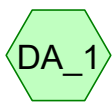


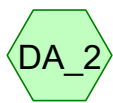
Lamoille Union Schools
- West

Town Office Building

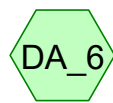
Sylvan Hill Rd and
Johnson St Ext



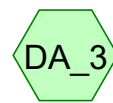
CPv



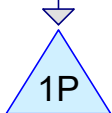
1/2 WQv



1/2 WQv



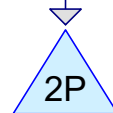
1/2 WQv



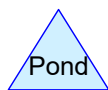
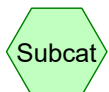
Stormtech



Infiltration Basin and
Stormtech



Stormtech



Routing Diagram for HydePark_SWMP_Top3_11-5-19

Prepared by Hewlett-Packard Company, Printed 11/14/2019
HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

HydePark_SWMP_Top3_11-5-19

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Printed 11/14/2019

Page 2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.805	88	(DA_2)
6.397	86	(DA_3)
3.399	92	(DA_6)
0.744	39	>75% Grass cover, Good, HSG A (DA_1)
1.871	98	Paved Parking, HSG A (DA_1)
14.216	87	TOTAL AREA

HydePark_SWMP_Top3_11-5-19

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Printed 11/14/2019

Page 3

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.615	HSG A	DA_1
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
11.601	Other	DA_2, DA_3, DA_6
14.216		TOTAL AREA

HydePark_SWMP_Top3_11-5-19

Prepared by Hewlett-Packard Company

Printed 11/14/2019

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Page 4

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	11.601	11.601		DA_2, DA_3, DA_6
0.744	0.000	0.000	0.000	0.000	0.744	>75% Grass cover, Good	DA_1
1.871	0.000	0.000	0.000	0.000	1.871	Paved Parking	DA_1
2.615	0.000	0.000	0.000	11.601	14.216	TOTAL AREA	

HydePark_SWMP_Top3_11-5-19

NRCC 24-hr B 1-Year Rainfall=1.97"

Prepared by Hewlett-Packard Company

Printed 11/14/2019

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Page 5

Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA_1: CPv Runoff Area=2.615 ac 71.55% Impervious Runoff Depth=1.25"
Flow Length=488' Slope=0.0063 '/' Tc=21.8 min CN=WQ Runoff=2.62 cfs 0.272 af

Subcatchment DA_2: 1/2 WQv Runoff Area=1.805 ac 0.00% Impervious Runoff Depth=0.94"
Flow Length=396' Slope=0.0030 '/' Tc=21.1 min CN=88 Runoff=1.50 cfs 0.142 af

Subcatchment DA_3: 1/2 WQv Runoff Area=6.397 ac 0.00% Impervious Runoff Depth=0.83"
Flow Length=1,353' Slope=0.0036 '/' Tc=55.5 min CN=86 Runoff=2.68 cfs 0.441 af

Subcatchment DA_6: 1/2 WQv Runoff Area=3.399 ac 0.00% Impervious Runoff Depth=1.21"
Flow Length=752' Slope=0.0029 '/' Tc=30.3 min CN=92 Runoff=3.02 cfs 0.343 af

Pond 1P: Stormtech Peak Elev=6.27' Storage=0.125 af Inflow=2.62 cfs 0.272 af
Discarded=0.22 cfs 0.272 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.272 af

Pond 2P: Stormtech Peak Elev=5.26' Storage=0.057 af Inflow=2.68 cfs 0.441 af
Discarded=0.06 cfs 0.121 af Primary=2.70 cfs 0.319 af Outflow=2.76 cfs 0.441 af

Pond 6P: Infiltration Basin and Stormtech Peak Elev=617.29' Storage=2,427 cf Inflow=4.37 cfs 0.484 af
Discarded=0.21 cfs 0.221 af Primary=4.16 cfs 0.264 af Outflow=4.37 cfs 0.484 af

Total Runoff Area = 14.216 ac Runoff Volume = 1.197 af Average Runoff Depth = 1.01"
86.84% Pervious = 12.345 ac 13.16% Impervious = 1.871 ac

Summary for Subcatchment DA_1: CPv

Runoff = 2.62 cfs @ 12.31 hrs, Volume= 0.272 af, Depth= 1.25"

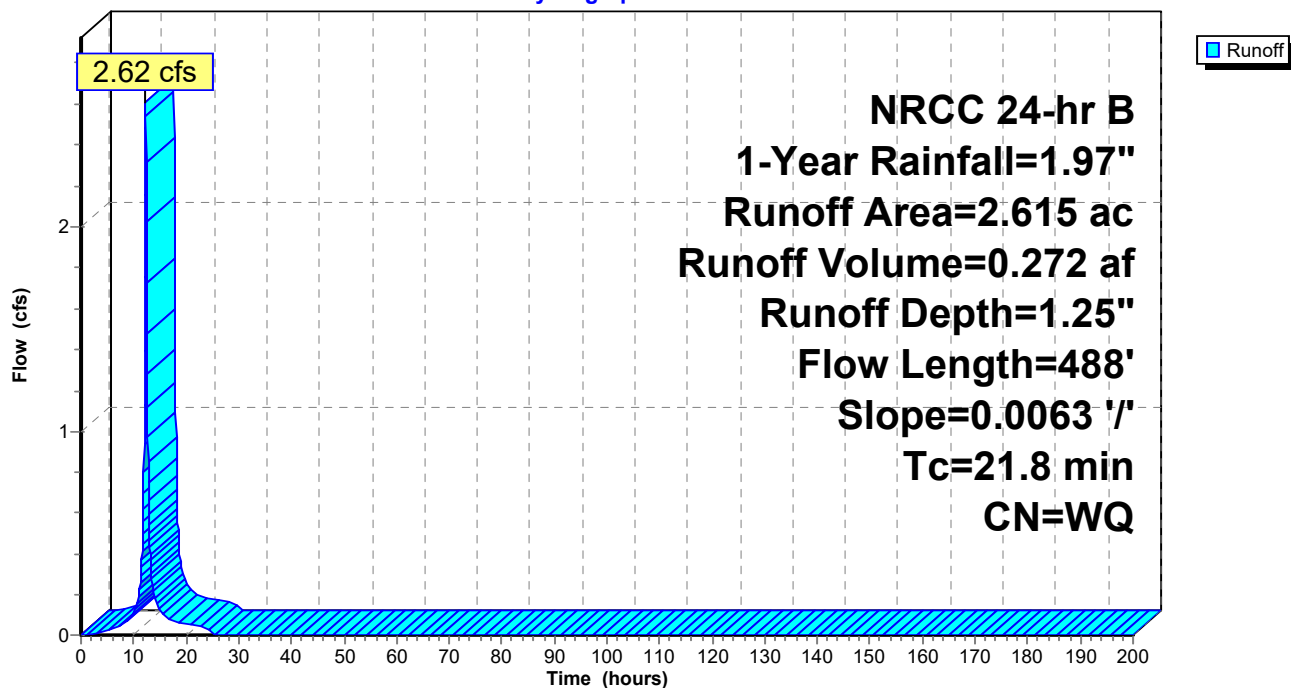
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-Year Rainfall=1.97"

Area (ac)	CN	Description
0.744	39	>75% Grass cover, Good, HSG A
1.871	98	Paved Parking, HSG A
2.615		Weighted Average
0.744		28.45% Pervious Area
1.871		71.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	488	0.0063	0.37		Lag/CN Method, Contour Length= 718' Interval= 1'

Subcatchment DA_1: CPv

Hydrograph



Summary for Subcatchment DA_2: 1/2 WQv

Runoff = 1.50 cfs @ 12.31 hrs, Volume= 0.142 af, Depth= 0.94"

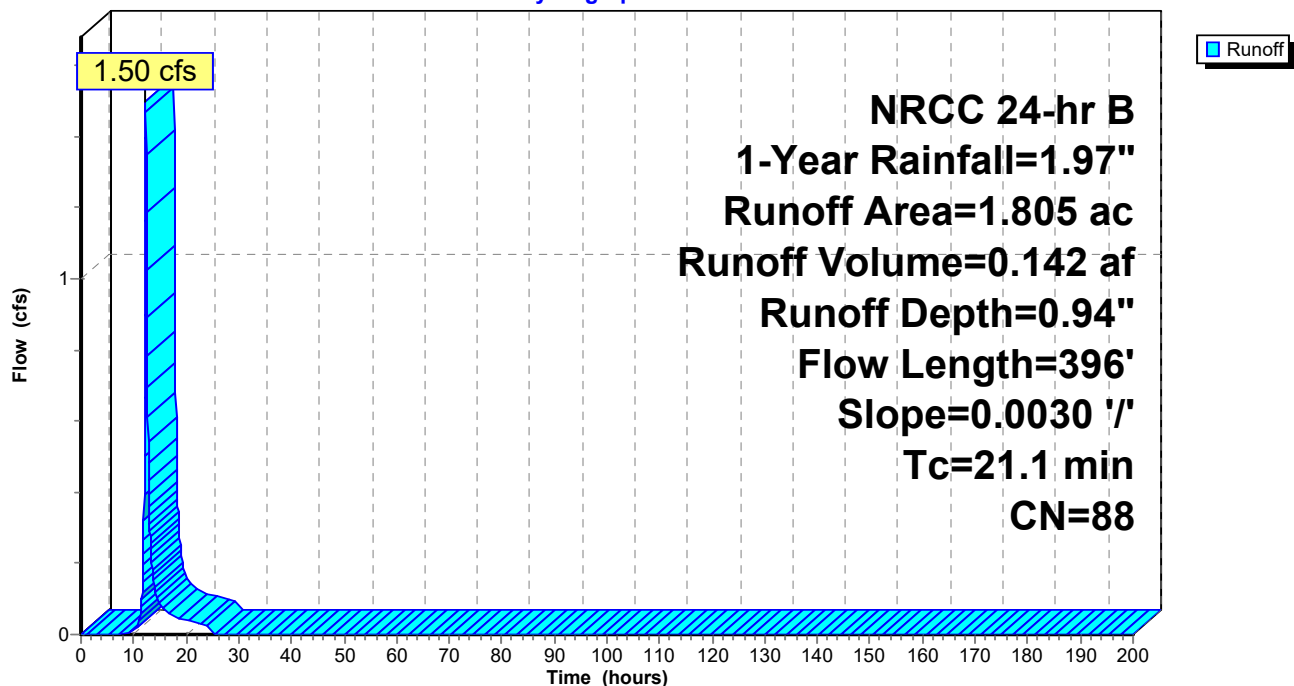
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-Year Rainfall=1.97"

Area (ac)	CN	Description
* 1.805	88	
1.805		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	396	0.0030	0.31		Lag/CN Method, Contour Length= 234' Interval= 1'

Subcatchment DA_2: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_3: 1/2 WQv

Runoff = 2.68 cfs @ 12.78 hrs, Volume= 0.441 af, Depth= 0.83"

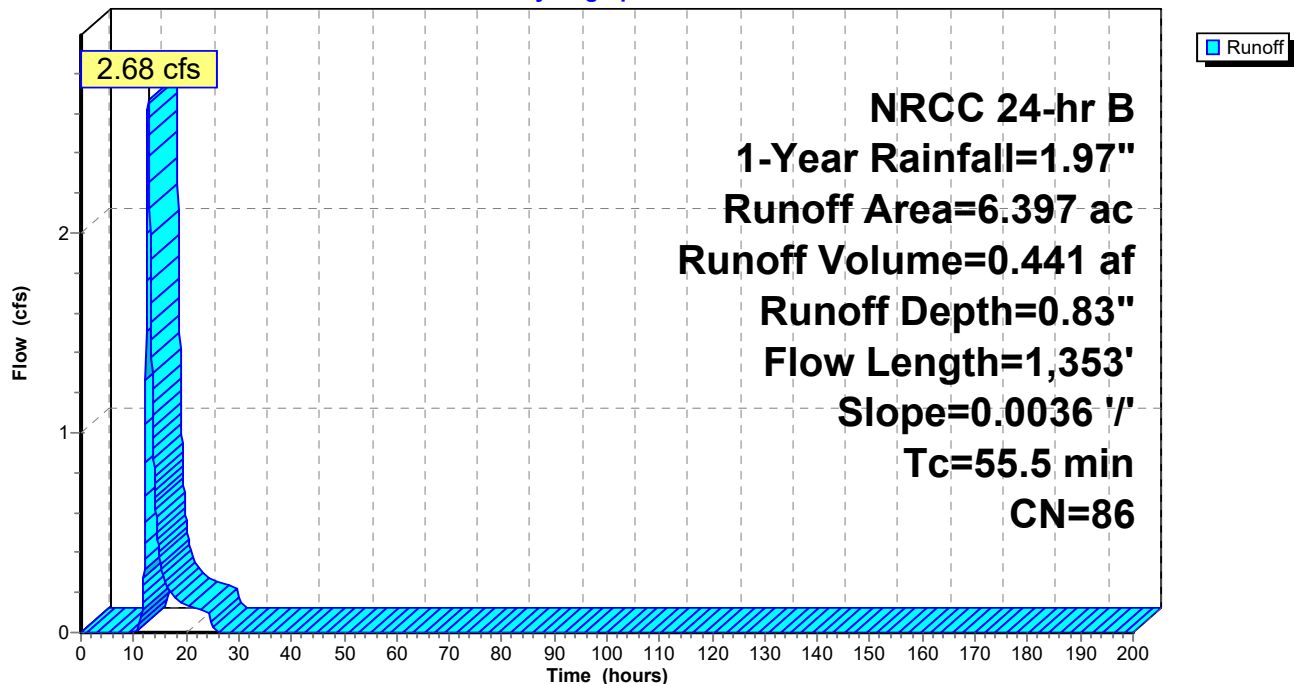
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-Year Rainfall=1.97"

Area (ac)	CN	Description
* 6.397	86	
6.397		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
55.5	1,353	0.0036	0.41		Lag/CN Method, Contour Length= 993' Interval= 1'

Subcatchment DA_3: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_6: 1/2 WQv

Runoff = 3.02 cfs @ 12.42 hrs, Volume= 0.343 af, Depth= 1.21"

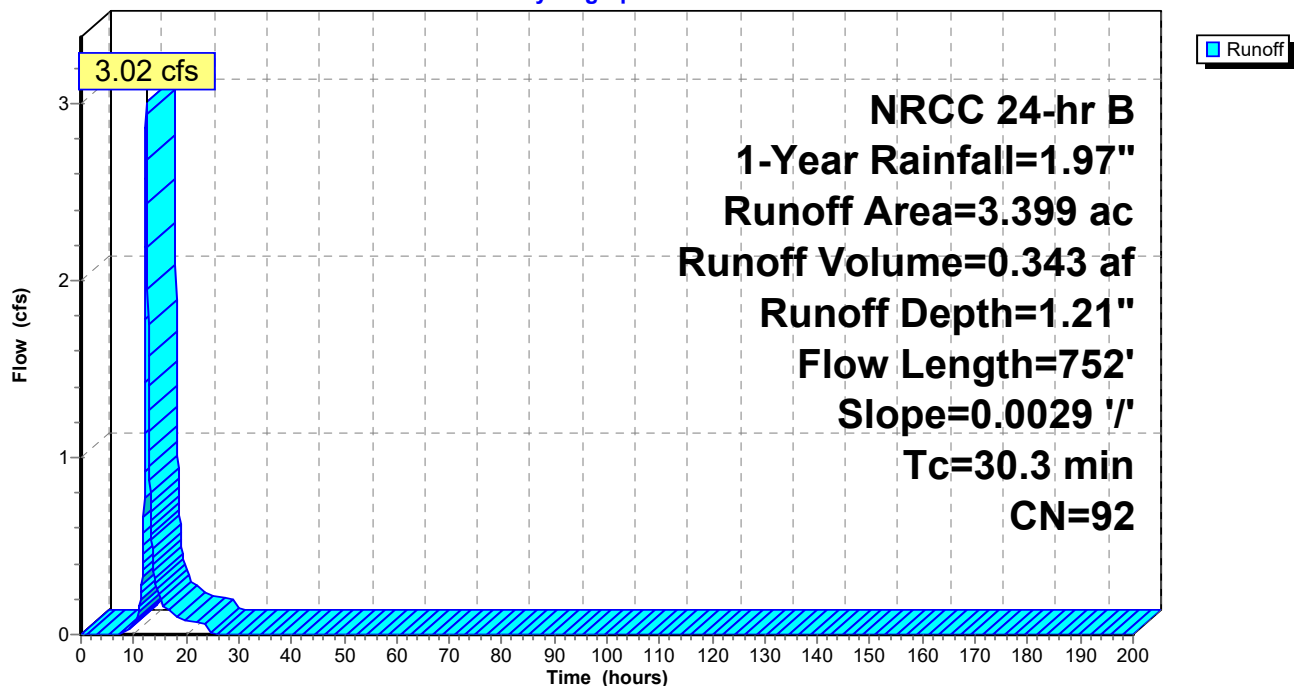
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-Year Rainfall=1.97"

Area (ac)	CN	Description
* 3.399	92	
3.399		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	752	0.0029	0.41		Lag/CN Method, Contour Length= 429' Interval= 1'

Subcatchment DA_6: 1/2 WQv

Hydrograph



Summary for Pond 1P: Stormtech

Inflow Area = 2.615 ac, 71.55% Impervious, Inflow Depth = 1.25" for 1-Year event
 Inflow = 2.62 cfs @ 12.31 hrs, Volume= 0.272 af
 Outflow = 0.22 cfs @ 11.15 hrs, Volume= 0.272 af, Atten= 92%, Lag= 0.0 min
 Discarded = 0.22 cfs @ 11.15 hrs, Volume= 0.272 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 6.27' @ 13.71 hrs Surf.Area= 0.031 ac Storage= 0.125 af

Plug-Flow detention time= 197.8 min calculated for 0.272 af (100% of inflow)
 Center-of-Mass det. time= 197.8 min (980.9 - 783.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.052 af	28.50'W x 47.37'L x 6.75'H Field A 0.209 af Overall - 0.078 af Embedded = 0.131 af x 40.0% Voids
#2A	0.75'	0.078 af	ADS_StormTech MC-4500 +Cap x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 30 Chambers in 3 Rows Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
0.131 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	7.000 in/hr Exfiltration over Surface area
#2	Primary	6.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 11.15 hrs HW=0.07' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
 ↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 1P: Stormtech - Chamber Wizard Field A**Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)**

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length

3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

30 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,408.9 cf Chamber Storage

9,112.2 cf Field - 3,408.9 cf Chambers = 5,703.2 cf Stone x 40.0% Voids = 2,281.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,690.2 cf = 0.131 af

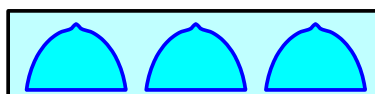
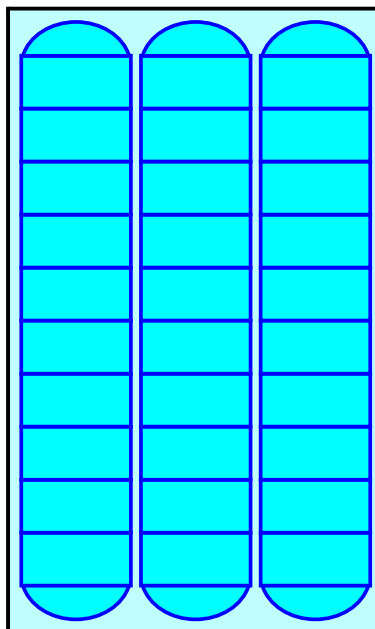
Overall Storage Efficiency = 62.4%

Overall System Size = 47.37' x 28.50' x 6.75'

30 Chambers

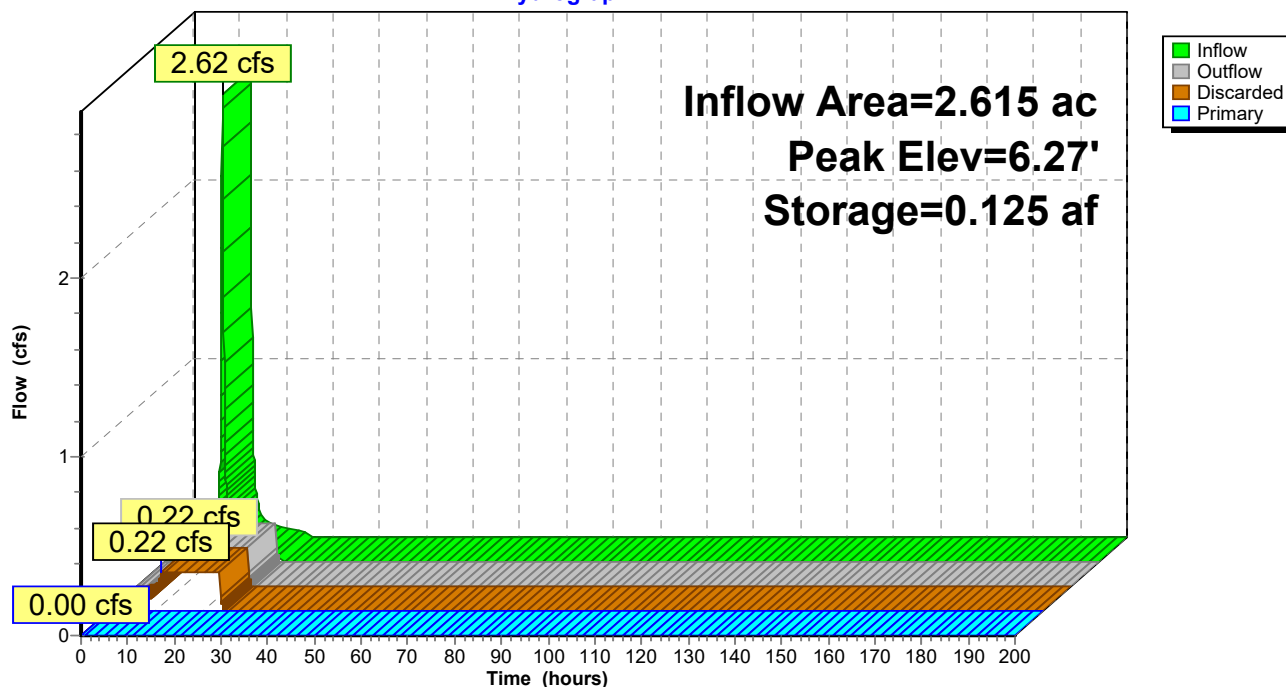
337.5 cy Field

211.2 cy Stone



Pond 1P: Stormtech

Hydrograph



Summary for Pond 2P: Stormtech

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

Inflow Area = 6.397 ac, 0.00% Impervious, Inflow Depth = 0.83" for 1-Year event
 Inflow = 2.68 cfs @ 12.78 hrs, Volume= 0.441 af
 Outflow = 2.76 cfs @ 12.76 hrs, Volume= 0.441 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.06 cfs @ 11.40 hrs, Volume= 0.121 af
 Primary = 2.70 cfs @ 12.76 hrs, Volume= 0.319 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 5.26' @ 12.76 hrs Surf.Area= 0.018 ac Storage= 0.057 af

Plug-Flow detention time= 141.5 min calculated for 0.440 af (100% of inflow)
 Center-of-Mass det. time= 141.6 min (1,031.7 - 890.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.027 af	22.75'W x 34.38'L x 5.50'H Field A 0.099 af Overall - 0.032 af Embedded = 0.066 af x 40.0% Voids
#2A	0.75'	0.032 af	ADS_StormTech MC-3500 d +Cap x 12 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 12 Chambers in 3 Rows Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf
0.059 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	3.120 in/hr Exfiltration over Surface area
#2	Primary	5.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 11.40 hrs HW=0.06' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=2.66 cfs @ 12.76 hrs HW=5.26' (Free Discharge)

↑**2=Orifice/Grate** (Weir Controls 2.66 cfs @ 1.65 fps)

Pond 2P: Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +12.0" End Stone x 2 = 34.38' Base Length

3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

12 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 1,408.8 cf Chamber Storage

4,301.8 cf Field - 1,408.8 cf Chambers = 2,893.0 cf Stone x 40.0% Voids = 1,157.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,566.0 cf = 0.059 af

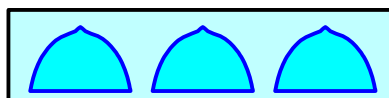
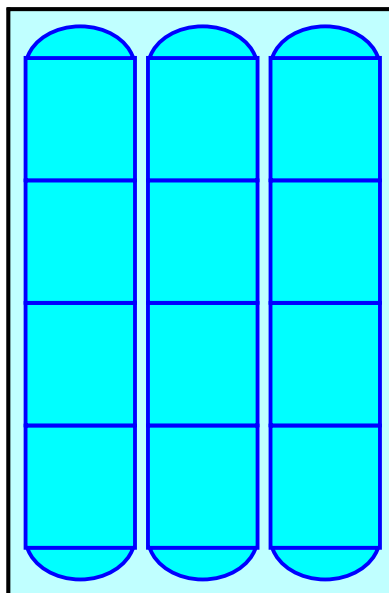
Overall Storage Efficiency = 59.6%

Overall System Size = 34.38' x 22.75' x 5.50'

12 Chambers

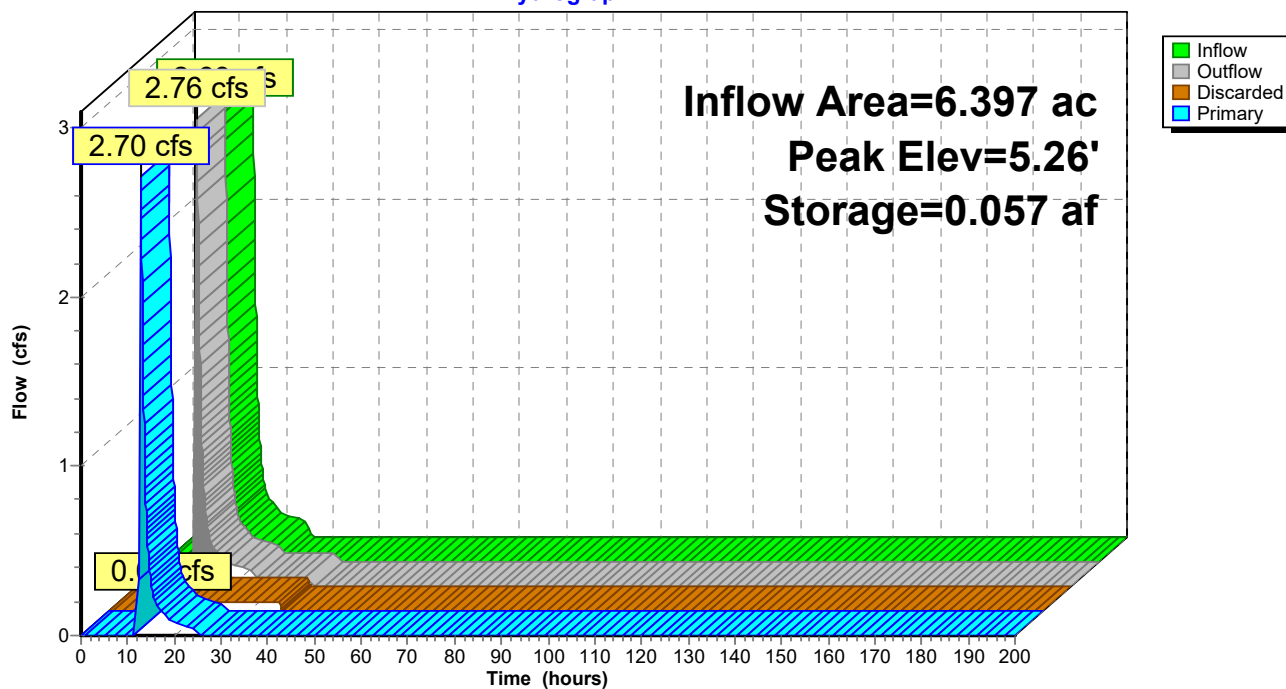
159.3 cy Field

107.1 cy Stone



Pond 2P: Stormtech

Hydrograph



Summary for Pond 6P: Infiltration Basin and Stormtech

[42] Hint: Gap in defined storage above volume #2 at 614.00'

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 1.12" for 1-Year event
 Inflow = 4.37 cfs @ 12.38 hrs, Volume= 0.484 af
 Outflow = 4.37 cfs @ 12.40 hrs, Volume= 0.484 af, Atten= 0%, Lag= 0.9 min
 Discarded = 0.21 cfs @ 12.40 hrs, Volume= 0.221 af
 Primary = 4.16 cfs @ 12.40 hrs, Volume= 0.264 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 617.29' @ 12.40 hrs Surf.Area= 1,297 sf Storage= 2,427 cf

Plug-Flow detention time= 76.6 min calculated for 0.484 af (100% of inflow)
 Center-of-Mass det. time= 76.7 min (918.6 - 842.0)

