









#### Site 10 20240629

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# **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"

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# Rainfall Events Listing (selected events)

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

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# Area Listing (all nodes)

Area	CN	Description
(sq-ft)		(subcatchment-numbers)
31,206	70	Brush (fair) HSG C (1S, 5S, 8S)
626,499	98	Impervious HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S)
177,173	79	Open Space (fair) HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S)
85,546	74	Open Space (good) HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S)
47,650	73	Woods (fair) HSG C (1S, 8S)
68,603	70	Woods, Good, HSG C (13S)
1,036,677	89	TOTAL AREA

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# Soil Listing (all nodes)

Area	Soil	Subcatchment	
(sq-ft)	Group	Numbers	
0	HSG A		
0	HSG B		
1,036,677	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S	
0	HSG D		
0	Other		
1,036,677		TOTAL AREA	

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# **Ground Covers (all nodes)**

HSG-A	HSG-B	HSG-C	HSG-D	Other	Total	Ground	Subcatchi
(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	Cover	Numbers
0	0	31,206	0	0	31,206	Brush (fair)	
0	0	626,499	0	0	626,499	Impervious	
0	0	177,173	0	0	177,173	Open Space (fair)	
0	0	85,546	0	0	85,546	Open Space (good)	
0	0	47,650	0	0	47,650	Woods (fair)	
0	0	68,603	0	0	68,603	Woods, Good	
0	0	1,036,677	0	0	1,036,677	<b>TOTAL AREA</b>	

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# Pipe Listing (all nodes)

Line#	Node	In-Invert	Out-Invert	Length	Slope	n	Width	Diam/Height	Inside-Fill
	Number	(feet)	(feet)	(feet)	(ft/ft)		(inches)	(inches)	(inches)
1	4P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
2	5P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
3	6P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
4	7P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
5	10P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
6	11P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
7	12P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0

Pond 1P: Bioretention Basin 1

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Time span=0.00-150.00 hrs, dt=0.02 hrs, 7501 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

Runoff Area=141,085 sf 17.73% Impervious Runoff Depth=2.01" Subcatchment 1S: DA 1: CN w/ IC areas Tc=18.6 min CN=75/98 Runoff=5.42 cfs 23,690 cf Runoff Area=21,583 sf 64.54% Impervious Runoff Depth=3.07" Subcatchment 2S: DA 2: CN w/ IC areas Tc=1.4 min CN=78/98 Runoff=1.97 cfs 5,524 cf Runoff Area=40,101 sf 65.65% Impervious Runoff Depth=3.07" Subcatchment 3S: DA 3: CN w/ IC areas Tc=3.5 min CN=77/98 Runoff=3.54 cfs 10,247 cf Runoff Area=84,260 sf 73.22% Impervious Runoff Depth=3.21" Subcatchment 4S: DA 4: CN w/ IC areas Tc=3.2 min CN=77/98 Runoff=7.79 cfs 22,567 cf Runoff Area=52,282 sf 79.56% Impervious Runoff Depth=3.35" Subcatchment 5S: DA 5: CN w/ IC areas Tc=2.5 min CN=78/98 Runoff=5.12 cfs 14,606 cf Runoff Area=76,785 sf 82.96% Impervious Runoff Depth=3.43" Subcatchment 6S: DA 6: CN w/ IC areas Tc=3.2 min CN=79/98 Runoff=7.50 cfs 21,942 cf Runoff Area=120,233 sf 94.05% Impervious Runoff Depth=3.62" Subcatchment 7S: DA 7: CN w/ IC areas Tc=3.5 min CN=78/98 Runoff=12.17 cfs 36,308 cf Runoff Area=111,353 sf 71.87% Impervious Runoff Depth=3.11" Subcatchment 8S: DA 8: CN w/ IC areas Tc=2.0 min CN=73/98 Runoff=10.30 cfs 28,842 cf Runoff Area=59,019 sf 68.70% Impervious Runoff Depth=3.15" Subcatchment 9S: DA 9: CN w/ IC areas Tc=2.8 min CN=78/98 Runoff=5.45 cfs 15,488 cf Subcatchment 10S: DA 10: CN w/ IC areas Runoff Area=48,527 sf 85.53% Impervious Runoff Depth=3.42" Tc=5.8 min CN=74/98 Runoff=4.37 cfs 13,840 cf Subcatchment 11S: DA 11: CN w/ IC areas Runoff Area=57,652 sf 78.51% Impervious Runoff Depth=3.30" Tc=2.5 min CN=76/98 Runoff=5.55 cfs 15,860 cf Subcatchment 12S: DA 12: CN w/ IC areas Runoff Area=67,756 sf 72.56% Impervious Runoff Depth=3.20" Tc=2.9 min CN=77/98 Runoff=6.30 cfs 18,074 cf Subcatchment 13S: DA 13: CN w/ IC areas Runoff Area=156,041 sf 15.80% Impervious Runoff Depth=1.92" Tc=24.6 min CN=74/98 Runoff=4.98 cfs 24,910 cf

Pond 2P: Bioretention Basin 2 Peak Elev=69.45' Storage=2,561 cf Inflow=1.97 cfs 5,524 cf Primary=0.24 cfs 5,183 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=0.24 cfs 5,183 cf

Primary=0.36 cfs 20,625 cf Secondary=0.59 cfs 3,064 cf Tertiary=0.00 cfs 0 cf Outflow=0.95 cfs 23,690 cf

Peak Elev=64.20' Storage=10,526 cf Inflow=5.42 cfs 23,690 cf

Pond 3P: Bioretention Basin 3 Peak Elev=66.10' Storage=5,164 cf Inflow=3.54 cfs 10,247 cf Primary=0.31 cfs 9,787 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=0.31 cfs 9,787 cf

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Pond 4P: PP (w/ underdrain) w/ UG storage Peak Elev=95.62' Storage=10,670 cf Inflow=7.79 cfs 22,567 cf Primary=0.36 cfs 22,567 cf Secondary=0.00 cfs 0 cf Outflow=0.36 cfs 22,567 cf

Pond 5P: PP (w/ underdrain) w/ UG storage 2 Peak Elev=95.62' Storage=7,334 cf Inflow=5.12 cfs 14,606 cf Primary=0.20 cfs 14,606 cf Secondary=0.00 cfs 0 cf Outflow=0.20 cfs 14,606 cf

Pond 6P: PP (w/ underdrain) w/ UG storage Peak Elev=95.65' Storage=12,645 cf Inflow=7.50 cfs 21,942 cf Primary=0.20 cfs 21,942 cf Secondary=0.00 cfs 0 cf Outflow=0.20 cfs 21,942 cf

Pond 7P: PP (w/ underdrain) w/ UG Peak Elev=95.68' Storage=20,146 cf Inflow=12.17 cfs 36,308 cf Primary=0.36 cfs 36,308 cf Secondary=0.00 cfs 0 cf Outflow=0.36 cfs 36,308 cf

Pond 8P: Existing Basin 1 Peak Elev=59.16' Storage=5,439 cf Inflow=11.35 cfs 124,265 cf Primary=6.92 cfs 124,265 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=6.92 cfs 124,265 cf

**Pond 9P: Existing Basin 2**Peak Elev=66.91' Storage=5,666 cf Inflow=5.45 cfs 15,488 cf
Primary=0.35 cfs 12,537 cf Secondary=0.70 cfs 2,952 cf Tertiary=0.00 cfs 0 cf Outflow=1.05 cfs 15,488 cf

Pond 10P: PP (w/ underdrain) w/ UG storage Peak Elev=95.86' Storage=5,241 cf Inflow=4.37 cfs 13,840 cf Primary=0.37 cfs 13,840 cf Secondary=0.00 cfs 0 cf Outflow=0.37 cfs 13,840 cf

Pond 11P: PP (w/ underdrain) w/ UG storage Peak Elev=95.67' Storage=6,485 cf Inflow=5.55 cfs 15,860 cf Primary=0.36 cfs 15,860 cf Secondary=0.00 cfs 0 cf Outflow=0.36 cfs 15,860 cf

Pond 12P: PP (w/ underdrain) w/ UG storage Peak Elev=95.59' Storage=7,878 cf Inflow=6.30 cfs 18,074 cf Primary=0.36 cfs 18,074 cf Secondary=0.00 cfs 0 cf Outflow=0.36 cfs 18,074 cf

Pond 13P: Bioretention Basin 4 Peak Elev=51.61' Storage=18,950 cf Inflow=6.05 cfs 72,685 cf Primary=0.35 cfs 30,021 cf Secondary=3.04 cfs 41,402 cf Tertiary=0.00 cfs 0 cf Outflow=3.39 cfs 71,423 cf

Total Runoff Area = 1,036,677 sf Runoff Volume = 251,900 cf Average Runoff Depth = 2.92" 39.57% Pervious = 410,178 sf 60.43% Impervious = 626,499 sf

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## Summary for Subcatchment 1S: DA 1: CN w/ IC areas

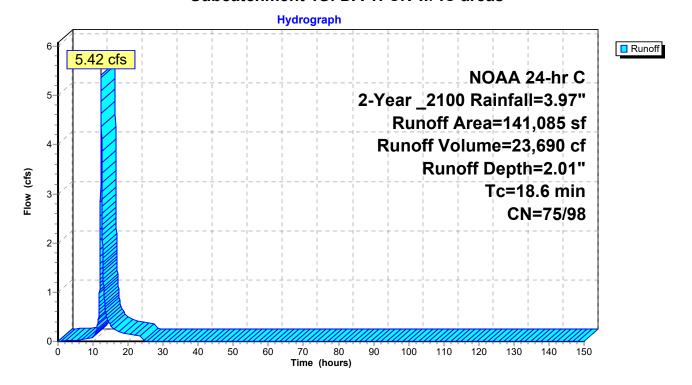
Runoff = 5.42 cfs @ 12.28 hrs, Volume= 23,690 cf, Depth= 2.01"

Routed to Pond 1P: Bioretention Basin 1

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
*	25,014	98	Impervious HSG C
	26,886	70	Brush (fair) HSG C
	45,464	79	Open Space (fair) HSG C
*	10,665	74	Open Space (good) HSG C
*	33,056	73	Woods (fair) HSG C
	141,085	79	Weighted Average
	116,071	75	82.27% Pervious Area
	25,014	98	17.73% Impervious Area
	Tc Length	Slop	
(	(min) (feet)	(ft/	ft) (ft/sec) (cfs)
	18.6		Direct Entry, Direct (see AutoCAD)

#### Subcatchment 1S: DA 1: CN w/ IC areas



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

[49] Hint: Tc<2dt may require smaller dt

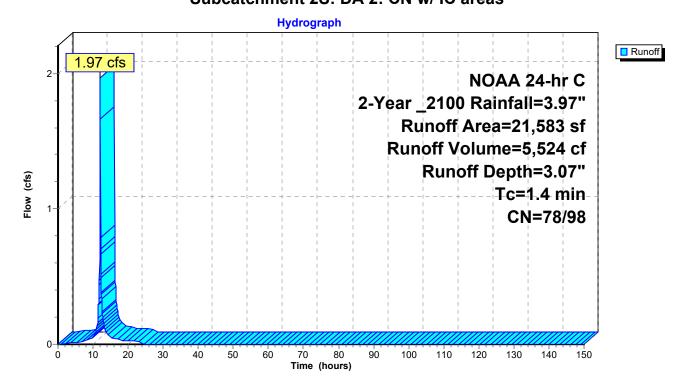
5,524 cf, Depth= 3.07" Runoff 1.97 cfs @ 12.10 hrs, Volume=

Routed to Pond 2P: Bioretention Basin 2

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						
*	13,929	98	Impervious I	Impervious HSG C					
	6,668	79	Open Space	Open Space (fair) HSG C					
*	986	74	Open Space	e (good) HS	SG C				
	21,583	91	Weighted Av	Weighted Average					
	7,654	78	35.46% Per	vious Area					
	13,929	98	64.54% Imp	ervious Ar	ea				
(	Tc Length	Slop (ft/f	,	Capacity (cfs)	Description				
	1.4				Direct Entry, Direct (see AutoCAD)				

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



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

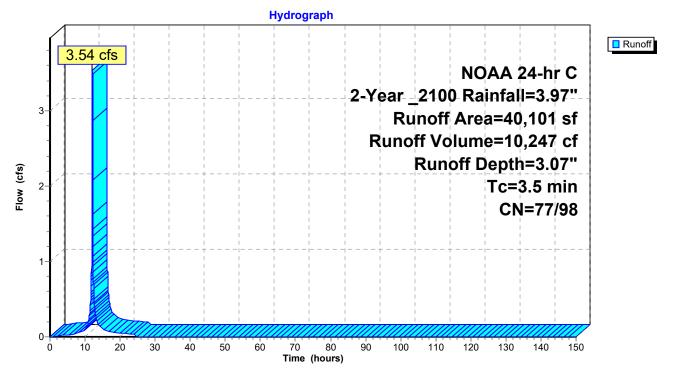
10,247 cf, Depth= 3.07" Runoff 3.54 cfs @ 12.10 hrs, Volume=

Routed to Pond 3P: Bioretention Basin 3

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						
*	26,326	98	Impervious HSG C	Impervious HSG C					
	9,202	79	Open Space (fair) HSG C	Open Space (fair) HSG C					
*	4,573	74	Open Space (good) HSG C	Open Space (good) HSG C					
	40,101	91	Weighted Average						
	13,775	77	34.35% Pervious Area						
	26,326	98	65.65% Impervious Area						
	Tc Length (min) (feet)	Slop (ft/t							
	3.5		Direct Entry, Direct (see AutoCAD)						

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



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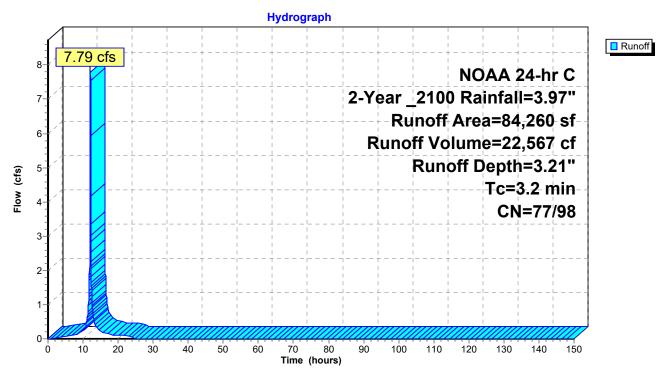
#### Summary for Subcatchment 4S: DA 4: CN w/ IC areas

Runoff = 7.79 cfs @ 12.10 hrs, Volume= 22,567 cf, Depth= 3.21" Routed to Pond 4P : PP (w/ underdrain) w/ UG storage 1

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						
*	61,698	98	Impervious	Impervious HSG C					
	13,143	79	Open Space	Open Space (fair) HSG C					
*	9,419	74	Open Space	Open Space (good) HSG C					
	84,260	92	Weighted A	Weighted Average					
	22,562	77	26.78% Per	vious Area					
	61,698	98	73.22% Imp	ervious Ar	ea				
	Tc Length	Slop		Capacity	Description				
<u>(r</u>	min) (feet)	(ft/f	t) (ft/sec)	(cfs)					
	3.2				Direct Entry, Direct (see AutoCAD)				

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



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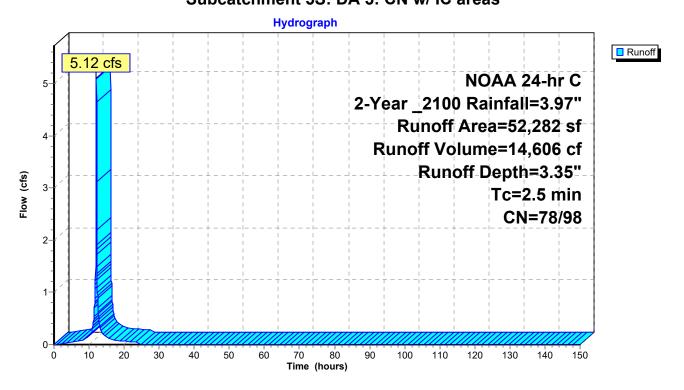
## Summary for Subcatchment 5S: DA 5: CN w/ IC areas

Runoff 5.12 cfs @ 12.09 hrs, Volume= 14,606 cf, Depth= 3.35" Routed to Pond 5P: PP (w/ underdrain) w/ UG storage 2

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"

_	Α	rea (sf)	CN	Description						
*		41,595	98	Impervious	Impervious HSG C					
		444	70	Brush (fair)	Brush (fair) HSG C					
		9,377	79	Open Spac	pen Space (fair) HSG C					
*		866	74	Open Spac	e (good) H	SG C				
		52,282	94	Weighted A	Weighted Average					
		10,687	78	20.44% Pe	rvious Area	a a constant of the constant o				
		41,595	98	79.56% Imp	pervious Ar	ea				
	Tc	Length	Slop	e Velocity	Capacity	Description				
(	min)	(feet)	(ft/f	t) (ft/sec)	(cfs)					
	2.5					Direct Entry, Direct (see AutoCAD)				

# Subcatchment 5S: DA 5: CN w/ IC areas



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#### Summary for Subcatchment 6S: DA 6: CN w/ IC areas

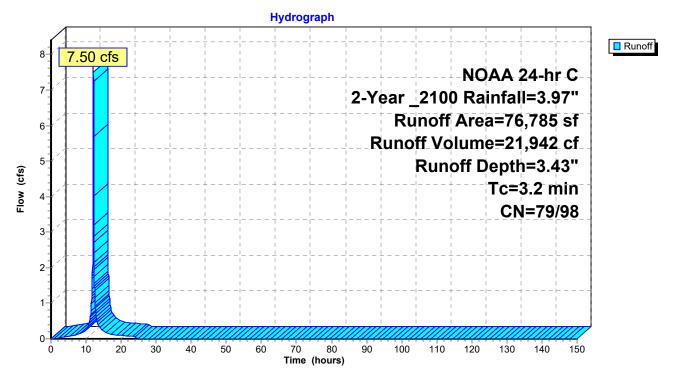
7.50 cfs @ 12.10 hrs, Volume= Runoff 21,942 cf, Depth= 3.43" Routed to Pond 6P: PP (w/ underdrain) w/ UG storage 3

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						
*	63,699	98	Impervious	Impervious HSG C					
	12,708	79	Open Space	Open Space (fair) HSG C					
*	378	74	Open Space	Open Space (good) HSG C					
	76,785	95	Weighted A	Veighted Average					
	13,086	79	17.04% Per	vious Area					
	63,699	98	82.96% Imp	ervious Are	ea				
	Tc Length	Slop	oe Velocity	Capacity	Description				
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)					
	3.2				Direct Entry, Direct (see AutoCAD)				

**Direct Entry, Direct (see AutoCAD)** 

#### Subcatchment 6S: DA 6: CN w/ IC areas



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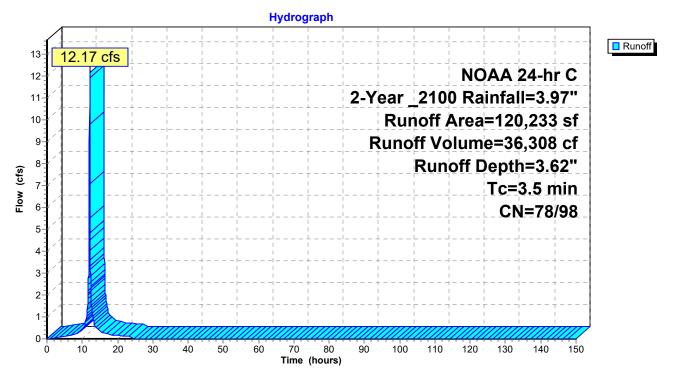
## Summary for Subcatchment 7S: DA 7: CN w/ IC areas

12.17 cfs @ 12.10 hrs, Volume= 36,308 cf, Depth= 3.62" Runoff Routed to Pond 7P: PP (w/ underdrain) w/ UG storage 4

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						
*	113,075	98	Impervious	Impervious HSG C					
	5,111	79	Open Space	Open Space (fair) HSG C					
*	2,047	74	Open Space	Open Space (good) HSG C					
	120,233	97	Weighted A	Veighted Average					
	7,158	78	5.95% Perv	ious Area					
	113,075	98	94.05% Imp	ervious Ar	ea				
(	Tc Length (min) (feet)	Slop (ft/	,	Capacity (cfs)	Description				
	3.5				Direct Entry, Direct (see AutoCAD)				

#### Subcatchment 7S: DA 7: CN w/ IC areas



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#### Summary for Subcatchment 8S: DA 8: CN w/ IC areas

[49] Hint: Tc<2dt may require smaller dt

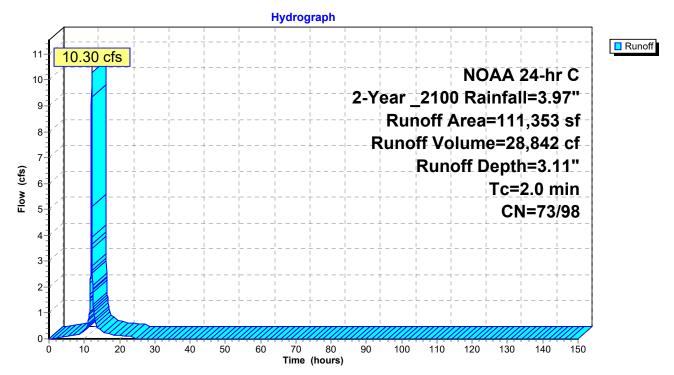
Runoff = 10.30 cfs @ 12.09 hrs, Volume= 28,842 cf, Depth= 3.11"

Routed to Pond 8P: Existing Basin 1

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				
*	80,033	98	Impervious I	HSG C			
	3,876	70	Brush (fair) I	HSG C			
	419	79	Open Space	(fair) HSC	3 C		
*	12,431	74	Open Space	(good) HS	SG C		
*	14,594	73	Woods (fair)	HSG C			
	111,353	91	Weighted Av	/erage			
	31,320	73	28.13% Per	/ious Area			
	80,033	98	71.87% Imp	71.87% Impervious Area			
(n	Tc Length	Slop (ft/	•	Capacity (cfs)	Description		
	2.0	,	, , ,	, ,	Direct Entry, Direct (see AutoCAD)		

#### Subcatchment 8S: DA 8: CN w/ IC areas



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## Summary for Subcatchment 9S: DA 9: CN w/ IC areas

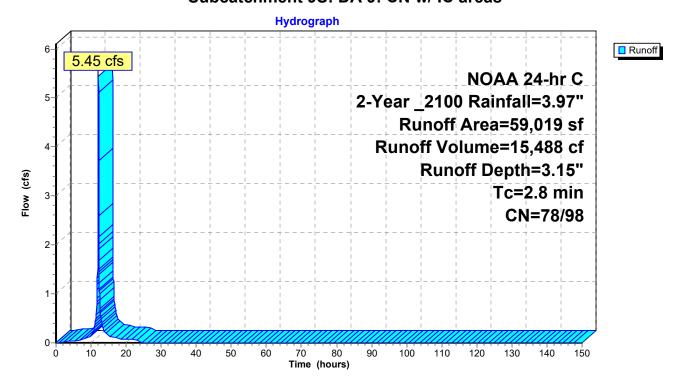
Runoff = 5.45 cfs @ 12.10 hrs, Volume= 15,488 cf, Depth= 3.15"

Routed to Pond 9P: Existing Basin 2

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					
*	40,544	98	Impervious HSG	C				
	15,969	79	Open Space (fair)	Open Space (fair) HSG C				
*	2,506	74	Open Space (god	Open Space (good) HSG C				
	59,019	92	Weighted Average					
	18,475	78	31.30% Pervious Area					
	40,544	98	68.70% Impervious Area					
	<b>-</b>	01			<b>5</b>			
	Tc Length	Slop	, ,	,	Description			
(	(min) (feet)	(ft/f	) (ft/sec)	(cfs)				
	2.8				Direct Entry, Direct (see AutoCAD)			

## Subcatchment 9S: DA 9: CN w/ IC areas



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## Summary for Subcatchment 10S: DA 10: CN w/ IC areas

Runoff = 4.37 cfs @ 12.13 hrs, Volume= 13,840 cf, Depth= 3.42" Routed to Pond 10P : PP (w/ underdrain) w/ UG storage 5

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	Description				
*	41,506	98	Impervious I	HSG C				
	60	79	Open Space	Open Space (fair) HSG C				
*	6,961	74	Open Space	Open Space (good) HSG C				
	48,527	95	Weighted Av	Weighted Average				
	7,021	74	14.47% Per	14.47% Pervious Area				
	41,506	98	85.53% Imp	85.53% Impervious Area				
<u>(</u> r	Tc Length min) (feet)	Slop (ft/f	,	Capacity (cfs)	Description			
	5.8				Direct Entry, Direct (see AutoCAD)			

## Subcatchment 10S: DA 10: CN w/ IC areas

Hydrograph Runoff 4.37 cfs NOAA 24-hr C 2-Year | 2100 Rainfall=3.97" Runoff Area=48,527 sf Runoff Volume=13,840 cf 3-Runoff Depth=3.42" Flow (cfs) Tc=5.8 min CN=74/98 2-10 150 Time (hours)

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## Summary for Subcatchment 11S: DA 11: CN w/ IC areas

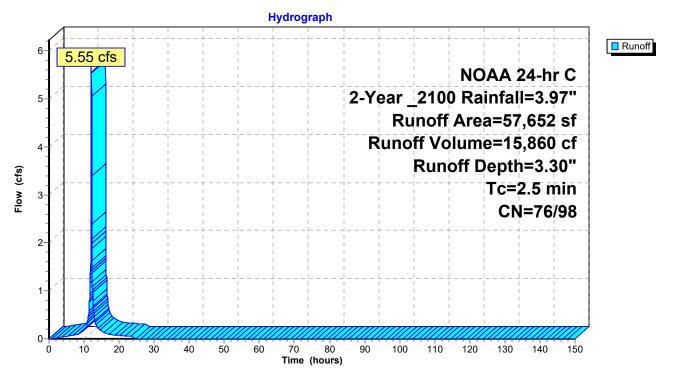
5.55 cfs @ 12.09 hrs, Volume= Runoff 15,860 cf, Depth= 3.30" Routed to Pond 11P: PP (w/ underdrain) w/ UG storage 6

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	Description				
*	45,264	98	Impervious	HSG C				
	5,795	79	Open Space	Open Space (fair) HSG C				
*	6,593	74	Open Space	Open Space (good) HSG C				
	57,652	93	Weighted A	Weighted Average				
	12,388	76	21.49% Per	vious Area				
	45,264	98	78.51% Imp	78.51% Impervious Area				
	Tc Length		,	Capacity	Description			
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)				
	2.5				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

#### Subcatchment 11S: DA 11: CN w/ IC areas



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## Summary for Subcatchment 12S: DA 12: CN w/ IC areas

Runoff = 6.30 cfs @ 12.10 hrs, Volume= 18,074 cf, Depth= 3.20" Routed to Pond 12P : PP (w/ underdrain) w/ UG storage 7

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	Description				
*	49,166	98	Impervious H	ISG C				
	11,017	79	Open Space	Open Space (fair) HSG C				
*	7,573	74	Open Space	Open Space (good) HSG C				
	67,756	92	Weighted Av	Weighted Average				
	18,590	77	27.44% Perv	27.44% Pervious Area				
	49,166	98	72.56% Impe	72.56% Impervious Area				
		٠.						
	Tc Length	Slop		Capacity	Description			
<u>(r</u>	min) (feet)	(ft/1	ft) (ft/sec)	(cfs)				
	2.9				Direct Entry, Direct (see AutoCAD)			

## Subcatchment 12S: DA 12: CN w/ IC areas

Hydrograph Runoff 6.30 cfs NOAA 24-hr C 6-2-Year \_2100 Rainfall=3.97" Runoff Area=67,756 sf 5-Runoff Volume=18,074 cf Runoff Depth=3.20" 4-Flow (cfs) Tc=2.9 min CN=77/98 3-2-10 40 150 Time (hours)

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## Summary for Subcatchment 13S: DA 13: CN w/ IC areas

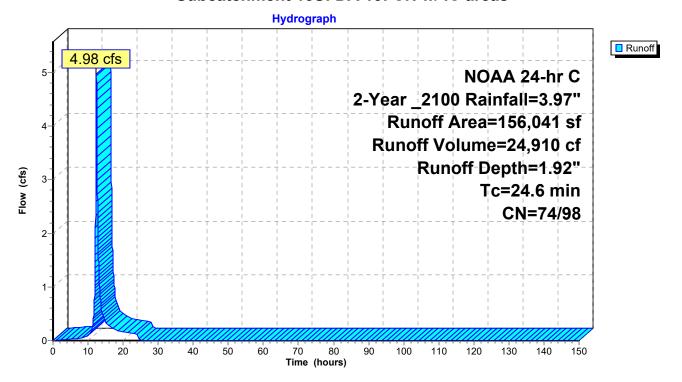
Runoff = 4.98 cfs @ 12.36 hrs, Volume= 24,910 cf, Depth= 1.92"

Routed to Pond 13P: Bioretention Basin 4

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	
*	24,650	98	Impervious HSG C	
	42,240	79	Open Space (fair) HSG C	
*	20,548	74	Open Space (good) HSG C	
	68,603	70	Woods, Good, HSG C	
	156,041	77	Weighted Average	
	131,391	74	84.20% Pervious Area	
	24,650	98	15.80% Impervious Area	
	Tc Length	Slop	pe Velocity Capacity Description	
	(min) (feet)	(ft/	/ft) (ft/sec) (cfs)	
	24.6		Direct Entry, Direct (see AutoCAD)	

#### Subcatchment 13S: DA 13: CN w/ IC areas



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# Summary for Pond 1P: Bioretention Basin 1

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 141,085 sf, 17.73% Impervious, Inflow Depth = 2.01" for 2-Year 2100 event 5.42 cfs @ 12.28 hrs, Volume= Inflow 23.690 cf Outflow 0.95 cfs @ 13.13 hrs, Volume= 23,690 cf, Atten= 82%, Lag= 50.9 min 0.36 cfs @ 13.13 hrs, Volume= Primary 20,625 cf Routed to nonexistent node 5R 0.59 cfs @ 13.13 hrs. Volume= Secondary = 3.064 cf Routed to nonexistent node 5R 0.00 cfs @ 0.00 hrs, Volume= 0 cf Tertiary Routed to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 64.20' @ 13.13 hrs Surf.Area= 7,554 sf Storage= 10,526 cf

Plug-Flow detention time= 261.5 min calculated for 23,690 cf (100% of inflow) Center-of-Mass det. time= 261.4 min (1,091.3 - 829.8)

<u>Volume</u>	Invert	Avail.Sto	rage Storage	Description			
#1	62.50'	37,96	60 cf Custon	rismatic)Listed below (Recalc)			
Elevation (fee	et)	rf.Area (sq-ft) 4,800	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
67.0	-	12,071	37,960	37,960			
Device	Routing	Invert	Outlet Device	es			
#1	Primary	61.75'		w Flow Orifice ir flow at low hea			
#2	#2 Secondary 64.0		24.0" W x 18.0" H Vert. SECONDARY OUTLET C= 0.600 Limited to weir flow at low heads				
#3 Tertiary 6		66.25'	<b>60.0" x 60.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads				

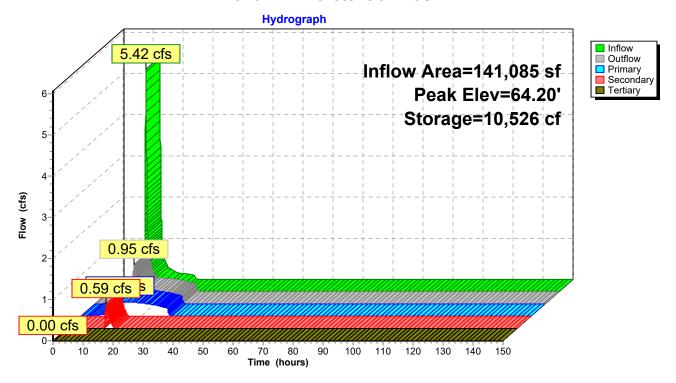
Primary OutFlow Max=0.36 cfs @ 13.13 hrs HW=64.20' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 0.36 cfs @ 7.35 fps)

Secondary OutFlow Max=0.59 cfs @ 13.13 hrs HW=64.20' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 0.59 cfs @ 1.45 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.50' (Free Discharge) 3=Orifice/Grate (Controls 0.00 cfs)

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#### Pond 1P: Bioretention Basin 1



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#### **Summary for Pond 2P: Bioretention Basin 2**

Inflow Area = 21,583 sf, 64.54% Impervious, Inflow Depth = 3.07" for 2-Year 2100 event Inflow 1.97 cfs @ 12.10 hrs. Volume= 5.524 cf 0.24 cfs @ 12.54 hrs, Volume= Outflow 5,183 cf, Atten= 88%, Lag= 26.6 min 0.24 cfs @ 12.54 hrs, Volume= Primary 5,183 cf Routed to nonexistent node 5R Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs, Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 69.45' @ 12.54 hrs Surf.Area= 2,255 sf Storage= 2,561 cf

Plug-Flow detention time= 180.7 min calculated for 5,182 cf (94% of inflow) Center-of-Mass det. time= 145.3 min (913.1 - 767.8)

Volume	Invert	Avail.Sto	rage S	Storage D	escription	
#1	68.00'	14,80	05 cf <b>(</b>	5 cf Custom Stage Data (Prismatic)Listed below (Recalc)		rismatic)Listed below (Recalc)
Elevatio		rf.Area (sq-ft)	Inc.S (cubic-		Cum.Store (cubic-feet)	
68.0	00	1,281		0	0	
73.0	00	4,641		14,805 14,805		
Device	Routing	Invert	Outlet	Devices		
#1	Primary	68.25'	3.0" V	ert. Low	Flow Orifice	C= 0.600
	_				low at low hea	
#2	Secondary	70.50'				ONDARY OUTLET C= 0.600
	<b>-</b> .:	70 751			low at low hea	
#3	Tertiary	72.75'				Grate C= 0.600
			Limite	a to well i	low at low hea	aus

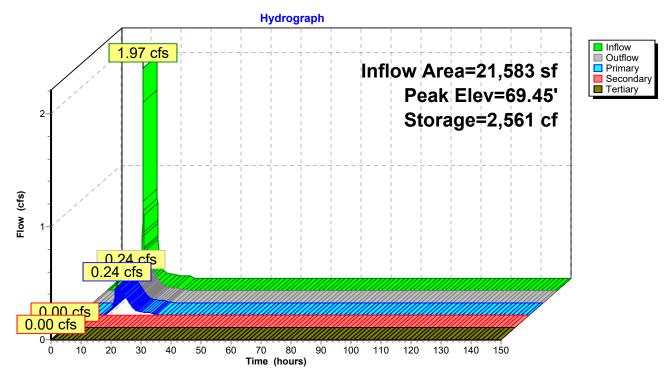
Primary OutFlow Max=0.24 cfs @ 12.54 hrs HW=69.45' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 0.24 cfs @ 4.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.00' (Free Discharge) 2=SECONDARY OUTLET ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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## Pond 2P: Bioretention Basin 2



Invert

Volume

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## **Summary for Pond 3P: Bioretention Basin 3**

Inflow Area = 40,101 sf, 65.65% Impervious, Inflow Depth = 3.07" for 2-Year 2100 event Inflow 3.54 cfs @ 12.10 hrs. Volume= 10.247 cf 0.31 cfs @ 12.96 hrs, Volume= Outflow 9,787 cf, Atten= 91%, Lag= 51.1 min 0.31 cfs @ 12.96 hrs, Volume= Primary 9.787 cf Routed to nonexistent node 5R Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs. Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 66.10' @ 12.96 hrs Surf.Area= 3,163 sf Storage= 5,164 cf

Plug-Flow detention time= 231.9 min calculated for 9,787 cf (96% of inflow) Center-of-Mass det. time= 204.5 min (973.5 - 769.0)

Avail.Storage Storage Description

64.00'	17,16	60 cf Custom	Stage Data (Pi	rismatic)Listed below (Recalc)
Elevation Surf.Area (feet) (sq-ft)		Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
64.00 1,760		0	0	
69.00 5,104		17,160	17,160	
Routing	Invert	Outlet Devices		
Primary	64.25'			
Secondary	66.50'			
Tertiary	68.75'	60.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads		
	on Suet) 00 00 Routing Primary Secondary	on Surf.Area (sq-ft) 00 1,760 00 5,104  Routing Invert Primary 64.25'  Secondary 66.50'	on Surf.Area Inc.Store (st) (sq-ft) (cubic-feet)  00 1,760 0 00 5,104 17,160  Routing Invert Outlet Devices Primary 64.25' 3.0" Vert. Low Limited to weir Secondary 66.50' 24.0" W x 18.0 Limited to weir Tertiary 68.75' 60.0" x 60.0" I	on         Surf.Area         Inc.Store (cubic-feet)         Cum.Store (cubic-feet)           00         1,760         0         0           00         5,104         17,160         17,160           Routing         Invert         Outlet Devices           Primary         64.25'         3.0" Vert. Low Flow Orifice Limited to weir flow at low heat secondary           Secondary         66.50'         24.0" W x 18.0" H Vert. SEC Limited to weir flow at low heat flow heat secondary           Tertiary         68.75'         60.0" x 60.0" Horiz. Orifice/0

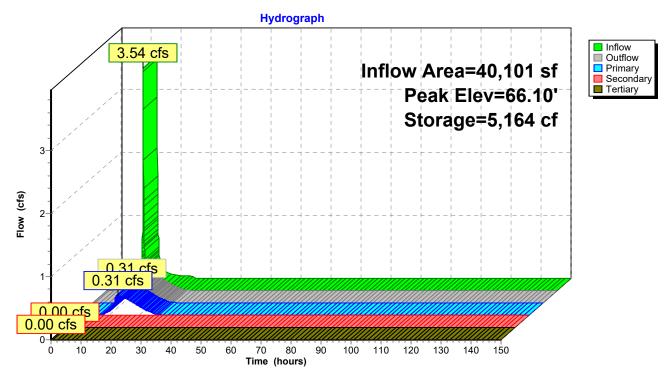
Primary OutFlow Max=0.31 cfs @ 12.96 hrs HW=66.10' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 0.31 cfs @ 6.32 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=64.00' (Free Discharge) 2=SECONDARY OUTLET ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=64.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 3P: Bioretention Basin 3



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## Summary for Pond 4P: PP (w/ underdrain) w/ UG storage 1

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 84,260 sf, 73.22% Impervious, Inflow Depth = 3.21" for 2-Year \_2100 event

Inflow = 7.79 cfs @ 12.10 hrs, Volume= 22,567 cf

Outflow = 0.36 cfs @ 13.63 hrs, Volume= 22,567 cf, Atten= 95%, Lag= 91.8 min

Primary = 0.36 cfs @ 13.63 hrs, Volume= 22,567 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.62' @ 13.63 hrs Surf.Area= 14,771 sf Storage= 10,670 cf

Plug-Flow detention time= 261.1 min calculated for 22,567 cf (100% of inflow)

Center-of-Mass det. time= 261.0 min (1,025.1 - 764.1)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	3,624 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	12,961 cf	68.00'W x 217.22'L x 3.50'H Field A
			51,698 cf Overall - 19,295 cf Embedded = 32,403 cf x 40.0% Voids
#3A	95.00'	19,295 cf	ADS_StormTech SC-740 +Cap x 420 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
			420 Chambers in 14 Rows

35,880 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	6,787	0.0	0	0
97.67	6,787	35.0	1,592	1,592
97.83	6,787	15.0	163	1,754
98.00	6,787	15.0	173	1,928
98.25	6.787	100.0	1.697	3.624

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	67.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

## Site 10\_20240629

NOAA 24-hr C 2-Year \_2100 Rainfall=3.97"

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Primary OutFlow Max=0.36 cfs @ 13.63 hrs HW=95.62' (Free Discharge)
1=Restriction Orifice (Passes 0.36 cfs of 0.44 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.36 cfs @ 1.82 fps)
3=Perforations (Passes 0.36 cfs of 6.71 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 4P: PP (w/ underdrain) w/ UG storage 1 - Chamber Wizard Field A

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

30 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 215.22' Row Length +12.0" End Stone x 2 = 217.22' Base Length

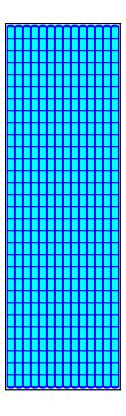
14 Rows x 51.0" Wide + 6.0" Spacing x 13 + 12.0" Side Stone x 2 = 68.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

420 Chambers x 45.9 cf = 19,294.8 cf Chamber Storage

51,697.6 cf Field - 19,294.8 cf Chambers = 32,402.8 cf Stone x 40.0% Voids = 12,961.1 cf Stone Storage

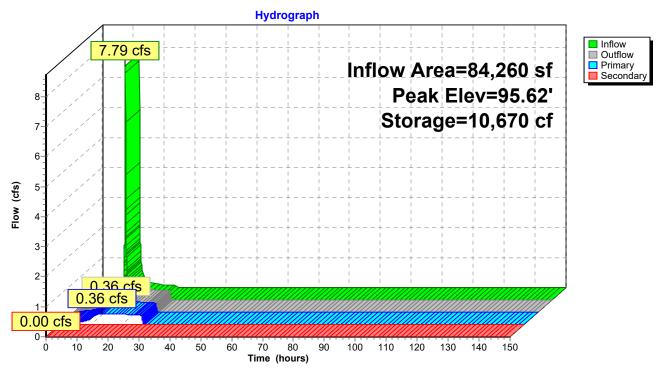
Chamber Storage + Stone Storage = 32,255.9 cf = 0.740 af Overall Storage Efficiency = 62.4% Overall System Size = 217.22' x 68.00' x 3.50'

420 Chambers 1,914.7 cy Field 1,200.1 cy Stone



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Pond 4P: PP (w/ underdrain) w/ UG storage 1



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## Summary for Pond 5P: PP (w/ underdrain) w/ UG storage 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 52,282 sf, 79.56% Impervious, Inflow Depth = 3.35" for 2-Year \_2100 event Inflow = 5.12 cfs @ 12.09 hrs, Volume= 14,606 cf

Outflow = 0.20 cfs @ 14.07 hrs, Volume= 14,606 cf, Atten= 96%, Lag= 118.5 min Primary = 0.20 cfs @ 14.07 hrs, Volume= 14,606 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.62' @ 14.07 hrs Surf.Area= 10,213 sf Storage= 7,334 cf

Plug-Flow detention time= 336.0 min calculated for 14,604 cf (100% of inflow) Center-of-Mass det. time= 336.0 min (1,095.8 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,510 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,005 cf	77.50'W x 131.78'L x 3.50'H Field A
			35,744 cf Overall - 13,231 cf Embedded = 22,514 cf x 40.0% Voids
#3A	95.00'	13,231 cf	ADS_StormTech SC-740 +Cap x 288 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
			288 Chambers in 16 Rows

24,746 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.25	4,700	100.0	1,175	2,510

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	2.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	132.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.20 cfs @ 14.07 hrs HW=95.62' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.20 cfs @ 8.97 fps)
2=6" HDPE Underdrain (Passes 0.20 cfs of 0.36 cfs potential flow)
3=Perforations (Passes 0.20 cfs of 6.71 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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#### Pond 5P: PP (w/ underdrain) w/ UG storage 2 - Chamber Wizard Field A

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

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length

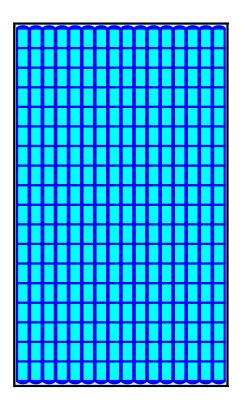
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

288 Chambers x 45.9 cf = 13,230.7 cf Chamber Storage

35,744.4 cf Field - 13,230.7 cf Chambers = 22,513.7 cf Stone x 40.0% Voids = 9,005.5 cf Stone Storage

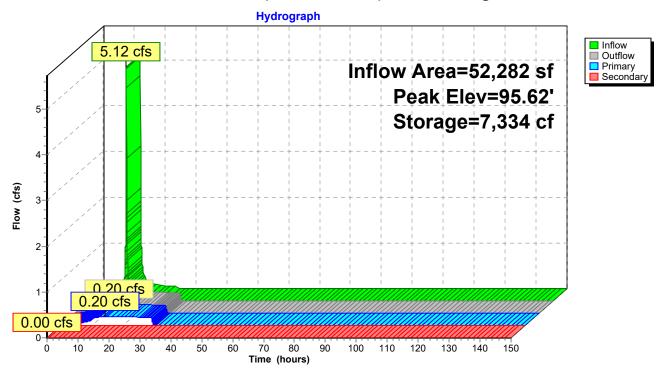
Chamber Storage + Stone Storage = 22,236.2 cf = 0.510 af Overall Storage Efficiency = 62.2% Overall System Size = 131.78' x 77.50' x 3.50'

288 Chambers 1,323.9 cy Field 833.8 cy Stone



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# Pond 5P: PP (w/ underdrain) w/ UG storage 2



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# Summary for Pond 6P: PP (w/ underdrain) w/ UG storage 3

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 76,785 sf, 82.96% Impervious, Inflow Depth = 3.43" for 2-Year\_2100 event

Inflow = 7.50 cfs @ 12.10 hrs, Volume= 21,942 cf

Outflow = 0.20 cfs @ 15.03 hrs, Volume= 21,942 cf, Atten= 97%, Lag= 176.1 min

Primary = 0.20 cfs @ 15.03 hrs, Volume= 21,942 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.65' @ 15.03 hrs Surf.Area= 16,925 sf Storage= 12,645 cf

Plug-Flow detention time= 595.2 min calculated for 21,942 cf (100% of inflow)

Center-of-Mass det. time= 595.2 min (1,353.9 - 758.7)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,054 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	14,875 cf	144.00'W x 117.54'L x 3.50'H Field A
			59,238 cf Overall - 22,051 cf Embedded = 37,187 cf x 40.0% Voids
#3A	95.00'	22,051 cf	ADS_StormTech SC-740 +Cap x 480 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
			480 Chambers in 30 Rows

38,980 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	3,240	0.0	0	0
97.67	3,240	35.0	760	760
97.83	3,240	15.0	78	838
98.00	3,240	15.0	83	920
98.35	3,240	100.0	1,134	2,054

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	2.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.20 cfs @ 15.03 hrs HW=95.65' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.20 cfs @ 9.01 fps)
2=6" HDPE Underdrain (Passes 0.20 cfs of 0.36 cfs potential flow)
3=Perforations (Passes 0.20 cfs of 6.74 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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# Pond 6P: PP (w/ underdrain) w/ UG storage 3 - Chamber Wizard Field A

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

16 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 115.54' Row Length +12.0" End Stone x 2 = 117.54' Base Length

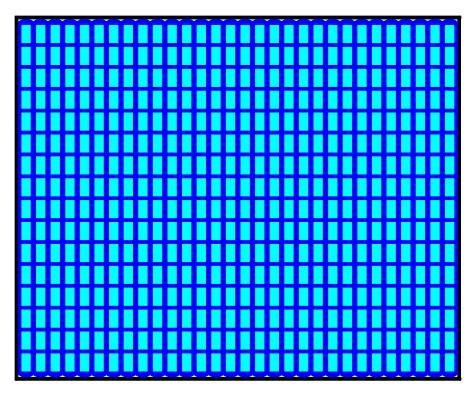
30 Rows x 51.0" Wide + 6.0" Spacing x 29 + 12.0" Side Stone x 2 = 144.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

480 Chambers x 45.9 cf = 22,051.2 cf Chamber Storage

59,238.5 cf Field - 22,051.2 cf Chambers = 37,187.3 cf Stone x 40.0% Voids = 14,874.9 cf Stone Storage

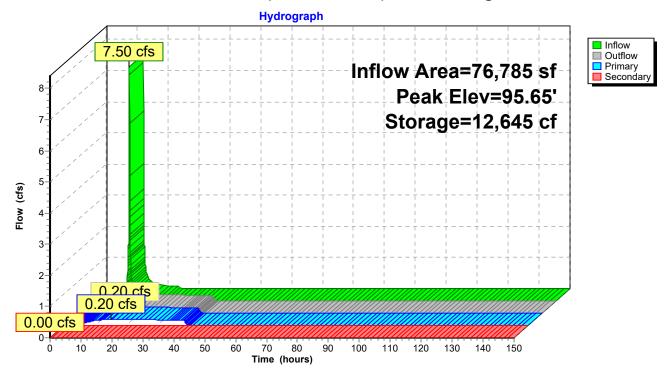
Chamber Storage + Stone Storage = 36,926.1 cf = 0.848 af Overall Storage Efficiency = 62.3% Overall System Size = 117.54' x 144.00' x 3.50'

480 Chambers 2,194.0 cy Field 1,377.3 cy Stone



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# Pond 6P: PP (w/ underdrain) w/ UG storage 3



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# Summary for Pond 7P: PP (w/ underdrain) w/ UG storage 4

[44] Hint: Outlet device #3 is below defined storage

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.68' @ 14.75 hrs Surf.Area= 26,122 sf Storage= 20,146 cf

Plug-Flow detention time= 507.2 min calculated for 36,308 cf (100% of inflow)

Center-of-Mass det. time= 507.2 min (1,260.7 - 753.5)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,980 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	22,825 cf	163.00'W x 160.26'L x 3.50'H Field A
			91,426 cf Overall - 34,363 cf Embedded = 57,063 cf x 40.0% Voids
#3A	95.00'	34,363 cf	ADS_StormTech SC-740 +Cap x 748 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
			748 Chambers in 34 Rows

60,168 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.35	4,700	100.0	1,645	2,980

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

### Site 10 20240629

NOAA 24-hr C 2-Year \_2100 Rainfall=3.97"

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Primary OutFlow Max=0.36 cfs @ 14.75 hrs HW=95.68' (Free Discharge)
1=Restriction Orifice (Passes 0.36 cfs of 0.44 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.36 cfs @ 1.84 fps)
3=Perforations (Passes 0.36 cfs of 6.77 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 7P: PP (w/ underdrain) w/ UG storage 4 - Chamber Wizard Field A

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

22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length

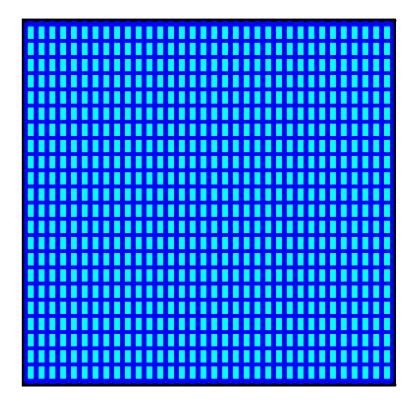
34 Rows x 51.0" Wide + 6.0" Spacing x 33 + 12.0" Side Stone x 2 = 163.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

748 Chambers x 45.9 cf = 34,363.1 cf Chamber Storage

91,426.4 cf Field - 34,363.1 cf Chambers = 57,063.3 cf Stone x 40.0% Voids = 22,825.3 cf Stone Storage

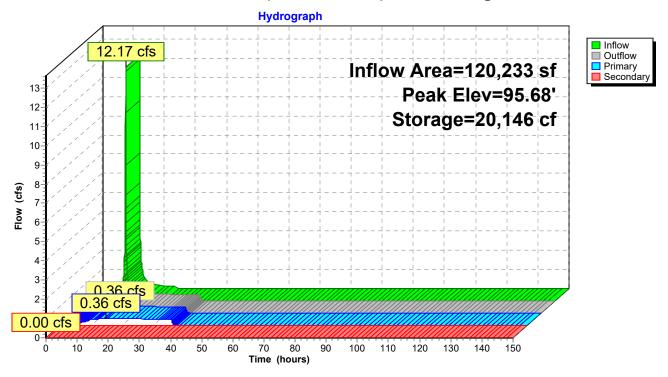
Chamber Storage + Stone Storage = 57,188.5 cf = 1.313 af Overall Storage Efficiency = 62.6% Overall System Size = 160.26' x 163.00' x 3.50'

748 Chambers 3,386.2 cy Field 2,113.5 cy Stone



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Pond 7P: PP (w/ underdrain) w/ UG storage 4



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# **Summary for Pond 8P: Existing Basin 1**

Inflow Area = 444,913 sf, 80.94% Impervious, Inflow Depth = 3.35" for 2-Year 2100 event Inflow 11.35 cfs @ 12.09 hrs, Volume= 124.265 cf 6.92 cfs @ 12.14 hrs, Volume= Outflow = 124,265 cf, Atten= 39%, Lag= 2.9 min 6.92 cfs @ 12.14 hrs, Volume= Primary 124,265 cf Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 67L 0.00 cfs @ 0.00 hrs, Volume= 0 cf Tertiary Routed to nonexistent node 67L

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 59.16' @ 12.14 hrs Surf.Area= 7,965 sf Storage= 5,439 cf

Plug-Flow detention time= 17.1 min calculated for 124,248 cf (100% of inflow) Center-of-Mass det. time= 17.2 min (1,116.7 - 1,099.6)

Volume	Invert	t Avail.Sto	rage Storage	Description	
#1	58.00	' 33,88	31 cf Custom	n Stage Data (Pr	rismatic)Listed below (Recalc)
Elevatio		urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
58.0	00	1,339	0	0	
59.0	00	7,134	4,237	4,237	
60.0	00	12,352	9,743	13,980	
61.0	00	18,300	15,326	29,306	
61.2	25	18,300	4,575	33,881	
Device	Routing	Invert	Outlet Device	s	
#1	Primary	58.00'		ow Flow Orifice	
#2	Secondary	60.00'	24.0" W x 18	.0" H Vert. 2-YR	Orifice C= 0.600
#3	Tertiary	60.75'	48.0" x 48.0"	ir flow at low hea  Horiz. Orifice/G ir flow at low hea	Grate C= 0.600

**100.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=6.92 cfs @ 12.14 hrs HW=59.16' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 6.92 cfs @ 3.66 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge) 2=2-YR Orifice ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge)

-3=Orifice/Grate (Controls 0.00 cfs)

#4

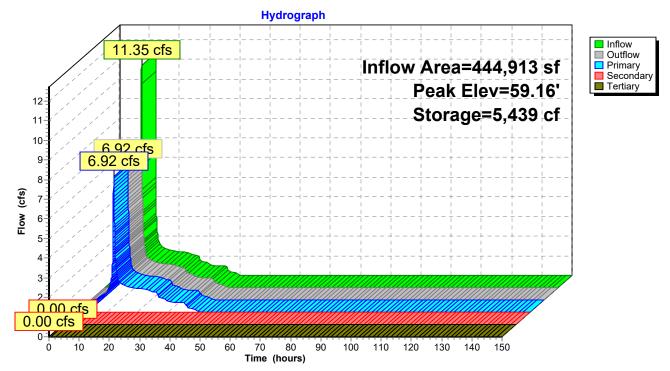
Tertiary

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

61.00'

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# Pond 8P: Existing Basin 1



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# **Summary for Pond 9P: Existing Basin 2**

https://hydro.rutgers.edu/view-project/100596/

Inflow Area = 59,019 sf, 68.70% Impervious, Inflow Depth = 3.15" for 2-Year 2100 event 5.45 cfs @ 12.10 hrs. Volume= Inflow 15,488 cf Outflow 1.05 cfs @ 12.39 hrs, Volume= = 15,488 cf, Atten= 81%, Lag= 17.5 min 0.35 cfs @ 12.39 hrs, Volume= 12,537 cf Primary = 0.70 cfs @ 12.39 hrs, Volume= Secondary = 2,952 cf 0 cf Tertiary 0.00 cfs @ 0.00 hrs, Volume=

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 66.91' @ 12.39 hrs Surf.Area= 4,092 sf Storage= 5,666 cf

Plug-Flow detention time= 100.8 min calculated for 15,486 cf (100% of inflow)

Center-of-Mass det. time= 100.8 min ( 867.3 - 766.5 )

Volume	Invert	Avail.Sto	rage :	Storage	Description	
#1	64.60'	13,40	01 cf (	Custom	Stage Data (Pr	ismatic)Listed below
Elevation (fee	et)	urf.Area (sq-ft)	Inc.S (cubic-	Store feet)	Cum.Store (cubic-feet)	
64.6		0		0	0	
65.0	00	647		129	129	
66.0	00	2,768	1	,708	1,837	
68.0	00	5,693	8	3,461	10,298	
68.5	50	6,718	3	,103	13,401	
Device	Routing	Invert	Outlet	Device	S	
#1	Primary	64.60'	3.0" V	/ert. 3"	Orifice C= 0.60	00 Limited to weir flow at low heads
#2	Secondary	66.40'	0.7' lc	ng 8" S	Sharp-Crested R	Rectangular Weir 2 End Contraction(s)
#3	Tertiary	67.75'			Horiz. Orifice/Gir flow at low hea	

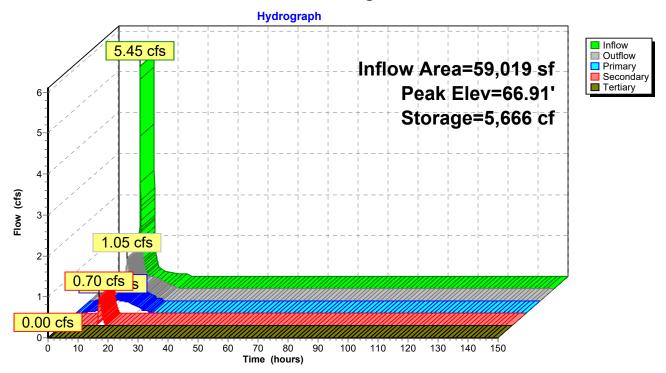
Primary OutFlow Max=0.35 cfs @ 12.39 hrs HW=66.91' (Free Discharge)
1=3" Orifice (Orifice Controls 0.35 cfs @ 7.11 fps)

Secondary OutFlow Max=0.70 cfs @ 12.39 hrs HW=66.91' (Free Discharge) 2=8" Sharp-Crested Rectangular Weir (Weir Controls 0.70 cfs @ 2.32 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=64.60' (Free Discharge) **3=Orifice/Grate** ( Controls 0.00 cfs)

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# Pond 9P: Existing Basin 2



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# Summary for Pond 10P: PP (w/ underdrain) w/ UG storage 5

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 48,527 sf, 85.53% Impervious, Inflow Depth = 3.42" for 2-Year \_2100 event

Inflow = 4.37 cfs @ 12.13 hrs, Volume= 13,840 cf

Outflow = 0.37 cfs @ 13.06 hrs, Volume= 13,840 cf, Atten= 92%, Lag= 56.1 min

Primary = 0.37 cfs @ 13.06 hrs, Volume= 13,840 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.86' @ 13.06 hrs Surf.Area= 5,816 sf Storage= 5,241 cf

Plug-Flow detention time= 105.4 min calculated for 13,839 cf (100% of inflow)

Center-of-Mass det. time= 105.4 min (865.0 - 759.5)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	3,687 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	5,184 cf	34.75'W x 167.38'L x 3.50'H Field A
			20,357 cf Overall - 7,396 cf Embedded = 12,961 cf x 40.0% Voids
#3A	95.00'	7,396 cf	ADS_StormTech SC-740 +Cap x 161 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
			161 Chambers in 7 Rows

16,268 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	5,816	0.0	0	0
97.67	5,816	35.0	1,364	1,364
97.83	5,816	15.0	140	1,503
98.00	5,816	15.0	148	1,652
98.35	5,816	100.0	2,036	3,687

. . . .

