 +		- +	R	luno	ff Vo	lum	e=48	8,577	cf -	
10-1 (c)	,}·	<u> </u>	 				L	Run	off D)epth	1=3.7	74''	
Flow (cfs)	/	+	 	 	- -	 		 		Tc=	6.0 n	nin	
	/ /	+	I+		+					+	N=0	+	
6		<u>+</u> 	'	'' 		'' '					11-0		
5		+	 										
4					 								
3		 	 +	 	 +	 						 +	
2	Í	+	i 	i 		 						 	
1		-											
0	10 2	20 30	40 50	60 70 Time	80 e (hours)	90	100	110	120	130	140	150	

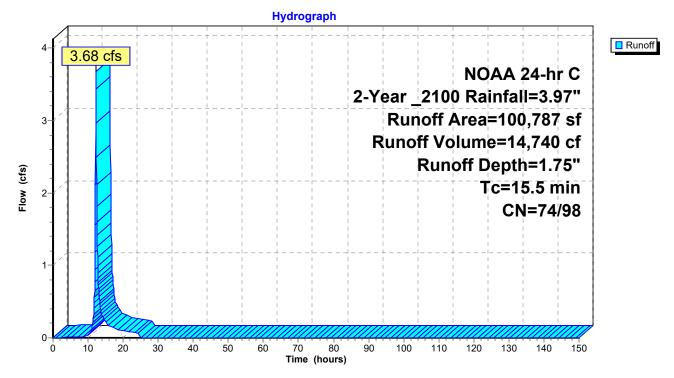
Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 3.68 cfs @ 12.25 hrs, Volume= 14,740 cf, Depth= 1.75" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description			
*	8,425	98	Impervious			
	86	65	Brush, Good	d, HSG C		
	92,276	74	>75% Grass	s cover, Go	bod, HSG C	
	100,787	76	Weighted A	verage		
	92,362	74	91.64% Per	vious Area	l	
	8,425	98	8.36% Impe	rvious Area	а	
	Tc Length in) (feet)	Slop (ft/		Capacity (cfs)	Description	
15	5.5				Direct Entry, Direct	

Subcatchment 2S: DA 2: CN w/ IC areas



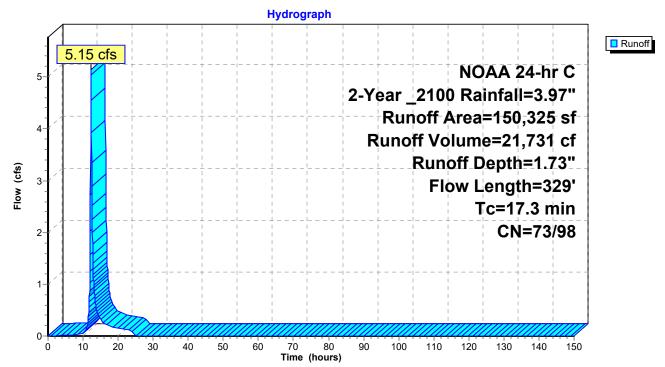
Summary for Subcatchment 3S: DA 3: CN w/ IC areas

Runoff = 5.15 cfs @ 12.27 hrs, Volume= 21,731 cf, Depth= 1.73" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	A	rea (sf)	CN	Description						
*		15,427	98	98 Impervious						
		17,213	65	Brùsh, Goo	d, HSG C					
		11,427	73	Brush, Goo	d, HSG D					
		99,487			,	bod, HSG C				
_		6,771	70	<u>Woods, Go</u>	od, HSG C					
	1	50,325	75	Weighted A	verage					
	1	34,898	73	39.74% Pei	rvious Area					
		15,427	98	10.26% Imp	pervious Ar	ea				
	Tc	Length	Slope		Capacity	Description				
_	(min)	(feet)	(ft/ft)	, ,	(cfs)					
	12.5	100	0.0103	0.13		Sheet Flow, Sheetflow				
						Grass: Short n= 0.150 P2= 3.34"				
	4.8	229	0.0129	0.80		Shallow Concentrated Flow, SCF - Grass				
						Short Grass Pasture Kv= 7.0 fps				
	17.3	329	Total							

Subcatchment 3S: DA 3: CN w/ IC areas

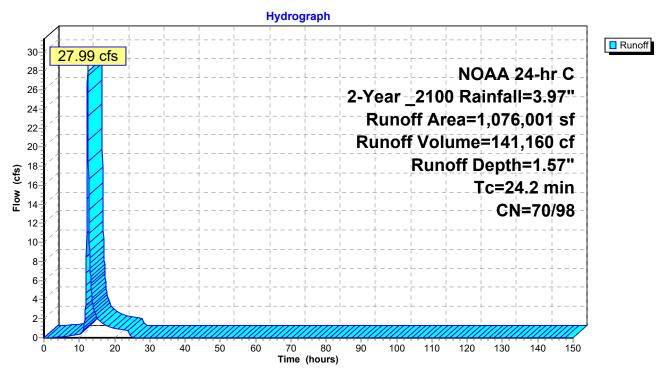


Summary for Subcatchment 4S: DA 4: CN w/ IC areas

Runoff = 27.99 cfs @ 12.36 hrs, Volume= 141,160 cf, Depth= 1.57" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

A	rea (sf)	CN	Description				
* 1	17,373	98	Impervious				
3	876,010	65	Brush, Good, HSG C				
	14,106	73	Brush, Good, HSG D				
	58,960	79	50-75% Grass cover, Fair, HSG C				
	6,320	84	50-75% Grass cover, Fair, HSG D				
1	99,948	74	>75% Grass cover, Good, HSG C				
	6,758	80	>75% Grass cover, Good, HSG D				
	13	86	<50% Grass cover, Poor, HSG C				
	5,323	72	Woods/grass comb., Good, HSG C				
	90,808	73	Woods, Fair, HSG C				
2	200,382	70	Woods, Good, HSG C				
1,0	076,001	73	Weighted Average				
ç	958,628	70	89.09% Pervious Area				
1	17,373	98	10.91% Impervious Area				
Тс	Length	Slop	lope Velocity Capacity Description				
(min)	(feet)	(ft/f					
24.2	· · ·	•	Direct Entry, Direct				



Subcatchment 4S: DA 4: CN w/ IC areas

Summary for Reach 1R: INLET PIPE

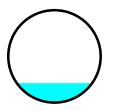
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 1.51" for 2-Year _2100 event Inflow = 19.58 cfs @ 12.62 hrs, Volume= 148,967 cf Outflow = 19.57 cfs @ 12.62 hrs, Volume= 148,968 cf, Atten= 0%, Lag= 0.1 min Routed to Pond 4P : Municipal Property Basin 2100

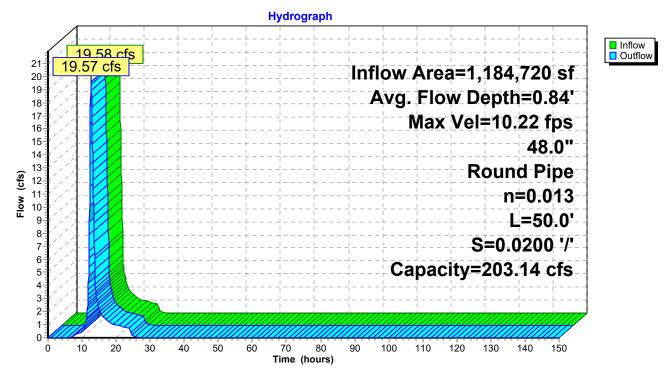
Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 10.22 fps, Min. Travel Time= 0.1 min Avg. Velocity = 3.91 fps, Avg. Travel Time= 0.2 min

Peak Storage= 96 cf @ 12.62 hrs Average Depth at Peak Storage= 0.84' , Surface Width= 3.26' Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 203.14 cfs

48.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 50.0' Slope= 0.0200 '/' Inlet Invert= 66.00', Outlet Invert= 65.00'



Reach 1R: INLET PIPE



Summary for Reach 2R: OUTFLOW PIPE

[52] Hint: Inlet/Outlet conditions not evaluated

 Inflow Area =
 1,184,720 sf, 30.92% Impervious, Inflow Depth =
 1.42" for 2-Year _2100 event

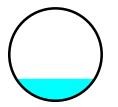
 Inflow =
 11.63 cfs @
 13.28 hrs, Volume=
 140,539 cf

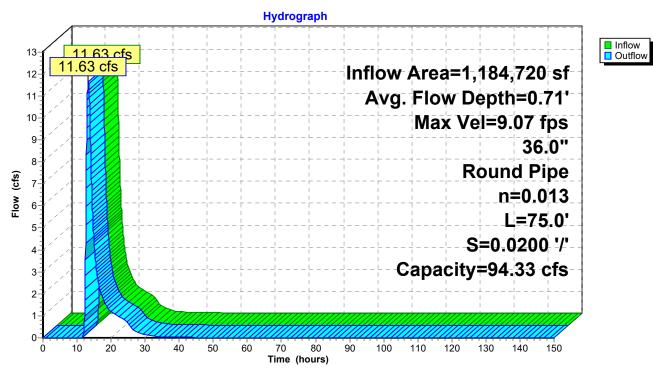
 Outflow =
 11.63 cfs @
 13.29 hrs, Volume=
 140,539 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Max. Velocity= 9.07 fps, Min. Travel Time= 0.1 min Avg. Velocity = 1.78 fps, Avg. Travel Time= 0.7 min

Peak Storage= 96 cf @ 13.28 hrs Average Depth at Peak Storage= 0.71', Surface Width= 2.55' Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 94.33 cfs

36.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 75.0' Slope= 0.0200 '/' Inlet Invert= 62.00', Outlet Invert= 60.50'





Reach 2R: OUTFLOW PIPE

Site 4_20240629	NOAA 24-hr C 2-Year	_2100 Rainfall=3.97"
Prepared by Rutgers Cooperative Extension Wate	r Resources Program	Printed 6/29/2024
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Summary for Pond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Inflow Area =	958,817 sf, 14.64% Impervious,	Inflow Depth = 1.89" for 2-Year _2100 event
Inflow =	29.91 cfs @ 12.37 hrs, Volume=	151,065 cf
Outflow =	19.58 cfs @ 12.62 hrs, Volume=	
Primary =	19.58 cfs @ 12.62 hrs, Volume=	148,967 cf
Routed to Link		
Secondary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf
Routed to Link	< 1L : Combined Flow	
	0.00 cfs @ 0.00 hrs, Volume=	0 cf
Routed to Link	< 1L : Combined Flow	

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 3 Peak Elev= 98.24' @ 12.62 hrs Surf.Area= 12,249 sf Storage= 22,845 cf

Plug-Flow detention time= 29.9 min calculated for 148,967 cf (99% of inflow) Center-of-Mass det. time= 20.4 min (862.2 - 841.8)

Volume	Invert	Avail.Storage	Storage Description
#1	97.75'	497 cf	Custom Stage Data (Conic)Listed below (Recalc)
#2A	93.75'	689 cf	15.75'W x 32.10'L x 4.50'H Field A
			2,275 cf Overall - 551 cf Embedded = 1,724 cf x 40.0% Voids
#3A	95.25'	551 cf	ADS_StormTech SC-740 +Cap x 12 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			12 Chambers in 3 Rows
		1 737 cf	x 18.00 = 31.271 cf. Total Available Storage

1,737 cf x 18.00 = 31,271 cf Total Available Storage

Elevatio (fee		Surf.Area (sq-ft)	Void %)		Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
97.7	75	175	0.		0	175	
98.2	25	175	35.	D 31	31	198	
99.2	25	175	35.	D 61	92	245	
99.5	50	175	25.	D 11	103	257	
100.0	00	175	100.	88	190	281	
100.5	51	175	100.	0 89	280	304	
101.	75	175	100.) 217	497	363	
Device	Routing	In	vert	Outlet Devices			
#1	Primary	94	17'	6.0" Round Culve	rt X 18.00 L= 10.0)' Ke= 0.500	
	,	-		Inlet / Outlet Invert=	94.17'/94.12' S	= 0.0050 '/' Cc= 0.900	
				n= 0.020 Corrugate	ed PE, corrugated	interior, Flow Area= 0.20 sf	
#2	Device 1	94	.33'			18.00 L= 32.0' Ke= 0.500	
				Inlet / Outlet Invert=	94.33'/94.17' S	= 0.0050 '/' Cc= 0.900	
				n= 0.020 Corrugate	ed PE, corrugated	interior, Flow Area= 0.20 sf	
#3	Seconda	ry 100	0.00'	9		ted Rectangular Weir X 18.00)
		5		•		00 1.20 1.40 1.60 1.80 2.00	
				2.50 3.00 3.50			
				Coef. (English) 2.54	4 2.61 2.61 2.60	2.66 2.70 2.77 2.89 2.88	
				2.85 3.07 3.20 3.3	32		

Site 4 20240629

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#4 Tertiary 100.50' **6.0' long Sharp-Crested Rectangular Weir X 18.00** 2 End Contraction(s)

Primary OutFlow Max=19.56 cfs @ 12.62 hrs HW=98.23' (Free Discharge) 1=Culvert (Passes 19.56 cfs of 29.35 cfs potential flow) 2=6" HDPE Underdrain (Barrel Controls 19.56 cfs @ 5.53 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.75' (Free Discharge) —3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.75' (Free Discharge) **4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

ond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration) - Chamber Wizard Fi

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech® SC-740 with cap length) Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

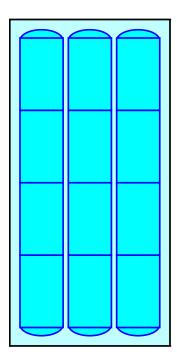
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length 3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width 18.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.50' Field Height

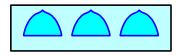
12 Chambers x 45.9 cf = 551.3 cf Chamber Storage

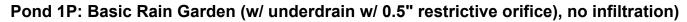
2,274.9 cf Field - 551.3 cf Chambers = 1,723.6 cf Stone x 40.0% Voids = 689.4 cf Stone Storage

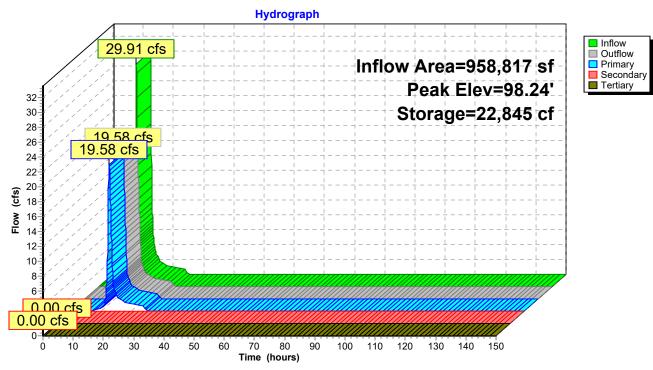
Chamber Storage + Stone Storage = 1,240.7 cf = 0.028 af Overall Storage Efficiency = 54.5%Overall System Size = $32.10' \times 15.75' \times 4.50'$

12 Chambers 84.3 cy Field 63.8 cy Stone









Summary for Pond 2P: ROOF RG 750 SF

Assumes infiltration through media is non-limiting.

Inflow Area =	69,839 sf,100.00% Impervious,	Inflow Depth = 3.74" for 2-Year 2100 event					
Inflow =	6.55 cfs @ 12.13 hrs, Volume=	21,738 cf					
Outflow =	0.26 cfs @ 14.34 hrs, Volume=	21,738 cf, Atten= 96%, Lag= 133.0 min					
Discarded =	0.26 cfs @ 14.34 hrs, Volume=	21,738 cf					
Primary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf					
Routed to Link 1L : Combined Flow							

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 99.63' @ 14.34 hrs Surf.Area= 22,105 sf Storage= 11,163 cf

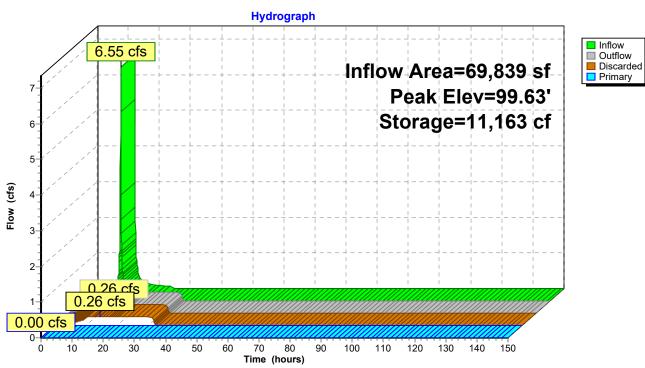
Plug-Flow detention time= 390.6 min calculated for 21,731 cf (100% of inflow) Center-of-Mass det. time= 390.7 min (1,143.7 - 753.1)

Volume	Invert	Avai	I.Storage	Storage Descrip	otion	
#1	98.25'		735 cf	Custom Stage	Data (Conic)Listed	d below (Recalc)
			735 cf	x 37.00 = 27,2	209 cf Total Availa	ble Storage
Elevation (feet) 98.25 99.25 99.50 100.00	Su	rf.Area (sq-ft) 546 546 546 750	Voids (%) 0.0 35.0 25.0 100.0	Inc.Store (cubic-feet) 0 191 34 323	Cum.Store (cubic-feet) 0 191 225 548	Wet.Area (sq-ft) 546 629 650 858
100.25		750	100.0	188	735	883
Device Ro #1 Di	outing scarded imary	Inv	vert Outl .25' 0.50 .00' 2.0' Hea 2.50 Coe	et Devices 0 in/hr Exfiltration long x 3.0' brea d (feet) 0.20 0.4 3.00 3.50 4.00	on over Surface a adth Broad-Creste 0 0.60 0.80 1.00 0 4.50 2.58 2.68 2.67 2	

Discarded OutFlow Max=0.26 cfs @ 14.34 hrs HW=99.63' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.25' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Site 4_20240629



Pond 2P: ROOF RG 750 SF

Summary for Pond 3P: Basic Porous Pavement (infiltration only)

156,064 sf,100.00% Impervious, Inflow Depth = 3.74" for 2-Year 2100 event Inflow Area = Inflow 14.64 cfs @ 12.13 hrs, Volume= 48.577 cf = 1.81 cfs @ 11.60 hrs, Volume= Outflow = 48,577 cf, Atten= 88%, Lag= 0.0 min 1.81 cfs @ 11.60 hrs, Volume= 48,577 cf Discarded = 0.00 cfs @ 0.00 hrs, Volume= Primary = 0 cf Routed to Link 1L : Combined Flow

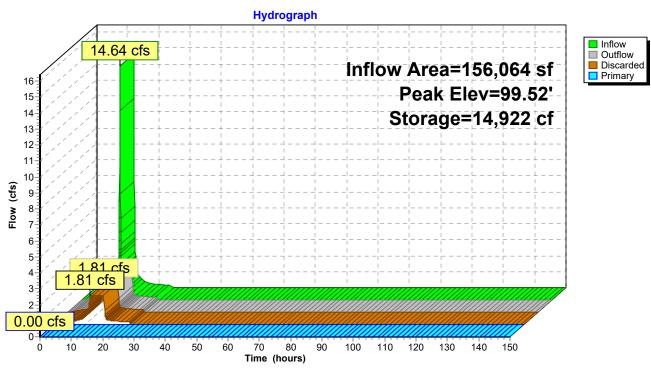
Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 99.52' @ 12.71 hrs Surf.Area= 156,064 sf Storage= 14,922 cf

Plug-Flow detention time= 52.0 min calculated for 48,561 cf (100% of inflow) Center-of-Mass det. time= 52.0 min (805.0 - 753.1)

Volume	Inve	ert Ava	il.Storage	e Storage Descr	iption	
#1	99.2	5'	72,180 c	f Custom Stage	e Data (Prismatic	Listed below (Recalc)
Elevatio (fee 99.2 99.7 99.8 100.0 100.2	et) 25 75 83 00	Surf.Area (sq-ft) 156,064 156,064 156,064 156,064 156,064	Voids (%) 0.0 35.0 15.0 15.0 100.0	Inc.Store (cubic-feet) 0 27,311 1,873 3,980 39,016	Cum.Store (cubic-feet) 0 27,311 29,184 33,164 72,180	
Device	Routing	In	vert Ou	utlet Devices		
#1 #2	Discarded Primary		0.00' 15 He 2.5 Co	.0' long x 1.0' br ead (feet) 0.20 0. 50 3.00	40 0.60 0.80 1.0	area brous Asphalt X 37.00 00 1.20 1.40 1.60 1.80 2.00 2.98 3.08 3.20 3.28 3.31

Discarded OutFlow Max=1.81 cfs @ 11.60 hrs HW=99.26' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 1.81 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=99.25' (Free Discharge) ←2=Edge of Porous Asphalt (Controls 0.00 cfs)



Pond 3P: Basic Porous Pavement (infiltration only)

Summary for Pond 4P: Municipal Property Basin 2100

[62] Hint: Exceeded Reach 1R OUTLET depth by 0.92' @ 13.80 hrs

Inflow Area =	1,184,720 sf,	30.92% Impervious,	Inflow Depth = 1.51" for 2-Year _2100 event					
Inflow =	19.57 cfs @	12.62 hrs, Volume=	148,968 cf					
		13.28 hrs, Volume=	140,539 cf, Atten= 41%, Lag= 39.8 min					
Primary =	11.63 cfs @	13.28 hrs, Volume=	140,539 cf					
Routed to Rea	ch 2R : OUTF	LOW PIPE						
		0.00 hrs, Volume=	0 cf					
Routed to Rea	ich 2R : OUTF	LOW PIPE						
Tertiary =	0.00 cfs @	0.00 hrs, Volume=	0 cf					
Routed to Reach 2R : OUTFLOW PIPE								

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Peak Elev= 66.47' @ 13.28 hrs Surf.Area= 38,772 sf Storage= 53,072 cf