Volume	Invert	Avail.Storage	Storage Description
#1	615.00'	7,058 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	608.50'	538 cf	8.42'W x 41.55'L x 5.50'H Field A
			1,923 cf Overall - 580 cf Embedded = 1,344 cf x 40.0% Voids
#3A	609.25'	580 cf	ADS_StormTech MC-3500 d +Cap x 5 Inside #2
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		8,175 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
615.00	0	0	0
616.00	610	305	305
617.00	871	741	1,046
618.00	1,133	1,002	2,048
619.00	1,481	1,307	3,355
620.00	1,917	1,699	5,054
621.00	2,091	2,004	7,058

Device	Routing	Invert	Outlet Devices
#1	Discarded	608.50'	7.000 in/hr Exfiltration over Surface area
#2	Primary	617.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.21 cfs @ 12.40 hrs HW=617.29' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=4.09 cfs @ 12.40 hrs HW=617.29' (Free Discharge)
 ↑2=Orifice/Grate (Weir Controls 4.09 cfs @ 1.76 fps)

Pond 6P: Infiltration Basin and Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length

1 Rows x 77.0" Wide + 12.0" Side Stone x 2 = 8.42' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

5 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 579.6 cf Chamber Storage

1,923.4 cf Field - 579.6 cf Chambers = 1,343.9 cf Stone x 40.0% Voids = 537.5 cf Stone Storage

Chamber Storage + Stone Storage = 1,117.1 cf = 0.026 af

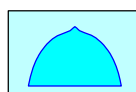
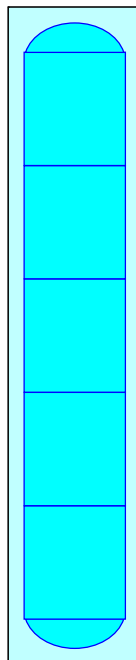
Overall Storage Efficiency = 58.1%

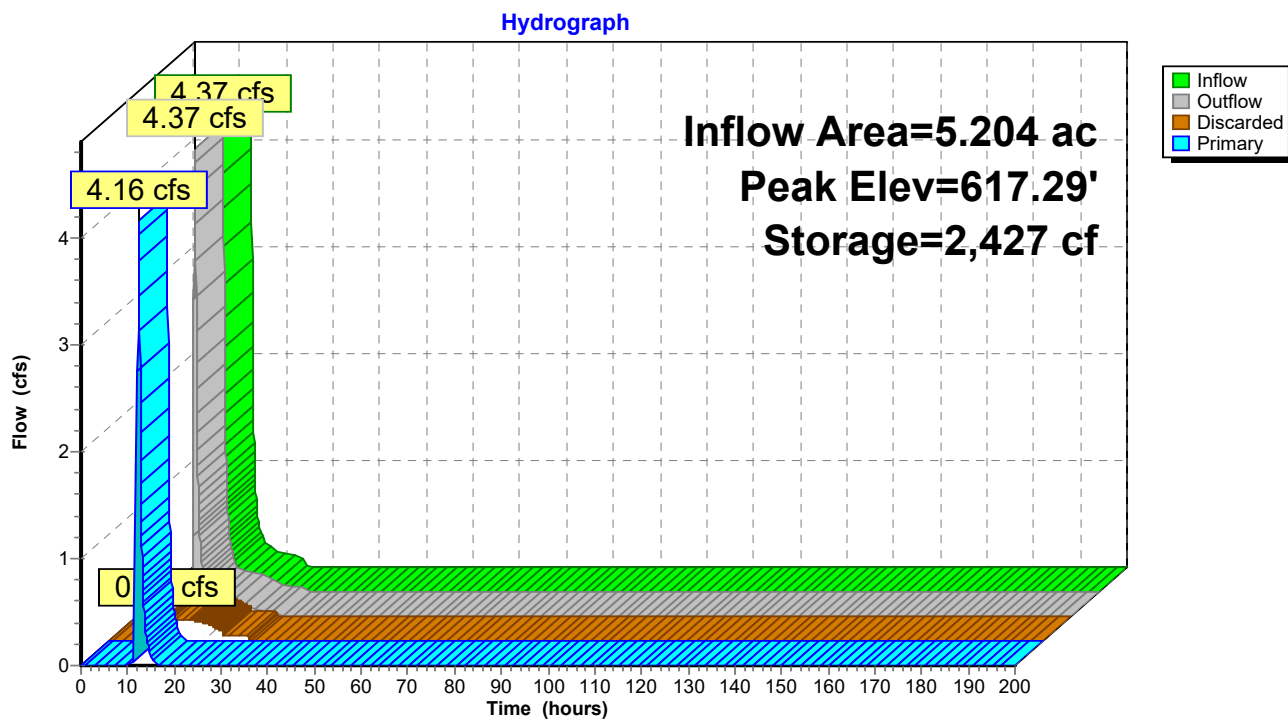
Overall System Size = 41.55' x 8.42' x 5.50'

5 Chambers

71.2 cy Field

49.8 cy Stone



Pond 6P: Infiltration Basin and Stormtech

HydePark_SWMP_Top3_11-5-19

NRCC 24-hr B 2-Year Rainfall=2.29"

Prepared by Hewlett-Packard Company

Printed 11/14/2019

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Page 19

Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA_1: CPv Runoff Area=2.615 ac 71.55% Impervious Runoff Depth=1.48"
Flow Length=488' Slope=0.0063 '/' Tc=21.8 min CN=WQ Runoff=3.07 cfs 0.322 af

Subcatchment DA_2: 1/2 WQv Runoff Area=1.805 ac 0.00% Impervious Runoff Depth=1.20"
Flow Length=396' Slope=0.0030 '/' Tc=21.1 min CN=88 Runoff=1.93 cfs 0.181 af

Subcatchment DA_3: 1/2 WQv Runoff Area=6.397 ac 0.00% Impervious Runoff Depth=1.07"
Flow Length=1,353' Slope=0.0036 '/' Tc=55.5 min CN=86 Runoff=3.52 cfs 0.573 af

Subcatchment DA_6: 1/2 WQv Runoff Area=3.399 ac 0.00% Impervious Runoff Depth=1.50"
Flow Length=752' Slope=0.0029 '/' Tc=30.3 min CN=92 Runoff=3.73 cfs 0.425 af

Pond 1P: Stormtech Peak Elev=6.62' Storage=0.129 af Inflow=3.07 cfs 0.322 af
Discarded=0.22 cfs 0.294 af Primary=0.87 cfs 0.027 af Outflow=1.09 cfs 0.322 af

Pond 2P: Stormtech Peak Elev=5.33' Storage=0.058 af Inflow=3.52 cfs 0.573 af
Discarded=0.06 cfs 0.124 af Primary=3.93 cfs 0.449 af Outflow=3.99 cfs 0.573 af

Pond 6P: Infiltration Basin and Stormtech Peak Elev=617.34' Storage=2,474 cf Inflow=5.46 cfs 0.606 af
Discarded=0.21 cfs 0.242 af Primary=5.24 cfs 0.364 af Outflow=5.46 cfs 0.606 af

Total Runoff Area = 14.216 ac Runoff Volume = 1.500 af Average Runoff Depth = 1.27"
86.84% Pervious = 12.345 ac 13.16% Impervious = 1.871 ac

Summary for Subcatchment DA_1: CPv

Runoff = 3.07 cfs @ 12.31 hrs, Volume= 0.322 af, Depth= 1.48"

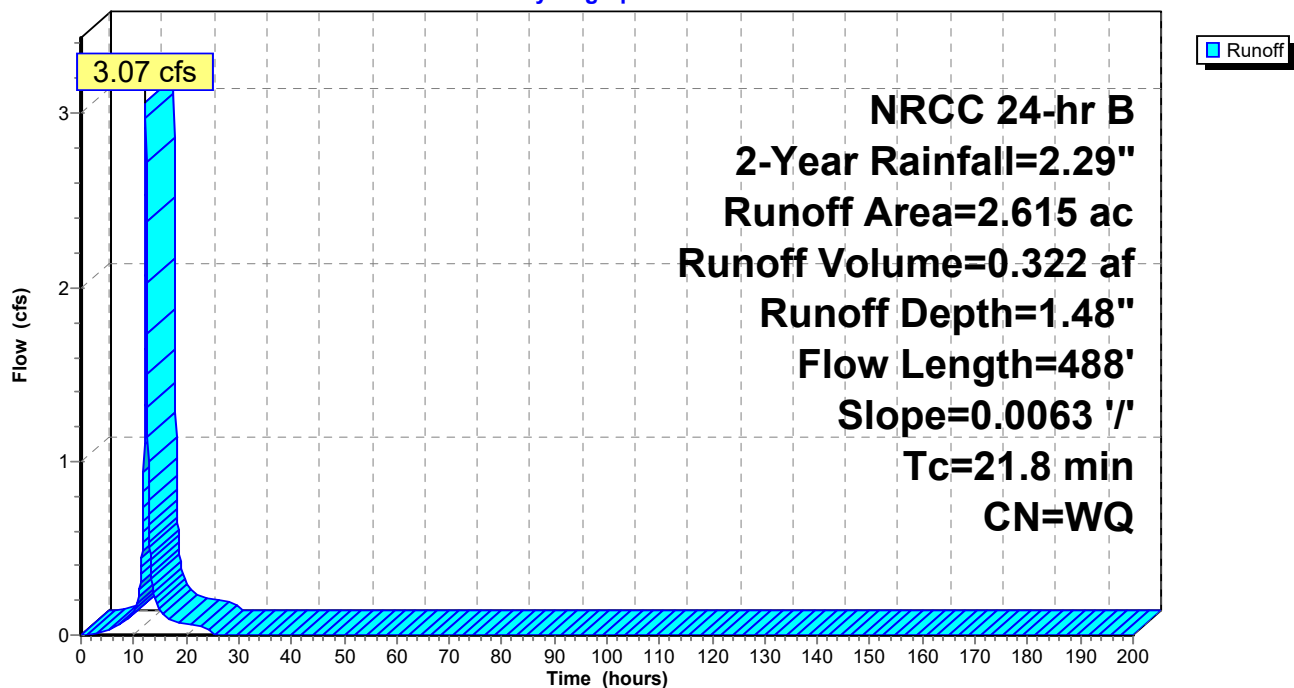
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 2-Year Rainfall=2.29"

Area (ac)	CN	Description
0.744	39	>75% Grass cover, Good, HSG A
1.871	98	Paved Parking, HSG A
2.615		Weighted Average
0.744		28.45% Pervious Area
1.871		71.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	488	0.0063	0.37		Lag/CN Method, Contour Length= 718' Interval= 1'

Subcatchment DA_1: CPv

Hydrograph



Summary for Subcatchment DA_2: 1/2 WQv

Runoff = 1.93 cfs @ 12.31 hrs, Volume= 0.181 af, Depth= 1.20"

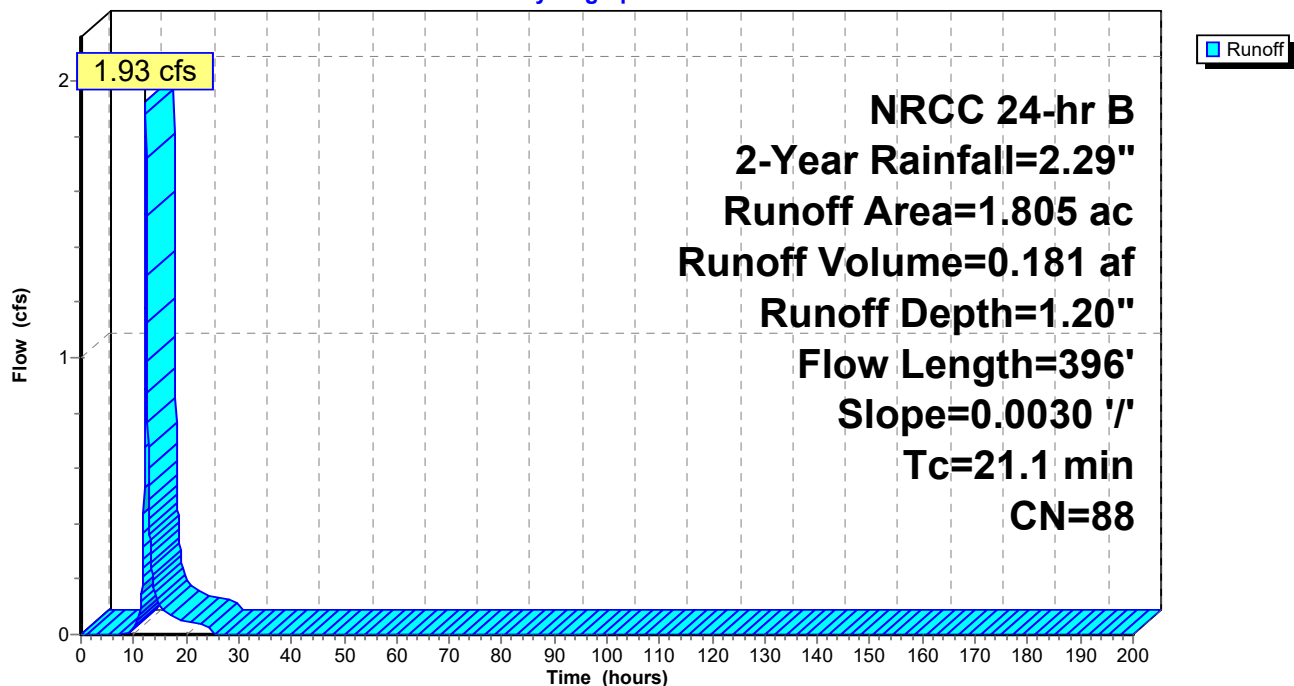
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 2-Year Rainfall=2.29"

Area (ac)	CN	Description
* 1.805	88	
1.805		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	396	0.0030	0.31		Lag/CN Method, Contour Length= 234' Interval= 1'

Subcatchment DA_2: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_3: 1/2 WQv

Runoff = 3.52 cfs @ 12.77 hrs, Volume= 0.573 af, Depth= 1.07"

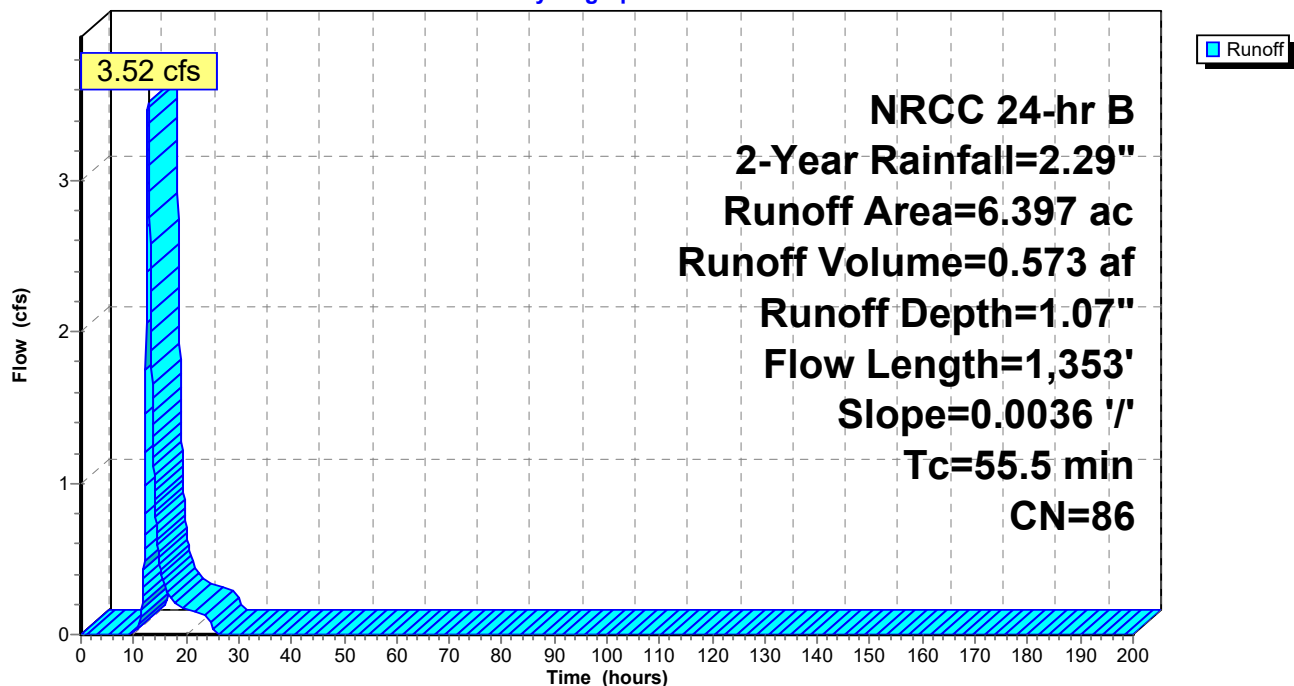
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 2-Year Rainfall=2.29"

Area (ac)	CN	Description
* 6.397	86	
6.397		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
55.5	1,353	0.0036	0.41		Lag/CN Method, Contour Length= 993' Interval= 1'

Subcatchment DA_3: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_6: 1/2 WQv

Runoff = 3.73 cfs @ 12.42 hrs, Volume= 0.425 af, Depth= 1.50"

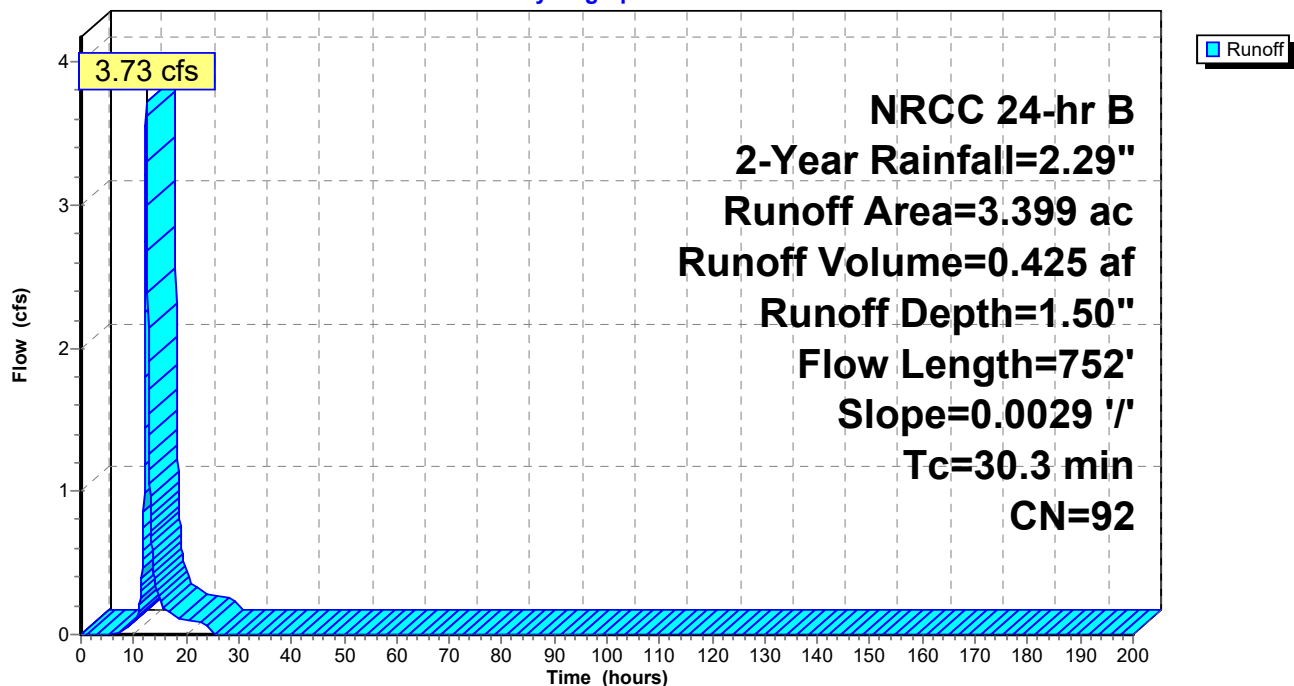
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 2-Year Rainfall=2.29"

Area (ac)	CN	Description
* 3.399	92	
3.399		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	752	0.0029	0.41		Lag/CN Method, Contour Length= 429' Interval= 1'

Subcatchment DA_6: 1/2 WQv

Hydrograph



Summary for Pond 1P: Stormtech

Inflow Area = 2.615 ac, 71.55% Impervious, Inflow Depth = 1.48" for 2-Year event
 Inflow = 3.07 cfs @ 12.31 hrs, Volume= 0.322 af
 Outflow = 1.09 cfs @ 12.74 hrs, Volume= 0.322 af, Atten= 64%, Lag= 25.9 min
 Discarded = 0.22 cfs @ 10.95 hrs, Volume= 0.294 af
 Primary = 0.87 cfs @ 12.74 hrs, Volume= 0.027 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 6.62' @ 12.74 hrs Surf.Area= 0.031 ac Storage= 0.129 af

Plug-Flow detention time= 189.8 min calculated for 0.321 af (100% of inflow)
 Center-of-Mass det. time= 189.8 min (969.0 - 779.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.052 af	28.50'W x 47.37'L x 6.75'H Field A 0.209 af Overall - 0.078 af Embedded = 0.131 af x 40.0% Voids
#2A	0.75'	0.078 af	ADS_StormTech MC-4500 +Cap x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 30 Chambers in 3 Rows Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
0.131 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	7.000 in/hr Exfiltration over Surface area
#2	Primary	6.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 10.95 hrs HW=0.07' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.85 cfs @ 12.74 hrs HW=6.62' (Free Discharge)
 ↑**2=Orifice/Grate** (Weir Controls 0.85 cfs @ 1.13 fps)

Pond 1P: Stormtech - Chamber Wizard Field A**Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)**

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length

3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

30 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,408.9 cf Chamber Storage

9,112.2 cf Field - 3,408.9 cf Chambers = 5,703.2 cf Stone x 40.0% Voids = 2,281.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,690.2 cf = 0.131 af

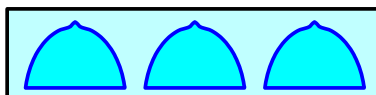
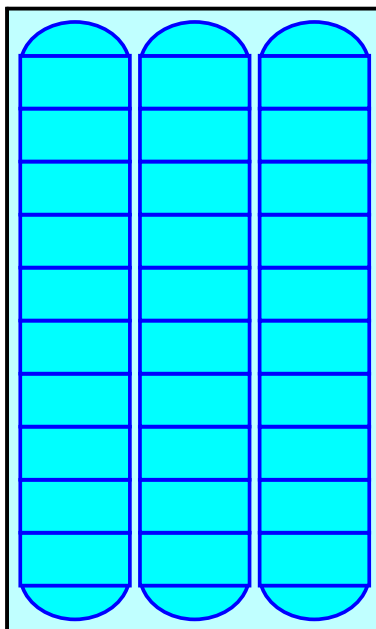
Overall Storage Efficiency = 62.4%

Overall System Size = 47.37' x 28.50' x 6.75'

30 Chambers

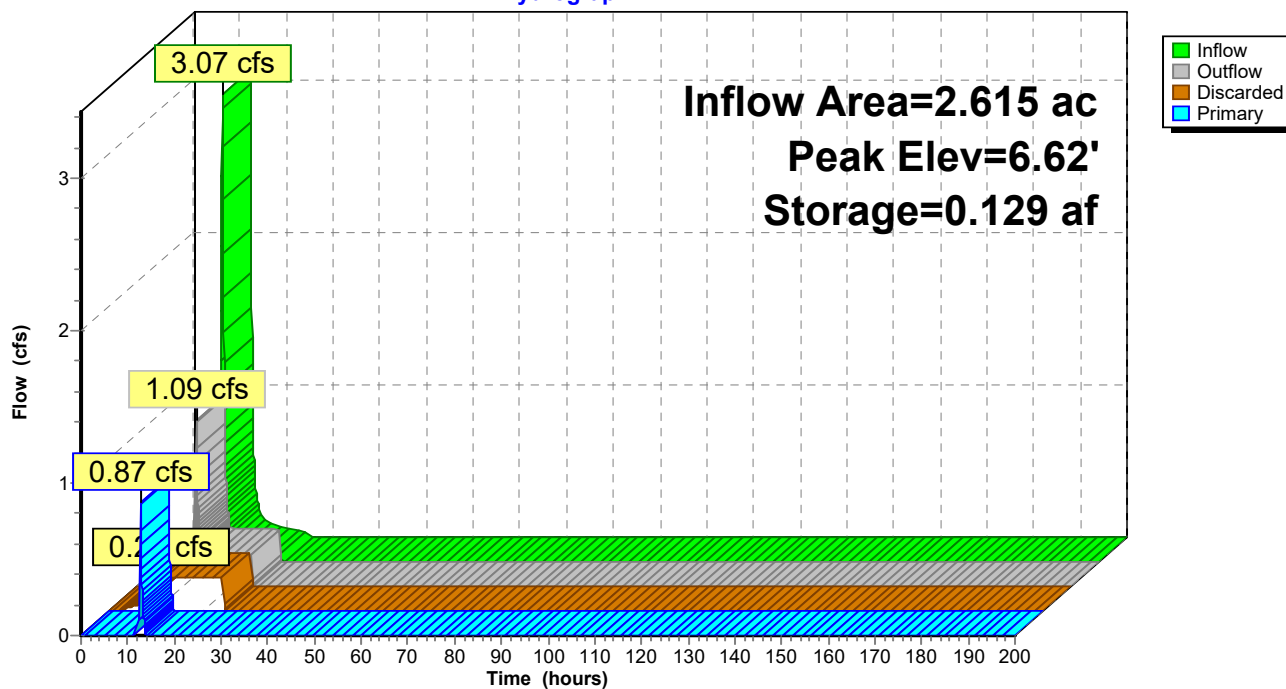
337.5 cy Field

211.2 cy Stone



Pond 1P: Stormtech

Hydrograph



Summary for Pond 2P: Stormtech

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

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 6.397 ac, 0.00% Impervious, Inflow Depth = 1.07" for 2-Year event
 Inflow = 3.52 cfs @ 12.77 hrs, Volume= 0.573 af
 Outflow = 3.99 cfs @ 12.51 hrs, Volume= 0.573 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.06 cfs @ 10.95 hrs, Volume= 0.124 af
 Primary = 3.93 cfs @ 12.51 hrs, Volume= 0.449 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Peak Elev= 5.33' @ 12.50 hrs Surf.Area= 0.018 ac Storage= 0.058 af

Plug-Flow detention time= 110.4 min calculated for 0.573 af (100% of inflow)

Center-of-Mass det. time= 110.5 min (993.2 - 882.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.027 af	22.75'W x 34.38'L x 5.50'H Field A 0.099 af Overall - 0.032 af Embedded = 0.066 af x 40.0% Voids
#2A	0.75'	0.032 af	ADS_StormTech MC-3500 d +Cap x 12 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 12 Chambers in 3 Rows Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf
			0.059 af Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	3.120 in/hr Exfiltration over Surface area
#2	Primary	5.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 10.95 hrs HW=0.06' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=3.48 cfs @ 12.51 hrs HW=5.31' (Free Discharge)↑**2=Orifice/Grate** (Weir Controls 3.48 cfs @ 1.81 fps)

Pond 2P: Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +12.0" End Stone x 2 = 34.38' Base Length

3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

12 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 1,408.8 cf Chamber Storage

4,301.8 cf Field - 1,408.8 cf Chambers = 2,893.0 cf Stone x 40.0% Voids = 1,157.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,566.0 cf = 0.059 af

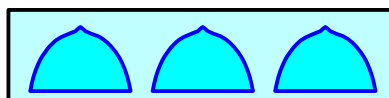
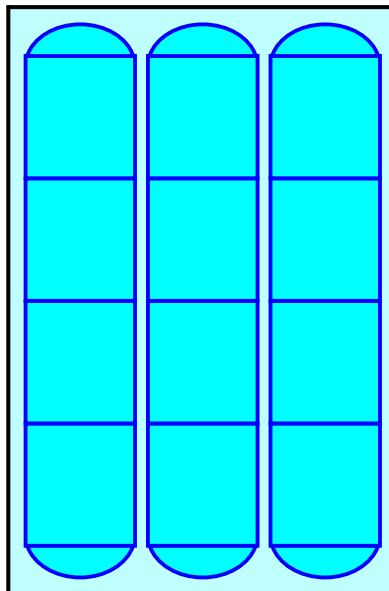
Overall Storage Efficiency = 59.6%

Overall System Size = 34.38' x 22.75' x 5.50'