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	·		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.37 cfs @ 13.06 hrs HW=95.86' (Free Discharge)
1=Restriction Orifice (Passes 0.37 cfs of 0.45 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.37 cfs @ 1.88 fps)
3=Perforations (Passes 0.37 cfs of 6.93 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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### Pond 10P: PP (w/ underdrain) w/ UG storage 5 - Chamber Wizard Field A

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

23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length

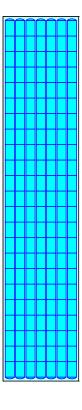
7 Rows x 51.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 34.75' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

161 Chambers x 45.9 cf = 7,396.3 cf Chamber Storage

20,357.2 cf Field - 7,396.3 cf Chambers = 12,960.8 cf Stone x 40.0% Voids = 5,184.3 cf Stone Storage

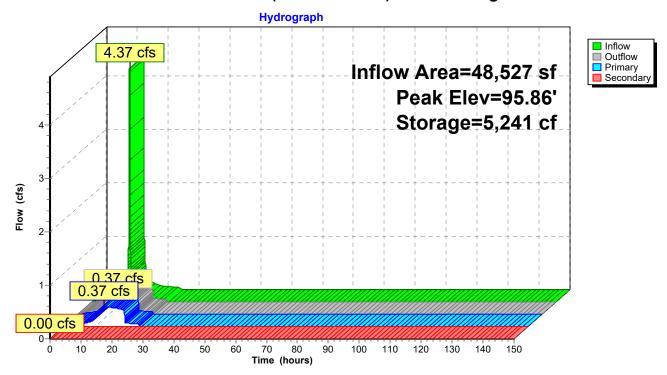
Chamber Storage + Stone Storage = 12,580.7 cf = 0.289 af Overall Storage Efficiency = 61.8% Overall System Size = 167.38' x 34.75' x 3.50'

161 Chambers 754.0 cy Field 480.0 cy Stone



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# Pond 10P: PP (w/ underdrain) w/ UG storage 5



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# Summary for Pond 11P: PP (w/ underdrain) w/ UG storage 6

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 57,652 sf, 78.51% Impervious, Inflow Depth = 3.30" for 2-Year \_2100 event

Inflow = 5.55 cfs @ 12.09 hrs, Volume= 15,860 cf

Outflow = 0.36 cfs @ 13.20 hrs, Volume= 15,860 cf, Atten= 94%, Lag= 66.6 min

Primary = 0.36 cfs @ 13.20 hrs, Volume= 15,860 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.67' @ 13.20 hrs Surf.Area= 8,594 sf Storage= 6,485 cf

Plug-Flow detention time= 141.3 min calculated for 15,860 cf (100% of inflow)

Center-of-Mass det. time= 141.3 min (901.7 - 760.3)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,144 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'		96.50'W x 89.06'L x 3.50'H Field A
			30,079 cf Overall - 11,026 cf Embedded = 19,053 cf x 40.0% Voids
#3A	95.00'	11,026 cf	ADS_StormTech SC-740 +Cap x 240 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
			240 Chambers in 20 Rows

20,791 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	3,382	0.0	0	0
97.67	3,382	35.0	793	793
97.83	3,382	15.0	81	874
98.00	3,382	15.0	86	960
98.35	3,382	100.0	1,184	2,144

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.36 cfs @ 13.20 hrs HW=95.67' (Free Discharge)
1=Restriction Orifice (Passes 0.36 cfs of 0.44 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.36 cfs @ 1.84 fps)
3=Perforations (Passes 0.36 cfs of 6.75 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 11P: PP (w/ underdrain) w/ UG storage 6 - Chamber Wizard Field A

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

12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length

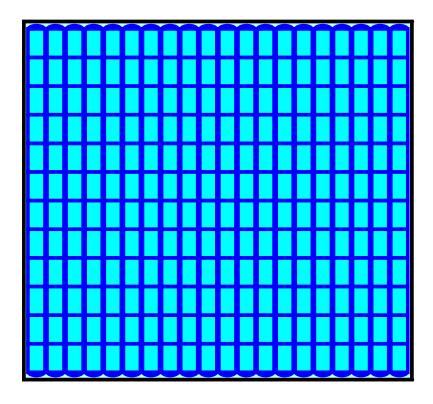
20 Rows x 51.0" Wide + 6.0" Spacing x 19 + 12.0" Side Stone x 2 = 96.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

240 Chambers x 45.9 cf = 11,025.6 cf Chamber Storage

30,078.9 cf Field - 11,025.6 cf Chambers = 19,053.3 cf Stone x 40.0% Voids = 7,621.3 cf Stone Storage

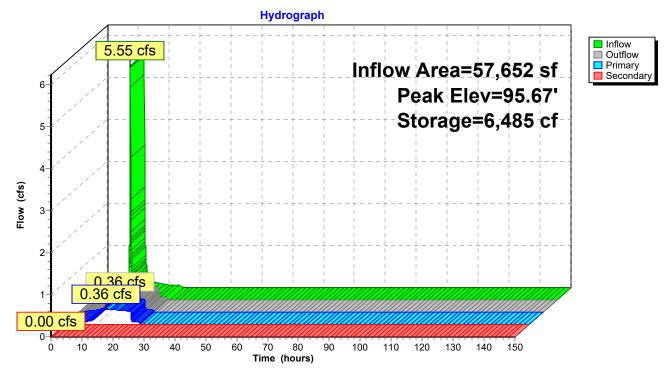
Chamber Storage + Stone Storage = 18,646.9 cf = 0.428 af Overall Storage Efficiency = 62.0% Overall System Size = 89.06' x 96.50' x 3.50'

240 Chambers 1,114.0 cy Field 705.7 cy Stone



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# Pond 11P: PP (w/ underdrain) w/ UG storage 6



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# Summary for Pond 12P: PP (w/ underdrain) w/ UG storage 7

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 67,756 sf, 72.56% Impervious, Inflow Depth = 3.20" for 2-Year \_2100 event

Inflow = 6.30 cfs @ 12.10 hrs, Volume= 18,074 cf

Outflow = 0.36 cfs @ 13.38 hrs, Volume= 18,074 cf, Atten= 94%, Lag= 77.0 min

Primary = 0.36 cfs @ 13.38 hrs, Volume= 18,074 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.59' @ 13.38 hrs Surf.Area= 11,316 sf Storage= 7,878 cf

Plug-Flow detention time= 182.7 min calculated for 18,072 cf (100% of inflow)

Center-of-Mass det. time= 182.6 min ( 946.8 - 764.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	935 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,962 cf	77.50'W x 146.02'L x 3.50'H Field A
			39,607 cf Overall - 14,701 cf Embedded = 24,906 cf x 40.0% Voids
#3A	95.00'	14,701 cf	ADS_StormTech SC-740 +Cap x 320 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
			320 Chambers in 16 Rows

25,598 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	1,474	0.0	0	0
97.67	1,474	35.0	346	346
97.83	1,474	15.0	35	381
98.00	1,474	15.0	38	419
98.35	1.474	100.0	516	935

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.36 cfs @ 13.38 hrs HW=95.59' (Free Discharge)
1=Restriction Orifice (Passes 0.36 cfs of 0.44 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.36 cfs @ 1.82 fps)
3=Perforations (Passes 0.36 cfs of 6.68 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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### Pond 12P: PP (w/ underdrain) w/ UG storage 7 - Chamber Wizard Field A

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

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

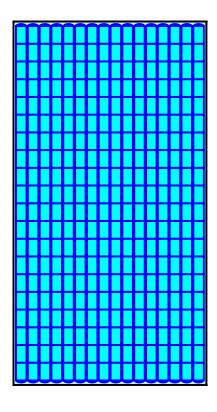
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

320 Chambers x 45.9 cf = 14,700.8 cf Chamber Storage

39,607.0 cf Field - 14,700.8 cf Chambers = 24,906.2 cf Stone x 40.0% Voids = 9,962.5 cf Stone Storage

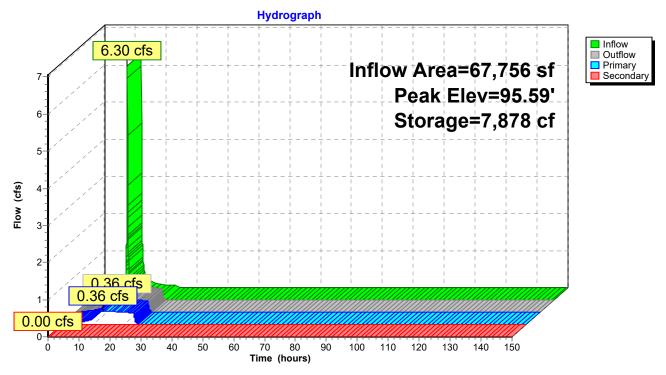
Chamber Storage + Stone Storage = 24,663.3 cf = 0.566 af Overall Storage Efficiency = 62.3% Overall System Size = 146.02' x 77.50' x 3.50'

320 Chambers 1,466.9 cy Field 922.5 cy Stone



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# Pond 12P: PP (w/ underdrain) w/ UG storage 7



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### **Summary for Pond 13P: Bioretention Basin 4**

Inflow Area = 329,976 sf, 48.67% Impervious, Inflow Depth = 2.64" for 2-Year 2100 event Inflow 6.05 cfs @ 12.36 hrs. Volume= 72.685 cf 3.39 cfs @ 12.76 hrs, Volume= Outflow 71,423 cf, Atten= 44%, Lag= 23.6 min 0.35 cfs @ 12.76 hrs, Volume= Primary 30,021 cf Routed to nonexistent node 5R 3.04 cfs @ 12.76 hrs, Volume= Secondary = 41,402 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs. Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 51.61' @ 12.76 hrs Surf.Area= 9,735 sf Storage= 18,950 cf

Plug-Flow detention time= 273.4 min calculated for 71,413 cf (98% of inflow) Center-of-Mass det. time= 264.7 min (1,149.3 - 884.6)

VolumeInvertAvail.StorageStorage Description#149.00'33,395 cfCustom Stage Data (Prismatic)Listed below (Recalc)ElevationSurf.AreaInc.StoreCum.Store

Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
49.00	4,800	0	0
52.00	10,478	22,917	22,917
53.00	10,478	10,478	33,395

Device	Routing	Invert	Outlet Devices
#1	Primary	49.25'	3.0" Vert. Low Flow Orifice C= 0.600
	-		Limited to weir flow at low heads
#2	Secondary	51.00'	<b>24.0" W x 18.0" H Vert. SECONDARY OUTLET</b> C= 0.600
	-		Limited to weir flow at low heads
#3	Tertiary	52.00'	<b>60.0" x 60.0" Horiz. Orifice/Grate</b> C= 0.600
	•		Limited to weir flow at low heads

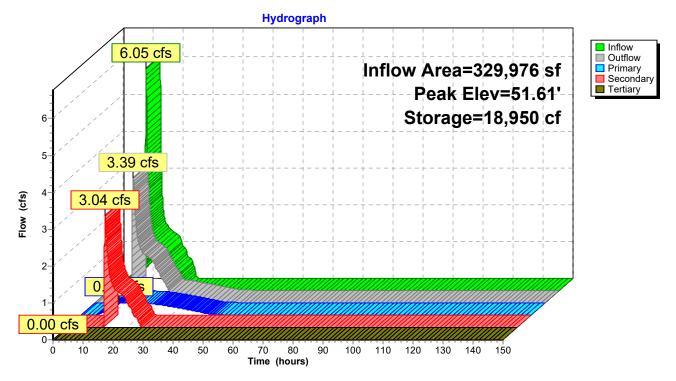
Primary OutFlow Max=0.35 cfs @ 12.76 hrs HW=51.61' (Free Discharge)
—1=Low Flow Orifice (Orifice Controls 0.35 cfs @ 7.19 fps)

Secondary OutFlow Max=3.04 cfs @ 12.76 hrs HW=51.61' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 3.04 cfs @ 2.50 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=49.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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## Pond 13P: Bioretention Basin 4



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Time span=0.00-150.00 hrs, dt=0.02 hrs, 7501 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

Runoff Area=141,085 sf 17.73% Impervious Runoff Depth=1.53" Subcatchment 1S: DA 1: CN w/ IC areas Tc=18.6 min CN=75/98 Runoff=4.06 cfs 17,985 cf Runoff Area=21,583 sf 64.54% Impervious Runoff Depth=2.49" Subcatchment 2S: DA 2: CN w/ IC areas Tc=1.4 min CN=78/98 Runoff=1.61 cfs 4,485 cf Subcatchment 3S: DA 3: CN w/ IC areas Runoff Area=40,101 sf 65.65% Impervious Runoff Depth=2.49" Tc=3.5 min CN=77/98 Runoff=2.88 cfs 8,323 cf Runoff Area=84,260 sf 73.22% Impervious Runoff Depth=2.63" Subcatchment 4S: DA 4: CN w/ IC areas Tc=3.2 min CN=77/98 Runoff=6.39 cfs 18,443 cf Runoff Area=52,282 sf 79.56% Impervious Runoff Depth=2.75" Subcatchment 5S: DA 5: CN w/ IC areas Tc=2.5 min CN=78/98 Runoff=4.22 cfs 11,996 cf Runoff Area=76,785 sf 82.96% Impervious Runoff Depth=2.82" Subcatchment 6S: DA 6: CN w/ IC areas Tc=3.2 min CN=79/98 Runoff=6.21 cfs 18,066 cf Runoff Area=120,233 sf 94.05% Impervious Runoff Depth=3.00" Subcatchment 7S: DA 7: CN w/ IC areas Tc=3.5 min CN=78/98 Runoff=10.17 cfs 30,098 cf Runoff Area=111,353 sf 71.87% Impervious Runoff Depth=2.54" Subcatchment 8S: DA 8: CN w/ IC areas Tc=2.0 min CN=73/98 Runoff=8.42 cfs 23,523 cf Runoff Area=59,019 sf 68.70% Impervious Runoff Depth=2.57" Subcatchment 9S: DA 9: CN w/ IC areas Tc=2.8 min CN=78/98 Runoff=4.45 cfs 12,617 cf Subcatchment 10S: DA 10: CN w/ IC areas Runoff Area=48,527 sf 85.53% Impervious Runoff Depth=2.82" Tc=5.8 min CN=74/98 Runoff=3.62 cfs 11,408 cf

Subcatchment11S: DA 11: CN w/ IC areas Runoff Area=57,652 sf 78.51% Impervious Runoff Depth=2.71"

Tc=2.5 min CN=76/98 Runoff=4.58 cfs 13,010 cf

Subcatchment 12S: DA 12: CN w/ IC areas Runoff Area=67,756 sf 72.56% Impervious Runoff Depth=2.61"

Tc=2.9 min CN=77/98 Runoff=5.17 cfs 14,764 cf

Subcatchment 13S: DA 13: CN w/ IC areas Runoff Area=156,041 sf 15.80% Impervious Runoff Depth=1.44" Tc=24.6 min CN=74/98 Runoff=3.68 cfs 18,764 cf

Pond 1P: Bioretention Basin 1 Peak Elev=63.94' Storage=8,600 cf Inflow=4.06 cfs 17,985 cf Primary=0.34 cfs 17,985 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=0.34 cfs 17,985 cf

Pond 2P: Bioretention Basin 2 Peak Elev=69.24' Storage=2,095 cf Inflow=1.61 cfs 4,485 cf Primary=0.22 cfs 4,143 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=0.22 cfs 4,143 cf

Pond 3P: Bioretention Basin 3 Peak Elev=65.77' Storage=4,166 cf Inflow=2.88 cfs 8,323 cf Primary=0.28 cfs 7,862 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=0.28 cfs 7,862 cf

Pond 4P: PP (w/ underdrain) w/ UG storage 1 Peak Elev=95.42' Storage=8,208 cf Inflow=6.39 cfs 18,443 cf Primary=0.35 cfs 18,443 cf Secondary=0.00 cfs 0 cf Outflow=0.35 cfs 18,443 cf

Pond 5P: PP (w/ underdrain) w/ UG storage 2 Peak Elev=95.43' Storage=5,703 cf Inflow=4.22 cfs 11,996 cf Primary=0.19 cfs 11,996 cf Secondary=0.00 cfs 0 cf Outflow=0.19 cfs 11,996 cf

Pond 6P: PP (w/ underdrain) w/ UG storage 3 Peak Elev=95.46' Storage=9,922 cf Inflow=6.21 cfs 18,066 cf Primary=0.19 cfs 18,066 cf Secondary=0.00 cfs 0 cf Outflow=0.19 cfs 18,066 cf

Pond 7P: PP (w/ underdrain) w/ UG Peak Elev=95.48' Storage=15,922 cf Inflow=10.17 cfs 30,098 cf Primary=0.35 cfs 30,098 cf Secondary=0.00 cfs 0 cf Outflow=0.35 cfs 30,098 cf

Pond 8P: Existing Basin 1 Peak Elev=59.05' Storage=4,615 cf Inflow=9.45 cfs 102,126 cf Primary=5.85 cfs 102,126 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=5.85 cfs 102,126 cf

Pond 9P: Existing Basin 2 Peak Elev=66.70' Storage=4,801 cf Inflow=4.45 cfs 12,617 cf Primary=0.33 cfs 11,249 cf Secondary=0.35 cfs 1,368 cf Tertiary=0.00 cfs 0 cf Outflow=0.68 cfs 12,617 cf

Pond 10P: PP (w/ underdrain) w/ UG storage Peak Elev=95.59' Storage=4,010 cf Inflow=3.62 cfs 11,408 cf Primary=0.36 cfs 11,408 cf Secondary=0.00 cfs 0 cf Outflow=0.36 cfs 11,408 cf

Pond 11P: PP (w/ underdrain) w/ UG storage Peak Elev=95.45' Storage=4,956 cf Inflow=4.58 cfs 13,010 cf Primary=0.35 cfs 13,010 cf Secondary=0.00 cfs 0 cf Outflow=0.35 cfs 13,010 cf

Pond 12P: PP (w/ underdrain) w/ UG storage Peak Elev=95.39' Storage=6,005 cf Inflow=5.17 cfs 14,764 cf Primary=0.35 cfs 14,764 cf Secondary=0.00 cfs 0 cf Outflow=0.35 cfs 14,764 cf

**Pond 13P: Bioretention Basin 4** Peak Elev=51.43' Storage=17,279 cf Inflow=4.72 cfs 57,946 cf Primary=0.34 cfs 28,380 cf Secondary=1.83 cfs 28,304 cf Tertiary=0.00 cfs 0 cf Outflow=2.17 cfs 56,684 cf

Total Runoff Area = 1,036,677 sf Runoff Volume = 203,482 cf Average Runoff Depth = 2.36" 39.57% Pervious = 410,178 sf 60.43% Impervious = 626,499 sf

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# Summary for Subcatchment 1S: DA 1: CN w/ IC areas

Runoff = 4.06 cfs @ 12.28 hrs, Volume= 17,985 cf, Depth= 1.53"

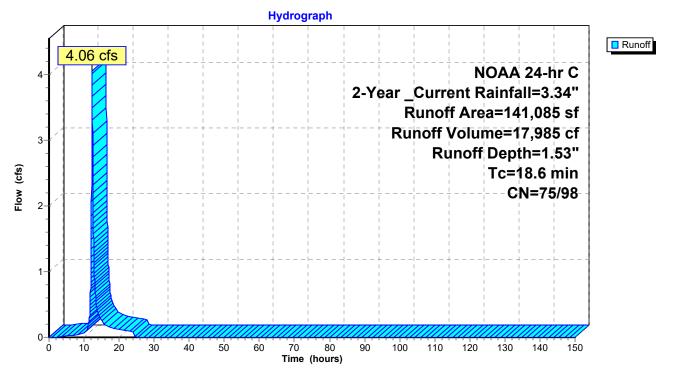
Routed to Pond 1P: Bioretention Basin 1

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				
*	25,014	98	Impervious HSG C				
	26,886	70	Brush (fair) HSG C				
	45,464	79	Open Space (fair) HSG C				
*	10,665	74	Open Space (good) HSG C				
*	33,056	73	Woods (fair) HSG C				
	141,085	79	Weighted Average				
	116,071	75	82.27% Pervious Area				
	25,014	98	17.73% Impervious Area				
	Tc Length	Slop					
	(min) (feet)	(ft/	/ft) (ft/sec) (cfs)				
	18.6		Direct Entry, Direct (see AutoCAD)				

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### Subcatchment 1S: DA 1: CN w/ IC areas



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

[49] Hint: Tc<2dt may require smaller dt

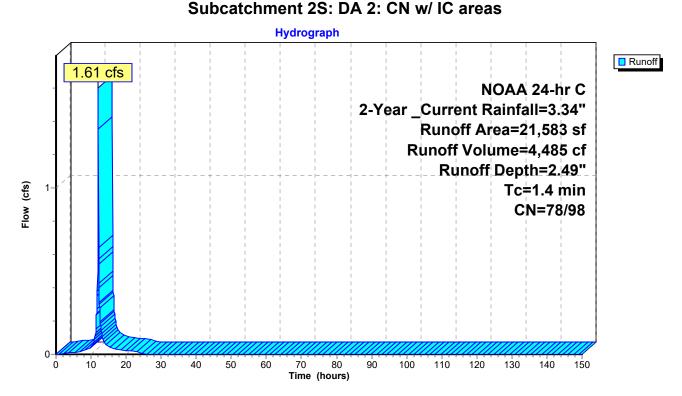
Runoff = 1.61 cfs @ 12.10 hrs, Volume= 4,485 cf, Depth= 2.49"

Routed to Pond 2P: Bioretention Basin 2

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					
*	13,929	98	Impervious I	Impervious HSG C				
	6,668	79	Open Space	e (fair) HSC	G C			
*	986	74	Open Space	Open Space (good) HSG C				
	21,583	91	Weighted Av	Veighted Average				
	7,654	78	35.46% Per	35.46% Pervious Area				
	13,929	98	64.54% Imp	64.54% Impervious Area				
(1	Tc Length min) (feet)	Slop (ft/f	,	Capacity (cfs)	Description			
	1.4		-		Direct Entry, Direct (see AutoCAD)			

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

Runoff 2.88 cfs @ 12.11 hrs, Volume= 8,323 cf, Depth= 2.49"

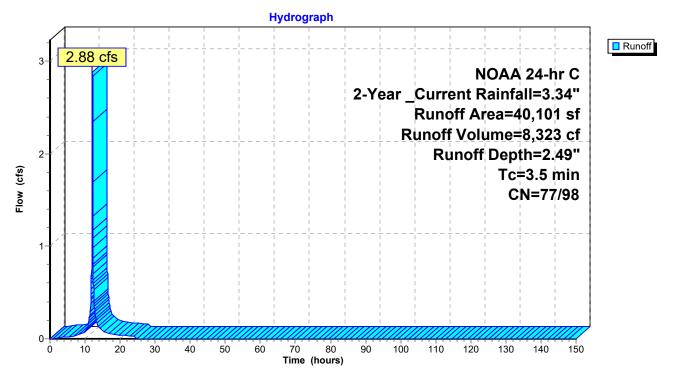
Routed to Pond 3P: Bioretention Basin 3

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	Description				
*	26,326	98	Impervious	mpervious HSG C				
	9,202	2 79	Open Space	e (fair) HSC	3 C			
*	4,573	3 74	Open Space	Open Space (good) HSG C				
	40,101	91	Weighted A	/eighted Average				
	13,775	77	34.35% Per	34.35% Pervious Area				
	26,326	98	65.65% Imp	ervious Ar	ea			
	Tc Lengt	th Slop	oe Velocity	Capacity	Description			
_	(min) (feet	t) (ft/	ft) (ft/sec)	(cfs)				
	3.5				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

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



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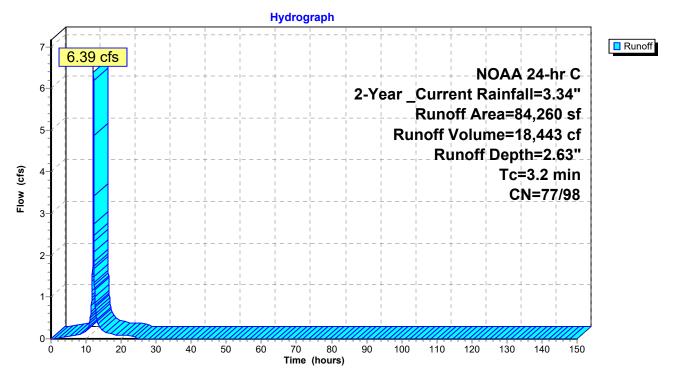
### Summary for Subcatchment 4S: DA 4: CN w/ IC areas

6.39 cfs @ 12.10 hrs, Volume= Runoff 18,443 cf, Depth= 2.63" Routed to Pond 4P: PP (w/ underdrain) w/ UG storage 1

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					
*	61,698	98	Impervious	mpervious HSG C				
	13,143	79	Open Space	e (fair) HSC	G C			
*	9,419	74	Open Space	Open Space (good) HSG C				
	84,260	92	Weighted A	Veighted Average				
	22,562	77	26.78% Per	26.78% Pervious Area				
	61,698	98	73.22% Imp	73.22% Impervious Area				
(	Tc Length min) (feet)	Slop (ft/i	,	Capacity (cfs)	Description			
	3.2				Direct Entry, Direct (see AutoCAD)			

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



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## Summary for Subcatchment 5S: DA 5: CN w/ IC areas

Runoff = 4.22 cfs @ 12.09 hrs, Volume= 11,996 cf, Depth= 2.75" Routed to Pond 5P : PP (w/ underdrain) w/ UG storage 2

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					
*	41,	595	98	Impervious	mpervious HSG C				
		444	70	Brush (fair)	Brush (fair) HSG C				
	9,	377	79	Open Space	Open Space (fair) HSG C				
*		866	74	Open Space	Open Space (good) HSG C				
	52,	282	94	Weighted Average					
	10,	687	78		20.44% Pervious Area				
	41,	595	98	79.56% Imp	ervious Are	rea			
	Tc Le	ngth	Slope	e Velocity	Capacity	Description			
_	(min) (	feet)	(ft/ft	) (ft/sec)	(cfs)				
	2.5					Direct Entry, Direct (see AutoCAD)			

# Subcatchment 5S: DA 5: CN w/ IC areas

Hydrograph Runoff 4.22 cfs NOAA 24-hr C 2-Year \_Current Rainfall=3.34" Runoff Area=52,282 sf Runoff Volume=11,996 cf Runoff Depth=2.75" Flow (cfs) Tc=2.5 min CN=78/98 2-10 30 40 60 90 110 120 140 150 70 80 100 130 Time (hours)

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### Summary for Subcatchment 6S: DA 6: CN w/ IC areas

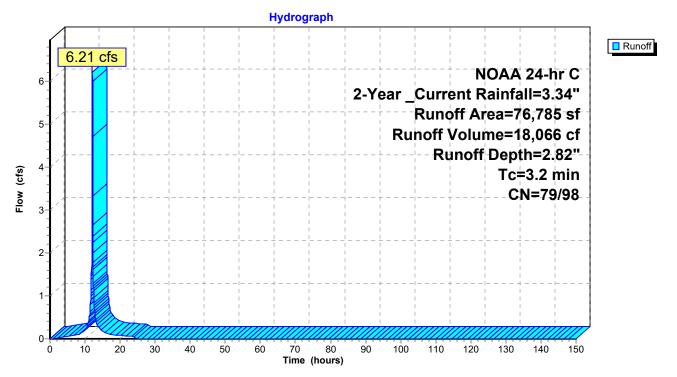
6.21 cfs @ 12.10 hrs, Volume= Runoff 18,066 cf, Depth= 2.82" Routed to Pond 6P: PP (w/ underdrain) w/ UG storage 3

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					
*	63,699	98	Impervious HSG C					
	12,708	79	Open Space (fair) HSG C					
*	378	74	Open Space (good) HSG C					
	76,785	95	Weighted A	verage				
	13,086	79	17.04% Pervious Area					
	63,699	98	82.96% Impervious Area					
	Tc Length	Slop	oe Velocity	Capacity	Description			
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)				
	3.2				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

### Subcatchment 6S: DA 6: CN w/ IC areas



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## Summary for Subcatchment 7S: DA 7: CN w/ IC areas

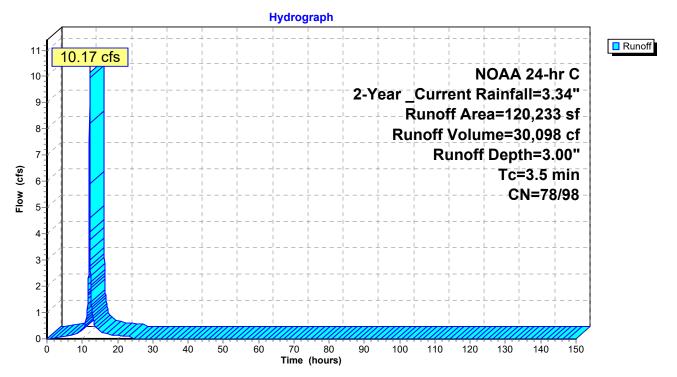
Runoff = 10.17 cfs @ 12.10 hrs, Volume= 30,098 cf, Depth= 3.00" Routed to Pond 7P : PP (w/ underdrain) w/ UG storage 4

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				
*	113,075	98	98 Impervious HSG C				
	5,111	79	Open Space (fair) HSG C				
*	2,047	74	74 Open Space (good) HSG C				
	120,233	97	Weighted A	verage			
	7,158						
	113,075	98	94.05% Impervious Area				
	Tc Length	Slop		Capacity	Description		
<u>(r</u>	min) (feet)	(ft/1	ft) (ft/sec)	(cfs)			
	3.5				Direct Entry, Direct (see AutoCAD)		

•

### Subcatchment 7S: DA 7: CN w/ IC areas



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# Summary for Subcatchment 8S: DA 8: CN w/ IC areas

[49] Hint: Tc<2dt may require smaller dt

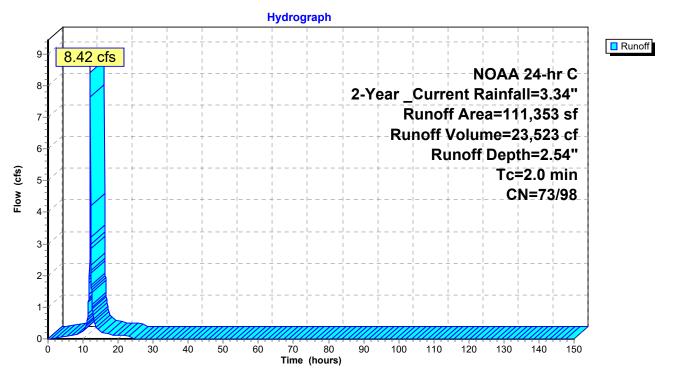
Runoff = 8.42 cfs @ 12.09 hrs, Volume= 23,523 cf, Depth= 2.54"

Routed to Pond 8P: Existing Basin 1

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		
*	80,033	98	Impervious HSG C		
	3,876	70	Brush (fair) HSG C		
	419	79	Open Space (fair) HSG C		
*	12,431	74	Open Space (good) HSG C		
*	14,594	73	Woods (fair) HSG C		
	111,353	91	Weighted Average		
	31,320	73	28.13% Pervious Area		
	80,033	98	71.87% Impervious Area		
	Tc Length (min) (feet)	Slop (ft/			
	2.0		Direct Entry, Direct (see AutoCAD)		

### Subcatchment 8S: DA 8: CN w/ IC areas



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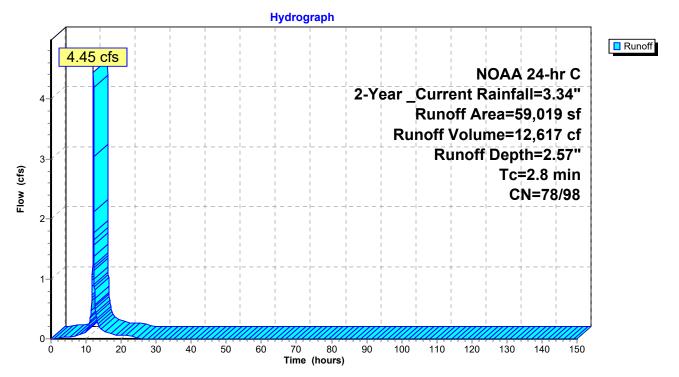
#### Summary for Subcatchment 9S: DA 9: CN w/ IC areas

4.45 cfs @ 12.10 hrs, Volume= 12,617 cf, Depth= 2.57" Runoff Routed to Pond 9P: Existing Basin 2

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				
*	40,544	98	Impervious HSG C	Impervious HSG C			
	15,969	79	Open Space (fair) HSG C				
*	2,506	74	Open Space (good) HSG C				
	59,019	92	Weighted Average				
	18,475	78	31.30% Pervious Area				
	40,544	98	68.70% Impervious Area				
	Tc Length	Slop					
_	(min) (feet)	(ft/	/ft) (ft/sec) (cfs)				
	2.8		Direct Entry, Direct (see AutoCAD)				

#### Subcatchment 9S: DA 9: CN w/ IC areas



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#### Summary for Subcatchment 10S: DA 10: CN w/ IC areas

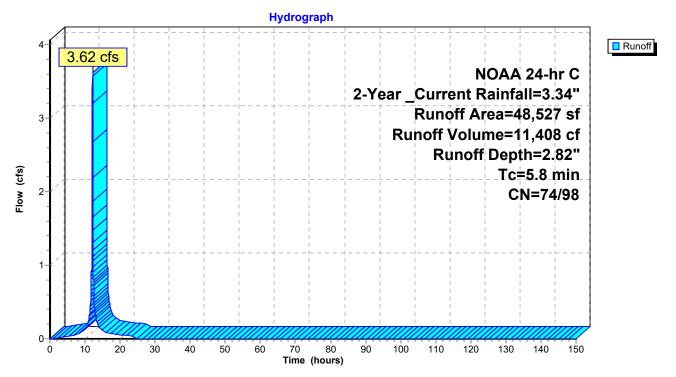
Runoff = 3.62 cfs @ 12.13 hrs, Volume= 11,408 cf, Depth= 2.82" Routed to Pond 10P : PP (w/ underdrain) w/ UG storage 5

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				
*	41,506	98	Impervious HSG C	Impervious HSG C			
	60	79	Open Space (fair) HSG C				
*	6,961	74	Open Space (good) HSG C				
	48,527	95	Weighted Average				
	7,021	74	14.47% Pervious Area				
	41,506	98	85.53% Impervious Area				
	Tc Length	Slop					
_	(min) (feet)	(ft/	ft) (ft/sec) (cfs)				
	5.8		Direct Entry, Direct (see AutoCAD)				

•

#### Subcatchment 10S: DA 10: CN w/ IC areas



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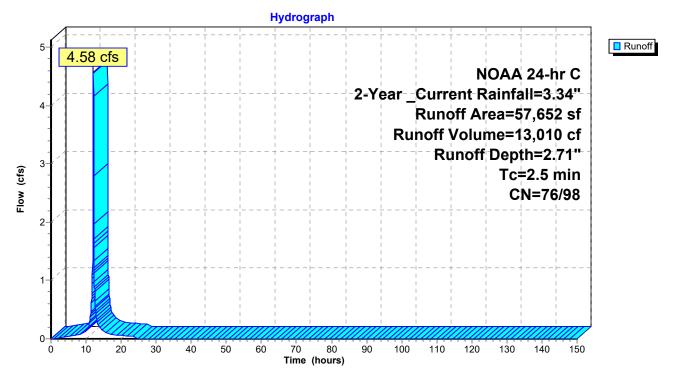
#### Summary for Subcatchment 11S: DA 11: CN w/ IC areas

Runoff = 4.58 cfs @ 12.09 hrs, Volume= 13,010 cf, Depth= 2.71" Routed to Pond 11P : PP (w/ underdrain) w/ UG storage 6

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					
*	45,264	98	Impervious	HSG C				
	5,795	79	Open Space	Open Space (fair) HSG C				
*	6,593	74	Open Space	Open Space (good) HSG C				
	57,652	93	Weighted Average					
	12,388	76						
	45,264	98	98 78.51% Impervious Area					
	Tc Length	Slop		Capacity	Description			
<u>(r</u>	min) (feet)	(ft/f	t) (ft/sec)	(cfs)				
	2.5				Direct Entry, Direct (see AutoCAD)			

#### Subcatchment 11S: DA 11: CN w/ IC areas



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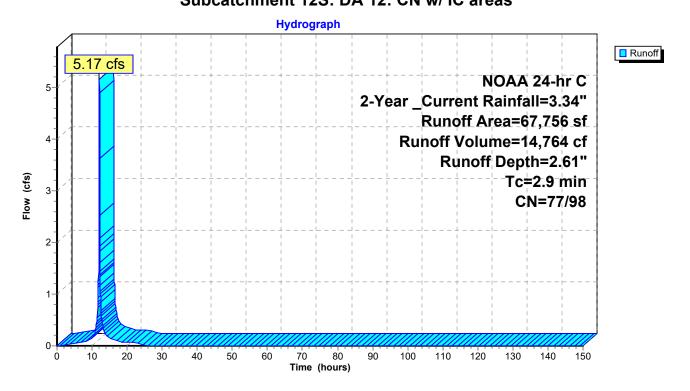
#### Summary for Subcatchment 12S: DA 12: CN w/ IC areas

Runoff = 5.17 cfs @ 12.10 hrs, Volume= 14,764 cf, Depth= 2.61" Routed to Pond 12P: PP (w/ underdrain) w/ UG storage 7

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				
*	49,166	98	Impervious H	ISG C			
	11,017	79	Open Space	Open Space (fair) HSG C			
*	7,573	74	Open Space	Open Space (good) HSG C			
	67,756	92	2 Weighted Average				
	18,590	77	7 27.44% Pervious Area				
	49,166	98	3 72.56% Impervious Area				
		٠.					
	Tc Length	Slop		Capacity	Description		
<u>(r</u>	min) (feet)	(ft/1	ft) (ft/sec)	(cfs)			
	2.9				Direct Entry, Direct (see AutoCAD)		

### Subcatchment 12S: DA 12: CN w/ IC areas



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#### Summary for Subcatchment 13S: DA 13: CN w/ IC areas

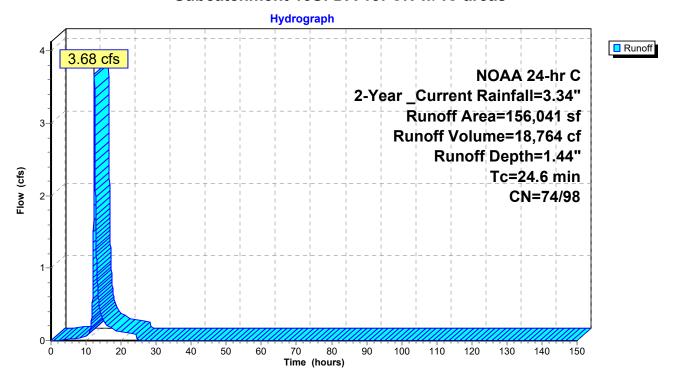
Runoff = 3.68 cfs @ 12.37 hrs, Volume= 18,764 cf, Depth= 1.44"

Routed to Pond 13P: Bioretention Basin 4

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
*	24,650	98	Impervious HSG C
	42,240	79	Open Space (fair) HSG C
*	20,548	74	Open Space (good) HSG C
	68,603	70	Woods, Good, HSG C
	156,041	77	Weighted Average
	131,391	74	84.20% Pervious Area
	24,650	98	15.80% Impervious Area
	Tc Length	Slop	
_	(min) (feet)	(ft/	/ft) (ft/sec) (cfs)
	24 6		Direct Entry, Direct (see AutoCAD)

#### Subcatchment 13S: DA 13: CN w/ IC areas



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#### **Summary for Pond 1P: Bioretention Basin 1**

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 141,085 sf, 17.73% Impervious, Inflow Depth = 1.53" for 2-Year Current event 4.06 cfs @ 12.28 hrs, Volume= Inflow 17,985 cf Outflow 0.34 cfs @ 14.17 hrs, Volume= 17,985 cf, Atten= 92%, Lag= 113.6 min Primary 0.34 cfs @ 14.17 hrs, Volume= 17,985 cf Routed to nonexistent node 5R 0.00 cfs @ Secondary = 0.00 hrs. Volume= 0 cfRouted to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 63.94' @ 14.17 hrs Surf.Area= 7,130 sf Storage= 8,600 cf

Plug-Flow detention time= 269.5 min calculated for 17,983 cf (100% of inflow) Center-of-Mass det. time= 269.5 min (1,103.8 - 834.3)

Volume	Invert	Avail.Stor	rage Storage D	escription	
#1	62.50'	37,96	60 cf Custom S	of Custom Stage Data (Prismatic)Listed below (Recalc)	
Elevatio		ırf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
62.5	-	4,800	0	0	
67.0	00	12,071	37,960	37,960	
Device	Routing	Invert	Outlet Devices		
#1	Primary	61.75'	3.0" Vert. Low		0.000
#2	Secondary	64.00'	Limited to weir		ads ONDARY OUTLET C= 0.600
π <b>∠</b>	Occordary	04.00	Limited to weir		0.1.27.11.11.00.1.22.1
#3 Tertiary 6		66.25'	60.0" x 60.0" H Limited to weir		Grate C= 0.600 ads

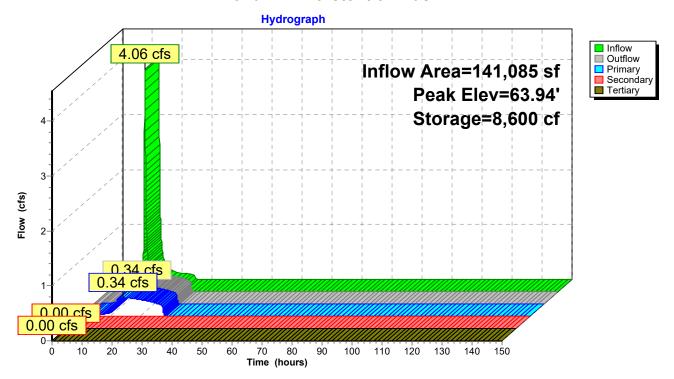
Primary OutFlow Max=0.34 cfs @ 14.17 hrs HW=63.94' (Free Discharge) -1=Low Flow Orifice (Orifice Controls 0.34 cfs @ 6.92 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.50' (Free Discharge) -2=SECONDARY OUTLET (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.50' (Free Discharge) -3=Orifice/Grate (Controls 0.00 cfs)

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#### Pond 1P: Bioretention Basin 1



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#### **Summary for Pond 2P: Bioretention Basin 2**

Inflow Area = 21,583 sf, 64.54% Impervious, Inflow Depth = 2.49" for 2-Year Current event Inflow 1.61 cfs @ 12.10 hrs. Volume= 4.485 cf 0.22 cfs @ 12.53 hrs, Volume= Outflow 4,143 cf, Atten= 86%, Lag= 25.8 min 0.22 cfs @ 12.53 hrs, Volume= Primary 4,143 cf Routed to nonexistent node 5R Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs, Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 69.24' @ 12.53 hrs Surf.Area= 2,111 sf Storage= 2,095 cf

Plug-Flow detention time= 185.1 min calculated for 4,143 cf (92% of inflow) Center-of-Mass det. time= 142.5 min (913.2 - 770.7)

Avail Chamana Chamana Dagamintian

Volume	Invert	Avail.Sto	rage Storage	Description		
#1	68.00'	14,80	05 cf Custon	n Stage Data (Pi	rismatic)Listed below (Recalc)	
		rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
68.0 73.0	-	1,281 4,641	0 14,805	0 14,805		
Device	Routing	Invert	Outlet Device	es		
#1	Primary	68.25'		w Flow Orifice ir flow at low hea		
#2	Secondary	70.50'	-	.0" H Vert. SEC	ONDARY OUTLET C= 0.600 ads	
#3	Tertiary	72.75' <b>60.0" x 60.0" Horiz. Orifice/Grate</b> C= 0.6 Limited to weir flow at low heads				

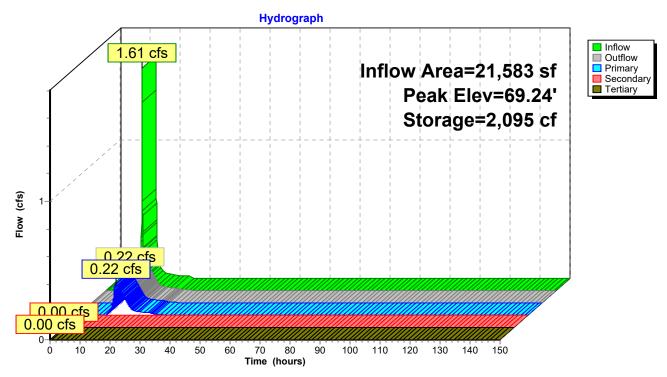
Primary OutFlow Max=0.22 cfs @ 12.53 hrs HW=69.24' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 0.22 cfs @ 4.47 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.00' (Free Discharge) 2=SECONDARY OUTLET (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 2P: Bioretention Basin 2



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#### **Summary for Pond 3P: Bioretention Basin 3**

Inflow Area = 40,101 sf, 65.65% Impervious, Inflow Depth = 2.49" for 2-Year Current event Inflow 2.88 cfs @ 12.11 hrs. Volume= 8.323 cf 0.28 cfs @ 12.87 hrs, Volume= Outflow 7,862 cf, Atten= 90%, Lag= 45.7 min 0.28 cfs @ 12.87 hrs, Volume= Primary 7,862 cf Routed to nonexistent node 5R Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs, Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 65.77' @ 12.87 hrs Surf.Area= 2,944 sf Storage= 4,166 cf

Plug-Flow detention time= 223.7 min calculated for 7,862 cf (94% of inflow) Center-of-Mass det. time= 191.0 min ( 962.8 - 771.8 )

Volume	Invert	Avail.Stor	rage Storage D	escription	
#1	64.00'	17,16	60 cf Custom S	Stage Data (Pi	rismatic)Listed below (Recalc)
Elevation (fee	et)	rf.Area (sq-ft) 1,760	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
69.0	-	5,104	17,160	17,160	
Device	Routing	Invert	Outlet Devices		
#1	Primary	64.25'	3.0" Vert. Low		
#2	Secondary	66.50'	Emmissa to mon	" H Vert. SEC	ONDARY OUTLET C= 0.600
#3	Tertiary	,		loriz. Orifice/0 flow at low hea	Grate C= 0.600 ads

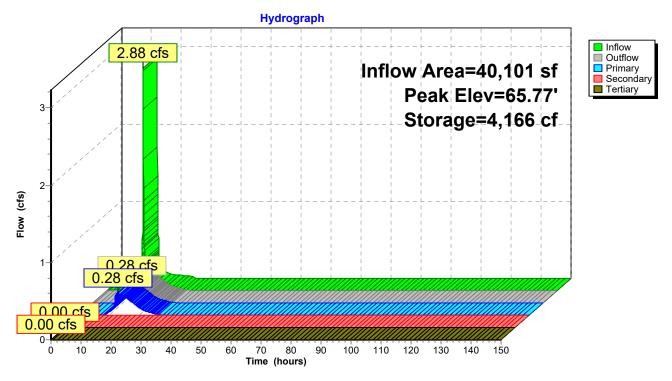
Primary OutFlow Max=0.28 cfs @ 12.87 hrs HW=65.77' (Free Discharge) **-1=Low Flow Orifice** (Orifice Controls 0.28 cfs @ 5.69 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=64.00' (Free Discharge) 2=SECONDARY OUTLET ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=64.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 3P: Bioretention Basin 3