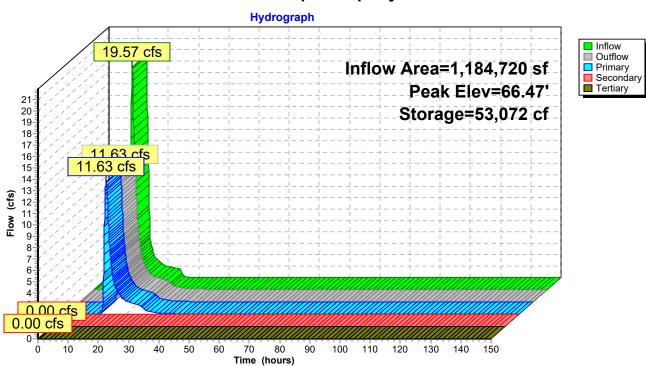
Plug-Flow detention time= 173.8 min calculated for 140,492 cf (94% of inflow) Center-of-Mass det. time= 144.1 min (1,006.5 - 862.4)

Volume	Invert	Avail.Stor	age Storage [Description	
#1	65.00'	213,10	5 cf Custom	Stage Data (Pri	smatic) Listed below (Recalc)
Elevatio (fee 65.0 70.0	et) 00 3	f.Area (sq-ft) 33,242 52,000	Inc.Store (cubic-feet) 0 213,105	Cum.Store (cubic-feet) 0 213,105	
Device	Routing	Invert	Outlet Devices		
#1	Primary	65.25'			X 2.00 C= 0.600
#2 Secondary		67.25'	24.0" W x 18.0	flow at low head)" H Vert. 2-YR flow at low head	Orifice X 3.00 C= 0.600
#3 Tertiary		69.50'	48.0" x 48.0" l	flow at low head	rate C= 0.600

Primary OutFlow Max=11.63 cfs @ 13.28 hrs HW=66.47' (Free Discharge) **1=Low Flow Orifice** (Orifice Controls 11.63 cfs @ 3.77 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=65.00' (Free Discharge) 2=2-YR Orifice (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=65.00' (Free Discharge) **-3=Orifice/Grate** (Controls 0.00 cfs)



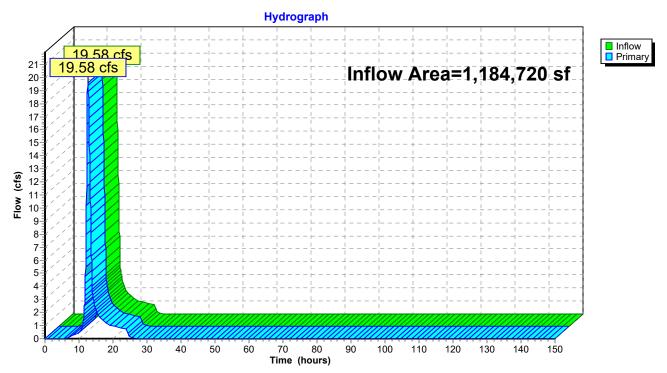
Pond 4P: Municipal Property Basin 2100

Site 4_20240629	NOAA 24-hr C 2-Year	_2100 Rainfall=3.97"
Prepared by Rutgers Cooperative Extension Water	r Resources Program	Printed 6/29/2024
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Summary for Link 1L: Combined Flow

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 1.51" for 2-Year _2100 event Inflow = 19.58 cfs @ 12.62 hrs, Volume= 148,967 cf Primary = 19.58 cfs @ 12.62 hrs, Volume= 148,967 cf, Atten= 0%, Lag= 0.0 min Routed to Reach 1R : INLET PIPE

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs



Link 1L: Combined Flow

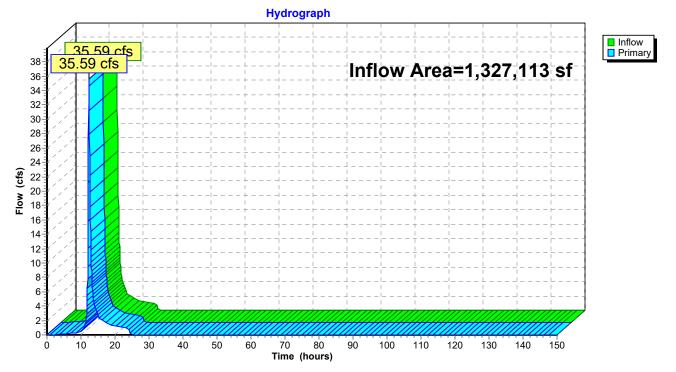
Site 4_20240629	NOAA 24-hr C 2-Year	_2100 Rainfall=3.97"
Prepared by Rutgers Cooperative Extension Water	Resources Program	Printed 6/29/2024
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Summary for Link 2L: Offsite Flows

Inflow Are	a =	1,327,113 sf, 10.64% Impervious, Inflow Depth = 1.61" for 2-Year _2	2100 event
Inflow	=	35.59 cfs @ 12.33 hrs, Volume= 177,631 cf	
Primary	=	35.59 cfs @ 12.33 hrs, Volume= 177,631 cf, Atten= 0%, Lag= 0	.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs

Link 2L: Offsite Flows



Site 4_20240629	NOAA 24-hr C 10-Year	_Current Rainfall=5.16"
Prepared by Rutgers Cooperative Extension Wat	er Resources Program	Printed 6/29/2024
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Time span=0.00-150.00 hrs, dt=0.05 hrs, 3001 points Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: DA 1: All	Runoff Area=1,184,721 sf 30.92% Impervious Runoff Depth=3.24" Tc=25.2 min CN=74/98 Runoff=62.74 cfs 320,259 cf
Subcatchment1Sa: DA 1: CN w/ IC areas	Runoff Area=958,817 sf 14.64% Impervious Runoff Depth=2.85" Tc=25.2 min CN=74/98 Runoff=45.77 cfs 227,583 cf
Subcatchment1Sb: Roof	Runoff Area=69,839 sf 100.00% Impervious Runoff Depth=4.92" Tc=6.0 min CN=0/98 Runoff=8.54 cfs 28,651 cf
Subcatchment 1Sc: Driveways (GIS -	Runoff Area=156,064 sf 100.00% Impervious Runoff Depth=4.92" Tc=6.0 min CN=0/98 Runoff=19.09 cfs 64,024 cf
Subcatchment 2S: DA 2: CN w/ IC areas	Runoff Area=100,787 sf 8.36% Impervious Runoff Depth=2.70" Tc=15.5 min CN=74/98 Runoff=5.74 cfs 22,641 cf
Subcatchment 3S: DA 3: CN w/ IC areas Flov	Runoff Area=150,325 sf 10.26% Impervious Runoff Depth=2.66" v Length=329' Tc=17.3 min CN=73/98 Runoff=8.05 cfs 33,382 cf
Subcatchment4S: DA 4: CN w/ IC areas	Runoff Area=1,076,001 sf 10.91% Impervious Runoff Depth=2.46" Tc=24.2 min CN=70/98 Runoff=45.01 cfs 220,363 cf
	Flow Depth=1.31' Max Vel=12.99 fps Inflow=46.89 cfs 224,539 cf ' S=0.0200 '/' Capacity=203.14 cfs Outflow=46.49 cfs 224,580 cf
	Flow Depth=0.86' Max Vel=10.08 fps Inflow=16.81 cfs 216,150 cf .0' S=0.0200 '/' Capacity=94.33 cfs Outflow=16.81 cfs 216,150 cf
	Peak Elev=100.28' Storage=26,636 cf Inflow=45.77 cfs 227,583 cf cfs 13,790 cf Tertiary=0.00 cfs 0 cf Outflow=46.89 cfs 224,539 cf
Pond 2P: ROOF RG 750 SF Discarded=0.2	Peak Elev=99.82' Storage=15,649 cf Inflow=8.54 cfs 28,651 cf 9 cfs 28,651 cf Primary=0.00 cfs 0 cf Outflow=0.29 cfs 28,651 cf
Pond 3P: Basic Porous Pavement Discarded=1.8	Peak Elev=99.66' Storage=22,242 cf Inflow=19.09 cfs 64,024 cf 1 cfs 64,024 cf Primary=0.00 cfs 0 cf Outflow=1.81 cfs 64,024 cf
Pond 4P: Municipal Property Basin 2100 Primary=16.81 cfs 216,150 cf Secondary=	Peak Elev=66.98' Storage=72,987 cf Inflow=46.49 cfs 224,580 cf 0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=16.81 cfs 216,150 cf
Link 1L: Combined Flow	Inflow=46.89 cfs 224,539 cf Primary=46.89 cfs 224,539 cf
Link 2L: Offsite Flows	Inflow=56.93 cfs 276,386 cf Primary=56.93 cfs 276,386 cf

Total Runoff Area = 3,696,554 sf Runoff Volume = 916,904 cf Average Runoff Depth = 2.98" 76.36% Pervious = 2,822,814 sf 23.64% Impervious = 873,740 sf

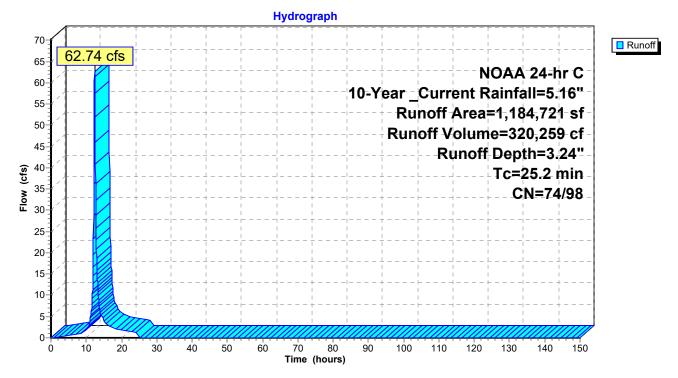
Summary for Subcatchment 1S: DA 1: All

Runoff = 62.74 cfs @ 12.36 hrs, Volume= 320,259 cf, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.00 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description			
*	366,258	98	Impervious			
	15,045	65	Brush, Good, HSG C			
	794,453	74	>75% Grass cover, Good, HSG C			
	8,965	70	Woods, Good, HSG C	_		
	1,184,721	81	Weighted Average			
	818,463	74	69.08% Pervious Area			
	366,258	98	30.92% Impervious Area			
	Tc Length	Slop				
<u> </u>	nin) (feet)	(ft/1	/ft) (ft/sec) (cfs)	_		
2	25.2		Direct Entry, Direct			

Subcatchment 1S: DA 1: All



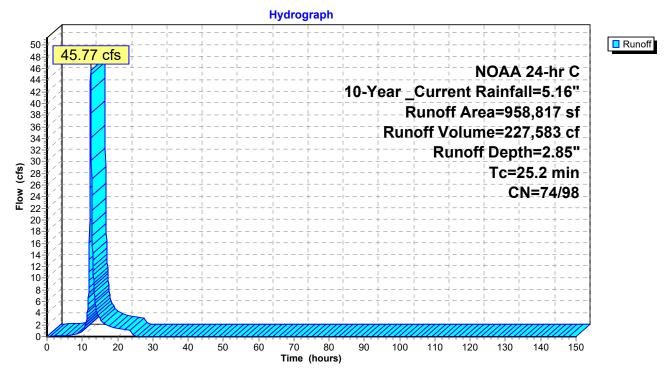
Summary for Subcatchment 1Sa: DA 1: CN w/ IC areas

Runoff = 45.77 cfs @ 12.36 hrs, Volume= 227,583 cf, Depth= 2.85" Routed to Pond 1P : Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	A	rea (sf)	CN	Description						
*	1	40,354	98	Impervious	mpervious					
		15,045	65	Brush, Goo	d, HSG C					
	7	94,453	74	>75% Gras	s cover, Go	bod, HSG C				
		8,965	70	Woods, Go	od, HSG C					
	958,817 77 Weighted Average									
	8	18,463	74	85.36% Pe	rvious Area	l de la constante de				
	1	40,354	98	14.64% Im	pervious Ar	ea				
	_									
	Тс	Length	Slop		Capacity	Description				
(n	nin)	(feet)	(ft/f	t) (ft/sec)	(cfs)					
2	5.2					Direct Entry, Direct				

Subcatchment 1Sa: DA 1: CN w/ IC areas

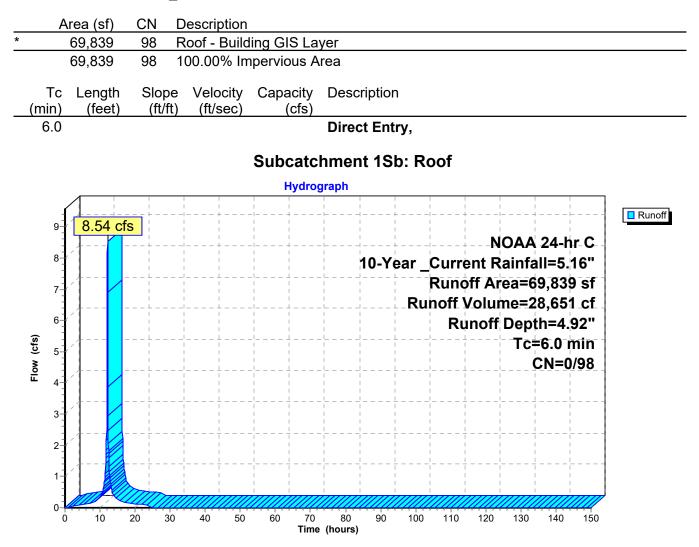


Site 4_20240629	NOAA 24-hr C 10-Year _Current Rainfall=5.16"
Prepared by Rutgers Cooperative Extension Wa	ter Resources Program Printed 6/29/2024
HydroCAD® 10.10-7c s/n 03601 © 2022 HydroCAD Soft	ware Solutions LLC Page 59

Summary for Subcatchment 1Sb: Roof

Runoff = 8.54 cfs @ 12.13 hrs, Volume= 28,651 cf, Depth= 4.92" Routed to Pond 2P : ROOF RG 750 SF

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _Current Rainfall=5.16"



Summary for Subcatchment 1Sc: Driveways (GIS - other)

Runoff = 19.09 cfs @ 12.13 hrs, Volume= 64,024 cf, Depth= 4.92" Routed to Pond 3P : Basic Porous Pavement (infiltration only)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	56,064			Drivways (
1	56,064	98 1	00.00% In	npervious A	vrea					
Tc iin)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
5.0		· · · · ·			Direct Entry	,				
			Subcato	hmont 19	Sc: Driveway	ie (GIS	- oth	or)		
			Subcalc	Hydro	-	3 (010	- 00			
		1 1		······································	·	<u> </u>	<u> </u>	·		
21 - 20 -	19.09 cfs	5 + 1	+	· └	· ـ		L +	· •	لہ ـ ـ ـ ـ ـ ـ ا 4 ـ ـ ـ ـ ـ ـ	
19- 18-	,	+ - 	+ 	 	· +		I I	- 1	24-h	
18-1 17-1		 	-	·	10-Yea	r _Curr		,		
16 (15 (() <mark>/</mark> - ·	1 1		·		Runof			•	
14 - 14		+ · + ·	+	·		Runoff	+		+	
13 (12 (- + : 	+	 	· + + 1 1 1 1	R	unoff			
11 <u>-</u>		 	<u>+</u>	·	$- \pm \pm - \pm$				=6.0 I CN=0	
10- 9-		+ - 		· L	· ـ		L 	^ 	JIN-U	/30
8	()	+		·	++		+	·		
7-¥ 6-¥		+		· . ! !	· + +		<u> </u>	· ·!		
5	(<u> </u>		· · · · · · · · · · · · · · · · · · ·	$\begin{array}{cccccccccccccccccccccccccccccccccccc$			 	 	
4		+	4	· ·	· + + · + +		 +	 	4 	
2		+			++			·		

Time (hours)

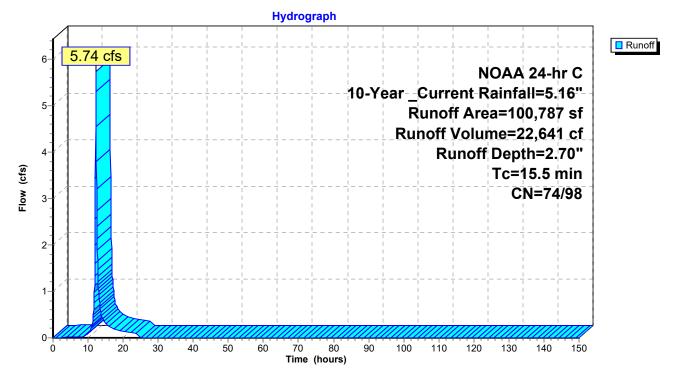
Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 5.74 cfs @ 12.24 hrs, Volume= 22,641 cf, Depth= 2.70" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description			
*	8,425	98	Impervious			
	86	65	Brush, Goo	d, HSG C		
	92,276	74	>75% Gras	s cover, Go	bod, HSG C	
	100,787	76	Weighted A	verage		
92,362 74 91.64% Pervious Area 8,425 98 8.36% Impervious Area				vious Area	l	
				ervious Are	а	
	Tc Length (min) (feet)		e Velocity (ft/sec)	Capacity (cfs)	Description	
15.5					Direct Entry, Direct	

Subcatchment 2S: DA 2: CN w/ IC areas



Summary for Subcatchment 3S: DA 3: CN w/ IC areas

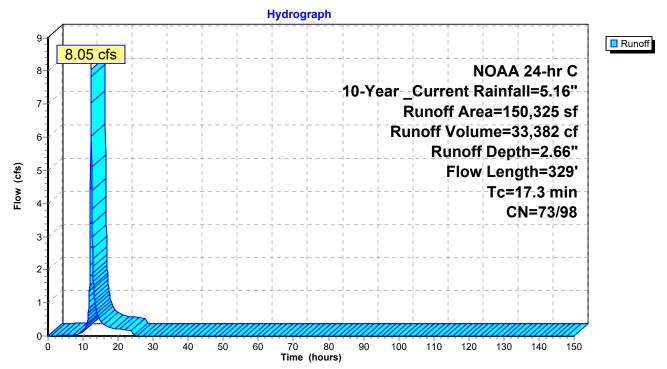
Runoff = 8.05 cfs @ 12.27 hrs, Volume= 33,382 cf, Depth= 2.66" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

_	A	rea (sf)	CN I	Description		
*		15,427	98	mpervious		
		17,213	65 I	Brush, Goo	d, HSG C	
		11,427	73	Brush, Goo	d, HSG D	
		99,487	74 :	>75% Gras	s cover, Go	bod, HSG C
_		6,771	70	Woods, Go	od, HSG C	
	1	50,325	75	Weighted A	verage	
	1	34,898	73 8	39.74% Pei	rvious Area	
		15,427	98	10.26% Imp	pervious Ar	ea
	Тс	Length	Slope		Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	12.5	100	0.0103	0.13		Sheet Flow, Sheetflow
						Grass: Short n= 0.150 P2= 3.34"
	4.8	229	0.0129	0.80		Shallow Concentrated Flow, SCF - Grass
_						Short Grass Pasture Kv= 7.0 fps
	17 2	320	Total			

17.3 329 Total

Subcatchment 3S: DA 3: CN w/ IC areas

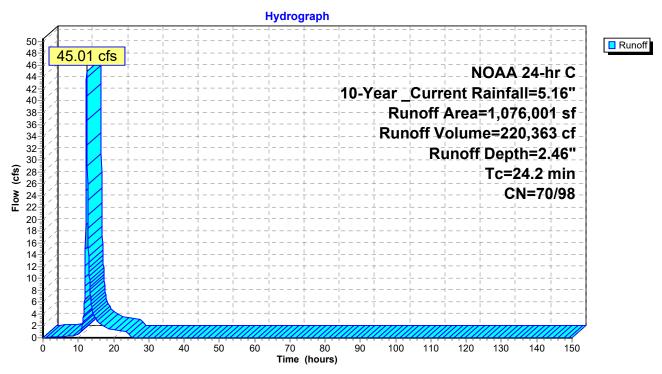


Summary for Subcatchment 4S: DA 4: CN w/ IC areas

Runoff = 45.01 cfs @ 12.35 hrs, Volume= 220,363 cf, Depth= 2.46" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

A	rea (sf)	CN	Description					
* 1	17,373	98	Impervious					
3	876,010	65	Brush, Good, HSG C					
	14,106	73	Brush, Goo	d, HSG D				
	58,960	79	50-75% Gra	ass cover, F	Fair, HSG C			
	6,320	84	50-75% Gra	ass cover, F	Fair, HSG D			
1	99,948	74	>75% Gras	s cover, Go	ood, HSG C			
	6,758	80	>75% Gras	s cover, Go	ood, HSG D			
	13	86	86 <50% Grass cover, Poor, HSG C					
	5,323	72	2 Woods/grass comb., Good, HSG C					
	90,808	73	Woods, Fair, HSG C					
2	200,382 70 Woods, Good, HSG C							
1,0	76,001	73	Weighted A	verage				
958,628		70	89.09% Pervious Area					
117,373 98 1			10.91% Impervious Area					
Тс	Length	Slop		Capacity	Description			
(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)				
24.2					Direct Entry, Direct			



Subcatchment 4S: DA 4: CN w/ IC areas

Summary for Reach 1R: INLET PIPE

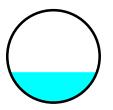
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 2.27" for 10-Year _Current event Inflow = 46.89 cfs @ 12.42 hrs, Volume= 224,539 cf Outflow = 46.49 cfs @ 12.42 hrs, Volume= 224,580 cf, Atten= 1%, Lag= 0.1 min Routed to Pond 4P : Municipal Property Basin 2100

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 12.99 fps, Min. Travel Time= 0.1 min Avg. Velocity = 4.27 fps, Avg. Travel Time= 0.2 min