12 Chambers

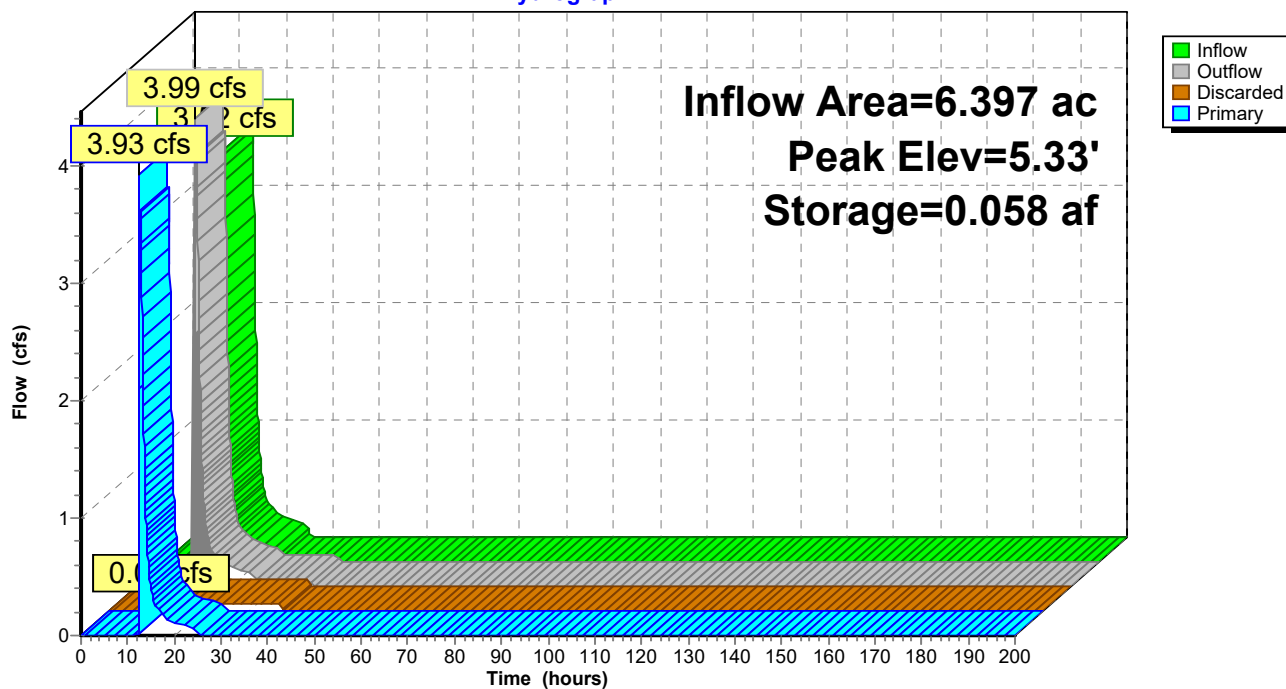
159.3 cy Field

107.1 cy Stone



Pond 2P: Stormtech

Hydrograph



Summary for Pond 6P: Infiltration Basin and Stormtech

[42] Hint: Gap in defined storage above volume #2 at 614.00'

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 1.40" for 2-Year event
 Inflow = 5.46 cfs @ 12.38 hrs, Volume= 0.606 af
 Outflow = 5.46 cfs @ 12.39 hrs, Volume= 0.606 af, Atten= 0%, Lag= 0.8 min
 Discarded = 0.21 cfs @ 12.39 hrs, Volume= 0.242 af
 Primary = 5.24 cfs @ 12.39 hrs, Volume= 0.364 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 617.34' @ 12.39 hrs Surf.Area= 1,310 sf Storage= 2,474 cf

Plug-Flow detention time= 67.0 min calculated for 0.606 af (100% of inflow)
 Center-of-Mass det. time= 67.0 min (902.8 - 835.9)

Volume	Invert	Avail.Storage	Storage Description
#1	615.00'	7,058 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	608.50'	538 cf	8.42'W x 41.55'L x 5.50'H Field A
			1,923 cf Overall - 580 cf Embedded = 1,344 cf x 40.0% Voids
#3A	609.25'	580 cf	ADS_StormTech MC-3500 d +Cap x 5 Inside #2
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		8,175 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
615.00	0	0	0
616.00	610	305	305
617.00	871	741	1,046
618.00	1,133	1,002	2,048
619.00	1,481	1,307	3,355
620.00	1,917	1,699	5,054
621.00	2,091	2,004	7,058

Device	Routing	Invert	Outlet Devices
#1	Discarded	608.50'	7.000 in/hr Exfiltration over Surface area
#2	Primary	617.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.21 cfs @ 12.39 hrs HW=617.34' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=5.17 cfs @ 12.39 hrs HW=617.34' (Free Discharge)
 ↑2=Orifice/Grate (Weir Controls 5.17 cfs @ 1.90 fps)

Pond 6P: Infiltration Basin and Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length

1 Rows x 77.0" Wide + 12.0" Side Stone x 2 = 8.42' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

5 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 579.6 cf Chamber Storage

1,923.4 cf Field - 579.6 cf Chambers = 1,343.9 cf Stone x 40.0% Voids = 537.5 cf Stone Storage

Chamber Storage + Stone Storage = 1,117.1 cf = 0.026 af

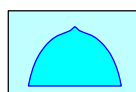
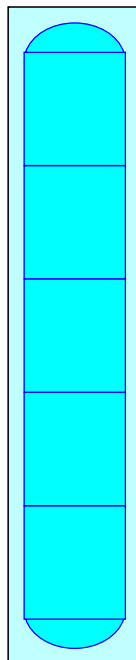
Overall Storage Efficiency = 58.1%

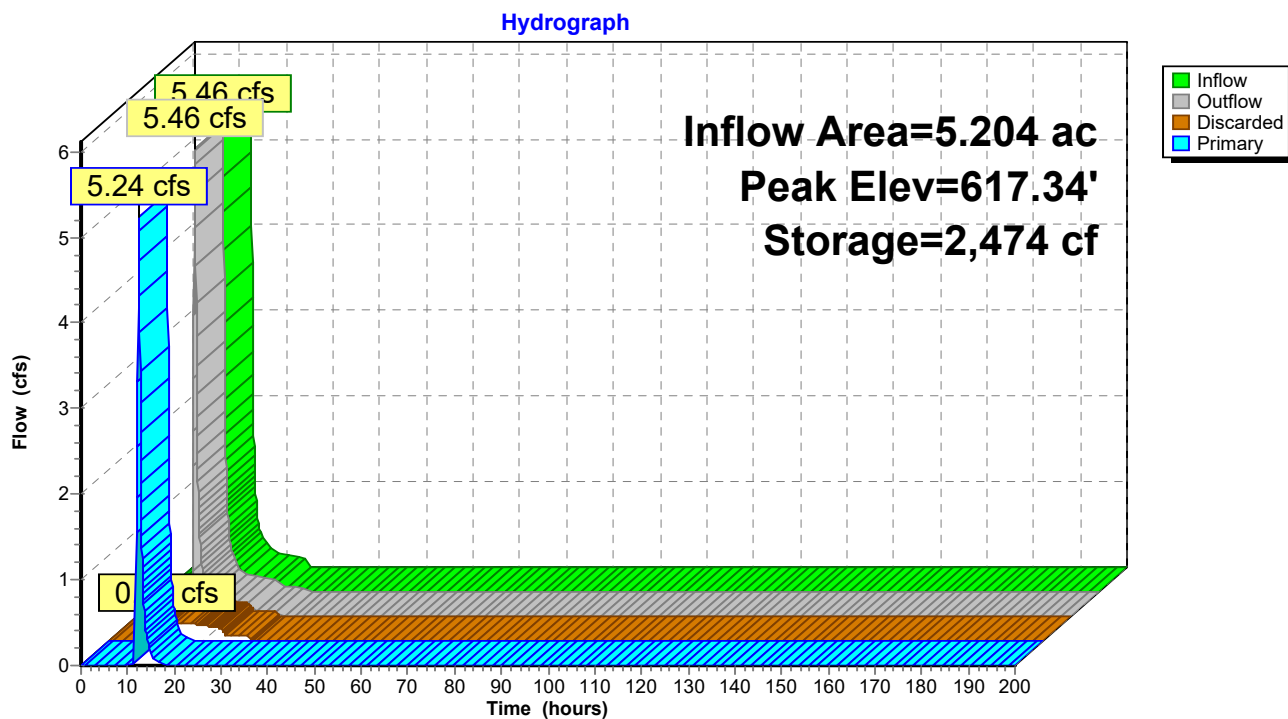
Overall System Size = 41.55' x 8.42' x 5.50'

5 Chambers

71.2 cy Field

49.8 cy Stone



Pond 6P: Infiltration Basin and Stormtech

HydePark_SWMP_Top3_11-5-19

NRCC 24-hr B 5-Year Rainfall=2.77"

Prepared by Hewlett-Packard Company

Printed 11/14/2019

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Page 33

Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA_1: CPv Runoff Area=2.615 ac 71.55% Impervious Runoff Depth=1.82"
Flow Length=488' Slope=0.0063 '/' Tc=21.8 min CN=WQ Runoff=3.74 cfs 0.396 af

Subcatchment DA_2: 1/2 WQv Runoff Area=1.805 ac 0.00% Impervious Runoff Depth=1.62"
Flow Length=396' Slope=0.0030 '/' Tc=21.1 min CN=88 Runoff=2.59 cfs 0.243 af

Subcatchment DA_3: 1/2 WQv Runoff Area=6.397 ac 0.00% Impervious Runoff Depth=1.47"
Flow Length=1,353' Slope=0.0036 '/' Tc=55.5 min CN=86 Runoff=4.85 cfs 0.782 af

Subcatchment DA_6: 1/2 WQv Runoff Area=3.399 ac 0.00% Impervious Runoff Depth=1.94"
Flow Length=752' Slope=0.0029 '/' Tc=30.3 min CN=92 Runoff=4.80 cfs 0.551 af

Pond 1P: Stormtech Peak Elev=6.80' Storage=0.131 af Inflow=3.74 cfs 0.396 af
Discarded=0.22 cfs 0.321 af Primary=3.37 cfs 0.075 af Outflow=3.58 cfs 0.396 af

Pond 2P: Stormtech Peak Elev=5.38' Storage=0.058 af Inflow=4.85 cfs 0.782 af
Discarded=0.06 cfs 0.128 af Primary=4.81 cfs 0.654 af Outflow=4.87 cfs 0.782 af

Pond 6P: Infiltration Basin and Stormtech Peak Elev=617.41' Storage=2,541 cf Inflow=7.14 cfs 0.794 af
Discarded=0.22 cfs 0.269 af Primary=6.91 cfs 0.525 af Outflow=7.12 cfs 0.794 af

Total Runoff Area = 14.216 ac Runoff Volume = 1.972 af Average Runoff Depth = 1.66"
86.84% Pervious = 12.345 ac 13.16% Impervious = 1.871 ac

Summary for Subcatchment DA_1: CPv

Runoff = 3.74 cfs @ 12.31 hrs, Volume= 0.396 af, Depth= 1.82"

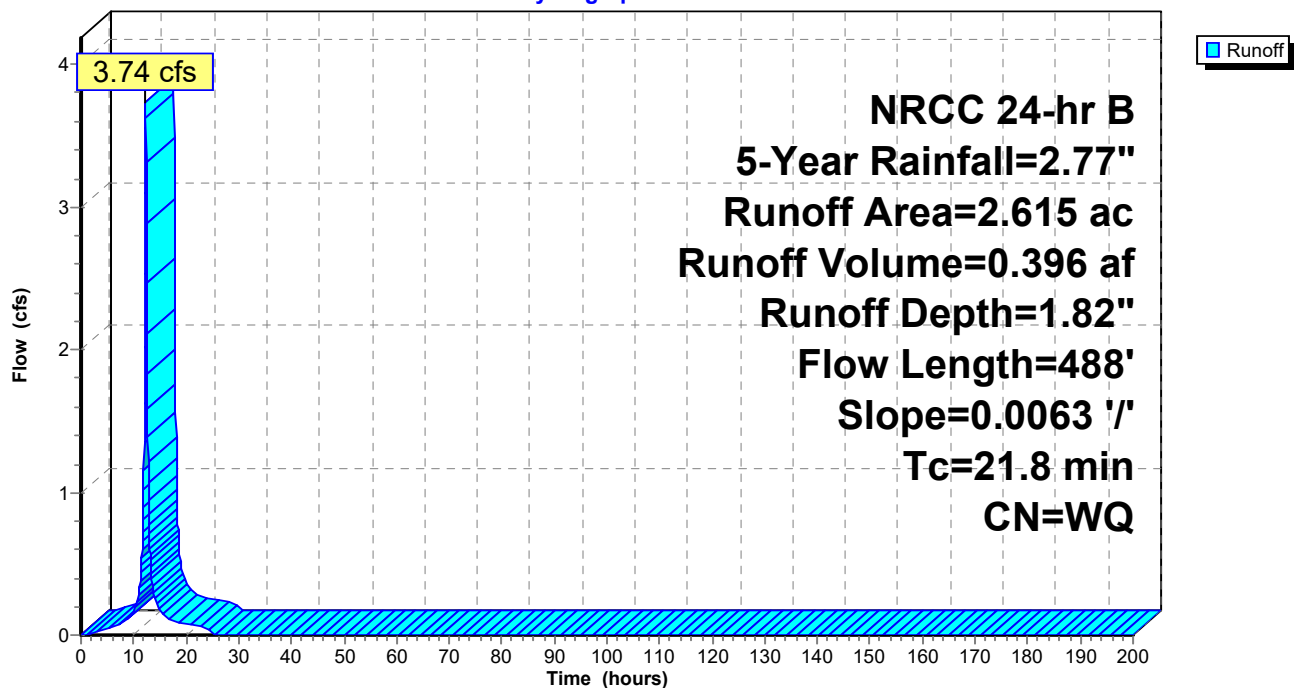
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 5-Year Rainfall=2.77"

Area (ac)	CN	Description
0.744	39	>75% Grass cover, Good, HSG A
1.871	98	Paved Parking, HSG A
2.615		Weighted Average
0.744		28.45% Pervious Area
1.871		71.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	488	0.0063	0.37		Lag/CN Method, Contour Length= 718' Interval= 1'

Subcatchment DA_1: CPv

Hydrograph



Summary for Subcatchment DA_2: 1/2 WQv

Runoff = 2.59 cfs @ 12.31 hrs, Volume= 0.243 af, Depth= 1.62"

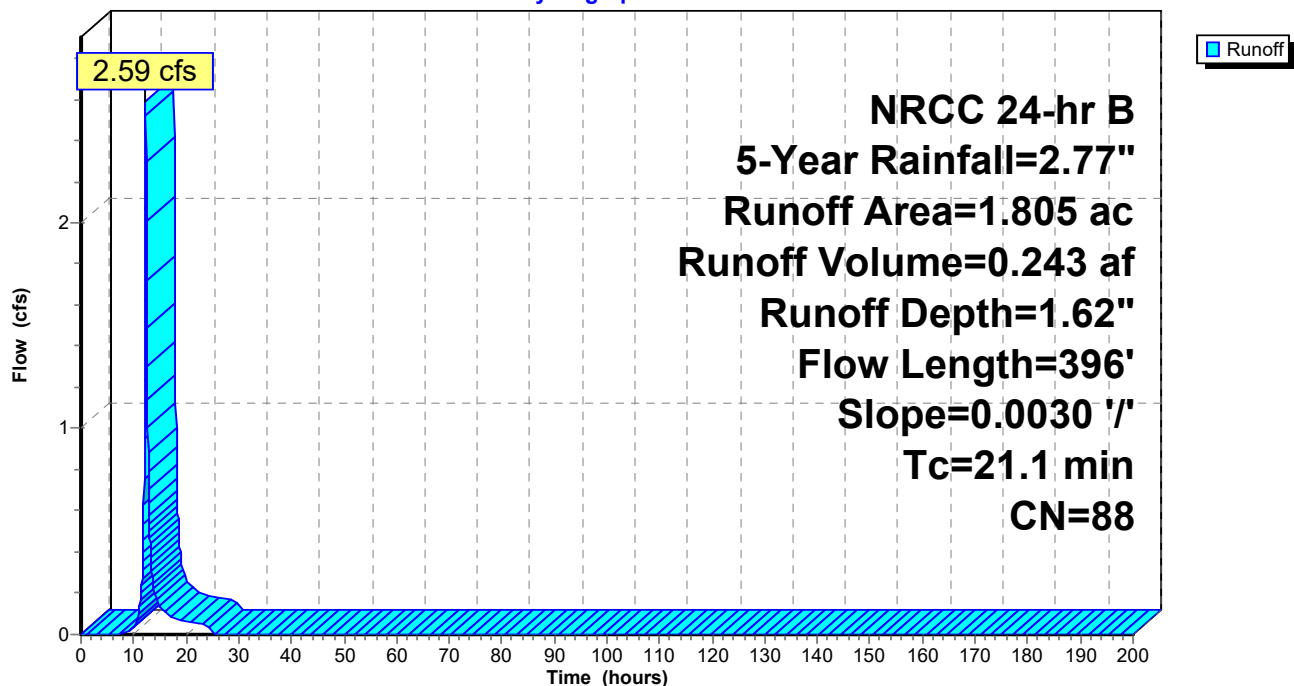
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 5-Year Rainfall=2.77"

Area (ac)	CN	Description
* 1.805	88	
1.805		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	396	0.0030	0.31		Lag/CN Method, Contour Length= 234' Interval= 1'

Subcatchment DA_2: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_3: 1/2 WQv

Runoff = 4.85 cfs @ 12.76 hrs, Volume= 0.782 af, Depth= 1.47"

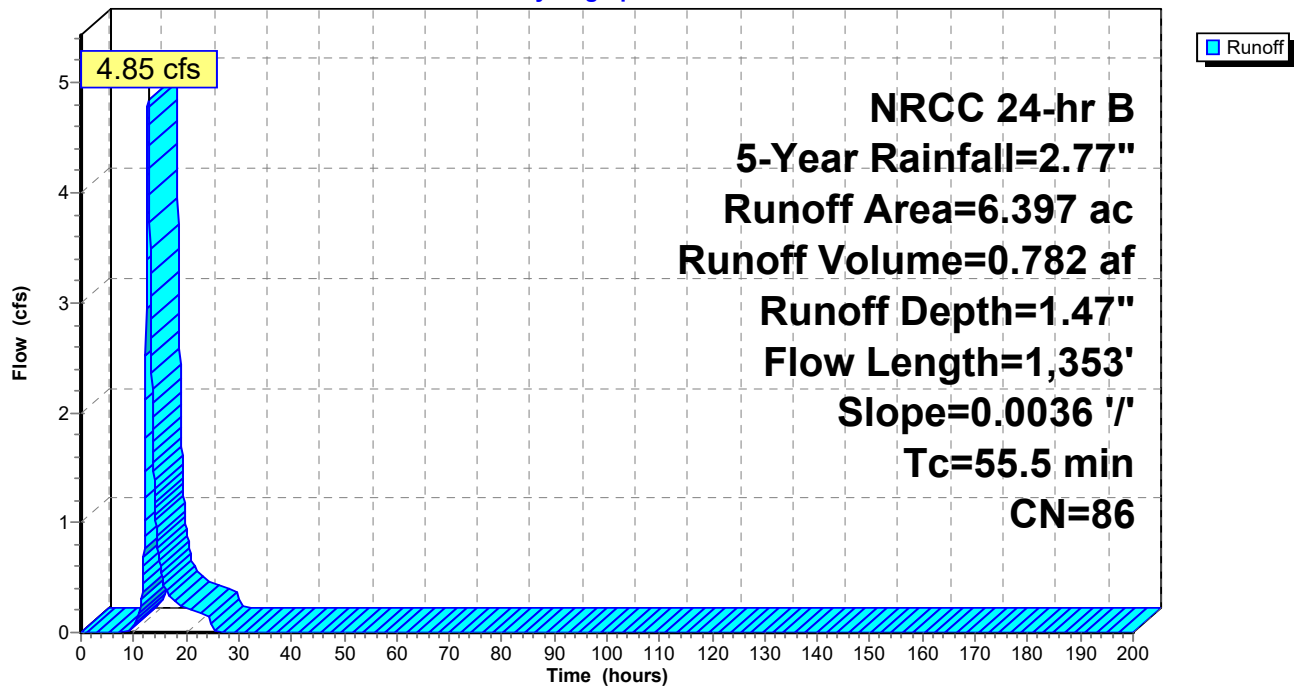
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 5-Year Rainfall=2.77"

Area (ac)	CN	Description
* 6.397	86	
6.397		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
55.5	1,353	0.0036	0.41		Lag/CN Method, Contour Length= 993' Interval= 1'

Subcatchment DA_3: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_6: 1/2 WQv

Runoff = 4.80 cfs @ 12.42 hrs, Volume= 0.551 af, Depth= 1.94"

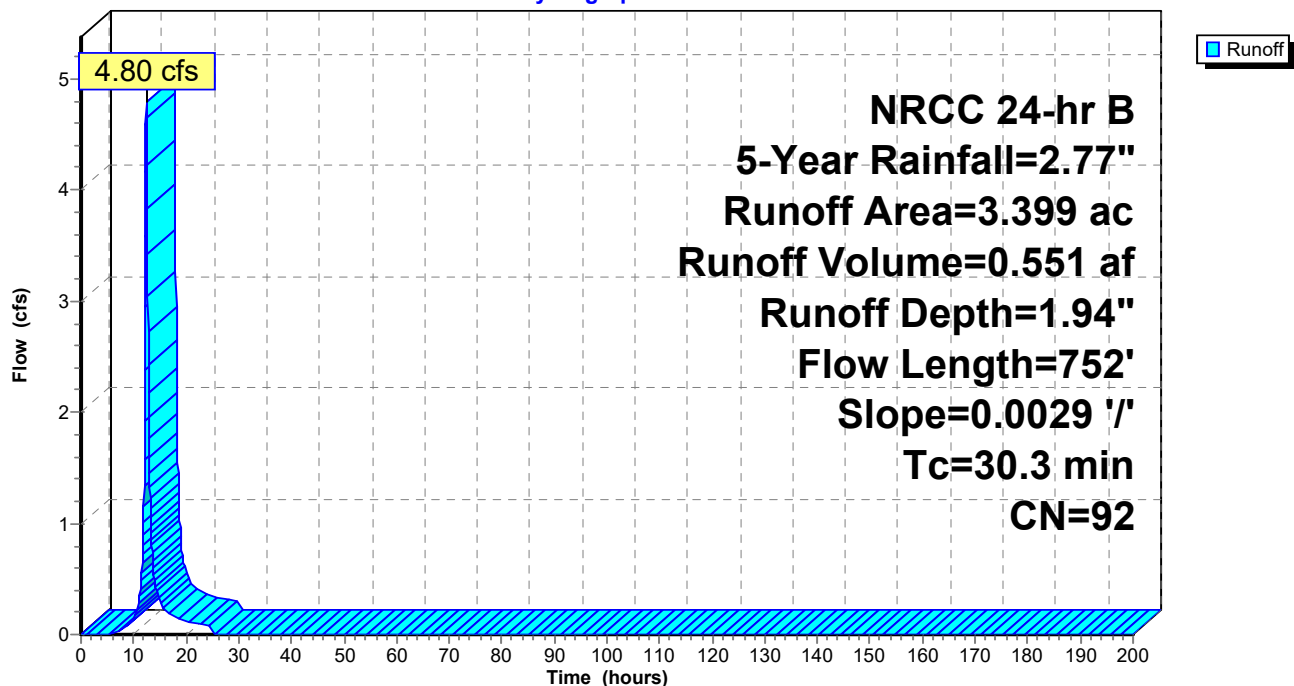
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 5-Year Rainfall=2.77"

Area (ac)	CN	Description
* 3.399	92	
3.399		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	752	0.0029	0.41		Lag/CN Method, Contour Length= 429' Interval= 1'

Subcatchment DA_6: 1/2 WQv

Hydrograph



Summary for Pond 1P: Stormtech

[93] Warning: Storage range exceeded by 0.05'

Inflow Area = 2.615 ac, 71.55% Impervious, Inflow Depth = 1.82" for 5-Year event
 Inflow = 3.74 cfs @ 12.31 hrs, Volume= 0.396 af
 Outflow = 3.58 cfs @ 12.50 hrs, Volume= 0.396 af, Atten= 4%, Lag= 11.8 min
 Discarded = 0.22 cfs @ 10.65 hrs, Volume= 0.321 af
 Primary = 3.37 cfs @ 12.50 hrs, Volume= 0.075 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 6.80' @ 12.50 hrs Surf.Area= 0.031 ac Storage= 0.131 af

Plug-Flow detention time= 171.7 min calculated for 0.396 af (100% of inflow)
 Center-of-Mass det. time= 171.7 min (946.4 - 774.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.052 af	28.50'W x 47.37'L x 6.75'H Field A 0.209 af Overall - 0.078 af Embedded = 0.131 af x 40.0% Voids
#2A	0.75'	0.078 af	ADS_StormTech MC-4500 +Cap x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 30 Chambers in 3 Rows Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
0.131 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	7.000 in/hr Exfiltration over Surface area
#2	Primary	6.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 10.65 hrs HW=0.07' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=3.17 cfs @ 12.50 hrs HW=6.79' (Free Discharge)

↑**2=Orifice/Grate** (Weir Controls 3.17 cfs @ 1.75 fps)

Pond 1P: Stormtech - Chamber Wizard Field A**Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)**

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length

3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

30 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,408.9 cf Chamber Storage

9,112.2 cf Field - 3,408.9 cf Chambers = 5,703.2 cf Stone x 40.0% Voids = 2,281.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,690.2 cf = 0.131 af

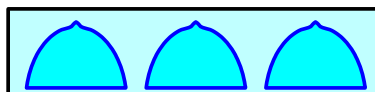
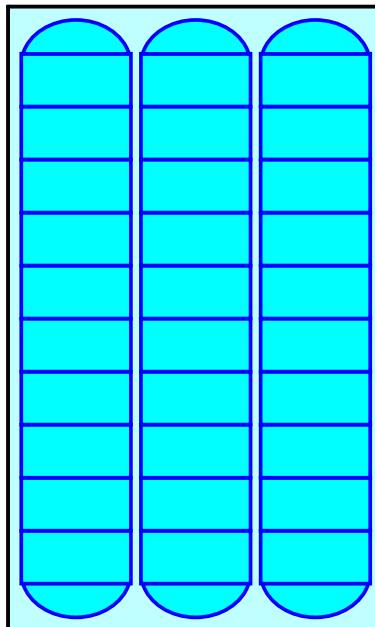
Overall Storage Efficiency = 62.4%

Overall System Size = 47.37' x 28.50' x 6.75'

30 Chambers

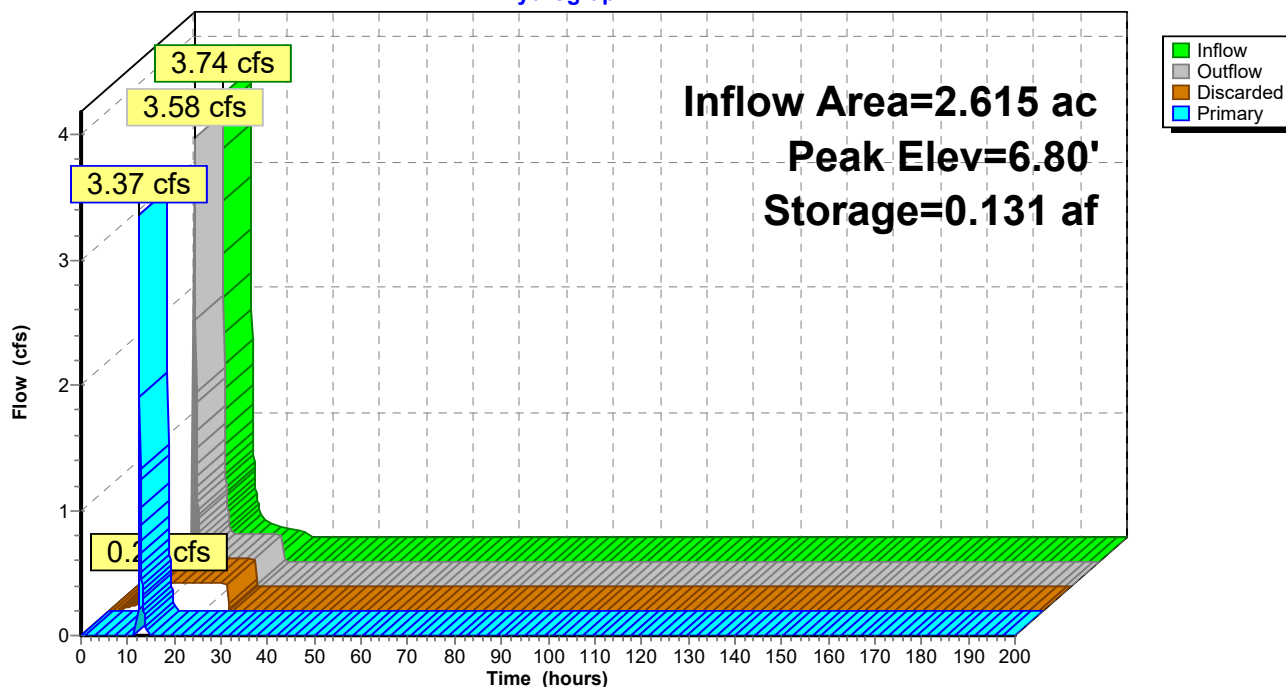
337.5 cy Field

211.2 cy Stone



Pond 1P: Stormtech

Hydrograph



Summary for Pond 2P: Stormtech

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

Inflow Area = 6.397 ac, 0.00% Impervious, Inflow Depth = 1.47" for 5-Year event
 Inflow = 4.85 cfs @ 12.76 hrs, Volume= 0.782 af
 Outflow = 4.87 cfs @ 12.76 hrs, Volume= 0.782 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.06 cfs @ 10.20 hrs, Volume= 0.128 af
 Primary = 4.81 cfs @ 12.76 hrs, Volume= 0.654 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 5.38' @ 12.76 hrs Surf.Area= 0.018 ac Storage= 0.058 af