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### Summary for Pond 4P: PP (w/ underdrain) w/ UG storage 1

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 84,260 sf, 73.22% Impervious, Inflow Depth = 2.63" for 2-Year Current event 6.39 cfs @ 12.10 hrs, Volume= 18,443 cf Inflow = 18,443 cf, Atten= 95%, Lag= 80.7 min Outflow = 0.35 cfs @ 13.45 hrs, Volume= Primary = 0.35 cfs @ 13.45 hrs, Volume= 18,443 cf Routed to Pond 8P: Existing Basin 1 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cfRouted to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.42' @ 13.45 hrs Surf.Area= 14,771 sf Storage= 8,208 cf

Plug-Flow detention time= 198.2 min calculated for 18,440 cf (100% of inflow) Center-of-Mass det. time= 198.1 min (965.1 - 767.0)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	3,624 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	12,961 cf	68.00'W x 217.22'L x 3.50'H Field A
			51,698 cf Overall - 19,295 cf Embedded = 32,403 cf x 40.0% Voids
#3A	95.00'	19,295 cf	ADS_StormTech SC-740 +Cap x 420 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
			420 Chambers in 14 Rows
		25 000 -4	Total Assilable Otanana

#### 35,880 cf Total Available Storage

#### Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	6,787	0.0	0	0
97.67	6,787	35.0	1,592	1,592
97.83	6,787	15.0	163	1,754
98.00	6,787	15.0	173	1,928
98.25	6.787	100.0	1.697	3.624

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	67.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.35 cfs @ 13.45 hrs HW=95.42' (Free Discharge)
1=Restriction Orifice (Passes 0.35 cfs of 0.42 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.35 cfs @ 1.77 fps)
3=Perforations (Passes 0.35 cfs of 6.51 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Site 10 20240629

NOAA 24-hr C 2-Year \_ Current Rainfall=3.34"

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### Pond 4P: PP (w/ underdrain) w/ UG storage 1 - Chamber Wizard Field A

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

30 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 215.22' Row Length +12.0" End Stone x 2 = 217.22' Base Length

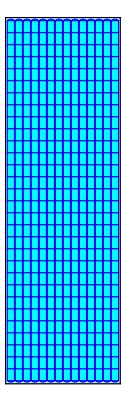
14 Rows x 51.0" Wide + 6.0" Spacing x 13 + 12.0" Side Stone x 2 = 68.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

420 Chambers x 45.9 cf = 19,294.8 cf Chamber Storage

51,697.6 cf Field - 19,294.8 cf Chambers = 32,402.8 cf Stone x 40.0% Voids = 12,961.1 cf Stone Storage

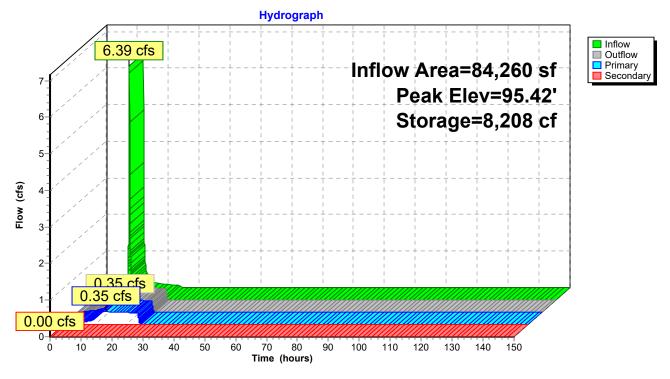
Chamber Storage + Stone Storage = 32,255.9 cf = 0.740 af Overall Storage Efficiency = 62.4% Overall System Size = 217.22' x 68.00' x 3.50'

420 Chambers 1,914.7 cy Field 1,200.1 cy Stone



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Pond 4P: PP (w/ underdrain) w/ UG storage 1



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#### Summary for Pond 5P: PP (w/ underdrain) w/ UG storage 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 52,282 sf, 79.56% Impervious, Inflow Depth = 2.75" for 2-Year \_Current event Inflow = 4.22 cfs @ 12.09 hrs, Volume= 11,996 cf

Outflow = 0.19 cfs @ 13.60 hrs, Volume= 11,996 cf, Atten= 96%, Lag= 90.4 min

Primary = 0.19 cfs @ 13.60 hrs, Volume = 11,996 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.43' @ 13.60 hrs Surf.Area= 10,213 sf Storage= 5,703 cf

Plug-Flow detention time= 262.1 min calculated for 11,994 cf (100% of inflow)

Center-of-Mass det. time= 262.1 min (1,025.1 - 763.0)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,510 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,005 cf	77.50'W x 131.78'L x 3.50'H Field A
			$35,744 \text{ cf Overall} - 13,231 \text{ cf Embedded} = 22,514 \text{ cf } \times 40.0\% \text{ Voids}$
#3A	95.00'	13,231 cf	ADS_StormTech SC-740 +Cap x 288 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
			288 Chambers in 16 Rows

24,746 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.25	4,700	100.0	1,175	2,510

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	2.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	132.0' long x 2.0' breadth Broad-Crested Rectangular Weir
	•		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
			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

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Primary OutFlow Max=0.19 cfs @ 13.60 hrs HW=95.43' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.19 cfs @ 8.71 fps)
2=6" HDPE Underdrain (Passes 0.19 cfs of 0.35 cfs potential flow)
3=Perforations (Passes 0.19 cfs of 6.52 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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### Pond 5P: PP (w/ underdrain) w/ UG storage 2 - Chamber Wizard Field A

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

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length

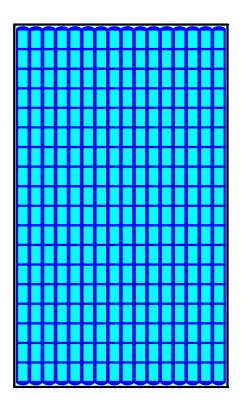
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

288 Chambers x 45.9 cf = 13,230.7 cf Chamber Storage

35,744.4 cf Field - 13,230.7 cf Chambers = 22,513.7 cf Stone x 40.0% Voids = 9,005.5 cf Stone Storage

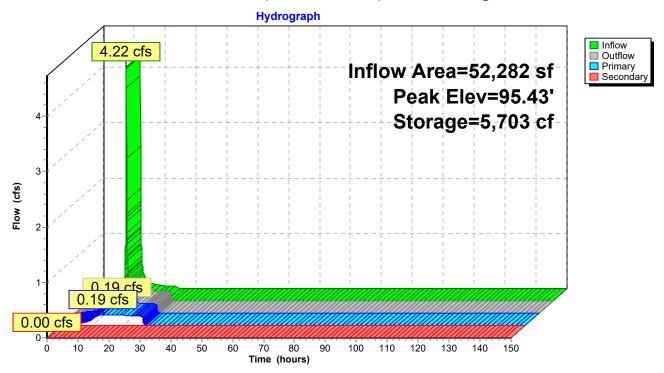
Chamber Storage + Stone Storage = 22,236.2 cf = 0.510 af Overall Storage Efficiency = 62.2% Overall System Size = 131.78' x 77.50' x 3.50'

288 Chambers 1,323.9 cy Field 833.8 cy Stone



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## Pond 5P: PP (w/ underdrain) w/ UG storage 2



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#### Summary for Pond 6P: PP (w/ underdrain) w/ UG storage 3

[44] Hint: Outlet device #3 is below defined storage

Routed to Pond 8P: Existing Basin 1

Inflow Area = 76,785 sf, 82.96% Impervious, Inflow Depth = 2.82" for 2-Year\_Current event Inflow = 6.21 cfs @ 12.10 hrs, Volume= 18,066 cf

Outflow = 0.19 cfs @ 14.71 hrs, Volume= 18,066 cf, Atten= 97%, Lag= 156.7 min Primary = 0.19 cfs @ 14.71 hrs, Volume= 18,066 cf

Routed to Pond 8P : Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.46' @ 14.71 hrs Surf.Area= 16,925 sf Storage= 9,922 cf

Plug-Flow detention time= 477.2 min calculated for 18,066 cf (100% of inflow) Center-of-Mass det. time= 477.1 min (1,239.0 - 761.9)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,054 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	14,875 cf	144.00'W x 117.54'L x 3.50'H Field A
			$59,238 \text{ cf Overall - } 22,051 \text{ cf Embedded = } 37,187 \text{ cf } \times 40.0\% \text{ Voids}$
#3A	95.00'	22,051 cf	ADS_StormTech SC-740 +Cap x 480 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
			480 Chambers in 30 Rows
		38,980 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	3,240	0.0	0	0
97.67	3,240	35.0	760	760
97.83	3,240	15.0	78	838
98.00	3,240	15.0	83	920
98.35	3,240	100.0	1,134	2,054

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	2.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.19 cfs @ 14.71 hrs HW=95.46' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.19 cfs @ 8.75 fps)
2=6" HDPE Underdrain (Passes 0.19 cfs of 0.35 cfs potential flow)
3=Perforations (Passes 0.19 cfs of 6.55 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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### Pond 6P: PP (w/ underdrain) w/ UG storage 3 - Chamber Wizard Field A

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

16 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 115.54' Row Length +12.0" End Stone x 2 = 117.54' Base Length

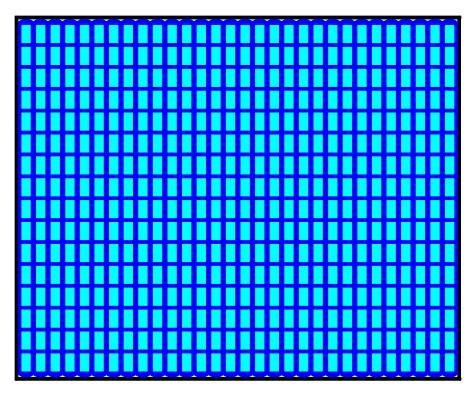
30 Rows x 51.0" Wide + 6.0" Spacing x 29 + 12.0" Side Stone x 2 = 144.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

480 Chambers x 45.9 cf = 22,051.2 cf Chamber Storage

59,238.5 cf Field - 22,051.2 cf Chambers = 37,187.3 cf Stone x 40.0% Voids = 14,874.9 cf Stone Storage

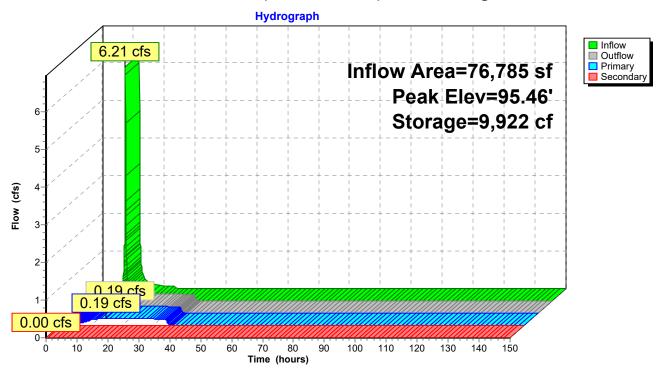
Chamber Storage + Stone Storage = 36,926.1 cf = 0.848 af Overall Storage Efficiency = 62.3% Overall System Size = 117.54' x 144.00' x 3.50'

480 Chambers 2,194.0 cy Field 1,377.3 cy Stone



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Pond 6P: PP (w/ underdrain) w/ UG storage 3



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### Summary for Pond 7P: PP (w/ underdrain) w/ UG storage 4

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 120,233 sf, 94.05% Impervious, Inflow Depth = 3.00" for 2-Year Current event 10.17 cfs @ 12.10 hrs, Volume= Inflow 30,098 cf Outflow = 0.35 cfs @ 14.39 hrs, Volume= 30,098 cf, Atten= 97%, Lag= 137.1 min 0.35 cfs @ 14.39 hrs, Volume= Primary 30,098 cf Routed to Pond 8P: Existing Basin 1 0.00 cfs @ 0.00 hrs, Volume= Secondary = 0 cfRouted to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.48' @ 14.39 hrs Surf.Area= 26,122 sf Storage= 15,922 cf

Plug-Flow detention time= 408.1 min calculated for 30,098 cf (100% of inflow) Center-of-Mass det. time= 408.1 min (1,165.0 - 756.9)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,980 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	22,825 cf	163.00'W x 160.26'L x 3.50'H Field A
			91,426 cf Overall - 34,363 cf Embedded = 57,063 cf x 40.0% Voids
#3A	95.00'	34,363 cf	ADS_StormTech SC-740 +Cap x 748 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
			748 Chambers in 34 Rows

60,168 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.35	4,700	100.0	1,645	2,980

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	-		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.35 cfs @ 14.39 hrs HW=95.48' (Free Discharge)
1=Restriction Orifice (Passes 0.35 cfs of 0.43 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.35 cfs @ 1.79 fps)
3=Perforations (Passes 0.35 cfs of 6.57 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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### Pond 7P: PP (w/ underdrain) w/ UG storage 4 - Chamber Wizard Field A

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

22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length

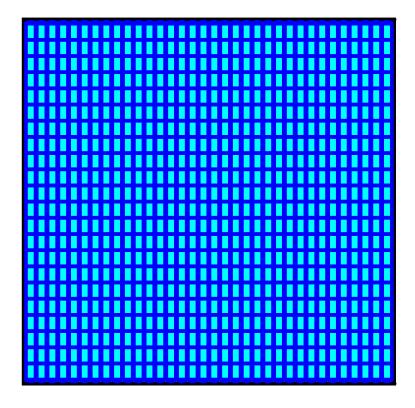
34 Rows x 51.0" Wide + 6.0" Spacing x 33 + 12.0" Side Stone x 2 = 163.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

748 Chambers x 45.9 cf = 34,363.1 cf Chamber Storage

91,426.4 cf Field - 34,363.1 cf Chambers = 57,063.3 cf Stone x 40.0% Voids = 22,825.3 cf Stone Storage

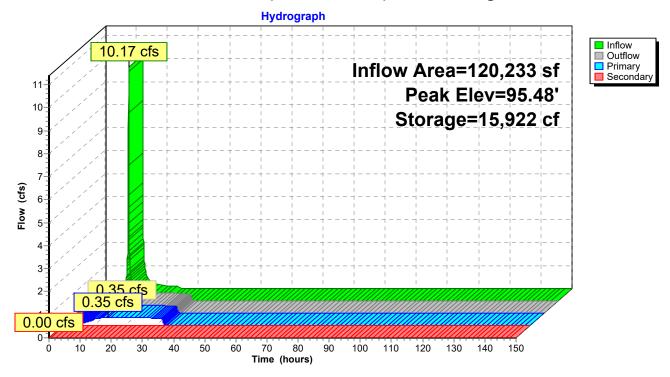
Chamber Storage + Stone Storage = 57,188.5 cf = 1.313 af Overall Storage Efficiency = 62.6% Overall System Size = 160.26' x 163.00' x 3.50'

748 Chambers 3,386.2 cy Field 2,113.5 cy Stone



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## Pond 7P: PP (w/ underdrain) w/ UG storage 4



Davice Pouting

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### **Summary for Pond 8P: Existing Basin 1**

Inflow Area = 444,913 sf, 80.94% Impervious, Inflow Depth = 2.75" for 2-Year Current event Inflow 9.45 cfs @ 12.09 hrs, Volume= 102.126 cf 5.85 cfs @ 12.14 hrs, Volume= Outflow = 102,126 cf, Atten= 38%, Lag= 2.8 min 5.85 cfs @ 12.14 hrs, Volume= Primary 102,126 cf 0.00 cfs @ 0.00 hrs, Volume= Secondary = 0 cf Routed to nonexistent node 67L Tertiary 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 67L

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 59.05' @ 12.14 hrs Surf.Area= 7,406 sf Storage= 4,615 cf

Plug-Flow detention time= 17.4 min calculated for 102,113 cf (100% of inflow) Center-of-Mass det. time= 17.4 min (1,051.1 - 1,033.6)

Volume	Invert	Avail.	Storage	Storage	e Description	
#1	58.00'	33	3,881 cf	Custor	n Stage Data (P	rismatic)Listed below (Recalc)
Elevation	Surf.	Area	Inc	.Store	Cum.Store	
(feet)	(	sq-ft)	(cubi	c-feet)	(cubic-feet)	
58.00	•	1,339		0	0	
59.00	7	7,134		4,237	4,237	
60.00	12	2,352		9,743	13,980	
61.00	18	3,300	1	15,326	29,306	
61.25	18	3,300		4,575	33,881	

DEVICE	Routing	IIIVEIL	Outlet Devices
#1	Primary	58.00'	24.0" Vert. Low Flow Orifice C= 0.600
			Limited to weir flow at low heads
#2	Secondary	60.00'	24.0" W x 18.0" H Vert. 2-YR Orifice C= 0.600
			Limited to weir flow at low heads
#3	Tertiary	60.75'	<b>48.0"</b> x <b>48.0"</b> Horiz. Orifice/Grate C= 0.600
			Limited to weir flow at low heads
#4	Tertiary	61.00'	100.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=5.84 cfs @ 12.14 hrs HW=59.05' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 5.84 cfs @ 3.49 fps)

Invert Outlet Devices

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge) 2=2-YR Orifice ( Controls 0.00 cfs)

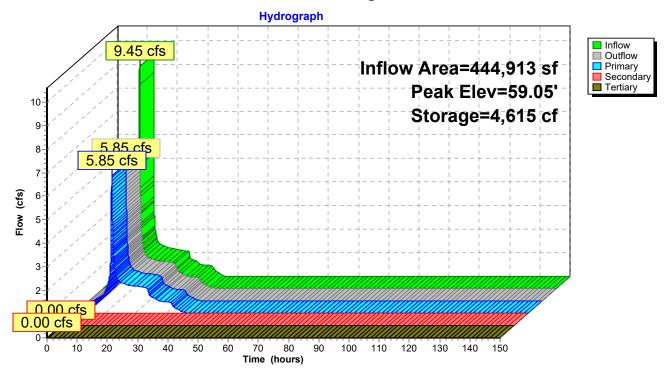
**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge)

-3=Orifice/Grate (Controls 0.00 cfs)

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 8P: Existing Basin 1



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#### **Summary for Pond 9P: Existing Basin 2**

https://hydro.rutgers.edu/view-project/100596/

Inflow Area = 59,019 sf, 68.70% Impervious, Inflow Depth = 2.57" for 2-Year Current event 4.45 cfs @ 12.10 hrs, Volume= Inflow 12,617 cf Outflow 0.68 cfs @ 12.54 hrs, Volume= = 12,617 cf, Atten= 85%, Lag= 26.6 min 0.33 cfs @ 12.54 hrs, Volume= 11,249 cf Primary = 0.35 cfs @ 12.54 hrs, Volume= 1,368 cf Secondary = 0 cf Tertiary 0.00 cfs @ 0.00 hrs, Volume=

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 66.70' @ 12.54 hrs Surf.Area= 3,793 sf Storage= 4,801 cf

Plug-Flow detention time= 105.1 min calculated for 12,616 cf (100% of inflow)

Center-of-Mass det. time= 105.1 min (874.5 - 769.4)

Volume	Invert	Avail.Stor	rage St	orage De	scription	
#1	64.60'	13,40	1 cf <b>C</b>	ustom Sta	age Data (Pris	smatic)Listed below
Elevation (fee	et)	urf.Area (sq-ft)	Inc.St (cubic-fe	et)	Cum.Store (cubic-feet)	
64.6 65.0		0 647		0 129	0 129	
66.0	00	2,768	1,7	708	1,837	
68.0 68.5		5,693 6,718	,	161 103	10,298 13,401	
Device	Routing	Invert	Outlet [	Devices		
#1	Primary	64.60'				Limited to weir flow at low heads
#2	Secondary	66.40'		•	•	ectangular Weir 2 End Contraction(s)
#3	Tertiary	67.75'			riz. Orifice/Gr w at low head	rate C= 0.600

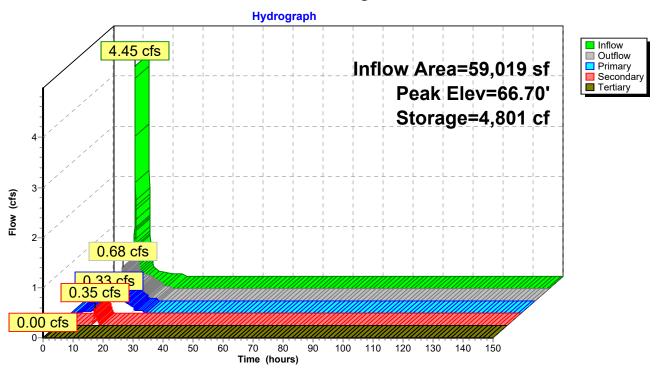
Primary OutFlow Max=0.33 cfs @ 12.54 hrs HW=66.70' (Free Discharge)
1=3" Orifice (Orifice Controls 0.33 cfs @ 6.77 fps)

Secondary OutFlow Max=0.35 cfs @ 12.54 hrs HW=66.70' (Free Discharge) 2=8" Sharp-Crested Rectangular Weir (Weir Controls 0.35 cfs @ 1.79 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=64.60' (Free Discharge) **3=Orifice/Grate** ( Controls 0.00 cfs)

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### Pond 9P: Existing Basin 2



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#### Summary for Pond 10P: PP (w/ underdrain) w/ UG storage 5

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 48,527 sf, 85.53% Impervious, Inflow Depth = 2.82" for 2-Year Current event

3.62 cfs @ 12.13 hrs, Volume= 11,408 cf Inflow

11,408 cf, Atten= 90%, Lag= 48.2 min Outflow = 0.36 cfs @ 12.93 hrs, Volume=

0.36 cfs @ 12.93 hrs, Volume= Primary = 11,408 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.59' @ 12.93 hrs Surf.Area= 5,816 sf Storage= 4,010 cf

Plug-Flow detention time= 79.8 min calculated for 11,408 cf (100% of inflow)

Center-of-Mass det. time= 79.8 min ( 842.4 - 762.6 )

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	3,687 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	5,184 cf	34.75'W x 167.38'L x 3.50'H Field A
			20,357 cf Overall - 7,396 cf Embedded = 12,961 cf x 40.0% Voids
#3A	95.00'	7,396 cf	ADS_StormTech SC-740 +Cap x 161 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
			161 Chambers in 7 Rows

16,268 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	5,816	0.0	0	0
97.67	5,816	35.0	1,364	1,364
97.83	5,816	15.0	140	1,503
98.00	5,816	15.0	148	1,652
98.35	5.816	100.0	2.036	3.687

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.36 cfs @ 12.93 hrs HW=95.59' (Free Discharge)
1=Restriction Orifice (Passes 0.36 cfs of 0.44 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.36 cfs @ 1.82 fps)
3=Perforations (Passes 0.36 cfs of 6.68 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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NOAA 24-hr C 2-Year \_ Current Rainfall=3.34"

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#### Pond 10P: PP (w/ underdrain) w/ UG storage 5 - Chamber Wizard Field A

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

23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length

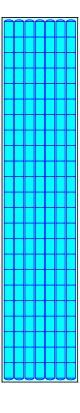
7 Rows x 51.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 34.75' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

161 Chambers x 45.9 cf = 7,396.3 cf Chamber Storage

20,357.2 cf Field - 7,396.3 cf Chambers = 12,960.8 cf Stone x 40.0% Voids = 5,184.3 cf Stone Storage

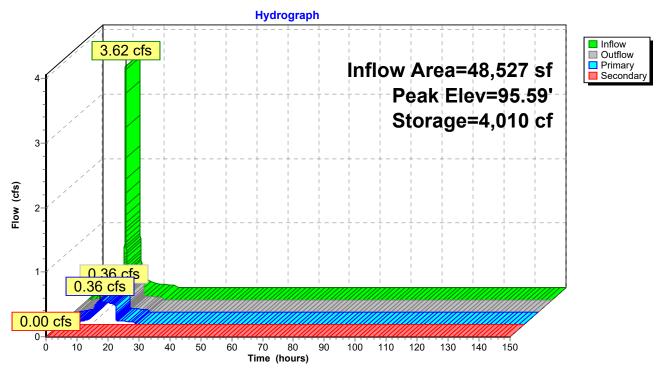
Chamber Storage + Stone Storage = 12,580.7 cf = 0.289 af Overall Storage Efficiency = 61.8% Overall System Size = 167.38' x 34.75' x 3.50'

161 Chambers 754.0 cy Field 480.0 cy Stone



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# Pond 10P: PP (w/ underdrain) w/ UG storage 5



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### Summary for Pond 11P: PP (w/ underdrain) w/ UG storage 6

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 57,652 sf, 78.51% Impervious, Inflow Depth = 2.71" for 2-Year Current event Inflow =

4.58 cfs @ 12.09 hrs, Volume= 13,010 cf

Outflow = 0.35 cfs @ 13.03 hrs, Volume= 13,010 cf, Atten= 92%, Lag= 56.2 min

0.35 cfs @ 13.03 hrs, Volume= Primary = 13,010 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs. Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.45' @ 13.03 hrs Surf.Area= 8,594 sf Storage= 4,956 cf

Plug-Flow detention time= 106.2 min calculated for 13,010 cf (100% of inflow)

Center-of-Mass det. time= 106.2 min (869.5 - 763.3)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,144 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'		96.50'W x 89.06'L x 3.50'H Field A
			30,079 cf Overall - 11,026 cf Embedded = 19,053 cf x 40.0% Voids
#3A	95.00'	11,026 cf	ADS_StormTech SC-740 +Cap x 240 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
			240 Chambers in 20 Rows

20,791 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	3,382	0.0	0	0
97.67	3,382	35.0	793	793
97.83	3,382	15.0	81	874
98.00	3,382	15.0	86	960
98.35	3.382	100.0	1.184	2.144

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.35 cfs @ 13.03 hrs HW=95.45' (Free Discharge)
1=Restriction Orifice (Passes 0.35 cfs of 0.43 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.35 cfs @ 1.78 fps)
3=Perforations (Passes 0.35 cfs of 6.54 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 11P: PP (w/ underdrain) w/ UG storage 6 - Chamber Wizard Field A

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

12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length

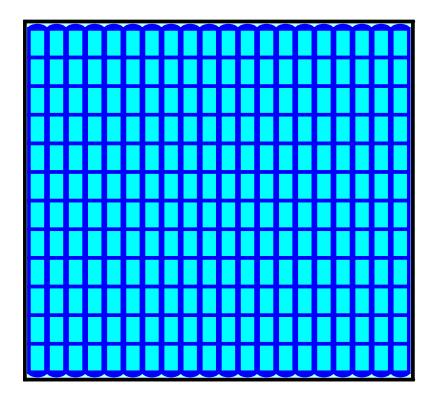
20 Rows x 51.0" Wide + 6.0" Spacing x 19 + 12.0" Side Stone x 2 = 96.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

240 Chambers x 45.9 cf = 11,025.6 cf Chamber Storage

30,078.9 cf Field - 11,025.6 cf Chambers = 19,053.3 cf Stone x 40.0% Voids = 7,621.3 cf Stone Storage

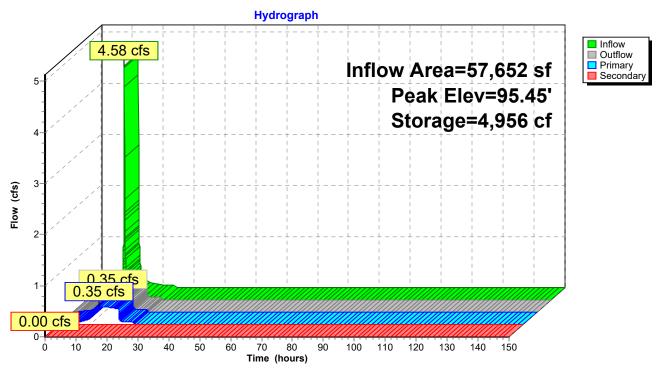
Chamber Storage + Stone Storage = 18,646.9 cf = 0.428 af Overall Storage Efficiency = 62.0% Overall System Size = 89.06' x 96.50' x 3.50'

240 Chambers 1,114.0 cy Field 705.7 cy Stone



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# Pond 11P: PP (w/ underdrain) w/ UG storage 6



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## Summary for Pond 12P: PP (w/ underdrain) w/ UG storage 7

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 67,756 sf, 72.56% Impervious, Inflow Depth = 2.61" for 2-Year \_Current event

Inflow = 5.17 cfs @ 12.10 hrs, Volume= 14,764 cf

Outflow = 0.35 cfs @ 13.19 hrs, Volume= 14,764 cf, Atten= 93%, Lag= 65.7 min

Primary = 0.35 cfs @ 13.19 hrs, Volume= 14,764 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 95.39' @ 13.19 hrs Surf.Area= 11,316 sf Storage= 6,005 cf

Plug-Flow detention time= 136.5 min calculated for 14,762 cf (100% of inflow)

Center-of-Mass det. time= 136.4 min (903.5 - 767.1)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	935 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,962 cf	77.50'W x 146.02'L x 3.50'H Field A
			$39,607 \text{ cf Overall} - 14,701 \text{ cf Embedded} = 24,906 \text{ cf } \times 40.0\% \text{ Voids}$
#3A	95.00'	14,701 cf	ADS_StormTech SC-740 +Cap x 320 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
			320 Chambers in 16 Rows

25,598 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	1,474	0.0	0	0
97.67	1,474	35.0	346	346
97.83	1,474	15.0	35	381
98.00	1,474	15.0	38	419
98.35	1.474	100.0	516	935

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.35 cfs @ 13.19 hrs HW=95.39' (Free Discharge)
1=Restriction Orifice (Passes 0.35 cfs of 0.42 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.35 cfs @ 1.76 fps)
3=Perforations (Passes 0.35 cfs of 6.48 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 12P: PP (w/ underdrain) w/ UG storage 7 - Chamber Wizard Field A

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

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

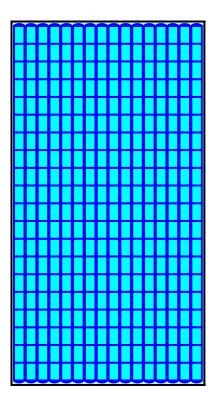
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

320 Chambers x 45.9 cf = 14,700.8 cf Chamber Storage

39,607.0 cf Field - 14,700.8 cf Chambers = 24,906.2 cf Stone x 40.0% Voids = 9,962.5 cf Stone Storage

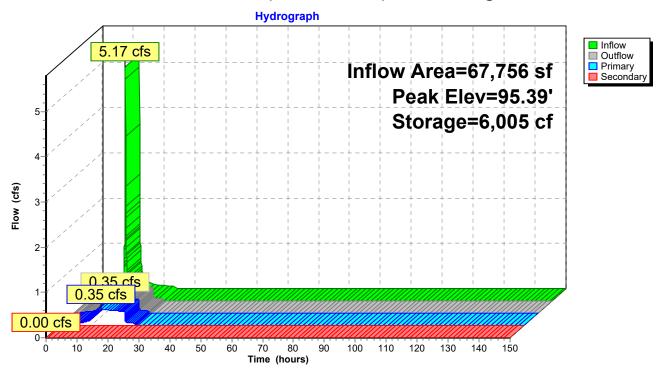
Chamber Storage + Stone Storage = 24,663.3 cf = 0.566 af Overall Storage Efficiency = 62.3% Overall System Size = 146.02' x 77.50' x 3.50'

320 Chambers 1,466.9 cy Field 922.5 cy Stone



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# Pond 12P: PP (w/ underdrain) w/ UG storage 7



Volume

Invert

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## Summary for Pond 13P: Bioretention Basin 4

Inflow Area = 329,976 sf, 48.67% Impervious, Inflow Depth = 2.11" for 2-Year Current event Inflow 4.72 cfs @ 12.37 hrs. Volume= 57.946 cf 2.17 cfs @ 12.99 hrs, Volume= Outflow 56,684 cf, Atten= 54%, Lag= 37.2 min 0.34 cfs @ 12.99 hrs, Volume= Primary 28,380 cf Routed to nonexistent node 5R Secondary = 1.83 cfs @ 12.99 hrs, Volume= 28,304 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs. Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 51.43' @ 12.99 hrs Surf.Area= 9,405 sf Storage= 17,279 cf

Plug-Flow detention time= 321.8 min calculated for 56,684 cf (98% of inflow) Center-of-Mass det. time= 309.6 min (1.174.2 - 864.6)

Avail Storage Storage Description

VOIUITIE	IIIVGI	t Avaii.0to	rage Storage	Description	
#1	49.00	)' 33,39	95 cf Custom	Stage Data (Pr	rismatic)Listed below (Recalc)
Elevatio		Surf.Area (sg-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
49.0		4,800	0	0	
52.0	00	10,478	22,917	22,917	
53.0	00	10,478	10,478	33,395	
Device	Routing	Invert	Outlet Devices	5	
#1	Primary	49.25'	3.0" Vert. Lov	v Flow Orifice	C= 0.600
#2	Secondary 51.00'		Limited to weir flow at low heads  24.0" W x 18.0" H Vert. SECONDARY OUTLET C= 0.600  Limited to weir flow at low heads		
#3	Tertiary 52.00'		<b>60.0" x 60.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads		

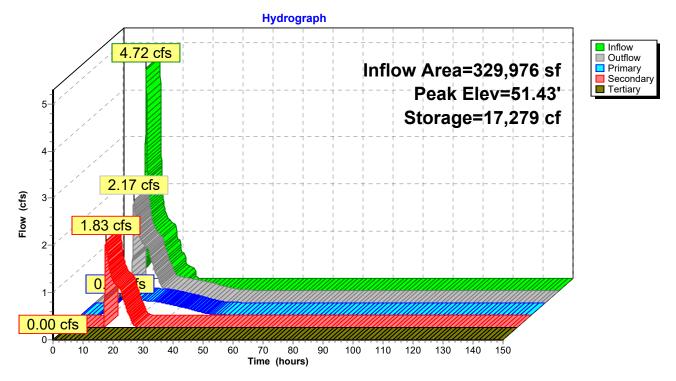
Primary OutFlow Max=0.34 cfs @ 12.99 hrs HW=51.43' (Free Discharge)
1=Low Flow Orifice (Orifice Controls 0.34 cfs @ 6.91 fps)

Secondary OutFlow Max=1.83 cfs @ 12.99 hrs HW=51.43' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 1.83 cfs @ 2.11 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=49.00' (Free Discharge) 3=Orifice/Grate (Controls 0.00 cfs)

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#### Pond 13P: Bioretention Basin 4



Pond 2P: Bioretention Basin 2

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Time span=0.00-150.00 hrs, dt=0.02 hrs, 7501 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

Runoff Area=141,085 sf 17.73% Impervious Runoff Depth=3.91" Subcatchment 1S: DA 1: CN w/ IC areas Tc=18.6 min CN=75/98 Runoff=10.66 cfs 45,932 cf Runoff Area=21,583 sf 64.54% Impervious Runoff Depth=5.19" Subcatchment 2S: DA 2: CN w/ IC areas Tc=1.4 min CN=78/98 Runoff=3.29 cfs 9,333 cf Subcatchment 3S: DA 3: CN w/ IC areas Runoff Area=40,101 sf 65.65% Impervious Runoff Depth=5.18" Tc=3.5 min CN=77/98 Runoff=5.93 cfs 17,306 cf Runoff Area=84,260 sf 73.22% Impervious Runoff Depth=5.35" Subcatchment 4S: DA 4: CN w/ IC areas Tc=3.2 min CN=77/98 Runoff=12.84 cfs 37,590 cf Runoff Area=52,282 sf 79.56% Impervious Runoff Depth=5.52" Subcatchment 5S: DA 5: CN w/ IC areas Tc=2.5 min CN=78/98 Runoff=8.32 cfs 24,052 cf Runoff Area=76,785 sf 82.96% Impervious Runoff Depth=5.61" Subcatchment 6S: DA 6: CN w/ IC areas Tc=3.2 min CN=79/98 Runoff=12.11 cfs 35,917 cf Runoff Area=120,233 sf 94.05% Impervious Runoff Depth=5.84" Subcatchment 7S: DA 7: CN w/ IC areas Tc=3.5 min CN=78/98 Runoff=19.31 cfs 58,516 cf Runoff Area=111,353 sf 71.87% Impervious Runoff Depth=5.21" Subcatchment 8S: DA 8: CN w/ IC areas Tc=2.0 min CN=73/98 Runoff=17.14 cfs 48,345 cf Runoff Area=59,019 sf 68.70% Impervious Runoff Depth=5.28" Subcatchment 9S: DA 9: CN w/ IC areas Tc=2.8 min CN=78/98 Runoff=9.04 cfs 25,973 cf Subcatchment 10S: DA 10: CN w/ IC areas Runoff Area=48,527 sf 85.53% Impervious Runoff Depth=5.59" Tc=5.8 min CN=74/98 Runoff=7.06 cfs 22,622 cf Subcatchment 11S: DA 11: CN w/ IC areas Runoff Area=57,652 sf 78.51% Impervious Runoff Depth=5.45" Tc=2.5 min CN=76/98 Runoff=9.07 cfs 26,202 cf Subcatchment 12S: DA 12: CN w/ IC areas Runoff Area=67,756 sf 72.56% Impervious Runoff Depth=5.34" Tc=2.9 min CN=77/98 Runoff=10.40 cfs 30,142 cf Subcatchment 13S: DA 13: CN w/ IC areas Runoff Area=156,041 sf 15.80% Impervious Runoff Depth=3.77" Tc=24.6 min CN=74/98 Runoff=10.00 cfs 49.081 cf Peak Elev=64.83' Storage=15,610 cf Inflow=10.66 cfs 45,932 cf Pond 1P: Bioretention Basin 1 Primary=0.41 cfs 25,853 cf Secondary=4.90 cfs 20,079 cf Tertiary=0.00 cfs 0 cf Outflow=5.30 cfs 45,932 cf

Pond 3P: Bioretention Basin 3 Peak Elev=66.80' Storage=7,533 cf Inflow=5.93 cfs 17,306 cf Primary=0.37 cfs 14,298 cf Secondary=1.03 cfs 2,547 cf Tertiary=0.00 cfs 0 cf Outflow=1.40 cfs 16,845 cf

Primary=0.32 cfs 8,992 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=0.32 cfs 8,992 cf

Peak Elev=70.18' Storage=4,380 cf Inflow=3.29 cfs 9,333 cf

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Pond 4P: PP (w/ underdrain) w/ UG Peak Elev=96.48' Storage=20,478 cf Inflow=12.84 cfs 37,590 cf Primary=0.40 cfs 37,590 cf Secondary=0.00 cfs 0 cf Outflow=0.40 cfs 37,590 cf

Pond 5P: PP (w/ underdrain) w/ UG storage Peak Elev=96.43' Storage=13,760 cf Inflow=8.32 cfs 24,052 cf Primary=0.22 cfs 24,052 cf Secondary=0.00 cfs 0 cf Outflow=0.22 cfs 24,052 cf

Pond 6P: PP (w/ underdrain) w/ UG Peak Elev=96.47' Storage=23,262 cf Inflow=12.11 cfs 35,917 cf Primary=0.22 cfs 35,917 cf Secondary=0.00 cfs 0 cf Outflow=0.22 cfs 35,917 cf

Pond 7P: PP (w/ underdrain) w/ UG Peak Elev=96.48' Storage=36,366 cf Inflow=19.31 cfs 58,516 cf Primary=0.40 cfs 58,516 cf Secondary=0.00 cfs 0 cf Outflow=0.40 cfs 58,516 cf

**Pond 8P: Existing Basin 1** Peak Elev=59.51' Storage=8,527 cf Inflow=18.25 cfs 204,421 cf Primary=10.62 cfs 204,421 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=10.62 cfs 204,421 cf

Pond 9P: Existing Basin 2 Peak Elev=67.70' Storage=9,017 cf Inflow=9.04 cfs 25,973 cf Primary=0.41 cfs 16,408 cf Secondary=2.13 cfs 9,565 cf Tertiary=0.00 cfs 0 cf Outflow=2.54 cfs 25,973 cf

Pond 10P: PP (w/ underdrain) w/ UG Peak Elev=97.01' Storage=10,021 cf Inflow=7.06 cfs 22,622 cf Primary=0.42 cfs 22,622 cf Secondary=0.00 cfs 0 cf Outflow=0.42 cfs 22,622 cf

Pond 11P: PP (w/ underdrain) w/ UG Peak Elev=96.59' Storage=12,473 cf Inflow=9.07 cfs 26,202 cf Primary=0.40 cfs 26,202 cf Secondary=0.00 cfs 0 cf Outflow=0.40 cfs 26,202 cf

Pond 12P: PP (w/ underdrain) w/ UG Peak Elev=96.43' Storage=15,238 cf Inflow=10.40 cfs 30,142 cf Primary=0.40 cfs 30,142 cf Secondary=0.00 cfs 0 cf Outflow=0.40 cfs 30,142 cf

**Pond 13P: Bioretention Basin 4** Peak Elev=52.08' Storage=23,758 cf Inflow=11.17 cfs 128,047 cf Primary=0.39 cfs 39,416 cf Secondary=7.21 cfs 86,239 cf Tertiary=1.49 cfs 1,129 cf Outflow=9.09 cfs 126,784 cf

Total Runoff Area = 1,036,677 sf Runoff Volume = 431,011 cf Average Runoff Depth = 4.99" 39.57% Pervious = 410,178 sf 60.43% Impervious = 626,499 sf

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## Summary for Subcatchment 1S: DA 1: CN w/ IC areas

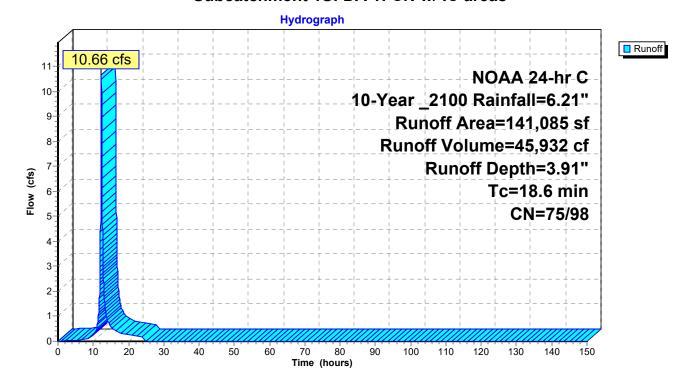
Runoff = 10.66 cfs @ 12.27 hrs, Volume= 45,932 cf, Depth= 3.91"

Routed to Pond 1P : Bioretention Basin 1

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				
*	25,014	98	Impervious I	HSG C			
	26,886	70	Brush (fair)	HSG C			
	45,464	79	Open Space	Open Špaće (fair) HSG C			
*	10,665	74	Open Space	(good) H	SG C		
*	33,056	73	Woods (fair)	HSG C			
	141,085	79	Weighted Av	verage			
	116,071	75	82.27% Per	vious Area			
	25,014	98	17.73% lmp	ervious Are	ea		
	Tc Length	Slop	,	Capacity	Description		
	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)			
	18.6				Direct Entry, Direct (see AutoCAD)		

#### Subcatchment 1S: DA 1: CN w/ IC areas



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

[49] Hint: Tc<2dt may require smaller dt

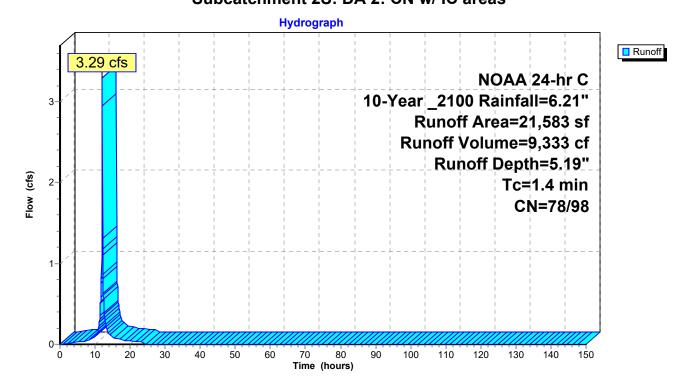
9,333 cf, Depth= 5.19" Runoff 3.29 cfs @ 12.09 hrs, Volume=

Routed to Pond 2P: Bioretention Basin 2

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			
*	13,929	98	Impervious I	HSG C			
	6,668	79	Open Space	e (fair) HSC	G C		
*	986	74	Open Space	e (good) HS	SG C		
	21,583	91	Weighted Av	verage			
	7,654	78	35.46% Per	vious Area			
	13,929	98	64.54% Imp	64.54% Impervious Area			
(	Tc Length	Slop (ft/f	,	Capacity (cfs)	Description		
	1.4				Direct Entry, Direct (see AutoCAD)		

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



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

17,306 cf, Depth= 5.18" Runoff 5.93 cfs @ 12.10 hrs, Volume=

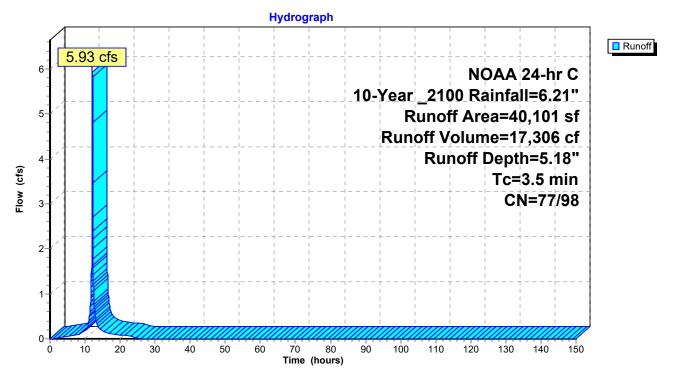
Routed to Pond 3P: Bioretention Basin 3

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				
*	26,326	98	Impervious I	HSG C				
	9,202	79	Open Space	Open Space (fair) HSG C				
*	4,573	74	Open Space	Open Space (good) HSG C				
	40,101	91	Weighted Av	Weighted Average				
	13,775	77	34.35% Per	vious Area				
	26,326	98	65.65% Imp	ervious Are	ea			
	Tc Length	Slop	,	Capacity	Description			
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)				
	3.5				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

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



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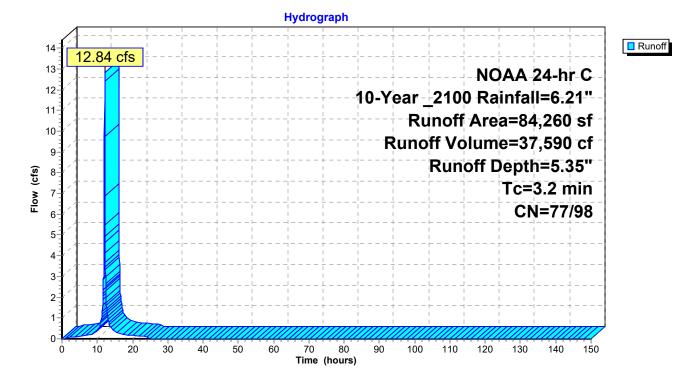
## Summary for Subcatchment 4S: DA 4: CN w/ IC areas

Runoff = 12.84 cfs @ 12.10 hrs, Volume= 37,590 cf, Depth= 5.35" Routed to Pond 4P : PP (w/ underdrain) w/ UG storage 1

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				
*	61,698	98	Impervious HSG C				
	13,143	79	Open Space (fair) HSG C				
*	9,419	74	Open Space (good) HSG C				
	84,260	92	Weighted Average				
	22,562	77	26.78% Pervious Area				
	61,698	98	73.22% Impervious Area				
	Tc Lenath	Slop	Velocity Capacity Desc	iption			
(	Tc Length min) (feet)	(ft/f	, ,	iption			
		(IVI					
	3.2		Direc	t Entry, Direct (see AutoCAD)			

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



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#### Summary for Subcatchment 5S: DA 5: CN w/ IC areas

Runoff = 8.32 cfs @ 12.09 hrs, Volume= 24,052 cf, Depth= 5.52" Routed to Pond 5P : PP (w/ underdrain) w/ UG storage 2

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				
*	41,595	98	Impervious I	HSG C			
	444	70	Brush (fair)	Brush (fair) HSG C			
	9,377	79	Open Space	Open Špaće (fair) HSG C			
*	866	74	Open Space	Open Space (good) HSG C			
	52,282	94	Weighted Av	Weighted Average			
	10,687	78	20.44% Per	vious Area			
	41,595	98	79.56% Imp	ervious Are	ea		
	Tc Length	Slop	e Velocity	Capacity	Description		
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)			
	2.5				Direct Entry, Direct (see AutoCAD)		

# Subcatchment 5S: DA 5: CN w/ IC areas

**Hydrograph** Runoff 8.32 cfs NOAA 24-hr C 8-10-Year \_2100 Rainfall=6.21" Runoff Area=52,282 sf Runoff Volume=24,052 cf 6-Runoff Depth=5.52" Flow (cfs) Tc=2.5 min CN=78/98 4-3-2-10 20 30 40 60 70 90 100 110 120 130 140 150 80 Time (hours)

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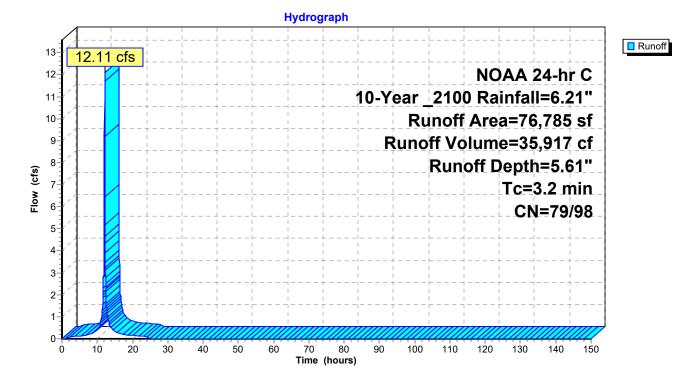
## Summary for Subcatchment 6S: DA 6: CN w/ IC areas

Runoff = 12.11 cfs @ 12.10 hrs, Volume= 35,917 cf, Depth= 5.61" Routed to Pond 6P : PP (w/ underdrain) w/ UG storage 3

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				
*	63,699	98	Impervious I	HSG C				
	12,708	79	Open Space	(fair) HSC	G C			
*	378	74	Open Space	(good) H	SG C			
	76,785	95	Weighted Av	/erage				
	13,086	79	17.04% Per	vious Area				
	63,699	98	82.96% Imp	ervious Ar	ea			
_	Tc Length	Slop	,	Capacity	Description			
(	min) (feet)	(ft/f	ft) (ft/sec)	(cfs)				
	3.2				Direct Entry, Direct (see AutoCAD)			

#### Subcatchment 6S: DA 6: CN w/ IC areas



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## Summary for Subcatchment 7S: DA 7: CN w/ IC areas

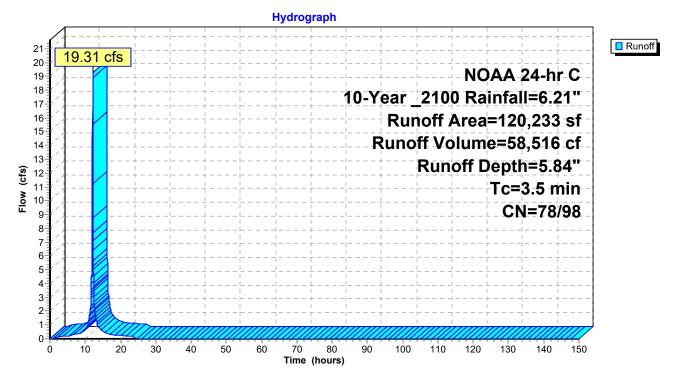
19.31 cfs @ 12.10 hrs, Volume= Runoff 58,516 cf, Depth= 5.84" Routed to Pond 7P: PP (w/ underdrain) w/ UG storage 4

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				
*	113,075	98	Impervious I	HSG C				
	5,111	79	Open Space	Open Space (fair) HSG C				
*	2,047	74	Open Space	Open Space (good) HSG C				
	120,233	97	Weighted Av	Weighted Average				
	7,158	78	5.95% Pervi	ous Area				
	113,075	98	94.05% Imp	ervious Are	ea			
	Tc Length	Slop	,	Capacity	Description			
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)				
	3.5				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

#### Subcatchment 7S: DA 7: CN w/ IC areas



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## Summary for Subcatchment 8S: DA 8: CN w/ IC areas

[49] Hint: Tc<2dt may require smaller dt

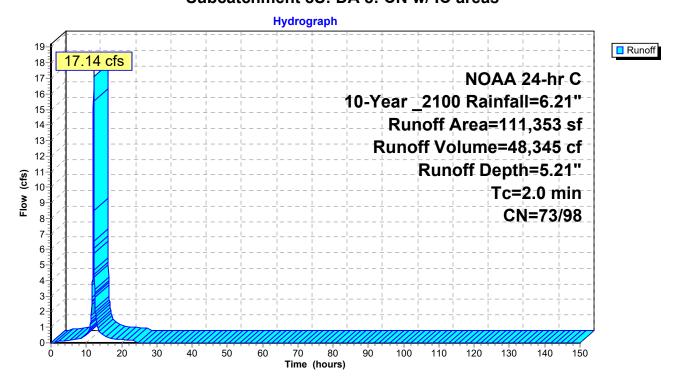
Runoff = 17.14 cfs @ 12.09 hrs, Volume= 48,345 cf, Depth= 5.21"