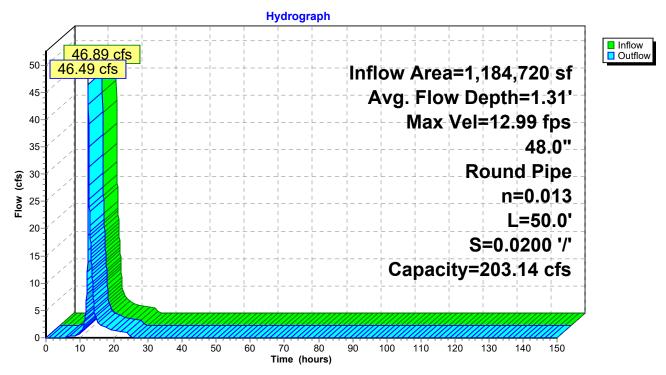
Peak Storage= 179 cf @ 12.42 hrs Average Depth at Peak Storage= 1.31', Surface Width= 3.76' Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 203.14 cfs

48.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 50.0' Slope= 0.0200 '/' Inlet Invert= 66.00', Outlet Invert= 65.00'



Site 4 20240629

Reach 1R: INLET PIPE



Summary for Reach 2R: OUTFLOW PIPE

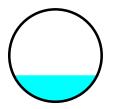
[52] Hint: Inlet/Outlet conditions not evaluated

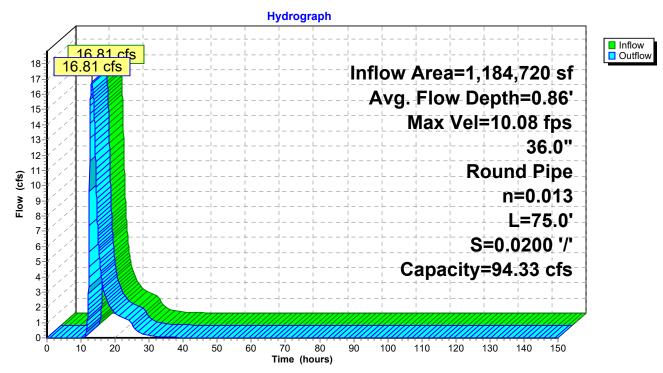
Inflow Area	a =	1,184,720 sf, 30.92% Impervious, Inflow Depth = 2.19" for 10-Year Current event
Inflow	=	16.81 cfs @ 13.14 hrs, Volume= 216,150 cf
Outflow	=	16.81 cfs @ 13.14 hrs, Volume= 216,150 cf, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Max. Velocity= 10.08 fps, Min. Travel Time= 0.1 min Avg. Velocity = 1.88 fps, Avg. Travel Time= 0.7 min

Peak Storage= 125 cf @ 13.14 hrs Average Depth at Peak Storage= 0.86', Surface Width= 2.71' Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 94.33 cfs

36.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 75.0' Slope= 0.0200 '/' Inlet Invert= 62.00', Outlet Invert= 60.50'





Reach 2R: OUTFLOW PIPE

Summary for Pond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area =	958,817 sf, 14.64% Impervious,	Inflow Depth = 2.85" for 10-Year _Current event						
Inflow =	45.77 cfs @ 12.36 hrs, Volume=	227,583 cf						
Outflow =	46.89 cfs @ 12.42 hrs, Volume=	224,539 cf, Atten= 0%, Lag= 3.5 min						
Primary =	24.54 cfs @ 12.40 hrs, Volume=	210,749 cf						
Routed to Link 1L : Combined Flow								
Secondary =	22.30 cfs @ 12.42 hrs, Volume=	13,790 cf						
Routed to Link 1L : Combined Flow								
Tertiary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf						
Routed to Link 1L : Combined Flow								

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 3 Peak Elev= 100.28' @ 12.40 hrs Surf.Area= 12,249 sf Storage= 26,636 cf

Plug-Flow detention time= 26.0 min calculated for 224,539 cf (99% of inflow) Center-of-Mass det. time= 17.7 min (851.7 - 834.0)

Volume	Invert	Avail.Storage	Storage Description
#1	97.75'	497 cf	Custom Stage Data (Conic)Listed below (Recalc)
#2A	93.75'	689 cf	15.75'W x 32.10'L x 4.50'H Field A
			2,275 cf Overall - 551 cf Embedded = 1,724 cf x 40.0% Voids
#3A	95.25'	551 cf	ADS_StormTech SC-740 +Cap x 12 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			12 Chambers in 3 Rows
		1,737 cf	x 18.00 = 31,271 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevatio	on	Surf.Area	Void	s Inc.Store	Cum.Store	Wet.Area
(fee	et)	(sq-ft)	(%) (cubic-feet)	(cubic-feet)	(sq-ft)
97.7	75	175	0.) 0	C	175
98.2	25	175	35.) 31	31	198
99.2	25	175	35.) 61	92	245
99.5	50	175	25.) 11	103	257
100.0	00	175	100.) 88	190	281
100.5	51	175	100.) 89	280	304
101.7	75	175	100.) 217	497	363
Device	Routing	In	vert	Outlet Devices		
#1	Primary	94	.17'	6.0" Round Culve	rt X 18.00 L= 10	.0' Ke= 0.500
	,			Inlet / Outlet Invert=	94.17' / 94.12'	S= 0.0050 '/' Cc=

#	£1	Primary	94.17'	6.0" Round Culvert X 18.00 L= 10.0' Ke= 0.500
				Inlet / Outlet Invert= 94.17' / 94.12' S= 0.0050 '/' Cc= 0.900
				n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#	£2	Device 1	94.33'	6.0" Round 6" HDPE Underdrain X 18.00 L= 32.0' Ke= 0.500
				Inlet / Outlet Invert= 94.33' / 94.17' S= 0.0050 '/' Cc= 0.900
				n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#	ŧ3	Secondary	100.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 18.00
				Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
				2.50 3.00 3.50

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NOAA 24-hr C 10-Year _Current Rainfall=5.16"

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 #4
 Tertiary
 100.50'
 Coef. (English)
 2.54
 2.61
 2.61
 2.60
 2.66
 2.70
 2.77
 2.89
 2.88
 2.85
 3.07
 3.20
 3.32
 6.0' long Sharp-Crested Rectangular Weir X 18.00
 2
 End Contraction(s)

Primary OutFlow Max=24.54 cfs @ 12.40 hrs HW=100.28' (Free Discharge) 1=Culvert (Passes 24.54 cfs of 36.74 cfs potential flow) 2=6" HDPE Underdrain (Barrel Controls 24.54 cfs @ 6.94 fps)

Secondary OutFlow Max=19.45 cfs @ 12.42 hrs HW=100.27' (Free Discharge) —3=Broad-Crested Rectangular Weir (Weir Controls 19.45 cfs @ 1.33 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.75' (Free Discharge) **4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

ond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration) - Chamber Wizard Fi

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech® SC-740 with cap length) Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

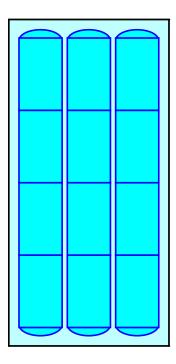
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length 3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width 18.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.50' Field Height

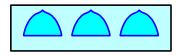
12 Chambers x 45.9 cf = 551.3 cf Chamber Storage

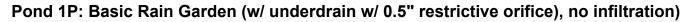
2,274.9 cf Field - 551.3 cf Chambers = 1,723.6 cf Stone x 40.0% Voids = 689.4 cf Stone Storage

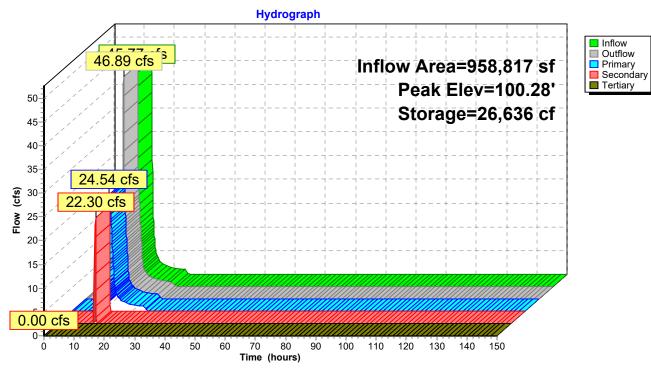
Chamber Storage + Stone Storage = 1,240.7 cf = 0.028 af Overall Storage Efficiency = 54.5%Overall System Size = $32.10' \times 15.75' \times 4.50'$

12 Chambers 84.3 cy Field 63.8 cy Stone









Summary for Pond 2P: ROOF RG 750 SF

Assumes infiltration through media is non-limiting.

Inflow Area =	69,839 sf,100.00% Impervious,	Inflow Depth = 4.92" for 10-Year Current event					
Inflow =	8.54 cfs @ 12.13 hrs, Volume=	28,651 cf					
Outflow =	0.29 cfs @ 14.70 hrs, Volume=	28,651 cf, Atten= 97%, Lag= 154.2 min					
Discarded =	0.29 cfs @ 14.70 hrs, Volume=	28,651 cf					
Primary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf					
Routed to Link 1L : Combined Flow							

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 99.82' @ 14.70 hrs Surf.Area= 24,965 sf Storage= 15,649 cf

Plug-Flow detention time= 508.6 min calculated for 28,641 cf (100% of inflow) Center-of-Mass det. time= 508.7 min (1,257.0 - 748.3)

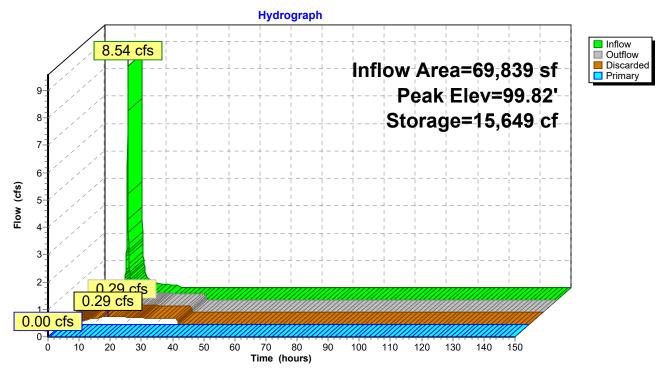
Volume	Invert	Avai	I.Storage	Storage Descri	ption		
#1	98.25'		735 cf	Custom Stage	Data (Conic)Liste	d below (Recalc)	
			735 cf	x 37.00 = 27,209 cf Total Available Storage			
Elevation (feet) 98.25 99.25 99.50 100.00 100.25	Su	rf.Area (sq-ft) 546 546 546 750 750	Voids (%) 0.0 35.0 25.0 100.0 100.0	Inc.Store (cubic-feet) 0 191 34 323 188	Cum.Store (cubic-feet) 0 191 225 548 735	Wet.Area (sq-ft) 546 629 650 858 883	
	outing			let Devices	100		
#1 Discarded 98.25' #2 Primary 100.00'			.25' 0.5 .00' 2.0' Hea 2.50	D0 in/hr Exfiltrati long x 3.0' brea ad (feet) 0.20 0.4 0 3.00 3.50 4.00	40 0.60 0.80 1.00 0 4.50 2.58 2.68 2.67 2	area ed Rectangular Weir X 37.00) 1.20 1.40 1.60 1.80 2.00 2.65 2.64 2.64 2.68 2.68	

Discarded OutFlow Max=0.29 cfs @ 14.70 hrs HW=99.82' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.25' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Site 4_20240629

Pond 2P: ROOF RG 750 SF



Summary for Pond 3P: Basic Porous Pavement (infiltration only)

156,064 sf,100.00% Impervious, Inflow Depth = 4.92" for 10-Year Current event Inflow Area = Inflow 19.09 cfs @ 12.13 hrs, Volume= 64.024 cf = 1.81 cfs @ 11.35 hrs, Volume= 64,024 cf, Atten= 91%, Lag= 0.0 min Outflow = 1.81 cfs @ 11.35 hrs, Volume= 64,024 cf Discarded = Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to Link 1L : Combined Flow

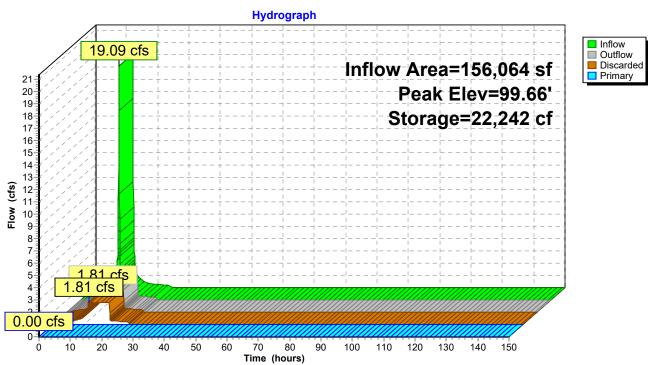
Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 99.66' @ 12.98 hrs Surf.Area= 156,064 sf Storage= 22,242 cf

Plug-Flow detention time= 81.9 min calculated for 64,003 cf (100% of inflow) Center-of-Mass det. time= 81.9 min (830.2 - 748.3)

Volume	Inver	t Ava	il.Storage	Storage Descri	Storage Description					
#1	99.25	5'	72,180 cf	Custom Stage	Listed below (Recalc)					
Elevatio (fee 99.2 99.7 99.8 100.0 100.2	et) 25 75 33 00	Surf.Area (sq-ft) 156,064 156,064 156,064 156,064 156,064	Voids (%) 0.0 35.0 15.0 15.0 100.0	Inc.Store (cubic-feet) 0 27,311 1,873 3,980 39,016	Cum.Store (cubic-feet) 0 27,311 29,184 33,164 72,180					
Device	Routing	In	vert Ou	tlet Devices						
#1 #2	Discarded Primary		0.00' 15. Hea 2.5 Co	0' long x 1.0' br ad (feet) 0.20 0.4 0 3.00	40 0.60 0.80 1.0	area rous Asphalt X 37.00 0 1.20 1.40 1.60 1.80 2.00 2.98 3.08 3.20 3.28 3.31				

Discarded OutFlow Max=1.81 cfs @ 11.35 hrs HW=99.26' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 1.81 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=99.25' (Free Discharge) ←2=Edge of Porous Asphalt (Controls 0.00 cfs)



Pond 3P: Basic Porous Pavement (infiltration only)

Summary for Pond 4P: Municipal Property Basin 2100

[63] Warning: Exceeded Reach 1R INLET depth by 0.24' @ 13.45 hrs

Inflow Area =	1,184,720 sf, 30.92% Impervious,	Inflow Depth = 2.27" for 10-Year _Current event
Inflow =	46.49 cfs @ 12.42 hrs, Volume=	224,580 cf
	16.81 cfs @ 13.14 hrs, Volume=	216,150 cf, Atten= 64%, Lag= 42.9 min
Primary =	16.81 cfs @ 13.14 hrs, Volume=	216,150 cf
Routed to Re	ach 2R : OUTFLOW PIPE	
Secondary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf
Routed to Re	ach 2R : OUTFLOW PIPE	
Tertiary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf
Routed to Re	ach 2R : OUTFLOW PIPE	

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Peak Elev= 66.98' @ 13.14 hrs Surf.Area= 40,653 sf Storage= 72,987 cf

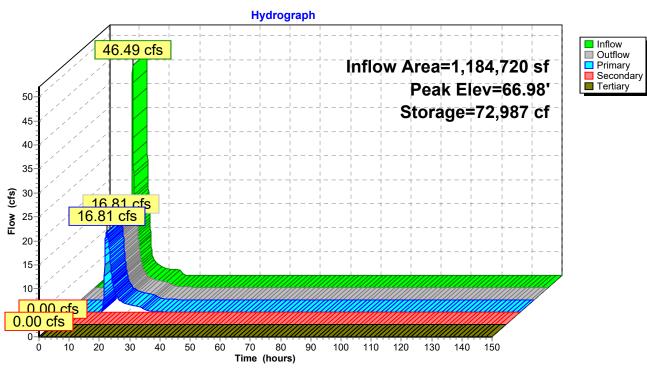
Plug-Flow detention time= 141.0 min calculated for 216,150 cf (96% of inflow) Center-of-Mass det. time= 118.9 min (970.8 - 851.9)

Volume	Invert	Avail.Stor	age Storage	e Description	
#1	65.00'	213,10	5 cf Custor	n Stage Data (Pri	smatic)Listed below (Recalc)
Elevatio (fee 65.0	et)	ırf.Area (sq-ft) 33,242	Inc.Store (cubic-feet) 0	Cum.Store (cubic-feet) 0	
70.0		52,000	213,105	213,105	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	65.25'		ow Flow Orifice	
#2	Secondary	67.25'	24.0" W x 18	eir flow at low head 8.0" H Vert. 2-YR eir flow at low head	Orifice X 3.00 C= 0.600
#3	Tertiary	69.50'	48.0" x 48.0	" Horiz. Orifice/G eir flow at low head	rate C= 0.600

Primary OutFlow Max=16.80 cfs @ 13.14 hrs HW=66.98' (Free Discharge) **1=Low Flow Orifice** (Orifice Controls 16.80 cfs @ 4.75 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=65.00' (Free Discharge) 2=2-YR Orifice (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=65.00' (Free Discharge) **-3=Orifice/Grate** (Controls 0.00 cfs)



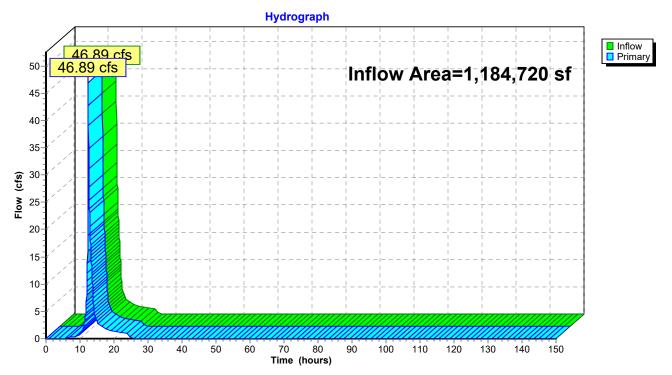
Pond 4P: Municipal Property Basin 2100

Site 4_20240629	NOAA 24-hr C 10-Year	_Current Rainfall=5.16"
Prepared by Rutgers Cooperative Extension Wa	ater Resources Program	Printed 6/29/2024
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Summary for Link 1L: Combined Flow

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 2.27" for 10-Year _Current event Inflow = 46.89 cfs @ 12.42 hrs, Volume= 224,539 cf Primary = 46.89 cfs @ 12.42 hrs, Volume= 224,539 cf, Atten= 0%, Lag= 0.0 min Routed to Reach 1R : INLET PIPE

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs



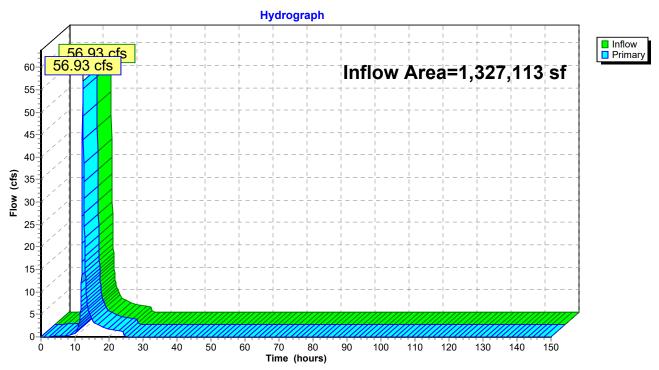
Link 1L: Combined Flow

Site 4_20240629	NOAA 24-hr C 10-Year	_Current Rainfall=5.16"
Prepared by Rutgers Cooperative Extension Wa	ater Resources Program	Printed 6/29/2024
HydroCAD® 10.10-7c s/n 03601 © 2022 HydroCAD So	ftware Solutions LLC	Page 79

Summary for Link 2L: Offsite Flows

Inflow Are	a =	1,327,113 sf, 10.64% Impervious, Inflow Depth = 2.50" for 10-Year _Current event
Inflow	=	56.93 cfs @ 12.33 hrs, Volume= 276,386 cf
Primary	=	56.93 cfs @ 12.33 hrs, Volume= 276,386 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs



Link 2L: Offsite Flows

Site 4_20240629	NOAA 24-hr C 10-Yea	r_2100 Rainfall=6.21"
Prepared by Rutgers Cooperative Extension Water	Resources Program	Printed 6/29/2024
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Time span=0.00-150.00 hrs, dt=0.05 hrs, 3001 points Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