Plug-Flow detention time= 82.8 min calculated for 0.782 af (100% of inflow)
 Center-of-Mass det. time= 82.8 min (956.8 - 874.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.027 af	22.75'W x 34.38'L x 5.50'H Field A 0.099 af Overall - 0.032 af Embedded = 0.066 af x 40.0% Voids
#2A	0.75'	0.032 af	ADS_StormTech MC-3500 d +Cap x 12 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 12 Chambers in 3 Rows Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf
0.059 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	3.120 in/hr Exfiltration over Surface area
#2	Primary	5.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 10.20 hrs HW=0.06' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=4.79 cfs @ 12.76 hrs HW=5.38' (Free Discharge)

↑**2=Orifice/Grate** (Weir Controls 4.79 cfs @ 2.01 fps)

Pond 2P: Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +12.0" End Stone x 2 = 34.38' Base Length

3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

12 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 1,408.8 cf Chamber Storage

4,301.8 cf Field - 1,408.8 cf Chambers = 2,893.0 cf Stone x 40.0% Voids = 1,157.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,566.0 cf = 0.059 af

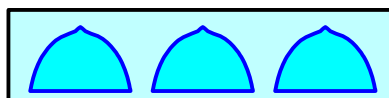
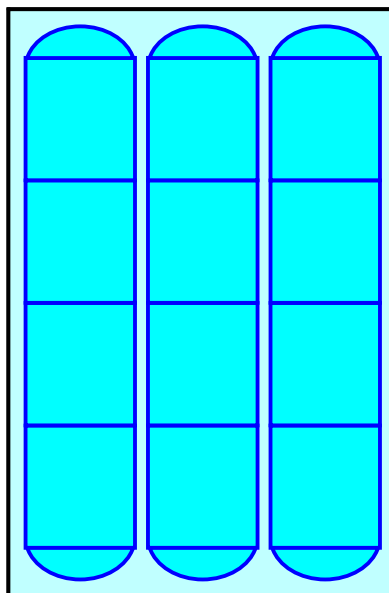
Overall Storage Efficiency = 59.6%

Overall System Size = 34.38' x 22.75' x 5.50'

12 Chambers

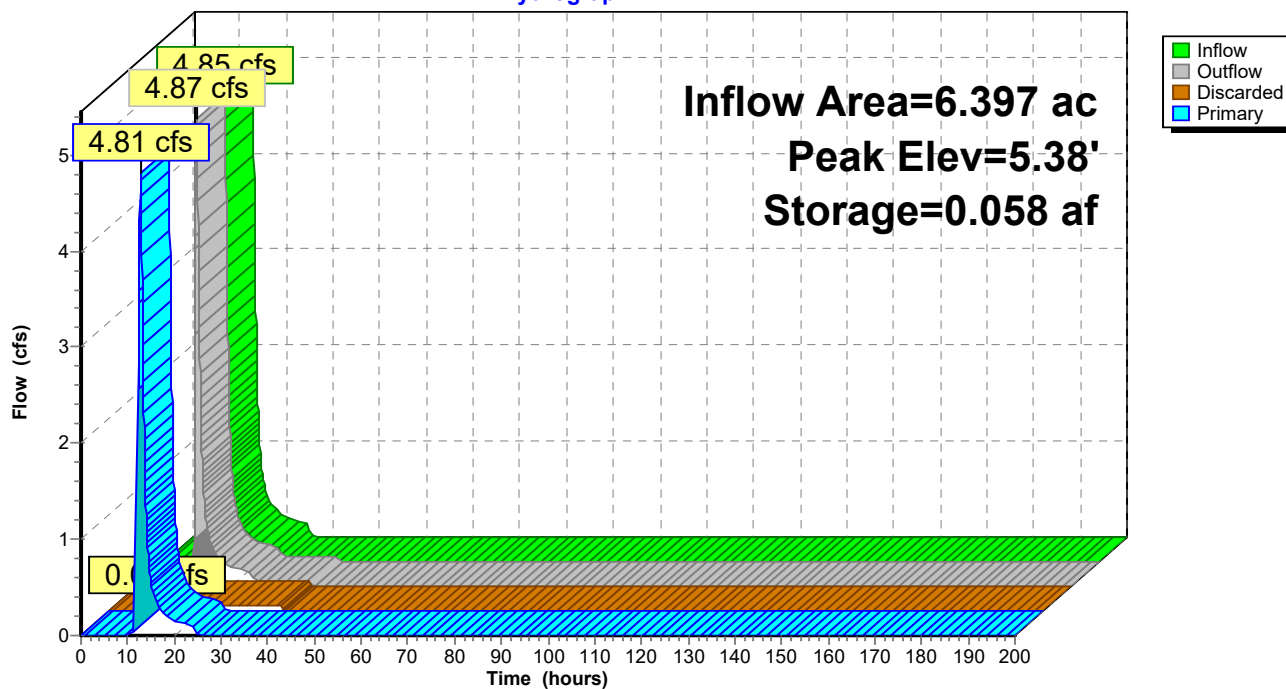
159.3 cy Field

107.1 cy Stone



Pond 2P: Stormtech

Hydrograph



Summary for Pond 6P: Infiltration Basin and Stormtech

[42] Hint: Gap in defined storage above volume #2 at 614.00'

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 1.83" for 5-Year event
 Inflow = 7.14 cfs @ 12.37 hrs, Volume= 0.794 af
 Outflow = 7.12 cfs @ 12.38 hrs, Volume= 0.794 af, Atten= 0%, Lag= 0.7 min
 Discarded = 0.22 cfs @ 12.38 hrs, Volume= 0.269 af
 Primary = 6.91 cfs @ 12.38 hrs, Volume= 0.525 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 617.41' @ 12.38 hrs Surf.Area= 1,328 sf Storage= 2,541 cf

Plug-Flow detention time= 57.9 min calculated for 0.794 af (100% of inflow)
 Center-of-Mass det. time= 58.0 min (886.5 - 828.5)

Volume	Invert	Avail.Storage	Storage Description
#1	615.00'	7,058 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	608.50'	538 cf	8.42'W x 41.55'L x 5.50'H Field A
			1,923 cf Overall - 580 cf Embedded = 1,344 cf x 40.0% Voids
#3A	609.25'	580 cf	ADS_StormTech MC-3500 d +Cap x 5 Inside #2
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		8,175 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
615.00	0	0	0
616.00	610	305	305
617.00	871	741	1,046
618.00	1,133	1,002	2,048
619.00	1,481	1,307	3,355
620.00	1,917	1,699	5,054
621.00	2,091	2,004	7,058

Device	Routing	Invert	Outlet Devices
#1	Discarded	608.50'	7.000 in/hr Exfiltration over Surface area
#2	Primary	617.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 12.38 hrs HW=617.41' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=6.83 cfs @ 12.38 hrs HW=617.41' (Free Discharge)
 ↑2=Orifice/Grate (Weir Controls 6.83 cfs @ 2.09 fps)

Pond 6P: Infiltration Basin and Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length

1 Rows x 77.0" Wide + 12.0" Side Stone x 2 = 8.42' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

5 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 579.6 cf Chamber Storage

1,923.4 cf Field - 579.6 cf Chambers = 1,343.9 cf Stone x 40.0% Voids = 537.5 cf Stone Storage

Chamber Storage + Stone Storage = 1,117.1 cf = 0.026 af

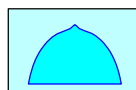
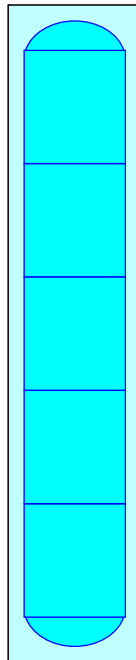
Overall Storage Efficiency = 58.1%

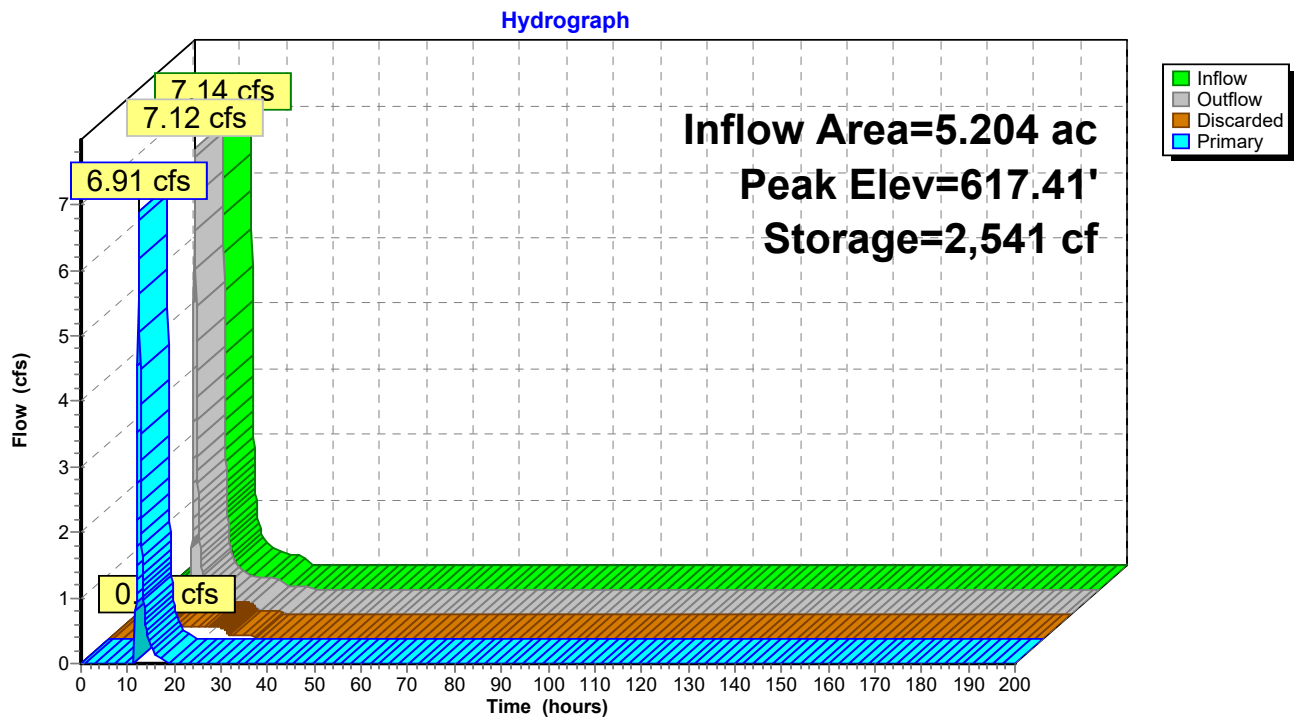
Overall System Size = 41.55' x 8.42' x 5.50'

5 Chambers

71.2 cy Field

49.8 cy Stone



Pond 6P: Infiltration Basin and Stormtech

HydePark_SWMP_Top3_11-5-19

NRCC 24-hr B 10-Year Rainfall=3.21"

Prepared by Hewlett-Packard Company

Printed 11/14/2019

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Page 47

Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA_1: CPv Runoff Area=2.615 ac 71.55% Impervious Runoff Depth=2.13"
Flow Length=488' Slope=0.0063 '/' Tc=21.8 min CN=WQ Runoff=4.35 cfs 0.464 af

Subcatchment DA_2: 1/2 WQv Runoff Area=1.805 ac 0.00% Impervious Runoff Depth=2.01"
Flow Length=396' Slope=0.0030 '/' Tc=21.1 min CN=88 Runoff=3.20 cfs 0.302 af

Subcatchment DA_3: 1/2 WQv Runoff Area=6.397 ac 0.00% Impervious Runoff Depth=1.84"
Flow Length=1,353' Slope=0.0036 '/' Tc=55.5 min CN=86 Runoff=6.11 cfs 0.983 af

Subcatchment DA_6: 1/2 WQv Runoff Area=3.399 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=752' Slope=0.0029 '/' Tc=30.3 min CN=92 Runoff=5.78 cfs 0.669 af

Pond 1P: Stormtech Peak Elev=6.95' Storage=0.131 af Inflow=4.35 cfs 0.464 af
Discarded=0.22 cfs 0.343 af Primary=6.21 cfs 0.121 af Outflow=6.43 cfs 0.464 af

Pond 2P: Stormtech Peak Elev=5.44' Storage=0.058 af Inflow=6.11 cfs 0.983 af
Discarded=0.06 cfs 0.132 af Primary=6.06 cfs 0.851 af Outflow=6.11 cfs 0.983 af

Pond 6P: Infiltration Basin and Stormtech Peak Elev=617.47' Storage=2,600 cf Inflow=8.68 cfs 0.970 af
Discarded=0.22 cfs 0.289 af Primary=8.44 cfs 0.682 af Outflow=8.66 cfs 0.970 af

Total Runoff Area = 14.216 ac Runoff Volume = 2.417 af Average Runoff Depth = 2.04"
86.84% Pervious = 12.345 ac 13.16% Impervious = 1.871 ac

Summary for Subcatchment DA_1: CPv

Runoff = 4.35 cfs @ 12.31 hrs, Volume= 0.464 af, Depth= 2.13"

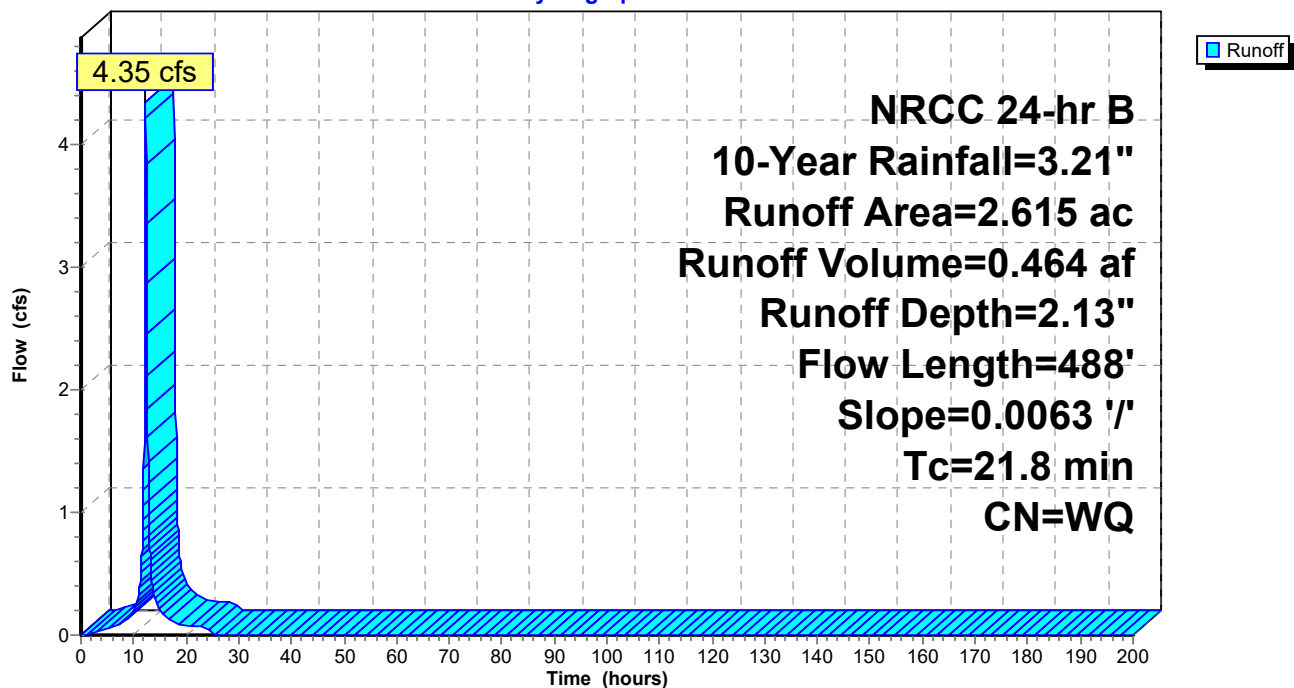
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-Year Rainfall=3.21"

Area (ac)	CN	Description
0.744	39	>75% Grass cover, Good, HSG A
1.871	98	Paved Parking, HSG A
2.615		Weighted Average
0.744		28.45% Pervious Area
1.871		71.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	488	0.0063	0.37		Lag/CN Method, Contour Length= 718' Interval= 1'

Subcatchment DA_1: CPv

Hydrograph



Summary for Subcatchment DA_2: 1/2 WQv

Runoff = 3.20 cfs @ 12.31 hrs, Volume= 0.302 af, Depth= 2.01"

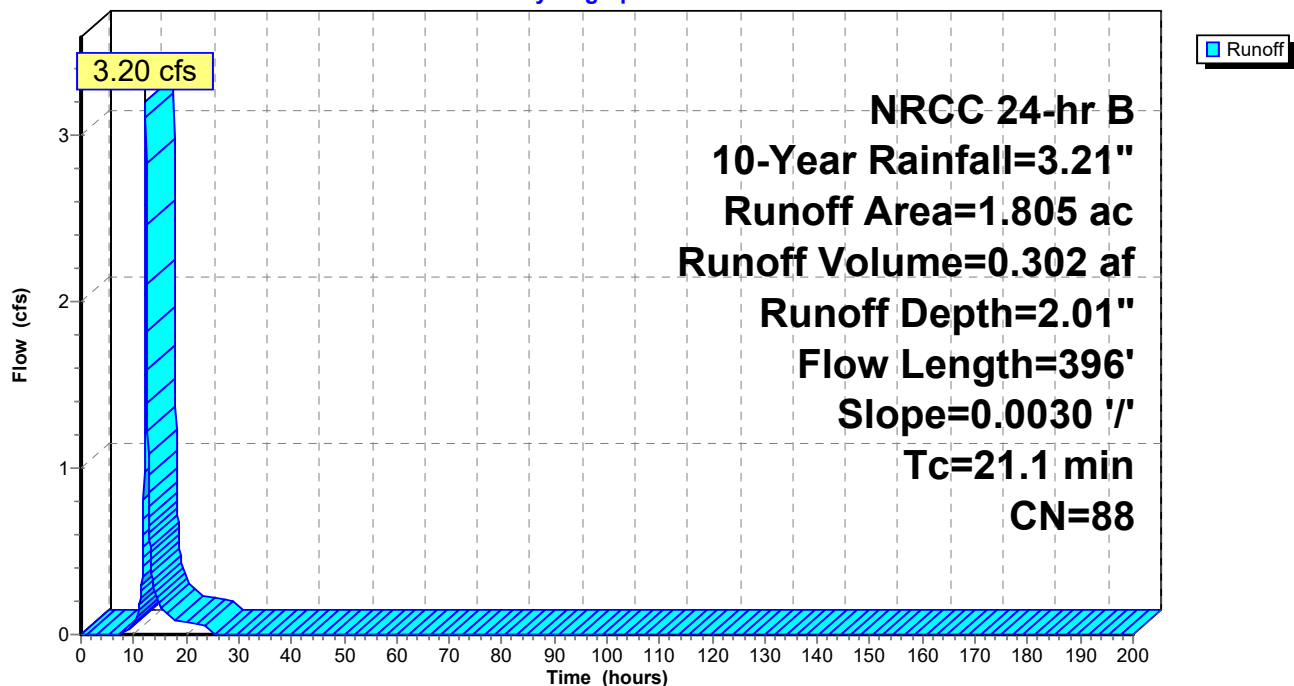
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-Year Rainfall=3.21"

Area (ac)	CN	Description
* 1.805	88	
1.805		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	396	0.0030	0.31		Lag/CN Method, Contour Length= 234' Interval= 1'

Subcatchment DA_2: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_3: 1/2 WQv

Runoff = 6.11 cfs @ 12.76 hrs, Volume= 0.983 af, Depth= 1.84"

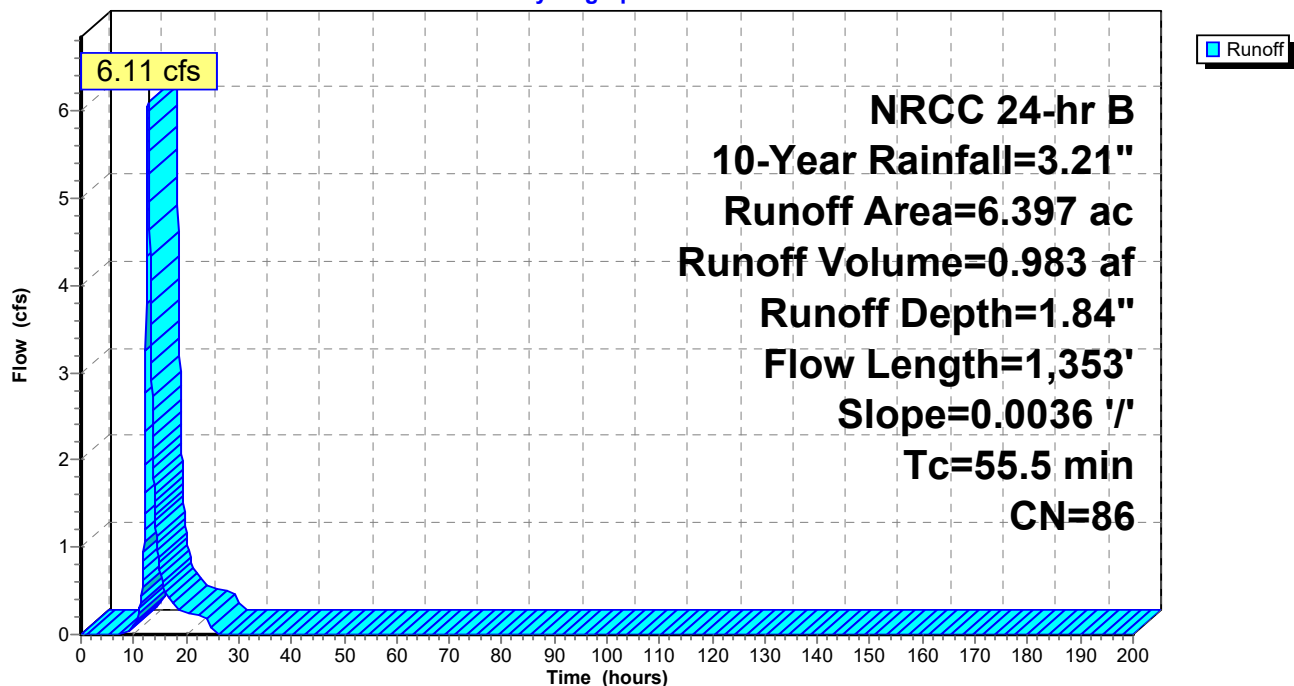
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-Year Rainfall=3.21"

Area (ac)	CN	Description
* 6.397	86	
6.397		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
55.5	1,353	0.0036	0.41		Lag/CN Method, Contour Length= 993' Interval= 1'

Subcatchment DA_3: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_6: 1/2 WQv

Runoff = 5.78 cfs @ 12.42 hrs, Volume= 0.669 af, Depth= 2.36"

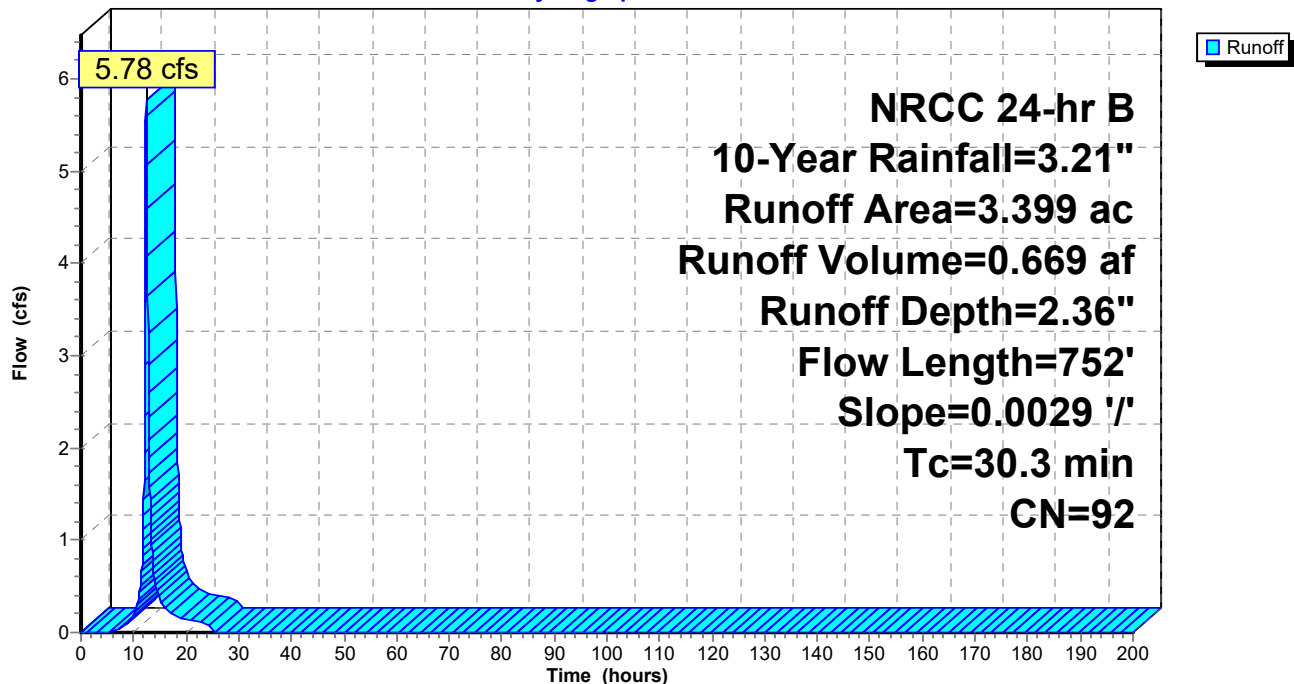
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-Year Rainfall=3.21"

Area (ac)	CN	Description
* 3.399	92	
3.399		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	752	0.0029	0.41		Lag/CN Method, Contour Length= 429' Interval= 1'

Subcatchment DA_6: 1/2 WQv

Hydrograph



Summary for Pond 1P: Stormtech

[93] Warning: Storage range exceeded by 0.20'

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

Inflow Area = 2.615 ac, 71.55% Impervious, Inflow Depth = 2.13" for 10-Year event
 Inflow = 4.35 cfs @ 12.31 hrs, Volume= 0.464 af
 Outflow = 6.43 cfs @ 12.40 hrs, Volume= 0.464 af, Atten= 0%, Lag= 5.8 min
 Discarded = 0.22 cfs @ 10.20 hrs, Volume= 0.343 af
 Primary = 6.21 cfs @ 12.40 hrs, Volume= 0.121 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 6.95' @ 12.40 hrs Surf.Area= 0.031 ac Storage= 0.131 af

Plug-Flow detention time= 159.1 min calculated for 0.464 af (100% of inflow)
 Center-of-Mass det. time= 159.1 min (930.7 - 771.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.052 af	28.50'W x 47.37'L x 6.75'H Field A 0.209 af Overall - 0.078 af Embedded = 0.131 af x 40.0% Voids
#2A	0.75'	0.078 af	ADS_StormTech MC-4500 +Cap x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 30 Chambers in 3 Rows Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
0.131 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	7.000 in/hr Exfiltration over Surface area
#2	Primary	6.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 10.20 hrs HW=0.07' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=5.91 cfs @ 12.40 hrs HW=6.94' (Free Discharge)
 ↑**2=Orifice/Grate** (Weir Controls 5.91 cfs @ 2.16 fps)

Pond 1P: Stormtech - Chamber Wizard Field A**Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)**

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length

3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

30 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,408.9 cf Chamber Storage

9,112.2 cf Field - 3,408.9 cf Chambers = 5,703.2 cf Stone x 40.0% Voids = 2,281.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,690.2 cf = 0.131 af

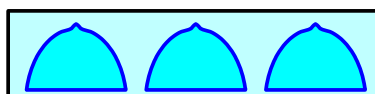
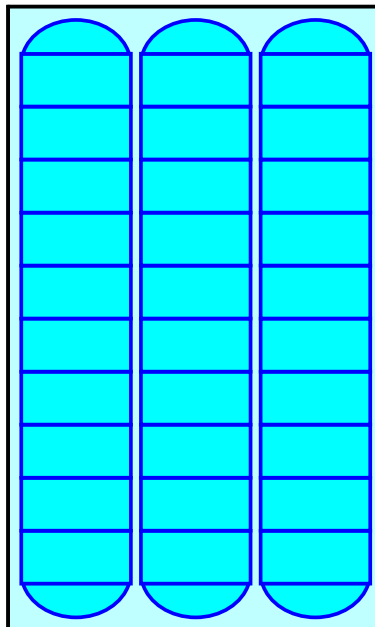
Overall Storage Efficiency = 62.4%

Overall System Size = 47.37' x 28.50' x 6.75'