Routed to Pond 8P: Existing Basin 1

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			
*	80,033	98	Impervious	HSG C			
	3,876	70	Brush (fair)	HSG C			
	419	79	Open Space	e (fair) HSC	3 C		
*	12,431	74	Open Space	e (good) HS	SG C		
*	14,594	73	Woods (fair	HSG C			
	111,353	91	Weighted A	Weighted Average			
	31,320	73	28.13% Per	vious Area			
	80,033	98	71.87% lmp	71.87% Impervious Area			
	Tc Length	Slop	,	Capacity	Description		
<u>(m</u>	nin) (feet)	(ft/	ft) (ft/sec)	(cfs)			
	2.0				Direct Entry, Direct (see AutoCAD)		

#### Subcatchment 8S: DA 8: CN w/ IC areas



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## Summary for Subcatchment 9S: DA 9: CN w/ IC areas

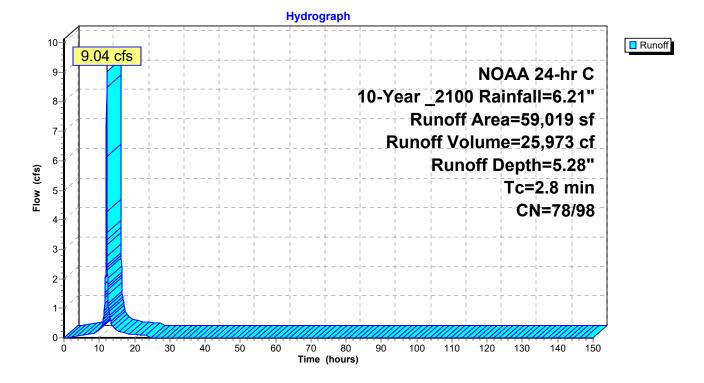
Runoff = 9.04 cfs @ 12.10 hrs, Volume= 25,973 cf, Depth= 5.28"

Routed to Pond 9P : Existing Basin 2

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				
*	40,544	98	Impervious HSG	Impervious HSG C			
	15,969	79	Open Space (fair) HSG C				
*	2,506	74	Open Space (god	Open Space (good) HSG C			
	59,019	92	Weighted Average				
	18,475	78	31.30% Pervious Area				
	40,544	98	68.70% Impervious Area				
	<b>-</b>	01			<b>5</b>		
	Tc Length	Slop	, ,	,	Description		
(	(min) (feet)	(ft/f	) (ft/sec)	(cfs)			
	2.8				Direct Entry, Direct (see AutoCAD)		

## Subcatchment 9S: DA 9: CN w/ IC areas



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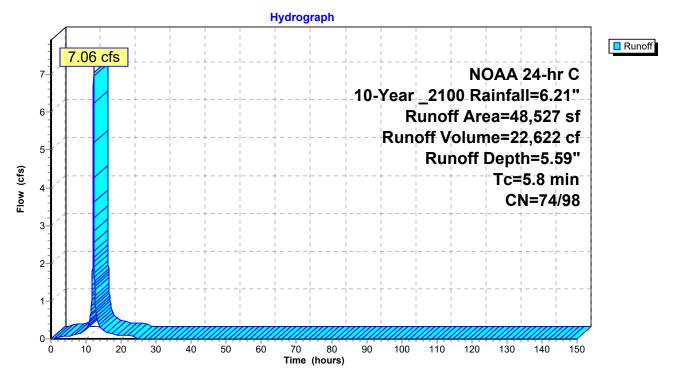
## Summary for Subcatchment 10S: DA 10: CN w/ IC areas

Runoff = 7.06 cfs @ 12.13 hrs, Volume= 22,622 cf, Depth= 5.59" Routed to Pond 10P : PP (w/ underdrain) w/ UG storage 5

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					
*	41,506	98	Impervious	Impervious HSG C				
	60	79	Open Space	Open Space (fair) HSG C				
*	6,961	74	Open Space	Open Space (good) HSG C				
	48,527	95	Weighted Average					
	7,021	74	14.47% Pervious Area					
	41,506	98	85.53% Impervious Area					
	T. L	01		0	December the co			
,	Tc Length	Slop		Capacity	Description			
<u>(n</u>	nin) (feet)	(ft/f	t) (ft/sec)	(cfs)				
	5.8				Direct Entry, Direct (see AutoCAD)			

#### Subcatchment 10S: DA 10: CN w/ IC areas



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## Summary for Subcatchment 11S: DA 11: CN w/ IC areas

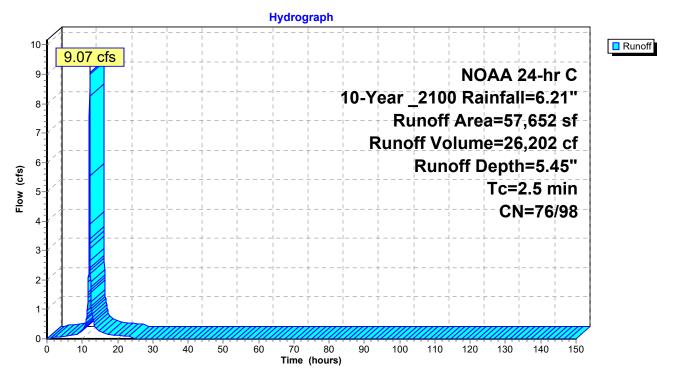
9.07 cfs @ 12.09 hrs, Volume= Runoff 26,202 cf, Depth= 5.45" Routed to Pond 11P: PP (w/ underdrain) w/ UG storage 6

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					
*	45,264	98	Impervious	Impervious HSG C				
	5,795	79	Open Space	Open Space (fair) HSG C				
*	6,593	74	Open Space	Dpen Space (good) HSG C				
	57,652	93	Weighted Average					
	12,388	76	21.49% Per	21.49% Pervious Area				
	45,264	98	78.51% Imp	78.51% Impervious Area				
	To longith	Class	. Valasitu	Conneitu	Description			
	Tc Length	Slop	,	Capacity	Description			
_	(min) (feet)	(ft/1	ft) (ft/sec)	(cfs)				
	2.5				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

#### Subcatchment 11S: DA 11: CN w/ IC areas



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# Summary for Subcatchment 12S: DA 12: CN w/ IC areas

Runoff = 10.40 cfs @ 12.10 hrs, Volume= 30,142 cf, Depth= 5.34" Routed to Pond 12P : PP (w/ underdrain) w/ UG storage 7

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					
*	49,166	98	Impervious H	ISG C				
	11,017	79	Open Space	Open Space (fair) HSG C				
*	7,573	74	Open Space	Open Space (good) HSG C				
	67,756	92	Weighted Average					
	18,590	77	27.44% Pervious Area					
	49,166	98	72.56% Impervious Area					
		٠.						
	Tc Length	Slop		Capacity	Description			
<u>(r</u>	min) (feet)	(ft/1	ft) (ft/sec)	(cfs)				
	2.9				Direct Entry, Direct (see AutoCAD)			

#### Subcatchment 12S: DA 12: CN w/ IC areas

Hydrograph Runoff 10.40 cfs NOAA 24-hr C 10 10-Year 2100 Rainfall=6.21" 9-Runoff Area=67,756 sf 8-Runoff Volume=30,142 cf 7-Runoff Depth=5.34" Flow (cfs) 6-Tc=2.9 min 5-CN=77/98 4-3-2-10 80 100 140 150 Time (hours)

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# Summary for Subcatchment 13S: DA 13: CN w/ IC areas

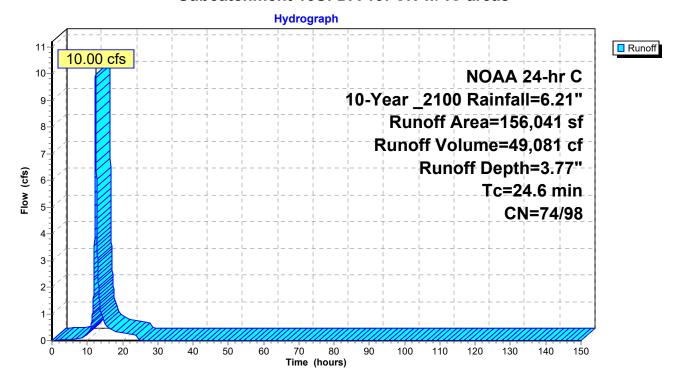
Runoff = 10.00 cfs @ 12.35 hrs, Volume= 49,081 cf, Depth= 3.77"

Routed to Pond 13P: Bioretention Basin 4

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			
4	* 24,650	98	Impervious HSG C			
	42,240	79	Open Space (fair) HSG C			
4	* 20,548	74	Open Space (good) HSG C			
_	68,603	70	Woods, Good, HSG C			
_	156,041	77	Weighted Average			
	131,391	74	84.20% Pervious Area			
	24,650	98	15.80% Impervious Area			
	Tc Length (min) (feet)	Slo <sub>l</sub> (ft/				
-	, , , ,	(IV				
	24 6		Direct Entry Direct (see AutoCAD)			

# Subcatchment 13S: DA 13: CN w/ IC areas



#3

Tertiary

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# **Summary for Pond 1P: Bioretention Basin 1**

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 141,085 sf, 17.73% Impervious, Inflow Depth = 3.91" for 10-Year 2100 event 10.66 cfs @ 12.27 hrs, Volume= Inflow 45.932 cf Outflow 45,932 cf, Atten= 50%, Lag= 16.7 min 5.30 cfs @ 12.55 hrs, Volume= Primary 0.41 cfs @ 12.55 hrs, Volume= 25,853 cf Routed to nonexistent node 5R 4.90 cfs @ 12.55 hrs. Volume= Secondary = 20.079 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 64.83' @ 12.55 hrs Surf.Area= 8,572 sf Storage= 15,610 cf

Plug-Flow detention time= 186.7 min calculated for 45,932 cf (100% of inflow) Center-of-Mass det. time= 186.7 min (1,004.1 - 817.4)

Volume	Inver	t Avail.Sto	rage Storage I	Description	
#1	62.50	)' 37,96	60 cf Custom	Stage Data (Pr	rismatic)Listed below (Recalc)
Elevatio		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
62.5	50	4,800	0	0	
67.0	00	12,071	37,960	37,960	
Device	Routing	Invert	Outlet Devices	<b>;</b>	
#1	Primary	61.75'	3.0" Vert. Low	/ Flow Orifice	C= 0.600
#2	Secondar	y 64.00'	24.0" W x 18.0	flow at low head " H Vert. SEC flow at low head	ONDARY OUTLET C= 0.600

Limited to weir flow at low heads

**60.0" x 60.0" Horiz. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.41 cfs @ 12.55 hrs HW=64.83' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 0.41 cfs @ 8.28 fps)

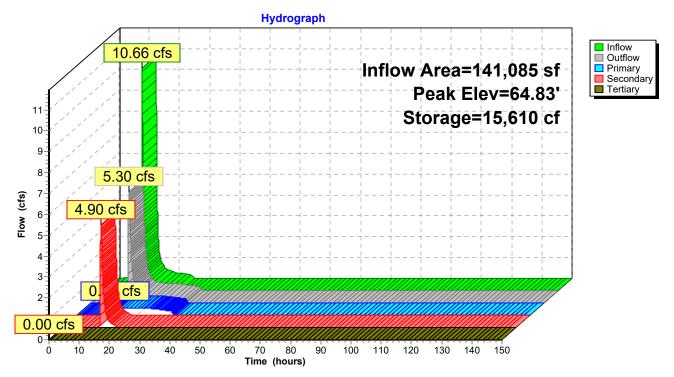
66.25'

Secondary OutFlow Max=4.89 cfs @ 12.55 hrs HW=64.83' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 4.89 cfs @ 2.93 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.50' (Free Discharge) 3=Orifice/Grate (Controls 0.00 cfs)

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#### Pond 1P: Bioretention Basin 1



Volume

Invert

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#### **Summary for Pond 2P: Bioretention Basin 2**

Inflow Area = 21,583 sf, 64.54% Impervious, Inflow Depth = 5.19" for 10-Year 2100 event Inflow 3.29 cfs @ 12.09 hrs. Volume= 9.333 cf 0.32 cfs @ 12.81 hrs, Volume= Outflow 8,992 cf, Atten= 90%, Lag= 43.3 min 0.32 cfs @ 12.81 hrs, Volume= Primary 8,992 cf Routed to nonexistent node 5R Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs. Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 70.18' @ 12.81 hrs Surf.Area= 2,744 sf Storage= 4,380 cf

Plug-Flow detention time= 188.7 min calculated for 8,992 cf (96% of inflow) Center-of-Mass det. time= 165.7 min (926.2 - 760.5)

Avail.Storage Storage Description

		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
#1 68.00' 14,8		14,80	05 cf Custom	Stage Data (Pi	rismatic)Listed below (Recalc)
Elevation Surf.Area (feet) (sq-ft)			Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
68.00 1,28		1,281	0	0	
73.0	00	4,641	14,805	14,805	
Device	Routing	Invert	Outlet Devices	;	
#1	Primary	68.25'	3.0" Vert. Low	/ Flow Orifice	
#2	Secondary	70.50'			ONDARY OUTLET C= 0.600
#3	Tertiary	72.75'	60.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads		

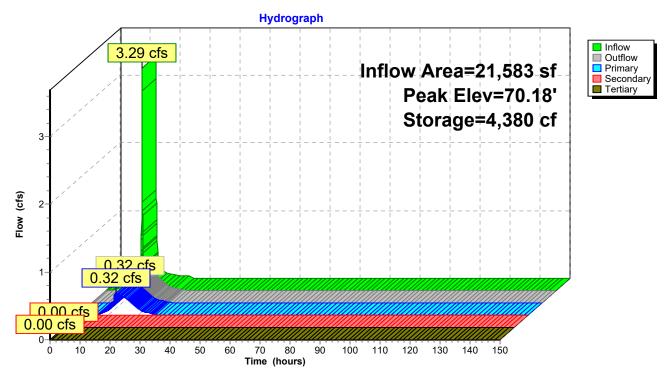
Primary OutFlow Max=0.32 cfs @ 12.81 hrs HW=70.18' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 0.32 cfs @ 6.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.00' (Free Discharge) 2=SECONDARY OUTLET ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 2P: Bioretention Basin 2



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#### **Summary for Pond 3P: Bioretention Basin 3**

Inflow Area = 40,101 sf, 65.65% Impervious, Inflow Depth = 5.18" for 10-Year 2100 event Inflow 5.93 cfs @ 12.10 hrs. Volume= 17.306 cf 1.40 cfs @ 12.34 hrs, Volume= Outflow 16,845 cf, Atten= 76%, Lag= 14.4 min 0.37 cfs @ 12.34 hrs, Volume= Primary 14,298 cf Routed to nonexistent node 5R Secondary = 1.03 cfs @ 12.34 hrs, Volume= 2,547 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs. Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 66.80' @ 12.34 hrs Surf.Area= 3,630 sf Storage= 7,533 cf

Plug-Flow detention time= 212.8 min calculated for 16,845 cf (97% of inflow) Center-of-Mass det. time= 195.6 min ( 957.5 - 762.0 )

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	64.00'	17,16	60 cf Custom	Stage Data (Pi	rismatic)Listed below (Recalc)
Elevatio		rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
64.0	00	1,760	0	0	
69.0	00	5,104	17,160	17,160	
Device	Routing	Invert	Outlet Devices	i	
#1	Primary	64.25'	3.0" Vert. Low	/ Flow Orifice	C= 0.600
#2	Secondary	66.50'	24.0" W x 18.0	flow at low head " H Vert. SEC flow at low head	ONDARY OUTLET C= 0.600
#3	Tertiary	68.75'		Horiz. Orifice/Orifice/Oriflow at low hea	<b>Grate</b> C= 0.600 ads

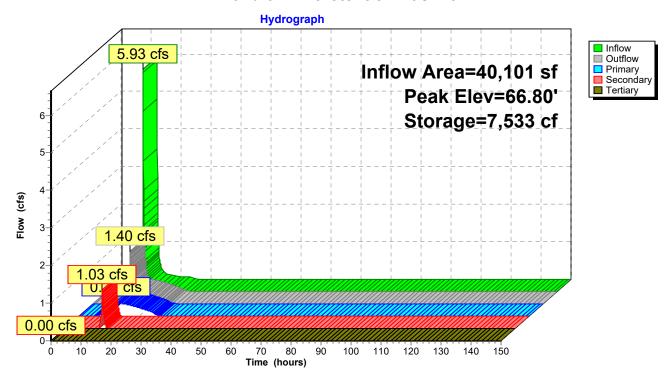
Primary OutFlow Max=0.37 cfs @ 12.34 hrs HW=66.80' (Free Discharge) **-1=Low Flow Orifice** (Orifice Controls 0.37 cfs @ 7.49 fps)

Secondary OutFlow Max=1.03 cfs @ 12.34 hrs HW=66.80' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 1.03 cfs @ 1.74 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=64.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 3P: Bioretention Basin 3



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## Summary for Pond 4P: PP (w/ underdrain) w/ UG storage 1

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 84,260 sf, 73.22% Impervious, Inflow Depth = 5.35" for 10-Year 2100 event 12.84 cfs @ 12.10 hrs, Volume= Inflow = 37,590 cf 37,590 cf, Atten= 97%, Lag= 153.8 min Outflow = 0.40 cfs @ 14.66 hrs, Volume= 0.40 cfs @ 14.66 hrs, Volume= Primary = 37,590 cf Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.48' @ 14.66 hrs Surf.Area= 14,771 sf Storage= 20,478 cf

Plug-Flow detention time= 477.3 min calculated for 37,585 cf (100% of inflow)

Center-of-Mass det. time= 477.3 min (1,234.4 - 757.0)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	3,624 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	12,961 cf	68.00'W x 217.22'L x 3.50'H Field A
			51,698 cf Overall - 19,295 cf Embedded = 32,403 cf x 40.0% Voids
#3A	95.00'	19,295 cf	ADS_StormTech SC-740 +Cap x 420 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
			420 Chambers in 14 Rows

35,880 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	6,787	0.0	0	0
97.67	6,787	35.0	1,592	1,592
97.83	6,787	15.0	163	1,754
98.00	6,787	15.0	173	1,928
98.25	6.787	100.0	1.697	3.624

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	67.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

#### Site 10 20240629

NOAA 24-hr C 10-Year \_2100 Rainfall=6.21"

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Primary OutFlow Max=0.40 cfs @ 14.66 hrs HW=96.48' (Free Discharge)
1=Restriction Orifice (Passes 0.40 cfs of 0.49 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.40 cfs @ 2.03 fps)
3=Perforations (Passes 0.40 cfs of 7.50 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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#### Pond 4P: PP (w/ underdrain) w/ UG storage 1 - Chamber Wizard Field A

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

30 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 215.22' Row Length +12.0" End Stone x 2 = 217.22' Base Length

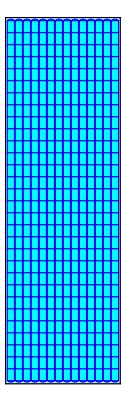
14 Rows x 51.0" Wide + 6.0" Spacing x 13 + 12.0" Side Stone x 2 = 68.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

420 Chambers x 45.9 cf = 19,294.8 cf Chamber Storage

51,697.6 cf Field - 19,294.8 cf Chambers = 32,402.8 cf Stone x 40.0% Voids = 12,961.1 cf Stone Storage

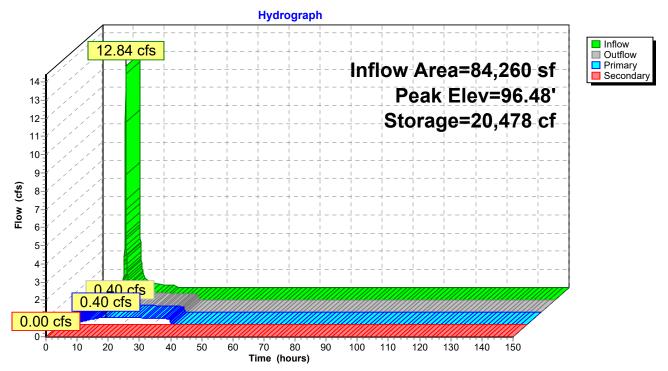
Chamber Storage + Stone Storage = 32,255.9 cf = 0.740 af Overall Storage Efficiency = 62.4% Overall System Size = 217.22' x 68.00' x 3.50'

420 Chambers 1,914.7 cy Field 1,200.1 cy Stone



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Pond 4P: PP (w/ underdrain) w/ UG storage 1



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## Summary for Pond 5P: PP (w/ underdrain) w/ UG storage 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 52,282 sf, 79.56% Impervious, Inflow Depth = 5.52" for 10-Year 2100 event 8.32 cfs @ 12.09 hrs, Volume= Inflow 24,052 cf 0.22 cfs @ 14.96 hrs, Volume= Outflow = 24,052 cf, Atten= 97%, Lag= 171.9 min

0.22 cfs @ 14.96 hrs, Volume= Primary = 24,052 cf

Routed to Pond 8P: Existing Basin 1

0.00 cfs @ 0.00 hrs, Volume= Secondary = 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.43' @ 14.96 hrs Surf.Area= 10,213 sf Storage= 13,760 cf

Plug-Flow detention time= 591.0 min calculated for 24,052 cf (100% of inflow)

Center-of-Mass det. time= 591.0 min (1,343.6 - 752.6)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,510 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,005 cf	77.50'W x 131.78'L x 3.50'H Field A
			$35,744 \text{ cf Overall} - 13,231 \text{ cf Embedded} = 22,514 \text{ cf } \times 40.0\% \text{ Voids}$
#3A	95.00'	13,231 cf	ADS_StormTech SC-740 +Cap x 288 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
			288 Chambers in 16 Rows

24,746 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.25	4,700	100.0	1,175	2,510

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	2.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	132.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

## Site 10\_20240629

NOAA 24-hr C 10-Year \_2100 Rainfall=6.21"

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Primary OutFlow Max=0.22 cfs @ 14.96 hrs HW=96.43' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.22 cfs @ 9.96 fps)
2=6" HDPE Underdrain (Passes 0.22 cfs of 0.40 cfs potential flow)
3=Perforations (Passes 0.22 cfs of 7.46 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 5P: PP (w/ underdrain) w/ UG storage 2 - Chamber Wizard Field A

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

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length

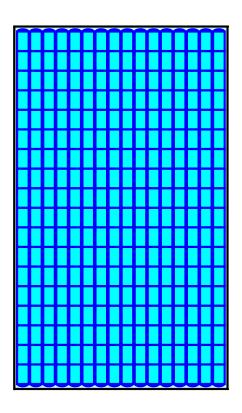
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

288 Chambers x 45.9 cf = 13,230.7 cf Chamber Storage

35,744.4 cf Field - 13,230.7 cf Chambers = 22,513.7 cf Stone x 40.0% Voids = 9,005.5 cf Stone Storage

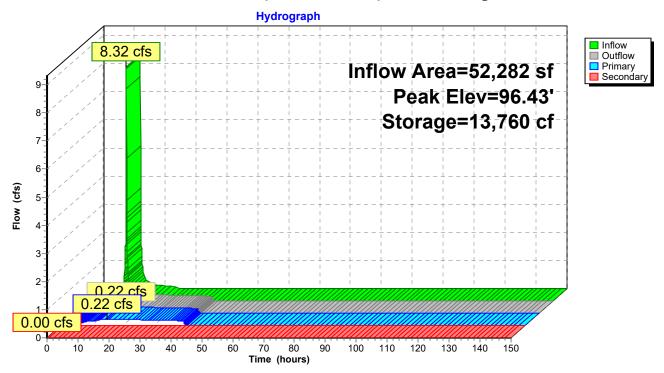
Chamber Storage + Stone Storage = 22,236.2 cf = 0.510 af Overall Storage Efficiency = 62.2% Overall System Size = 131.78' x 77.50' x 3.50'

288 Chambers 1,323.9 cy Field 833.8 cy Stone



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Pond 5P: PP (w/ underdrain) w/ UG storage 2



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## Summary for Pond 6P: PP (w/ underdrain) w/ UG storage 3

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 76,785 sf, 82.96% Impervious, Inflow Depth = 5.61" for 10-Year \_2100 event

Inflow = 12.11 cfs @ 12.10 hrs, Volume= 35,917 cf

Outflow = 0.22 cfs @ 17.07 hrs, Volume= 35,917 cf, Atten= 98%, Lag= 298.1 min

Primary = 0.22 cfs @ 17.07 hrs, Volume = 35,917 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.47' @ 17.07 hrs Surf.Area= 16,925 sf Storage= 23,262 cf

Plug-Flow detention time= 1,005.2 min calculated for 35,912 cf (100% of inflow)

Center-of-Mass det. time= 1,005.3 min (1,756.6 - 751.3)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,054 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	14,875 cf	144.00'W x 117.54'L x 3.50'H Field A
			59,238 cf Overall - 22,051 cf Embedded = 37,187 cf x 40.0% Voids
#3A	95.00'	22,051 cf	ADS_StormTech SC-740 +Cap x 480 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
			480 Chambers in 30 Rows

38,980 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	3,240	0.0	0	0
97.67	3,240	35.0	760	760
97.83	3,240	15.0	78	838
98.00	3,240	15.0	83	920
98.35	3,240	100.0	1,134	2,054

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	2.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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NOAA 24-hr C 10-Year \_2100 Rainfall=6.21"

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Primary OutFlow Max=0.22 cfs @ 17.07 hrs HW=96.47' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.22 cfs @ 10.00 fps)
2=6" HDPE Underdrain (Passes 0.22 cfs of 0.40 cfs potential flow)
3=Perforations (Passes 0.22 cfs of 7.48 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 6P: PP (w/ underdrain) w/ UG storage 3 - Chamber Wizard Field A

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

16 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 115.54' Row Length +12.0" End Stone x 2 = 117.54' Base Length

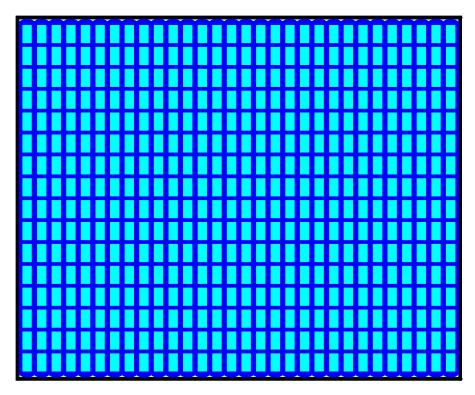
30 Rows x 51.0" Wide + 6.0" Spacing x 29 + 12.0" Side Stone x 2 = 144.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

480 Chambers x 45.9 cf = 22,051.2 cf Chamber Storage

59,238.5 cf Field - 22,051.2 cf Chambers = 37,187.3 cf Stone x 40.0% Voids = 14,874.9 cf Stone Storage

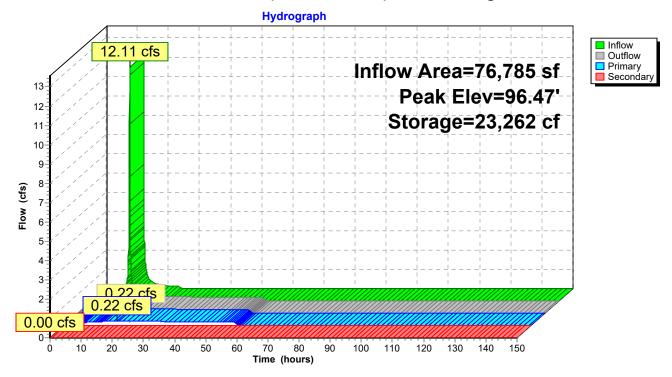
Chamber Storage + Stone Storage = 36,926.1 cf = 0.848 af Overall Storage Efficiency = 62.3% Overall System Size = 117.54' x 144.00' x 3.50'

480 Chambers 2,194.0 cy Field 1,377.3 cy Stone



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## Pond 6P: PP (w/ underdrain) w/ UG storage 3



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## Summary for Pond 7P: PP (w/ underdrain) w/ UG storage 4

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 120,233 sf, 94.05% Impervious, Inflow Depth = 5.84" for 10-Year \_2100 event Inflow = 19.31 cfs @ 12.10 hrs, Volume= 58,516 cf

Outflow = 0.40 cfs @ 16.27 hrs, Volume= 58,516 cf, Atten= 98%, Lag= 250.2 min Primary = 0.40 cfs @ 16.27 hrs, Volume= 58,516 cf

Routed to Pond 8P : Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P : Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.48' @ 16.27 hrs Surf.Area= 26,122 sf Storage= 36,366 cf

Plug-Flow detention time= 850.5 min calculated for 58,508 cf (100% of inflow) Center-of-Mass det. time= 850.6 min (1,596.5 - 745.9)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,980 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	22,825 cf	163.00'W x 160.26'L x 3.50'H Field A
			91,426 cf Overall - 34,363 cf Embedded = 57,063 cf x 40.0% Voids
#3A	95.00'	34,363 cf	ADS_StormTech SC-740 +Cap x 748 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
			748 Chambers in 34 Rows

60,168 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.35	4,700	100.0	1,645	2,980

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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NOAA 24-hr C 10-Year \_2100 Rainfall=6.21"

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Primary OutFlow Max=0.40 cfs @ 16.27 hrs HW=96.48' (Free Discharge)

-1=Restriction Orifice (Passes 0.40 cfs of 0.49 cfs potential flow)
-2=6" HDPE Underdrain (Outlet Controls 0.40 cfs @ 2.03 fps)
-3=Perforations (Passes 0.40 cfs of 7.50 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 7P: PP (w/ underdrain) w/ UG storage 4 - Chamber Wizard Field A

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

22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length

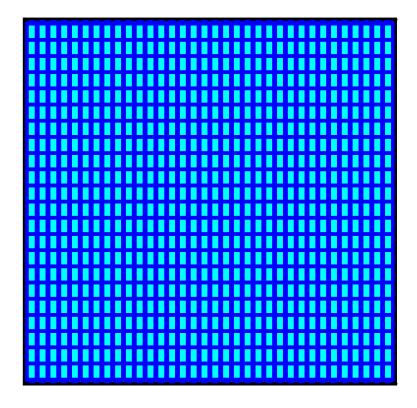
34 Rows x 51.0" Wide + 6.0" Spacing x 33 + 12.0" Side Stone x 2 = 163.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

748 Chambers x 45.9 cf = 34,363.1 cf Chamber Storage

91,426.4 cf Field - 34,363.1 cf Chambers = 57,063.3 cf Stone x 40.0% Voids = 22,825.3 cf Stone Storage

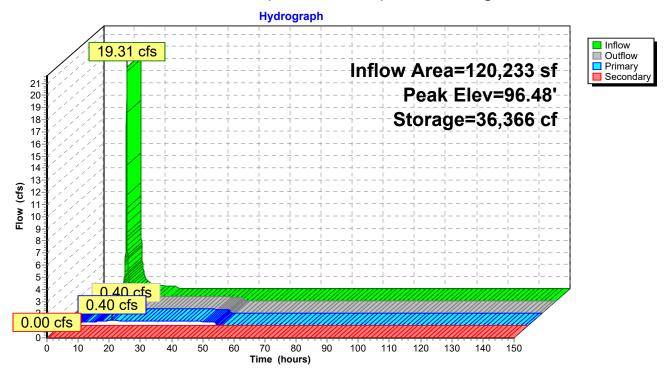
Chamber Storage + Stone Storage = 57,188.5 cf = 1.313 af Overall Storage Efficiency = 62.6% Overall System Size = 160.26' x 163.00' x 3.50'

748 Chambers 3,386.2 cy Field 2,113.5 cy Stone



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Pond 7P: PP (w/ underdrain) w/ UG storage 4



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## Summary for Pond 8P: Existing Basin 1

Inflow Area = 444,913 sf, 80.94% Impervious, Inflow Depth = 5.51" for 10-Year 2100 event Inflow 18.25 cfs @ 12.09 hrs, Volume= 204.421 cf 10.62 cfs @ 12.14 hrs, Volume= Outflow = 204,421 cf, Atten= 42%, Lag= 2.9 min 10.62 cfs @ 12.14 hrs, Volume= Primary 204,421 cf 0.00 hrs, Volume= Secondary = 0.00 cfs @ 0 cf Routed to nonexistent node 67L 0.00 cfs @ 0.00 hrs, Volume= 0 cf Tertiary Routed to nonexistent node 67L

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 59.51' @ 12.14 hrs Surf.Area= 9,781 sf Storage= 8,527 cf

Plug-Flow detention time= 16.8 min calculated for 204,421 cf (100% of inflow) Center-of-Mass det. time= 16.7 min (1,346.4 - 1,329.8)

Volume	Inve	ert Avail.Sto	rage Stora	age Description	
#1	58.0	0' 33,8	81 cf Cust	tom Stage Data (Pr	ismatic)Listed below (Recalc)
Elevation (fee		Surf.Area (sq-ft)	Inc.Store	•	
58.0		1,339	0		
59.0		7,134	4,237	4,237	
60.0	00	12,352	9,743	13,980	
61.0		18,300	15,326	•	
61.2	25	18,300	4,575	33,881	
Device	Routing	Invert	Outlet Dev	vices	
#1	Primary	58.00'		. Low Flow Orifice	5 5.555
""		00.001		weir flow at low hea	
#2	Seconda	ry 60.00'	-	18.0" H Vert. 2-YR	
#3	Tertiary	60.75'		weir flow at low hea	
#3	rordary	00.75	70.0 A 40	.u iloliz. Ollice/G	11 atc 0-0.000

Limited to weir flow at low heads

**100.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=10.62 cfs @ 12.14 hrs HW=59.51' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 10.62 cfs @ 4.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge) 2=2-YR Orifice ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge)

-3=Orifice/Grate (Controls 0.00 cfs)

#4

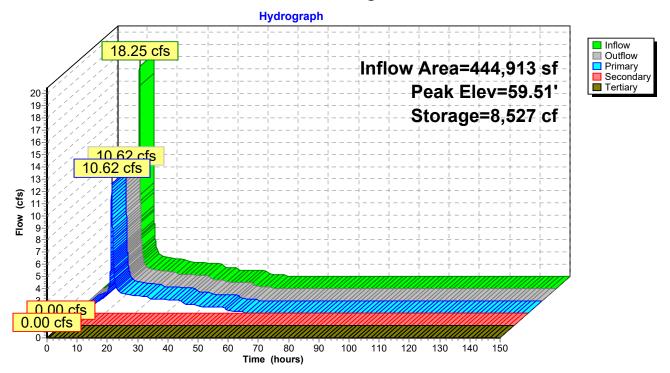
Tertiary

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

61.00'

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## Pond 8P: Existing Basin 1



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## **Summary for Pond 9P: Existing Basin 2**

https://hydro.rutgers.edu/view-project/100596/

Inflow Area = 59,019 sf, 68.70% Impervious, Inflow Depth = 5.28" for 10-Year 2100 event 9.04 cfs @ 12.10 hrs. Volume= Inflow = 25,973 cf Outflow 2.54 cfs @ 12.26 hrs, Volume= 25,973 cf, Atten= 72%, Lag= 9.8 min 0.41 cfs @ 12.26 hrs, Volume= Primary = 16,408 cf 2.13 cfs @ 12.26 hrs, Volume= 9,565 cf Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Tertiary

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 67.70' @ 12.26 hrs Surf.Area= 5,250 sf Storage= 9,017 cf

Plug-Flow detention time= 91.4 min calculated for 25,969 cf (100% of inflow) Center-of-Mass det. time= 91.4 min (850.7 - 759.2)

Volume	Invert	Avail.Sto	rage Storag	ge Description
#1	64.60'	13,40	1 cf Custo	om Stage Data (Prismatic)Listed below
Elevatio		urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.6	30	0	Ó	0
65.0	00	647	129	129
66.0	00	2,768	1,708	1,837
68.0	00	5,693	8,461	10,298
68.5	50	6,718	3,103	13,401
Device	Routing	Invert	Outlet Devic	ces
#1	Primary	64.60'	3.0" Vert. 3'	" Orifice C= 0.600 Limited to weir flow at low heads
#2	Secondary	66.40'	•	'Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Tertiary	67.75'		<b>O" Horiz. Orifice/Grate</b> C= 0.600 yeir flow at low heads

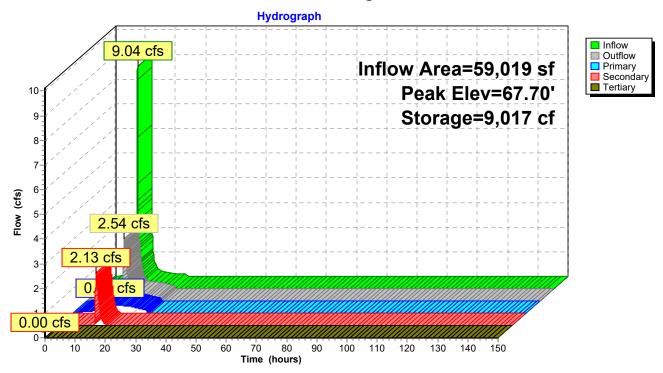
Primary OutFlow Max=0.41 cfs @ 12.26 hrs HW=67.70' (Free Discharge)
1=3" Orifice (Orifice Controls 0.41 cfs @ 8.30 fps)

Secondary OutFlow Max=2.13 cfs @ 12.26 hrs HW=67.70' (Free Discharge) 2=8" Sharp-Crested Rectangular Weir (Weir Controls 2.13 cfs @ 3.72 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=64.60' (Free Discharge) **3=Orifice/Grate** ( Controls 0.00 cfs)

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## Pond 9P: Existing Basin 2



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## Summary for Pond 10P: PP (w/ underdrain) w/ UG storage 5

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 48,527 sf, 85.53% Impervious, Inflow Depth = 5.59" for 10-Year 2100 event

7.06 cfs @ 12.13 hrs, Volume= Inflow 22,622 cf

0.42 cfs @ 13.43 hrs, Volume= Outflow = 22,622 cf, Atten= 94%, Lag= 78.4 min

0.42 cfs @ 13.43 hrs, Volume= Primary 22,622 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 97.01' @ 13.43 hrs Surf.Area= 11,632 sf Storage= 10,021 cf

Plug-Flow detention time= 202.1 min calculated for 22,619 cf (100% of inflow)

Center-of-Mass det. time= 202.1 min ( 954.7 - 752.6 )

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	3,687 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	5,184 cf	34.75'W x 167.38'L x 3.50'H Field A
			20,357 cf Overall - 7,396 cf Embedded = 12,961 cf x 40.0% Voids
#3A	95.00'	7,396 cf	ADS_StormTech SC-740 +Cap x 161 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
			161 Chambers in 7 Rows

16,268 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	5,816	0.0	0	0
97.67	5,816	35.0	1,364	1,364
97.83	5,816	15.0	140	1,503
98.00	5,816	15.0	148	1,652
98.35	5.816	100.0	2.036	3.687

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

### Site 10 20240629

NOAA 24-hr C 10-Year \_2100 Rainfall=6.21"

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Primary OutFlow Max=0.42 cfs @ 13.43 hrs HW=97.01' (Free Discharge)
1=Restriction Orifice (Passes 0.42 cfs of 0.52 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.42 cfs @ 2.15 fps)
3=Perforations (Passes 0.42 cfs of 7.94 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 10P: PP (w/ underdrain) w/ UG storage 5 - Chamber Wizard Field A

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

23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length

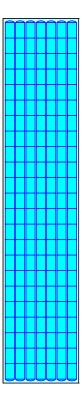
7 Rows x 51.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 34.75' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

161 Chambers x 45.9 cf = 7,396.3 cf Chamber Storage

20,357.2 cf Field - 7,396.3 cf Chambers = 12,960.8 cf Stone x 40.0% Voids = 5,184.3 cf Stone Storage

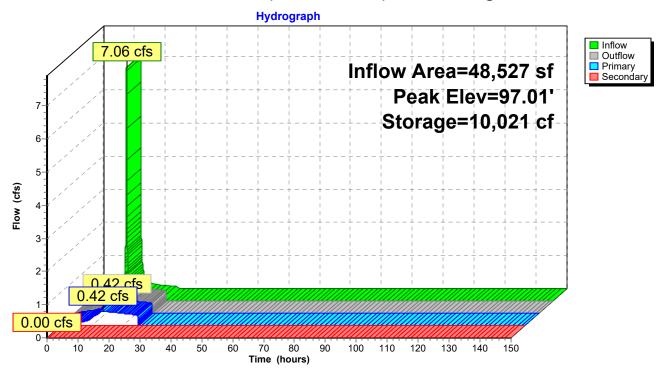
Chamber Storage + Stone Storage = 12,580.7 cf = 0.289 af Overall Storage Efficiency = 61.8% Overall System Size = 167.38' x 34.75' x 3.50'

161 Chambers 754.0 cy Field 480.0 cy Stone



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## Pond 10P: PP (w/ underdrain) w/ UG storage 5



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## Summary for Pond 11P: PP (w/ underdrain) w/ UG storage 6

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 57,652 sf, 78.51% Impervious, Inflow Depth = 5.45" for 10-Year \_2100 event

Inflow = 9.07 cfs @ 12.09 hrs, Volume= 26,202 cf

Outflow = 0.40 cfs @ 13.59 hrs, Volume= 26,202 cf, Atten= 96%, Lag= 89.8 min

Primary = 0.40 cfs @ 13.59 hrs, Volume= 26,202 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.59' @ 13.59 hrs Surf.Area= 8,594 sf Storage= 12,473 cf

Plug-Flow detention time= 273.7 min calculated for 26,202 cf (100% of inflow)

Center-of-Mass det. time= 273.7 min (1,027.1 - 753.4)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,144 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	7,621 cf	96.50'W x 89.06'L x 3.50'H Field A
			$30,079 \text{ cf Overall} - 11,026 \text{ cf Embedded} = 19,053 \text{ cf } \times 40.0\% \text{ Voids}$
#3A	95.00'	11,026 cf	ADS_StormTech SC-740 +Cap x 240 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
			240 Chambers in 20 Rows

20,791 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	3,382	0.0	0	0
97.67	3,382	35.0	793	793
97.83	3,382	15.0	81	874
98.00	3,382	15.0	86	960
98.35	3,382	100.0	1,184	2,144

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

### Site 10 20240629

NOAA 24-hr C 10-Year 2100 Rainfall=6.21"

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Primary OutFlow Max=0.40 cfs @ 13.59 hrs HW=96.59' (Free Discharge)
1=Restriction Orifice (Passes 0.40 cfs of 0.50 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.40 cfs @ 2.06 fps)
3=Perforations (Passes 0.40 cfs of 7.59 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 11P: PP (w/ underdrain) w/ UG storage 6 - Chamber Wizard Field A

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

12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length

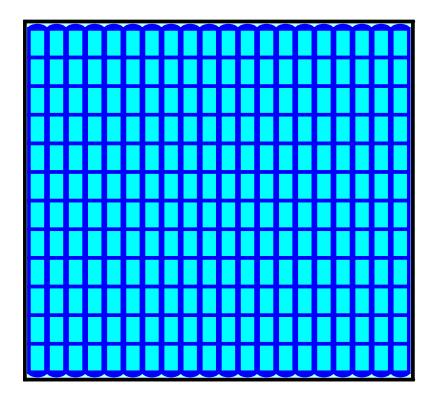
20 Rows x 51.0" Wide + 6.0" Spacing x 19 + 12.0" Side Stone x 2 = 96.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

240 Chambers x 45.9 cf = 11,025.6 cf Chamber Storage

30,078.9 cf Field - 11,025.6 cf Chambers = 19,053.3 cf Stone x 40.0% Voids = 7,621.3 cf Stone Storage

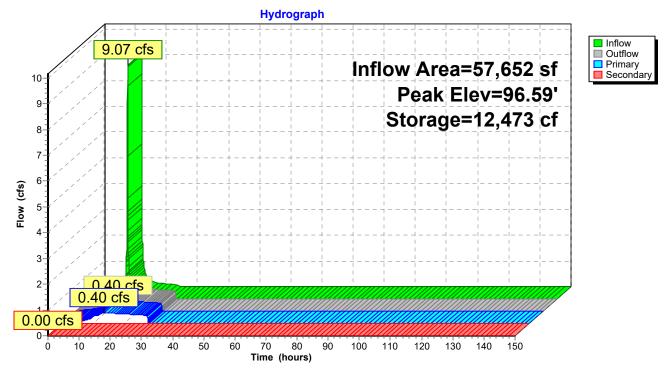
Chamber Storage + Stone Storage = 18,646.9 cf = 0.428 af Overall Storage Efficiency = 62.0% Overall System Size = 89.06' x 96.50' x 3.50'

240 Chambers 1,114.0 cy Field 705.7 cy Stone



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# Pond 11P: PP (w/ underdrain) w/ UG storage 6



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#### \_\_\_\_\_

## Summary for Pond 12P: PP (w/ underdrain) w/ UG storage 7

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 67,756 sf, 72.56% Impervious, Inflow Depth = 5.34" for 10-Year \_2100 event

Inflow = 10.40 cfs @ 12.10 hrs, Volume= 30,142 cf

Outflow = 0.40 cfs @ 14.13 hrs, Volume= 30,142 cf, Atten= 96%, Lag= 121.9 min

Primary = 0.40 cfs @ 14.13 hrs, Volume= 30,142 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.43' @ 14.13 hrs Surf.Area= 11,316 sf Storage= 15,238 cf

Plug-Flow detention time= 350.1 min calculated for 30,138 cf (100% of inflow)

Center-of-Mass det. time= 350.1 min (1,107.2 - 757.1)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	935 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,962 cf	77.50'W x 146.02'L x 3.50'H Field A
			$39,607 \text{ cf Overall} - 14,701 \text{ cf Embedded} = 24,906 \text{ cf } \times 40.0\% \text{ Voids}$
#3A	95.00'	14,701 cf	ADS_StormTech SC-740 +Cap x 320 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
			320 Chambers in 16 Rows

25,598 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	1,474	0.0	0	0
97.67	1,474	35.0	346	346
97.83	1,474	15.0	35	381
98.00	1,474	15.0	38	419
98.35	1,474	100.0	516	935

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

### Site 10 20240629

NOAA 24-hr C 10-Year \_2100 Rainfall=6.21"

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Primary OutFlow Max=0.40 cfs @ 14.13 hrs HW=96.43' (Free Discharge)
1=Restriction Orifice (Passes 0.40 cfs of 0.49 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.40 cfs @ 2.02 fps)
3=Perforations (Passes 0.40 cfs of 7.45 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 12P: PP (w/ underdrain) w/ UG storage 7 - Chamber Wizard Field A

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

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

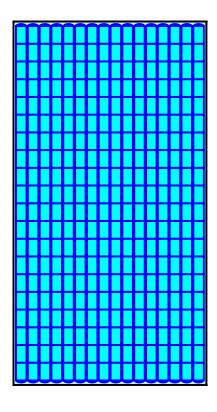
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

320 Chambers x 45.9 cf = 14,700.8 cf Chamber Storage

39,607.0 cf Field - 14,700.8 cf Chambers = 24,906.2 cf Stone x 40.0% Voids = 9,962.5 cf Stone Storage

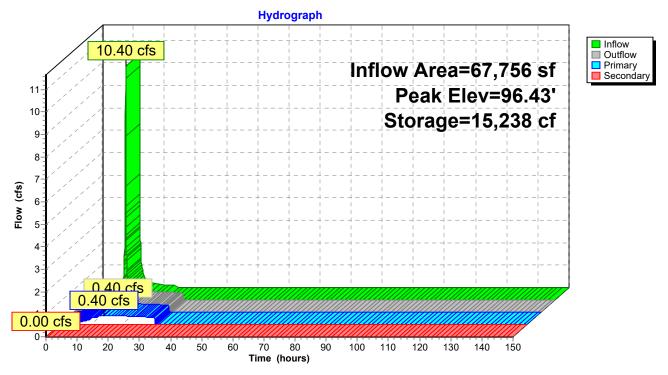
Chamber Storage + Stone Storage = 24,663.3 cf = 0.566 af Overall Storage Efficiency = 62.3% Overall System Size = 146.02' x 77.50' x 3.50'

320 Chambers 1,466.9 cy Field 922.5 cy Stone



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Pond 12P: PP (w/ underdrain) w/ UG storage 7



Volume

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## Summary for Pond 13P: Bioretention Basin 4

Inflow Area = 329,976 sf, 48.67% Impervious, Inflow Depth = 4.66" for 10-Year 2100 event Inflow 11.17 cfs @ 12.35 hrs. Volume= 128.047 cf 9.09 cfs @ 12.51 hrs, Volume= Outflow = 126,784 cf, Atten= 19%, Lag= 9.7 min 0.39 cfs @ 12.51 hrs, Volume= Primary 39,416 cf Routed to nonexistent node 5R 7.21 cfs @ 12.51 hrs, Volume= Secondary = 86,239 cf Routed to nonexistent node 5R 1.49 cfs @ 12.51 hrs, Volume= 1.129 cf Tertiarv Routed to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 52.08' @ 12.51 hrs Surf.Area= 10,478 sf Storage= 23,758 cf

Plug-Flow detention time= 214.7 min calculated for 126,784 cf (99% of inflow)

Avail Storage Storage Description

Center-of-Mass det. time= 206.3 min ( 1,162.6 - 956.3 )

Invert

VOIUITIE	IIIVEI	t Avaii.010	rage Storage	Description	
#1	49.00	33,3	95 cf Custom	Stage Data (P	rismatic)Listed below (Recalc)
	Elevation Surf.Area (feet) (sq-ft)		Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
49.0			0	0	
_	52.00 10,478		22,917	22,917	
53.0	00	10,478	10,478	33,395	
Device	Routing	Invert	Outlet Devices	8	
#1	Primary	49.25'	3.0" Vert. Lov	w Flow Orifice	C= 0.600
#2	Secondary	51.00'	24.0" W x 18.		ONDARY OUTLET C= 0.600
#3	Tertiary	52.00'	Limited to weir flow at low heads  60.0" x 60.0" Horiz. Orifice/Grate C= 0.600  Limited to weir flow at low heads		

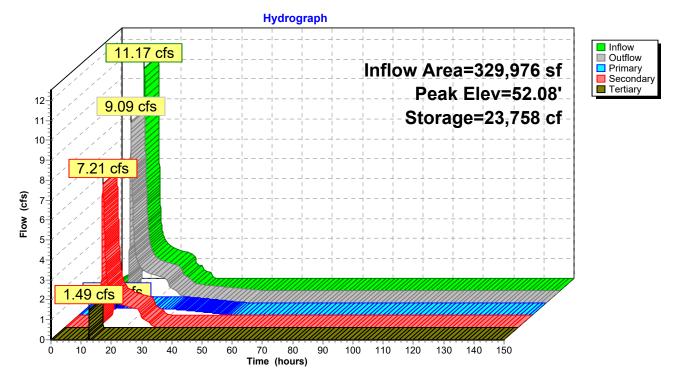
Primary OutFlow Max=0.39 cfs @ 12.51 hrs HW=52.08' (Free Discharge)
—1=Low Flow Orifice (Orifice Controls 0.39 cfs @ 7.92 fps)

Secondary OutFlow Max=7.21 cfs @ 12.51 hrs HW=52.08' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 7.21 cfs @ 3.34 fps)

Tertiary OutFlow Max=1.48 cfs @ 12.51 hrs HW=52.08' (Free Discharge) 3=Orifice/Grate (Weir Controls 1.48 cfs @ 0.93 fps)

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### Pond 13P: Bioretention Basin 4



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Time span=0.00-150.00 hrs, dt=0.02 hrs, 7501 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

Runoff Area=141,085 sf 17.73% Impervious Runoff Depth=3.00" Subcatchment 1S: DA 1: CN w/ IC areas Tc=18.6 min CN=75/98 Runoff=8.15 cfs 35,214 cf Runoff Area=21,583 sf 64.54% Impervious Runoff Depth=4.19" Subcatchment 2S: DA 2: CN w/ IC areas Tc=1.4 min CN=78/98 Runoff=2.67 cfs 7,531 cf Subcatchment 3S: DA 3: CN w/ IC areas Runoff Area=40,101 sf 65.65% Impervious Runoff Depth=4.18" Tc=3.5 min CN=77/98 Runoff=4.80 cfs 13,965 cf Runoff Area=84,260 sf 73.22% Impervious Runoff Depth=4.34" Subcatchment 4S: DA 4: CN w/ IC areas Tc=3.2 min CN=77/98 Runoff=10.47 cfs 30,496 cf Runoff Area=52,282 sf 79.56% Impervious Runoff Depth=4.50" Subcatchment 5S: DA 5: CN w/ IC areas Tc=2.5 min CN=78/98 Runoff=6.81 cfs 19,601 cf Runoff Area=76,785 sf 82.96% Impervious Runoff Depth=4.58" Subcatchment 6S: DA 6: CN w/ IC areas Tc=3.2 min CN=79/98 Runoff=9.95 cfs 29,338 cf Runoff Area=120,233 sf 94.05% Impervious Runoff Depth=4.80" Subcatchment 7S: DA 7: CN w/ IC areas Tc=3.5 min CN=78/98 Runoff=15.96 cfs 48,087 cf Runoff Area=111,353 sf 71.87% Impervious Runoff Depth=4.22" Subcatchment 8S: DA 8: CN w/ IC areas Tc=2.0 min CN=73/98 Runoff=13.91 cfs 39,114 cf Runoff Area=59,019 sf 68.70% Impervious Runoff Depth=4.27" Subcatchment 9S: DA 9: CN w/ IC areas Tc=2.8 min CN=78/98 Runoff=7.35 cfs 21,018 cf Subcatchment 10S: DA 10: CN w/ IC areas Runoff Area=48,527 sf 85.53% Impervious Runoff Depth=4.57" Tc=5.8 min CN=74/98 Runoff=5.80 cfs 18,486 cf Subcatchment 11S: DA 11: CN w/ IC areas Runoff Area=57,652 sf 78.51% Impervious Runoff Depth=4.44" Tc=2.5 min CN=76/98 Runoff=7.42 cfs 21,323 cf Subcatchment 12S: DA 12: CN w/ IC areas Runoff Area=67,756 sf 72.56% Impervious Runoff Depth=4.33" Tc=2.9 min CN=77/98 Runoff=8.47 cfs 24,442 cf Subcatchment 13S: DA 13: CN w/ IC areas Runoff Area=156,041 sf 15.80% Impervious Runoff Depth=2.88" Tc=24.6 min CN=74/98 Runoff=7.59 cfs 37,404 cf Peak Elev=64.55' Storage=13,250 cf Inflow=8.15 cfs 35,214 cf Pond 1P: Bioretention Basin 1