C ,	
Subcatchment 1S: DA 1: All	Runoff Area=1,184,721 sf 30.92% Impervious Runoff Depth=4.17" Tc=25.2 min CN=74/98 Runoff=80.91 cfs 411,587 cf
Subcatchment1Sa: DA 1: CN w/ IC areas	s Runoff Area=958,817 sf 14.64% Impervious Runoff Depth=3.74" Tc=25.2 min CN=74/98 Runoff=60.44 cfs 299,169 cf
Subcatchment1Sb: Roof	Runoff Area=69,839 sf 100.00% Impervious Runoff Depth=5.97" Tc=6.0 min CN=0/98 Runoff=10.30 cfs 34,754 cf
Subcatchment 1Sc: Driveways (GIS -	Runoff Area=156,064 sf 100.00% Impervious Runoff Depth=5.97" Tc=6.0 min CN=0/98 Runoff=23.01 cfs 77,663 cf
Subcatchment2S: DA 2: CN w/ IC areas	Runoff Area=100,787 sf 8.36% Impervious Runoff Depth=3.58" Tc=15.5 min CN=74/98 Runoff=7.64 cfs 30,071 cf
Subcatchment3S: DA 3: CN w/ IC areas Flow	Runoff Area=150,325 sf 10.26% Impervious Runoff Depth=3.54" / Length=329' Tc=17.3 min CN=73/98 Runoff=10.75 cfs 44,365 cf
Subcatchment4S: DA 4: CN w/ IC areas	Runoff Area=1,076,001 sf 10.91% Impervious Runoff Depth=3.30" Tc=24.2 min CN=70/98 Runoff=61.11 cfs 295,889 cf
	. Flow Depth=1.49' Max Vel=14.07 fps Inflow=60.27 cfs 296,713 cf 0' S=0.0200 '/' Capacity=203.14 cfs Outflow=60.25 cfs 296,801 cf
	. Flow Depth=1.01' Max Vel=11.04 fps Inflow=23.18 cfs 288,378 cf 5.0' S=0.0200 '/' Capacity=94.33 cfs Outflow=23.18 cfs 288,378 cf
Pond 1P: Basic Rain Garden (w/ Primary=24.80 cfs 256,604 cf Secondary=35.47	Peak Elev=100.40' Storage=27,010 cf Inflow=60.44 cfs 299,169 cf cfs 40,109 cf Tertiary=0.00 cfs 0 cf Outflow=60.27 cfs 296,713 cf
Pond 2P: ROOF RG 750 SF Discarded=0.	Peak Elev=99.98' Storage=19,759 cf Inflow=10.30 cfs 34,754 cf 32 cfs 34,754 cf Primary=0.00 cfs 0 cf Outflow=0.32 cfs 34,754 cf
Pond 3P: Basic Porous Pavement Discarded=1.	Peak Elev=99.83' Storage=29,277 cf Inflow=23.01 cfs 77,663 cf 81 cfs 77,663 cf Primary=0.00 cfs 0 cf Outflow=1.81 cfs 77,663 cf
Pond 4P: Municipal Property Basin 2100 Primary=20.82 cfs 283,237 cf Secondary=2.3	Peak Elev=67.50' Storage=94,683 cf Inflow=60.25 cfs 296,801 cf 6 cfs 5,142 cf Tertiary=0.00 cfs 0 cf Outflow=23.18 cfs 288,378 cf
Link 1L: Combined Flow	Inflow=60.27 cfs 296,713 cf Primary=60.27 cfs 296,713 cf
Link 2L: Offsite Flows	Inflow=77.25 cfs 370,326 cf Primary=77.25 cfs 370,326 cf

Total Runoff Area = 3,696,554 sf Runoff Volume = 1,193,500 cf Average Runoff Depth = 3.87" 76.36% Pervious = 2,822,814 sf 23.64% Impervious = 873,740 sf

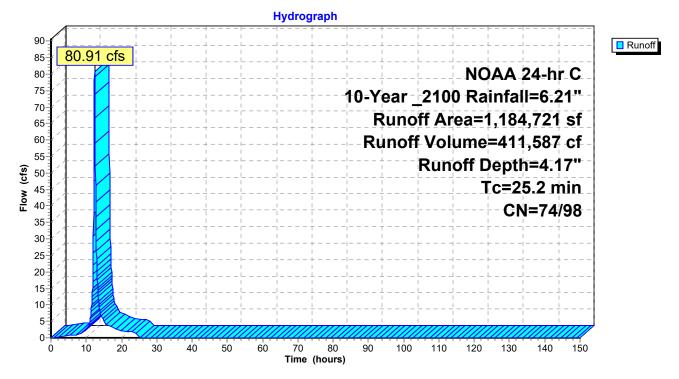
Summary for Subcatchment 1S: DA 1: All

Runoff = 80.91 cfs @ 12.36 hrs, Volume= 411,587 cf, Depth= 4.17"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description			
*	366,258	98	Impervious			
	15,045	65	Brush, Good, HSG C			
	794,453	74	>75% Grass cover, Good, HSG C			
	8,965	70	Woods, Good, HSG C			
	1,184,721	81	Weighted Average			
	818,463	74	69.08% Pervious Area			
	366,258	98	30.92% Impervious Area			
	-					
	Tc Length	Slop				
	(min) (feet)	(ft/	ft) (ft/sec) (cfs)			
	25.2		Direct Entry, Direct			

Subcatchment 1S: DA 1: All



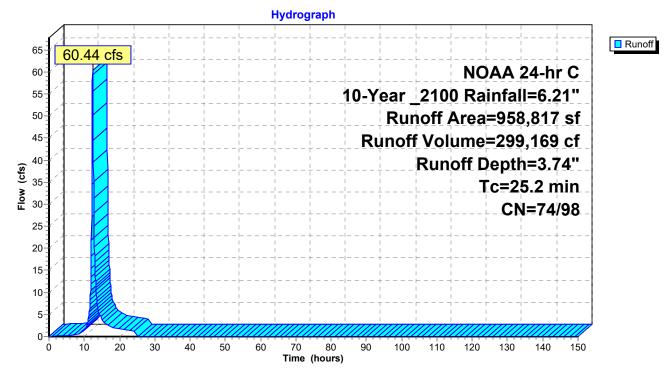
Summary for Subcatchment 1Sa: DA 1: CN w/ IC areas

Runoff = 60.44 cfs @ 12.36 hrs, Volume= 299,169 cf, Depth= 3.74" Routed to Pond 1P : Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (s	f) CN	Description					
*	140,35	4 98	Impervious					
	15,04	5 65	Brush, Goo	d, HSG C				
	794,45	3 74	>75% Gras	>75% Grass cover, Good, HSG C				
	8,96	5 70	Woods, Go	od, HSG C				
	958,81	7 77	Weighted A	verage				
	818,46	3 74	85.36% Pe	rvious Area	a			
	140,35	4 98	14.64% Im	pervious Ar	rea			
	Tc Leng			Capacity	I			
(m	nin) (fe	et) (ft	/ft) (ft/sec)	(cfs)				
2	5.2				Direct Entry, Direct			

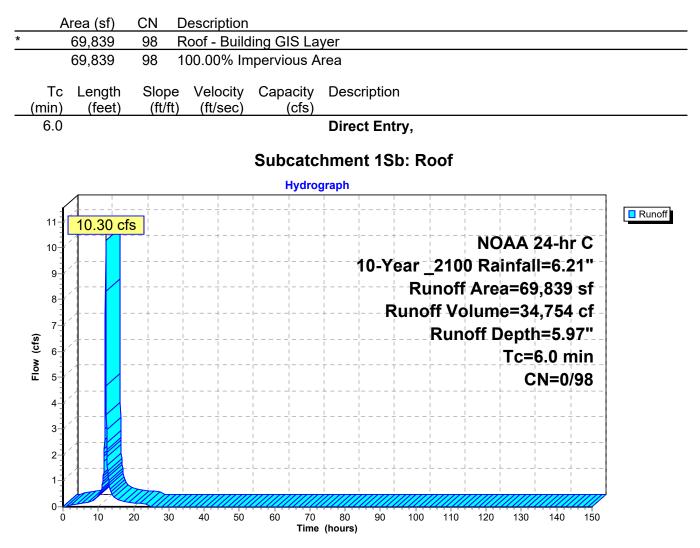
Subcatchment 1Sa: DA 1: CN w/ IC areas



Summary for Subcatchment 1Sb: Roof

Runoff = 10.30 cfs @ 12.13 hrs, Volume= 34,754 cf, Depth= 5.97" Routed to Pond 2P : ROOF RG 750 SF

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

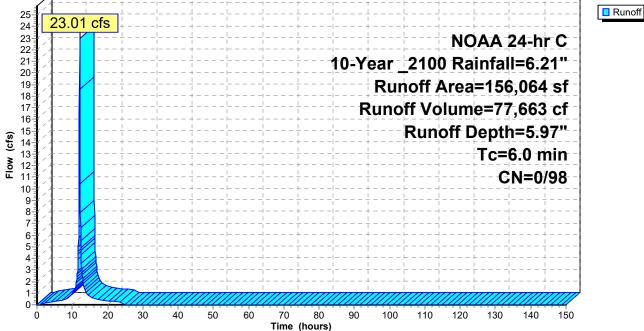


Summary for Subcatchment 1Sc: Driveways (GIS - other)

Runoff = 23.01 cfs @ 12.13 hrs, Volume= 77,663 cf, Depth= 5.97" Routed to Pond 3P : Basic Porous Pavement (infiltration only)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	А	rea (sf)	CN	Description						
*	1	56,064	98	Impervious	Drivways (other)				
	156,064 98 100.00% Impervious Area									
	Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs)									
	6.0 Direct Entry,									
	Subcatchment 1Sc: Driveways (GIS - other)									
	Hydrograph									
	~ 1		+	- +		 + +		+ +		Runoff
	25 24	23.01 cf	S +					+		



Site 4_20240629	NOAA 24-hr C 10-Year	_2100 Rainfall=6.21"
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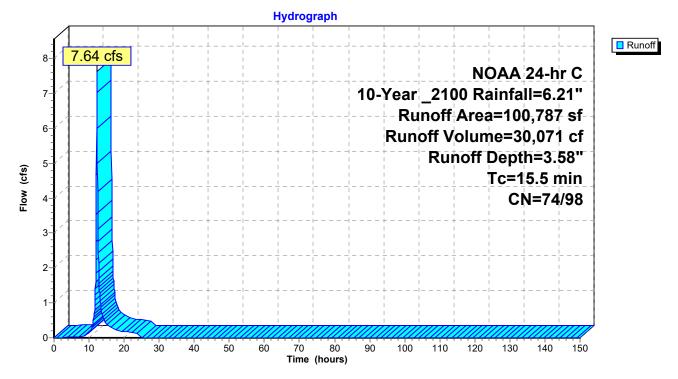
Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 7.64 cfs @ 12.24 hrs, Volume= 30,071 cf, Depth= 3.58" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description	Description				
*	8,425	98	Impervious					
	86	65	Brush, Goo	d, HSG C				
	92,276	74	>75% Gras	s cover, Go	ood, HSG C			
	100,787	76	Weighted A	verage				
	92,362 74 91.64% Pervious Area				3			
	8,425 98 8.36% Impervious Area			ervious Are	a			
- (mi	Гс Length n) (feet)	Slop (ft/f		Capacity (cfs)	Description			
15	.5				Direct Entry, Direct			

Subcatchment 2S: DA 2: CN w/ IC areas



Summary for Subcatchment 3S: DA 3: CN w/ IC areas

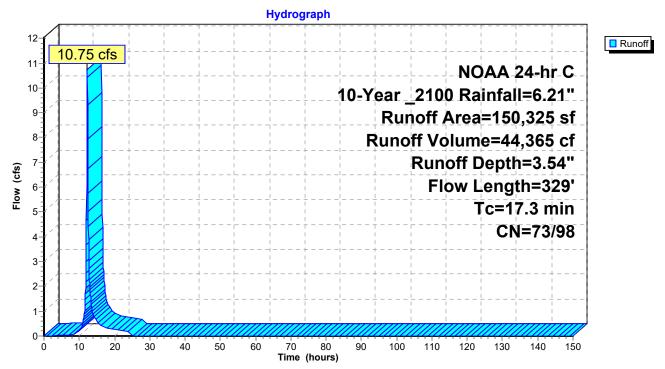
Runoff = 10.75 cfs @ 12.26 hrs, Volume= 44,365 cf, Depth= 3.54" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

_	A	rea (sf)	CN I	Description		
*		15,427	98 I	mpervious		
		17,213	65 I	Brush, Goo	d, HSG C	
		11,427	73 I	Brush, Goo	d, HSG D	
		99,487	74 >	>75% Gras	s cover, Go	ood, HSG C
_		6,771	70 \	Noods, Go	od, HSG C	
	1	50,325	75 \	Neighted A	verage	
	1	34,898	73 8	39.74% Pei	vious Area	
		15,427	98 ⁻	10.26% Imp	pervious Are	ea
	_				_	
	Тс	Length	Slope		Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	12.5	100	0.0103	0.13		Sheet Flow, Sheetflow
						Grass: Short n= 0.150 P2= 3.34"
	4.8	229	0.0129	0.80		Shallow Concentrated Flow, SCF - Grass
_						Short Grass Pasture Kv= 7.0 fps
	17 2	220	Total			

17.3 329 Total

Subcatchment 3S: DA 3: CN w/ IC areas



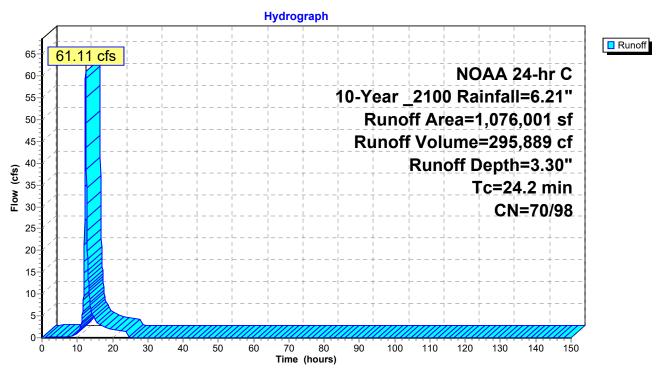
Site 4_20240629NOAA 24-hr C 10-Year _2100 Rainfall=6.21"Prepared by Rutgers Cooperative Extension Water Resources ProgramPrinted 6/29/2024HydroCAD® 10.10-7c s/n 03601 © 2022 HydroCAD Software Solutions LLCPage 87

Summary for Subcatchment 4S: DA 4: CN w/ IC areas

Runoff = 61.11 cfs @ 12.35 hrs, Volume= 295,889 cf, Depth= 3.30" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

Ar	rea (sf)	CN	Description					
* 1	17,373	98	Impervious					
37	76,010	65	Brush, Goo	d, HSG C				
	14,106	73	Brush, Goo	d, HSG D				
ę	58,960	79	50-75% Gra	iss cover, F	Fair, HSG C			
	6,320	84	50-75% Gra	iss cover, F	⁻ air, HSG D			
19	99,948	74	>75% Grass	s cover, Go	ood, HSG C			
	6,758	80	>75% Grass	s cover, Go	ood, HSG D			
	13	86	<50% Grass	s cover, Po	or, HSG C			
	5,323	72	Woods/gras	s comb., G	Good, HSG C			
9	90,808	73	Woods, Fair	r, HSG C				
20	00,382	70	Woods, Goo	od, HSG C				
1,07	76,001	73	Weighted A	verage				
9	58,628	70	89.09% Per	vious Area				
1	17,373	98	98 10.91% Impervious Area					
Тс	Length	Slop	e Velocity	Capacity	Description			
(min)	(feet)	(ft/ˈf		(cfs)	I			
24.2					Direct Entry, Direct			



Subcatchment 4S: DA 4: CN w/ IC areas

Summary for Reach 1R: INLET PIPE

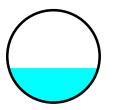
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 3.01" for 10-Year _2100 event Inflow = 60.27 cfs @ 12.37 hrs, Volume= 296,713 cf Outflow = 60.25 cfs @ 12.37 hrs, Volume= 296,801 cf, Atten= 0%, Lag= 0.1 min Routed to Pond 4P : Municipal Property Basin 2100

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 14.07 fps, Min. Travel Time= 0.1 min Avg. Velocity = 4.54 fps, Avg. Travel Time= 0.2 min

Peak Storage= 214 cf @ 12.37 hrs Average Depth at Peak Storage= 1.49', Surface Width= 3.87' Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 203.14 cfs

48.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 50.0' Slope= 0.0200 '/' Inlet Invert= 66.00', Outlet Invert= 65.00'



Site 4 20240629

20

15 10-5 0-

Ó

20

30

40

50

60

10

S=0.0200 '/'

140

150

Capacity=203.14 cfs

130

120

Hydrograph Inflow
Outflow 60.27 cfs 60.25 cfs 65 Inflow Area=1,184,720 sf 60 Avg. Flow Depth=1.49' 55 Max Vel=14.07 fps 50 48.0" 45 40 **Round Pipe** (cfs) 35 n=0.013 **NOL** 30-L=50.0' 25

70

Time (hours)

80

90

100

110

Reach 1R: INLET PIPE

Summary for Reach 2R: OUTFLOW PIPE

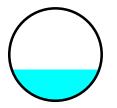
[52] Hint: Inlet/Outlet conditions not evaluated

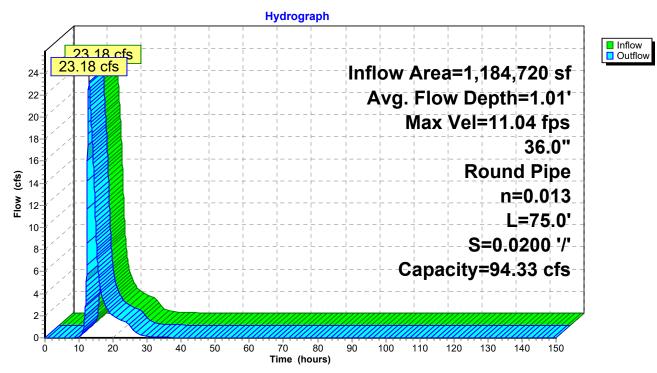
Inflow Are	a =	1,184,720 sf, 30.92% Impervious, Inflow Depth = 2.92"	for 10-Year _2100 event
Inflow	=	23.18 cfs @ 12.93 hrs, Volume= 288,378 cf	
Outflow	=	23.18 cfs @ 12.93 hrs, Volume= 288,378 cf, Atte	n= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Max. Velocity= 11.04 fps, Min. Travel Time= 0.1 min Avg. Velocity = 1.95 fps, Avg. Travel Time= 0.6 min

Peak Storage= 157 cf @ 12.93 hrs Average Depth at Peak Storage= 1.01', Surface Width= 2.84' Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 94.33 cfs

36.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 75.0' Slope= 0.0200 '/' Inlet Invert= 62.00', Outlet Invert= 60.50'





Reach 2R: OUTFLOW PIPE

Site 4_20240629	NOAA 24-hr C	10-Year	_2100 Rainfall=6.21"
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Summary for Pond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Inflow Area =	958,817 sf, 14.64% Impervious,	Inflow Depth = 3.74" for 10-Year _2100 event				
Inflow =	60.44 cfs @ 12.36 hrs, Volume=	299,169 cf				
Outflow =	60.27 cfs @ 12.37 hrs, Volume=	296,713 cf, Atten= 0%, Lag= 0.4 min				
	24.80 cfs @ 12.35 hrs, Volume=	256,604 cf				
Routed to Link	< 1L : Combined Flow					
	35.47 cfs @ 12.37 hrs, Volume=	40,109 cf				
Routed to Link 1L : Combined Flow						
	0.00 cfs @ 0.00 hrs, Volume=	0 cf				
Routed to Link	< 1L : Combined Flow					

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 3 Peak Elev= 100.40' @ 12.35 hrs Surf.Area= 12,249 sf Storage= 27,010 cf

Plug-Flow detention time= 20.2 min calculated for 296,615 cf (99% of inflow) Center-of-Mass det. time= 15.1 min (843.5 - 828.4)

Volume	Invert	Avail.Storage	Storage Description
#1	97.75'	497 cf	Custom Stage Data (Conic)Listed below (Recalc)
#2A	93.75'	689 cf	15.75'W x 32.10'L x 4.50'H Field A
			2,275 cf Overall - 551 cf Embedded = 1,724 cf x 40.0% Voids
#3A	95.25'	551 cf	ADS_StormTech SC-740 +Cap x 12 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			12 Chambers in 3 Rows
		1,737 cf	x 18.00 = 31,271 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevatio (fee		Surf.Area (sq-ft)	Voic %)		Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
97.7	75	175	0.	0	0	0	175	
98.2	25	175	35.	0	31	31	198	
99.2	25	175	35.	0	61	92	245	
99.8	50	175	25.	0	11	103	257	
100.0	00	175	100.	0	88	190	281	
100.5	51	175	100.	0	89	280	304	
101.7	75	175	100.	0	217	497	363	
Device	Routing	In	vert	Outlet	Devices			
#1	Primary	94	1.17'	6.0"	Round Culvert X 1	8.00 L= 10.0' k	(e= 0.500	
	, ,	_					.0050 '/' Cc= 0.900)
				n= 0.0	20 Corrugated PE	, corrugated inte	rior, Flow Area= 0.	20 sf
#2	Device 1	94	.33'	6.0" F	Round 6" HDPE Ur	nderdrain X 18.0)0 L= 32.0' Ke= 0.	500
				Inlet /	Outlet Invert= 94.3	3' / 94.17' S= 0.	.0050 '/' Cc= 0.900)
				n= 0.0	20 Corrugated PE	, corrugated inte	rior, Flow Area= 0.	20 sf
#3	Seconda	ry 100).00'	3.0' lo	ng x 2.0' breadth	Broad-Crested	Rectangular Weir	X 18.00
				Head	(feet) 0.20 0.40 0	.60 0.80 1.00	1.20 1.40 1.60 1.8	30 2.00
					3.00 3.50			
						1 2.61 2.60 2.6	6 2.70 2.77 2.89	2.88
				2.85	3.07 3.20 3.32			

Site 4 20240629

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#4 Tertiary 100.50' **6.0' long Sharp-Crested Rectangular Weir X 18.00** 2 End Contraction(s)

Primary OutFlow Max=24.80 cfs @ 12.35 hrs HW=100.40' (Free Discharge) 1=Culvert (Passes 24.80 cfs of 37.12 cfs potential flow) 2=6" HDPE Underdrain (Barrel Controls 24.80 cfs @ 7.02 fps)

Secondary OutFlow Max=35.07 cfs @ 12.37 hrs HW=100.40' (Free Discharge) —3=Broad-Crested Rectangular Weir (Weir Controls 35.07 cfs @ 1.64 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.75' (Free Discharge) **4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs) Site 4_20240629NOAA 24-hr C 10-Year _2100 Rainfall=6.21"Prepared by Rutgers Cooperative Extension Water Resources ProgramPrinted 6/29/2024HydroCAD® 10.10-7c s/n 03601 © 2022 HydroCAD Software Solutions LLCPage 94

ond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration) - Chamber Wizard Fi

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech® SC-740 with cap length) Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

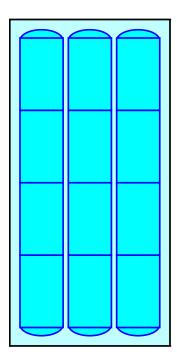
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length 3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width 18.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.50' Field Height

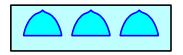
12 Chambers x 45.9 cf = 551.3 cf Chamber Storage

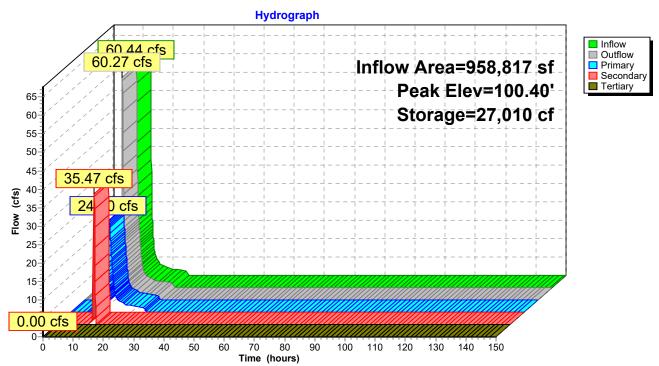
2,274.9 cf Field - 551.3 cf Chambers = 1,723.6 cf Stone x 40.0% Voids = 689.4 cf Stone Storage

Chamber Storage + Stone Storage = 1,240.7 cf = 0.028 af Overall Storage Efficiency = 54.5%Overall System Size = $32.10' \times 15.75' \times 4.50'$

12 Chambers 84.3 cy Field 63.8 cy Stone







Pond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Summary for Pond 2P: ROOF RG 750 SF

Assumes infiltration through media is non-limiting.