30 Chambers

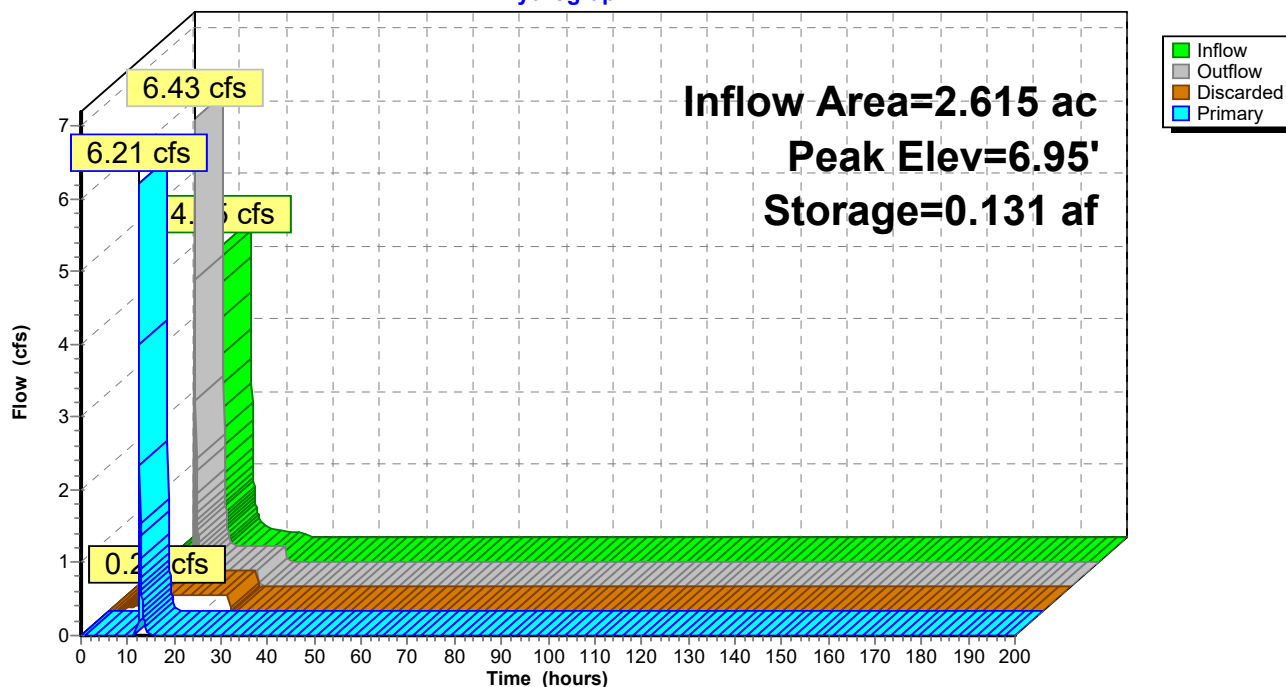
337.5 cy Field

211.2 cy Stone



Pond 1P: Stormtech

Hydrograph



Summary for Pond 2P: Stormtech

Inflow Area = 6.397 ac, 0.00% Impervious, Inflow Depth = 1.84" for 10-Year event
 Inflow = 6.11 cfs @ 12.76 hrs, Volume= 0.983 af
 Outflow = 6.11 cfs @ 12.76 hrs, Volume= 0.983 af, Atten= 0%, Lag= 0.3 min
 Discarded = 0.06 cfs @ 9.60 hrs, Volume= 0.132 af
 Primary = 6.06 cfs @ 12.76 hrs, Volume= 0.851 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 5.44' @ 12.76 hrs Surf.Area= 0.018 ac Storage= 0.058 af

Plug-Flow detention time= 67.3 min calculated for 0.983 af (100% of inflow)
 Center-of-Mass det. time= 67.3 min (935.1 - 867.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.027 af	22.75'W x 34.38'L x 5.50'H Field A 0.099 af Overall - 0.032 af Embedded = 0.066 af x 40.0% Voids
#2A	0.75'	0.032 af	ADS_StormTech MC-3500 d +Cap x 12 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 12 Chambers in 3 Rows Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf
0.059 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	3.120 in/hr Exfiltration over Surface area
#2	Primary	5.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 9.60 hrs HW=0.06' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=6.05 cfs @ 12.76 hrs HW=5.44' (Free Discharge)
 ↑**2=Orifice/Grate** (Weir Controls 6.05 cfs @ 2.18 fps)

Pond 2P: Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +12.0" End Stone x 2 = 34.38' Base Length

3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

12 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 1,408.8 cf Chamber Storage

4,301.8 cf Field - 1,408.8 cf Chambers = 2,893.0 cf Stone x 40.0% Voids = 1,157.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,566.0 cf = 0.059 af

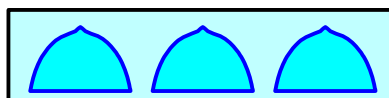
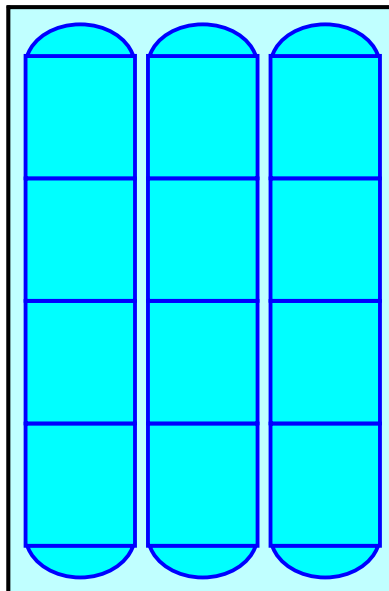
Overall Storage Efficiency = 59.6%

Overall System Size = 34.38' x 22.75' x 5.50'

12 Chambers

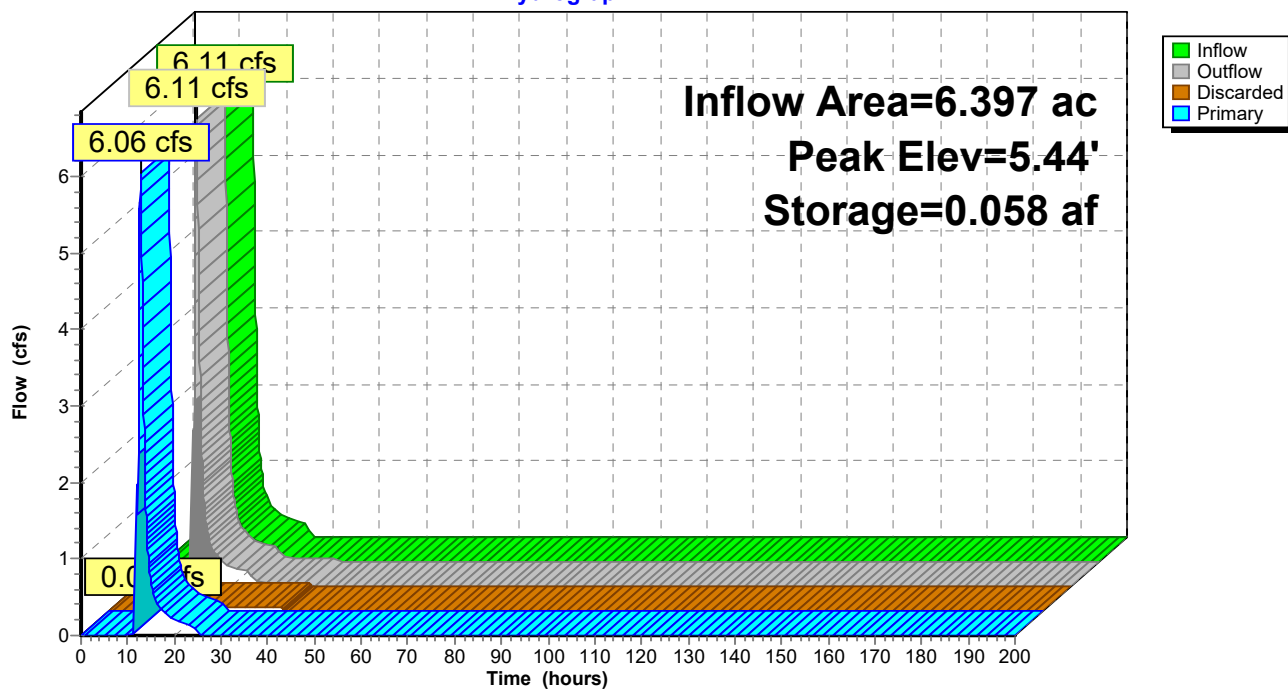
159.3 cy Field

107.1 cy Stone



Pond 2P: Stormtech

Hydrograph



Summary for Pond 6P: Infiltration Basin and Stormtech

[42] Hint: Gap in defined storage above volume #2 at 614.00'

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 2.24" for 10-Year event
 Inflow = 8.68 cfs @ 12.37 hrs, Volume= 0.970 af
 Outflow = 8.66 cfs @ 12.38 hrs, Volume= 0.970 af, Atten= 0%, Lag= 0.7 min
 Discarded = 0.22 cfs @ 12.38 hrs, Volume= 0.289 af
 Primary = 8.44 cfs @ 12.38 hrs, Volume= 0.682 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 617.47' @ 12.38 hrs Surf.Area= 1,344 sf Storage= 2,600 cf

Plug-Flow detention time= 51.4 min calculated for 0.970 af (100% of inflow)
 Center-of-Mass det. time= 51.5 min (874.5 - 823.0)

Volume	Invert	Avail.Storage	Storage Description
#1	615.00'	7,058 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	608.50'	538 cf	8.42'W x 41.55'L x 5.50'H Field A
			1,923 cf Overall - 580 cf Embedded = 1,344 cf x 40.0% Voids
#3A	609.25'	580 cf	ADS_StormTech MC-3500 d +Cap x 5 Inside #2
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		8,175 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
615.00	0	0	0
616.00	610	305	305
617.00	871	741	1,046
618.00	1,133	1,002	2,048
619.00	1,481	1,307	3,355
620.00	1,917	1,699	5,054
621.00	2,091	2,004	7,058

Device	Routing	Invert	Outlet Devices
#1	Discarded	608.50'	7.000 in/hr Exfiltration over Surface area
#2	Primary	617.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 12.38 hrs HW=617.47' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=8.35 cfs @ 12.38 hrs HW=617.47' (Free Discharge)
 ↑2=Orifice/Grate (Weir Controls 8.35 cfs @ 2.24 fps)

Pond 6P: Infiltration Basin and Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length

1 Rows x 77.0" Wide + 12.0" Side Stone x 2 = 8.42' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

5 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 579.6 cf Chamber Storage

1,923.4 cf Field - 579.6 cf Chambers = 1,343.9 cf Stone x 40.0% Voids = 537.5 cf Stone Storage

Chamber Storage + Stone Storage = 1,117.1 cf = 0.026 af

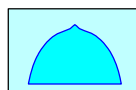
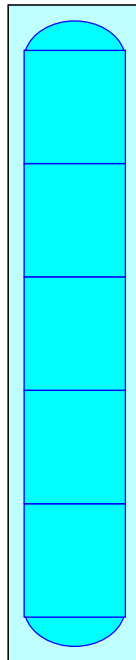
Overall Storage Efficiency = 58.1%

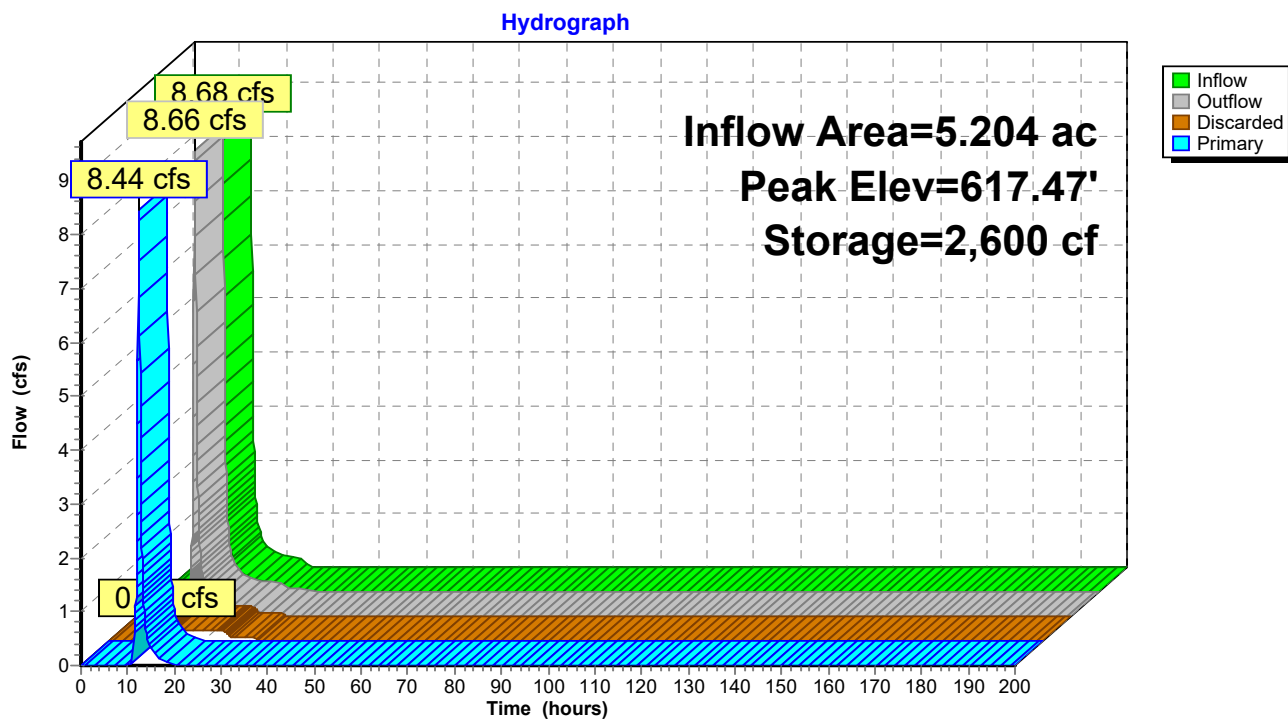
Overall System Size = 41.55' x 8.42' x 5.50'

5 Chambers

71.2 cy Field

49.8 cy Stone



Pond 6P: Infiltration Basin and Stormtech

HydePark_SWMP_Top3_11-5-19

NRCC 24-hr B 25-Year Rainfall=3.89"

Prepared by Hewlett-Packard Company

Printed 11/14/2019

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Page 61

Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA_1: CPv Runoff Area=2.615 ac 71.55% Impervious Runoff Depth=2.63"
Flow Length=488' Slope=0.0063 '/' Tc=21.8 min CN=WQ Runoff=5.30 cfs 0.572 af

Subcatchment DA_2: 1/2 WQv Runoff Area=1.805 ac 0.00% Impervious Runoff Depth=2.63"
Flow Length=396' Slope=0.0030 '/' Tc=21.1 min CN=88 Runoff=4.17 cfs 0.395 af

Subcatchment DA_3: 1/2 WQv Runoff Area=6.397 ac 0.00% Impervious Runoff Depth=2.45"
Flow Length=1,353' Slope=0.0036 '/' Tc=55.5 min CN=86 Runoff=8.11 cfs 1.304 af

Subcatchment DA_6: 1/2 WQv Runoff Area=3.399 ac 0.00% Impervious Runoff Depth=3.01"
Flow Length=752' Slope=0.0029 '/' Tc=30.3 min CN=92 Runoff=7.30 cfs 0.853 af

Pond 1P: Stormtech Peak Elev=7.01' Storage=0.131 af Inflow=5.30 cfs 0.572 af
Discarded=0.22 cfs 0.377 af Primary=7.63 cfs 0.196 af Outflow=7.85 cfs 0.572 af

Pond 2P: Stormtech Peak Elev=5.54' Storage=0.059 af Inflow=8.11 cfs 1.304 af
Discarded=0.06 cfs 0.137 af Primary=8.05 cfs 1.168 af Outflow=8.11 cfs 1.304 af

Pond 6P: Infiltration Basin and Stormtech Peak Elev=617.55' Storage=2,685 cf Inflow=11.08 cfs 1.248 af
Discarded=0.22 cfs 0.308 af Primary=10.83 cfs 0.940 af Outflow=11.05 cfs 1.248 af

Total Runoff Area = 14.216 ac Runoff Volume = 3.125 af Average Runoff Depth = 2.64"
86.84% Pervious = 12.345 ac 13.16% Impervious = 1.871 ac

Summary for Subcatchment DA_1: CPv

Runoff = 5.30 cfs @ 12.31 hrs, Volume= 0.572 af, Depth= 2.63"

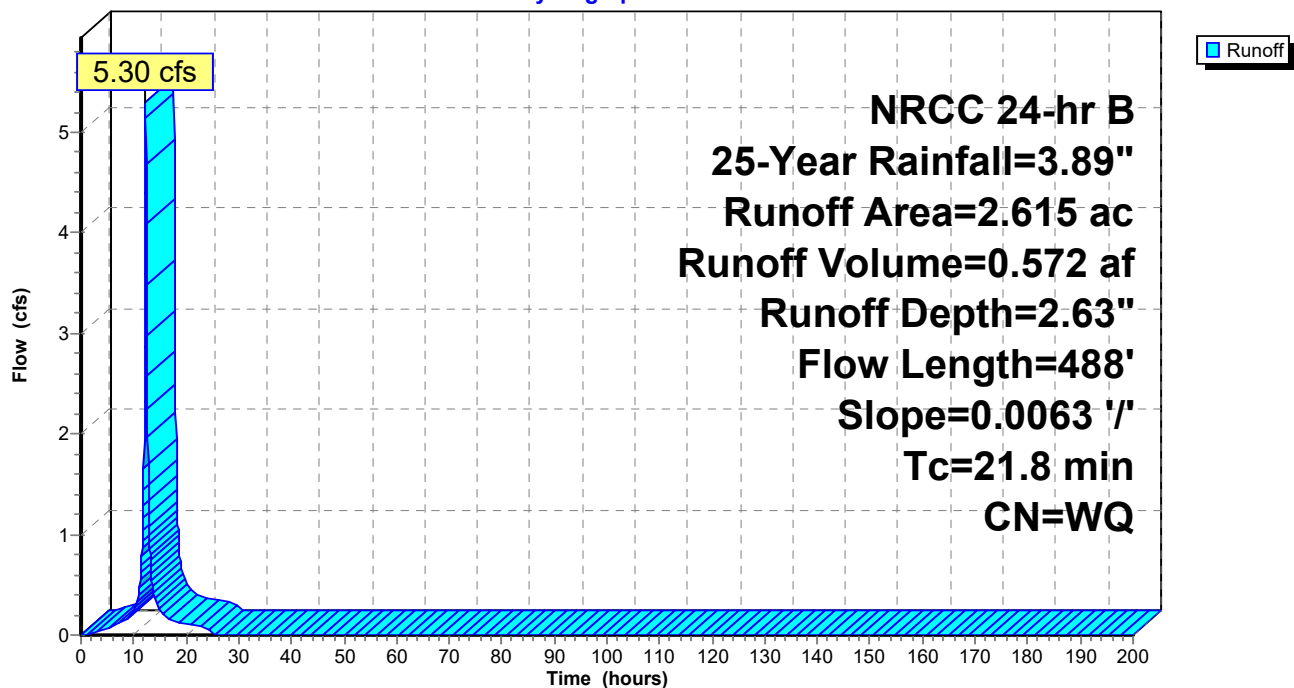
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 25-Year Rainfall=3.89"

Area (ac)	CN	Description
0.744	39	>75% Grass cover, Good, HSG A
1.871	98	Paved Parking, HSG A
2.615		Weighted Average
0.744		28.45% Pervious Area
1.871		71.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	488	0.0063	0.37		Lag/CN Method, Contour Length= 718' Interval= 1'

Subcatchment DA_1: CPv

Hydrograph



Summary for Subcatchment DA_2: 1/2 WQv

Runoff = 4.17 cfs @ 12.30 hrs, Volume= 0.395 af, Depth= 2.63"

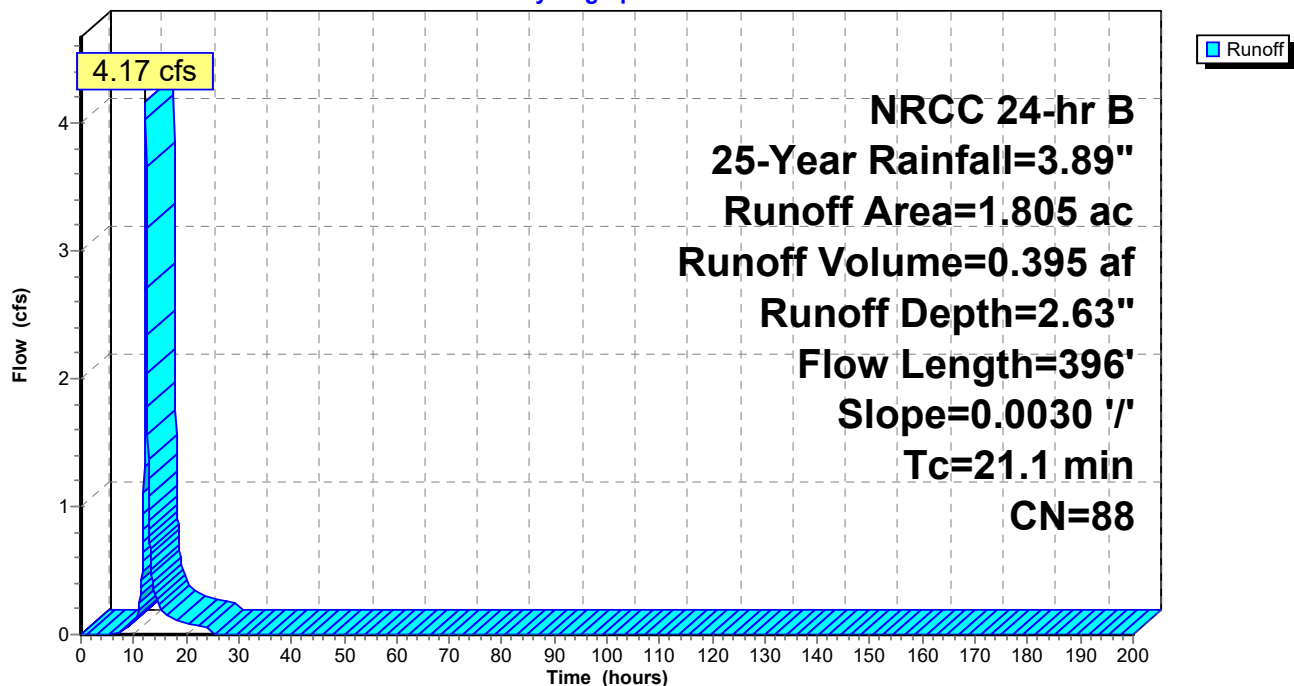
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 25-Year Rainfall=3.89"

Area (ac)	CN	Description
* 1.805	88	
1.805		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	396	0.0030	0.31		Lag/CN Method, Contour Length= 234' Interval= 1'

Subcatchment DA_2: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_3: 1/2 WQv

Runoff = 8.11 cfs @ 12.75 hrs, Volume= 1.304 af, Depth= 2.45"

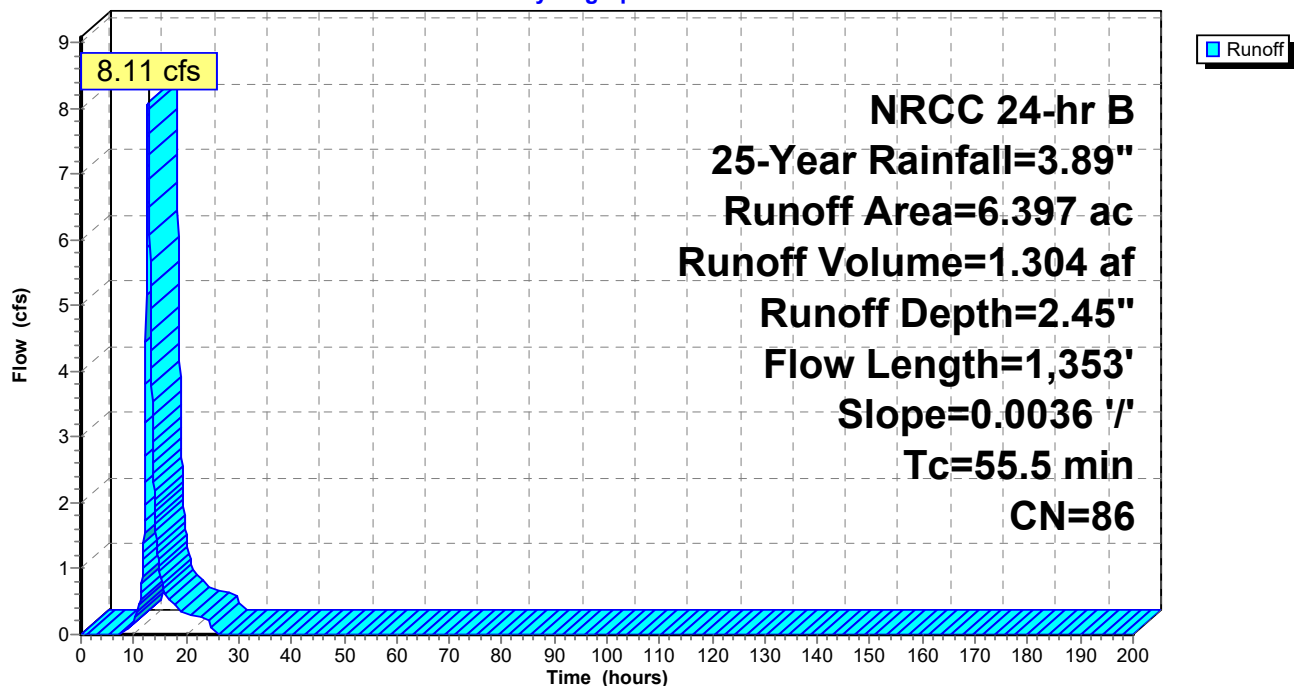
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 25-Year Rainfall=3.89"

Area (ac)	CN	Description
* 6.397	86	
6.397		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
55.5	1,353	0.0036	0.41		Lag/CN Method, Contour Length= 993' Interval= 1'

Subcatchment DA_3: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_6: 1/2 WQv

Runoff = 7.30 cfs @ 12.41 hrs, Volume= 0.853 af, Depth= 3.01"

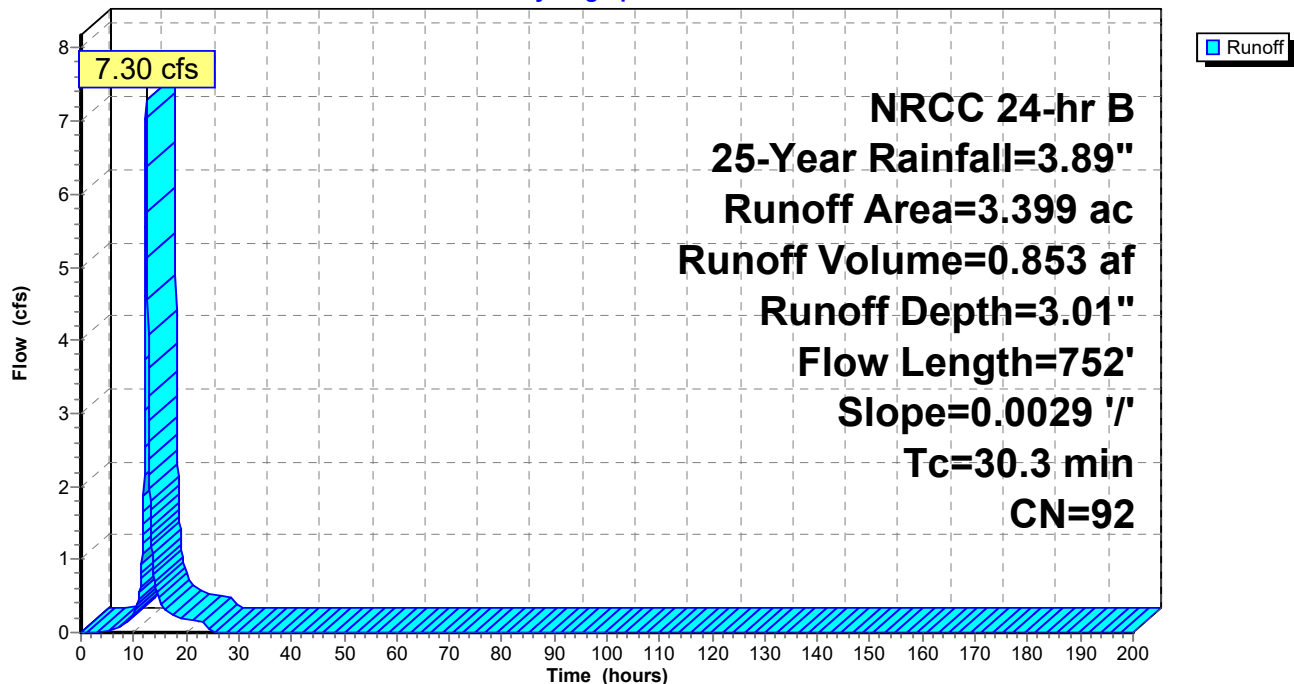
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 25-Year Rainfall=3.89"