Primary=0.39 cfs 23,652 cf Secondary=2.63 cfs 11,561 cf Tertiary=0.00 cfs 0 cf Outflow=3.02 cfs 35,213 cf

Pond 2P: Bioretention Basin 2 Peak Elev=69.84' Storage=3,495 cf Inflow=2.67 cfs 7,531 cf Primary=0.29 cfs 7,190 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=0.29 cfs 7,190 cf

Pond 3P: Bioretention Basin 3 Peak Elev=66.61' Storage=6,857 cf Inflow=4.80 cfs 13,965 cf Primary=0.35 cfs 12,938 cf Secondary=0.22 cfs 566 cf Tertiary=0.00 cfs 0 cf Outflow=0.58 cfs 13,504 cf

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- Pond 4P: PP (w/ underdrain) w/ UG Peak Elev=96.05' Storage=15,705 cf Inflow=10.47 cfs 30,496 cf Primary=0.38 cfs 30,496 cf Secondary=0.00 cfs 0 cf Outflow=0.38 cfs 30,496 cf
- Pond 5P: PP (w/ underdrain) w/ UG storage Peak Elev=96.03' Storage=10,665 cf Inflow=6.81 cfs 19,601 cf Primary=0.21 cfs 19,601 cf Secondary=0.00 cfs 0 cf Outflow=0.21 cfs 19,601 cf
- Pond 6P: PP (w/ underdrain) w/ UG storage Peak Elev=96.06' Storage=18,114 cf Inflow=9.95 cfs 29,338 cf Primary=0.21 cfs 29,338 cf Secondary=0.00 cfs 0 cf Outflow=0.21 cfs 29,338 cf
- Pond 7P: PP (w/ underdrain) w/ UG Peak Elev=96.08' Storage=28,512 cf Inflow=15.96 cfs 48,087 cf Primary=0.38 cfs 48,087 cf Secondary=0.00 cfs 0 cf Outflow=0.38 cfs 48,087 cf
- Pond 8P: Existing Basin 1 Peak Elev=59.35' Storage=7,049 cf Inflow=14.99 cfs 166,636 cf Primary=8.92 cfs 166,636 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=8.92 cfs 166,636 cf
- Pond 9P: Existing Basin 2 Peak Elev=67.32' Storage=7,418 cf Inflow=7.35 cfs 21,018 cf Primary=0.38 cfs 14,690 cf Secondary=1.49 cfs 6,327 cf Tertiary=0.00 cfs 0 cf Outflow=1.87 cfs 21,018 cf
- Pond 10P: PP (w/ underdrain) w/ UG storage Peak Elev=96.42' Storage=7,718 cf Inflow=5.80 cfs 18,486 cf Primary=0.40 cfs 18,486 cf Secondary=0.00 cfs 0 cf Outflow=0.40 cfs 18,486 cf
- Pond 11P: PP (w/ underdrain) w/ UG storage Peak Elev=96.13' Storage=9,585 cf Inflow=7.42 cfs 21,323 cf Primary=0.38 cfs 21,323 cf Secondary=0.00 cfs 0 cf Outflow=0.38 cfs 21,323 cf
- Pond 12P: PP (w/ underdrain) w/ UG Peak Elev=96.01' Storage=11,654 cf Inflow=8.47 cfs 24,442 cf Primary=0.38 cfs 24,442 cf Secondary=0.00 cfs 0 cf Outflow=0.38 cfs 24,442 cf
- **Pond 13P: Bioretention Basin 4** Peak Elev=51.91' Storage=21,981 cf Inflow=8.71 cfs 101,655 cf Primary=0.38 cfs 34,773 cf Secondary=5.57 cfs 65,619 cf Tertiary=0.00 cfs 0 cf Outflow=5.95 cfs 100,393 cf

Total Runoff Area = 1,036,677 sf Runoff Volume = 346,018 cf Average Runoff Depth = 4.01" 39.57% Pervious = 410,178 sf 60.43% Impervious = 626,499 sf

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## Summary for Subcatchment 1S: DA 1: CN w/ IC areas

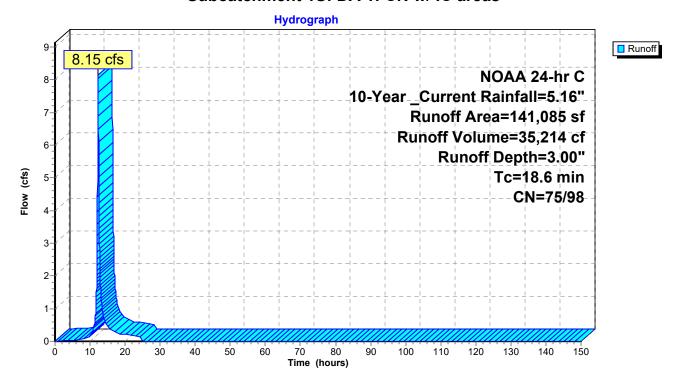
Runoff = 8.15 cfs @ 12.28 hrs, Volume= 35,214 cf, Depth= 3.00"

Routed to Pond 1P: Bioretention Basin 1

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		
*	25,014	98	Impervious HSG C		
	26,886	70	Brush (fair) HSG C		
	45,464	79	Open Space (fair) HSG C		
*	10,665	74	Open Space (good) HSG C		
*	33,056	73	Woods (fair) HSG C		
	141,085	79	Weighted Average		
	116,071	75	82.27% Pervious Area		
	25,014	98	17.73% Impervious Area		
,	Tc Length	Slop			
	nin) (feet)	(ft/	/ft) (ft/sec) (cfs)		
1	18.6		Direct Entry, Direct (see AutoCAD)		

### Subcatchment 1S: DA 1: CN w/ IC areas



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

[49] Hint: Tc<2dt may require smaller dt

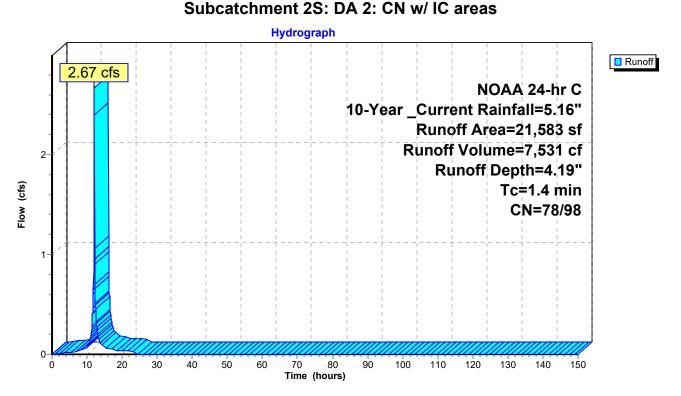
Runoff = 2.67 cfs @ 12.09 hrs, Volume= 7,531 cf, Depth= 4.19"

Routed to Pond 2P: Bioretention Basin 2

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					
*	13,929	98	Impervious I	HSG C				
	6,668	79	Open Space	Open Space (fair) HSG C				
*	986	74	Open Space	Open Space (good) HSG C				
	21,583	91	Weighted Av	Weighted Average				
	7,654	78	35.46% Per	35.46% Pervious Area				
	13,929	98	64.54% Impervious Area					
(1	Tc Length min) (feet)	Slop (ft/f	,	Capacity (cfs)	Description			
	1.4		-		Direct Entry, Direct (see AutoCAD)			

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

Runoff 4.80 cfs @ 12.10 hrs, Volume= 13,965 cf, Depth= 4.18"

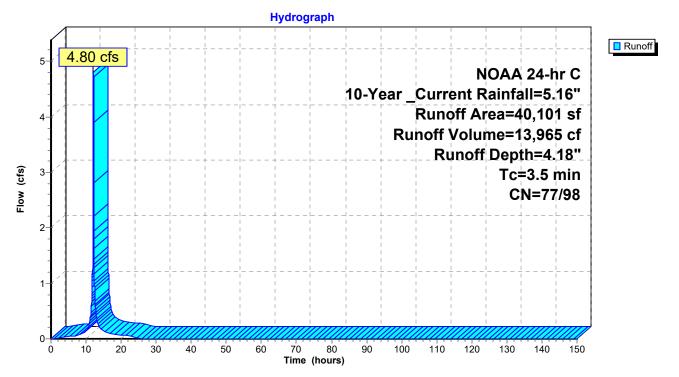
Routed to Pond 3P: Bioretention Basin 3

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					
*	26,326	98	Impervious	HSG C				
	9,202	2 79	Open Space	Open Space (fair) HSG C				
*	4,573	3 74	Open Space	Open Space (good) HSG C				
	40,101	91	Weighted A	Weighted Average				
	13,775	77	34.35% Per	34.35% Pervious Area				
	26,326	98	65.65% Imp	ervious Ar	ea			
	Tc Lengt	th Slop	oe Velocity	Capacity	Description			
_	(min) (feet	t) (ft/	ft) (ft/sec)	(cfs)				
	3.5				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

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



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

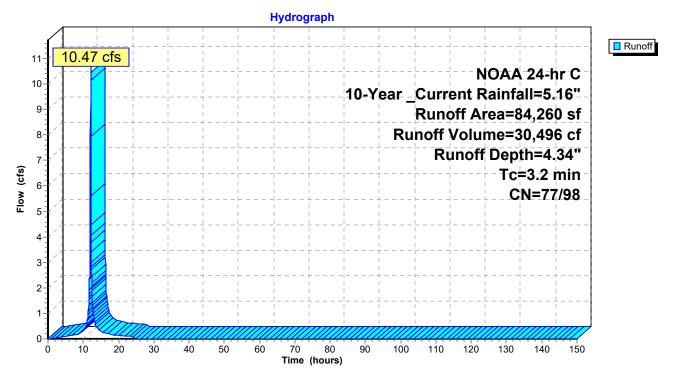
10.47 cfs @ 12.10 hrs, Volume= 30,496 cf, Depth= 4.34" Runoff Routed to Pond 4P: PP (w/ underdrain) w/ UG storage 1

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					
*	61,698	98	Impervious I	HSG C				
	13,143	79	Open Space	Open Space (fair) HSG C				
*	9,419	74	Open Space	Open Space (good) HSG C				
	84,260	92	Weighted Av	Weighted Average				
	22,562	77	26.78% Per	26.78% Pervious Area				
	61,698	98	73.22% Imp	73.22% Impervious Area				
	Tc Length	Slop	,	Capacity	Description			
	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)				
	3.2				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

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



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## Summary for Subcatchment 5S: DA 5: CN w/ IC areas

Runoff = 6.81 cfs @ 12.09 hrs, Volume= 19,601 cf, Depth= 4.50" Routed to Pond 5P : PP (w/ underdrain) w/ UG storage 2

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"

	Α	rea (sf)	CN	Description					
*		41,595	98	Impervious	HSG C				
		444	70	Brush (fair)	Brush (fair) HSG C				
		9,377	79	Open Space	Open Space (fair) HSG C				
*		866	74	Open Space	Open Space (good) HSG C				
		52,282	94	Weighted A	Weighted Average				
		10,687	78	20.44% Per	20.44% Pervious Area				
		41,595	98	79.56% Imp	ervious Ar	ea			
	Тс	Length	Slop	e Velocity	Capacity	Description			
	(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)				
	2.5					Direct Entry, Direct (see AutoCAD)			

## Subcatchment 5S: DA 5: CN w/ IC areas

Hydrograph Runoff 6.81 cfs NOAA 24-hr C 10-Year \_Current Rainfall=5.16" 6-Runoff Area=52,282 sf Runoff Volume=19,601 cf 5-Runoff Depth=4.50" Flow (cfs) Tc=2.5 min CN=78/98 3-2-10 30 40 90 100 110 120 130 140 150 70 80 Time (hours)

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## Summary for Subcatchment 6S: DA 6: CN w/ IC areas

Runoff = 9.95 cfs @ 12.10 hrs, Volume= 29,338 cf, Depth= 4.58" Routed to Pond 6P : PP (w/ underdrain) w/ UG storage 3

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					
*	63,699	98	Impervious I	HSG C				
	12,708	79	Open Space	Open Space (fair) HSG C				
*	378	74	Open Space	Open Space (good) HSG C				
	76,785	95	Weighted Av	Weighted Average				
	13,086	79	17.04% Per	17.04% Pervious Area				
	63,699	98	82.96% Imp	82.96% Impervious Area				
_	Tc Length	Slop	,	Capacity	Description			
(	min) (feet)	(ft/f	ft) (ft/sec)	(cfs)				
	3.2				Direct Entry, Direct (see AutoCAD)			

## Subcatchment 6S: DA 6: CN w/ IC areas

Hydrograph Runoff 9.95 cfs 10 NOAA 24-hr C 10-Year Current Rainfall=5.16" 9 Runoff Area=76,785 sf 8 Runoff Volume=29,338 cf 7-Runoff Depth=4.58" Flow (cfs) Tc=3.2 min 6-CN=79/98 5-4-3 2-10 30 80 150 Time (hours)

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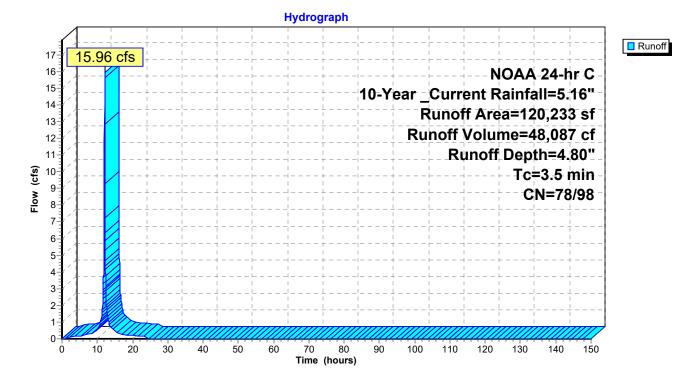
### Summary for Subcatchment 7S: DA 7: CN w/ IC areas

Runoff = 15.96 cfs @ 12.10 hrs, Volume= 48,087 cf, Depth= 4.80" Routed to Pond 7P : PP (w/ underdrain) w/ UG storage 4

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			
*	113,075	98	Impervious HSG C			
	5,111	79	Open Space (fair) HSG C			
*	2,047	74	Open Space (good) HSG C			
	120,233	97	Weighted Average			
	7,158	78	5.95% Pervious Area			
	113,075	98	94.05% Impervious Area			
	Tc Length	Slop	, ,	cription		
<u>(r</u>	min) (feet)	(ft/1	) (ft/sec) (cfs)			
	3.5		Dire	ect Entry, Direct (see AutoCAD)		

#### Subcatchment 7S: DA 7: CN w/ IC areas



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# Summary for Subcatchment 8S: DA 8: CN w/ IC areas

[49] Hint: Tc<2dt may require smaller dt

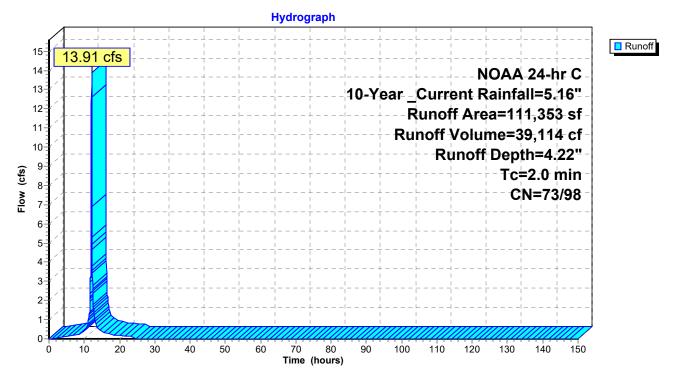
Runoff = 13.91 cfs @ 12.09 hrs, Volume= 39,114 cf, Depth= 4.22"

Routed to Pond 8P: Existing Basin 1

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
*	80,033	98	Impervious HSG C
	3,876	70	Brush (fair) HSG C
	419	79	Open Space (fair) HSG C
*	12,431	74	Open Space (good) HSG C
*	14,594	73	Woods (fair) HSG C
	111,353	91	Weighted Average
	31,320	73	28.13% Pervious Area
	80,033	98	71.87% Impervious Area
	Tc Length (min) (feet)	Slop (ft/	
	2.0		Direct Entry, Direct (see AutoCAD)

#### Subcatchment 8S: DA 8: CN w/ IC areas



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# Summary for Subcatchment 9S: DA 9: CN w/ IC areas

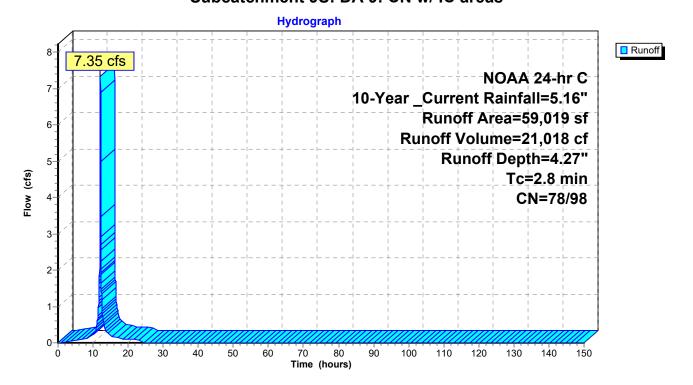
Runoff = 7.35 cfs @ 12.10 hrs, Volume= 21,018 cf, Depth= 4.27"

Routed to Pond 9P : Existing Basin 2

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				
*	40,544	98	Impervious H	ISG C			
	15,969	79	Open Space	Open Space (fair) HSG C			
*	2,506	74	Open Space	(good) HS	SG C		
	59,019	92	Weighted Ave	Weighted Average			
	18,475	78	31.30% Pervi	31.30% Pervious Area			
	40,544	98	68.70% Impe	ervious Are	ea		
	Tc Length	Slop		Capacity	Description		
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)			
	2.8				Direct Entry, Direct (see AutoCAD)		

### Subcatchment 9S: DA 9: CN w/ IC areas



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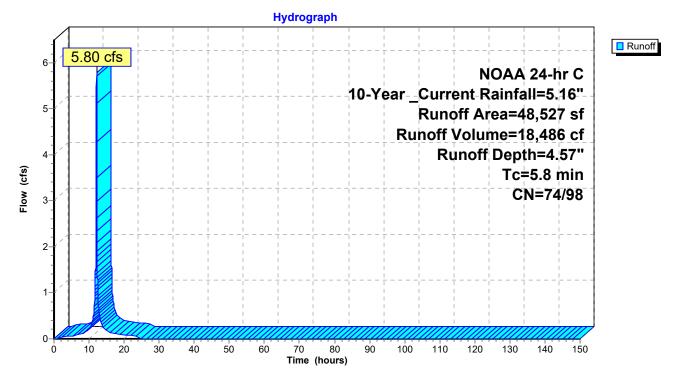
### Summary for Subcatchment 10S: DA 10: CN w/ IC areas

Runoff = 5.80 cfs @ 12.13 hrs, Volume= 18,486 cf, Depth= 4.57" Routed to Pond 10P : PP (w/ underdrain) w/ UG storage 5

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			
*	41,506	98	Impervious HSG C			
	60	79	Open Space (fair) HSG C			
*	6,961	74	Open Space (good) HSG C			
	48,527	95	Weighted Average			
	7,021	74	14.47% Pervious Area			
	41,506	98	85.53% Impervious Area			
	Tc Length	Slop				
_	(min) (feet)	(ft/	ft) (ft/sec) (cfs)			
	5.8		Direct Entry, Direct (see AutoCAD)			

#### Subcatchment 10S: DA 10: CN w/ IC areas



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### Summary for Subcatchment 11S: DA 11: CN w/ IC areas

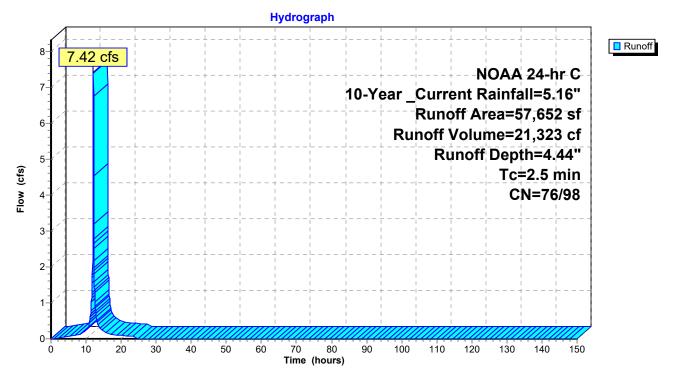
7.42 cfs @ 12.09 hrs, Volume= Runoff 21,323 cf, Depth= 4.44" Routed to Pond 11P: PP (w/ underdrain) w/ UG storage 6

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				
*	45,264	98	Impervious	HSG C			
	5,795	79	Open Space	e (fair) HSC	G C		
*	6,593	74	Open Space	Open Space (good) HSG C			
	57,652	93	Weighted Average				
	12,388	76	21.49% Per	21.49% Pervious Area			
	45,264	98	78.51% Imp	78.51% Impervious Area			
	To longith	Class	. Valasitu	Conneitu	Description		
	Tc Length	Slop	,	Capacity	Description		
_	(min) (feet)	(ft/1	ft) (ft/sec)	(cfs)			
	2.5				Direct Entry, Direct (see AutoCAD)		

**Direct Entry, Direct (see AutoCAD)** 

#### Subcatchment 11S: DA 11: CN w/ IC areas



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# Summary for Subcatchment 12S: DA 12: CN w/ IC areas

Runoff = 8.47 cfs @ 12.10 hrs, Volume= 24,442 cf, Depth= 4.33" Routed to Pond 12P : PP (w/ underdrain) w/ UG storage 7

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			
*	49,166	98	Impervious H	ISG C		
	11,017	79	Open Space	(fair) HSC	G C	
*	7,573	74	Open Space	(good) HS	SG C	
	67,756	92	2 Weighted Average			
	18,590	77	27.44% Pervious Area			
	49,166	98	72.56% Impe	ervious Are	ea	
		٠.				
	Tc Length	Slop		Capacity	Description	
<u>(r</u>	min) (feet)	(ft/1	ft) (ft/sec)	(cfs)		
	2.9				Direct Entry, Direct (see AutoCAD)	

### Subcatchment 12S: DA 12: CN w/ IC areas

Hydrograph Runoff 8.47 cfs NOAA 24-hr C 8-10-Year Current Rainfall=5.16" Runoff Area=67,756 sf Runoff Volume=24,442 cf 6-Runoff Depth=4.33" Flow (cfs) Tc=2.9 min 5-CN=77/98 4-3-2-10 110 150 Time (hours)

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# Summary for Subcatchment 13S: DA 13: CN w/ IC areas

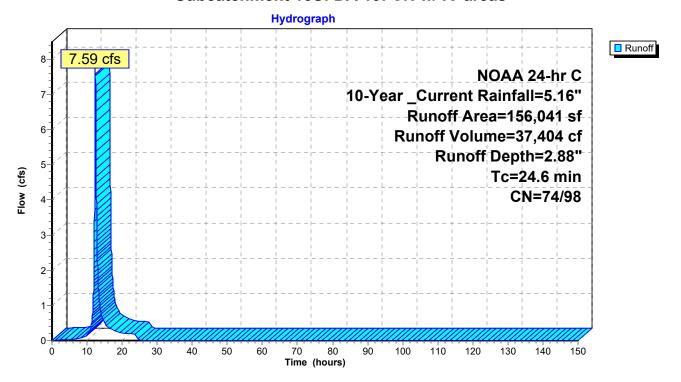
37,404 cf, Depth= 2.88" Runoff 7.59 cfs @ 12.36 hrs, Volume=

Routed to Pond 13P: Bioretention Basin 4

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
*	24,650	98	Impervious HSG C
	42,240	79	Open Space (fair) HSG C
*	20,548	74	Open Space (good) HSG C
	68,603	70	Woods, Good, HSG C
_	156,041	77	Weighted Average
	131,391	74	84.20% Pervious Area
	24,650	98	15.80% Impervious Area
	Tc Length (min) (feet)	Slo <sub>l</sub> (ft/	, - I , I
-	<u> </u>	(II/	
	24 6		Direct Entry, Direct (see AutoCAD)

#### Subcatchment 13S: DA 13: CN w/ IC areas



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# **Summary for Pond 1P: Bioretention Basin 1**

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 141,085 sf, 17.73% Impervious, Inflow Depth = 3.00" for 10-Year Current event 8.15 cfs @ 12.28 hrs, Volume= Inflow 35,214 cf Outflow 3.02 cfs @ 12.68 hrs, Volume= 35,213 cf, Atten= 63%, Lag= 24.0 min 0.39 cfs @ 12.68 hrs, Volume= Primary 23,652 cf Routed to nonexistent node 5R 2.63 cfs @ 12.68 hrs, Volume= Secondary = 11.561 cf Routed to nonexistent node 5R 0.00 cfs @ 0.00 hrs, Volume= 0 cf Tertiary Routed to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 64.55' @ 12.68 hrs Surf.Area= 8,115 sf Storage= 13,250 cf

Plug-Flow detention time= 214.6 min calculated for 35,209 cf (100% of inflow)

Center-of-Mass det. time= 214.7 min (1,037.3 - 822.6)

<u>Volume</u>	Invert	Avail.Sto	rage Storage	Description				
#1	62.50'	37,96	60 cf Custom	Stage Data (P	rismatic)Listed below (Recalc)			
Elevatio		rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)				
62.5 67.0	-	4,800 12,071	0 37,960	0 37,960				
Device	Routing	Invert	Outlet Devices	S				
#1	Primary	61.75'	0.0 . 0. 0. = 0	w Flow Orifice r flow at low hea	0.000			
#2	Secondary	64.00'		<b>0" H Vert. SEC</b> r flow at low hea	ONDARY OUTLET C= 0.600 ads			
#3	Tertiary	Tertiary 66.25'		<b>60.0" x 60.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads				

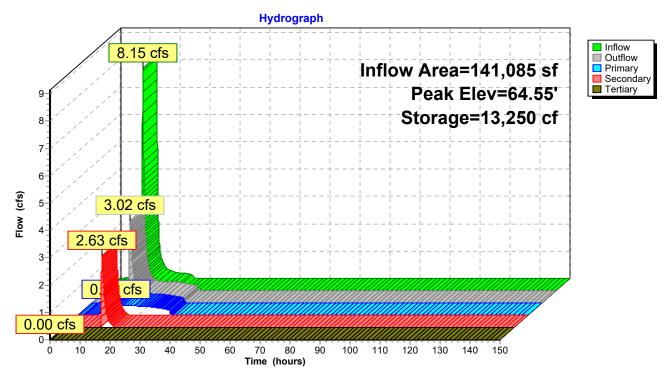
Primary OutFlow Max=0.39 cfs @ 12.68 hrs HW=64.55' (Free Discharge) **-1=Low Flow Orifice** (Orifice Controls 0.39 cfs @ 7.88 fps)

Secondary OutFlow Max=2.63 cfs @ 12.68 hrs HW=64.55' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 2.63 cfs @ 2.38 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.50' (Free Discharge) -3=Orifice/Grate (Controls 0.00 cfs)

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#### Pond 1P: Bioretention Basin 1



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#### **Summary for Pond 2P: Bioretention Basin 2**

Inflow Area = 21,583 sf, 64.54% Impervious, Inflow Depth = 4.19" for 10-Year Current event Inflow 2.67 cfs @ 12.09 hrs. Volume= 7.531 cf 0.29 cfs @ 12.70 hrs, Volume= Outflow 7,190 cf, Atten= 89%, Lag= 36.8 min 0.29 cfs @ 12.70 hrs, Volume= Primary 7,190 cf Routed to nonexistent node 5R Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs, Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 69.84' @ 12.70 hrs Surf.Area= 2,518 sf Storage= 3,495 cf

Plug-Flow detention time= 182.3 min calculated for 7,190 cf (95% of inflow) Center-of-Mass det. time= 154.7 min (918.2 - 763.5)

Volume	Invert	Avail.Sto	rage Storag	je Description	
#1	68.00'	14,80	05 cf Custo	m Stage Data (P	rismatic)Listed below (Recalc)
Elevatio		rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
68.0	00	1,281	0	0	
73.0	00	4,641	14,805	14,805	
Device	Routing	Invert	Outlet Device	ces	
#1	Primary	68.25'		ow Flow Orifice	
#2	Secondary	70.50'	24.0" W x 1		ONDARY OUTLET C= 0.600
#3	Tertiary	72.75'		<b>)" Horiz. Orifice/(</b> reir flow at low hea	

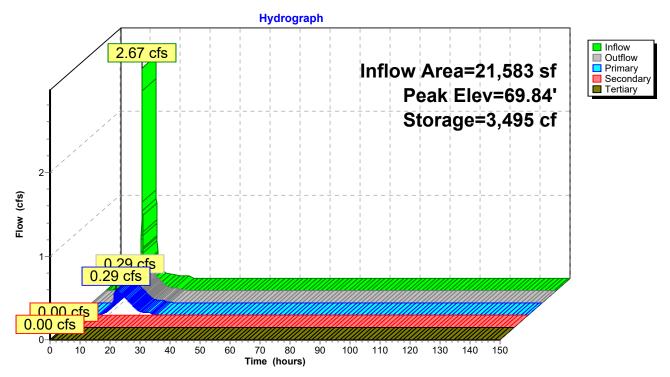
Primary OutFlow Max=0.29 cfs @ 12.70 hrs HW=69.84' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 0.29 cfs @ 5.83 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.00' (Free Discharge) 2=SECONDARY OUTLET ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 2P: Bioretention Basin 2



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#### **Summary for Pond 3P: Bioretention Basin 3**

Inflow Area = 40,101 sf, 65.65% Impervious, Inflow Depth = 4.18" for 10-Year Current event Inflow 4.80 cfs @ 12.10 hrs. Volume= 13.965 cf 0.58 cfs @ 12.62 hrs, Volume= Outflow 13,504 cf, Atten= 88%, Lag= 31.1 min 0.35 cfs @ 12.62 hrs, Volume= Primary 12,938 cf Routed to nonexistent node 5R 0.22 cfs @ 12.62 hrs, Volume= Secondary = 566 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs. Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 66.61' @ 12.62 hrs Surf.Area= 3,503 sf Storage= 6,857 cf

Plug-Flow detention time= 238.7 min calculated for 13,504 cf (97% of inflow) Center-of-Mass det. time= 217.7 min ( 982.6 - 764.9 )

Volume	Invert	Avail.Stor	age Storage	Description	
#1	64.00'	17,16	of Custom Stage Data (Prismatic)Listed below (Recalc)		rismatic)Listed below (Recalc)
Elevation (fee		rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
64.0	00	1,760	0	0	
69.0	00	5,104	17,160	17,160	
Device	Routing	Invert	Outlet Devices	<b>)</b>	
#1	Primary	64.25'	3.0" Vert. Lov	/ Flow Orifice	C= 0.600
			Limited to weir	flow at low hea	ads
#2	Secondary	66.50'			ONDARY OUTLET C= 0.600
#3	Tertiary	68.75'	60.0" x 60.0"	flow at low hea Horiz. Orifice/C flow at low hea	Grate C= 0.600

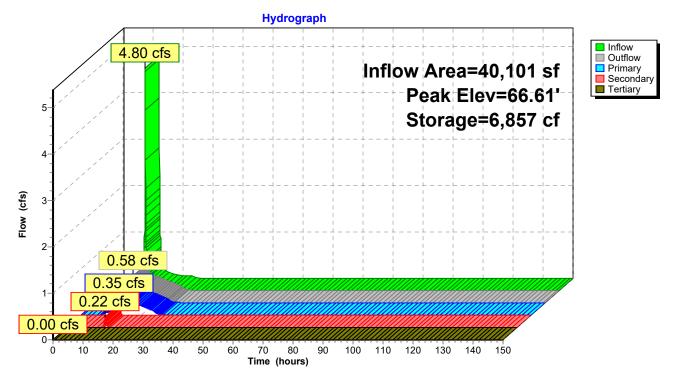
Primary OutFlow Max=0.35 cfs @ 12.62 hrs HW=66.61' (Free Discharge) **-1=Low Flow Orifice** (Orifice Controls 0.35 cfs @ 7.19 fps)

Secondary OutFlow Max=0.22 cfs @ 12.62 hrs HW=66.61' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 0.22 cfs @ 1.04 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=64.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 3P: Bioretention Basin 3



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# Summary for Pond 4P: PP (w/ underdrain) w/ UG storage 1

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 84,260 sf, 73.22% Impervious, Inflow Depth = 4.34" for 10-Year \_Current event

Inflow = 10.47 cfs @ 12.10 hrs, Volume= 30,496 cf

Outflow = 0.38 cfs @ 14.32 hrs, Volume= 30,496 cf, Atten= 96%, Lag= 133.0 min

Primary = 0.38 cfs @ 14.32 hrs, Volume= 30,496 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.05' @ 14.32 hrs Surf.Area= 14,771 sf Storage= 15,705 cf

Plug-Flow detention time= 377.6 min calculated for 30,492 cf (100% of inflow)

Center-of-Mass det. time= 377.7 min (1,137.5 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	3,624 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	12,961 cf	68.00'W x 217.22'L x 3.50'H Field A
			51,698 cf Overall - 19,295 cf Embedded = 32,403 cf x 40.0% Voids
#3A	95.00'	19,295 cf	ADS_StormTech SC-740 +Cap x 420 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
			420 Chambers in 14 Rows

35,880 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	6,787	0.0	0	0
97.67	6,787	35.0	1,592	1,592
97.83	6,787	15.0	163	1,754
98.00	6,787	15.0	173	1,928
98.25	6,787	100.0	1,697	3,624

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	67.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

### Site 10\_20240629

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

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Primary OutFlow Max=0.38 cfs @ 14.32 hrs HW=96.05' (Free Discharge)
1=Restriction Orifice (Passes 0.38 cfs of 0.46 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.38 cfs @ 1.93 fps)
3=Perforations (Passes 0.38 cfs of 7.11 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Site 10 20240629

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

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# Pond 4P: PP (w/ underdrain) w/ UG storage 1 - Chamber Wizard Field A

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

30 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 215.22' Row Length +12.0" End Stone x 2 = 217.22' Base Length

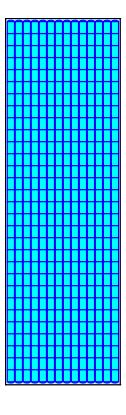
14 Rows x 51.0" Wide + 6.0" Spacing x 13 + 12.0" Side Stone x 2 = 68.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

420 Chambers x 45.9 cf = 19,294.8 cf Chamber Storage

51,697.6 cf Field - 19,294.8 cf Chambers = 32,402.8 cf Stone x 40.0% Voids = 12,961.1 cf Stone Storage

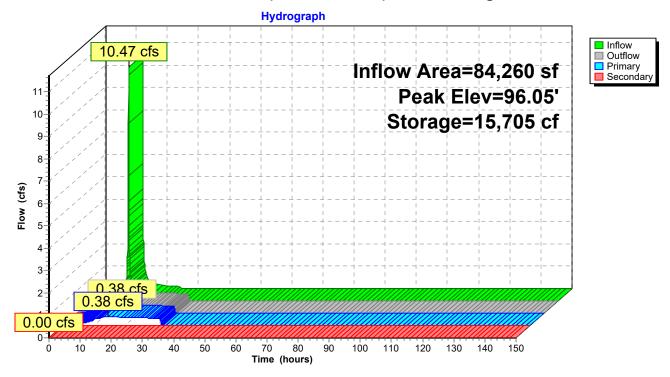
Chamber Storage + Stone Storage = 32,255.9 cf = 0.740 af Overall Storage Efficiency = 62.4% Overall System Size = 217.22' x 68.00' x 3.50'

420 Chambers 1,914.7 cy Field 1,200.1 cy Stone



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Pond 4P: PP (w/ underdrain) w/ UG storage 1



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# Summary for Pond 5P: PP (w/ underdrain) w/ UG storage 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 52,282 sf, 79.56% Impervious, Inflow Depth = 4.50" for 10-Year\_Current event 
Inflow = 6.81 cfs @ 12.09 hrs, Volume= 19,601 cf 
Outflow = 0.21 cfs @ 14.65 hrs, Volume= 19,601 cf, Atten= 97%, Lag= 153.3 min 
Primary = 0.21 cfs @ 14.65 hrs, Volume= 19,601 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.03' @ 14.65 hrs Surf.Area= 10,213 sf Storage= 10,665 cf

Plug-Flow detention time= 474.1 min calculated for 19,601 cf (100% of inflow) Center-of-Mass det. time= 474.0 min (1,229.5 - 755.5)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,510 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,005 cf	77.50'W x 131.78'L x 3.50'H Field A
			35,744 cf Overall - 13,231 cf Embedded = 22,514 cf x 40.0% Voids
#3A	95.00'	13,231 cf	ADS_StormTech SC-740 +Cap x 288 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
			288 Chambers in 16 Rows

24,746 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.25	4.700	100.0	1.175	2.510

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	<b>2.0" Vert. Restriction Orifice</b> C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	<b>0.9" x 0.1" Horiz. Perforations X 400.00 columns</b> X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	132.0' long x 2.0' breadth Broad-Crested Rectangular Weir 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 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

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Primary OutFlow Max=0.21 cfs @ 14.65 hrs HW=96.03' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.21 cfs @ 9.48 fps)
2=6" HDPE Underdrain (Passes 0.21 cfs of 0.38 cfs potential flow)
3=Perforations (Passes 0.21 cfs of 7.09 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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# Pond 5P: PP (w/ underdrain) w/ UG storage 2 - Chamber Wizard Field A

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

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length

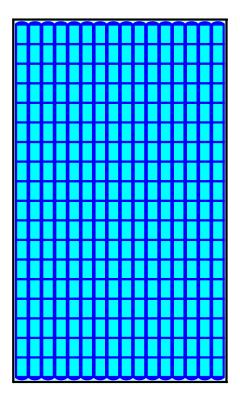
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

288 Chambers x 45.9 cf = 13,230.7 cf Chamber Storage

35,744.4 cf Field - 13,230.7 cf Chambers = 22,513.7 cf Stone x 40.0% Voids = 9,005.5 cf Stone Storage

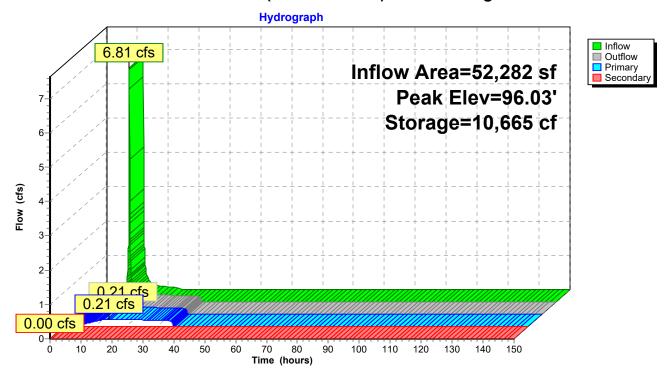
Chamber Storage + Stone Storage = 22,236.2 cf = 0.510 af Overall Storage Efficiency = 62.2% Overall System Size = 131.78' x 77.50' x 3.50'

288 Chambers 1,323.9 cy Field 833.8 cy Stone



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Pond 5P: PP (w/ underdrain) w/ UG storage 2



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# Summary for Pond 6P: PP (w/ underdrain) w/ UG storage 3

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 76,785 sf, 82.96% Impervious, Inflow Depth = 4.58" for 10-Year \_Current event

Inflow = 9.95 cfs @ 12.10 hrs, Volume= 29,338 cf

Outflow = 0.21 cfs @ 16.27 hrs, Volume= 29,338 cf, Atten= 98%, Lag= 250.2 min

Primary = 0.21 cfs @ 16.27 hrs, Volume= 29,338 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.06' @ 16.27 hrs Surf.Area= 16,925 sf Storage= 18,114 cf

Plug-Flow detention time= 815.1 min calculated for 29,338 cf (100% of inflow)

Center-of-Mass det. time= 815.1 min (1,569.3 - 754.2)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,054 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	14,875 cf	144.00'W x 117.54'L x 3.50'H Field A
			$59,238 \text{ cf Overall - } 22,051 \text{ cf Embedded = } 37,187 \text{ cf } \times 40.0\% \text{ Voids}$
#3A	95.00'	22,051 cf	ADS_StormTech SC-740 +Cap x 480 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
			480 Chambers in 30 Rows

38,980 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	3,240	0.0	0	0
97.67	3,240	35.0	760	760
97.83	3,240	15.0	78	838
98.00	3,240	15.0	83	920
98.35	3,240	100.0	1,134	2,054

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	2.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.21 cfs @ 16.27 hrs HW=96.06' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.21 cfs @ 9.52 fps)
2=6" HDPE Underdrain (Passes 0.21 cfs of 0.38 cfs potential flow)
3=Perforations (Passes 0.21 cfs of 7.12 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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# Pond 6P: PP (w/ underdrain) w/ UG storage 3 - Chamber Wizard Field A

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

16 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 115.54' Row Length +12.0" End Stone x 2 = 117.54' Base Length

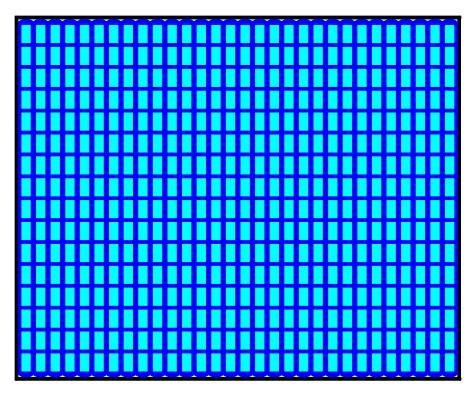
30 Rows x 51.0" Wide + 6.0" Spacing x 29 + 12.0" Side Stone x 2 = 144.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

480 Chambers x 45.9 cf = 22,051.2 cf Chamber Storage

59,238.5 cf Field - 22,051.2 cf Chambers = 37,187.3 cf Stone x 40.0% Voids = 14,874.9 cf Stone Storage

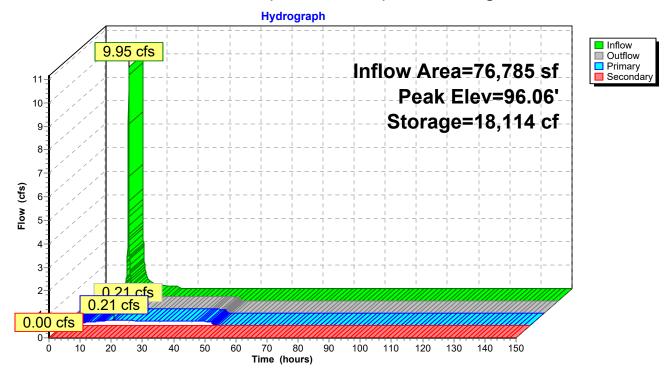
Chamber Storage + Stone Storage = 36,926.1 cf = 0.848 af Overall Storage Efficiency = 62.3% Overall System Size = 117.54' x 144.00' x 3.50'

480 Chambers 2,194.0 cy Field 1,377.3 cy Stone



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# Pond 6P: PP (w/ underdrain) w/ UG storage 3



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# Summary for Pond 7P: PP (w/ underdrain) w/ UG storage 4

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 120,233 sf, 94.05% Impervious, Inflow Depth = 4.80" for 10-Year \_Current event

Inflow = 15.96 cfs @ 12.10 hrs, Volume= 48,087 cf

Outflow = 0.38 cfs @ 15.42 hrs, Volume= 48,087 cf, Atten= 98%, Lag= 199.2 min

Primary = 0.38 cfs @ 15.42 hrs, Volume= 48,087 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.08' @ 15.42 hrs Surf.Area= 26,122 sf Storage= 28,512 cf

Plug-Flow detention time= 690.9 min calculated for 48,081 cf (100% of inflow)

Center-of-Mass det. time= 691.0 min (1,439.8 - 748.8)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,980 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	22,825 cf	163.00'W x 160.26'L x 3.50'H Field A
			91,426 cf Overall - 34,363 cf Embedded = 57,063 cf x 40.0% Voids
#3A	95.00'	34,363 cf	ADS_StormTech SC-740 +Cap x 748 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
			748 Chambers in 34 Rows

60,168 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surt.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.35	4,700	100.0	1,645	2,980

. . . .

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

### Site 10\_20240629

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

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Primary OutFlow Max=0.38 cfs @ 15.42 hrs HW=96.08' (Free Discharge)
1=Restriction Orifice (Passes 0.38 cfs of 0.47 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.38 cfs @ 1.94 fps)
3=Perforations (Passes 0.38 cfs of 7.14 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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# Pond 7P: PP (w/ underdrain) w/ UG storage 4 - Chamber Wizard Field A

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

22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length

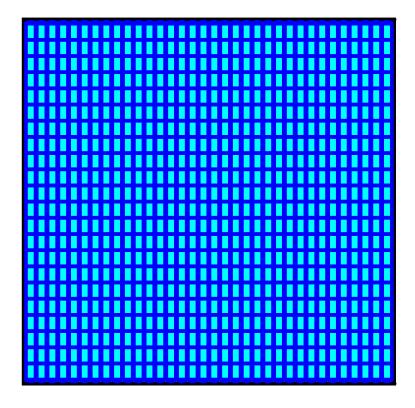
34 Rows x 51.0" Wide + 6.0" Spacing x 33 + 12.0" Side Stone x 2 = 163.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

748 Chambers x 45.9 cf = 34,363.1 cf Chamber Storage

91,426.4 cf Field - 34,363.1 cf Chambers = 57,063.3 cf Stone x 40.0% Voids = 22,825.3 cf Stone Storage

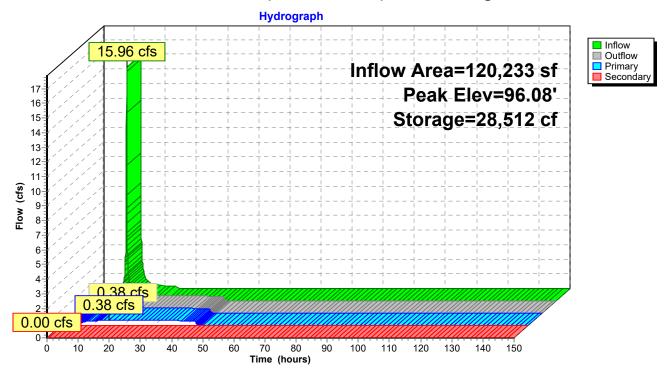
Chamber Storage + Stone Storage = 57,188.5 cf = 1.313 af Overall Storage Efficiency = 62.6% Overall System Size = 160.26' x 163.00' x 3.50'

748 Chambers 3,386.2 cy Field 2,113.5 cy Stone



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Pond 7P: PP (w/ underdrain) w/ UG storage 4



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#### **Summary for Pond 8P: Existing Basin 1**

Inflow Area = 444,913 sf, 80.94% Impervious, Inflow Depth = 4.49" for 10-Year Current event Inflow 14.99 cfs @ 12.09 hrs, Volume= 166.636 cf 8.92 cfs @ 12.14 hrs, Volume= Outflow = 166,636 cf, Atten= 40%, Lag= 2.9 min 8.92 cfs @ 12.14 hrs, Volume= Primary 166,636 cf Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 67L 0.00 cfs @ 0.00 hrs, Volume= 0 cf Tertiary Routed to nonexistent node 67L

Rouled to honexistent hode o/L

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 59.35' @ 12.14 hrs Surf.Area= 8,958 sf Storage= 7,049 cf

Plug-Flow detention time= 16.8 min calculated for 166,613 cf (100% of inflow)

Center-of-Mass det. time= 16.9 min (1,239.8 - 1,222.9)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	58.00'	33,88	31 cf Custom	Stage Data (Pı	rismatic)Listed below (Recalc)
Elevatio	_	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
58.0	00	1,339	0	0	
59.0	00	7,134	4,237	4,237	
60.0	00	12,352	9,743	13,980	
61.0	00	18,300	15,326	29,306	
61.2	25	18,300	4,575	33,881	
Device	Routing	Invert	Outlet Device	S	
#1	Primary	58.00'		ow Flow Orifice	
#2	Secondary	60.00'	24.0" W x 18.		Orifice C= 0.600
#3	Tertiary	60.75'	<b>48.0" x 48.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads		

**100.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=8.92 cfs @ 12.14 hrs HW=59.35' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 8.92 cfs @ 3.95 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge) 2=2-YR Orifice ( Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge)

-3=Orifice/Grate (Controls 0.00 cfs)

#4

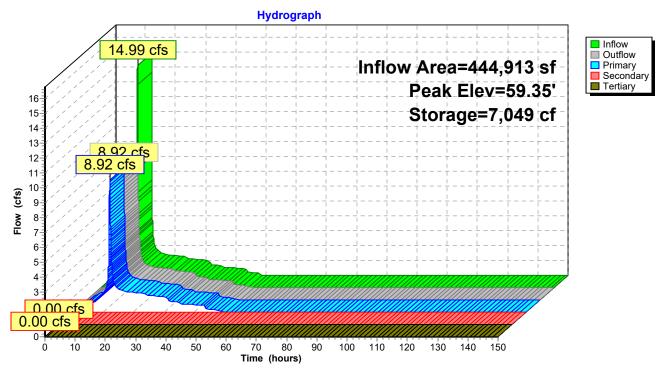
Tertiary

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

61.00'

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# Pond 8P: Existing Basin 1



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# **Summary for Pond 9P: Existing Basin 2**

https://hydro.rutgers.edu/view-project/100596/

Inflow Area = 59,019 sf, 68.70% Impervious, Inflow Depth = 4.27" for 10-Year Current event 7.35 cfs @ 12.10 hrs, Volume= Inflow 21,018 cf Outflow 1.87 cfs @ 12.31 hrs, Volume= = 21,018 cf, Atten= 75%, Lag= 12.9 min 0.38 cfs @ 12.31 hrs, Volume= Primary = 14,690 cf 1.49 cfs @ 12.31 hrs, Volume= 6,327 cf Secondary = Tertiary 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 67.32' @ 12.31 hrs Surf.Area= 4,697 sf Storage= 7,418 cf

Plug-Flow detention time= 94.6 min calculated for 21,018 cf (100% of inflow) Center-of-Mass det. time= 94.5 min (856.7 - 762.2)

Volume	Invert	: Avail.Sto	rage Storage	e Description	
#1	64.60'	13,40	01 cf Custor	n Stage Data (Pris	matic)Listed below
Elevatio		urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
64.6	30	0	0	0	
65.0	00	647	129	129	
66.0	00	2,768	1,708	1,837	
68.0	00	5,693	8,461	10,298	
68.5	50	6,718	3,103	13,401	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	64.60'			Limited to weir flow at low heads
#2	Secondary		<b>0.7' long 8" Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)		
#3	Tertiary	67.75'	<b>48.0" x 48.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads		

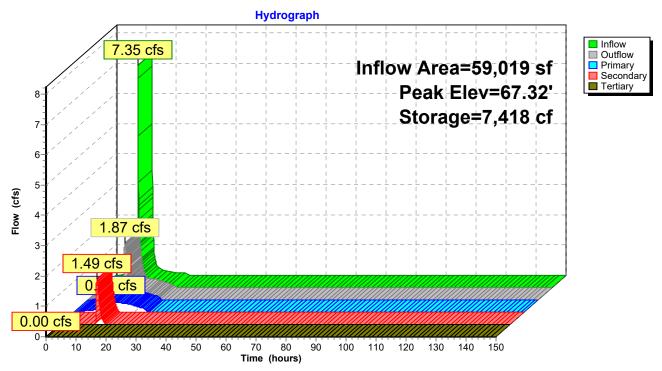
Primary OutFlow Max=0.38 cfs @ 12.31 hrs HW=67.32' (Free Discharge)
1=3" Orifice (Orifice Controls 0.38 cfs @ 7.75 fps)

Secondary OutFlow Max=1.49 cfs @ 12.31 hrs HW=67.32' (Free Discharge) 2=8" Sharp-Crested Rectangular Weir (Weir Controls 1.49 cfs @ 3.13 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=64.60' (Free Discharge) **3=Orifice/Grate** ( Controls 0.00 cfs)

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# Pond 9P: Existing Basin 2



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# Summary for Pond 10P: PP (w/ underdrain) w/ UG storage 5

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 48,527 sf, 85.53% Impervious, Inflow Depth = 4.57" for 10-Year \_Current event

Inflow = 5.80 cfs @ 12.13 hrs, Volume= 18,486 cf

Outflow = 0.40 cfs @ 13.28 hrs, Volume= 18,486 cf, Atten= 93%, Lag= 69.0 min

Primary = 0.40 cfs @ 13.28 hrs, Volume= 18,486 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.42' @ 13.28 hrs Surf.Area= 5,816 sf Storage= 7,718 cf