Inflow Area =	69,839 sf,100.00% Impervious,	Inflow Depth = 5.97" for 10-Year 2100 event					
Inflow =	10.30 cfs @ 12.13 hrs, Volume=	34,754 cf					
Outflow =	0.32 cfs @ 14.90 hrs, Volume=	34,754 cf, Atten= 97%, Lag= 166.4 min					
Discarded =	0.32 cfs @ 14.90 hrs, Volume=	34,754 cf					
Primary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf					
Routed to Link 1L : Combined Flow							

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 99.98' @ 14.90 hrs Surf.Area= 27,448 sf Storage= 19,759 cf

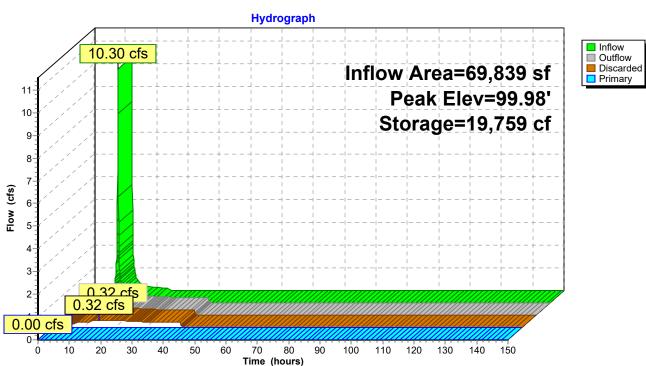
Plug-Flow detention time= 601.2 min calculated for 34,743 cf (100% of inflow) Center-of-Mass det. time= 601.3 min (1,346.7 - 745.3)

Volume	Inve	rt Ava	il.Storage	Storage Descri	ption	
#1	98.25	5'	735 cf	Custom Stage	Data (Conic)Liste	d below (Recalc)
			735 cf	x 37.00 = 27,2	209 cf Total Availa	able Storage
Elevatio (fee 98.2 99.2 99.5 100.0 100.2	et) 25 25 50 00	Surf.Area (sq-ft) 546 546 546 750 750	Voids (%) 0.0 35.0 25.0 100.0 100.0	Inc.Store (cubic-feet) 0 191 34 323 188	Cum.Store (cubic-feet) 0 191 225 548 735	Wet.Area (sq-ft) 546 629 650 858 883
Device #1 #2	25 <u>Routing</u> Discarded Primary	750 100.0 touting Invert Out Discarded 98.25' 0.50 Primary 100.00' 2.0' Hea 2.50 Coe 2.72		let Devices 00 in/hr Exfiltrati long x 3.0' brea id (feet) 0.20 0.4 0 3.00 3.50 4.00 if. (English) 2.44 2 2.81 2.92 2.97	ion over Surface a adth Broad-Creste 40 0.60 0.80 1.00 0 4.50 2.58 2.68 2.67 2 7 3.07 3.32	area ed Rectangular Weir X 37.00 0 1.20 1.40 1.60 1.80 2.00 2.65 2.64 2.64 2.68 2.68

Discarded OutFlow Max=0.32 cfs @ 14.90 hrs HW=99.98' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.25' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Site 4 20240629



Pond 2P: ROOF RG 750 SF

Summary for Pond 3P: Basic Porous Pavement (infiltration only)

156,064 sf,100.00% Impervious, Inflow Depth = 5.97" for 10-Year 2100 event Inflow Area = Inflow = 23.01 cfs @ 12.13 hrs, Volume= 77.663 cf 1.81 cfs @ 11.15 hrs, Volume= 77,663 cf, Atten= 92%, Lag= 0.0 min Outflow = 1.81 cfs @ 11.15 hrs, Volume= 77,663 cf Discarded = 0.00 cfs @ 0.00 hrs, Volume= Primary = 0 cf Routed to Link 1L : Combined Flow

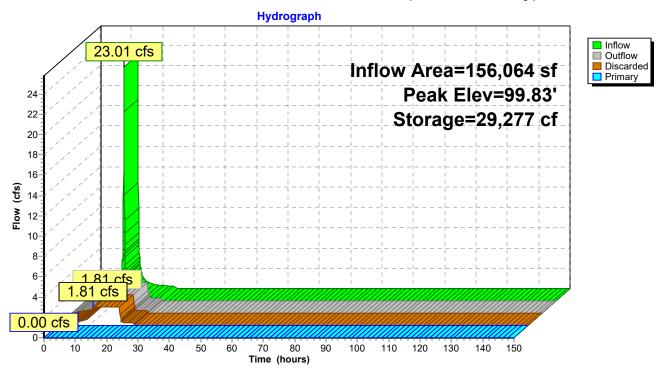
Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 99.83' @ 13.14 hrs Surf.Area= 156,064 sf Storage= 29,277 cf

Plug-Flow detention time= 112.7 min calculated for 77,663 cf (100% of inflow) Center-of-Mass det. time= 112.6 min (858.0 - 745.3)

Volume	Inve	rt Ava	il.Storage	Storage Descri	ption	
#1	99.25	5'	72,180 cf	Custom Stage	Data (Prismatic)	Listed below (Recalc)
Elevatio (fee 99.2 99.7 99.8 100.0 100.2	et) 25 75 33 00	Surf.Area (sq-ft) 156,064 156,064 156,064 156,064 156,064	Voids (%) 35.0 15.0 15.0 100.0	Inc.Store (cubic-feet) 0 27,311 1,873 3,980 39,016	Cum.Store (cubic-feet) 0 27,311 29,184 33,164 72,180	
Device #1 #2	Routing Discarded Primary	99 k	0.25' 0.5 0.00' 15. Hea 2.5	0' long x 1.0' br ad (feet) 0.20 0.4 0 3.00	40 0.60 0.80 1.0	area rous Asphalt X 37.00 0 1.20 1.40 1.60 1.80 2.00 2.98 3.08 3.20 3.28 3.31
				0 3.31 3.32		

Discarded OutFlow Max=1.81 cfs @ 11.15 hrs HW=99.26' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 1.81 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=99.25' (Free Discharge) ←2=Edge of Porous Asphalt (Controls 0.00 cfs)



Pond 3P: Basic Porous Pavement (infiltration only)

Summary for Pond 4P: Municipal Property Basin 2100

[63] Warning: Exceeded Reach 1R INLET depth by 0.64' @ 13.05 hrs

Inflow Area =	1,184,720 sf, 30.92% Imperviou	s, Inflow Depth = 3.01" for 10-Year _2100 event
Inflow =	60.25 cfs @ 12.37 hrs, Volume	= 296,801 cf
Outflow =	23.18 cfs @ 12.93 hrs, Volume	= 288,378 cf, Atten= 62%, Lag= 34.0 min
Primary =	20.82 cfs @ 12.93 hrs, Volume	= 283,237 cf
Routed to Rea	ach 2R : OUTFLOW PIPE	
Secondary =	2.36 cfs @ 12.93 hrs, Volume	= 5,142 cf
Routed to Rea	ach 2R : OUTFLOW PIPE	
Tertiary =	0.00 cfs @ 0.00 hrs, Volume	= 0 cf
Routed to Rea	ach 2R : OUTFLOW PIPE	

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Peak Elev= 67.50' @ 12.93 hrs Surf.Area= 42,608 sf Storage= 94,683 cf

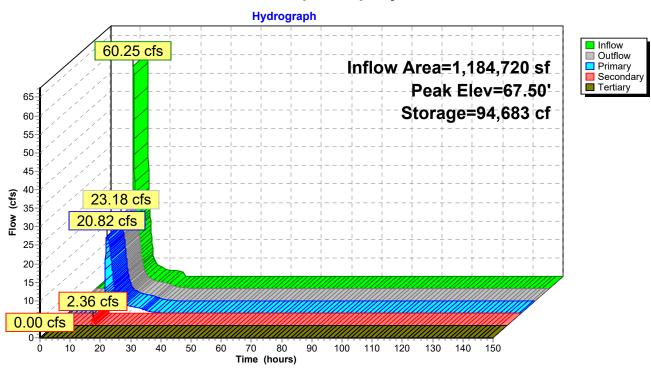
Plug-Flow detention time= 122.7 min calculated for 288,282 cf (97% of inflow) Center-of-Mass det. time= 107.4 min (951.0 - 843.7)

Volume	Invert	Avail.Stor	rage Storage l	Description	
#1	65.00'	213,10	05 cf Custom	Stage Data (Pr	ismatic)Listed below (Recalc)
Elevatio	et)	rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
65.0 70.0		33,242 52,000	0 213,105	0 213,105	
Device	Routing	Invert	Outlet Devices	i	
#1	Primary	65.25'			X 2.00 C= 0.600
#2	Secondary	67.25'	24.0" W x 18.0	flow at low hea)'' H Vert. 2-YR flow at low hea	Orifice X 3.00 C= 0.600
#3	Tertiary	69.50'		Horiz. Orifice/G	Grate C= 0.600 Ids

Primary OutFlow Max=20.82 cfs @ 12.93 hrs HW=67.50' (Free Discharge) **1=Low Flow Orifice** (Orifice Controls 20.82 cfs @ 5.89 fps)

Secondary OutFlow Max=2.35 cfs @ 12.93 hrs HW=67.50' (Free Discharge) 2=2-YR Orifice (Orifice Controls 2.35 cfs @ 1.59 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=65.00' (Free Discharge) **-3=Orifice/Grate** (Controls 0.00 cfs)



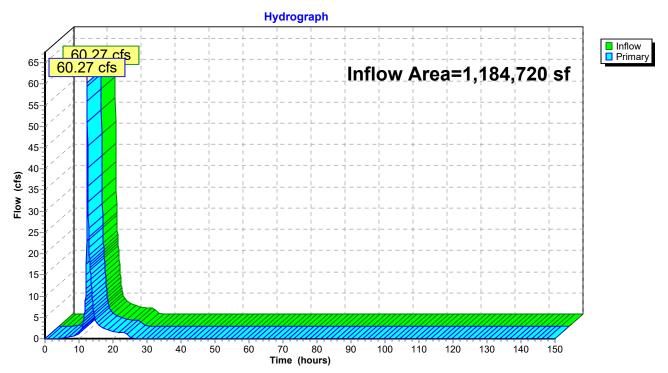
Pond 4P: Municipal Property Basin 2100

Site 4_20240629	NOAA 24-hr C 10-Year	_2100 Rainfall=6.21"
Prepared by Rutgers Cooperative Extension Wate	er Resources Program	Printed 6/29/2024
HydroCAD® 10.10-7c s/n 03601 © 2022 HydroCAD Softw	vare Solutions LLC	Page 102

Summary for Link 1L: Combined Flow

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 3.01" for 10-Year _2100 event Inflow = 60.27 cfs @ 12.37 hrs, Volume= 296,713 cf Primary = 60.27 cfs @ 12.37 hrs, Volume= 296,713 cf, Atten= 0%, Lag= 0.0 min Routed to Reach 1R : INLET PIPE

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs



Link 1L: Combined Flow

Site 4_20240629	NOAA 24-hr C 10-Yea	r_2100 Rainfall=6.21"
Prepared by Rutgers Cooperative Extension Wate	er Resources Program	Printed 6/29/2024
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Summary for Link 2L: Offsite Flows

Inflow Are	a =	1,327,113 sf, 10.64% Impervious, Inflow Depth = 3.35" for 10-Year _2100 event
Inflow	=	77.25 cfs @ 12.32 hrs, Volume= 370,326 cf
Primary	=	77.25 cfs @ 12.32 hrs, Volume= 370,326 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs

Hydrograph Inflow Primary 77 25 cfs 77.25 cfs 85 Inflow Area=1,327,113 sf 80-75 70 65-60 55 (classification) (class 50 35-30-25 20-15-10-5 0-10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 ò Time (hours)

Link 2L: Offsite Flows

Site 4_20240629 Prepared by Rutgers Cooperative Exte HydroCAD® 10.10-7c s/n 03601 © 2022 Hyd	
Runoff by SCS TR-20 metho	-150.00 hrs, dt=0.05 hrs, 3001 points d, UH=SCS, Split Pervious/Imperv. UI as Pervious Frans method . Pond routing by Stor-Ind method
Subcatchment 1S: DA 1: All	Runoff Area=1,184,721 sf 30.92% Impervious Runoff Depth=6.69" Tc=25.2 min CN=74/98 Runoff=129.69 cfs 660,293 cf
Subcatchment1Sa: DA 1: CN w/ IC areas	s Runoff Area=958,817 sf 14.64% Impervious Runoff Depth=6.21" Tc=25.2 min CN=74/98 Runoff=100.09 cfs 496,331 cf
Subcatchment1Sb: Roof	Runoff Area=69,839 sf 100.00% Impervious Runoff Depth=8.71" Tc=6.0 min CN=0/98 Runoff=14.87 cfs 50,690 cf
Subcatchment 1Sc: Driveways (GIS -	Runoff Area=156,064 sf 100.00% Impervious Runoff Depth=8.71" Tc=6.0 min CN=0/98 Runoff=33.22 cfs 113,272 cf
Subcatchment2S: DA 2: CN w/ IC areas	Runoff Area=100,787 sf 8.36% Impervious Runoff Depth=6.03" Tc=15.5 min CN=74/98 Runoff=12.78 cfs 50,629 cf
Subcatchment 3S: DA 3: CN w/ IC areas Flow	Runoff Area=150,325 sf 10.26% Impervious Runoff Depth=5.97" / Length=329' Tc=17.3 min CN=73/98 Runoff=18.08 cfs 74,828 cf
Subcatchment4S: DA 4: CN w/ IC areas	Runoff Area=1,076,001 sf 10.91% Impervious Runoff Depth=5.66" Tc=24.2 min CN=70/98 Runoff=105.51 cfs 507,861 cf
	Flow Depth=2.11' Max Vel=16.54 fps Inflow=111.59 cfs 520,753 cf ' S=0.0200 '/' Capacity=203.14 cfs Outflow=111.44 cfs 520,860 cf
	. Flow Depth=1.77' Max Vel=14.22 fps Inflow=61.75 cfs 512,421 cf 5.0' S=0.0200 '/' Capacity=94.33 cfs Outflow=61.71 cfs 512,421 cf
	Peak Elev=100.59' Storage=27,623 cf Inflow=100.09 cfs 496,331 cf 8,549 cf Tertiary=10.50 cfs 7,427 cf Outflow=99.98 cfs 493,292 cf
Pond 2P: ROOF RG 750 SF Discarded=0.32 cfs	Peak Elev=100.08' Storage=22,498 cf Inflow=14.87 cfs 50,690 cf 39,037 cf Primary=4.13 cfs 11,653 cf Outflow=4.45 cfs 50,690 cf
Pond 3P: Basic Porous Pavement Discarded=1.81 cfs	Peak Elev=100.03' Storage=37,731 cf Inflow=33.22 cfs 113,272 cf 97,464 cf Primary=7.50 cfs 15,808 cf Outflow=9.31 cfs 113,272 cf
	Peak Elev=68.70' Storage=148,864 cf Inflow=111.44 cfs 520,860 cf cfs 97,213 cf Tertiary=0.00 cfs 0 cf Outflow=61.75 cfs 512,421 cf
Link 1L: Combined Flow	Inflow=111.59 cfs 520,753 cf Primary=111.59 cfs 520,753 cf

Link 2L: Offsite Flows

Inflow=132.74 cfs 633,318 cf Primary=132.74 cfs 633,318 cf

Total Runoff Area = 3,696,554 sf Runoff Volume = 1,953,903 cf Average Runoff Depth = 6.34" 76.36% Pervious = 2,822,814 sf 23.64% Impervious = 873,740 sf Site 4_20240629NOAA 24-hr C 100-Year _Current Rainfall=8.95"Prepared by Rutgers Cooperative Extension Water Resources ProgramPrinted 6/29/2024HydroCAD® 10.10-7c s/n 03601 © 2022 HydroCAD Software Solutions LLCPage 105

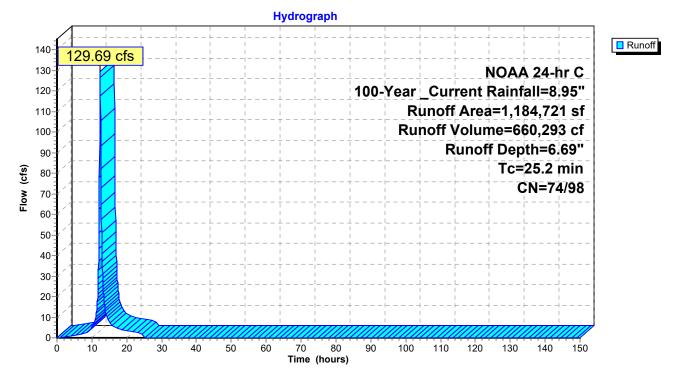
Summary for Subcatchment 1S: DA 1: All

Runoff = 129.69 cfs @ 12.35 hrs, Volume= 660,293 cf, Depth= 6.69"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.00 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description		
*	366,258	98	Impervious		
	15,045	65	Brush, Goo	d, HSG C	
	794,453	74	>75% Gras	s cover, Go	ood, HSG C
	8,965	70	Woods, Go	od, HSG C	;
	1,184,721	81	Weighted A	verage	
	818,463	74	69.08% Per	vious Area	3
	366,258	98	30.92% Imp	ervious Ar	ea
	Tc Length	Slop		Capacity	Description
((min) (feet)	(ft/	ft) (ft/sec)	(cfs)	
	25.2				Direct Entry, Direct

Subcatchment 1S: DA 1: All



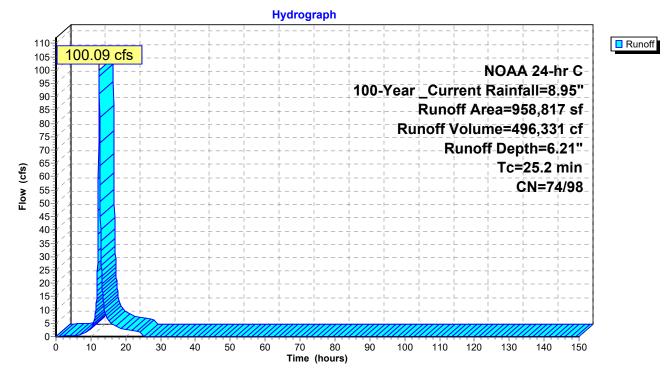
Summary for Subcatchment 1Sa: DA 1: CN w/ IC areas

Runoff = 100.09 cfs @ 12.35 hrs, Volume= 496,331 cf, Depth= 6.21" Routed to Pond 1P : Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	140,354	98	Impervious
	15,045	65	Brush, Good, HSG C
	794,453	74	>75% Grass cover, Good, HSG C
	8,965	70	Woods, Good, HSG C
	958,817	77	Weighted Average
	818,463	74	85.36% Pervious Area
	140,354	98	14.64% Impervious Area
	Tc Length	Slop	
(m	nin) (feet)	(ft/	/ft) (ft/sec) (cfs)
2	5.2		Direct Entry, Direct

Subcatchment 1Sa: DA 1: CN w/ IC areas

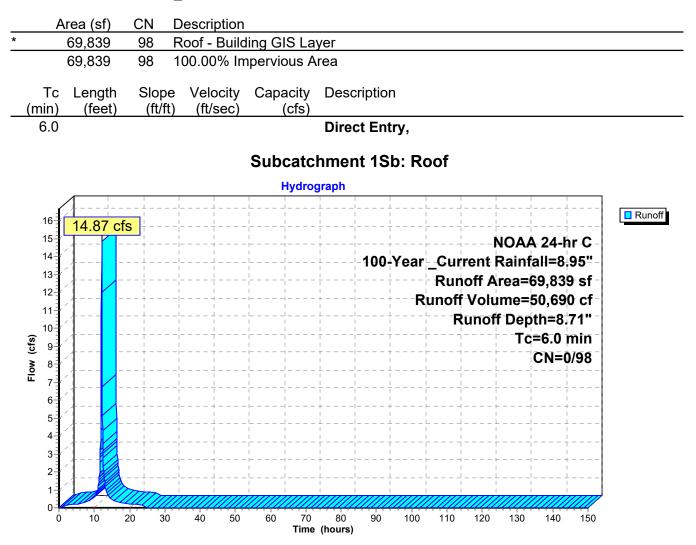


Site 4_20240629	NOAA 24-hr C 100-Year	_Current Rainfall=8.95"
Prepared by Rutgers Cooperative Extensio	n Water Resources Program	Printed 6/29/2024
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Summary for Subcatchment 1Sb: Roof