Area (ac)	CN	Description
* 3.399	92	
3.399		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	752	0.0029	0.41		Lag/CN Method, Contour Length= 429' Interval= 1'

Subcatchment DA_6: 1/2 WQv

Hydrograph



Summary for Pond 1P: Stormtech

[93] Warning: Storage range exceeded by 0.26'

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

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 2.615 ac, 71.55% Impervious, Inflow Depth = 2.63" for 25-Year event
 Inflow = 5.30 cfs @ 12.31 hrs, Volume= 0.572 af
 Outflow = 7.85 cfs @ 12.30 hrs, Volume= 0.572 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.22 cfs @ 9.70 hrs, Volume= 0.377 af
 Primary = 7.63 cfs @ 12.30 hrs, Volume= 0.196 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 7.01' @ 12.30 hrs Surf.Area= 0.031 ac Storage= 0.131 af

Plug-Flow detention time= 146.1 min calculated for 0.572 af (100% of inflow)
 Center-of-Mass det. time= 146.1 min (915.3 - 769.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.052 af	28.50'W x 47.37'L x 6.75'H Field A 0.209 af Overall - 0.078 af Embedded = 0.131 af x 40.0% Voids
#2A	0.75'	0.078 af	ADS_StormTech MC-4500 +Cap x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 30 Chambers in 3 Rows Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
0.131 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	7.000 in/hr Exfiltration over Surface area
#2	Primary	6.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 9.70 hrs HW=0.07' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)**Primary OutFlow** Max=6.99 cfs @ 12.30 hrs HW=6.99' (Free Discharge)↑**2=Orifice/Grate** (Weir Controls 6.99 cfs @ 2.28 fps)

Pond 1P: Stormtech - Chamber Wizard Field A**Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)**

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length

3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

30 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,408.9 cf Chamber Storage

9,112.2 cf Field - 3,408.9 cf Chambers = 5,703.2 cf Stone x 40.0% Voids = 2,281.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,690.2 cf = 0.131 af

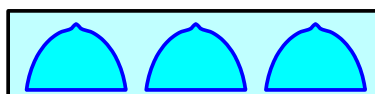
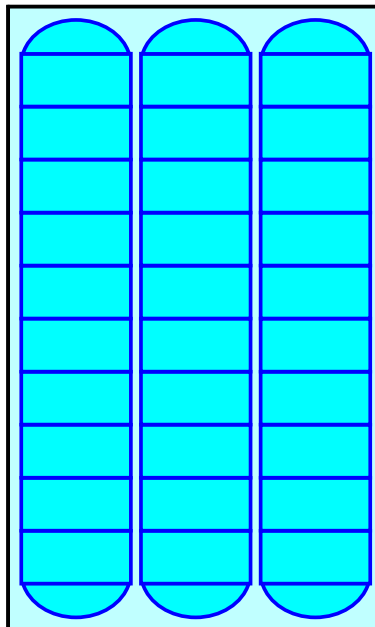
Overall Storage Efficiency = 62.4%

Overall System Size = 47.37' x 28.50' x 6.75'

30 Chambers

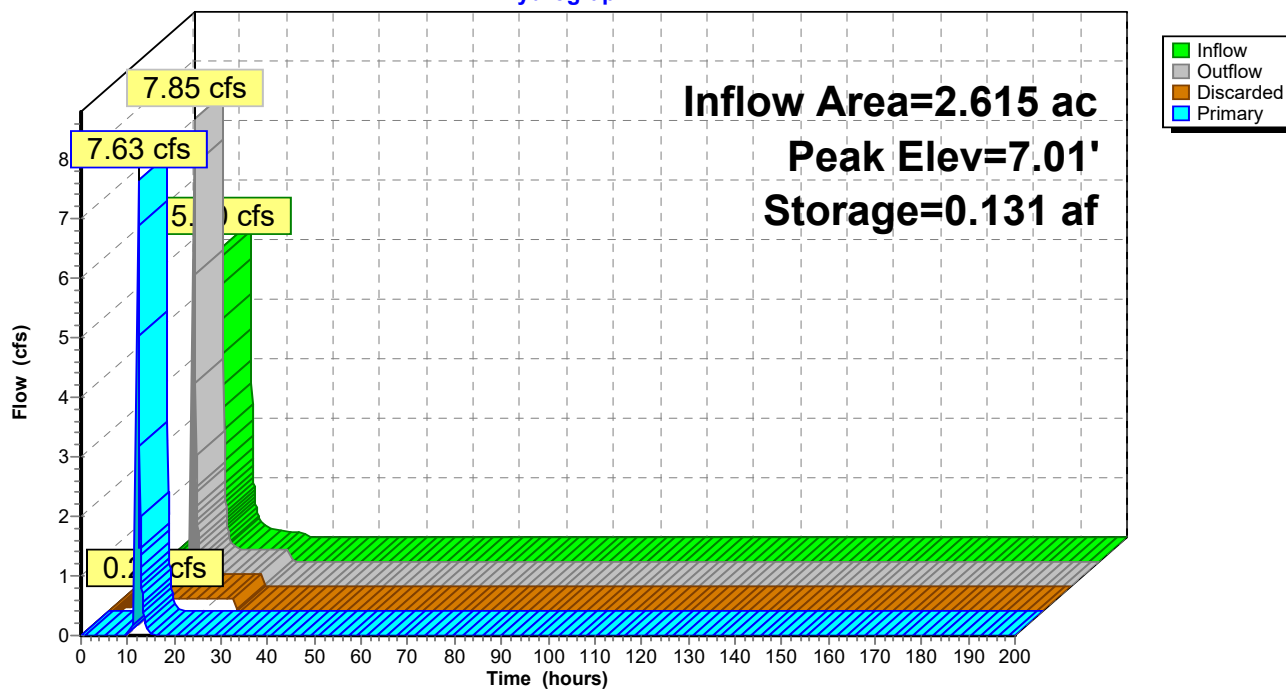
337.5 cy Field

211.2 cy Stone



Pond 1P: Stormtech

Hydrograph



Summary for Pond 2P: Stormtech

[93] Warning: Storage range exceeded by 0.04'

Inflow Area = 6.397 ac, 0.00% Impervious, Inflow Depth = 2.45" for 25-Year event
 Inflow = 8.11 cfs @ 12.75 hrs, Volume= 1.304 af
 Outflow = 8.11 cfs @ 12.75 hrs, Volume= 1.304 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.06 cfs @ 8.60 hrs, Volume= 0.137 af
 Primary = 8.05 cfs @ 12.75 hrs, Volume= 1.168 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 5.54' @ 12.75 hrs Surf.Area= 0.018 ac Storage= 0.059 af

Plug-Flow detention time= 52.5 min calculated for 1.304 af (100% of inflow)
 Center-of-Mass det. time= 52.6 min (912.6 - 860.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.027 af	22.75'W x 34.38'L x 5.50'H Field A 0.099 af Overall - 0.032 af Embedded = 0.066 af x 40.0% Voids
#2A	0.75'	0.032 af	ADS_StormTech MC-3500 d +Cap x 12 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 12 Chambers in 3 Rows Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf
0.059 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	3.120 in/hr Exfiltration over Surface area
#2	Primary	5.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 8.60 hrs HW=0.06' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=8.04 cfs @ 12.75 hrs HW=5.54' (Free Discharge)

↑**2=Orifice/Grate** (Weir Controls 8.04 cfs @ 2.39 fps)

Pond 2P: Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +12.0" End Stone x 2 = 34.38' Base Length

3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

12 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 1,408.8 cf Chamber Storage

4,301.8 cf Field - 1,408.8 cf Chambers = 2,893.0 cf Stone x 40.0% Voids = 1,157.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,566.0 cf = 0.059 af

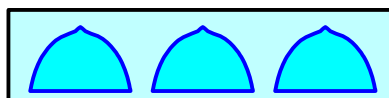
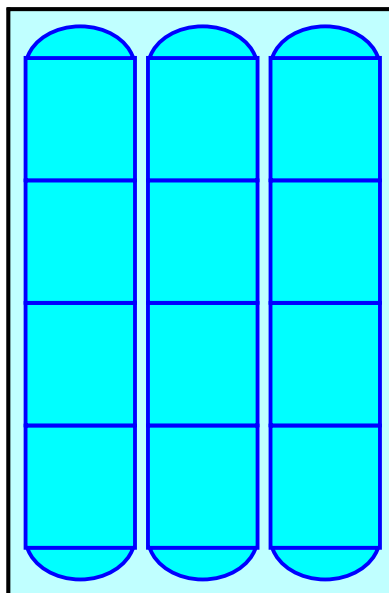
Overall Storage Efficiency = 59.6%

Overall System Size = 34.38' x 22.75' x 5.50'

12 Chambers

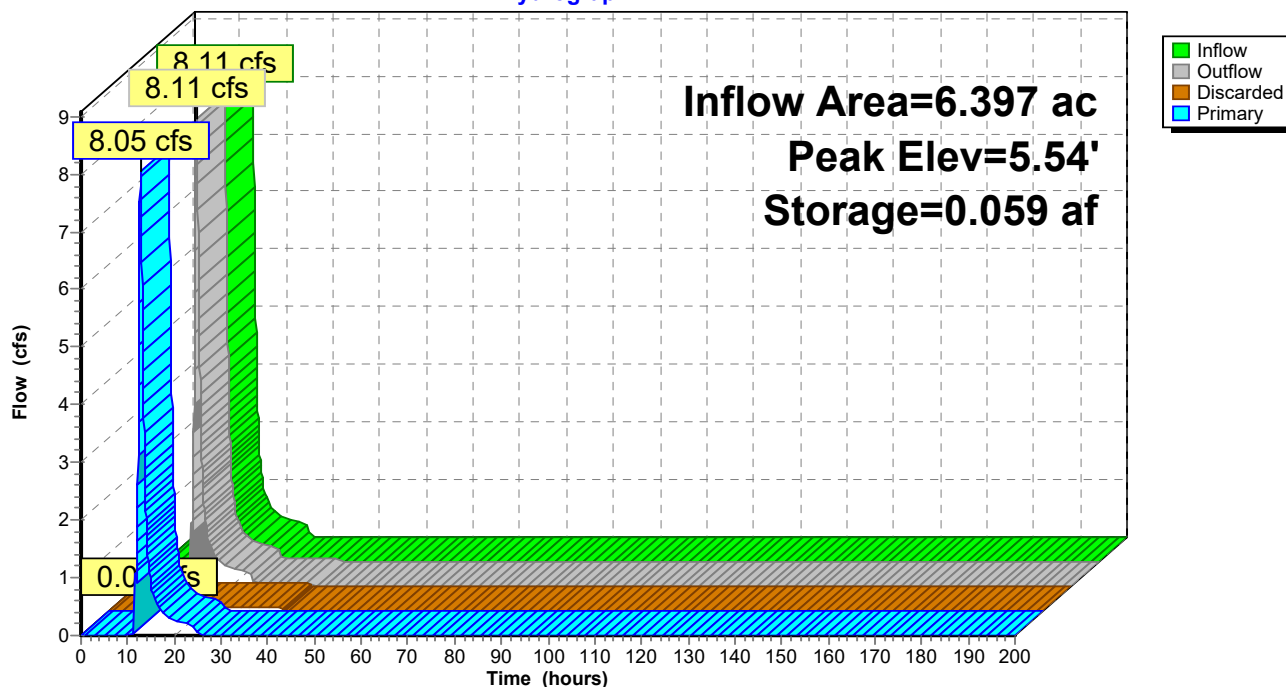
159.3 cy Field

107.1 cy Stone



Pond 2P: Stormtech

Hydrograph



Summary for Pond 6P: Infiltration Basin and Stormtech

[42] Hint: Gap in defined storage above volume #2 at 614.00'

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 2.88" for 25-Year event
 Inflow = 11.08 cfs @ 12.37 hrs, Volume= 1.248 af
 Outflow = 11.05 cfs @ 12.38 hrs, Volume= 1.248 af, Atten= 0%, Lag= 0.6 min
 Discarded = 0.22 cfs @ 12.38 hrs, Volume= 0.308 af
 Primary = 10.83 cfs @ 12.38 hrs, Volume= 0.940 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 617.55' @ 12.38 hrs Surf.Area= 1,366 sf Storage= 2,685 cf

Plug-Flow detention time= 43.0 min calculated for 1.248 af (100% of inflow)
 Center-of-Mass det. time= 43.1 min (859.4 - 816.2)

Volume	Invert	Avail.Storage	Storage Description
#1	615.00'	7,058 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	608.50'	538 cf	8.42'W x 41.55'L x 5.50'H Field A
			1,923 cf Overall - 580 cf Embedded = 1,344 cf x 40.0% Voids
#3A	609.25'	580 cf	ADS_StormTech MC-3500 d +Cap x 5 Inside #2
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		8,175 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
615.00	0	0	0
616.00	610	305	305
617.00	871	741	1,046
618.00	1,133	1,002	2,048
619.00	1,481	1,307	3,355
620.00	1,917	1,699	5,054
621.00	2,091	2,004	7,058

Device	Routing	Invert	Outlet Devices
#1	Discarded	608.50'	7.000 in/hr Exfiltration over Surface area
#2	Primary	617.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 12.38 hrs HW=617.55' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=10.72 cfs @ 12.38 hrs HW=617.55' (Free Discharge)
 ↑2=Orifice/Grate (Weir Controls 10.72 cfs @ 2.43 fps)

Pond 6P: Infiltration Basin and Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length

1 Rows x 77.0" Wide + 12.0" Side Stone x 2 = 8.42' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

5 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 579.6 cf Chamber Storage

1,923.4 cf Field - 579.6 cf Chambers = 1,343.9 cf Stone x 40.0% Voids = 537.5 cf Stone Storage

Chamber Storage + Stone Storage = 1,117.1 cf = 0.026 af

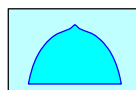
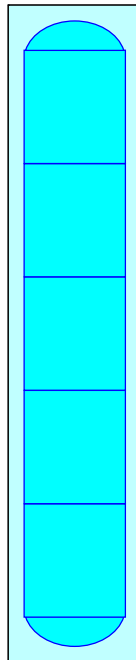
Overall Storage Efficiency = 58.1%

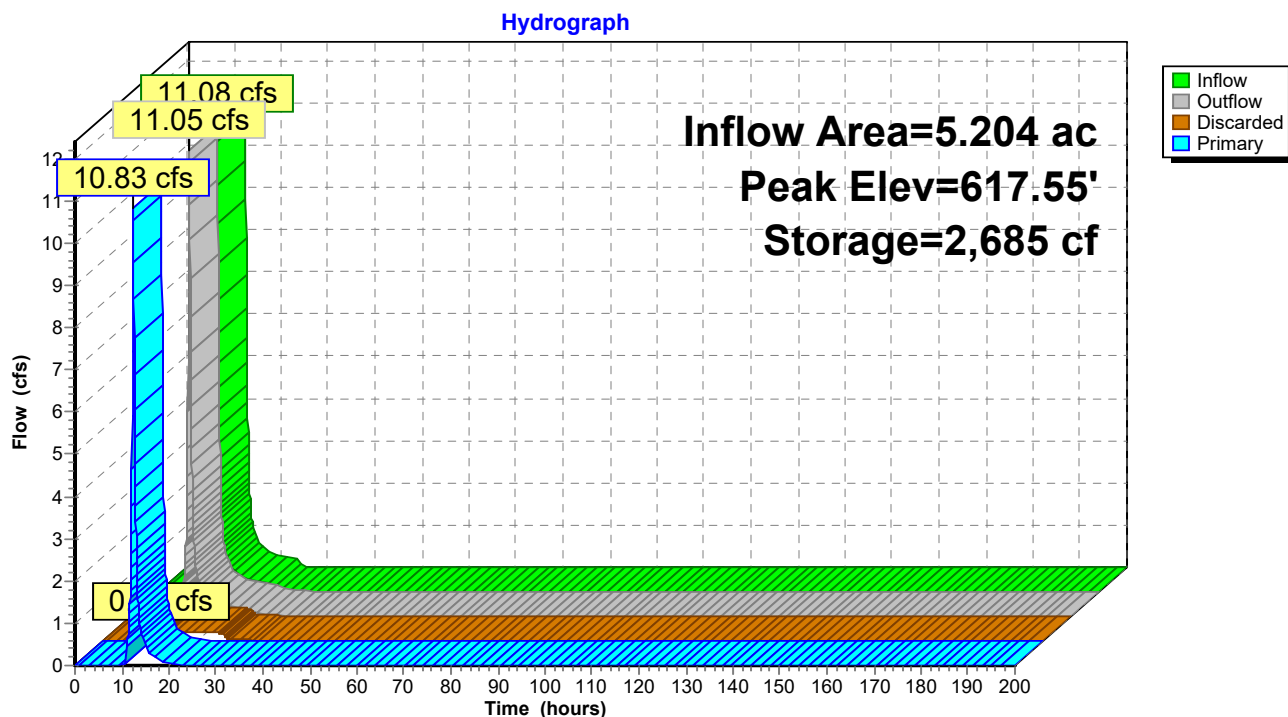
Overall System Size = 41.55' x 8.42' x 5.50'

5 Chambers

71.2 cy Field

49.8 cy Stone



Pond 6P: Infiltration Basin and Stormtech

HydePark_SWMP_Top3_11-5-19

NRCC 24-hr B 50-Year Rainfall=4.50"

Prepared by Hewlett-Packard Company

Printed 11/14/2019

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Page 75

Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA_1: CPv Runoff Area=2.615 ac 71.55% Impervious Runoff Depth=3.08"
Flow Length=488' Slope=0.0063 '/' Tc=21.8 min CN=WQ Runoff=6.14 cfs 0.672 af

Subcatchment DA_2: 1/2 WQv Runoff Area=1.805 ac 0.00% Impervious Runoff Depth=3.20"
Flow Length=396' Slope=0.0030 '/' Tc=21.1 min CN=88 Runoff=5.03 cfs 0.481 af

Subcatchment DA_3: 1/2 WQv Runoff Area=6.397 ac 0.00% Impervious Runoff Depth=3.00"
Flow Length=1,353' Slope=0.0036 '/' Tc=55.5 min CN=86 Runoff=9.92 cfs 1.601 af

Subcatchment DA_6: 1/2 WQv Runoff Area=3.399 ac 0.00% Impervious Runoff Depth=3.60"
Flow Length=752' Slope=0.0029 '/' Tc=30.3 min CN=92 Runoff=8.66 cfs 1.020 af

Pond 1P: Stormtech Peak Elev=7.06' Storage=0.131 af Inflow=6.14 cfs 0.672 af
Discarded=0.22 cfs 0.405 af Primary=8.61 cfs 0.267 af Outflow=8.83 cfs 0.672 af

Pond 2P: Stormtech Peak Elev=5.61' Storage=0.059 af Inflow=9.92 cfs 1.601 af
Discarded=0.06 cfs 0.140 af Primary=9.87 cfs 1.461 af Outflow=9.93 cfs 1.601 af

Pond 6P: Infiltration Basin and Stormtech Peak Elev=617.63' Storage=2,760 cf Inflow=13.22 cfs 1.501 af
Discarded=0.22 cfs 0.321 af Primary=12.99 cfs 1.180 af Outflow=13.22 cfs 1.501 af

Total Runoff Area = 14.216 ac Runoff Volume = 3.774 af Average Runoff Depth = 3.19"
86.84% Pervious = 12.345 ac 13.16% Impervious = 1.871 ac

Summary for Subcatchment DA_1: CPv

Runoff = 6.14 cfs @ 12.31 hrs, Volume= 0.672 af, Depth= 3.08"

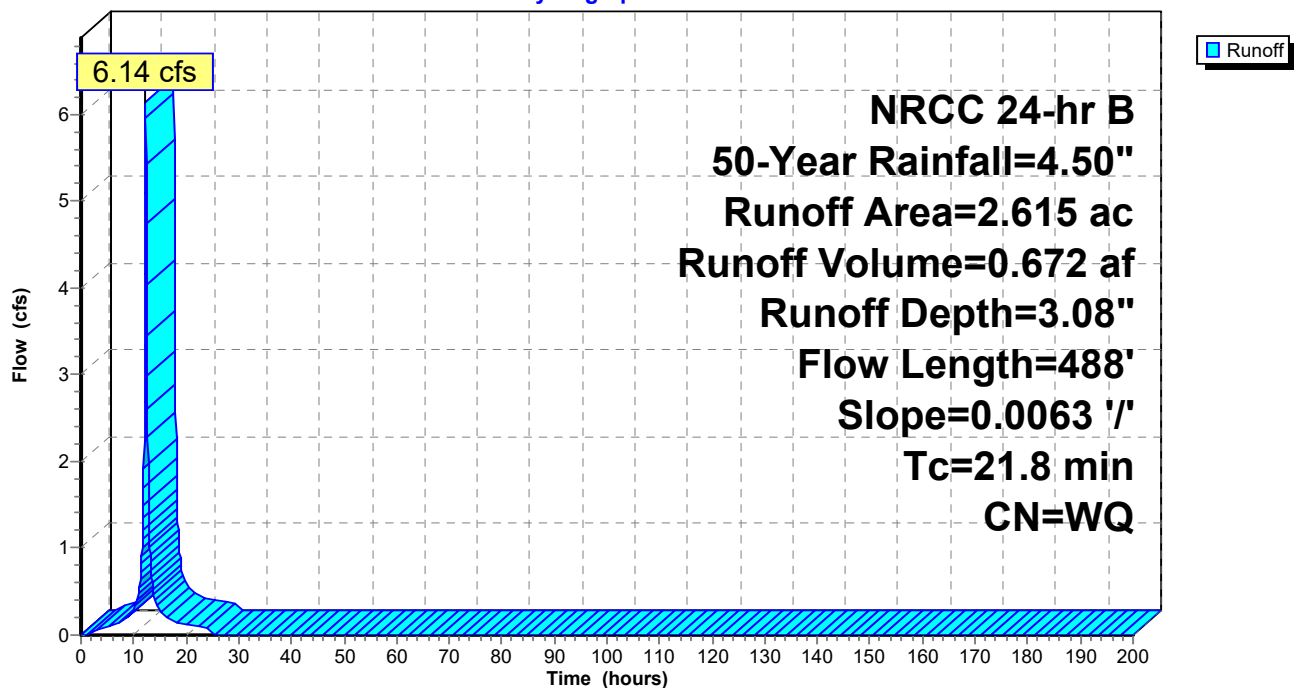
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 50-Year Rainfall=4.50"

Area (ac)	CN	Description
0.744	39	>75% Grass cover, Good, HSG A
1.871	98	Paved Parking, HSG A
2.615		Weighted Average
0.744		28.45% Pervious Area
1.871		71.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	488	0.0063	0.37		Lag/CN Method, Contour Length= 718' Interval= 1'

Subcatchment DA_1: CPv

Hydrograph



Summary for Subcatchment DA_2: 1/2 WQv

Runoff = 5.03 cfs @ 12.30 hrs, Volume= 0.481 af, Depth= 3.20"

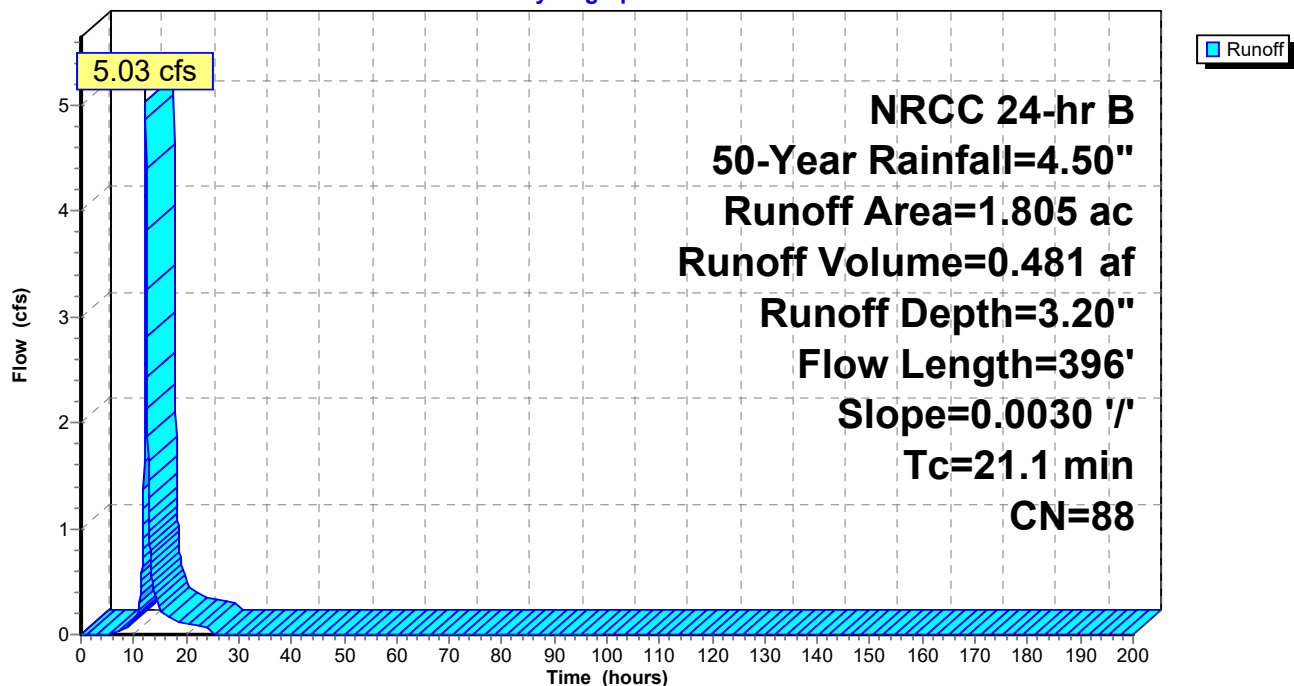
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 50-Year Rainfall=4.50"

Area (ac)	CN	Description
* 1.805	88	
1.805		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	396	0.0030	0.31		Lag/CN Method, Contour Length= 234' Interval= 1'

Subcatchment DA_2: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_3: 1/2 WQv

Runoff = 9.92 cfs @ 12.75 hrs, Volume= 1.601 af, Depth= 3.00"

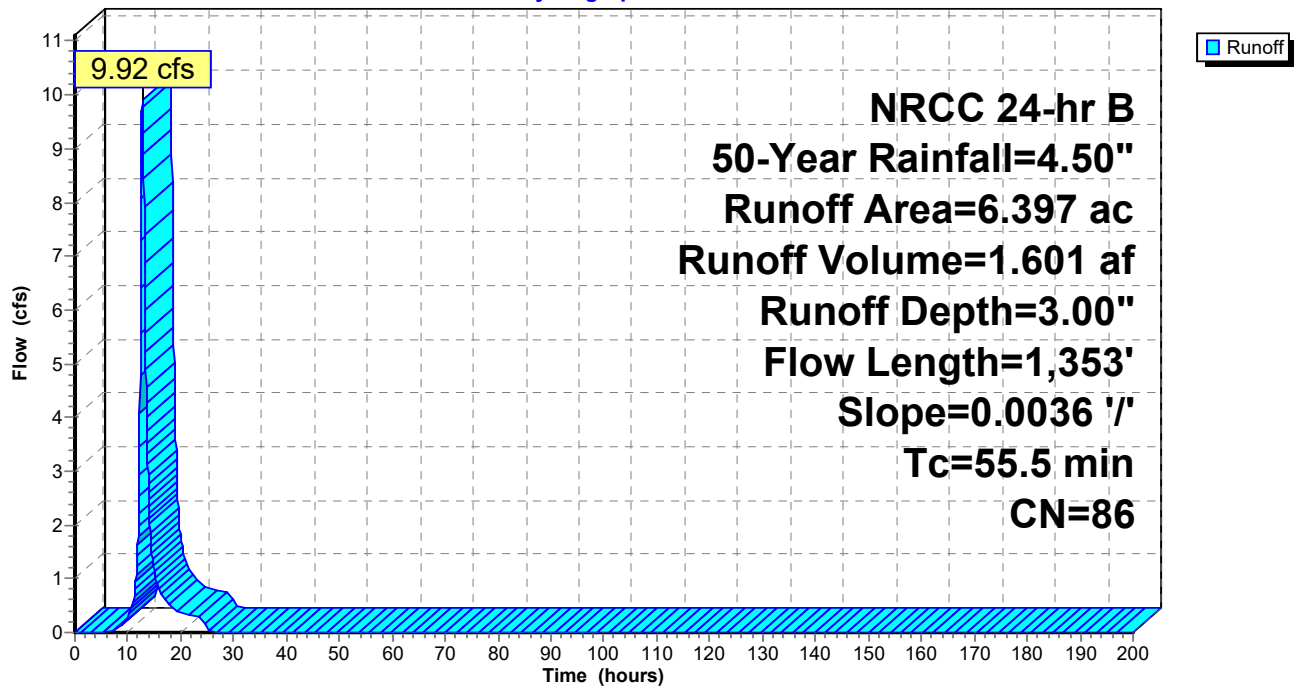
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 50-Year Rainfall=4.50"