Plug-Flow detention time= 156.6 min calculated for 18,483 cf (100% of inflow)

Center-of-Mass det. time= 156.6 min (911.9 - 755.3)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	3,687 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	5,184 cf	34.75'W x 167.38'L x 3.50'H Field A
			20,357 cf Overall - 7,396 cf Embedded = 12,961 cf x 40.0% Voids
#3A	95.00'	7,396 cf	ADS_StormTech SC-740 +Cap x 161 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
			161 Chambers in 7 Rows

16,268 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	5,816	0.0	0	0
97.67	5,816	35.0	1,364	1,364
97.83	5,816	15.0	140	1,503
98.00	5,816	15.0	148	1,652
98.35	5.816	100.0	2.036	3.687

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

### Site 10\_20240629

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

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Primary OutFlow Max=0.40 cfs @ 13.28 hrs HW=96.42' (Free Discharge)
1=Restriction Orifice (Passes 0.40 cfs of 0.49 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.40 cfs @ 2.02 fps)
3=Perforations (Passes 0.40 cfs of 7.44 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Site 10 20240629

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

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#### Pond 10P: PP (w/ underdrain) w/ UG storage 5 - Chamber Wizard Field A

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

23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length

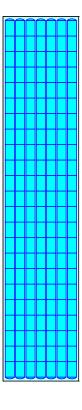
7 Rows x 51.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 34.75' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

161 Chambers x 45.9 cf = 7,396.3 cf Chamber Storage

20,357.2 cf Field - 7,396.3 cf Chambers = 12,960.8 cf Stone x 40.0% Voids = 5,184.3 cf Stone Storage

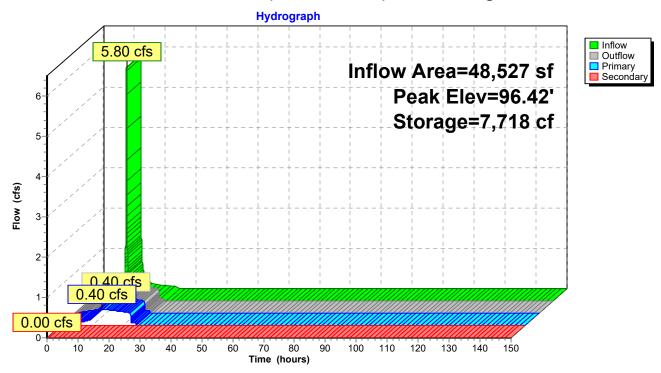
Chamber Storage + Stone Storage = 12,580.7 cf = 0.289 af Overall Storage Efficiency = 61.8% Overall System Size = 167.38' x 34.75' x 3.50'

161 Chambers 754.0 cy Field 480.0 cy Stone



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# Pond 10P: PP (w/ underdrain) w/ UG storage 5



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## Summary for Pond 11P: PP (w/ underdrain) w/ UG storage 6

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 57,652 sf, 78.51% Impervious, Inflow Depth = 4.44" for 10-Year \_Current event

Inflow = 7.42 cfs @ 12.09 hrs, Volume= 21,323 cf

Outflow = 0.38 cfs @ 13.44 hrs, Volume= 21,323 cf, Atten= 95%, Lag= 81.0 min

Primary = 0.38 cfs @ 13.44 hrs, Volume= 21,323 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.13' @ 13.44 hrs Surf.Area= 8,594 sf Storage= 9,585 cf

Plug-Flow detention time= 212.4 min calculated for 21,321 cf (100% of inflow)

Center-of-Mass det. time= 212.4 min ( 968.6 - 756.2 )

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,144 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	7,621 cf	96.50'W x 89.06'L x 3.50'H Field A
			$30,079 \text{ cf Overall} - 11,026 \text{ cf Embedded} = 19,053 \text{ cf } \times 40.0\% \text{ Voids}$
#3A	95.00'	11,026 cf	ADS_StormTech SC-740 +Cap x 240 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
			240 Chambers in 20 Rows

20,791 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	3,382	0.0	0	0
97.67	3,382	35.0	793	793
97.83	3,382	15.0	81	874
98.00	3,382	15.0	86	960
98.35	3,382	100.0	1,184	2,144

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

#### Site 10 20240629

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

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Primary OutFlow Max=0.38 cfs @ 13.44 hrs HW=96.13' (Free Discharge)
1=Restriction Orifice (Passes 0.38 cfs of 0.47 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.38 cfs @ 1.95 fps)
3=Perforations (Passes 0.38 cfs of 7.18 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 11P: PP (w/ underdrain) w/ UG storage 6 - Chamber Wizard Field A

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

12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length

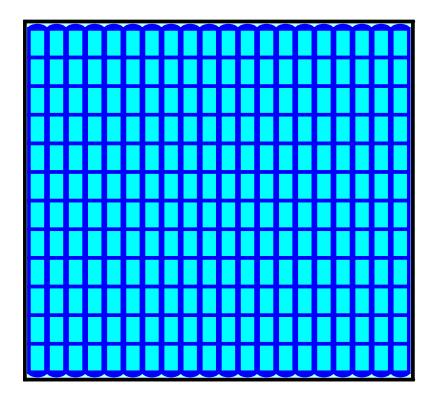
20 Rows x 51.0" Wide + 6.0" Spacing x 19 + 12.0" Side Stone x 2 = 96.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

240 Chambers x 45.9 cf = 11,025.6 cf Chamber Storage

30,078.9 cf Field - 11,025.6 cf Chambers = 19,053.3 cf Stone x 40.0% Voids = 7,621.3 cf Stone Storage

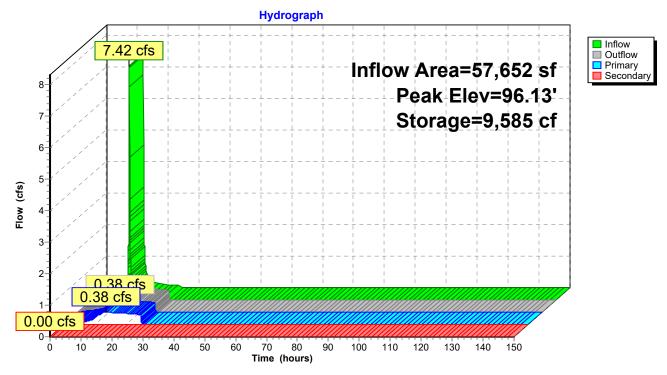
Chamber Storage + Stone Storage = 18,646.9 cf = 0.428 af Overall Storage Efficiency = 62.0% Overall System Size = 89.06' x 96.50' x 3.50'

240 Chambers 1,114.0 cy Field 705.7 cy Stone



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Pond 11P: PP (w/ underdrain) w/ UG storage 6



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## Summary for Pond 12P: PP (w/ underdrain) w/ UG storage 7

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 67,756 sf, 72.56% Impervious, Inflow Depth = 4.33" for 10-Year \_Current event

Inflow = 8.47 cfs @ 12.10 hrs, Volume= 24,442 cf

Outflow = 0.38 cfs @ 13.65 hrs, Volume= 24,442 cf, Atten= 96%, Lag= 93.3 min

Primary = 0.38 cfs @ 13.65 hrs, Volume= 24,442 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 96.01' @ 13.65 hrs Surf.Area= 11,316 sf Storage= 11,654 cf

Plug-Flow detention time= 273.0 min calculated for 24,438 cf (100% of inflow)

Center-of-Mass det. time= 273.0 min ( 1,033.0 - 760.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	935 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,962 cf	77.50'W x 146.02'L x 3.50'H Field A
			39,607 cf Overall - 14,701 cf Embedded = 24,906 cf x 40.0% Voids
#3A	95.00'	14,701 cf	ADS_StormTech SC-740 +Cap x 320 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
			320 Chambers in 16 Rows

25,598 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	1,474	0.0	0	0
97.67	1,474	35.0	346	346
97.83	1,474	15.0	35	381
98.00	1,474	15.0	38	419
98.35	1,474	100.0	516	935

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	·		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

#### Site 10 20240629

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

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Primary OutFlow Max=0.38 cfs @ 13.65 hrs HW=96.01' (Free Discharge)
1=Restriction Orifice (Passes 0.38 cfs of 0.46 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.38 cfs @ 1.92 fps)
3=Perforations (Passes 0.38 cfs of 7.08 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

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#### Pond 12P: PP (w/ underdrain) w/ UG storage 7 - Chamber Wizard Field A

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

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

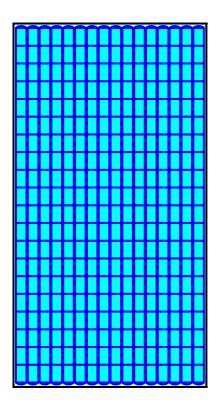
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

320 Chambers x 45.9 cf = 14,700.8 cf Chamber Storage

39,607.0 cf Field - 14,700.8 cf Chambers = 24,906.2 cf Stone x 40.0% Voids = 9,962.5 cf Stone Storage

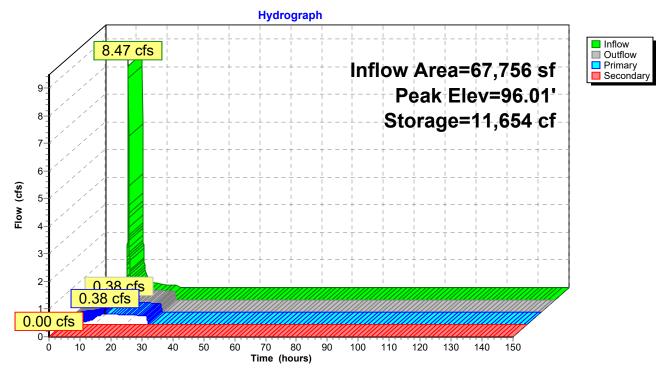
Chamber Storage + Stone Storage = 24,663.3 cf = 0.566 af Overall Storage Efficiency = 62.3% Overall System Size = 146.02' x 77.50' x 3.50'

320 Chambers 1,466.9 cy Field 922.5 cy Stone



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# Pond 12P: PP (w/ underdrain) w/ UG storage 7



Volume

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## Summary for Pond 13P: Bioretention Basin 4

Inflow Area = 329,976 sf, 48.67% Impervious, Inflow Depth = 3.70" for 10-Year Current event Inflow 8.71 cfs @ 12.36 hrs. Volume= 101.655 cf 5.95 cfs @ 12.61 hrs, Volume= Outflow = 100,393 cf, Atten= 32%, Lag= 15.1 min 0.38 cfs @ 12.61 hrs, Volume= Primary 34,773 cf Routed to nonexistent node 5R Secondary = 5.57 cfs @ 12.61 hrs, Volume= 65,619 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs. Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 51.91' @ 12.61 hrs Surf.Area= 10,308 sf Storage= 21,981 cf

Plug-Flow detention time= 232.7 min calculated for 100,379 cf (99% of inflow)

Avail Storage Storage Description

Center-of-Mass det. time= 224.9 min ( 1,148.3 - 923.5 )

Invert

Volume	IIIVEI	t Avaii.0to	rage Storage	Description			
#1	49.00	' 33,39	95 cf Custom	n Stage Data (Pi	rismatic)Listed below (Recalc)		
Elevation (fee		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
49.0		4,800	0	0			
52.0	00	10,478	22,917	22,917			
53.0	00	10,478	10,478	33,395			
Device	Routing	Invert	Outlet Device	s			
#1	Primary	49.25'	3.0" Vert. Lo	w Flow Orifice	C= 0.600		
	•		Limited to we	ir flow at low hea	ads		
#2	#2 Secondary 51.00'		24.0" W x 18.0" H Vert. SECONDARY OUTLET C= 0.600				
			Limited to we	Limited to weir flow at low heads			
#3	Tertiary	52.00'			Grate C= 0.600		
			Limited to we	ir flow at low hea	ads		

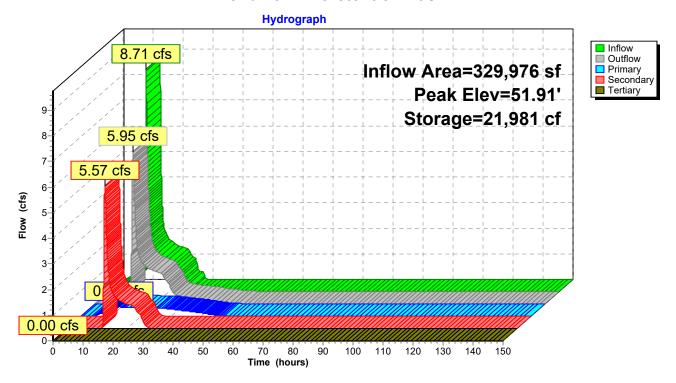
Primary OutFlow Max=0.38 cfs @ 12.61 hrs HW=51.91' (Free Discharge)
1=Low Flow Orifice (Orifice Controls 0.38 cfs @ 7.67 fps)

Secondary OutFlow Max=5.57 cfs @ 12.61 hrs HW=51.91' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 5.57 cfs @ 3.06 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=49.00' (Free Discharge) 3=Orifice/Grate (Controls 0.00 cfs)

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#### Pond 13P: Bioretention Basin 4



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Time span=0.00-150.00 hrs, dt=0.02 hrs, 7501 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: CN w/ IC areas Runoff Area=141,085 sf 17.73% Impervious Runoff Depth=9.43" Tc=18.6 min CN=75/98 Runoff=25.39 cfs 110,908 cf

Subcatchment2S: DA 2: CN w/ IC areas Runoff Area=21,583 sf 64.54% Impervious Runoff Depth=10.99"

Tc=1.4 min CN=78/98 Runoff=6.83 cfs 19,766 cf

Subcatchment3S: DA 3: CN w/ IC areas Runoff Area=40,101 sf 65.65% Impervious Runoff Depth=10.97"

Tc=3.5 min CN=77/98 Runoff=12.33 cfs 36,662 cf

Subcatchment 4S: DA 4: CN w/ IC areas Runoff Area=84,260 sf 73.22% Impervious Runoff Depth=11.18" Tc=3.2 min CN=77/98 Runoff=26.35 cfs 78,486 cf

Subcatchment 5S: DA 5: CN w/ IC areas Runoff Area=52,282 sf 79.56% Impervious Runoff Depth=11.38" Tc=2.5 min CN=78/98 Runoff=16.84 cfs 49,576 cf

Subcatchment 6S: DA 6: CN w/ IC areas Runoff Area=76,785 sf 82.96% Impervious Runoff Depth=11.49" Tc=3.2 min CN=79/98 Runoff=24.36 cfs 73,524 cf

Subcatchment 7S: DA 7: CN w/ IC areas Runoff Area=120,233 sf 94.05% Impervious Runoff Depth=11.75"

Tc=3.5 min CN=78/98 Runoff=38.22 cfs 117,771 cf

Subcatchment8S: DA 8: CN w/ IC areas Runoff Area=111,353 sf 71.87% Impervious Runoff Depth=10.98"

Tc=2.0 min CN=73/98 Runoff=34.94 cfs 101,913 cf

Subcatchment9S: DA 9: CN w/ IC areas Runoff Area=59,019 sf 68.70% Impervious Runoff Depth=11.10" Tc=2.8 min CN=78/98 Runoff=18.62 cfs 54,580 cf

Subcatchment 10S: DA 10: CN w/ IC areas Runoff Area=48,527 sf 85.53% Impervious Runoff Depth=11.45" Tc=5.8 min CN=74/98 Runoff=14.25 cfs 46,314 cf

**Subcatchment 11S: DA 11: CN w/ IC areas** Runoff Area=57,652 sf 78.51% Impervious Runoff Depth=11.29" Tc=2.5 min CN=76/98 Runoff=18.47 cfs 54,251 cf

**Subcatchment 12S: DA 12: CN w/ IC areas** Runoff Area=67,756 sf 72.56% Impervious Runoff Depth=11.16" Tc=2.9 min CN=77/98 Runoff=21.35 cfs 63,011 cf

**Subcatchment 13S: DA 13: CN w/ IC areas** Runoff Area=156,041 sf 15.80% Impervious Runoff Depth=9.26" Tc=24.6 min CN=74/98 Runoff=24.26 cfs 120,366 cf

**Pond 1P: Bioretention Basin 1** Peak Elev=66.08' Storage=27,491 cf Inflow=25.39 cfs 110,908 cf Primary=0.48 cfs 32,497 cf Secondary=16.39 cfs 78,412 cf Tertiary=0.00 cfs 0 cf Outflow=16.88 cfs 110,908 cf

Pond 2P: Bioretention Basin 2 Peak Elev=71.10' Storage=7,200 cf Inflow=6.83 cfs 19,766 cf Primary=0.39 cfs 14,520 cf Secondary=2.98 cfs 4,905 cf Tertiary=0.00 cfs 0 cf Outflow=3.37 cfs 19,425 cf

**Pond 3P: Bioretention Basin 3** Peak Elev=67.68' Storage=11,017 cf Inflow=12.33 cfs 36,662 cf Primary=0.43 cfs 20,526 cf Secondary=8.26 cfs 15,675 cf Tertiary=0.00 cfs 0 cf Outflow=8.69 cfs 36,200 cf

Pond 4P: PP (w/ underdrain) w/ UG Peak Elev=98.13' Storage=35,087 cf Inflow=26.35 cfs 78,486 cf Primary=0.47 cfs 61,398 cf Secondary=8.29 cfs 17,088 cf Outflow=8.76 cfs 78,486 cf

Pond 5P: PP (w/ underdrain) w/ UG Peak Elev=98.05' Storage=23,825 cf Inflow=16.84 cfs 49,576 cf Primary=0.26 cfs 39,427 cf Secondary=4.36 cfs 10,149 cf Outflow=4.61 cfs 49,576 cf

Pond 6P: PP (w/ underdrain) w/ UG Peak Elev=98.24' Storage=38,636 cf Inflow=24.36 cfs 73,524 cf Primary=0.26 cfs 55,446 cf Secondary=5.86 cfs 18,078 cf Outflow=6.12 cfs 73,524 cf

Pond 7P: PP (w/ underdrain) w/ UG Peak Elev=98.34' Storage=60,099 cf Inflow=38.22 cfs 117,771 cf Primary=0.48 cfs 90,166 cf Secondary=9.55 cfs 27,605 cf Outflow=10.03 cfs 117,771 cf

**Pond 8P: Existing Basin 1** Peak Elev=60.78' Storage=25,375 cf Inflow=36.28 cfs 421,270 cf Primary=20.17 cfs 413,133 cf Secondary=4.40 cfs 8,044 cf Tertiary=0.27 cfs 94 cf Outflow=24.83 cfs 421,271 cf

**Pond 9P: Existing Basin 2** Peak Elev=68.17' Storage=11,343 cf Inflow=18.62 cfs 54,580 cf Primary=0.44 cfs 23,554 cf Secondary=2.69 cfs 19,921 cf Tertiary=14.17 cfs 11,108 cf Outflow=17.30 cfs 54,582 cf

Pond 10P: PP (w/ underdrain) w/ UG Peak Elev=98.10' Storage=14,807 cf Inflow=14.25 cfs 46,314 cf Primary=0.47 cfs 35,237 cf Secondary=13.37 cfs 11,077 cf Outflow=13.84 cfs 46,314 cf

Pond 11P: PP (w/ underdrain) w/ UG Peak Elev=98.11' Storage=19,976 cf Inflow=18.47 cfs 54,251 cf Primary=0.47 cfs 42,376 cf Secondary=15.50 cfs 11,875 cf Outflow=15.97 cfs 54,251 cf

Pond 12P: PP (w/ underdrain) w/ UG Peak Elev=98.12' Storage=25,262 cf Inflow=21.35 cfs 63,011 cf Primary=0.47 cfs 49,575 cf Secondary=17.96 cfs 13,436 cf Outflow=18.42 cfs 63,011 cf

**Pond 13P: Bioretention Basin 4** Peak Elev=52.56' Storage=28,791 cf Inflow=55.02 cfs 283,942 cf Primary=0.42 cfs 53,654 cf Secondary=12.42 cfs 178,726 cf Tertiary=27.45 cfs 50,300 cf Outflow=40.30 cfs 282,681 cf

Total Runoff Area = 1,036,677 sf Runoff Volume = 927,128 cf Average Runoff Depth = 10.73" 39.57% Pervious = 410,178 sf 60.43% Impervious = 626,499 sf

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## Summary for Subcatchment 1S: DA 1: CN w/ IC areas

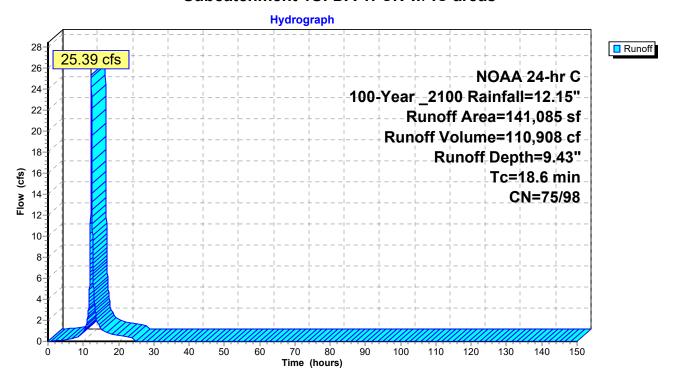
Runoff = 25.39 cfs @ 12.27 hrs, Volume= 110,908 cf, Depth= 9.43"

Routed to Pond 1P: Bioretention Basin 1

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		
*	25,014	98	Impervious HSG C		
	26,886	70	Brush (fair) HSG C		
	45,464	79	Open Space (fair) HSG C		
*	10,665	74	Open Space (good) HSG C		
*	33,056	73	Woods (fair) HSG C		
	141,085	79	Weighted Average		
	116,071	75	82.27% Pervious Area		
	25,014	98	17.73% Impervious Area		
	Tc Length	Slop	pe Velocity Capacity Description		
	(min) (feet)	(ft/	ft) (ft/sec) (cfs)		
	18.6	•	Direct Entry, Direct (see AutoCAD)		

#### Subcatchment 1S: DA 1: CN w/ IC areas



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

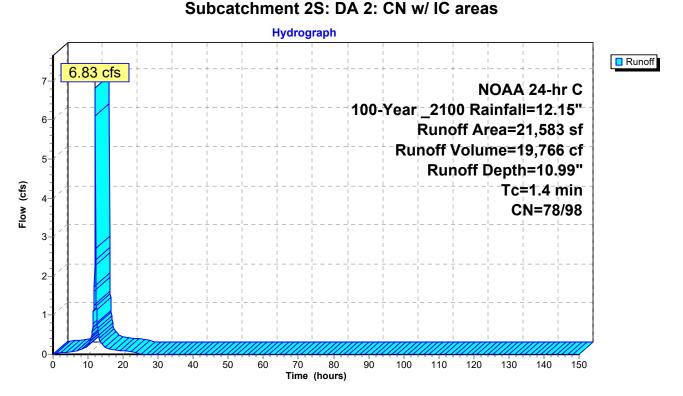
[49] Hint: Tc<2dt may require smaller dt

Runoff = 6.83 cfs @ 12.08 hrs, Volume= 19,766 cf, Depth=10.99"

Routed to Pond 2P: Bioretention Basin 2

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				
*	13,929	98	Impervious I	Impervious HSG C			
	6,668	79	Open Space	Open Space (fair) HSG C			
*	986	74	Open Space	Open Space (good) HSG C			
	21,583	91	Weighted Average				
	7,654	78	35.46% Pervious Area				
	13,929	98	64.54% Impervious Area				
(1	Tc Length min) (feet)	Slop (ft/f	,	Capacity (cfs)	Description		
	1.4		-		Direct Entry, Direct (see AutoCAD)		



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

36,662 cf, Depth=10.97" Runoff 12.33 cfs @ 12.10 hrs, Volume=

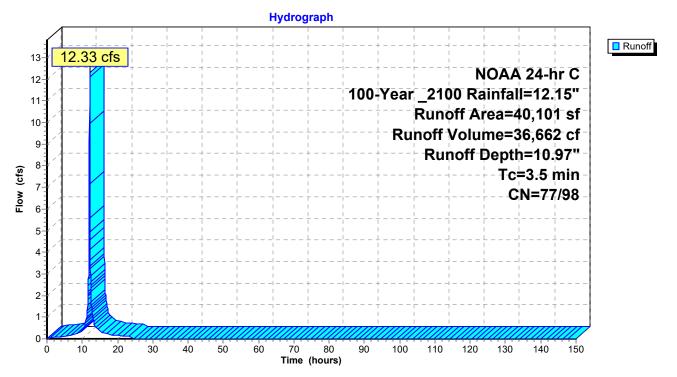
Routed to Pond 3P: Bioretention Basin 3

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				
*	26,326	98	Impervious	Impervious HSG C			
	9,202	2 79	Open Space	Open Space (fair) HSG C			
*	4,573	3 74	Open Space	Open Space (good) HSG C			
	40,101	91	Weighted A	Weighted Average			
	13,775	77	34.35% Per	34.35% Pervious Area			
	26,326	98	65.65% Imp	65.65% Impervious Area			
	Tc Lengt	th Slop	oe Velocity	Capacity	Description		
_	(min) (feet	t) (ft/	ft) (ft/sec)	(cfs)			
	3.5				Direct Entry, Direct (see AutoCAD)		

**Direct Entry, Direct (see AutoCAD)** 

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



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

Runoff = 26.35 cfs @ 12.10 hrs, Volume= 78,486 cf, Depth=11.18" Routed to Pond 4P : PP (w/ underdrain) w/ UG storage 1

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		
*	61,698	98	Impervious HSG C		
	13,143	79	Open Space (fair) HSG C		
*	9,419	74	Open Space (good) HSG C		
	84,260	92	Weighted Average		
	22,562	77	26.78% Pervious Area		
	61,698	98	73.22% Impervious Area		
	Tc Length	Slop			
_	(min) (feet)	(ft/1	t) (ft/sec) (cfs)		
	3.2		Direct Entry, Direct (see Au	toCAD)	

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

Hydrograph Runoff 28 26.35 cfs NOAA 24-hr C 26 100-Year 2100 Rainfall=12.15" 24 Runoff Area=84,260 sf 22-Runoff Volume=78,486 cf 20-Runoff Depth=11.18" 18 Tc=3.2 min (c**ts**) <u>8</u> 14-CN=77/98 12-10 8 6-4-10 80 100 150 Time (hours)

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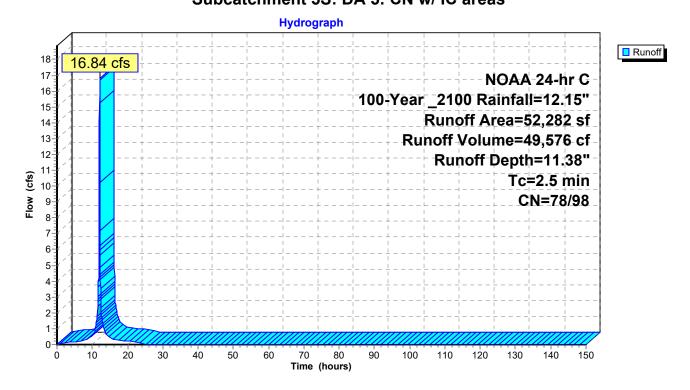
## Summary for Subcatchment 5S: DA 5: CN w/ IC areas

Runoff = 16.84 cfs @ 12.09 hrs, Volume= 49,576 cf, Depth=11.38" Routed to Pond 5P : PP (w/ underdrain) w/ UG storage 2

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"

	Α	rea (sf)	CN	Description				
*		41,595	98	Impervious	Impervious HSG C			
		444	70	Brush (fair)	Brush (fair) HSG C			
		9,377	79	Open Space	Open Space (fair) HSG C			
*		866	74	Open Space	Open Space (good) HSG C			
		52,282	94	Weighted A	verage			
		10,687	78	20.44% Per	vious Area	l		
		41,595	98	79.56% Imp	ervious Ar	ea		
	Тс	Length	Slop	e Velocity	Capacity	Description		
	(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)			
	2.5					Direct Entry, Direct (see AutoCAD)		

# Subcatchment 5S: DA 5: CN w/ IC areas



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## Summary for Subcatchment 6S: DA 6: CN w/ IC areas

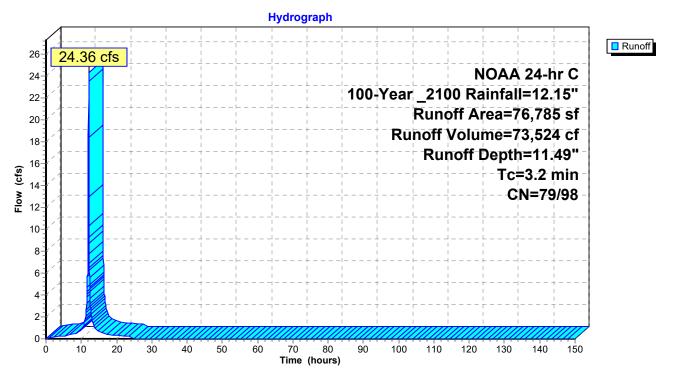
24.36 cfs @ 12.10 hrs, Volume= Runoff 73,524 cf, Depth=11.49" Routed to Pond 6P: PP (w/ underdrain) w/ UG storage 3

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					
*	63,699	98	Impervious	Impervious HSG C				
	12,708	79	Open Space	pen Space (fair) HSG C				
*	378	74	Open Space	Dpen Space (good) HSG C				
	76,785	95	Weighted A	verage				
	13,086	79	17.04% Per	vious Area				
	63,699	98	82.96% Imp	ervious Are	ea			
	Tc Length	Slop	oe Velocity	Capacity	Description			
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)				
	3.2				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

#### Subcatchment 6S: DA 6: CN w/ IC areas



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## Summary for Subcatchment 7S: DA 7: CN w/ IC areas

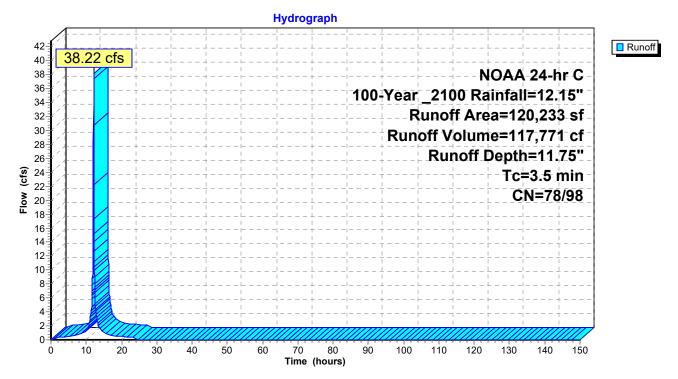
38.22 cfs @ 12.10 hrs, Volume= Runoff 117,771 cf, Depth=11.75" Routed to Pond 7P: PP (w/ underdrain) w/ UG storage 4

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				
*	113,075	98	Impervious I	HSG C				
	5,111	79	Open Space	pen Space (fair) HSG C				
*	2,047	74	Open Space	Open Space (good) HSG C				
	120,233	97	Weighted Av	verage				
	7,158	78	5.95% Pervi	ous Area				
	113,075	98	94.05% Imp	ervious Are	ea			
	Tc Length	Slop	,	Capacity	Description			
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)				
	3.5				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

#### Subcatchment 7S: DA 7: CN w/ IC areas



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## Summary for Subcatchment 8S: DA 8: CN w/ IC areas

[49] Hint: Tc<2dt may require smaller dt

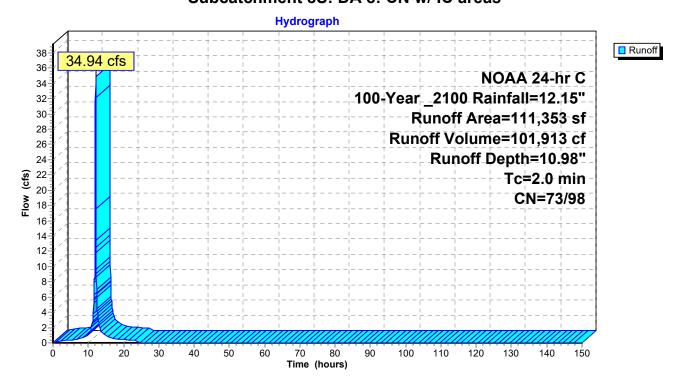
Runoff = 34.94 cfs @ 12.10 hrs, Volume= 101,913 cf, Depth=10.98"

Routed to Pond 8P: Existing Basin 1

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				
*	80,033	98	Impervious HSG C				
	3,876	70	Brush (fair) HSG C				
	419	79	oen Śpaće (fair) HSG C				
*	12,431	74	Open Space (good) HSG C				
*	14,594	73	Woods (fair) HSG C				
	111,353	91	Weighted Average				
	31,320	73	28.13% Pervious Area				
	80,033	98	71.87% Impervious Area				
	Tc Length	Slop	ppe Velocity Capacity Description				
(	(min) (feet)	(ft/	t/ft) (ft/sec) (cfs)				
	2.0		Direct Entry, Direct (see AutoCAD)				

#### Subcatchment 8S: DA 8: CN w/ IC areas



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## Summary for Subcatchment 9S: DA 9: CN w/ IC areas

Runoff = 18.62 cfs @ 12.09 hrs, Volume= 54,580 cf, Depth=11.10"

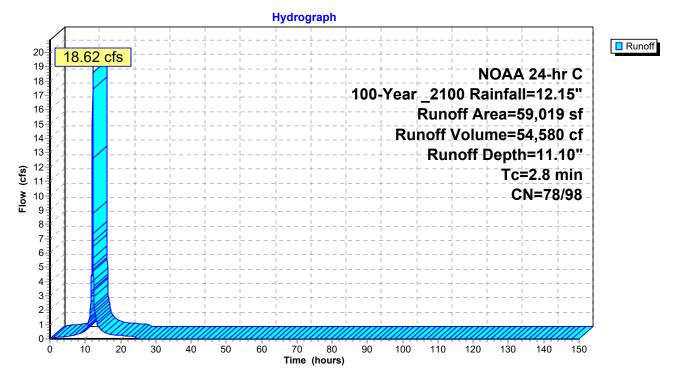
Routed to Pond 9P: Existing Basin 2

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					
*	40,544	98	Impervious HSG C	mpervious HSG C				
	15,969	79	pen Space (fair) HSG C					
*	2,506	74	Open Space (good) HSG C					
	59,019	92	Weighted Average					
	18,475	78	31.30% Pervious Area					
	40,544	98	68.70% Impervious Area					
	Tc Length	Slop						
_	(min) (feet)	(ft/	/ft) (ft/sec) (cfs)					
	2.8		Direct Entry, Direct (see AutoCAD)					

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#### Subcatchment 9S: DA 9: CN w/ IC areas



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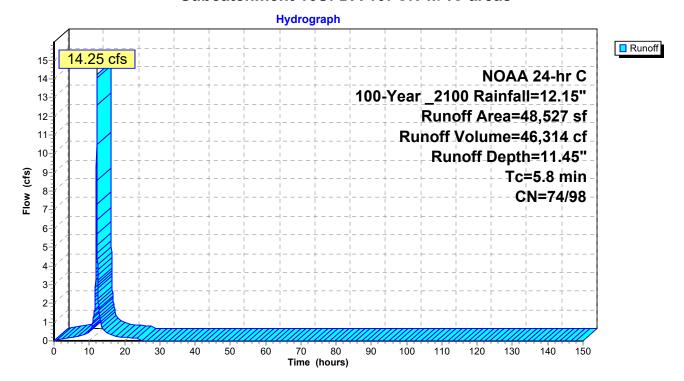
## Summary for Subcatchment 10S: DA 10: CN w/ IC areas

Runoff = 14.25 cfs @ 12.13 hrs, Volume= 46,314 cf, Depth=11.45" Routed to Pond 10P : PP (w/ underdrain) w/ UG storage 5

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				
*	41,506	98	Impervious I	HSG C				
	60	79	Open Space	pen Space (fair) HSG C				
*	6,961	74	Open Space	Dpen Space (good) HSG C				
	48,527	95	Weighted Average					
	7,021	74	14.47% Per	14.47% Pervious Area				
	41,506	98	85.53% Imp	ervious Are	ea			
<u>(</u> r	Tc Length min) (feet)	Slop (ft/f	,	Capacity (cfs)	Description			
	5.8				Direct Entry, Direct (see AutoCAD)			

#### Subcatchment 10S: DA 10: CN w/ IC areas



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## Summary for Subcatchment 11S: DA 11: CN w/ IC areas

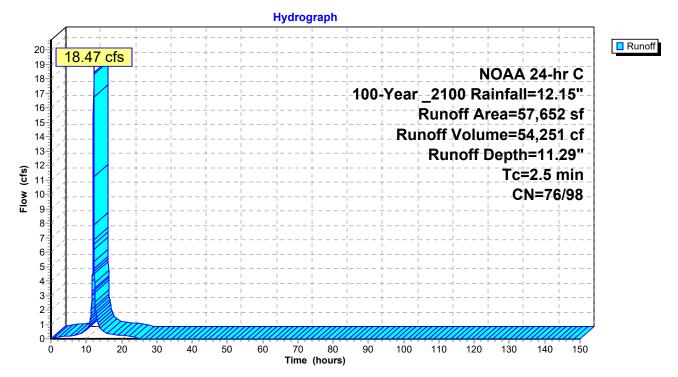
18.47 cfs @ 12.09 hrs, Volume= Runoff 54,251 cf, Depth=11.29" Routed to Pond 11P: PP (w/ underdrain) w/ UG storage 6

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					
*	45,264	98	Impervious	mpervious HSG C				
	5,795	79	Open Space	pen Space (fair) HSG C				
*	6,593	74	Open Space	Dpen Space (good) HSG C				
	57,652	93	Weighted A	verage				
	12,388	76	21.49% Per	vious Area				
	45,264	98	78.51% Imp	ervious Are	ea			
	To longith	Class	. Valasitu	Conneitu	Description			
	Tc Length	Slop	,	Capacity	Description			
_	(min) (feet)	(ft/1	ft) (ft/sec)	(cfs)				
	2.5				Direct Entry, Direct (see AutoCAD)			

**Direct Entry, Direct (see AutoCAD)** 

#### Subcatchment 11S: DA 11: CN w/ IC areas



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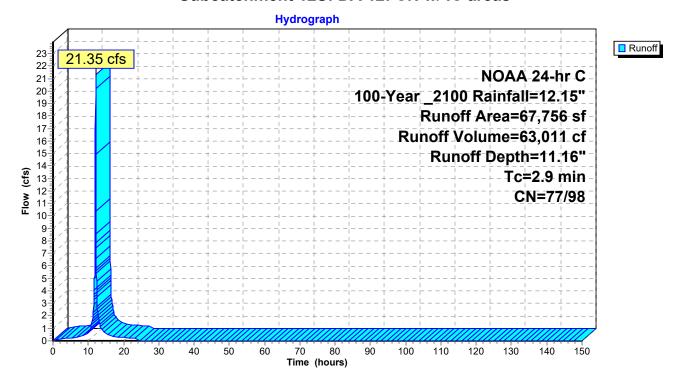
## Summary for Subcatchment 12S: DA 12: CN w/ IC areas

Runoff = 21.35 cfs @ 12.10 hrs, Volume= 63,011 cf, Depth=11.16" Routed to Pond 12P : PP (w/ underdrain) w/ UG storage 7

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				
*	49,166	98	Impervious H	ISG C				
	11,017	79	Open Space	pen Space (fair) HSG C				
*	7,573	74	Open Space	Open Space (good) HSG C				
	67,756	92	Weighted Average					
	18,590	77	27.44% Perv	∕ious Area				
	49,166	98	72.56% Impe	ervious Are	ea			
		٠.						
	Tc Length	Slop		Capacity	Description			
<u>(r</u>	min) (feet)	(ft/1	ft) (ft/sec)	(cfs)				
	2.9				Direct Entry, Direct (see AutoCAD)			

#### Subcatchment 12S: DA 12: CN w/ IC areas



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## Summary for Subcatchment 13S: DA 13: CN w/ IC areas

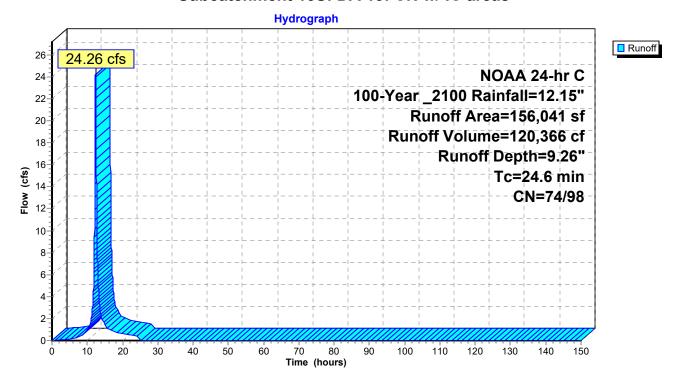
Runoff = 24.26 cfs @ 12.34 hrs, Volume= 120,366 cf, Depth= 9.26"

Routed to Pond 13P: Bioretention Basin 4

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				
*	24,650	98	Impervious HSG C				
	42,240	79	pen Space (fair) HSG C				
*	20,548	74	Open Space (good) HSG C				
	68,603	70	Woods, Good, HSG C				
_	156,041	77 Weighted Average					
	131,391	74	84.20% Pervious Area				
	24,650	98	15.80% Impervious Area				
	Tc Length (min) (feet)	Slo <sub>l</sub> (ft/	, - I , I				
-	<u> </u>	(II/					
	24 6		Direct Entry, Direct (see AutoCAD)				

# Subcatchment 13S: DA 13: CN w/ IC areas



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### **Summary for Pond 1P: Bioretention Basin 1**

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 141,085 sf, 17.73% Impervious, Inflow Depth = 9.43" for 100-Year 2100 event 25.39 cfs @ 12.27 hrs, Volume= Inflow 110,908 cf Outflow 16.88 cfs @ 12.45 hrs, Volume= 110,908 cf, Atten= 34%, Lag= 10.6 min 0.48 cfs @ 12.45 hrs, Volume= Primary 32,497 cf Routed to nonexistent node 5R 16.39 cfs @ 12.45 hrs. Volume= Secondary = 78.412 cf Routed to nonexistent node 5R 0.00 cfs @ 0.00 hrs, Volume= 0 cf Tertiary Routed to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 66.08' @ 12.45 hrs Surf.Area= 10,577 sf Storage= 27,491 cf

Plug-Flow detention time= 109.3 min calculated for 110,893 cf (100% of inflow) Center-of-Mass det. time= 109.4 min ( 907.6 - 798.2 )

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	62.50'	37,96	60 cf Custon	n Stage Data (Pı	rismatic)Listed below (Recalc)
Elevatio		urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
62.5 67.0		4,800 12,071	0 37,960	0 37,960	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	61.75'		w Flow Orifice	
#2	Secondary	64.00'	-	.0" H Vert. SEC	ONDARY OUTLET C= 0.600
#3	Tertiary	66.25'	60.0" x 60.0"	' <b>Horiz. Orifice/C</b> Fir flow at low hea	Grate C= 0.600

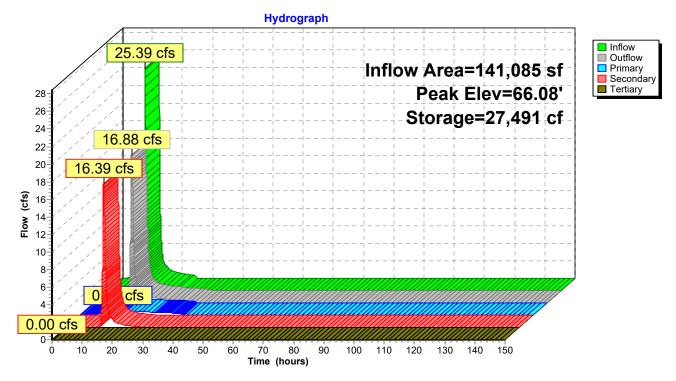
Primary OutFlow Max=0.48 cfs @ 12.45 hrs HW=66.07' (Free Discharge) -1=Low Flow Orifice (Orifice Controls 0.48 cfs @ 9.87 fps)

Secondary OutFlow Max=16.39 cfs @ 12.45 hrs HW=66.07' (Free Discharge) -2=SECONDARY OUTLET (Orifice Controls 16.39 cfs @ 5.46 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.50' (Free Discharge) -3=Orifice/Grate (Controls 0.00 cfs)

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#### Pond 1P: Bioretention Basin 1



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#### **Summary for Pond 2P: Bioretention Basin 2**

Inflow Area = 21,583 sf, 64.54% Impervious, Inflow Depth = 10.99" for 100-Year 2100 event Inflow 6.83 cfs @ 12.08 hrs. Volume= 19.766 cf 3.37 cfs @ 12.14 hrs, Volume= Outflow 19,425 cf, Atten= 51%, Lag= 3.3 min 0.39 cfs @ 12.14 hrs, Volume= Primary 14,520 cf Routed to nonexistent node 5R 2.98 cfs @ 12.14 hrs, Volume= Secondary = 4,905 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs. Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 71.10' @ 12.14 hrs Surf.Area= 3,364 sf Storage= 7,200 cf

Plug-Flow detention time= 149.2 min calculated for 19,422 cf (98% of inflow) Center-of-Mass det. time= 138.0 min (888.2 - 750.2)

Volume	Invert	Avail.Sto	rage Storage I	Description	
#1	68.00'	14,80	05 cf Custom	Stage Data (Pi	rismatic)Listed below (Recalc)
Elevation (fee	et)	rf.Area (sq-ft) 1,281	Inc.Store (cubic-feet) 0	Cum.Store (cubic-feet) 0	
73.0	00	4,641	14,805	14,805	
Device	Routing	Invert	Outlet Devices	<b>;</b>	
#1	Primary	68.25'		Flow Orifice flow at low hea	
#2	Secondary	70.50'		<b>)" H Vert. SEC</b> flow at low hea	ONDARY OUTLET C= 0.600 ads
#3	Tertiary	72.75'		Horiz. Orifice/Orifice/Oriflow at low hea	Grate C= 0.600 ads

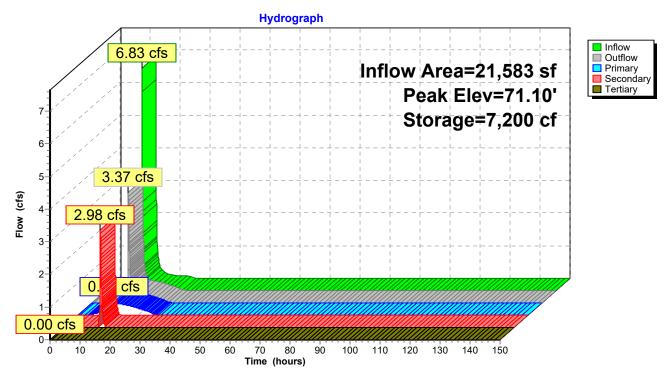
Primary OutFlow Max=0.39 cfs @ 12.14 hrs HW=71.10' (Free Discharge) **-1=Low Flow Orifice** (Orifice Controls 0.39 cfs @ 7.95 fps)

Secondary OutFlow Max=2.97 cfs @ 12.14 hrs HW=71.10' (Free Discharge) **2=SECONDARY OUTLET** (Orifice Controls 2.97 cfs @ 2.48 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 2P: Bioretention Basin 2



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## **Summary for Pond 3P: Bioretention Basin 3**

Inflow Area = 40,101 sf, 65.65% Impervious, Inflow Depth = 10.97" for 100-Year 2100 event Inflow 12.33 cfs @ 12.10 hrs. Volume= 36.662 cf 8.69 cfs @ 12.15 hrs, Volume= Outflow = 36,200 cf, Atten= 30%, Lag= 2.8 min 0.43 cfs @ 12.15 hrs, Volume= Primary 20,526 cf Routed to nonexistent node 5R 8.26 cfs @ 12.15 hrs, Volume= Secondary = 15,675 cf Routed to nonexistent node 5R 0.00 cfs @ 0.00 hrs. Volume= Tertiary 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 67.68' @ 12.15 hrs Surf.Area= 4,223 sf Storage= 11,017 cf

Plug-Flow detention time= 147.6 min calculated for 36,200 cf (99% of inflow) Center-of-Mass det. time= 138.8 min (890.8 - 752.0)

Volume	Inve	rt Avail.Sto	rage Storage	Description	
#1	64.00	0' 17,10	60 cf Custom	Stage Data (P	rismatic)Listed below (Recalc)
Elevation (fee	et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
64.0		1,760	0	0	
69.0	00	5,104	17,160	17,160	
Device	Routing	Invert	Outlet Devices	S	
#1	Primary	64.25'	3.0" Vert. Lov	w Flow Orifice	C= 0.600
			Limited to wei	r flow at low hea	ads
#2	Secondar	y 66.50'	24.0" W x 18.	0" H Vert. SEC	ONDARY OUTLET C= 0.600
			Limited to wei	r flow at low hea	ads
#3	Tertiary	68.75'	60.0" x 60.0"	Horiz. Orifice/0	Grate C= 0.600

Limited to weir flow at low heads

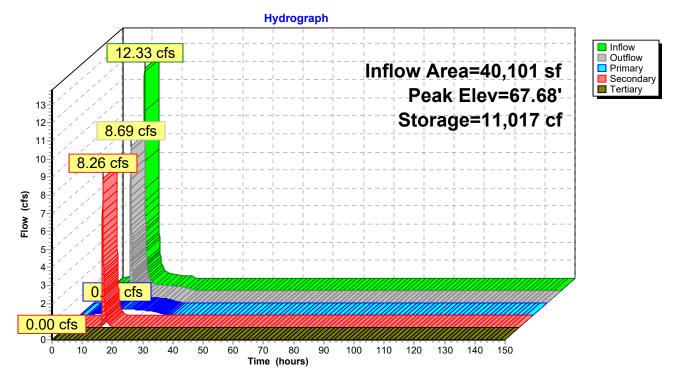
Primary OutFlow Max=0.43 cfs @ 12.15 hrs HW=67.68' (Free Discharge)
1=Low Flow Orifice (Orifice Controls 0.43 cfs @ 8.75 fps)

Secondary OutFlow Max=8.20 cfs @ 12.15 hrs HW=67.68' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 8.20 cfs @ 3.48 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=64.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 3P: Bioretention Basin 3



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## Summary for Pond 4P: PP (w/ underdrain) w/ UG storage 1

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 84,260 sf, 73.22% Impervious, Inflow Depth = 11.18" for 100-Year \_2100 event

Inflow = 26.35 cfs @ 12.10 hrs, Volume= 78,486 cf

Outflow = 8.76 cfs @ 12.24 hrs, Volume= 78,486 cf, Atten= 67%, Lag= 8.3 min

Primary = 0.47 cfs @ 12.24 hrs, Volume= 61,398 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 8.29 cfs @ 12.24 hrs, Volume= 17,088 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 98.13' @ 12.24 hrs Surf.Area= 21,558 sf Storage= 35,087 cf

Plug-Flow detention time= 578.3 min calculated for 78,486 cf (100% of inflow)

Center-of-Mass det. time= 578.3 min ( 1,326.0 - 747.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	3,624 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	12,961 cf	68.00'W x 217.22'L x 3.50'H Field A
			51,698 cf Overall - 19,295 cf Embedded = 32,403 cf x 40.0% Voids
#3A	95.00'	19,295 cf	ADS_StormTech SC-740 +Cap x 420 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
			420 Chambers in 14 Rows

35,880 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	6,787	0.0	0	0
97.67	6,787	35.0	1,592	1,592
97.83	6,787	15.0	163	1,754
98.00	6,787	15.0	173	1,928
98.25	6.787	100.0	1.697	3.624

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
"0	<b>5</b>	00.471	Limited to weir flow at low heads
#2	Device 1	92.17	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	67.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.47 cfs @ 12.24 hrs HW=98.13' (Free Discharge)
1=Restriction Orifice (Passes 0.47 cfs of 0.58 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.47 cfs @ 2.38 fps)
3=Perforations (Passes 0.47 cfs of 8.82 cfs potential flow)

Secondary OutFlow Max=8.22 cfs @ 12.24 hrs HW=98.13' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 8.22 cfs @ 0.93 fps)

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## Pond 4P: PP (w/ underdrain) w/ UG storage 1 - Chamber Wizard Field A

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

30 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 215.22' Row Length +12.0" End Stone x 2 = 217.22' Base Length

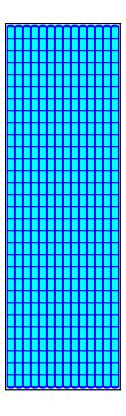
14 Rows x 51.0" Wide + 6.0" Spacing x 13 + 12.0" Side Stone x 2 = 68.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

420 Chambers x 45.9 cf = 19,294.8 cf Chamber Storage

51,697.6 cf Field - 19,294.8 cf Chambers = 32,402.8 cf Stone x 40.0% Voids = 12,961.1 cf Stone Storage

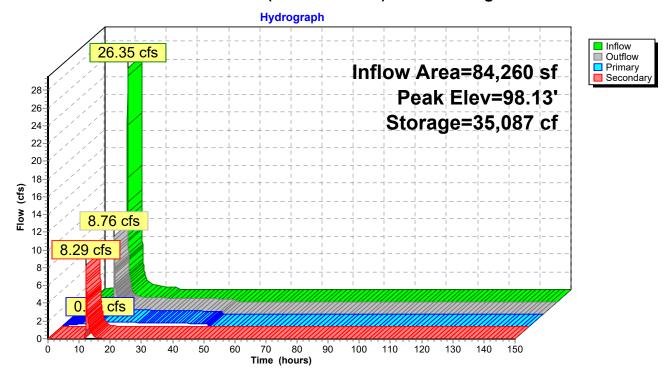
Chamber Storage + Stone Storage = 32,255.9 cf = 0.740 af Overall Storage Efficiency = 62.4% Overall System Size = 217.22' x 68.00' x 3.50'

420 Chambers 1,914.7 cy Field 1,200.1 cy Stone



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Pond 4P: PP (w/ underdrain) w/ UG storage 1



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## Summary for Pond 5P: PP (w/ underdrain) w/ UG storage 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 52,282 sf, 79.56% Impervious, Inflow Depth = 11.38" for 100-Year \_2100 event Inflow = 16.84 cfs @ 12.09 hrs, Volume= 49,576 cf

Outflow = 4.61 cfs @ 12.26 hrs, Volume= 49,576 cf, Atten= 73%, Lag= 10.1 min Primary = 0.26 cfs @ 12.26 hrs, Volume= 39,427 cf

Routed to Pond 8P : Existing Basin 1

Secondary = 4.36 cfs @ 12.26 hrs, Volume= 10,149 cf

Routed to Pond 8P : Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 98.05' @ 12.26 hrs Surf.Area= 14,913 sf Storage= 23,825 cf

Plug-Flow detention time= 737.9 min calculated for 49,569 cf (100% of inflow) Center-of-Mass det. time= 738.0 min (1,481.6 - 743.5)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	2,510 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,005 cf	77.50'W x 131.78'L x 3.50'H Field A
			35,744 cf Overall - 13,231 cf Embedded = 22,514 cf x 40.0% Voids
#3A	95.00'	13,231 cf	ADS_StormTech SC-740 +Cap x 288 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
			288 Chambers in 16 Rows

24,746 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.25	4,700	100.0	1,175	2,510

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	2.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	132.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.26 cfs @ 12.26 hrs HW=98.05' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.26 cfs @ 11.70 fps)
2=6" HDPE Underdrain (Passes 0.26 cfs of 0.47 cfs potential flow)
3=Perforations (Passes 0.26 cfs of 8.76 cfs potential flow)

Secondary OutFlow Max=4.20 cfs @ 12.26 hrs HW=98.05' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 4.20 cfs @ 0.59 fps)

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### Pond 5P: PP (w/ underdrain) w/ UG storage 2 - Chamber Wizard Field A

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

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length

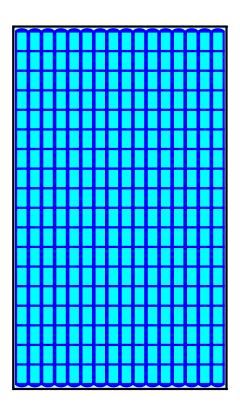
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

288 Chambers x 45.9 cf = 13,230.7 cf Chamber Storage

35,744.4 cf Field - 13,230.7 cf Chambers = 22,513.7 cf Stone x 40.0% Voids = 9,005.5 cf Stone Storage

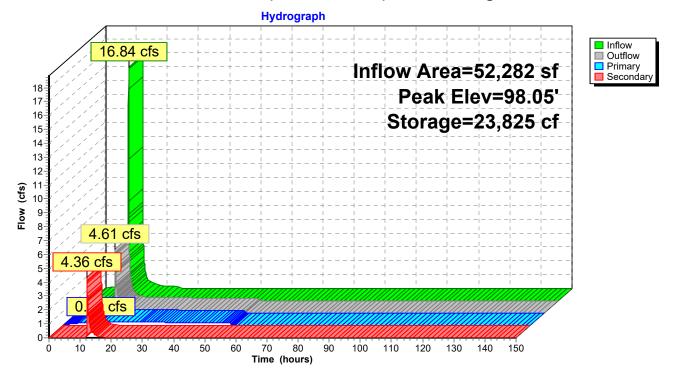
Chamber Storage + Stone Storage = 22,236.2 cf = 0.510 af Overall Storage Efficiency = 62.2% Overall System Size = 131.78' x 77.50' x 3.50'

288 Chambers 1,323.9 cy Field 833.8 cy Stone



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# Pond 5P: PP (w/ underdrain) w/ UG storage 2



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## Summary for Pond 6P: PP (w/ underdrain) w/ UG storage 3

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 76,785 sf, 82.96% Impervious, Inflow Depth = 11.49" for 100-Year \_2100 event

Inflow = 24.36 cfs @ 12.10 hrs, Volume= 73,524 cf

Outflow = 6.12 cfs @ 12.32 hrs, Volume= 73,524 cf, Atten= 75%, Lag= 13.3 min

Primary = 0.26 cfs @ 12.32 hrs, Volume= 55,446 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 5.86 cfs @ 12.32 hrs, Volume= 18,078 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 98.24' @ 12.32 hrs Surf.Area= 20,165 sf Storage= 38,636 cf

Plug-Flow detention time= 1,131.1 min calculated for 73,514 cf (100% of inflow)

Center-of-Mass det. time= 1,131.4 min (1,873.7 - 742.3)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,054 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	14,875 cf	144.00'W x 117.54'L x 3.50'H Field A
			59,238 cf Overall - 22,051 cf Embedded = 37,187 cf x 40.0% Voids
#3A	95.00'	22,051 cf	ADS_StormTech SC-740 +Cap x 480 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
			480 Chambers in 30 Rows

38,980 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surt.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	3,240	0.0	0	0
97.67	3,240	35.0	760	760
97.83	3,240	15.0	78	838
98.00	3,240	15.0	83	920
98.35	3,240	100.0	1,134	2,054

. . . .