Runoff = 14.87 cfs @ 12.13 hrs, Volume= 50,690 cf, Depth= 8.71" Routed to Pond 2P : ROOF RG 750 SF

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year _Current Rainfall=8.95"



Summary for Subcatchment 1Sc: Driveways (GIS - other)

Runoff = 33.22 cfs @ 12.13 hrs, Volume= 113,272 cf, Depth= 8.71" Routed to Pond 3P : Basic Porous Pavement (infiltration only)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	rea (sf)		Descriptior										
1	56,064	98 I	mpervious	Drivways (other)								
1	56,064	98 1	100.00% Ir	npervious A	Area								
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Desc	riptior	ו						
6.0					Direc	ct Ent	ry,						
			Subcato	hment 1	Sc: Dr	ivew	ays	(GIS	- otł	ner)			
				Hydro	graph								
36	33.22 cfs	+ 			-+	+				 	 	 +	Runoff
34-1 32-1		<u>+</u>		- L	- <u>+</u>					NOA			
30- 28-		<u>+</u>				100-		_Cur Runo					
26		$\frac{1}{1}$;; ;;	- · - ·	$-\frac{1}{1}\frac{1}{1}$			noff \		1			
24- 22-	,	 		- -	- - 	+		R	unof	f Dep	th=8 =6.0		
Elow (cts) 18		+	+		- +	+					-0.0 CN=(
8 18- 18- 16-		+ +	+ 	-	+ 	+ 				+ +		+ +	
14 (12 (+			- +	+				 	 	 +	
10		+ <u>+</u>		-	- + - <u> </u> 	+ +				+ 	 	+ 	
8-1 6-1		<u> </u>										$\frac{1}{1}$	
4 2											 		
	10 2	20 30	40 50	60 70 Time	80 (hours)	90	100	110	120	130	140	150	

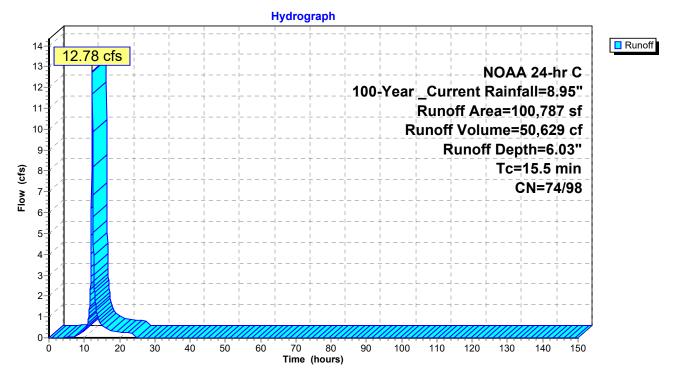
Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 12.78 cfs @ 12.24 hrs, Volume= 50,629 cf, Depth= 6.03" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year Current Rainfall=8.95"

	Area (sf)	CN	Description					
*	8,425	98	Impervious					
	86	65	Brush, Goo	d, HSG C				
	92,276	74	>75% Gras	s cover, Go	bod, HSG C			
	100,787	76	Weighted A	verage				
	92,362	74	91.64% Pe	rvious Area				
	8,425 98 8.36% Impervious Area				а			
(n	Tc Length nin) (feet)	Slop (ft/t		Capacity (cfs)	Description			
1	5.5				Direct Entry, Direct			

Subcatchment 2S: DA 2: CN w/ IC areas



Summary for Subcatchment 3S: DA 3: CN w/ IC areas

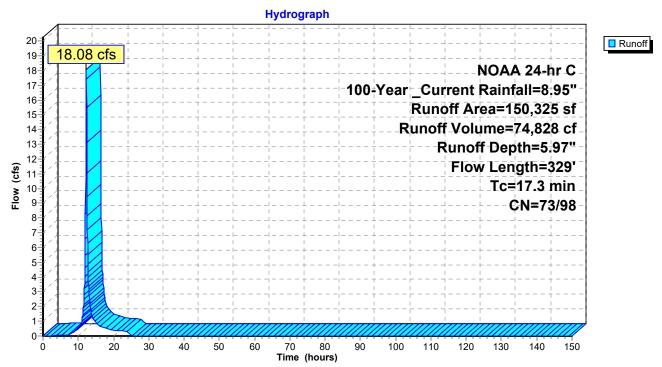
Runoff = 18.08 cfs @ 12.26 hrs, Volume= 74,828 cf, Depth= 5.97" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

_	A	rea (sf)	CN I	Description							
*		15,427	98 Impervious								
		17,213	65 I	Brush, Goo	d, HSG C						
		11,427	73 I	Brush, Goo	d, HSG D						
		99,487	74 >	>75% Gras	s cover, Go	ood, HSG C					
_		6,771	70	Noods, Go	od, HSG C						
	1	50,325	75 \	Neighted A	verage						
	1	34,898	73 8	39.74% Pei	rvious Area						
	15,427 98 10.26% Impervious Are					ea					
	_										
	Тс	Length	Slope	Velocity	Capacity	Description					
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
	12.5	100	0.0103	0.13		Sheet Flow, Sheetflow					
						Grass: Short n= 0.150 P2= 3.34"					
	4.8	229	0.0129	0.80		Shallow Concentrated Flow, SCF - Grass					
_						Short Grass Pasture Kv= 7.0 fps					
	17 0	220	Total								

17.3 329 Total

Subcatchment 3S: DA 3: CN w/ IC areas

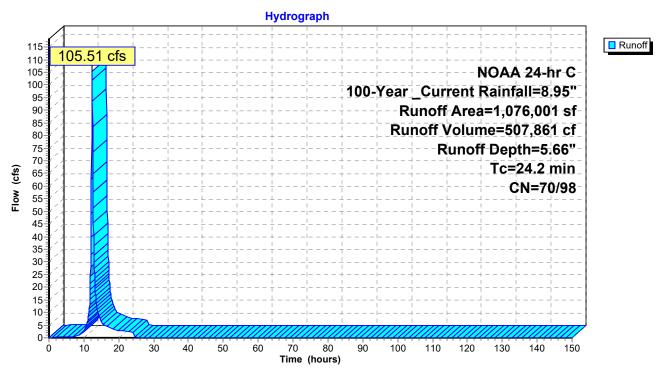


Summary for Subcatchment 4S: DA 4: CN w/ IC areas

Runoff = 105.51 cfs @ 12.34 hrs, Volume= 507,861 cf, Depth= 5.66" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

A	rea (sf)	CN	Description						
* 1	17,373	98	Impervious	Impervious					
3	876,010	65	Brush, Goo	d, HSG C					
	14,106	73	Brush, Goo	d, HSG D					
	58,960	79	50-75% Gra	ass cover, F	Fair, HSG C				
	6,320	84	50-75% Gra	ass cover, F	Fair, HSG D				
1	99,948	74	>75% Gras	s cover, Go	ood, HSG C				
	6,758	80	>75% Gras	s cover, Go	ood, HSG D				
	13	86	<50% Gras	s cover, Po	or, HSG C				
	5,323	72	Woods/gras	s comb., G	Good, HSG C				
	90,808	73	Woods, Fai	r, HSG C					
2	200,382	70	Woods, Go	od, HSG C					
1,0	76,001	73	Weighted A	verage					
ç	958,628	70	89.09% Per	vious Area					
1	17,373	98 10.91% Impervious Area							
Тс	Length	Slop		Capacity	Description				
(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)					
24.2					Direct Entry, Direct				



Subcatchment 4S: DA 4: CN w/ IC areas

Summary for Reach 1R: INLET PIPE

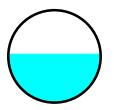
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 5.27" for 100-Year _Current event Inflow = 111.59 cfs @ 12.36 hrs, Volume= 520,753 cf Outflow = 111.44 cfs @ 12.36 hrs, Volume= 520,860 cf, Atten= 0%, Lag= 0.1 min Routed to Pond 4P : Municipal Property Basin 2100

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 16.54 fps, Min. Travel Time= 0.1 min Avg. Velocity = 5.17 fps, Avg. Travel Time= 0.2 min

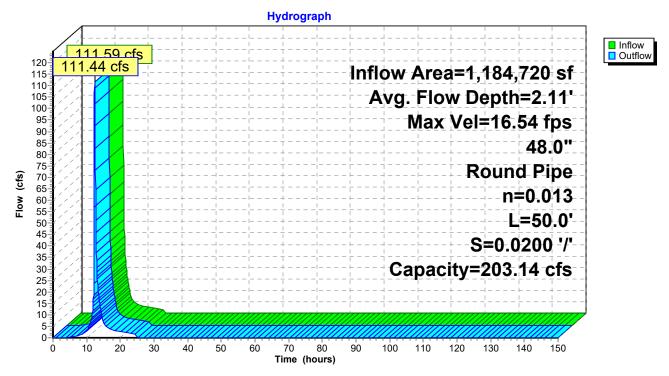
Peak Storage= 337 cf @ 12.36 hrs Average Depth at Peak Storage= 2.11', Surface Width= 3.99' Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 203.14 cfs

48.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 50.0' Slope= 0.0200 '/' Inlet Invert= 66.00', Outlet Invert= 65.00'



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Reach 1R: INLET PIPE



Summary for Reach 2R: OUTFLOW PIPE

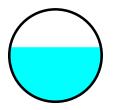
[52] Hint: Inlet/Outlet conditions not evaluated

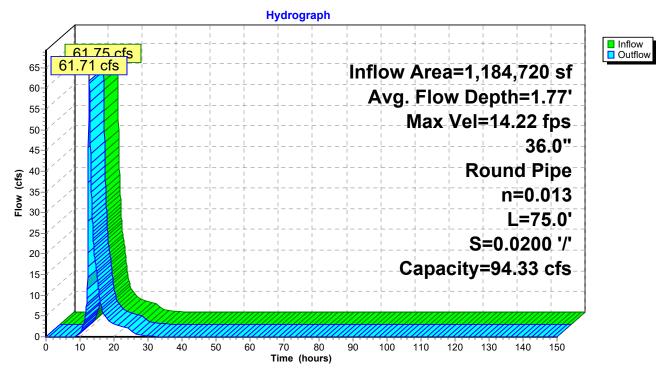
Inflow Are	a =	1,184,720 sf, 30.92% Impervious, Inflow Depth = 5.19" for 100-Year Current event
Inflow	=	61.75 cfs @ 12.67 hrs, Volume= 512,421 cf
Outflow	=	61.71 cfs @ 12.68 hrs, Volume= 512,421 cf, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Max. Velocity= 14.22 fps, Min. Travel Time= 0.1 min Avg. Velocity = 2.12 fps, Avg. Travel Time= 0.6 min

Peak Storage= 325 cf @ 12.68 hrs Average Depth at Peak Storage= 1.77' , Surface Width= 2.95' Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 94.33 cfs

36.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 75.0' Slope= 0.0200 '/' Inlet Invert= 62.00', Outlet Invert= 60.50'





Reach 2R: OUTFLOW PIPE

Site 4_20240629	NOAA 24-hr C 100-Year _	Current Rainfall=8.95"
Prepared by Rutgers Cooperative Extensio	n Water Resources Program	Printed 6/29/2024
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Summary for Pond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Inflow Area =	958,817 sf, 14.64% Impervious,	Inflow Depth = 6.21" for 100-Year _Current event
Inflow =	100.09 cfs @ 12.35 hrs, Volume=	496,331 cf
Outflow =	99.98 cfs @ 12.36 hrs, Volume=	493,292 cf, Atten= 0%, Lag= 0.2 min
Primary =	25.22 cfs @ 12.36 hrs, Volume=	367,317 cf
Routed to Lir	nk 1L : Combined Flow	
Secondary =	64.26 cfs @ 12.36 hrs, Volume=	118,549 cf
Routed to Lir	nk 1L : Combined Flow	
Tertiary =	10.50 cfs @ 12.36 hrs, Volume=	7,427 cf
Routed to Lir	nk 1L : Combined Flow	

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 3 Peak Elev= 100.59' @ 12.36 hrs Surf.Area= 12,249 sf Storage= 27,623 cf

Plug-Flow detention time= 15.8 min calculated for 493,128 cf (99% of inflow) Center-of-Mass det. time= 11.9 min (829.2 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	97.75'	497 cf	Custom Stage Data (Conic)Listed below (Recalc)
#2A	93.75'	689 cf	15.75'W x 32.10'L x 4.50'H Field A
			2,275 cf Overall - 551 cf Embedded = 1,724 cf x 40.0% Voids
#3A	95.25'	551 cf	ADS_StormTech SC-740 +Cap x 12 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			12 Chambers in 3 Rows
		1 737 cf	x 18.00 = 31.271 cf. Total Available Storage

1,737 ct x 18.00 = 31,271 ct Total Available Storage

Storage	Group A	created	with	Chamber	Wizard

Elevation (feet)		Surf.Area Void (sq-ft) (%			Cum.Store (cubic-feet)	Wet.Area (sq-ft)		
	1				· · · · ·	<u>_</u>		
97.7 98.2		175 175	0. 35.		0 31	175 198		
	-	-			-			
99.2	-	175	35.		92	245		
99.5		175	25.	-	103	257		
100.0		175	100.		190	281		
100.5	51	175	100.	0 89	280	304		
101.7	75	175	100.	0 217	497	363		
Device	Routing	In	vert	Outlet Devices				
#1	Primary	94	1.17'	6.0" Round Culve	rt X 18.00 L= 10.0)' Ke= 0.500		
	,			Inlet / Outlet Invert=	94.17'/94.12' S	= 0.0050 '/' Cc= 0.900		
				n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf				
#2	Device 1	94.33'		6.0" Round 6" HDPE Underdrain X 18.00 L= 32.0' Ke= 0.500				
<i></i>	Derice	01.00		Inlet / Outlet Invert= 94.33' / 94.17' S= 0.0050 '/' Cc= 0.900				
				n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf				
#3	Seconda	ny 100		0		ted Rectangular Weir X 18.00		
#3 Secondar		ary 100.00'		•		•		
					.40 0.60 0.60 1.0	00 1.20 1.40 1.60 1.80 2.00		
				2.50 3.00 3.50				
						2.66 2.70 2.77 2.89 2.88		
				2.85 3.07 3.20 3.3	32			

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#4 Tertiary 100.50' 6.0' long Sharp-Crested Rectangular Weir X 18.00 2 End Contraction(s)

Primary OutFlow Max=25.22 cfs @ 12.36 hrs HW=100.59' (Free Discharge) -1=Culvert (Passes 25.22 cfs of 37.74 cfs potential flow) **1**–2=6" HDPE Underdrain (Barrel Controls 25.22 cfs @ 7.13 fps)

Secondary OutFlow Max=63.99 cfs @ 12.36 hrs HW=100.59' (Free Discharge) —3=Broad-Crested Rectangular Weir (Weir Controls 63.99 cfs @ 2.01 fps)

Tertiary OutFlow Max=9.62 cfs @ 12.36 hrs HW=100.59' (Free Discharge) -4=Sharp-Crested Rectangular Weir (Weir Controls 9.62 cfs @ 0.98 fps)

ond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration) - Chamber Wizard Fi

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech® SC-740 with cap length) Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

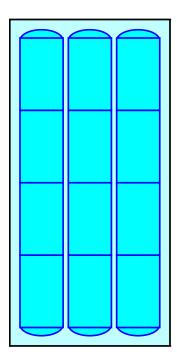
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length 3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width 18.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.50' Field Height

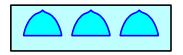
12 Chambers x 45.9 cf = 551.3 cf Chamber Storage

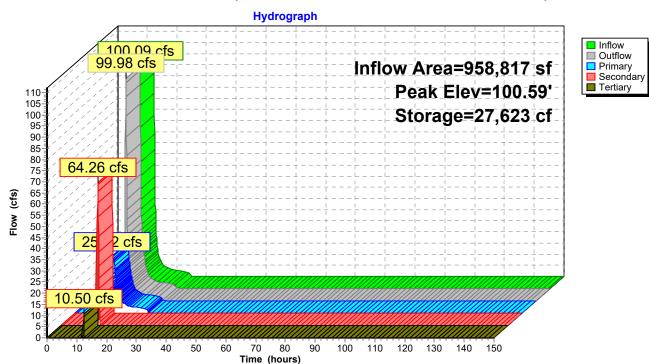
2,274.9 cf Field - 551.3 cf Chambers = 1,723.6 cf Stone x 40.0% Voids = 689.4 cf Stone Storage

Chamber Storage + Stone Storage = 1,240.7 cf = 0.028 af Overall Storage Efficiency = 54.5%Overall System Size = $32.10' \times 15.75' \times 4.50'$

12 Chambers 84.3 cy Field 63.8 cy Stone







Pond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Summary for Pond 2P: ROOF RG 750 SF

Assumes infiltration through media is non-limiting.

Inflow Area =	69,839 sf,100.00% Impervious,	Inflow Depth = 8.71" for 100-Year Current event					
Inflow =	14.87 cfs @ 12.13 hrs, Volume=	50,690 cf					
Outflow =	4.45 cfs @ 12.35 hrs, Volume=	50,690 cf, Atten= 70%, Lag= 13.3 min					
Discarded =	0.32 cfs @ 12.20 hrs, Volume=	39,037 cf					
Primary =	4.13 cfs @ 12.35 hrs, Volume=	11,653 cf					
Routed to Link 1L : Combined Flow							

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 100.08' @ 12.35 hrs Surf.Area= 27,750 sf Storage= 22,498 cf

Plug-Flow detention time= 488.2 min calculated for 50,673 cf (100% of inflow) Center-of-Mass det. time= 488.4 min (1,228.8 - 740.4)

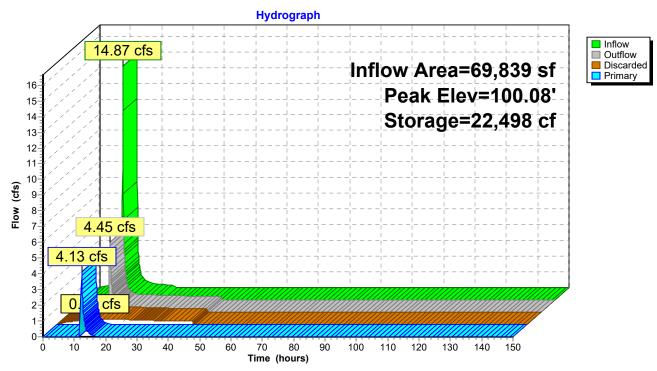
Volume	Invert	Avai	I.Storage	Storage Descrip	otion	
#1 98.25' 735 cf Custom Stage Data (Conic)Listed below (Recal						below (Recalc)
			735 cf	x 37.00 = 27,2	209 cf Total Availal	ble Storage
Elevatior (feet 98.25 99.25 99.50 100.00 100.25) 5 5)	rf.Area (sq-ft) 546 546 546 750 750	Voids (%) 0.0 35.0 25.0 100.0 100.0	Inc.Store (cubic-feet) 0 191 34 323 188	Cum.Store (cubic-feet) 0 191 225 548 735	Wet.Area (sq-ft) 546 629 650 858 883
100.25 75 Device Routing #1 Discarded		Inv	vert Outl .25' 0.50 .00' 2.0' Hea 2.50 Coe	et Devices 0 in/hr Exfiltrations long x 3.0' brea d (feet) 0.20 0.4 3.00 3.50 4.00	on over Surface an dth Broad-Crested 0 0.60 0.80 1.00 4.50 2.58 2.68 2.67 2	

Discarded OutFlow Max=0.32 cfs @ 12.20 hrs HW=100.02' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=4.10 cfs @ 12.35 hrs HW=100.08' (Free Discharge) **2=Broad-Crested Rectangular Weir** (Weir Controls 4.10 cfs @ 0.69 fps)

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Pond 2P: ROOF RG 750 SF



Summary for Pond 3P: Basic Porous Pavement (infiltration only)

156,064 sf,100.00% Impervious, Inflow Depth = 8.71" for 100-Year Current event Inflow Area = Inflow 33.22 cfs @ 12.13 hrs, Volume= 113.272 cf = 9.31 cfs @ 12.37 hrs, Volume= Outflow = 113,272 cf, Atten= 72%, Lag= 14.3 min 1.81 cfs @ 10.75 hrs, Volume= Discarded = 97,464 cf 7.50 cfs @ 12.37 hrs, Volume= Primary = 15,808 cf Routed to Link 1L : Combined Flow

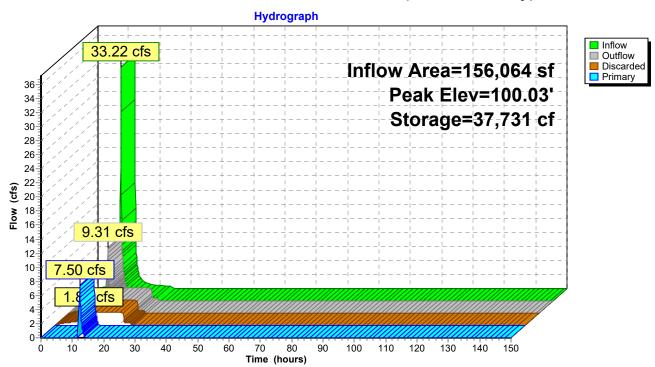
Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 100.03' @ 12.37 hrs Surf.Area= 156,064 sf Storage= 37,731 cf

Plug-Flow detention time= 118.1 min calculated for 113,234 cf (100% of inflow) Center-of-Mass det. time= 118.1 min (858.5 - 740.4)

Volume Invert A		ert Ava	il.Storage	Storage Description			
#1	99.2	5'	72,180 cf	Custom Stage	Custom Stage Data (Prismatic)Listed below (Recalc)		
Elevatio (fee 99.2 99.7 99.8 100.0 100.2	et) 25 75 33 00	Surf.Area (sq-ft) 156,064 156,064 156,064 156,064 156,064	Voids (%) 0.0 35.0 15.0 15.0 100.0	Inc.Store (cubic-feet) 0 27,311 1,873 3,980 39,016	Cum.Store (cubic-feet) 0 27,311 29,184 33,164 72,180		
Device	Routing	In	vert Out	et Devices			
#1 #2	Discarded Primary		0.00' 15.0 Hea 2.50 Coe	l' long x 1.0' br id (feet) 0.20 0.) 3.00	40 0.60 0.80 1.0	e area brous Asphalt X 37.00 00 1.20 1.40 1.60 1.80 2.00 0 2.98 3.08 3.20 3.28 3.31	