Area (ac)	CN	Description
* 6.397	86	
6.397		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
55.5	1,353	0.0036	0.41		Lag/CN Method, Contour Length= 993' Interval= 1'

Subcatchment DA_3: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_6: 1/2 WQv

Runoff = 8.66 cfs @ 12.41 hrs, Volume= 1.020 af, Depth= 3.60"

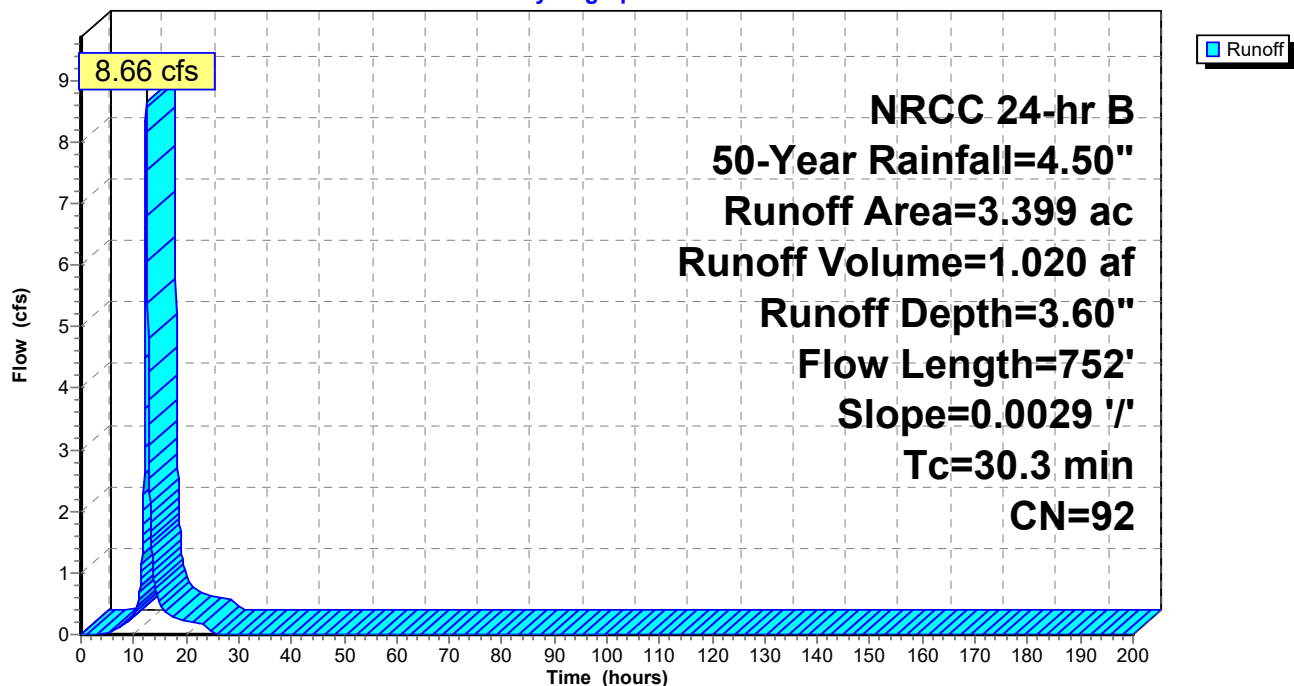
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 50-Year Rainfall=4.50"

Area (ac)	CN	Description
* 3.399	92	
3.399		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	752	0.0029	0.41		Lag/CN Method, Contour Length= 429' Interval= 1'

Subcatchment DA_6: 1/2 WQv

Hydrograph



Summary for Pond 1P: Stormtech

[93] Warning: Storage range exceeded by 0.31'

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

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 2.615 ac, 71.55% Impervious, Inflow Depth = 3.08" for 50-Year event
 Inflow = 6.14 cfs @ 12.31 hrs, Volume= 0.672 af
 Outflow = 8.83 cfs @ 12.35 hrs, Volume= 0.672 af, Atten= 0%, Lag= 2.6 min
 Discarded = 0.22 cfs @ 9.35 hrs, Volume= 0.405 af
 Primary = 8.61 cfs @ 12.35 hrs, Volume= 0.267 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 7.06' @ 12.35 hrs Surf.Area= 0.031 ac Storage= 0.131 af

Plug-Flow detention time= 137.9 min calculated for 0.672 af (100% of inflow)
 Center-of-Mass det. time= 137.9 min (906.0 - 768.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.052 af	28.50'W x 47.37'L x 6.75'H Field A 0.209 af Overall - 0.078 af Embedded = 0.131 af x 40.0% Voids
#2A	0.75'	0.078 af	ADS_StormTech MC-4500 +Cap x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 30 Chambers in 3 Rows Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
0.131 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	7.000 in/hr Exfiltration over Surface area
#2	Primary	6.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 9.35 hrs HW=0.07' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)**Primary OutFlow** Max=8.42 cfs @ 12.35 hrs HW=7.05' (Free Discharge)↑**2=Orifice/Grate** (Weir Controls 8.42 cfs @ 2.43 fps)

Pond 1P: Stormtech - Chamber Wizard Field A**Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)**

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length

3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

30 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,408.9 cf Chamber Storage

9,112.2 cf Field - 3,408.9 cf Chambers = 5,703.2 cf Stone x 40.0% Voids = 2,281.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,690.2 cf = 0.131 af

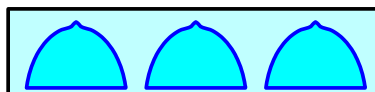
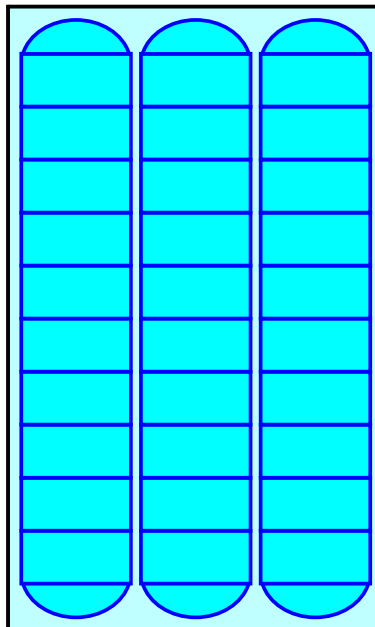
Overall Storage Efficiency = 62.4%

Overall System Size = 47.37' x 28.50' x 6.75'

30 Chambers

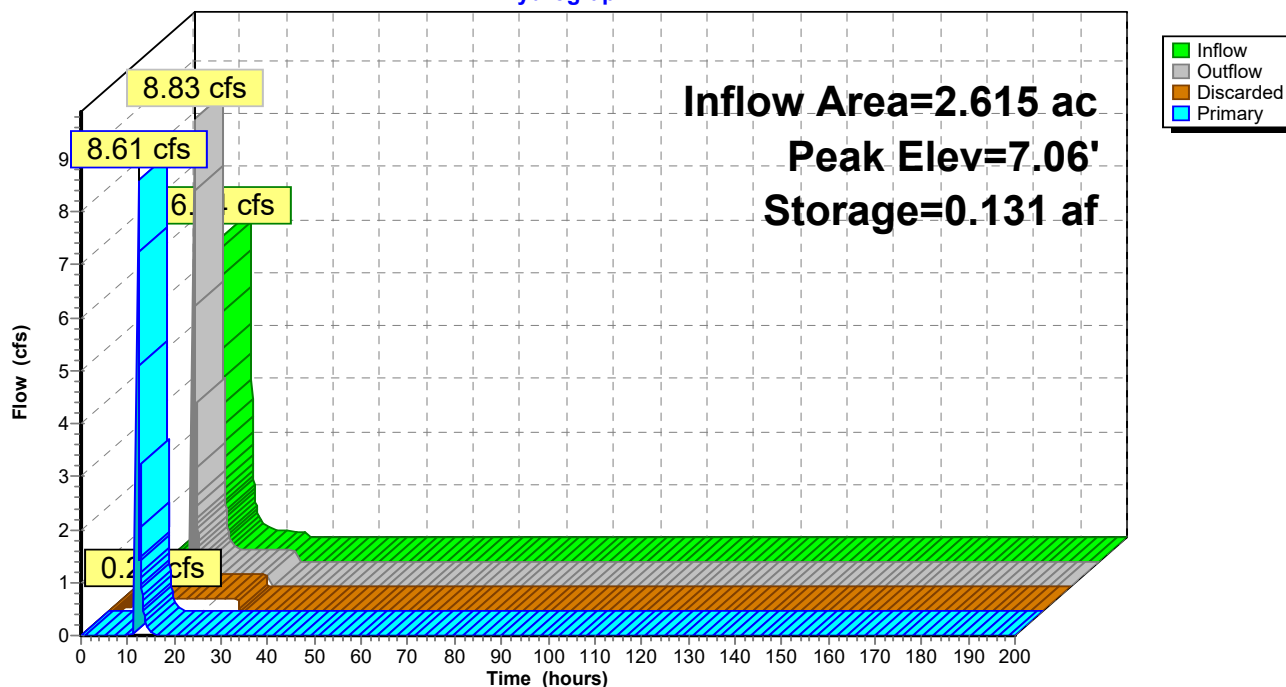
337.5 cy Field

211.2 cy Stone



Pond 1P: Stormtech

Hydrograph



Summary for Pond 2P: Stormtech

[93] Warning: Storage range exceeded by 0.11'

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

Inflow Area = 6.397 ac, 0.00% Impervious, Inflow Depth = 3.00" for 50-Year event
 Inflow = 9.92 cfs @ 12.75 hrs, Volume= 1.601 af
 Outflow = 9.93 cfs @ 12.72 hrs, Volume= 1.601 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.06 cfs @ 7.90 hrs, Volume= 0.140 af
 Primary = 9.87 cfs @ 12.72 hrs, Volume= 1.461 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Peak Elev= 5.61' @ 12.72 hrs Surf.Area= 0.018 ac Storage= 0.059 af

Plug-Flow detention time= 44.1 min calculated for 1.601 af (100% of inflow)

Center-of-Mass det. time= 44.3 min (898.6 - 854.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.027 af	22.75'W x 34.38'L x 5.50'H Field A 0.099 af Overall - 0.032 af Embedded = 0.066 af x 40.0% Voids
#2A	0.75'	0.032 af	ADS_StormTech MC-3500 d +Cap x 12 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 12 Chambers in 3 Rows Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf
0.059 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	3.120 in/hr Exfiltration over Surface area
#2	Primary	5.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 7.90 hrs HW=0.06' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=9.83 cfs @ 12.72 hrs HW=5.61' (Free Discharge)↑**2=Orifice/Grate** (Weir Controls 9.83 cfs @ 2.56 fps)

Pond 2P: Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +12.0" End Stone x 2 = 34.38' Base Length

3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

12 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 1,408.8 cf Chamber Storage

4,301.8 cf Field - 1,408.8 cf Chambers = 2,893.0 cf Stone x 40.0% Voids = 1,157.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,566.0 cf = 0.059 af

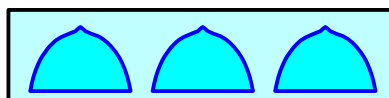
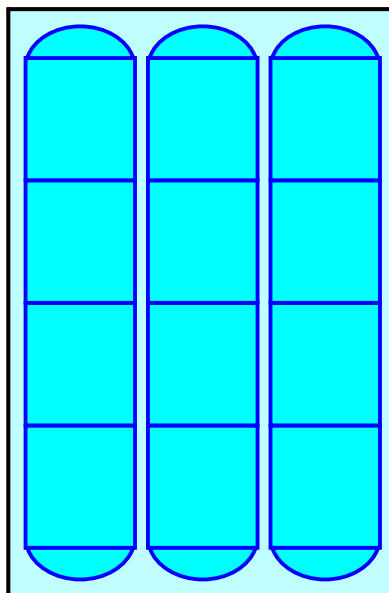
Overall Storage Efficiency = 59.6%

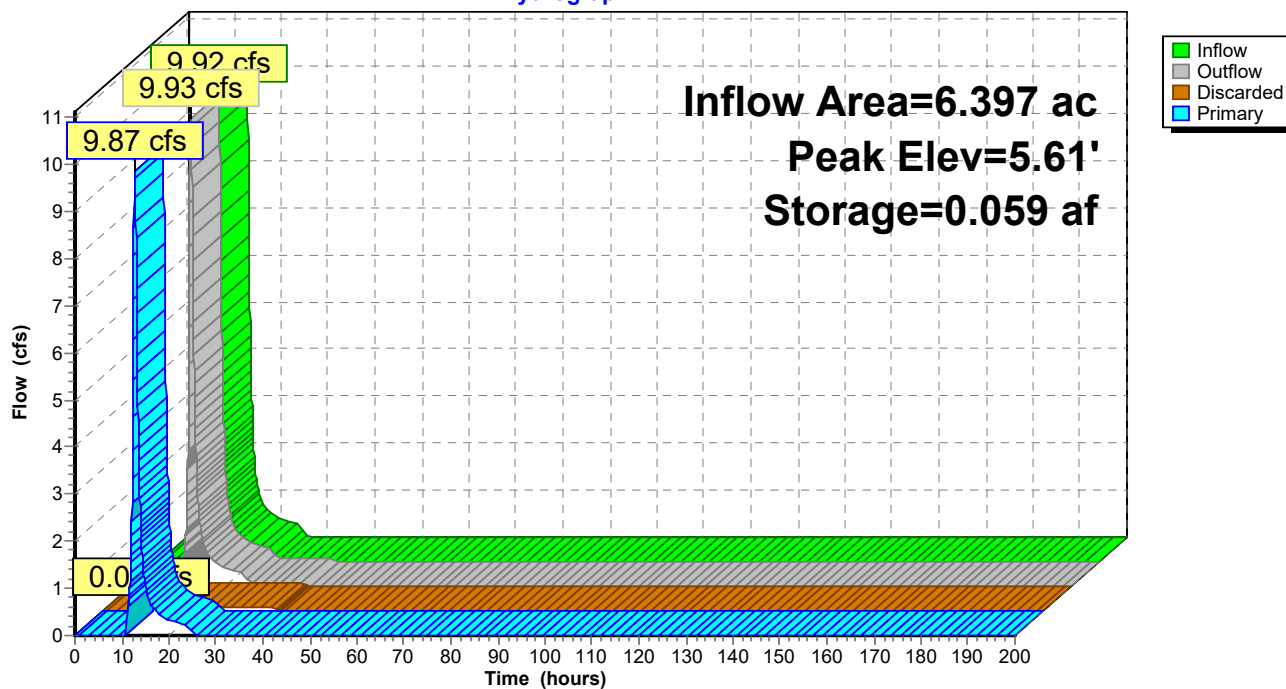
Overall System Size = 34.38' x 22.75' x 5.50'

12 Chambers

159.3 cy Field

107.1 cy Stone



Pond 2P: Stormtech**Hydrograph**

Summary for Pond 6P: Infiltration Basin and Stormtech

[42] Hint: Gap in defined storage above volume #2 at 614.00'

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 3.46" for 50-Year event
 Inflow = 13.22 cfs @ 12.36 hrs, Volume= 1.501 af
 Outflow = 13.22 cfs @ 12.37 hrs, Volume= 1.501 af, Atten= 0%, Lag= 0.5 min
 Discarded = 0.22 cfs @ 12.37 hrs, Volume= 0.321 af
 Primary = 12.99 cfs @ 12.37 hrs, Volume= 1.180 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 617.63' @ 12.37 hrs Surf.Area= 1,385 sf Storage= 2,760 cf

Plug-Flow detention time= 37.4 min calculated for 1.501 af (100% of inflow)
 Center-of-Mass det. time= 37.5 min (848.8 - 811.3)

Volume	Invert	Avail.Storage	Storage Description
#1	615.00'	7,058 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	608.50'	538 cf	8.42'W x 41.55'L x 5.50'H Field A
			1,923 cf Overall - 580 cf Embedded = 1,344 cf x 40.0% Voids
#3A	609.25'	580 cf	ADS_StormTech MC-3500 d +Cap x 5 Inside #2
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		8,175 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
615.00	0	0	0
616.00	610	305	305
617.00	871	741	1,046
618.00	1,133	1,002	2,048
619.00	1,481	1,307	3,355
620.00	1,917	1,699	5,054
621.00	2,091	2,004	7,058

Device	Routing	Invert	Outlet Devices
#1	Discarded	608.50'	7.000 in/hr Exfiltration over Surface area
#2	Primary	617.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 12.37 hrs HW=617.62' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=12.90 cfs @ 12.37 hrs HW=617.62' (Free Discharge)
 ↑2=Orifice/Grate (Weir Controls 12.90 cfs @ 2.58 fps)

Pond 6P: Infiltration Basin and Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length

1 Rows x 77.0" Wide + 12.0" Side Stone x 2 = 8.42' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

5 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 579.6 cf Chamber Storage

1,923.4 cf Field - 579.6 cf Chambers = 1,343.9 cf Stone x 40.0% Voids = 537.5 cf Stone Storage

Chamber Storage + Stone Storage = 1,117.1 cf = 0.026 af

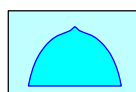
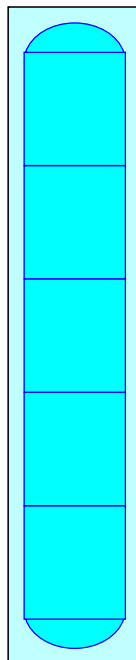
Overall Storage Efficiency = 58.1%

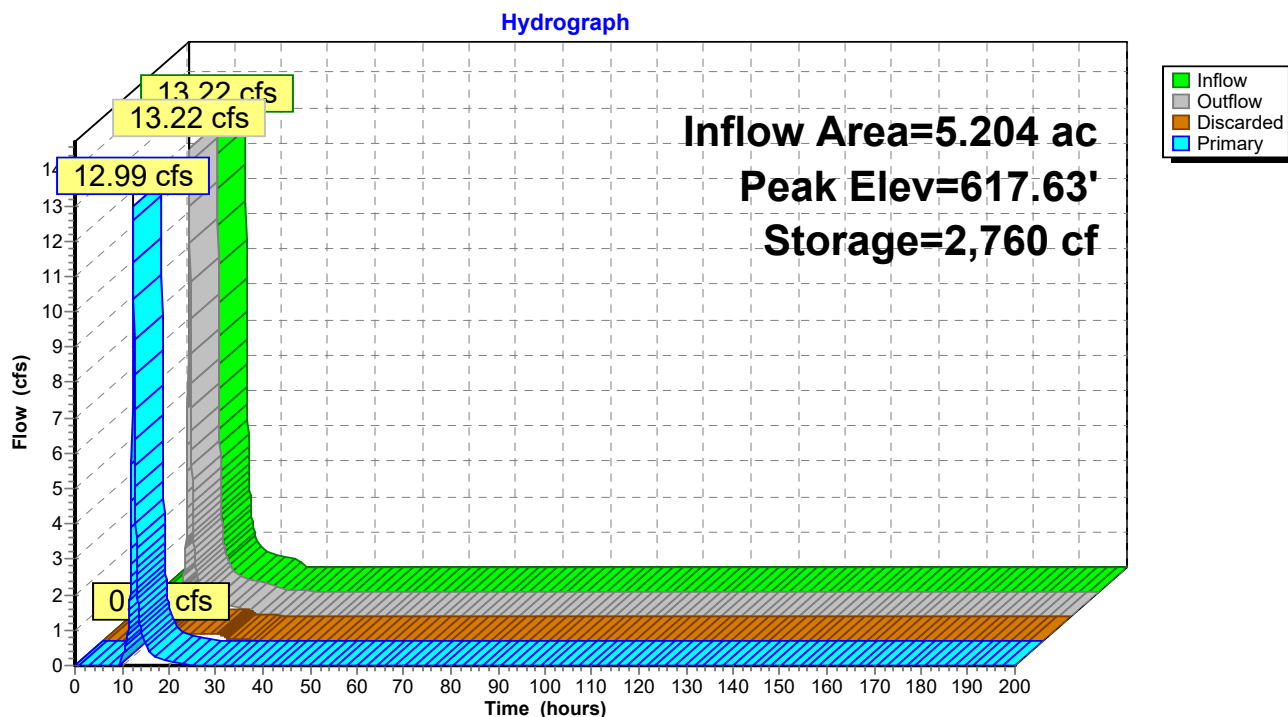
Overall System Size = 41.55' x 8.42' x 5.50'

5 Chambers

71.2 cy Field

49.8 cy Stone



Pond 6P: Infiltration Basin and Stormtech

HydePark_SWMP_Top3_11-5-19

NRCC 24-hr B 100-Year Rainfall=5.22"

Prepared by Hewlett-Packard Company

Printed 11/14/2019

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Page 89

Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA_1: CPv Runoff Area=2.615 ac 71.55% Impervious Runoff Depth=3.64"
Flow Length=488' Slope=0.0063 '/' Tc=21.8 min CN=WQ Runoff=7.14 cfs 0.792 af

Subcatchment DA_2: 1/2 WQv Runoff Area=1.805 ac 0.00% Impervious Runoff Depth=3.88"
Flow Length=396' Slope=0.0030 '/' Tc=21.1 min CN=88 Runoff=6.06 cfs 0.583 af

Subcatchment DA_3: 1/2 WQv Runoff Area=6.397 ac 0.00% Impervious Runoff Depth=3.67"
Flow Length=1,353' Slope=0.0036 '/' Tc=55.5 min CN=86 Runoff=12.08 cfs 1.958 af

Subcatchment DA_6: 1/2 WQv Runoff Area=3.399 ac 0.00% Impervious Runoff Depth=4.30"
Flow Length=752' Slope=0.0029 '/' Tc=30.3 min CN=92 Runoff=10.26 cfs 1.219 af

Pond 1P: Stormtech Peak Elev=7.05' Storage=0.131 af Inflow=7.14 cfs 0.792 af
Discarded=0.22 cfs 0.434 af Primary=8.44 cfs 0.359 af Outflow=8.66 cfs 0.792 af

Pond 2P: Stormtech Peak Elev=5.70' Storage=0.059 af Inflow=12.08 cfs 1.958 af
Discarded=0.06 cfs 0.144 af Primary=12.02 cfs 1.814 af Outflow=12.08 cfs 1.958 af

Pond 6P: Infiltration Basin and Stormtech Peak Elev=617.71' Storage=2,848 cf Inflow=15.75 cfs 1.803 af
Discarded=0.23 cfs 0.334 af Primary=15.51 cfs 1.469 af Outflow=15.74 cfs 1.803 af

Total Runoff Area = 14.216 ac Runoff Volume = 4.553 af Average Runoff Depth = 3.84"
86.84% Pervious = 12.345 ac 13.16% Impervious = 1.871 ac

Summary for Subcatchment DA_1: CPv

Runoff = 7.14 cfs @ 12.31 hrs, Volume= 0.792 af, Depth= 3.64"

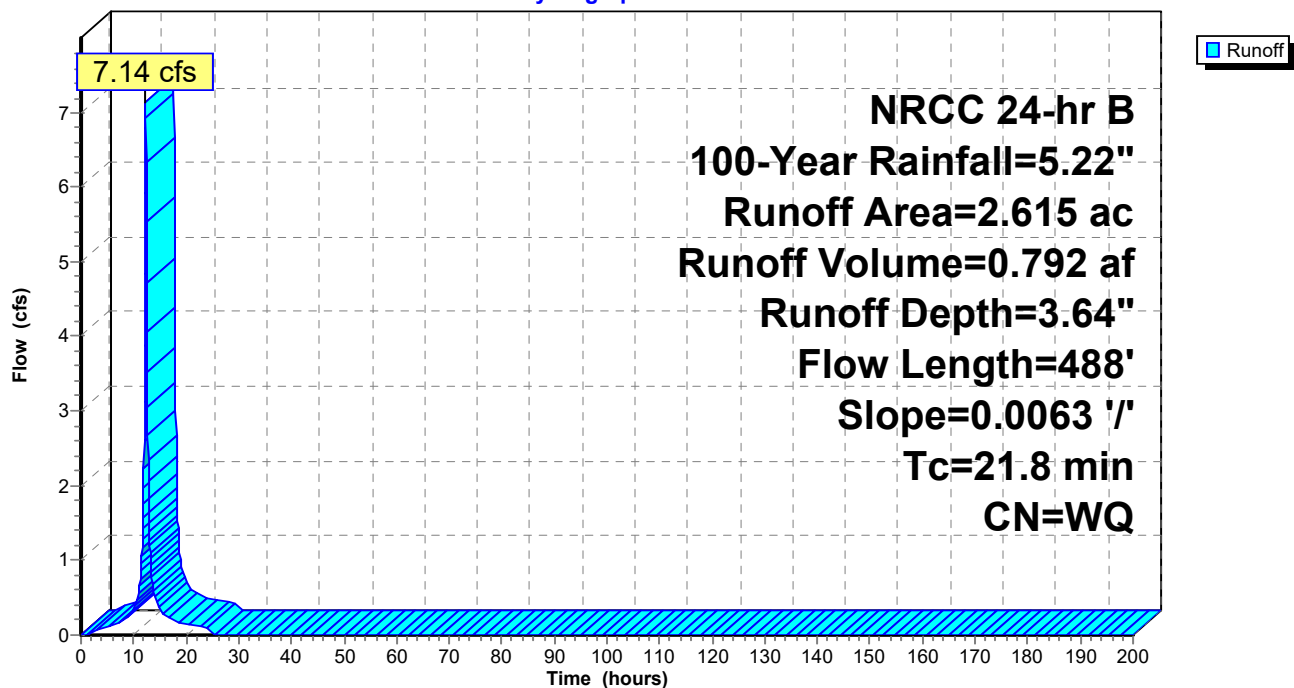
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-Year Rainfall=5.22"

Area (ac)	CN	Description
0.744	39	>75% Grass cover, Good, HSG A
1.871	98	Paved Parking, HSG A
2.615		Weighted Average
0.744		28.45% Pervious Area
1.871		71.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	488	0.0063	0.37		Lag/CN Method, Contour Length= 718' Interval= 1'

Subcatchment DA_1: CPv

Hydrograph



Summary for Subcatchment DA_2: 1/2 WQv

Runoff = 6.06 cfs @ 12.30 hrs, Volume= 0.583 af, Depth= 3.88"

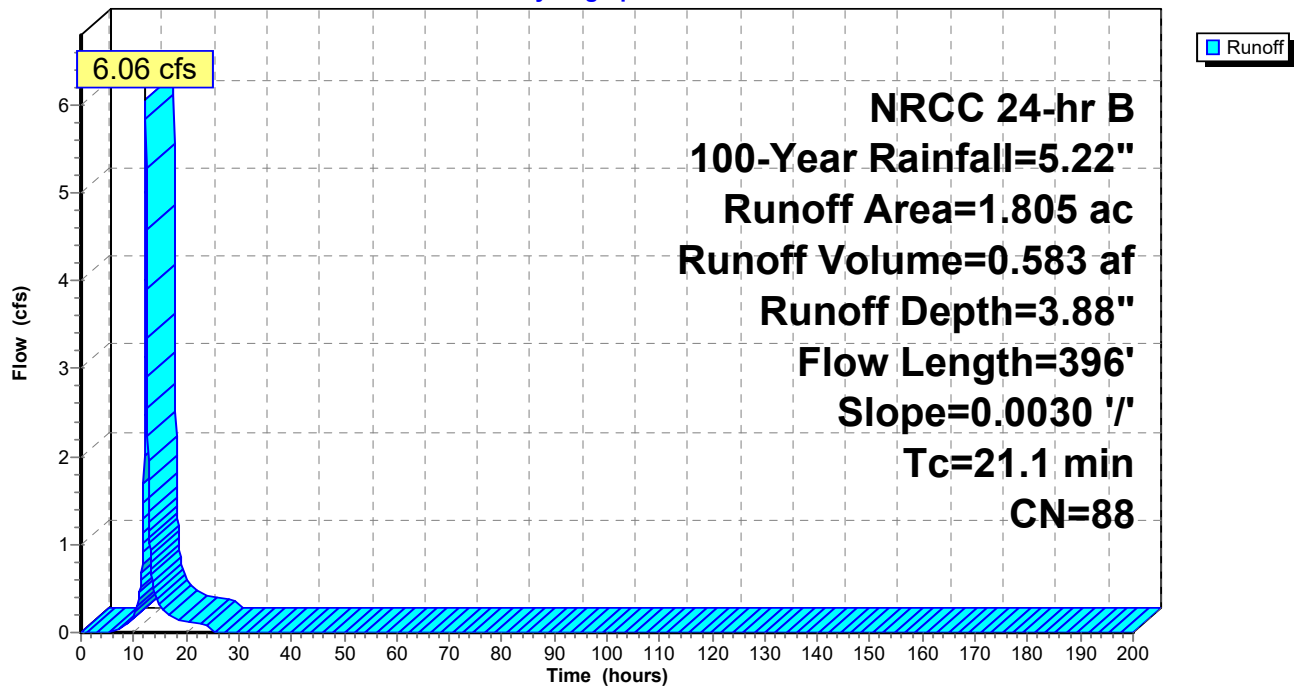
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-Year Rainfall=5.22"

Area (ac)	CN	Description
* 1.805	88	
1.805		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	396	0.0030	0.31		Lag/CN Method, Contour Length= 234' Interval= 1'