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	2.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.26 cfs @ 12.32 hrs HW=98.24' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.26 cfs @ 11.88 fps)
2=6" HDPE Underdrain (Passes 0.26 cfs of 0.47 cfs potential flow)
3=Perforations (Passes 0.26 cfs of 8.90 cfs potential flow)

Secondary OutFlow Max=5.84 cfs @ 12.32 hrs HW=98.24' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 5.84 cfs @ 1.26 fps)

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## Pond 6P: PP (w/ underdrain) w/ UG storage 3 - Chamber Wizard Field A

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

16 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 115.54' Row Length +12.0" End Stone x 2 = 117.54' Base Length

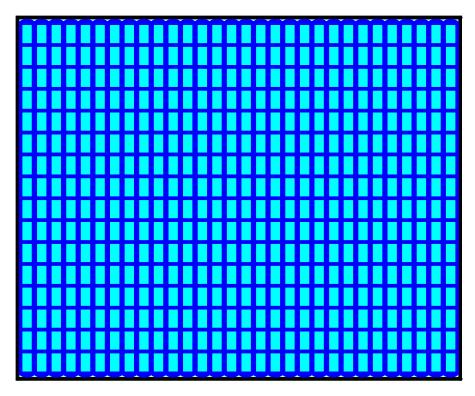
30 Rows x 51.0" Wide + 6.0" Spacing x 29 + 12.0" Side Stone x 2 = 144.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

480 Chambers x 45.9 cf = 22,051.2 cf Chamber Storage

59,238.5 cf Field - 22,051.2 cf Chambers = 37,187.3 cf Stone x 40.0% Voids = 14,874.9 cf Stone Storage

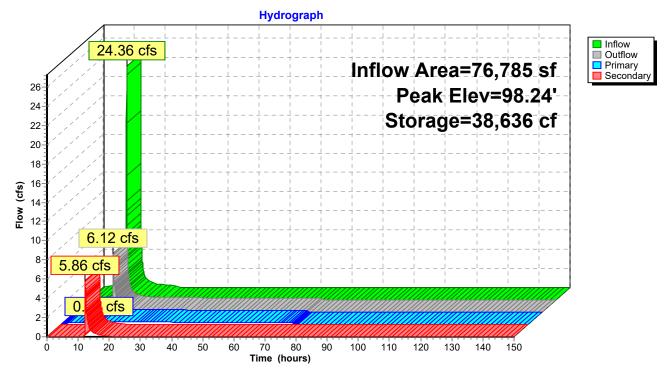
Chamber Storage + Stone Storage = 36,926.1 cf = 0.848 af Overall Storage Efficiency = 62.3% Overall System Size = 117.54' x 144.00' x 3.50'

480 Chambers 2,194.0 cy Field 1,377.3 cy Stone



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# Pond 6P: PP (w/ underdrain) w/ UG storage 3



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## Summary for Pond 7P: PP (w/ underdrain) w/ UG storage 4

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 120,233 sf, 94.05% Impervious, Inflow Depth = 11.75" for 100-Year \_2100 event

Inflow = 38.22 cfs @ 12.10 hrs, Volume= 117,771 cf

Outflow = 10.03 cfs @ 12.31 hrs, Volume= 117,771 cf, Atten= 74%, Lag= 12.2 min

Primary = 0.48 cfs @ 12.31 hrs, Volume= 90,166 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 9.55 cfs @ 12.31 hrs, Volume= 27,605 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 98.34' @ 12.31 hrs Surf.Area= 30,822 sf Storage= 60,099 cf

Plug-Flow detention time= 973.7 min calculated for 117,755 cf (100% of inflow)

Center-of-Mass det. time= 973.9 min (1,711.4 - 737.5)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,980 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	22,825 cf	163.00'W x 160.26'L x 3.50'H Field A
			91,426 cf Overall - 34,363 cf Embedded = 57,063 cf x 40.0% Voids
#3A	95.00'	34,363 cf	ADS_StormTech SC-740 +Cap x 748 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
			748 Chambers in 34 Rows

60,168 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.35	4,700	100.0	1,645	2,980

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.48 cfs @ 12.31 hrs HW=98.33' (Free Discharge)
1=Restriction Orifice (Passes 0.48 cfs of 0.59 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.48 cfs @ 2.42 fps)
3=Perforations (Passes 0.48 cfs of 8.97 cfs potential flow)

Secondary OutFlow Max=9.51 cfs @ 12.31 hrs HW=98.33' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 9.51 cfs @ 1.50 fps)

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## Pond 7P: PP (w/ underdrain) w/ UG storage 4 - Chamber Wizard Field A

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

22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length

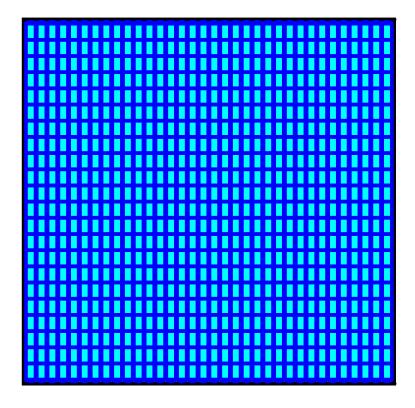
34 Rows x 51.0" Wide + 6.0" Spacing x 33 + 12.0" Side Stone x 2 = 163.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

748 Chambers x 45.9 cf = 34,363.1 cf Chamber Storage

91,426.4 cf Field - 34,363.1 cf Chambers = 57,063.3 cf Stone x 40.0% Voids = 22,825.3 cf Stone Storage

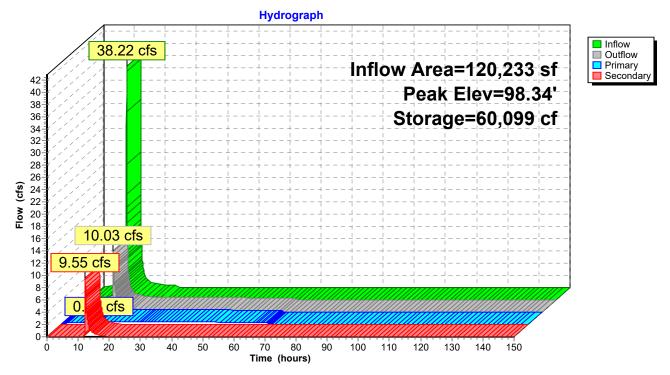
Chamber Storage + Stone Storage = 57,188.5 cf = 1.313 af Overall Storage Efficiency = 62.6% Overall System Size = 160.26' x 163.00' x 3.50'

748 Chambers 3,386.2 cy Field 2,113.5 cy Stone



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# Pond 7P: PP (w/ underdrain) w/ UG storage 4



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## Summary for Pond 8P: Existing Basin 1

Inflow Area = 444,913 sf, 80.94% Impervious, Inflow Depth = 11.36" for 100-Year 2100 event Inflow 36.28 cfs @ 12.10 hrs, Volume= 421.270 cf 24.83 cfs @ 12.51 hrs, Volume= Outflow = 421,271 cf, Atten= 32%, Lag= 24.5 min 20.17 cfs @ 12.51 hrs, Volume= Primary 413,133 cf Secondary = 4.40 cfs @ 12.51 hrs, Volume= 8,044 cf Routed to nonexistent node 67L Tertiary 0.27 cfs @ 12.51 hrs, Volume= 94 cf Routed to nonexistent node 67L

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 60.78' @ 12.51 hrs Surf.Area= 16,975 sf Storage= 25,375 cf

Plug-Flow detention time= 16.0 min calculated for 421,215 cf (100% of inflow)

Center-of-Mass det. time= 16.0 min ( 1,423.9 - 1,407.9 )

Volume	Inver	t Avail.Sto	rage Stora	ge Description
#1	58.00	' 33,88	31 cf Custo	om Stage Data (Prismatic)Listed below (Recalc)
Elevation (fee	et)	Surf.Area (sq-ft) 1,339	Inc.Store (cubic-feet)	
59.0		7,134	4,237	
60.0	00	12,352	9,743	13,980
61.0	00	18,300	15,326	29,306
61.2	25	18,300	4,575	33,881
Device	Routing	Invert	Outlet Devi	ices
#1	Primary	58.00'	24.0" Vert.	Low Flow Orifice C= 0.600
#2	Secondary	60.00'	24.0" W x	weir flow at low heads  18.0" H Vert. 2-YR Orifice   C= 0.600  weir flow at low heads
#3	Tertiary	60.75'	48.0" x 48.	.0" Horiz. Orifice/Grate C= 0.600
	-			weir flow at low heads
#4	Tertiary	61.00'	100.0' long	g Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=20.16 cfs @ 12.51 hrs HW=60.78' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 20.16 cfs @ 6.42 fps)

Secondary OutFlow Max=4.40 cfs @ 12.51 hrs HW=60.78' (Free Discharge) 2=2-YR Orifice (Orifice Controls 4.40 cfs @ 2.83 fps)

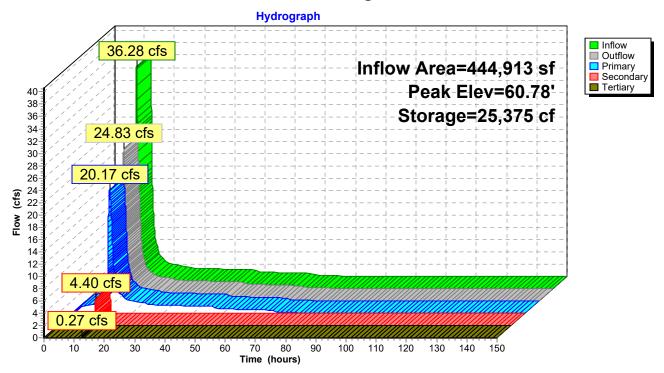
**Tertiary OutFlow** Max=0.23 cfs @ 12.51 hrs HW=60.78' (Free Discharge)

-3=Orifice/Grate (Weir Controls 0.23 cfs @ 0.54 fps)

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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# Pond 8P: Existing Basin 1



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## **Summary for Pond 9P: Existing Basin 2**

https://hydro.rutgers.edu/view-project/100596/

Inflow Area = 59,019 sf, 68.70% Impervious, Inflow Depth = 11.10" for 100-Year 2100 event 18.62 cfs @ 12.09 hrs. Volume= Inflow 54,580 cf Outflow = 17.30 cfs @ 12.12 hrs, Volume= 54,582 cf, Atten= 7%, Lag= 1.3 min 0.44 cfs @ 12.12 hrs, Volume= 23,554 cf Primary = 2.69 cfs @ 12.12 hrs, Volume= 19,921 cf Secondary = Tertiary 14.17 cfs @ 12.12 hrs, Volume= 11,108 cf

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 68.17' @ 12.12 hrs Surf.Area= 6,038 sf Storage= 11,343 cf

Plug-Flow detention time= 76.6 min calculated for 54,575 cf (100% of inflow)

Center-of-Mass det. time= 76.6 min (825.9 - 749.3)

Volume	Invert	: Avail.Sto	rage Storag	ge Description
#1	64.60'	13,40	1 cf Custo	om Stage Data (Prismatic)Listed below
Elevation (fee		urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.6	30	0	0	0
65.0	00	647	129	129
66.0	00	2,768	1,708	1,837
68.0	00	5,693	8,461	10,298
68.5	50	6,718	3,103	13,401
Device	Routing	Invert	Outlet Devi	
#1	Primary	64.60'		<b>3" Orifice</b> C= 0.600 Limited to weir flow at low heads
#2	Secondary		•	"Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Tertiary	67.75'		<b>0" Horiz. Orifice/Grate</b> C= 0.600 weir flow at low heads

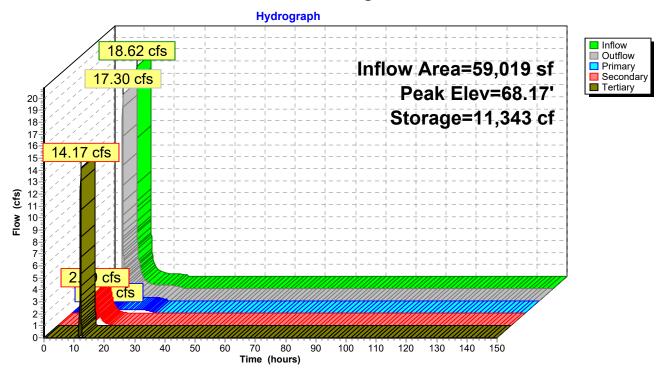
Primary OutFlow Max=0.44 cfs @ 12.12 hrs HW=68.17' (Free Discharge) 1=3" Orifice (Orifice Controls 0.44 cfs @ 8.93 fps)

Secondary OutFlow Max=2.69 cfs @ 12.12 hrs HW=68.17' (Free Discharge) 2=8" Sharp-Crested Rectangular Weir (Weir Controls 2.69 cfs @ 4.35 fps)

Tertiary OutFlow Max=14.05 cfs @ 12.12 hrs HW=68.17' (Free Discharge) -3=Orifice/Grate (Weir Controls 14.05 cfs @ 2.11 fps)

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# Pond 9P: Existing Basin 2



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## Summary for Pond 10P: PP (w/ underdrain) w/ UG storage 5

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 48,527 sf, 85.53% Impervious, Inflow Depth = 11.45" for 100-Year \_2100 event

Inflow = 14.25 cfs @ 12.13 hrs, Volume= 46,314 cf

Outflow = 13.84 cfs @ 12.16 hrs, Volume= 46,314 cf, Atten= 3%, Lag= 2.3 min

Primary = 0.47 cfs @ 12.17 hrs, Volume= 35,237 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 13.37 cfs @ 12.16 hrs, Volume= 11,077 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 98.10' @ 12.17 hrs Surf.Area= 11,632 sf Storage= 14,807 cf

Plug-Flow detention time= 221.2 min calculated for 46,314 cf (100% of inflow)

Center-of-Mass det. time= 221.2 min ( 965.4 - 744.2 )

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	3,687 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	5,184 cf	34.75'W x 167.38'L x 3.50'H Field A
			20,357 cf Overall - 7,396 cf Embedded = 12,961 cf x 40.0% Voids
#3A	95.00'	7,396 cf	ADS_StormTech SC-740 +Cap x 161 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
			161 Chambers in 7 Rows

16,268 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	5,816	0.0	0	0
97.67	5,816	35.0	1,364	1,364
97.83	5,816	15.0	140	1,503
98.00	5,816	15.0	148	1,652
98.35	5.816	100.0	2.036	3.687

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.47 cfs @ 12.17 hrs HW=98.09' (Free Discharge)
1=Restriction Orifice (Passes 0.47 cfs of 0.57 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.47 cfs @ 2.38 fps)
3=Perforations (Passes 0.47 cfs of 8.79 cfs potential flow)

Secondary OutFlow Max=12.42 cfs @ 12.16 hrs HW=98.09' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 12.42 cfs @ 0.78 fps)

Site 10 20240629

NOAA 24-hr C 100-Year \_2100 Rainfall=12.15"

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## Pond 10P: PP (w/ underdrain) w/ UG storage 5 - Chamber Wizard Field A

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

23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length

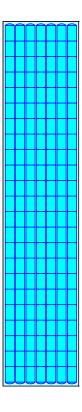
7 Rows x 51.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 34.75' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

161 Chambers x 45.9 cf = 7,396.3 cf Chamber Storage

20,357.2 cf Field - 7,396.3 cf Chambers = 12,960.8 cf Stone x 40.0% Voids = 5,184.3 cf Stone Storage

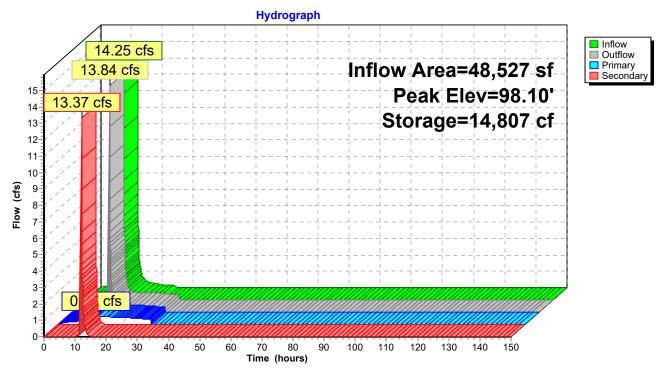
Chamber Storage + Stone Storage = 12,580.7 cf = 0.289 af Overall Storage Efficiency = 61.8% Overall System Size = 167.38' x 34.75' x 3.50'

161 Chambers 754.0 cy Field 480.0 cy Stone



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# Pond 10P: PP (w/ underdrain) w/ UG storage 5



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## Summary for Pond 11P: PP (w/ underdrain) w/ UG storage 6

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 57,652 sf, 78.51% Impervious, Inflow Depth = 11.29" for 100-Year \_2100 event

Inflow = 18.47 cfs @ 12.09 hrs, Volume= 54,251 cf

Outflow = 15.97 cfs @ 12.14 hrs, Volume= 54,251 cf, Atten= 14%, Lag= 2.8 min

Primary = 0.47 cfs @ 12.14 hrs, Volume = 42,376 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 15.50 cfs @ 12.14 hrs, Volume= 11,875 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 98.11' @ 12.14 hrs Surf.Area= 11,976 sf Storage= 19,976 cf

Plug-Flow detention time= 324.1 min calculated for 54,251 cf (100% of inflow)

Center-of-Mass det. time= 324.1 min ( 1,068.6 - 744.5 )

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,144 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	7,621 cf	96.50'W x 89.06'L x 3.50'H Field A
			$30,079 \text{ cf Overall} - 11,026 \text{ cf Embedded} = 19,053 \text{ cf } \times 40.0\% \text{ Voids}$
#3A	95.00'	11,026 cf	ADS_StormTech SC-740 +Cap x 240 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
			240 Chambers in 20 Rows

20,791 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	3,382	0.0	0	0
97.67	3,382	35.0	793	793
97.83	3,382	15.0	81	874
98.00	3,382	15.0	86	960
98.35	3,382	100.0	1,184	2,144

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.47 cfs @ 12.14 hrs HW=98.11' (Free Discharge)
1=Restriction Orifice (Passes 0.47 cfs of 0.57 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.47 cfs @ 2.38 fps)
3=Perforations (Passes 0.47 cfs of 8.80 cfs potential flow)

Secondary OutFlow Max=15.20 cfs @ 12.14 hrs HW=98.11' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 15.20 cfs @ 0.84 fps)

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## Pond 11P: PP (w/ underdrain) w/ UG storage 6 - Chamber Wizard Field A

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

12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length

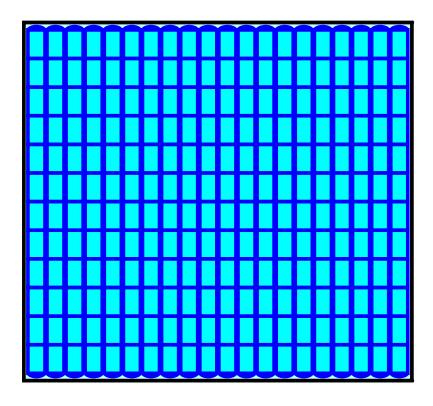
20 Rows x 51.0" Wide + 6.0" Spacing x 19 + 12.0" Side Stone x 2 = 96.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

240 Chambers x 45.9 cf = 11,025.6 cf Chamber Storage

30,078.9 cf Field - 11,025.6 cf Chambers = 19,053.3 cf Stone x 40.0% Voids = 7,621.3 cf Stone Storage

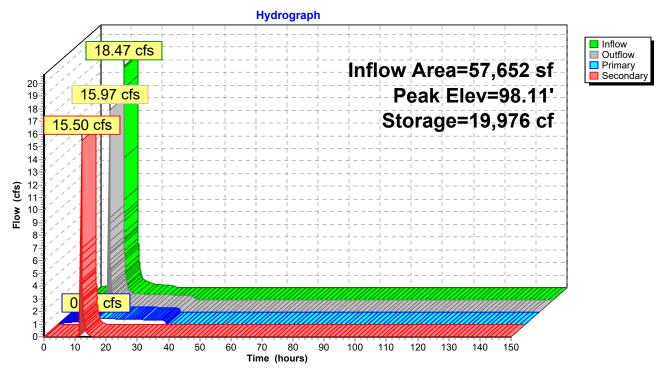
Chamber Storage + Stone Storage = 18,646.9 cf = 0.428 af Overall Storage Efficiency = 62.0% Overall System Size = 89.06' x 96.50' x 3.50'

240 Chambers 1,114.0 cy Field 705.7 cy Stone



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# Pond 11P: PP (w/ underdrain) w/ UG storage 6



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## Summary for Pond 12P: PP (w/ underdrain) w/ UG storage 7

[44] Hint: Outlet device #3 is below defined storage

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 67,756 sf, 72.56% Impervious, Inflow Depth = 11.16" for 100-Year \_2100 event

Inflow = 21.35 cfs @ 12.10 hrs, Volume= 63,011 cf

Outflow = 18.42 cfs @ 12.16 hrs, Volume= 63,011 cf, Atten= 14%, Lag= 3.9 min

Primary = 0.47 cfs @ 12.16 hrs, Volume= 49,575 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 17.96 cfs @ 12.16 hrs, Volume= 13,436 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 98.12' @ 12.16 hrs Surf.Area= 12,790 sf Storage= 25,262 cf

Plug-Flow detention time= 425.9 min calculated for 63,011 cf (100% of inflow)

Center-of-Mass det. time= 425.8 min ( 1,173.6 - 747.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	935 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,962 cf	77.50'W x 146.02'L x 3.50'H Field A
			39,607 cf Overall - 14,701 cf Embedded = 24,906 cf x 40.0% Voids
#3A	95.00'	14,701 cf	ADS_StormTech SC-740 +Cap x 320 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
			320 Chambers in 16 Rows

25,598 cf Total Available Storage

#### Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	1,474	0.0	0	0
97.67	1,474	35.0	346	346
97.83	1,474	15.0	35	381
98.00	1,474	15.0	38	419
98.35	1,474	100.0	516	935

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.47 cfs @ 12.16 hrs HW=98.11' (Free Discharge)
1=Restriction Orifice (Passes 0.47 cfs of 0.57 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.47 cfs @ 2.38 fps)
3=Perforations (Passes 0.47 cfs of 8.80 cfs potential flow)

Secondary OutFlow Max=16.94 cfs @ 12.16 hrs HW=98.12' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 16.94 cfs @ 0.87 fps)

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## Pond 12P: PP (w/ underdrain) w/ UG storage 7 - Chamber Wizard Field A

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

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

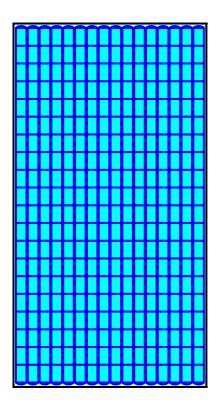
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

320 Chambers x 45.9 cf = 14,700.8 cf Chamber Storage

39,607.0 cf Field - 14,700.8 cf Chambers = 24,906.2 cf Stone x 40.0% Voids = 9,962.5 cf Stone Storage

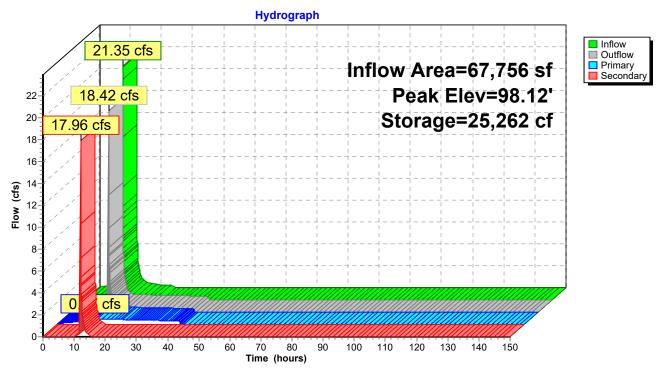
Chamber Storage + Stone Storage = 24,663.3 cf = 0.566 af Overall Storage Efficiency = 62.3% Overall System Size = 146.02' x 77.50' x 3.50'

320 Chambers 1,466.9 cy Field 922.5 cy Stone



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# Pond 12P: PP (w/ underdrain) w/ UG storage 7



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## Summary for Pond 13P: Bioretention Basin 4

Inflow Area = 329,976 sf, 48.67% Impervious, Inflow Depth = 10.33" for 100-Year 2100 event Inflow 55.02 cfs @ 12.16 hrs. Volume= 283.942 cf 40.30 cfs @ 12.24 hrs, Volume= Outflow = 282,681 cf, Atten= 27%, Lag= 4.7 min 0.42 cfs @ 12.24 hrs, Volume= Primary 53,654 cf Routed to nonexistent node 5R Secondary = 12.42 cfs @ 12.24 hrs, Volume= 178,726 cf Routed to nonexistent node 5R 27.45 cfs @ 12.24 hrs, Volume= 50.300 cf Tertiary Routed to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 52.56' @ 12.24 hrs Surf.Area= 10,478 sf Storage= 28,791 cf

Plug-Flow detention time= 139.7 min calculated for 282,681 cf (100% of inflow)

Center-of-Mass det. time= 133.5 min (1,097.5 - 964.0)

Volume	Inver	t Avail.Sto	rage Storaç	je Description	
#1	49.00	)' 33,39	95 cf Custo	m Stage Data (Prisr	natic)Listed below (Recalc)
Elevation (fee		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
49.0 52.0 53.0	00	4,800 10,478 10,478	0 22,917 10,478	0 22,917 33,395	
Device	Routing	Invert	Outlet Device	,	
#1	Primary	49.25'	3.0" Vert. L	ow Flow Orifice Carrier flow at low heads	= 0.600
#2	Secondar	y 51.00'	24.0" W x 1		DARY OUTLET C= 0.600
#3	Tertiary	52.00'		<b>O" Horiz. Orifice/Gra</b> reir flow at low heads	te C= 0.600

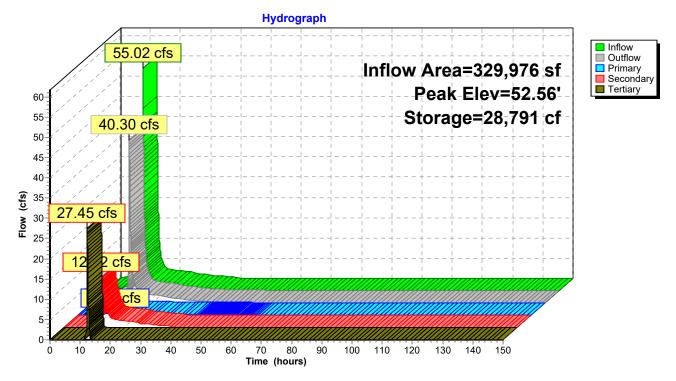
Primary OutFlow Max=0.42 cfs @ 12.24 hrs HW=52.56' (Free Discharge) -1=Low Flow Orifice (Orifice Controls 0.42 cfs @ 8.59 fps)

Secondary OutFlow Max=12.42 cfs @ 12.24 hrs HW=52.56' (Free Discharge) **2=SECONDARY OUTLET** (Orifice Controls 12.42 cfs @ 4.14 fps)

Tertiary OutFlow Max=27.44 cfs @ 12.24 hrs HW=52.56' (Free Discharge) 3=Orifice/Grate (Weir Controls 27.44 cfs @ 2.45 fps)

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### Pond 13P: Bioretention Basin 4



Pond 3P: Bioretention Basin 3

NOAA 24-hr C 100-Year \_Current Rainfall=8.95"

Peak Elev=67.30' Storage=9,437 cf Inflow=8.88 cfs 26,170 cf

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Time span=0.00-150.00 hrs, dt=0.02 hrs, 7501 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

readiffeating by Geof mar frai	is motified. If one routing by other me motified
Subcatchment 1S: DA 1: CN w/ IC areas F	Runoff Area=141,085 sf 17.73% Impervious Runoff Depth=6.40" Tc=18.6 min CN=75/98 Runoff=17.42 cfs 75,286 cf
Subcatchment 2S: DA 2: CN w/ IC areas	Runoff Area=21,583 sf 64.54% Impervious Runoff Depth=7.85" Tc=1.4 min CN=78/98 Runoff=4.92 cfs 14,112 cf
Subcatchment3S: DA 3: CN w/ IC areas	Runoff Area=40,101 sf 65.65% Impervious Runoff Depth=7.83" Tc=3.5 min CN=77/98 Runoff=8.88 cfs 26,170 cf
Subcatchment4S: DA 4: CN w/ IC areas	Runoff Area=84,260 sf 73.22% Impervious Runoff Depth=8.02" Tc=3.2 min CN=77/98 Runoff=19.07 cfs 56,348 cf
Subcatchment 5S: DA 5: CN w/ IC areas	Runoff Area=52,282 sf 79.56% Impervious Runoff Depth=8.21" Tc=2.5 min CN=78/98 Runoff=12.25 cfs 35,779 cf
Subcatchment 6S: DA 6: CN w/ IC areas	Runoff Area=76,785 sf 82.96% Impervious Runoff Depth=8.32" Tc=3.2 min CN=79/98 Runoff=17.77 cfs 53,210 cf
Subcatchment 7S: DA 7: CN w/ IC areas	Runoff Area=120,233 sf 94.05% Impervious Runoff Depth=8.56" Tc=3.5 min CN=78/98 Runoff=28.04 cfs 85,814 cf
Subcatchment 8S: DA 8: CN w/ IC areas	Runoff Area=111,353 sf 71.87% Impervious Runoff Depth=7.85" Tc=2.0 min CN=73/98 Runoff=25.63 cfs 72,862 cf
Subcatchment9S: DA 9: CN w/ IC areas	Runoff Area=59,019 sf 68.70% Impervious Runoff Depth=7.95" Tc=2.8 min CN=78/98 Runoff=13.46 cfs 39,088 cf
Subcatchment 10S: DA 10: CN w/ IC areas	Runoff Area=48,527 sf 85.53% Impervious Runoff Depth=8.29" Tc=5.8 min CN=74/98 Runoff=10.38 cfs 33,509 cf
Subcatchment 11S: DA 11: CN w/ IC areas	Runoff Area=57,652 sf 78.51% Impervious Runoff Depth=8.13" Tc=2.5 min CN=76/98 Runoff=13.41 cfs 39,077 cf
Subcatchment 12S: DA 12: CN w/ IC areas	Runoff Area=67,756 sf 72.56% Impervious Runoff Depth=8.01" Tc=2.9 min CN=77/98 Runoff=15.45 cfs 45,216 cf
Subcatchment 13S: DA 13: CN w/ IC areas F	Runoff Area=156,041 sf 15.80% Impervious Runoff Depth=6.25" Tc=24.6 min CN=74/98 Runoff=16.52 cfs 81,215 cf
	Peak Elev=65.46' Storage=21,262 cf Inflow=17.42 cfs 75,286 cf s 45,339 cf Tertiary=0.00 cfs 0 cf Outflow=11.74 cfs 75,287 cf
Pond 2P: Bioretention Basin 2 Primary=0.36 cfs 12,259 cf Secondary=0.68	Peak Elev=70.72' Storage=5,980 cf Inflow=4.92 cfs 14,112 cf cfs 1,512 cf Tertiary=0.00 cfs 0 cf Outflow=1.04 cfs 13,771 cf

Primary=0.40 cfs 17,407 cf Secondary=4.57 cfs 8,302 cf Tertiary=0.00 cfs 0 cf Outflow=4.97 cfs 25,709 cf

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Pond 4P: PP (w/ underdrain) w/ UG Peak Elev=97.93' Storage=33,697 cf Inflow=19.07 cfs 56,348 cf Primary=0.46 cfs 56,348 cf Secondary=0.00 cfs 0 cf Outflow=0.46 cfs 56,348 cf

Pond 5P: PP (w/ underdrain) w/ UG Peak Elev=97.76' Storage=22,412 cf Inflow=12.25 cfs 35,779 cf Primary=0.25 cfs 35,779 cf Secondary=0.00 cfs 0 cf Outflow=0.25 cfs 35,779 cf

Pond 6P: PP (w/ underdrain) w/ UG Peak Elev=97.93' Storage=37,362 cf Inflow=17.77 cfs 53,210 cf Primary=0.25 cfs 53,210 cf Secondary=0.00 cfs 0 cf Outflow=0.25 cfs 53,210 cf

Pond 7P: PP (w/ underdrain) w/ UG Peak Elev=97.95' Storage=57,964 cf Inflow=28.04 cfs 85,814 cf Primary=0.46 cfs 85,814 cf Secondary=0.00 cfs 0 cf Outflow=0.46 cfs 85,814 cf

**Pond 8P: Existing Basin 1** Peak Elev=59.89' Storage=12,668 cf Inflow=26.84 cfs 304,013 cf Primary=14.40 cfs 304,013 cf Secondary=0.00 cfs 0 cf Tertiary=0.00 cfs 0 cf Outflow=14.40 cfs 304,013 cf

**Pond 9P: Existing Basin 2** Peak Elev=68.05' Storage=10,616 cf Inflow=13.46 cfs 39,088 cf Primary=0.43 cfs 20,114 cf Secondary=2.57 cfs 14,376 cf Tertiary=8.66 cfs 4,595 cf Outflow=11.66 cfs 39,085 cf

Pond 10P: PP (w/ underdrain) w/ UG Peak Elev=98.02' Storage=14,344 cf Inflow=10.38 cfs 33,509 cf Primary=0.46 cfs 31,168 cf Secondary=1.56 cfs 2,341 cf Outflow=2.02 cfs 33,509 cf

Pond 11P: PP (w/ underdrain) w/ UG Peak Elev=98.01' Storage=19,638 cf Inflow=13.41 cfs 39,077 cf Primary=0.46 cfs 38,066 cf Secondary=0.62 cfs 1,012 cf Outflow=1.08 cfs 39,077 cf

Pond 12P: PP (w/ underdrain) w/ UG Peak Elev=98.00' Storage=25,088 cf Inflow=15.45 cfs 45,216 cf Primary=0.46 cfs 45,056 cf Secondary=0.14 cfs 160 cf Outflow=0.60 cfs 45,216 cf

**Pond 13P: Bioretention Basin 4** Peak Elev=52.24' Storage=25,461 cf Inflow=17.84 cfs 199,018 cf Primary=0.40 cfs 50,099 cf Secondary=8.90 cfs 135,873 cf Tertiary=7.83 cfs 11,778 cf Outflow=17.13 cfs 197,749 cf

Total Runoff Area = 1,036,677 sf Runoff Volume = 657,688 cf Average Runoff Depth = 7.61" 39.57% Pervious = 410,178 sf 60.43% Impervious = 626,499 sf

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## Summary for Subcatchment 1S: DA 1: CN w/ IC areas

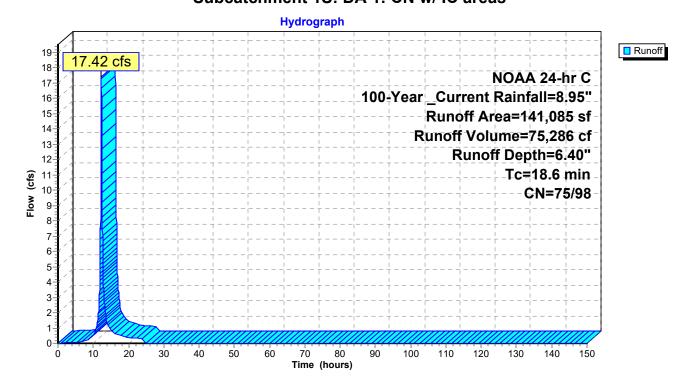
Runoff = 17.42 cfs @ 12.27 hrs, Volume= 75,286 cf, Depth= 6.40"

Routed to Pond 1P: Bioretention Basin 1

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				
*	25,014	98	Impervious HSG C				
	26,886	70	Brush (fair) HSG C				
	45,464	79	Open Space (fair) HSG C				
*	10,665	74	Open Space (good) HSG C				
*	33,056	73	Woods (fair) HSG C				
	141,085	79	Weighted Average				
	116,071	75	82.27% Pervious Area				
	25,014	98	17.73% Impervious Area				
	Tc Length	Slop	pe Velocity Capacity Description				
(	min) (feet)	(ft/	/ft) (ft/sec) (cfs)				
	18.6		Direct Entry, Direct (see AutoCAD)				

## Subcatchment 1S: DA 1: CN w/ IC areas



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

[49] Hint: Tc<2dt may require smaller dt

14,112 cf, Depth= 7.85" Runoff 4.92 cfs @ 12.08 hrs, Volume=

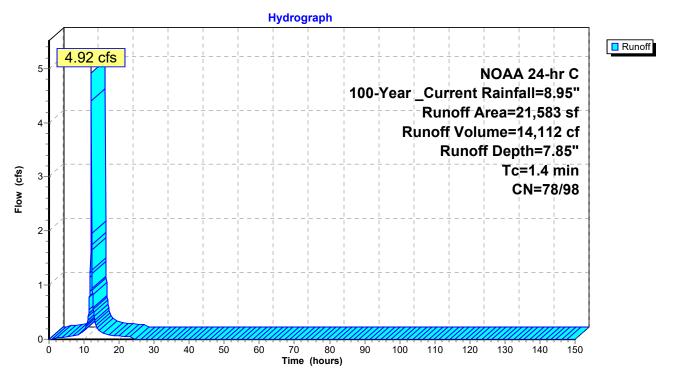
Routed to Pond 2P: Bioretention Basin 2

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				
*	13,929	98	Impervious HSG C	_			
	6,668	79	pen Space (fair) HSG C				
*	986	74	Open Space (good) HSG C				
	21,583	91	Weighted Average	_			
	7,654	78	35.46% Pervious Area				
	13,929	98	64.54% Impervious Area				
	Tc Length (min) (feet)	Slop (ft/					
	1.4	,	Direct Entry, Direct (see AutoCAD)	-			

**Direct Entry, Direct (see AutoCAD)** 

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



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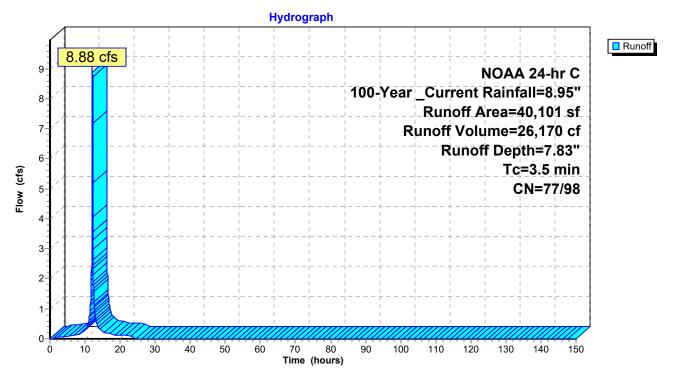
## Summary for Subcatchment 3S: DA 3: CN w/ IC areas

26,170 cf, Depth= 7.83" Runoff 8.88 cfs @ 12.10 hrs, Volume= Routed to Pond 3P: Bioretention Basin 3

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					
*	26,326	98	Impervious HSG C					
	9,202	79	Open Space (fair) HSG C					
*	4,573	74	Open Space (good) HSG C					
	40,101	91	Weighted Average					
	13,775	77	34.35% Pervious Area					
	26,326	98	65.65% Impervious Area					
	Ta lawath	Ola		O:h.	Description			
,	Tc Length	Slop	,	Capacity	Description			
(	min) (feet)	(ft/1	ft) (ft/sec)	(cfs)				
	3.5				Direct Entry, Direct (see AutoCAD)			

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



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

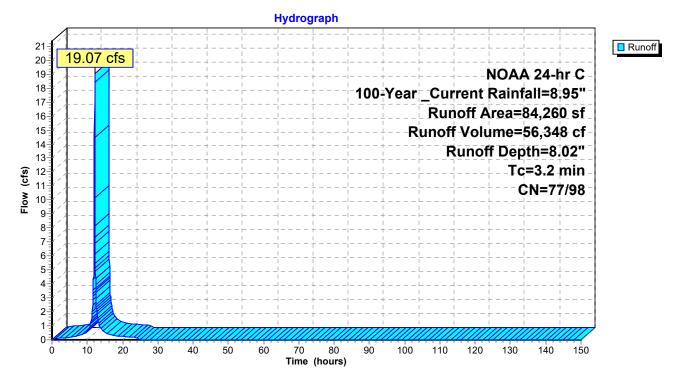
Runoff = 19.07 cfs @ 12.10 hrs, Volume= 56,348 cf, Depth= 8.02" Routed to Pond 4P : PP (w/ underdrain) w/ UG storage 1

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					
*	61,698	98	Impervious HSG C					
	13,143	79	Open Space (fair) HSG C					
*	9,419	74	Open Space (good) HSG C					
	84,260	92	Weighted Average					
	22,562	77	26.78% Pervious Area					
	61,698	98	73.22% Impervious Area					
	Tc Length	Slop		Capacity	Description			
<u>(r</u>	min) (feet)	(ft/f	t) (ft/sec)	(cfs)				
	3.2				Direct Entry, Direct (see AutoCAD)			

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



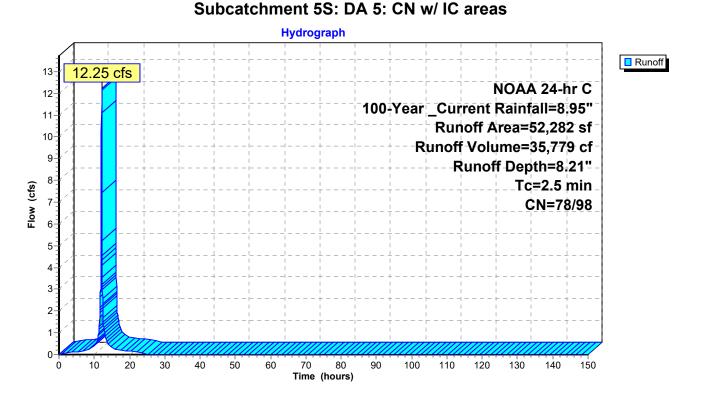
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## Summary for Subcatchment 5S: DA 5: CN w/ IC areas

Runoff = 12.25 cfs @ 12.09 hrs, Volume= 35,779 cf, Depth= 8.21" Routed to Pond 5P : PP (w/ underdrain) w/ UG storage 2

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							
*	41,595	98	Impervious I	mpervious HSG C						
	444	70	Brush (fair)	HSG C						
	9,377	79	Open Space	(fair) HSG	3 C					
*	866	74	Open Space	(good) HS	SG C					
	52,282	94	Weighted Av	Weighted Average						
	10,687	78	20.44% Per	vious Area						
	41,595	98	79.56% Imp	ervious Are	ea					
	Tc Length	Slop	e Velocity	Capacity	Description					
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)						
	2.5				Direct Entry, Direct (see AutoCAD)					



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## Summary for Subcatchment 6S: DA 6: CN w/ IC areas

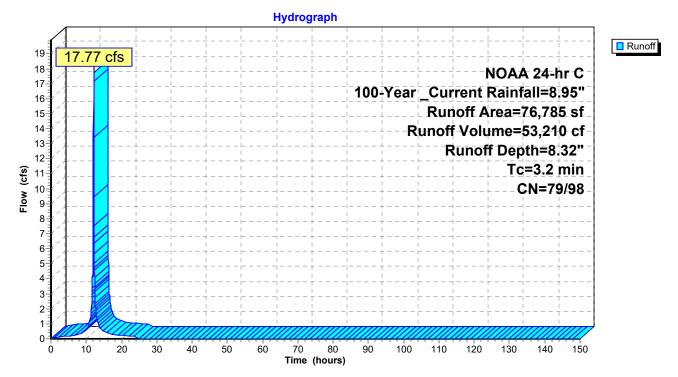
17.77 cfs @ 12.10 hrs, Volume= Runoff 53,210 cf, Depth= 8.32" Routed to Pond 6P: PP (w/ underdrain) w/ UG storage 3

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	Description						
*	63,699	98	Impervious	HSG C						
	12,708	79	Open Space	e (fair) HSC	G C					
*	378	74	Open Space	e (good) HS	SG C					
	76,785	95	Weighted A	Veighted Average						
	13,086	79	17.04% Per	17.04% Pervious Area						
	63,699	98	82.96% Imp	ervious Are	ea					
	Tc Length	Slop	oe Velocity	Capacity	Description					
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)						
	3.2				Direct Entry, Direct (see AutoCAD)					

**Direct Entry, Direct (see AutoCAD)** 

#### Subcatchment 6S: DA 6: CN w/ IC areas



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## Summary for Subcatchment 7S: DA 7: CN w/ IC areas

Runoff = 28.04 cfs @ 12.10 hrs, Volume= 85,814 cf, Depth= 8.56" Routed to Pond 7P : PP (w/ underdrain) w/ UG storage 4

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					
*	113,075	98	Impervious HSG C					
	5,111	79	Open Space (fair) HSG C					
*	2,047	74	Open Space (good) HSG C					
	120,233	97	Weighted Average					
	7,158	78	5.95% Pervious Area					
	113,075	98	94.05% Impervious Area					
	Tc Length	Slop	, ,	cription				
<u>(r</u>	min) (feet)	(ft/1	) (ft/sec) (cfs)					
	3.5		Dire	ect Entry, Direct (see AutoCAD)				

## Subcatchment 7S: DA 7: CN w/ IC areas

Hydrograph Runoff 30 28.04 cfs NOAA 24-hr C 28 26 100-Year Current Rainfall=8.95" 24 Runoff Area=120,233 sf 22-Runoff Volume=85,814 cf 20 Runoff Depth=8.56" Tc=3.5 min 18 16-CN=78/98 **≥** 14 12-10-8-6-4 2-10 80 100 150 Time (hours)

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## Summary for Subcatchment 8S: DA 8: CN w/ IC areas

[49] Hint: Tc<2dt may require smaller dt

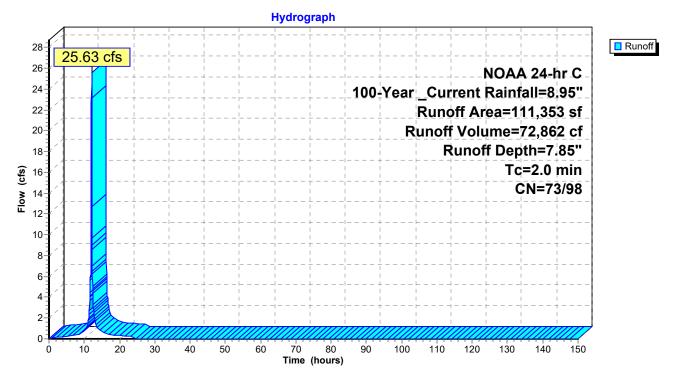
Runoff = 25.63 cfs @ 12.09 hrs, Volume= 72,862 cf, Depth= 7.85"

Routed to Pond 8P: Existing Basin 1

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	
*	80,033	98	Impervious HSG C	
	3,876	70	Brush (fair) HSG C	
	419	79	Open Space (fair) HSG C	
*	12,431	74	Open Space (good) HSG C	
*	14,594	73	Woods (fair) HSG C	
	111,353	91	Weighted Average	
	31,320	73	28.13% Pervious Area	
	80,033	98	71.87% Impervious Area	
(r	Tc Length	Slop (ft/	pe Velocity Capacity Description /ft) (ft/sec) (cfs)	
	2.0		Direct Entry, Direct (see AutoCAD)	

#### Subcatchment 8S: DA 8: CN w/ IC areas



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## Summary for Subcatchment 9S: DA 9: CN w/ IC areas

Runoff = 13.46 cfs @ 12.09 hrs, Volume= 39,088 cf, Depth= 7.95"

Routed to Pond 9P : Existing Basin 2

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						
*	40,544	98	Impervious H	ISG C					
	15,969	79	Open Space	pen Space (fair) HSG C					
*	2,506	74	Open Space	(good) HS	SG C				
	59,019	92	Weighted Ave	Veighted Average					
	18,475	78	31.30% Pervi	31.30% Pervious Area					
	40,544	98	68.70% Impe	ervious Are	ea				
	Tc Length	Slop		Capacity	Description				
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)					
	2.8				Direct Entry, Direct (see AutoCAD)				