Discarded OutFlow Max=1.81 cfs @ 10.75 hrs HW=99.26' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 1.81 cfs)

Primary OutFlow Max=7.38 cfs @ 12.37 hrs HW=100.03' (Free Discharge) ←2=Edge of Porous Asphalt (Weir Controls 7.38 cfs @ 0.46 fps)



Pond 3P: Basic Porous Pavement (infiltration only)

Summary for Pond 4P: Municipal Property Basin 2100

[63] Warning: Exceeded Reach 1R INLET depth by 1.36' @ 12.90 hrs

Inflow Area =	1,184,720 sf, 30.92% Impervious,	Inflow Depth = 5.28" for 100-Year _Current event
Inflow =	111.44 cfs @ 12.36 hrs, Volume=	520,860 cf
Outflow =	61.75 cfs @ 12.67 hrs, Volume=	512,421 cf, Atten= 45%, Lag= 18.8 min
Primary =	27.98 cfs @ 12.67 hrs, Volume=	415,208 cf
Routed to Re	each 2R : OUTFLOW PIPE	
Secondary =	33.77 cfs @ 12.67 hrs, Volume=	97,213 cf
Routed to Re	each 2R : OUTFLOW PIPE	
Tertiary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf
Routed to Re	each 2R : OUTFLOW PIPE	

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Peak Elev= 68.70' @ 12.67 hrs Surf.Area= 47,138 sf Storage= 148,864 cf

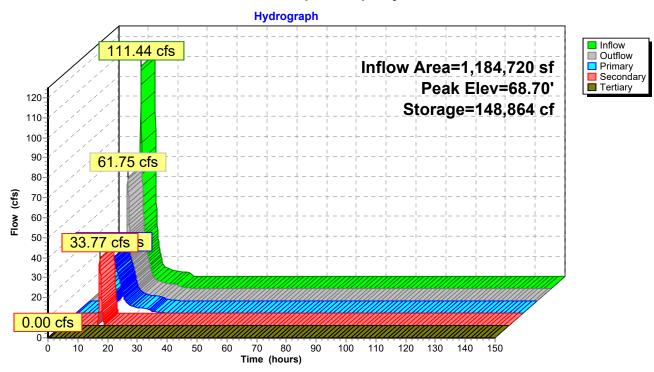
Plug-Flow detention time= 91.0 min calculated for 512,250 cf (98% of inflow) Center-of-Mass det. time= 82.3 min (908.4 - 826.2)

Volume	Invert	Avail.Stor	rage Storage I	Description			
#1	65.00'	213,10	05 cf Custom	5 cf Custom Stage Data (Prismatic)Listed below (Reca			
Elevatio (fee 65.0	et)	f.Area (sq-ft) 33,242	Inc.Store (cubic-feet) 0	Cum.Store (cubic-feet) 0			
70.0		52,000	213,105	213,105			
Device	Routing	Invert	Outlet Devices				
#1	Primary	65.25'		w Flow Orifice	X 2.00 C= 0.600		
#2 Secondary 67.2		67.25'	24.0" W x 18.0" H Vert. 2-YR Orifice X 3.00 C= 0.600 Limited to weir flow at low heads				
#3 Tertiary 69.50		69.50'	48.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads				

Primary OutFlow Max=27.96 cfs @ 12.67 hrs HW=68.70' (Free Discharge) **1=Low Flow Orifice** (Orifice Controls 27.96 cfs @ 7.91 fps)

Secondary OutFlow Max=33.63 cfs @ 12.67 hrs HW=68.70' (Free Discharge) 2=2-YR Orifice (Orifice Controls 33.63 cfs @ 3.87 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=65.00' (Free Discharge) **-3=Orifice/Grate** (Controls 0.00 cfs)



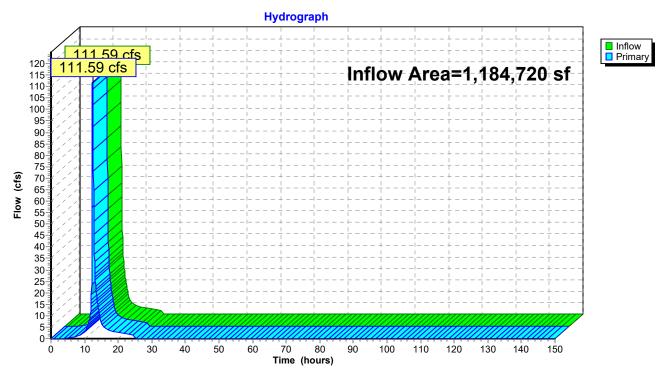
Pond 4P: Municipal Property Basin 2100

Site 4_20240629	NOAA 24-hr C 100-Year	_Current Rainfall=8.95"
Prepared by Rutgers Cooperative Extensio	n Water Resources Program	Printed 6/29/2024
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Summary for Link 1L: Combined Flow

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 5.27" for 100-Year _Current event Inflow = 111.59 cfs @ 12.36 hrs, Volume= 520,753 cf Primary = 111.59 cfs @ 12.36 hrs, Volume= 520,753 cf, Atten= 0%, Lag= 0.0 min Routed to Reach 1R : INLET PIPE

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs



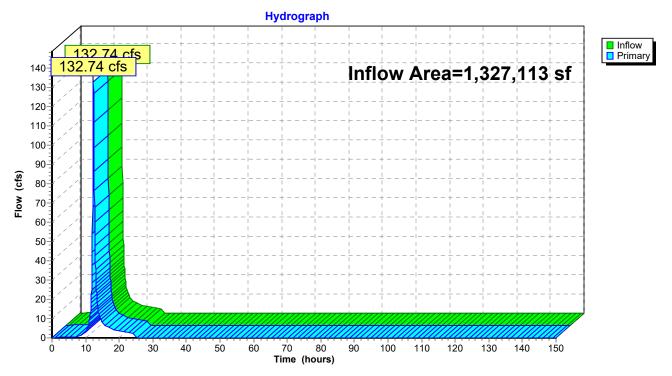
Link 1L: Combined Flow

Site 4_20240629	NOAA 24-hr C 100-Year_	Current Rainfall=8.95"
Prepared by Rutgers Cooperative Extensio	on Water Resources Program	Printed 6/29/2024
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Summary for Link 2L: Offsite Flows

Inflow Are	a =	1,327,113 sf, 10	0.64% Impervious,	Inflow Depth = 5.73" for 100-Year _C	Current event
Inflow	=	132.74 cfs @ 12.	2.32 hrs, Volume=	633,318 cf	
Primary	=	132.74 cfs @ 12.	2.32 hrs, Volume=	633,318 cf, Atten= 0%, Lag= 0.0 r	min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs



Link 2L: Offsite Flows

Site 4_20240629 Prepared by Rutgers Cooperative Ext <u>HydroCAD® 10.10-7c s/n 03601 © 2022 Hy</u>		00 Rainfall=12.15" Printed 6/29/2024 Page 128
Runoff by SCS TR-20 meth	00-150.00 hrs, dt=0.05 hrs, 3001 points nod, UH=SCS, Split Pervious/Imperv. UI as Pe +Trans method - Pond routing by Stor-Ind me	
Subcatchment 1S: DA 1: All	Runoff Area=1,184,721 sf 30.92% Impervious Tc=25.2 min CN=74/98 Runoff=1	
Subcatchment1Sa: DA 1: CN w/ IC are	as Runoff Area=958,817 sf 14.64% Impervious Tc=25.2 min CN=74/98 Runoff=1	
Subcatchment1Sb: Roof	Runoff Area=69,839 sf 100.00% Impervious Tc=6.0 min CN=0/98 Runof	
Subcatchment1Sc: Driveways (GIS -	Runoff Area=156,064 sf 100.00% Impervious Tc=6.0 min CN=0/98 Runoff=	
Subcatchment2S: DA 2: CN w/ IC area	s Runoff Area=100,787 sf 8.36% Impervious Tc=15.5 min CN=74/98 Runof	
Subcatchment 3S: DA 3: CN w/ IC area Flow	s Runoff Area=150,325 sf 10.26% Impervious w Length=329' Tc=17.3 min CN=73/98 Runoff=	
Subcatchment4S: DA 4: CN w/ IC area	s Runoff Area=1,076,001 sf 10.91% Impervious Tc=24.2 min CN=70/98 Runoff=1	
	g. Flow Depth=2.84' Max Vel=18.15 fps Inflow=1 .0' S=0.0200 '/' Capacity=203.14 cfs Outflow=1	
	g. Flow Depth=3.00' Max Vel=15.21 fps Inflow=1 5.0' S=0.0200 '/' Capacity=94.33 cfs Outflow=1	
Pond 1P: Basic Rain Garden (w/ 5.49 cfs 486,774 cf Secondary=85.67 cfs 208	Peak Elev=100.72' Storage=28,021 cf Inflow=1 3,092 cf Tertiary=35.95 cfs 39,624 cf Outflow=1	
Pond 2P: ROOF RG 750 SF Discarded=0.32 cfs	Peak Elev=100.19' Storage=25,493 cf Inflow 41,853 cf Primary=14.74 cfs 27,453 cf Outflow	
Pond 3P: Basic Porous Pavement Discarded=1.81 cfs 11	Peak Elev=100.07' Storage=43,887 cf Inflow= 13,354 cf Primary=26.88 cfs 41,519 cf Outflow=	
Pond 4P: Municipal Property Basin 3.88 cfs 550,508 cf Secondary=60.36 cfs 228	Peak Elev=69.96' Storage=211,253 cf Inflow=1 3,170 cf Tertiary=16.56 cfs 16,426 cf Outflow=1	
Link 1L: Combined Flow		73.56 cfs 803,463 cf 73.56 cfs 803,463 cf
Link 2L: Offsite Flows		99.60 cfs 958,389 cf 99.60 cfs 958,389 cf
	f Bunoff Volume = 2 880 127 of Average	

Total Runoff Area = 3,696,554 sf Runoff Volume = 2,880,127 cf Average Runoff Depth = 9.35" 76.36% Pervious = 2,822,814 sf 23.64% Impervious = 873,740 sf

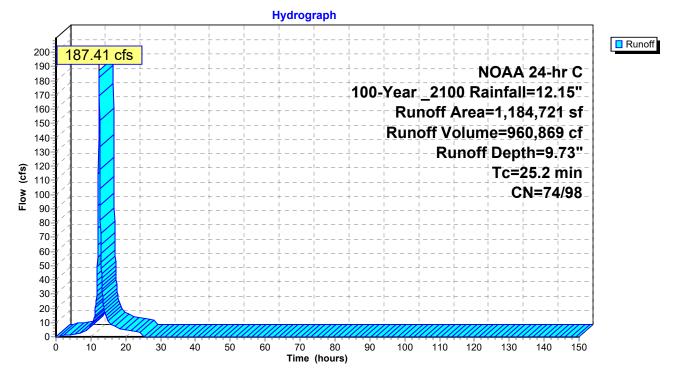
Summary for Subcatchment 1S: DA 1: All

Runoff = 187.41 cfs @ 12.35 hrs, Volume= 960,869 cf, Depth= 9.73"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.00 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description							
*	366,258	98	Impervious							
	15,045	65	Brush, Good, HSG C							
	794,453	74	>75% Grass cover, Good, HSG C							
	8,965	70	Woods, Good, HSG C							
	1,184,721	81	Weighted Average							
	818,463	74	69.08% Pervious Area							
	366,258	98	30.92% Impervious Area							
	-	~								
	Tc Length	Slop								
	(min) (feet)	(ft/	ft) (ft/sec) (cfs)							
	25.2		Direct Entry, Direct							





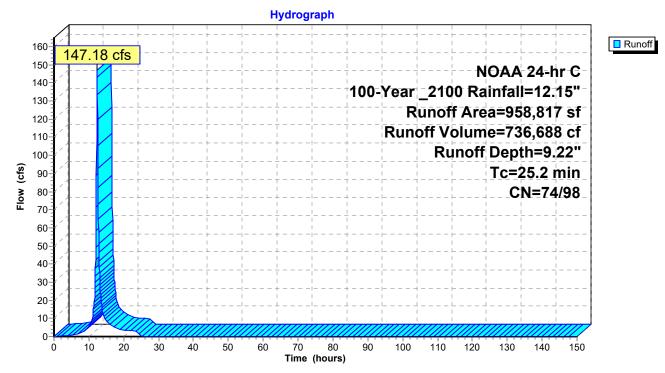
Summary for Subcatchment 1Sa: DA 1: CN w/ IC areas

Runoff = 147.18 cfs @ 12.35 hrs, Volume= 736,688 cf, Depth= 9.22" Routed to Pond 1P : Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description	Description							
*	140,354	98	Impervious	Impervious							
	15,045	65	Brush, Goo	Brush, Good, HSG C							
	794,453	74	>75% Gras	>75% Grass cover, Good, HSG C							
	8,965	70	Woods, Go	od, HSG C)						
	958,817	77	Weighted A	verage							
	818,463	74	85.36% Pe	vious Area	а						
	140,354	98	14.64% lmp	pervious Ar	rea						
	-			0 1							
,	Tc Lengt		,	Capacity	•						
(n	<u>nin) (feet</u>	t) (ft/	ft) (ft/sec)	(cfs)							
2	25.2				Direct Entry, Direct						

Subcatchment 1Sa: DA 1: CN w/ IC areas



Site 4_20240629	NOAA 24-hr C 100-Year _2100 Rainfall=12.15"	
Prepared by Rutgers Cooperative Extension Wa	ter Resources Program Printed 6/29/2024	
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Summary for Subcatchment 1Sb: Roof

Runoff = 20.20 cfs @ 12.13 hrs, Volume= 69,306 cf, Depth=11.91" Routed to Pond 2P : ROOF RG 750 SF

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	rea (sf)		escription										
	69,839 98 Roof - Building GIS Layer												
	69,839 98 100.00% Impervious Area												
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Desc	ription							
6.0					Dire	ct Entr	у,						
				Subcatc	hmer	nt 1Sb	: Ro	oof					
				Hydro	graph								
22		+ 	 	 		+-		י ר 	+	·			Runoff
21	20.20 cfs	▶ +	 4 			 	ا ا ـ ـ ـ ـ ا	ו 	 		04		
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18	/	- <u>+</u>	<u>-</u>	 		100 - \	:						
17 - 16 -	/ <mark>/</mark>	- +			+	+-				ea=6			
15	(]						Ru			ne=6			
14 6 13					±		l	Rur	off E)epth			
j 12	(]	- +	+	 	+	+-				Tc=	=6.0	min	
Flow (cfs) 11 11 11 11 11				<u></u>	$\frac{1}{1}$!		<u> </u>	(CN=0)/ 9 8 -	
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7 - 1 6 - 1		<u> </u> +		L 	+		! 	 		·			
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4					<u> </u>							$\frac{1}{1}$	
3-1 2-1		+ ·			+	+-	 		+	-		+	
1											/////	-	
0 - 0	10 2	0 30	40 50	60 70 Time	80 (hours)	90	100	110	120	130	140	150	

Summary for Subcatchment 1Sc: Driveways (GIS - other)

Runoff = 45.14 cfs @ 12.13 hrs, Volume= 154,874 cf, Depth=11.91" Routed to Pond 3P : Basic Porous Pavement (infiltration only)

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	<u>rea (sf)</u> 156,064		Descriptior mpervious	brivways (other)							
	156,064			mpervious A								
Tc nin)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Descript	ion						
6.0					Direct E	ntry,						
			Subcate	chment 19	Sc: Drive	wave		- oth	or)			
			Subcatt	Hydro		ways	(010	- 011				
	/	+			<u>910011</u>						+	
50 - 48 -	45.14 ct	+	;; !		· +	- †	j		·		τ ⊥	📘 Run
46 44)		-	- +	- +		<u>N</u>	ΟΑΑ	24-ł	nr C	
42	 				10	0-Year	210					
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36 34	/ / -	$\frac{1}{1}$ $$			· <mark> </mark>		off V					
32	/							off C	1		1	
30 28	 	+ +	+ +		· + · +	- + - +				=6.0		
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22 20	(] / -			-	· +	- ±		+	·		+	
18 16		+			· ـ			 +	· ·		1	
14	(}		<u> </u>		· <u> </u>	$-\frac{1}{1}$					$\frac{1}{1}$	
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4 2			+ 		· · · · · · · · · · · · · · · · · · ·	- + 		+ 	י اــ ــ ـــ ـــ ا		+	
	10	20 30	40 50	60 70	80 9) 100	110	120	130	140	150	

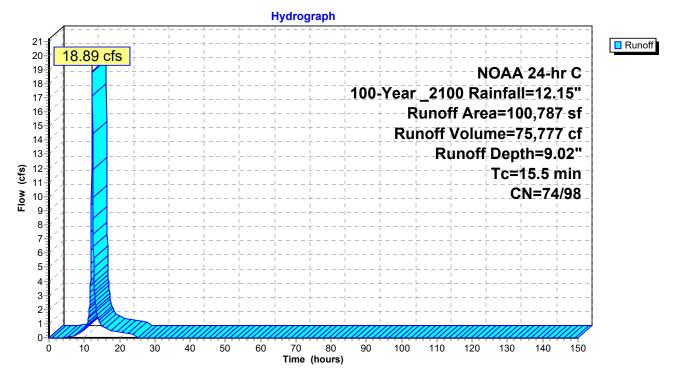
Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 18.89 cfs @ 12.24 hrs, Volume= 75,777 cf, Depth= 9.02" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year 2100 Rainfall=12.15"

	Area (sf)	CN	Description								
*	8,425	98	Impervious	Impervious							
	86	65	Brush, Goo	d, HSG C							
	92,276	74	>75% Gras	s cover, Go	ood, HSG C						
	100,787	76	Weighted A	verage							
	92,362	74	91.64% Per	vious Area	3						
	8,425	98	8.36% Impe	ervious Are	a						
<u>(n</u>	Tc Length nin) (feet)	Slop (ft/i		Capacity (cfs)	Description						
1	5.5				Direct Entry, Direct						

Subcatchment 2S: DA 2: CN w/ IC areas



Summary for Subcatchment 3S: DA 3: CN w/ IC areas

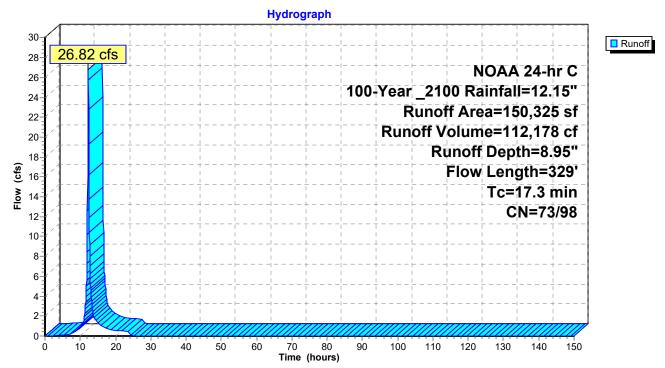
Runoff = 26.82 cfs @ 12.26 hrs, Volume= 112,178 cf, Depth= 8.95" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

_	A	rea (sf)	CN I	Description							
*		15,427	98	mpervious							
		17,213	65 I	Brush, Goo	d, HSG C						
		11,427	73 I	3 Brush, Good, HSG D							
		99,487	74 >	74 >75% Grass cover, Good, HSG C							
_	6,771 70 Woods, Good, HSG C										
	150,325 75 Weighted Average										
	134,898 73 89.74% Pervious Area										
	15,427 98 10.26% Impervious Are					ea					
	Тс	Length	Slope		Capacity	Description					
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
	12.5	100	0.0103	0.13		Sheet Flow, Sheetflow					
						Grass: Short n= 0.150 P2= 3.34"					
	4.8	229	0.0129	0.80		Shallow Concentrated Flow, SCF - Grass					
_						Short Grass Pasture Kv= 7.0 fps					
	17 2	220	Total								

17.3 329 Total

Subcatchment 3S: DA 3: CN w/ IC areas

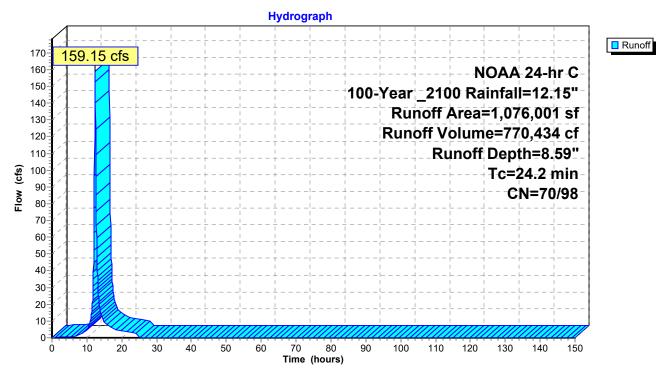


Summary for Subcatchment 4S: DA 4: CN w/ IC areas

Runoff = 159.15 cfs @ 12.34 hrs, Volume= 770,434 cf, Depth= 8.59" Routed to Link 2L : Offsite Flows

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-150.00 hrs, dt= 0.0 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

Ar	rea (sf)	CN	Description						
* 1	17,373	98	Impervious						
37	76,010	65	Brush, Goo	Brush, Good, HSG C					
	14,106	73	Brush, Goo	d, HSG D					
ę	58,960	79	50-75% Gra	iss cover, F	⁻ air, HSG C				
	6,320	84	50-75% Gra	iss cover, F	⁻ air, HSG D				
19	99,948	74	>75% Grass	s cover, Go	ood, HSG C				
	6,758	80	>75% Grass	s cover, Go	ood, HSG D				
	13	86	<50% Grass	<50% Grass cover, Poor, HSG C					
	5,323	72	Woods/grass comb., Good, HSG C						
9	90,808	73	Woods, Fair, HSG C						
20	00,382	70	Woods, Goo	od, HSG C					
1,07	76,001	73	Weighted A	verage					
9	58,628	70	89.09% Per	vious Area					
117,373 98 10.91% Impervious Area									
Тс	Length	Slop	e Velocity	Capacity	Description				
(min)	(feet)	(ft/ˈf		(cfs)	I				
24.2					Direct Entry, Direct				



Subcatchment 4S: DA 4: CN w/ IC areas

Summary for Reach 1R: INLET PIPE

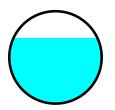
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 8.14" for 100-Year _2100 event Inflow = 173.56 cfs @ 12.32 hrs, Volume= 803,463 cf Outflow = 173.34 cfs @ 12.32 hrs, Volume= 803,525 cf, Atten= 0%, Lag= 0.1 min Routed to Pond 4P : Municipal Property Basin 2100

Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Max. Velocity= 18.15 fps, Min. Travel Time= 0.0 min Avg. Velocity = 5.74 fps, Avg. Travel Time= 0.1 min

Peak Storage= 477 cf @ 12.32 hrs Average Depth at Peak Storage= 2.84' , Surface Width= 3.63' Bank-Full Depth= 4.00' Flow Area= 12.6 sf, Capacity= 203.14 cfs

48.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 50.0' Slope= 0.0200 '/' Inlet Invert= 66.00', Outlet Invert= 65.00'



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Hydrograph Inflow
Outflow 173 56 cfs 173.34 cfs 190 Inflow Area=1,184,720 sf 180 170 Avg. Flow Depth=2.84' 160 Max Vel=18.15 fps 150 140 48.0" 130 120 **Round Pipe** 110 Flow (cfs) 100 n=0.013 90-L=50.0' 80-70-S=0.0200 '/' 60-50 Capacity=203.14 cfs 40 30 20 10 0-10 20 30 40 50 60 70 110 140 150 Ó 80 90 100 120 130 Time (hours)

Reach 1R: INLET PIPE

Summary for Reach 2R: OUTFLOW PIPE

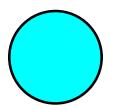
[52] Hint: Inlet/Outlet conditions not evaluated[55] Hint: Peak inflow is 117% of Manning's capacity[76] Warning: Detained 12,684 cf (Pond w/culvert advised)

Inflow Area =1,184,720 sf, 30.92% Impervious, Inflow Depth =8.05" for 100-Year _2100 eventInflow =110.80 cfs @12.58 hrs, Volume=795,104 cfOutflow =100.65 cfs @13.03 hrs, Volume=795,104 cf, Atten= 9%, Lag= 26.9 min

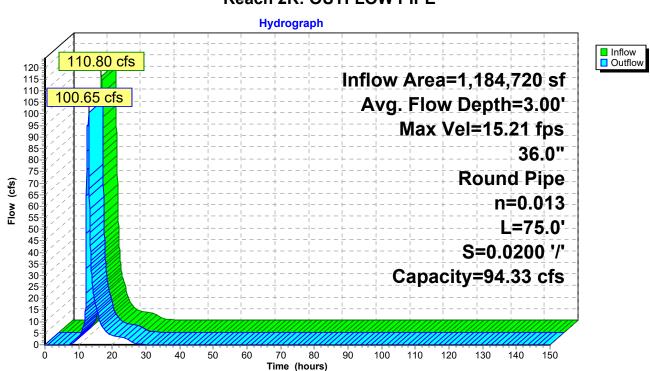
Routing by Stor-Ind+Trans method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Max. Velocity= 15.21 fps, Min. Travel Time= 0.1 min Avg. Velocity = 2.26 fps, Avg. Travel Time= 0.6 min

Peak Storage= 530 cf @ 12.50 hrs Average Depth at Peak Storage= 3.00' Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 94.33 cfs

36.0" Round Pipe n= 0.013 Concrete pipe, bends & connections Length= 75.0' Slope= 0.0200 '/' Inlet Invert= 62.00', Outlet Invert= 60.50'



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Reach 2R: OUTFLOW PIPE

Site 4_20240629	NOAA 24-hr C 100-Year	_2100 Rainfall=12.15"
Prepared by Rutgers Cooperative Extension Wa	iter Resources Program	Printed 6/29/2024
HydroCAD® 10.10-7c s/n 03601 © 2022 HydroCAD Sof	ftware Solutions LLC	Page 141

Summary for Pond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Inflow Area =	958,817 sf, 14.64% Impervious,	Inflow Depth = 9.22" for 100-Year _2100 event					
Inflow =	147.18 cfs @ 12.35 hrs, Volume=	736,688 cf					
Outflow =	147.10 cfs @ 12.35 hrs, Volume=	734,490 cf, Atten= 0%, Lag= 0.1 min					
	25.49 cfs @ 12.35 hrs, Volume=	486,774 cf					
Routed to Lir	nk 1L : Combined Flow						
Secondary =	85.67 cfs @ 12.35 hrs, Volume=	208,092 cf					
Routed to Link 1L : Combined Flow							
	35.95 cfs @ 12.35 hrs, Volume=	39,624 cf					
Routed to Lir	nk 1L : Combined Flow						

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 3 Peak Elev= 100.72' @ 12.35 hrs Surf.Area= 12,249 sf Storage= 28,021 cf

Plug-Flow detention time= 12.0 min calculated for 734,490 cf (100% of inflow) Center-of-Mass det. time= 9.9 min (818.1 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	97.75'	497 cf	Custom Stage Data (Conic)Listed below (Recalc)
#2A	93.75'		15.75'W x 32.10'L x 4.50'H Field A
			2,275 cf Overall - 551 cf Embedded = 1,724 cf x 40.0% Voids
#3A	95.25'	551 cf	ADS_StormTech SC-740 +Cap x 12 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			12 Chambers in 3 Rows
		1 737 cf	x 18 00 - 31 271 cf. Total Available Storage

1,737 cf x 18.00 = 31,271 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)		Surf.Area (sq-ft)	Void %)		Cum.Store (cubic-feet)	Wet.Area (sq-ft)		
97.7		175	0.		0	175		
98.2	25	175	35.	D 31	31	198		
99.2	25	175	35.	D 61	92	245		
99.5	50	175	25.	D 11	103	257		
100.0	00	175	100.	88 0	190	281		
100.5	51	175	100.	0 89	280	304		
101.7	75	175	100.	0 217	497	363		
Device Routing Invert Outlet Devices								
#1	Primary	94	17'	6.0" Round Culvert X 18.00 L= 10.0' Ke= 0.500				
	,			Inlet / Outlet Invert=			0.900	
				n= 0.020 Corrugated PE, corrugated interior, Flow A				
#2	Device 1	94	.33'	6.0" Round 6" HDPE Underdrain X 18.00 L= 32.0' Ke= 0.500				
				Inlet / Outlet Invert= 94.33' / 94.17' S= 0.0050 '/' Cc= 0.900				
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf					
#3 Secondary 100.00'			0.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 18.00				
		-		Head (feet) 0.20 0	.40 0.60 0.80 1.0	00 1.20 1.40 1.6	0 1.80 2.00	
				2.50 3.00 3.50				
				Coef. (English) 2.54	4 2.61 2.61 2.60	2.66 2.70 2.77	2.89 2.88	
				2.85 3.07 3.20 3.3	32			

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#4 Tertiary 100.50' 6.0' long Sharp-Crested Rectangular Weir X 18.00 2 End Contraction(s)

Primary OutFlow Max=25.48 cfs @ 12.35 hrs HW=100.72' (Free Discharge) -1=Culvert (Passes 25.48 cfs of 38.14 cfs potential flow) **1**–2=6" HDPE Underdrain (Barrel Controls 25.48 cfs @ 7.21 fps)

Secondary OutFlow Max=85.50 cfs @ 12.35 hrs HW=100.72' (Free Discharge) —3=Broad-Crested Rectangular Weir (Weir Controls 85.50 cfs @ 2.21 fps)

Tertiary OutFlow Max=35.63 cfs @ 12.35 hrs HW=100.72' (Free Discharge) -4=Sharp-Crested Rectangular Weir (Weir Controls 35.63 cfs @ 1.53 fps)

ond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration) - Chamber Wizard Fi

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length) Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

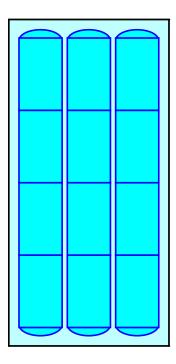
4 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 30.10' Row Length +12.0" End Stone x 2 = 32.10' Base Length 3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width 18.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.50' Field Height

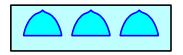
12 Chambers x 45.9 cf = 551.3 cf Chamber Storage

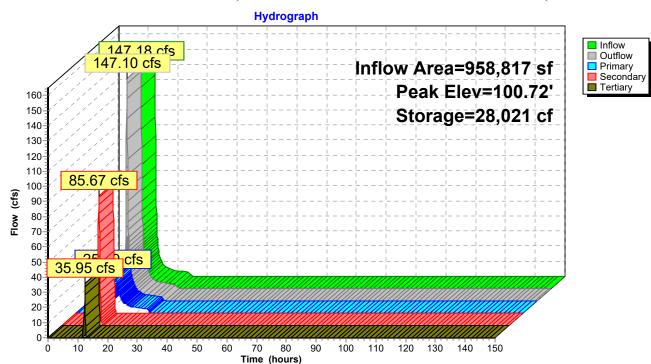
2,274.9 cf Field - 551.3 cf Chambers = 1,723.6 cf Stone x 40.0% Voids = 689.4 cf Stone Storage

Chamber Storage + Stone Storage = 1,240.7 cf = 0.028 af Overall Storage Efficiency = 54.5%Overall System Size = $32.10' \times 15.75' \times 4.50'$

12 Chambers 84.3 cy Field 63.8 cy Stone







Pond 1P: Basic Rain Garden (w/ underdrain w/ 0.5" restrictive orifice), no infiltration)

Summary for Pond 2P: ROOF RG 750 SF

Assumes infiltration through media is non-limiting.

Inflow Area =	69,839 sf,100.00% Impervious,	Inflow Depth = 11.91" for 100-Year 2100 event						
Inflow =	20.20 cfs @ 12.13 hrs, Volume=	69,306 cf						
Outflow =	15.06 cfs @ 12.20 hrs, Volume=	69,306 cf, Atten= 25%, Lag= 4.2 min						
Discarded =	0.32 cfs @ 12.05 hrs, Volume=	41,853 cf						
Primary =	14.74 cfs @ 12.20 hrs, Volume=	27,453 cf						
Routed to Link 1L : Combined Flow								

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 100.19' @ 12.20 hrs Surf.Area= 27,750 sf Storage= 25,493 cf

Plug-Flow detention time= 397.4 min calculated for 69,283 cf (100% of inflow) Center-of-Mass det. time= 397.7 min (1,134.9 - 737.1)

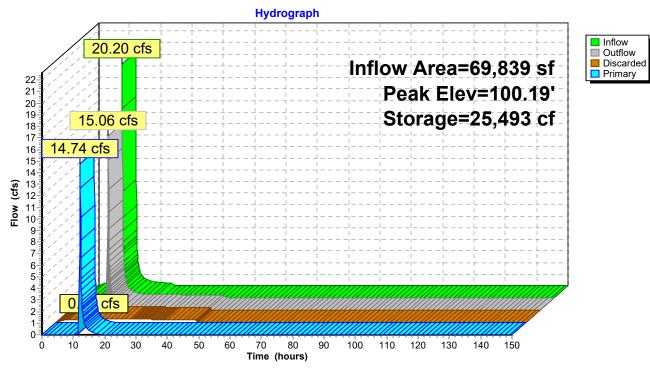
Volume	Inve	rt Ava	il.Storage	rage Storage Description				
#1 98.25' 735 cf Custom Stage Data (Conic)Listed below (Recalc)								
			735 cf	x 37.00 = 27,2	209 cf Total Availa	ble Storage		
Elevatio	et)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)		
98.2	-	546	0.0	0	0	546		
99.2	25	546	35.0	191	191	629		
99.5	50	546	25.0	34	225	650		
100.0	00	750	100.0	323	548	858		
100.2	25	750		188	735	883		
DeviceRoutingInvertOut#1Discarded98.25'0.50#2Primary100.00'2.0'Hea2.50Core			long x 3.0' brea d (feet) 0.20 0.4 0 3.00 3.50 4.00	40 0.60 0.80 1.00) 4.50 2.58 2.68 2.67 2	Area 2 Rectangular Weir X 37.00 1.20 1.40 1.60 1.80 2.00 2.65 2.64 2.64 2.68 2.68			

Discarded OutFlow Max=0.32 cfs @ 12.05 hrs HW=100.04' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=14.59 cfs @ 12.20 hrs HW=100.19' (Free Discharge) **2=Broad-Crested Rectangular Weir** (Weir Controls 14.59 cfs @ 1.05 fps)

Site 4 20240629





Summary for Pond 3P: Basic Porous Pavement (infiltration only)

156,064 sf,100.00% Impervious, Inflow Depth = 11.91" for 100-Year 2100 event Inflow Area = Inflow 45.14 cfs @ 12.13 hrs, Volume= 154.874 cf = 28.69 cfs @ 12.22 hrs, Volume= Outflow = 154,874 cf, Atten= 36%, Lag= 5.4 min 1.81 cfs @ 10.05 hrs, Volume= Discarded = 113.354 cf 41,519 cf Primary = 26.88 cfs @ 12.22 hrs, Volume= Routed to Link 1L : Combined Flow

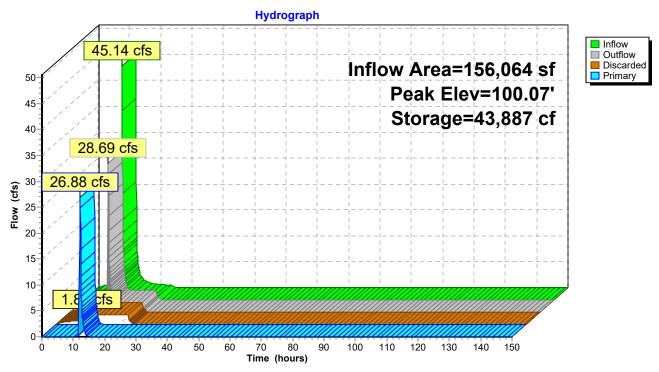
Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs Peak Elev= 100.07' @ 12.22 hrs Surf.Area= 156,064 sf Storage= 43,887 cf

Plug-Flow detention time= 105.4 min calculated for 154,822 cf (100% of inflow) Center-of-Mass det. time= 105.3 min (842.5 - 737.1)

Volume	Inve	rt Ava	il.Storage	ge Storage Description				
#1	99.25	5'	72,180 cf	Custom Stage	Data (Prismatic)	Listed below (Recalc)		
Elevatio (fee 99.2 99.7 99.8 100.0 100.2	et) 25 75 33 00	Surf.Area (sq-ft) 156,064 156,064 156,064 156,064 156,064	Voids (%) 35.0 15.0 15.0 100.0	Inc.Store (cubic-feet) 0 27,311 1,873 3,980 39,016	Cum.Store (cubic-feet) 0 27,311 29,184 33,164 72,180			
Device #1 #2	Routing Discarded Primary	99 k	0.25' 0.5 0.00' 15. Hea 2.5	0' long x 1.0' br ad (feet) 0.20 0.4 0 3.00	40 0.60 0.80 1.0	area rous Asphalt X 37.00 0 1.20 1.40 1.60 1.80 2.00 2.98 3.08 3.20 3.28 3.31		
				0 3.31 3.32				

Discarded OutFlow Max=1.81 cfs @ 10.05 hrs HW=99.26' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 1.81 cfs)

Primary OutFlow Max=25.82 cfs @ 12.22 hrs HW=100.07' (Free Discharge) ←2=Edge of Porous Asphalt (Weir Controls 25.82 cfs @ 0.70 fps)



Pond 3P: Basic Porous Pavement (infiltration only)

Summary for Pond 4P: Municipal Property Basin 2100

[63] Warning: Exceeded Reach 1R INLET depth by 2.13' @ 12.80 hrs

Inflow Area =	1,184,720 sf, 30.92% Impervious,	Inflow Depth = 8.14" for 100-Year _2100 event							
Inflow =	173.34 cfs @ 12.32 hrs, Volume=	803,525 cf							
Outflow =	110.80 cfs @ 12.58 hrs, Volume=	795,104 cf, Atten= 36%, Lag= 15.7 min							
Primary =	33.88 cfs @ 12.58 hrs, Volume=	550,508 cf							
Routed to Re	each 2R : OUTFLOW PIPE								
Secondary = 60.36 cfs @ 12.58 hrs, Volume= 228,170 cf									
Routed to Reach 2R : OUTFLOW PIPE									
Tertiary =	16.56 cfs @ 12.58 hrs, Volume=	16,426 cf							
Routed to Re	Routed to Reach 2R : OUTFLOW PIPE								

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs / 2 Peak Elev= 69.96' @ 12.58 hrs Surf.Area= 51,866 sf Storage= 211,253 cf

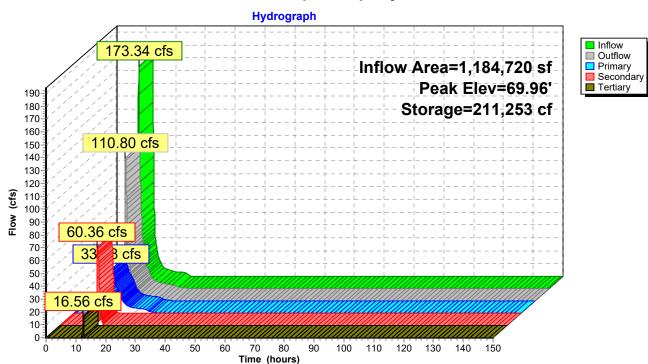
Plug-Flow detention time= 73.3 min calculated for 794,839 cf (99% of inflow) Center-of-Mass det. time= 67.8 min (881.1 - 813.3)

Volume	Invert	Avail.Stor	age Storage	Description	
#1	65.00'	213,10	5 cf Custom	Stage Data (Pri	ismatic)Listed below (Recalc)
Elevatio (fee 65.0	et)	f.Area (sq-ft) 33,242	Inc.Store (cubic-feet) 0	Cum.Store (cubic-feet) 0	
70.0		52,000	213,105	213,105	
Device	Routing	Invert	Outlet Devices	i	
#1	Primary	65.25'		w Flow Orifice	X 2.00 C= 0.600 ds
#2	Secondary	67.25'	24.0" W x 18.0		Orifice X 3.00 C= 0.600
#3	Tertiary	69.50'	48.0" x 48.0"	Horiz. Orifice/G	Frate C= 0.600

Primary OutFlow Max=33.86 cfs @ 12.58 hrs HW=69.96' (Free Discharge) —1=Low Flow Orifice (Orifice Controls 33.86 cfs @ 9.58 fps)

Secondary OutFlow Max=60.28 cfs @ 12.58 hrs HW=69.96' (Free Discharge) 2=2-YR Orifice (Orifice Controls 60.28 cfs @ 6.70 fps)

Tertiary OutFlow Max=16.31 cfs @ 12.58 hrs HW=69.96' (Free Discharge) **3=Orifice/Grate** (Weir Controls 16.31 cfs @ 2.22 fps)



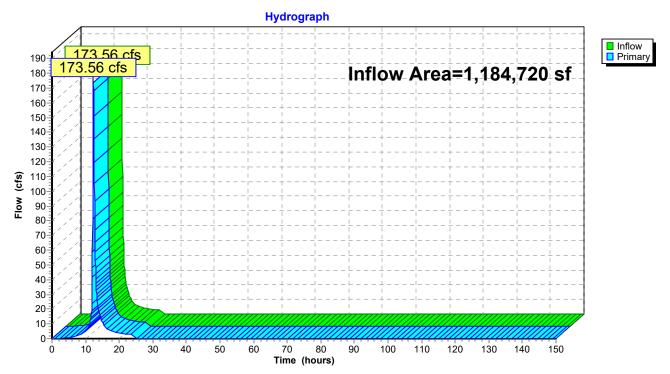
Pond 4P: Municipal Property Basin 2100

Site 4_20240629	NOAA 24-hr C 100-Year	_2100 Rainfall=12.15"
Prepared by Rutgers Cooperative Extension Wa	ater Resources Program	Printed 6/29/2024
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Summary for Link 1L: Combined Flow

Inflow Area = 1,184,720 sf, 30.92% Impervious, Inflow Depth = 8.14" for 100-Year _2100 event Inflow = 173.56 cfs @ 12.32 hrs, Volume= 803,463 cf Primary = 173.56 cfs @ 12.32 hrs, Volume= 803,463 cf, Atten= 0%, Lag= 0.0 min Routed to Reach 1R : INLET PIPE

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs



Link 1L: Combined Flow

Site 4_20240629	NOAA 24-hr C 100-Year	_2100 Rainfall=12.15"
Prepared by Rutgers Cooperative Extension Wa	ater Resources Program	Printed 6/29/2024
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Summary for Link 2L: Offsite Flows

Inflow Are	a =	1,327,113 sf,	, 10.64% Impervious,	Inflow Depth =	8.67"	for	100-Year	2100 event
Inflow	=	199.60 cfs @	12.32 hrs, Volume=	958,389 c	f			
Primary	=	199.60 cfs @	12.32 hrs, Volume=	958,389 c	f, Atter	0% = ר	%, Lag= 0.0	0 min

Primary outflow = Inflow, Time Span= 0.00-150.00 hrs, dt= 0.05 hrs

Link 2L: Offsite Flows