#### Subcatchment 9S: DA 9: CN w/ IC areas

Hydrograph Runoff 13.46 cfs NOAA 24-hr C 13 100-Year \_Current Rainfall=8.95" 12 Runoff Area=59,019 sf 11 Runoff Volume=39,088 cf 10 Runoff Depth=7.95" Tc=2.8 min Flow (cfs) 8-CN=78/98 7-6-5-4-3-2-10 80 100 150 Time (hours)

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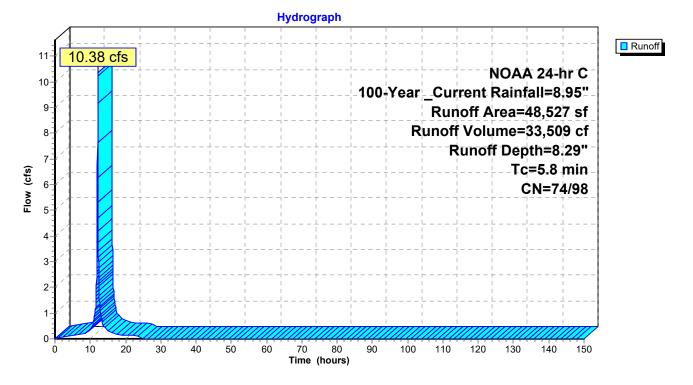
## Summary for Subcatchment 10S: DA 10: CN w/ IC areas

Runoff = 10.38 cfs @ 12.13 hrs, Volume= 33,509 cf, Depth= 8.29" Routed to Pond 10P : PP (w/ underdrain) w/ UG storage 5

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						
*	41,506	98	Impervious I	HSG C					
	60	79	Open Space	(fair) HSC	G C				
*	6,961	74	Open Space	Open Space (good) HSG C					
	48,527	95	Weighted Av	Veighted Average					
	7,021	74	14.47% Per	14.47% Pervious Area					
	41,506	98	85.53% Imp	ervious Are	ea				
<u>(</u> r	Tc Length min) (feet)	Slop (ft/f	,	Capacity (cfs)	Description				
	5.8				Direct Entry, Direct (see AutoCAD)				

#### Subcatchment 10S: DA 10: CN w/ IC areas



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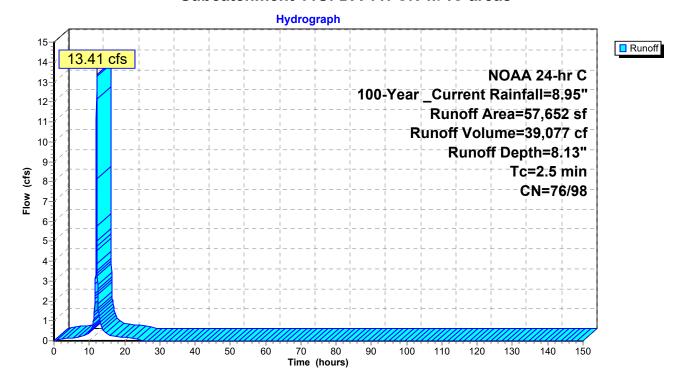
## Summary for Subcatchment 11S: DA 11: CN w/ IC areas

Runoff = 13.41 cfs @ 12.09 hrs, Volume= 39,077 cf, Depth= 8.13" Routed to Pond 11P : PP (w/ underdrain) w/ UG storage 6

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	
*	45,264	98	Impervious HSG C	
	5,795	79	Open Space (fair) HSG C	
*	6,593	74	Open Space (good) HSG C	
	57,652	93	Weighted Average	
	12,388	76	21.49% Pervious Area	
	45,264	98	78.51% Impervious Area	
	Tc Length (min) (feet)	Slop (ft/		
	2.5		Direct Entry, Direct (see AutoCAD)	

#### Subcatchment 11S: DA 11: CN w/ IC areas



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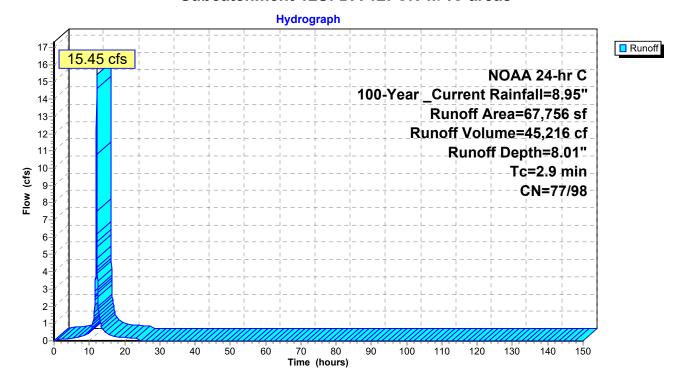
## Summary for Subcatchment 12S: DA 12: CN w/ IC areas

Runoff = 15.45 cfs @ 12.10 hrs, Volume= 45,216 cf, Depth= 8.01" Routed to Pond 12P : PP (w/ underdrain) w/ UG storage 7

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						
*	49,166	98	Impervious H	ISG C					
	11,017	79	Open Space	pen Space (fair) HSG C					
*	7,573	74	Open Space	(good) HS	SG C				
	67,756	92	Weighted Av	Veighted Average					
	18,590	77	27.44% Perv	∕ious Area					
	49,166	98	72.56% Impe	ervious Are	ea				
		٠.							
	Tc Length	Slop		Capacity	Description				
<u>(r</u>	min) (feet)	(ft/1	ft) (ft/sec)	(cfs)					
	2.9				Direct Entry, Direct (see AutoCAD)				

#### Subcatchment 12S: DA 12: CN w/ IC areas



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## Summary for Subcatchment 13S: DA 13: CN w/ IC areas

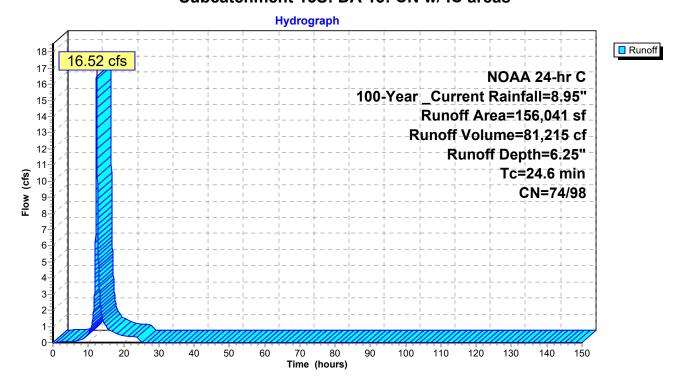
81,215 cf, Depth= 6.25" Runoff 16.52 cfs @ 12.35 hrs, Volume=

Routed to Pond 13P: Bioretention Basin 4

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
4	* 24,650	98	Impervious HSG C
	42,240	79	Open Space (fair) HSG C
4	* 20,548	74	Open Space (good) HSG C
_	68,603	70	Woods, Good, HSG C
_	156,041	77	Weighted Average
	131,391	74	84.20% Pervious Area
	24,650	98	15.80% Impervious Area
	Tc Length (min) (feet)	Slo <sub>l</sub> (ft/	
-	, , , ,	(IV	
	24 6		Direct Entry Direct (see AutoCAD)

## Subcatchment 13S: DA 13: CN w/ IC areas



Volume

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## **Summary for Pond 1P: Bioretention Basin 1**

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 141,085 sf, 17.73% Impervious, Inflow Depth = 6.40" for 100-Year Current event 17.42 cfs @ 12.27 hrs, Volume= Inflow 75,286 cf 75,287 cf, Atten= 33%, Lag= 10.5 min Outflow 11.74 cfs @ 12.44 hrs, Volume= 0.45 cfs @ 12.44 hrs, Volume= Primary 29,948 cf Routed to nonexistent node 5R 11.30 cfs @ 12.44 hrs. Volume= Secondary = 45.339 cf Routed to nonexistent node 5R 0.00 cfs @ 0.00 hrs, Volume= Tertiary 0 cf

Routed to nonexistent node 5R

Invert

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 65.46' @ 12.44 hrs Surf.Area= 9,579 sf Storage= 21,262 cf

Plug-Flow detention time= 140.6 min calculated for 75,277 cf (100% of inflow) Center-of-Mass det. time= 140.6 min (947.5 - 806.9)

Avail Storage Storage Description

#1	62.50'	37,960 cf	Custor	n Stage Data (Pr	smatic)Listed b	pelow (Recalc)	
Elevation (feet)	Surf.Area (sq-fl		c.Store c-feet)	Cum.Store (cubic-feet)			
62.50 67.00	4,80 12,07		0 37,960	0 37,960			
07.00	,		,	,			

Device	Routing	Invert	Outlet Devices			
#1	Primary	61.75'	3.0" Vert. Low Flow Orifice C= 0.600			
			Limited to weir flow at low heads			
#2	Secondary	64.00'	<b>24.0" W x 18.0" H Vert. SECONDARY OUTLET</b> C= 0.600			
	•		Limited to weir flow at low heads			
#3	Tertiary	66.25'	<b>60.0" x 60.0" Horiz. Orifice/Grate</b> C= 0.600			
	•		Limited to weir flow at low heads			

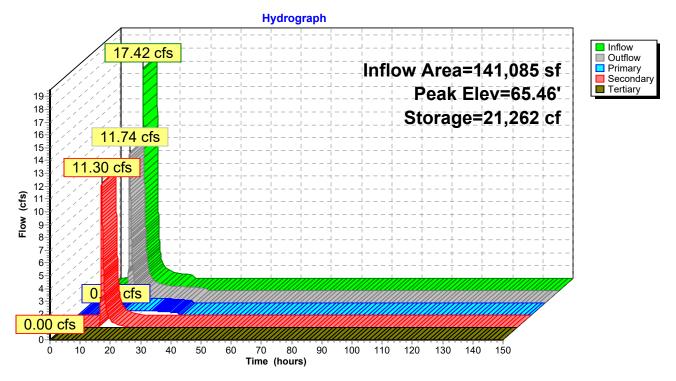
Primary OutFlow Max=0.45 cfs @ 12.44 hrs HW=65.46' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 0.45 cfs @ 9.11 fps)

Secondary OutFlow Max=11.29 cfs @ 12.44 hrs HW=65.46' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 11.29 cfs @ 3.87 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=62.50' (Free Discharge) 3=Orifice/Grate (Controls 0.00 cfs)

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#### Pond 1P: Bioretention Basin 1



#3

Tertiary

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#### **Summary for Pond 2P: Bioretention Basin 2**

Inflow Area = 21,583 sf, 64.54% Impervious, Inflow Depth = 7.85" for 100-Year Current event Inflow 4.92 cfs @ 12.08 hrs. Volume= 14.112 cf 1.04 cfs @ 12.33 hrs, Volume= Outflow 13,771 cf, Atten= 79%, Lag= 14.5 min 0.36 cfs @ 12.33 hrs, Volume= Primary 12,259 cf Routed to nonexistent node 5R 0.68 cfs @ 12.33 hrs, Volume= Secondary = 1,512 cf Routed to nonexistent node 5R 0.00 cfs @ 0.00 hrs, Volume= Tertiary 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 70.72' @ 12.33 hrs Surf.Area= 3,111 sf Storage= 5,980 cf

Plug-Flow detention time= 177.1 min calculated for 13,769 cf (98% of inflow) Center-of-Mass det. time= 161.7 min (916.5 - 754.8)

<u>Volume</u>	Inv	<u>ert Avail</u>	l.Storage	Storage	Description			
#1	68.0	00'	14,805 cf	Custom	Stage Data (Pr	rismatic)Listed below (Recalc)		
Elevation (fee	et)	Surf.Area (sq-ft)		:Store c-feet)	Cum.Store (cubic-feet)			
68.0 73.0		1,281 4,641	1	0  4,805	0 14,805			
Device	Routing	ln۱	ert Outle	et Devices	3			
#1 Primary		68.		3.0" Vert. Low Flow Orifice C= 0.600 Limited to weir flow at low heads 24.0" W x 18.0" H Vert. SECONDARY OUTLET C= 0.600 Limited to weir flow at low heads				
#2	Seconda	Secondary 70.50'						

Limited to weir flow at low heads

**60.0" x 60.0" Horiz. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.36 cfs @ 12.33 hrs HW=70.72' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 0.36 cfs @ 7.38 fps)

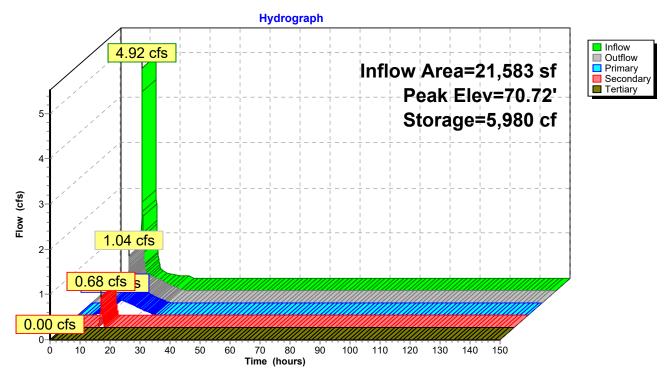
72.75'

Secondary OutFlow Max=0.67 cfs @ 12.33 hrs HW=70.72' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 0.67 cfs @ 1.51 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=68.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 2P: Bioretention Basin 2



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#### **Summary for Pond 3P: Bioretention Basin 3**

Inflow Area = 40,101 sf, 65.65% Impervious, Inflow Depth = 7.83" for 100-Year Current event Inflow 8.88 cfs @ 12.10 hrs. Volume= 26.170 cf 4.97 cfs @ 12.17 hrs, Volume= Outflow 25,709 cf, Atten= 44%, Lag= 3.7 min 0.40 cfs @ 12.17 hrs, Volume= Primary 17,407 cf Routed to nonexistent node 5R 4.57 cfs @ 12.17 hrs, Volume= Secondary = 8,302 cf Routed to nonexistent node 5R Tertiary 0.00 cfs @ 0.00 hrs. Volume= 0 cfRouted to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 67.30' @ 12.17 hrs Surf.Area= 3,965 sf Storage= 9,437 cf

Plug-Flow detention time= 172.2 min calculated for 25,709 cf (98% of inflow)

Center-of-Mass det. time= 160.3 min (916.7 - 756.4)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	64.00'	17,16	60 cf Custom	Stage Data (Pr	rismatic)Listed below (Recalc)
Elevatio (fee 64.0 69.0	et) 00	urf.Area (sq-ft) 1,760 5,104	Inc.Store (cubic-feet) 0 17,160	Cum.Store (cubic-feet) 0 17,160	
Device	Routing	Invert	Outlet Devices	S	
#1	Primary	64.25'		w Flow Orifice	
#2	Secondary	66.50'	24.0" W x 18.	r flow at low hea <b>0" H Vert. SEC</b> 0 r flow at low hea	ONDARY OUTLET C= 0.600
#3	Tertiary	68.75'		Horiz. Orifice/Or flow at low hea	Grate C= 0.600 ads

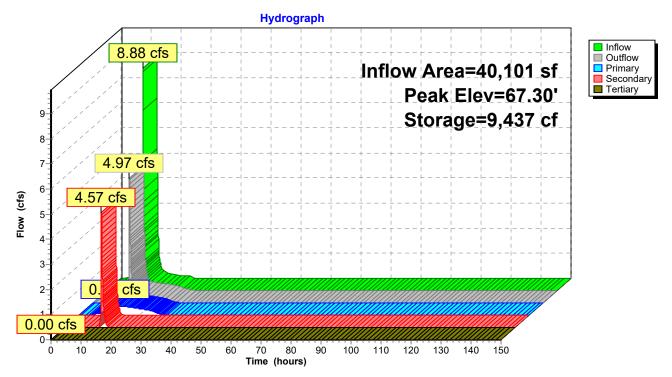
Primary OutFlow Max=0.40 cfs @ 12.17 hrs HW=67.29' (Free Discharge)
1=Low Flow Orifice (Orifice Controls 0.40 cfs @ 8.23 fps)

Secondary OutFlow Max=4.54 cfs @ 12.17 hrs HW=67.29' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 4.54 cfs @ 2.86 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=64.00' (Free Discharge) 3=Orifice/Grate ( Controls 0.00 cfs)

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#### Pond 3P: Bioretention Basin 3



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## Summary for Pond 4P: PP (w/ underdrain) w/ UG storage 1

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 84,260 sf, 73.22% Impervious, Inflow Depth = 8.02" for 100-Year \_Current event

Inflow = 19.07 cfs @ 12.10 hrs, Volume= 56,348 cf

Outflow = 0.46 cfs @ 15.36 hrs, Volume= 56,348 cf, Atten= 98%, Lag= 195.5 min

Primary = 0.46 cfs @ 15.36 hrs, Volume= 56,348 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 97.93' @ 15.36 hrs Surf.Area= 21,558 sf Storage= 33,697 cf

Plug-Flow detention time= 713.3 min calculated for 56,341 cf (100% of inflow)

Center-of-Mass det. time= 713.3 min ( 1,465.1 - 751.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	3,624 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	12,961 cf	68.00'W x 217.22'L x 3.50'H Field A
			51,698 cf Overall - 19,295 cf Embedded = 32,403 cf x 40.0% Voids
#3A	95.00'	19,295 cf	ADS_StormTech SC-740 +Cap x 420 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
			420 Chambers in 14 Rows

35,880 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	6,787	0.0	0	0
97.67	6,787	35.0	1,592	1,592
97.83	6,787	15.0	163	1,754
98.00	6,787	15.0	173	1,928
98.25	6,787	100.0	1.697	3,624

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	67.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

#### Site 10 20240629

NOAA 24-hr C 100-Year \_Current Rainfall=8.95"

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Primary OutFlow Max=0.46 cfs @ 15.36 hrs HW=97.93' (Free Discharge)
1=Restriction Orifice (Passes 0.46 cfs of 0.57 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.46 cfs @ 2.34 fps)
3=Perforations (Passes 0.46 cfs of 8.67 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Site 10 20240629

NOAA 24-hr C 100-Year Current Rainfall=8.95"

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## Pond 4P: PP (w/ underdrain) w/ UG storage 1 - Chamber Wizard Field A

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

30 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 215.22' Row Length +12.0" End Stone x 2 = 217.22' Base Length

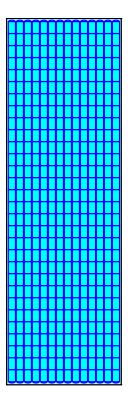
14 Rows x 51.0" Wide + 6.0" Spacing x 13 + 12.0" Side Stone x 2 = 68.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

420 Chambers x 45.9 cf = 19,294.8 cf Chamber Storage

51,697.6 cf Field - 19,294.8 cf Chambers = 32,402.8 cf Stone x 40.0% Voids = 12,961.1 cf Stone Storage

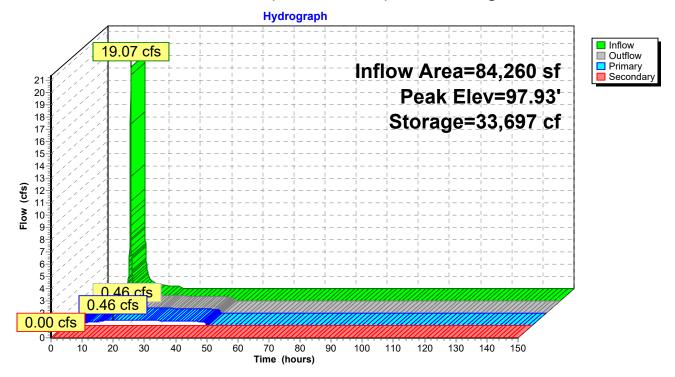
Chamber Storage + Stone Storage = 32,255.9 cf = 0.740 af Overall Storage Efficiency = 62.4% Overall System Size = 217.22' x 68.00' x 3.50'

420 Chambers 1,914.7 cy Field 1,200.1 cy Stone



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Pond 4P: PP (w/ underdrain) w/ UG storage 1



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## Summary for Pond 5P: PP (w/ underdrain) w/ UG storage 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 52,282 sf, 79.56% Impervious, Inflow Depth = 8.21" for 100-Year \_Current event

Inflow = 12.25 cfs @ 12.09 hrs, Volume= 35,779 cf

Outflow = 0.25 cfs @ 16.25 hrs, Volume= 35,779 cf, Atten= 98%, Lag= 249.4 min

Primary = 0.25 cfs @ 16.25 hrs, Volume= 35,779 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 97.76' @ 16.25 hrs Surf.Area= 14,913 sf Storage= 22,412 cf

Plug-Flow detention time= 875.2 min calculated for 35,774 cf (100% of inflow)

Center-of-Mass det. time= 875.3 min ( 1,622.7 - 747.4 )

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,510 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,005 cf	77.50'W x 131.78'L x 3.50'H Field A
			35,744 cf Overall - 13,231 cf Embedded = 22,514 cf x 40.0% Voids
#3A	95.00'	13,231 cf	ADS_StormTech SC-740 +Cap x 288 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
			288 Chambers in 16 Rows

24,746 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.25	4,700	100.0	1,175	2,510

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	<b>2.0" Vert. Restriction Orifice</b> C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	<b>0.9" x 0.1" Horiz. Perforations X 400.00 columns</b> X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	132.0' long x 2.0' breadth Broad-Crested Rectangular Weir 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 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

#### Site 10 20240629

NOAA 24-hr C 100-Year \_Current Rainfall=8.95"

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Primary OutFlow Max=0.25 cfs @ 16.25 hrs HW=97.76' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.25 cfs @ 11.40 fps)
2=6" HDPE Underdrain (Passes 0.25 cfs of 0.45 cfs potential flow)
3=Perforations (Passes 0.25 cfs of 8.54 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 5P: PP (w/ underdrain) w/ UG storage 2 - Chamber Wizard Field A

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

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length

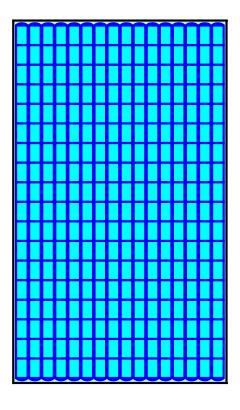
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

288 Chambers x 45.9 cf = 13,230.7 cf Chamber Storage

35,744.4 cf Field - 13,230.7 cf Chambers = 22,513.7 cf Stone x 40.0% Voids = 9,005.5 cf Stone Storage

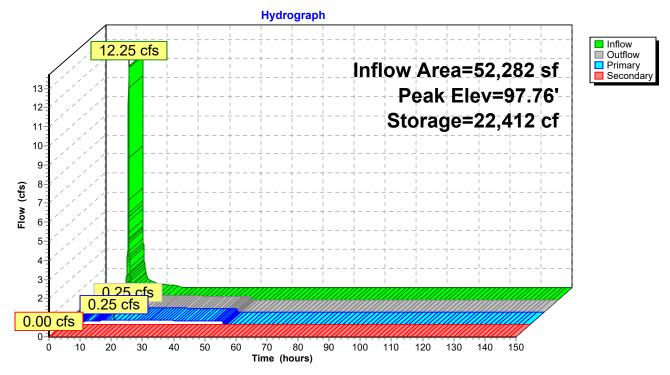
Chamber Storage + Stone Storage = 22,236.2 cf = 0.510 af Overall Storage Efficiency = 62.2% Overall System Size = 131.78' x 77.50' x 3.50'

288 Chambers 1,323.9 cy Field 833.8 cy Stone



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Pond 5P: PP (w/ underdrain) w/ UG storage 2



#### Site 10\_20240629

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## Summary for Pond 6P: PP (w/ underdrain) w/ UG storage 3

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 76,785 sf, 82.96% Impervious, Inflow Depth = 8.32" for 100-Year \_Current event

Inflow = 17.77 cfs @ 12.10 hrs, Volume= 53,210 cf

Outflow = 0.25 cfs @ 18.14 hrs, Volume= 53,210 cf, Atten= 99%, Lag= 362.5 min

Primary = 0.25 cfs @ 18.14 hrs, Volume= 53,210 cf

Routed to Pond 8P: Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 97.93' @ 18.14 hrs Surf.Area= 20,165 sf Storage= 37,362 cf

Plug-Flow detention time= 1,456.4 min calculated for 53,210 cf (100% of inflow)

Center-of-Mass det. time= 1,456.4 min (2,202.5 - 746.1)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,054 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	14,875 cf	144.00'W x 117.54'L x 3.50'H Field A
			59,238 cf Overall - 22,051 cf Embedded = 37,187 cf x 40.0% Voids
#3A	95.00'	22,051 cf	ADS_StormTech SC-740 +Cap x 480 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
			480 Chambers in 30 Rows

38,980 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	3,240	0.0	0	0
97.67	3,240	35.0	760	760
97.83	3,240	15.0	78	838
98.00	3,240	15.0	83	920
98.35	3,240	100.0	1,134	2,054

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	2.0" Vert. Restriction Orifice C= 0.600
			Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

#### Site 10 20240629

NOAA 24-hr C 100-Year \_Current Rainfall=8.95"

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Primary OutFlow Max=0.25 cfs @ 18.14 hrs HW=97.93' (Free Discharge)
1=Restriction Orifice (Orifice Controls 0.25 cfs @ 11.58 fps)
2=6" HDPE Underdrain (Passes 0.25 cfs of 0.46 cfs potential flow)
3=Perforations (Passes 0.25 cfs of 8.67 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 6P: PP (w/ underdrain) w/ UG storage 3 - Chamber Wizard Field A

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

16 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 115.54' Row Length +12.0" End Stone x 2 = 117.54' Base Length

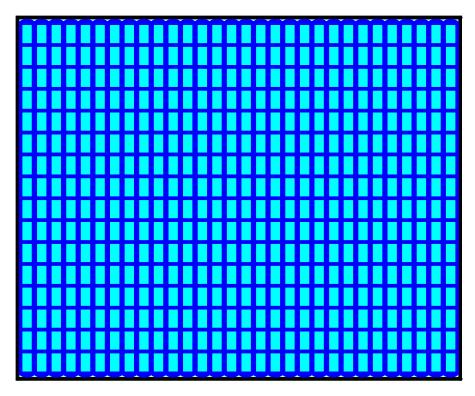
30 Rows x 51.0" Wide + 6.0" Spacing x 29 + 12.0" Side Stone x 2 = 144.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

480 Chambers x 45.9 cf = 22,051.2 cf Chamber Storage

59,238.5 cf Field - 22,051.2 cf Chambers = 37,187.3 cf Stone x 40.0% Voids = 14,874.9 cf Stone Storage

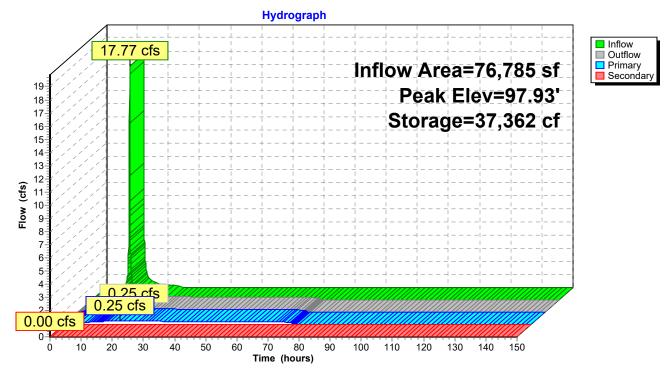
Chamber Storage + Stone Storage = 36,926.1 cf = 0.848 af Overall Storage Efficiency = 62.3% Overall System Size = 117.54' x 144.00' x 3.50'

480 Chambers 2,194.0 cy Field 1,377.3 cy Stone



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Pond 6P: PP (w/ underdrain) w/ UG storage 3



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## Summary for Pond 7P: PP (w/ underdrain) w/ UG storage 4

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 120,233 sf, 94.05% Impervious, Inflow Depth = 8.56" for 100-Year \_Current event

Inflow = 28.04 cfs @ 12.10 hrs, Volume= 85,814 cf

Outflow = 0.46 cfs @ 17.47 hrs, Volume= 85,814 cf, Atten= 98%, Lag= 322.0 min

Primary = 0.46 cfs @ 17.47 hrs, Volume= 85,814 cf

Routed to Pond 8P : Existing Basin 1

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond 8P: Existing Basin 1

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 97.95' @ 17.47 hrs Surf.Area= 30,822 sf Storage= 57,964 cf

Plug-Flow detention time= 1,229.5 min calculated for 85,814 cf (100% of inflow)

Center-of-Mass det. time= 1,229.5 min (1,970.5 - 741.0)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,980 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	22,825 cf	163.00'W x 160.26'L x 3.50'H Field A
			91,426 cf Overall - 34,363 cf Embedded = 57,063 cf x 40.0% Voids
#3A	95.00'	34,363 cf	ADS_StormTech SC-740 +Cap x 748 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
			748 Chambers in 34 Rows

60,168 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,700	0.0	0	0
97.67	4,700	35.0	1,102	1,102
97.83	4,700	15.0	113	1,215
98.00	4,700	15.0	120	1,335
98.35	4,700	100.0	1,645	2,980

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	19.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

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Primary OutFlow Max=0.46 cfs @ 17.47 hrs HW=97.95' (Free Discharge)
1=Restriction Orifice (Passes 0.46 cfs of 0.57 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.46 cfs @ 2.35 fps)
3=Perforations (Passes 0.46 cfs of 8.68 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.50' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond 7P: PP (w/ underdrain) w/ UG storage 4 - Chamber Wizard Field A

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

22 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 158.26' Row Length +12.0" End Stone x 2 = 160.26' Base Length

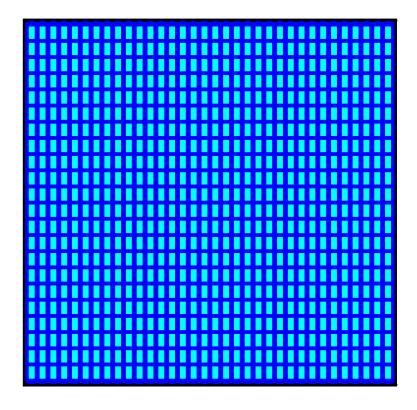
34 Rows x 51.0" Wide + 6.0" Spacing x 33 + 12.0" Side Stone x 2 = 163.00' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

748 Chambers x 45.9 cf = 34,363.1 cf Chamber Storage

91,426.4 cf Field - 34,363.1 cf Chambers = 57,063.3 cf Stone x 40.0% Voids = 22,825.3 cf Stone Storage

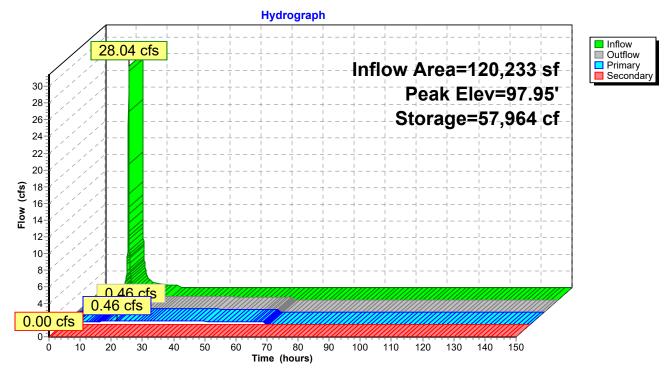
Chamber Storage + Stone Storage = 57,188.5 cf = 1.313 af Overall Storage Efficiency = 62.6% Overall System Size = 160.26' x 163.00' x 3.50'

748 Chambers 3,386.2 cy Field 2,113.5 cy Stone



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# Pond 7P: PP (w/ underdrain) w/ UG storage 4



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## **Summary for Pond 8P: Existing Basin 1**

Inflow Area = 444,913 sf, 80.94% Impervious, Inflow Depth = 8.20" for 100-Year Current event Inflow 26.84 cfs @ 12.09 hrs, Volume= 304.013 cf 14.40 cfs @ 12.14 hrs, Volume= 304,013 cf, Atten= 46%, Lag= 3.2 min Outflow = 14.40 cfs @ 12.14 hrs, Volume= Primary 304,013 cf Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 67L Tertiary 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to nonexistent node 67L

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 59.89' @ 12.14 hrs Surf.Area= 11,785 sf Storage= 12,668 cf

Plug-Flow detention time= 16.3 min calculated for 303,973 cf (100% of inflow) Center-of-Mass det. time= 16.3 min (1,600.8 - 1,584.5)

<u>Volume</u>	Inv	<u>ert Ava</u>	il.Storage	Storage	Description	
#1	58.0	00'	33,881 cf	Custom	Stage Data (Pri	smatic)Listed below (Recalc)
Elevatio		Surf.Area (sq-ft)		:.Store c-feet)	Cum.Store (cubic-feet)	
58.00 1,339			0	0		
59.00 7,134			4,237	4,237		
60.00		12,352		9,743	13,980	
61.00		18,300	1	15,326	29,306	
61.2	25	18,300		4,575	33,881	
Device	Routing	In	vert Outle	et Device:	s	
#1	Primary	58	3.00' <b>24.0</b>	" Vert. Lo	ow Flow Orifice	C= 0.600

D 0 1100	rtouting	11110010	Oddot Borioco
#1	Primary	58.00'	24.0" Vert. Low Flow Orifice C= 0.600
			Limited to weir flow at low heads
#2	Secondary	60.00'	24.0" W x 18.0" H Vert. 2-YR Orifice C= 0.600
			Limited to weir flow at low heads
#3	Tertiary	60.75'	<b>48.0" x 48.0" Horiz. Orifice/Grate</b> C= 0.600
	,		Limited to weir flow at low heads
ш.а	T	04 001	
#4	Tertiary	61.00'	100.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=14.38 cfs @ 12.14 hrs HW=59.89' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 14.38 cfs @ 4.68 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge) 2=2-YR Orifice ( Controls 0.00 cfs)

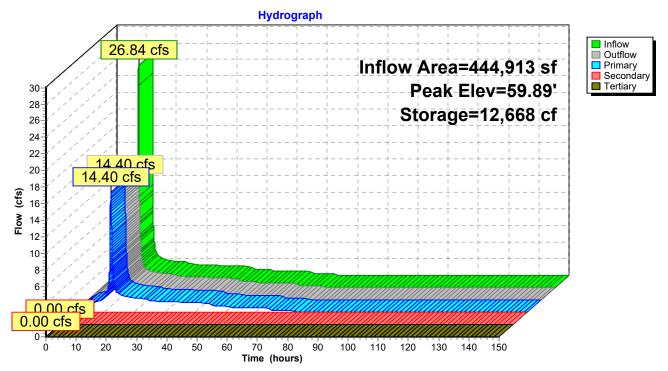
Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge)

-3=Orifice/Grate (Controls 0.00 cfs)

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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# Pond 8P: Existing Basin 1



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## **Summary for Pond 9P: Existing Basin 2**

https://hydro.rutgers.edu/view-project/100596/

Inflow Area = 59,019 sf, 68.70% Impervious, Inflow Depth = 7.95" for 100-Year Current event 13.46 cfs @ 12.09 hrs. Volume= Inflow 39,088 cf Outflow 11.66 cfs @ 12.12 hrs, Volume= = 39,085 cf, Atten= 13%, Lag= 1.8 min 0.43 cfs @ 12.12 hrs, Volume= 20,114 cf Primary = 2.57 cfs @ 12.12 hrs, Volume= 14,376 cf Secondary = 4,595 cf Tertiary 8.66 cfs @ 12.12 hrs, Volume=

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 68.05' @ 12.12 hrs Surf.Area= 5,798 sf Storage= 10,616 cf

Plug-Flow detention time= 82.7 min calculated for 39,085 cf (100% of inflow) Center-of-Mass det. time= 82.6 min (836.2 - 753.7)

Volume	Invert	Avail.Storage	Storage Description
#1	64.60'	13.401 cf	Custom Stage Data (Prismatic)Listed below

Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
64.60	0	0	0
65.00	647	129	129
66.00	2,768	1,708	1,837
68.00	5,693	8,461	10,298
68.50	6,718	3,103	13,401

Device	Routing	Invert	Outlet Devices
#1	Primary	64.60'	<b>3.0" Vert. 3" Orifice</b> C= 0.600 Limited to weir flow at low heads
#2	Secondary	66.40'	0.7' long 8" Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Tertiary	67.75'	<b>48.0"</b> x <b>48.0"</b> Horiz. Orifice/Grate C= 0.600
	-		Limited to weir flow at low heads

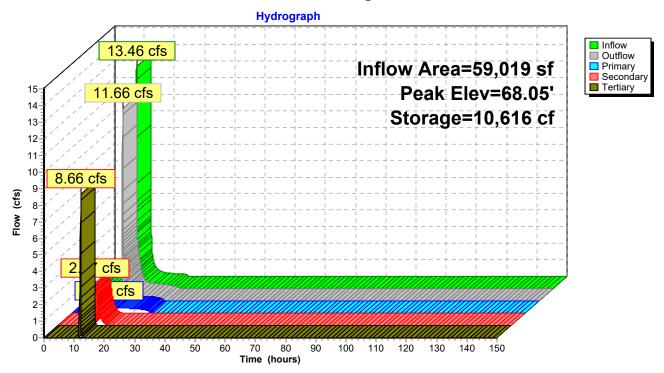
Primary OutFlow Max=0.43 cfs @ 12.12 hrs HW=68.05' (Free Discharge)
1=3" Orifice (Orifice Controls 0.43 cfs @ 8.78 fps)

Secondary OutFlow Max=2.56 cfs @ 12.12 hrs HW=68.05' (Free Discharge) 2=8" Sharp-Crested Rectangular Weir (Weir Controls 2.56 cfs @ 4.20 fps)

**Tertiary OutFlow** Max=8.54 cfs @ 12.12 hrs HW=68.05' (Free Discharge) **3=Orifice/Grate** (Weir Controls 8.54 cfs @ 1.79 fps)

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# Pond 9P: Existing Basin 2



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## Summary for Pond 10P: PP (w/ underdrain) w/ UG storage 5

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 48,527 sf, 85.53% Impervious, Inflow Depth = 8.29" for 100-Year \_Current event

Inflow = 10.38 cfs @ 12.13 hrs, Volume= 33,509 cf

Outflow = 2.02 cfs @ 12.52 hrs, Volume= 33,509 cf, Atten= 81%, Lag= 23.4 min

Primary = 0.46 cfs @ 12.52 hrs, Volume= 31,168 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 1.56 cfs @ 12.52 hrs, Volume= 2,341 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 98.02' @ 12.52 hrs Surf.Area= 11,632 sf Storage= 14,344 cf

Plug-Flow detention time= 262.4 min calculated for 33,505 cf (100% of inflow)

Center-of-Mass det. time= 262.4 min ( 1,010.2 - 747.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	3,687 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	5,184 cf	34.75'W x 167.38'L x 3.50'H Field A
			20,357 cf Overall - 7,396 cf Embedded = 12,961 cf x 40.0% Voids
#3A	95.00'	7,396 cf	ADS_StormTech SC-740 +Cap x 161 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
			161 Chambers in 7 Rows

16,268 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	5,816	0.0	0	0
97.67	5,816	35.0	1,364	1,364
97.83	5,816	15.0	140	1,503
98.00	5,816	15.0	148	1,652
98.35	5.816	100.0	2.036	3.687

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600
	•		Limited to weir flow at low heads
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns
			X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir
			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
			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

NOAA 24-hr C 100-Year \_Current Rainfall=8.95"

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Primary OutFlow Max=0.46 cfs @ 12.52 hrs HW=98.02' (Free Discharge)
1=Restriction Orifice (Passes 0.46 cfs of 0.57 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.46 cfs @ 2.36 fps)
3=Perforations (Passes 0.46 cfs of 8.73 cfs potential flow)

Secondary OutFlow Max=1.14 cfs @ 12.52 hrs HW=98.02' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 1.14 cfs @ 0.35 fps)

NOAA 24-hr C 100-Year \_Current Rainfall=8.95"

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#### Pond 10P: PP (w/ underdrain) w/ UG storage 5 - Chamber Wizard Field A

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

23 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 165.38' Row Length +12.0" End Stone x 2 = 167.38' Base Length

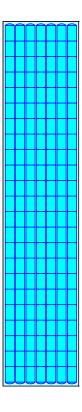
7 Rows x 51.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 34.75' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

161 Chambers x 45.9 cf = 7,396.3 cf Chamber Storage

20,357.2 cf Field - 7,396.3 cf Chambers = 12,960.8 cf Stone x 40.0% Voids = 5,184.3 cf Stone Storage

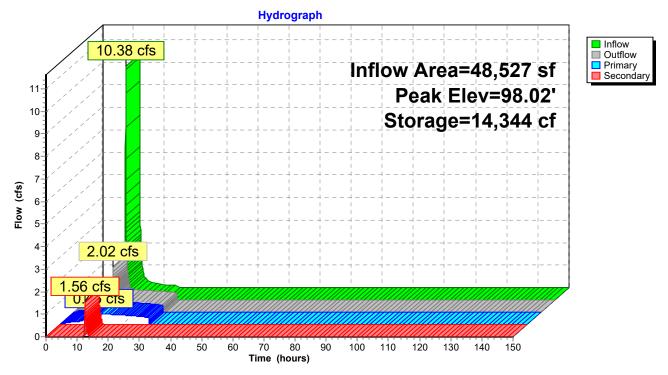
Chamber Storage + Stone Storage = 12,580.7 cf = 0.289 af Overall Storage Efficiency = 61.8% Overall System Size = 167.38' x 34.75' x 3.50'

161 Chambers 754.0 cy Field 480.0 cy Stone



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# Pond 10P: PP (w/ underdrain) w/ UG storage 5



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## Summary for Pond 11P: PP (w/ underdrain) w/ UG storage 6

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 57,652 sf, 78.51% Impervious, Inflow Depth = 8.13" for 100-Year Current event

Inflow = 13.41 cfs @ 12.09 hrs, Volume= 39,077 cf

Outflow = 1.08 cfs @ 12.96 hrs, Volume= 39,077 cf, Atten= 92%, Lag= 52.0 min

Primary = 0.46 cfs @ 12.96 hrs, Volume= 38,066 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.62 cfs @ 12.96 hrs, Volume= 1,012 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 98.01' @ 12.96 hrs Surf.Area= 11,976 sf Storage= 19,638 cf

Plug-Flow detention time= 393.1 min calculated for 39,072 cf (100% of inflow)

Center-of-Mass det. time= 393.1 min (1,141.4 - 748.3)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	2,144 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	7,621 cf	96.50'W x 89.06'L x 3.50'H Field A
			30,079 cf Overall - 11,026 cf Embedded = 19,053 cf x 40.0% Voids
#3A	95.00'	11,026 cf	ADS_StormTech SC-740 +Cap x 240 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
			240 Chambers in 20 Rows

20,791 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	3,382	0.0	0	0
97.67	3,382	35.0	793	793
97.83	3,382	15.0	81	874
98.00	3,382	15.0	86	960
98.35	3.382	100.0	1.184	2.144

Device	Routing	Invert	Outlet Devices		
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600		
	•		Limited to weir flow at low heads		
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500		
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900		
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf		
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns		
			X 3 rows C= 0.600 Limited to weir flow at low heads		
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir		
			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		
			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		

NOAA 24-hr C 100-Year \_Current Rainfall=8.95"

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Primary OutFlow Max=0.46 cfs @ 12.96 hrs HW=98.01' (Free Discharge)
1=Restriction Orifice (Passes 0.46 cfs of 0.57 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.46 cfs @ 2.36 fps)
3=Perforations (Passes 0.46 cfs of 8.73 cfs potential flow)

Secondary OutFlow Max=0.37 cfs @ 12.96 hrs HW=98.01' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 0.37 cfs @ 0.24 fps)

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#### Pond 11P: PP (w/ underdrain) w/ UG storage 6 - Chamber Wizard Field A

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

12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length

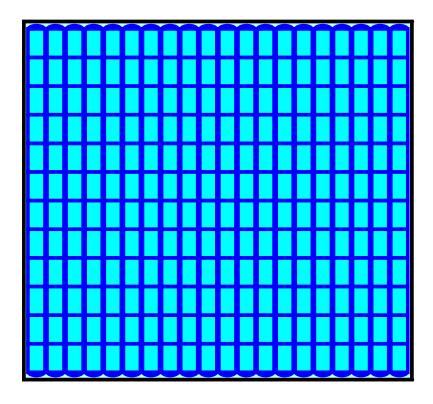
20 Rows x 51.0" Wide + 6.0" Spacing x 19 + 12.0" Side Stone x 2 = 96.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

240 Chambers x 45.9 cf = 11,025.6 cf Chamber Storage

30,078.9 cf Field - 11,025.6 cf Chambers = 19,053.3 cf Stone x 40.0% Voids = 7,621.3 cf Stone Storage

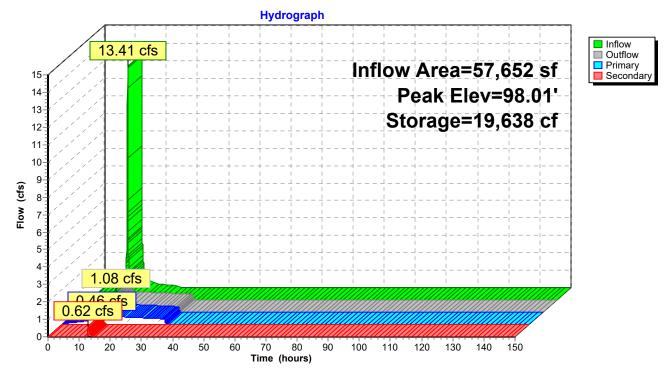
Chamber Storage + Stone Storage = 18,646.9 cf = 0.428 af Overall Storage Efficiency = 62.0% Overall System Size = 89.06' x 96.50' x 3.50'

240 Chambers 1,114.0 cy Field 705.7 cy Stone



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Pond 11P: PP (w/ underdrain) w/ UG storage 6



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# Summary for Pond 12P: PP (w/ underdrain) w/ UG storage 7

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 67,756 sf, 72.56% Impervious, Inflow Depth = 8.01" for 100-Year \_Current event

Inflow = 15.45 cfs @ 12.10 hrs, Volume= 45,216 cf

Outflow = 0.60 cfs @ 14.09 hrs, Volume= 45,216 cf, Atten= 96%, Lag= 119.5 min

Primary = 0.46 cfs @ 14.08 hrs, Volume= 45,056 cf

Routed to Pond 13P: Bioretention Basin 4

Secondary = 0.14 cfs @ 14.09 hrs, Volume= 160 cf

Routed to Pond 13P: Bioretention Basin 4

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs Peak Elev= 98.00' @ 14.08 hrs Surf.Area= 12,790 sf Storage= 25,088 cf

Plug-Flow detention time= 524.3 min calculated for 45,216 cf (100% of inflow)

Center-of-Mass det. time= 524.3 min (1,276.2 - 751.8)

<u>Volume</u>	Invert	Avail.Storage	Storage Description
#1	97.00'	935 cf	Custom Stage Data (Prismatic)Listed below (Recalc)
#2A	94.50'	9,962 cf	77.50'W x 146.02'L x 3.50'H Field A
			39,607 cf Overall - 14,701 cf Embedded = 24,906 cf x 40.0% Voids
#3A	95.00'	14,701 cf	ADS_StormTech SC-740 +Cap x 320 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
			320 Chambers in 16 Rows

25,598 cf Total Available Storage

Storage Group A created with Chamber Wizard

Elevation	Surf.Area	Voids	Inc.Store	Cum.Store
(feet)	(sq-ft)	(%)	(cubic-feet)	(cubic-feet)
97.00	1,474	0.0	0	0
97.67	1,474	35.0	346	346
97.83	1,474	15.0	35	381
98.00	1,474	15.0	38	419
98.35	1,474	100.0	516	935

Device	Routing	Invert	Outlet Devices		
#1	Primary	92.07'	3.0" Vert. Restriction Orifice C= 0.600		
			Limited to weir flow at low heads		
#2	Device 1	92.17'	<b>6.0" Round 6" HDPE Underdrain</b> L= 359.0' Ke= 0.500		
			Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 '/' Cc= 0.900		
			n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf		
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns		
			X 3 rows C= 0.600 Limited to weir flow at low heads		
#4	Secondary	98.00'	168.0' long x 2.0' breadth Broad-Crested Rectangular Weir		
			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		
			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		

NOAA 24-hr C 100-Year \_Current Rainfall=8.95"

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Primary OutFlow Max=0.46 cfs @ 14.08 hrs HW=98.00' (Free Discharge)
1=Restriction Orifice (Passes 0.46 cfs of 0.57 cfs potential flow)
2=6" HDPE Underdrain (Outlet Controls 0.46 cfs @ 2.36 fps)
3=Perforations (Passes 0.46 cfs of 8.72 cfs potential flow)

Secondary OutFlow Max=0.11 cfs @ 14.09 hrs HW=98.00' (Free Discharge) 4=Broad-Crested Rectangular Weir (Weir Controls 0.11 cfs @ 0.16 fps)

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### Pond 12P: PP (w/ underdrain) w/ UG storage 7 - Chamber Wizard Field A

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

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

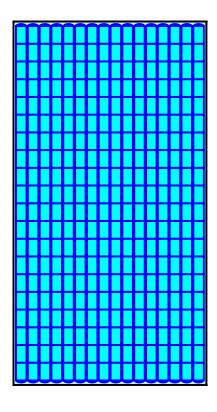
16 Rows x 51.0" Wide + 6.0" Spacing x 15 + 12.0" Side Stone x 2 = 77.50' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

320 Chambers x 45.9 cf = 14,700.8 cf Chamber Storage

39,607.0 cf Field - 14,700.8 cf Chambers = 24,906.2 cf Stone x 40.0% Voids = 9,962.5 cf Stone Storage

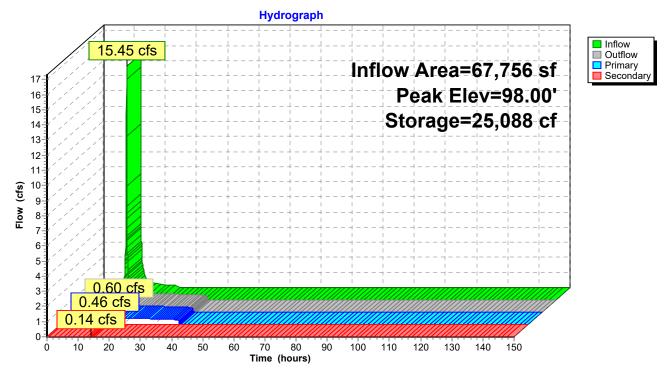
Chamber Storage + Stone Storage = 24,663.3 cf = 0.566 af Overall Storage Efficiency = 62.3% Overall System Size = 146.02' x 77.50' x 3.50'

320 Chambers 1,466.9 cy Field 922.5 cy Stone



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# Pond 12P: PP (w/ underdrain) w/ UG storage 7



Volume

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## Summary for Pond 13P: Bioretention Basin 4

Inflow Area = 329,976 sf, 48.67% Impervious, Inflow Depth = 7.24" for 100-Year Current event Inflow 17.84 cfs @ 12.35 hrs. Volume= 199.018 cf 17.13 cfs @ 12.41 hrs, Volume= Outflow = 197,749 cf, Atten= 4%, Lag= 3.8 min 0.40 cfs @ 12.41 hrs, Volume= Primary 50,099 cf Routed to nonexistent node 5R Secondary = 8.90 cfs @ 12.41 hrs, Volume= 135,873 cf Routed to nonexistent node 5R Tertiary 7.83 cfs @ 12.41 hrs, Volume= 11.778 cf Routed to nonexistent node 5R

Routing by Stor-Ind method, Time Span= 0.00-150.00 hrs, dt= 0.02 hrs / 2 Peak Elev= 52.24' @ 12.41 hrs Surf.Area= 10,478 sf Storage= 25,461 cf

Plug-Flow detention time= 181.8 min calculated for 197,723 cf (99% of inflow)

Avail Storage Storage Description

Center-of-Mass det. time= 174.6 min (1,191.6 - 1,017.0)

Invert

VOIGITIC	IIIVCI	t Avaii.Oto	rage Clorage i	Jescription	
#1	49.00	33,3	95 cf Custom	Stage Data (Pr	rismatic)Listed below (Recalc)
Elevation (fee		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
49.0	00	4,800	0	0	
52.	00	10,478	22,917	22,917	
53.	00	10,478	10,478	33,395	
Device	Routing	Invert	Outlet Devices		
#1	Primary	49.25'	3.0" Vert. Low Flow Orifice C= 0.600		C= 0.600
	•		Limited to weir	flow at low hea	nds
#2 Secondary 51.00'		24.0" W x 18.0" H Vert. SECONDARY OUTLET C= 0.600			
			Limited to weir flow at low heads		
#3 Tertiary 52.00' <b>60.0" x 60.0" Horiz. Orifice/Grate</b> C= 0.600					
			Limited to weir	flow at low hea	nds

Primary OutFlow Max=0.40 cfs @ 12.41 hrs HW=52.24' (Free Discharge) 1=Low Flow Orifice (Orifice Controls 0.40 cfs @ 8.15 fps)

Secondary OutFlow Max=8.89 cfs @ 12.41 hrs HW=52.24' (Free Discharge) 2=SECONDARY OUTLET (Orifice Controls 8.89 cfs @ 3.58 fps)

Tertiary OutFlow Max=7.81 cfs @ 12.41 hrs HW=52.24' (Free Discharge) 3=Orifice/Grate (Weir Controls 7.81 cfs @ 1.61 fps)

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#### Pond 13P: Bioretention Basin 4