Subcatchment DA_2: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_3: 1/2 WQv

Runoff = 12.08 cfs @ 12.74 hrs, Volume= 1.958 af, Depth= 3.67"

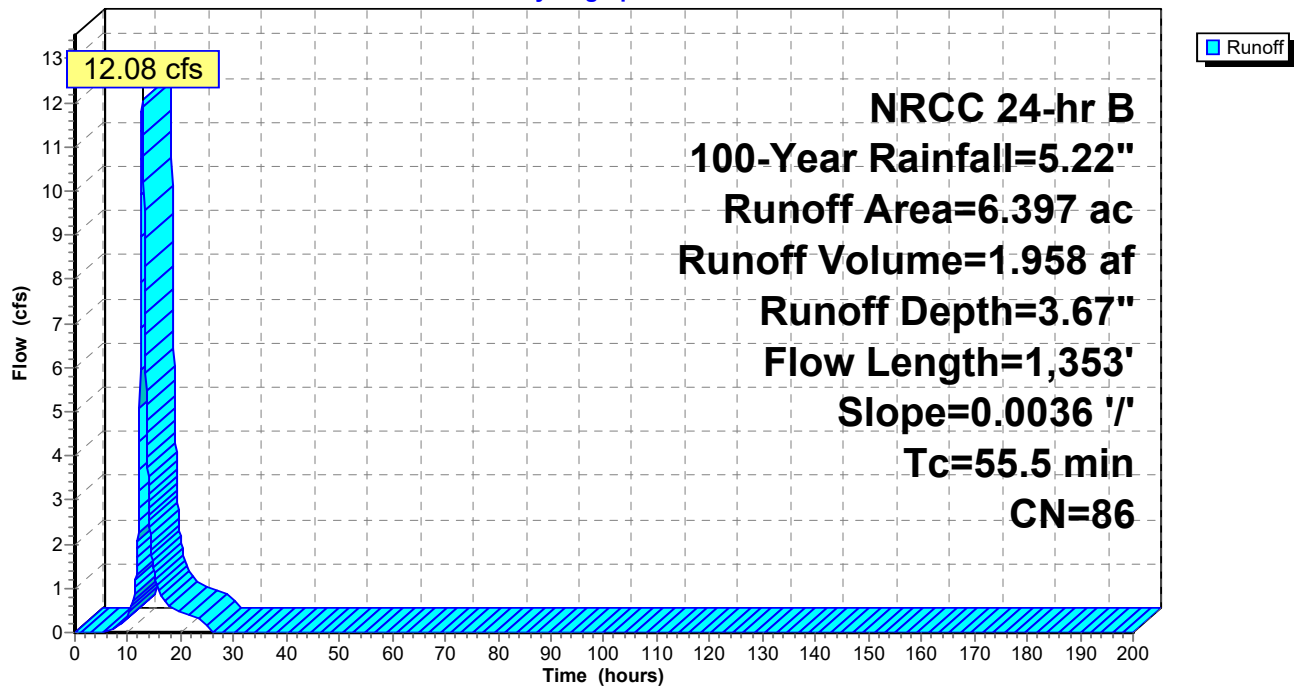
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-Year Rainfall=5.22"

Area (ac)	CN	Description
* 6.397	86	
6.397		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
55.5	1,353	0.0036	0.41		Lag/CN Method, Contour Length= 993' Interval= 1'

Subcatchment DA_3: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_6: 1/2 WQv

Runoff = 10.26 cfs @ 12.41 hrs, Volume= 1.219 af, Depth= 4.30"

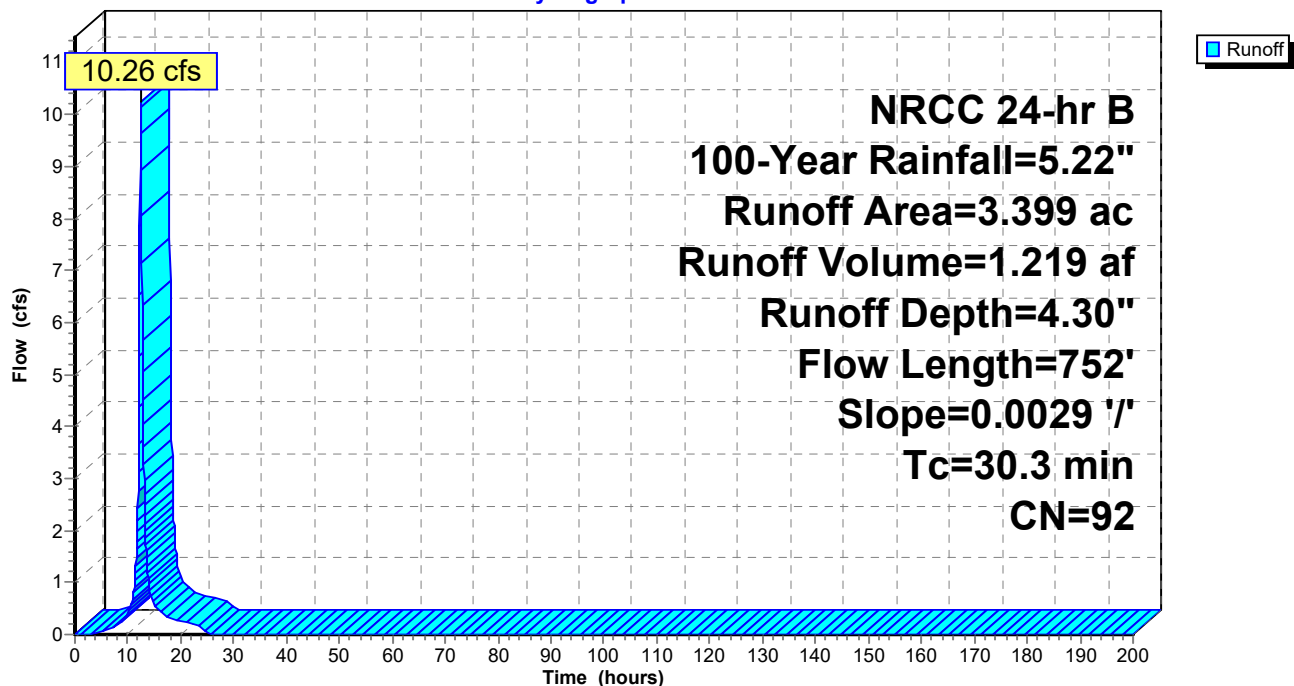
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-Year Rainfall=5.22"

Area (ac)	CN	Description
* 3.399	92	
3.399		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	752	0.0029	0.41		Lag/CN Method, Contour Length= 429' Interval= 1'

Subcatchment DA_6: 1/2 WQv

Hydrograph



Summary for Pond 1P: Stormtech

[93] Warning: Storage range exceeded by 0.30'

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

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=4)

Inflow Area = 2.615 ac, 71.55% Impervious, Inflow Depth = 3.64" for 100-Year event
 Inflow = 7.14 cfs @ 12.31 hrs, Volume= 0.792 af
 Outflow = 8.66 cfs @ 12.35 hrs, Volume= 0.792 af, Atten= 0%, Lag= 2.5 min
 Discarded = 0.22 cfs @ 8.55 hrs, Volume= 0.434 af
 Primary = 8.44 cfs @ 12.35 hrs, Volume= 0.359 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 7.05' @ 12.35 hrs Surf.Area= 0.031 ac Storage= 0.131 af

Plug-Flow detention time= 129.1 min calculated for 0.792 af (100% of inflow)
 Center-of-Mass det. time= 129.1 min (896.3 - 767.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.052 af	28.50'W x 47.37'L x 6.75'H Field A 0.209 af Overall - 0.078 af Embedded = 0.131 af x 40.0% Voids
#2A	0.75'	0.078 af	ADS_StormTech MC-4500 +Cap x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 30 Chambers in 3 Rows Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
			0.131 af Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	7.000 in/hr Exfiltration over Surface area
#2	Primary	6.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 8.55 hrs HW=0.07' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)**Primary OutFlow** Max=8.22 cfs @ 12.35 hrs HW=7.04' (Free Discharge)↑**2=Orifice/Grate** (Weir Controls 8.22 cfs @ 2.41 fps)

Pond 1P: Stormtech - Chamber Wizard Field A**Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)**

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length

3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

30 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,408.9 cf Chamber Storage

9,112.2 cf Field - 3,408.9 cf Chambers = 5,703.2 cf Stone x 40.0% Voids = 2,281.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,690.2 cf = 0.131 af

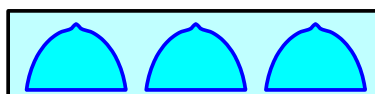
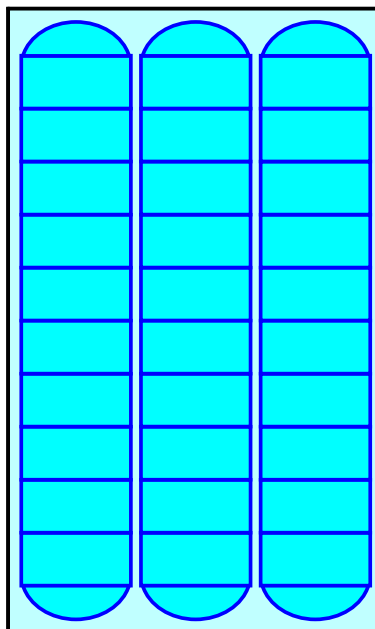
Overall Storage Efficiency = 62.4%

Overall System Size = 47.37' x 28.50' x 6.75'

30 Chambers

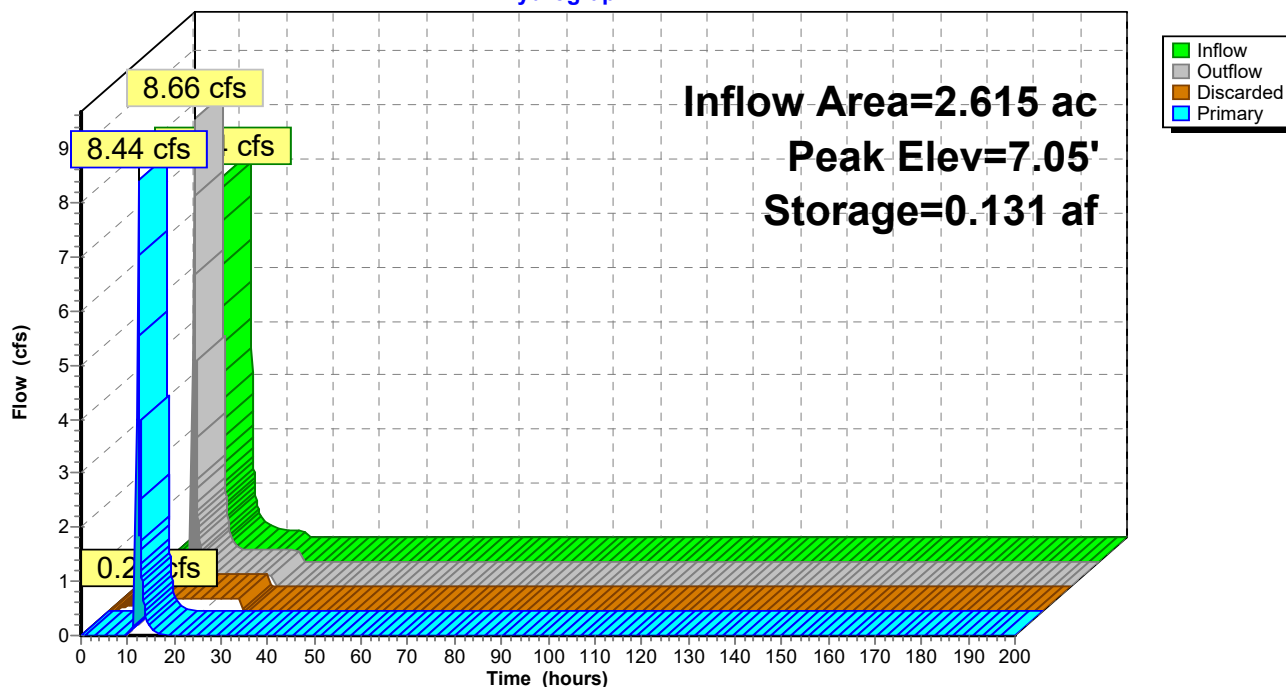
337.5 cy Field

211.2 cy Stone



Pond 1P: Stormtech

Hydrograph



Summary for Pond 2P: Stormtech

[93] Warning: Storage range exceeded by 0.20'

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

Inflow Area = 6.397 ac, 0.00% Impervious, Inflow Depth = 3.67" for 100-Year event
 Inflow = 12.08 cfs @ 12.74 hrs, Volume= 1.958 af
 Outflow = 12.08 cfs @ 12.74 hrs, Volume= 1.958 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.06 cfs @ 7.20 hrs, Volume= 0.144 af
 Primary = 12.02 cfs @ 12.74 hrs, Volume= 1.814 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Peak Elev= 5.70' @ 12.74 hrs Surf.Area= 0.018 ac Storage= 0.059 af

Plug-Flow detention time= 37.5 min calculated for 1.958 af (100% of inflow)

Center-of-Mass det. time= 37.5 min (886.3 - 848.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.027 af	22.75'W x 34.38'L x 5.50'H Field A 0.099 af Overall - 0.032 af Embedded = 0.066 af x 40.0% Voids
#2A	0.75'	0.032 af	ADS_StormTech MC-3500 d +Cap x 12 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 12 Chambers in 3 Rows Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf
0.059 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	3.120 in/hr Exfiltration over Surface area
#2	Primary	5.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 7.20 hrs HW=0.06' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=12.00 cfs @ 12.74 hrs HW=5.70' (Free Discharge)↑**2=Orifice/Grate** (Weir Controls 12.00 cfs @ 2.73 fps)

Pond 2P: Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +12.0" End Stone x 2 = 34.38' Base Length

3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

12 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 1,408.8 cf Chamber Storage

4,301.8 cf Field - 1,408.8 cf Chambers = 2,893.0 cf Stone x 40.0% Voids = 1,157.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,566.0 cf = 0.059 af

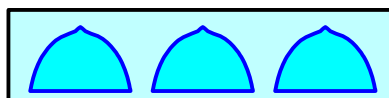
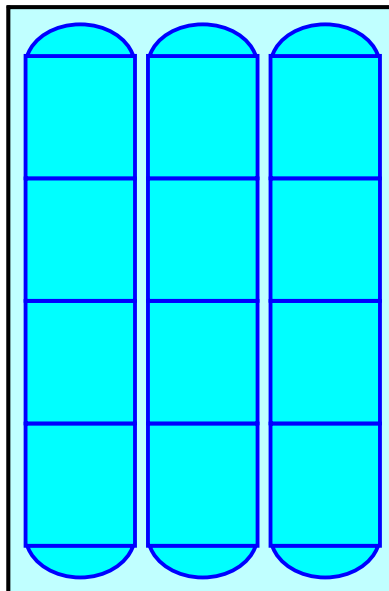
Overall Storage Efficiency = 59.6%

Overall System Size = 34.38' x 22.75' x 5.50'

12 Chambers

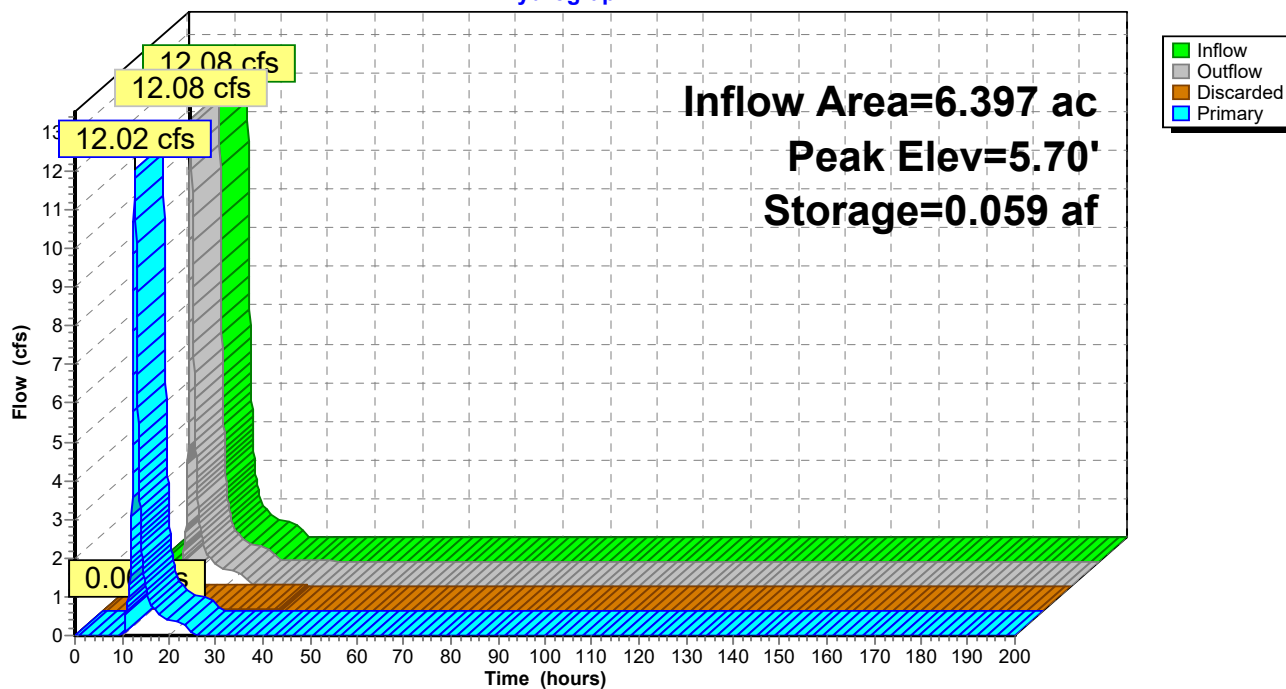
159.3 cy Field

107.1 cy Stone



Pond 2P: Stormtech

Hydrograph



Summary for Pond 6P: Infiltration Basin and Stormtech

[42] Hint: Gap in defined storage above volume #2 at 614.00'

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 4.16" for 100-Year event
 Inflow = 15.75 cfs @ 12.36 hrs, Volume= 1.803 af
 Outflow = 15.74 cfs @ 12.37 hrs, Volume= 1.803 af, Atten= 0%, Lag= 0.6 min
 Discarded = 0.23 cfs @ 12.37 hrs, Volume= 0.334 af
 Primary = 15.51 cfs @ 12.37 hrs, Volume= 1.469 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 617.71' @ 12.37 hrs Surf.Area= 1,407 sf Storage= 2,848 cf

Plug-Flow detention time= 32.5 min calculated for 1.802 af (100% of inflow)
 Center-of-Mass det. time= 32.6 min (839.1 - 806.5)

Volume	Invert	Avail.Storage	Storage Description
#1	615.00'	7,058 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	608.50'	538 cf	8.42'W x 41.55'L x 5.50'H Field A
			1,923 cf Overall - 580 cf Embedded = 1,344 cf x 40.0% Voids
#3A	609.25'	580 cf	ADS_StormTech MC-3500 d +Cap x 5 Inside #2
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		8,175 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
615.00	0	0	0
616.00	610	305	305
617.00	871	741	1,046
618.00	1,133	1,002	2,048
619.00	1,481	1,307	3,355
620.00	1,917	1,699	5,054
621.00	2,091	2,004	7,058

Device	Routing	Invert	Outlet Devices
#1	Discarded	608.50'	7.000 in/hr Exfiltration over Surface area
#2	Primary	617.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.23 cfs @ 12.37 hrs HW=617.71' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=15.57 cfs @ 12.37 hrs HW=617.71' (Free Discharge)
 ↑2=Orifice/Grate (Weir Controls 15.57 cfs @ 2.75 fps)

Pond 6P: Infiltration Basin and Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length

1 Rows x 77.0" Wide + 12.0" Side Stone x 2 = 8.42' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

5 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 579.6 cf Chamber Storage

1,923.4 cf Field - 579.6 cf Chambers = 1,343.9 cf Stone x 40.0% Voids = 537.5 cf Stone Storage

Chamber Storage + Stone Storage = 1,117.1 cf = 0.026 af

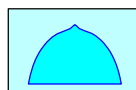
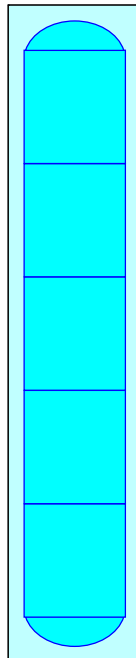
Overall Storage Efficiency = 58.1%

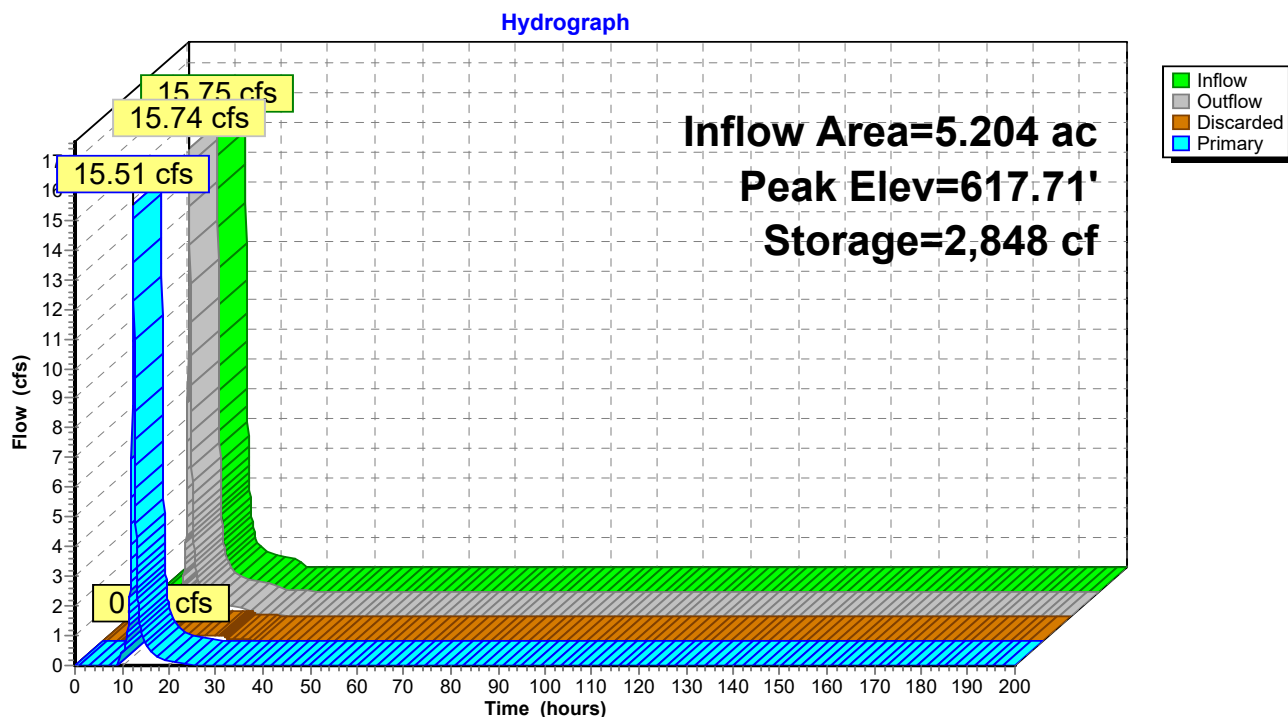
Overall System Size = 41.55' x 8.42' x 5.50'

5 Chambers

71.2 cy Field

49.8 cy Stone



Pond 6P: Infiltration Basin and Stormtech

HydePark_SWMP_Top3_11-5-19

NRCC 24-hr B Custom Rainfall=0.50"

Prepared by Hewlett-Packard Company

Printed 11/14/2019

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

Page 103

Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA_1: CPv Runoff Area=2.615 ac 71.55% Impervious Runoff Depth=0.23"
Flow Length=488' Slope=0.0063 '/' Tc=21.8 min CN=WQ Runoff=0.52 cfs 0.050 af

Subcatchment DA_2: 1/2 WQv Runoff Area=1.805 ac 0.00% Impervious Runoff Depth=0.03"
Flow Length=396' Slope=0.0030 '/' Tc=21.1 min CN=88 Runoff=0.02 cfs 0.005 af

Subcatchment DA_3: 1/2 WQv Runoff Area=6.397 ac 0.00% Impervious Runoff Depth=0.02"
Flow Length=1,353' Slope=0.0036 '/' Tc=55.5 min CN=86 Runoff=0.02 cfs 0.009 af

Subcatchment DA_6: 1/2 WQv Runoff Area=3.399 ac 0.00% Impervious Runoff Depth=0.09"
Flow Length=752' Slope=0.0029 '/' Tc=30.3 min CN=92 Runoff=0.17 cfs 0.025 af

Pond 1P: Stormtech Peak Elev=0.69' Storage=0.009 af Inflow=0.52 cfs 0.050 af
Discarded=0.22 cfs 0.050 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.050 af

Pond 2P: Stormtech Peak Elev=0.02' Storage=0.000 af Inflow=0.02 cfs 0.009 af
Discarded=0.02 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.009 af

Pond 6P: Infiltration Basin and Stormtech Peak Elev=609.99' Storage=305 cf Inflow=0.19 cfs 0.030 af
Discarded=0.06 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.030 af

Total Runoff Area = 14.216 ac Runoff Volume = 0.089 af Average Runoff Depth = 0.07"
86.84% Pervious = 12.345 ac 13.16% Impervious = 1.871 ac

Summary for Subcatchment DA_1: CPv

Runoff = 0.52 cfs @ 12.32 hrs, Volume= 0.050 af, Depth= 0.23"

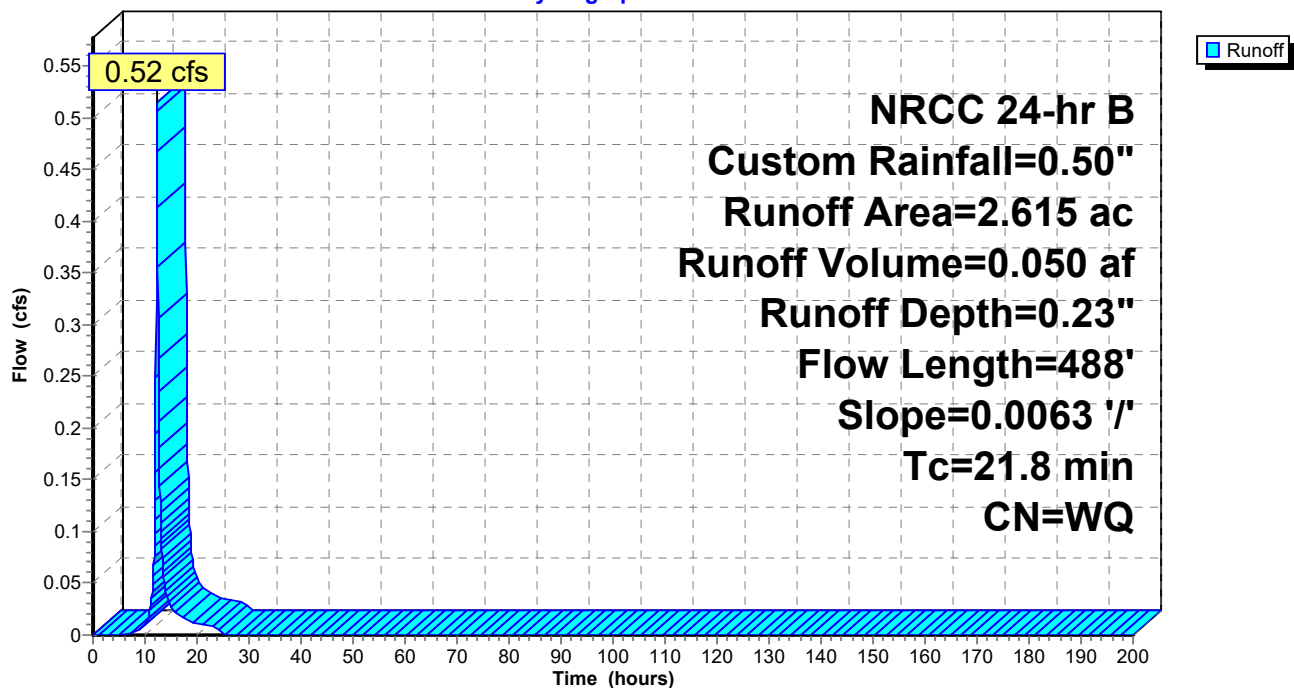
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B Custom Rainfall=0.50"

Area (ac)	CN	Description
0.744	39	>75% Grass cover, Good, HSG A
1.871	98	Paved Parking, HSG A
2.615		Weighted Average
0.744		28.45% Pervious Area
1.871		71.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	488	0.0063	0.37		Lag/CN Method, Contour Length= 718' Interval= 1'

Subcatchment DA_1: CPv

Hydrograph



Summary for Subcatchment DA_2: 1/2 WQv

Runoff = 0.02 cfs @ 12.63 hrs, Volume= 0.005 af, Depth= 0.03"

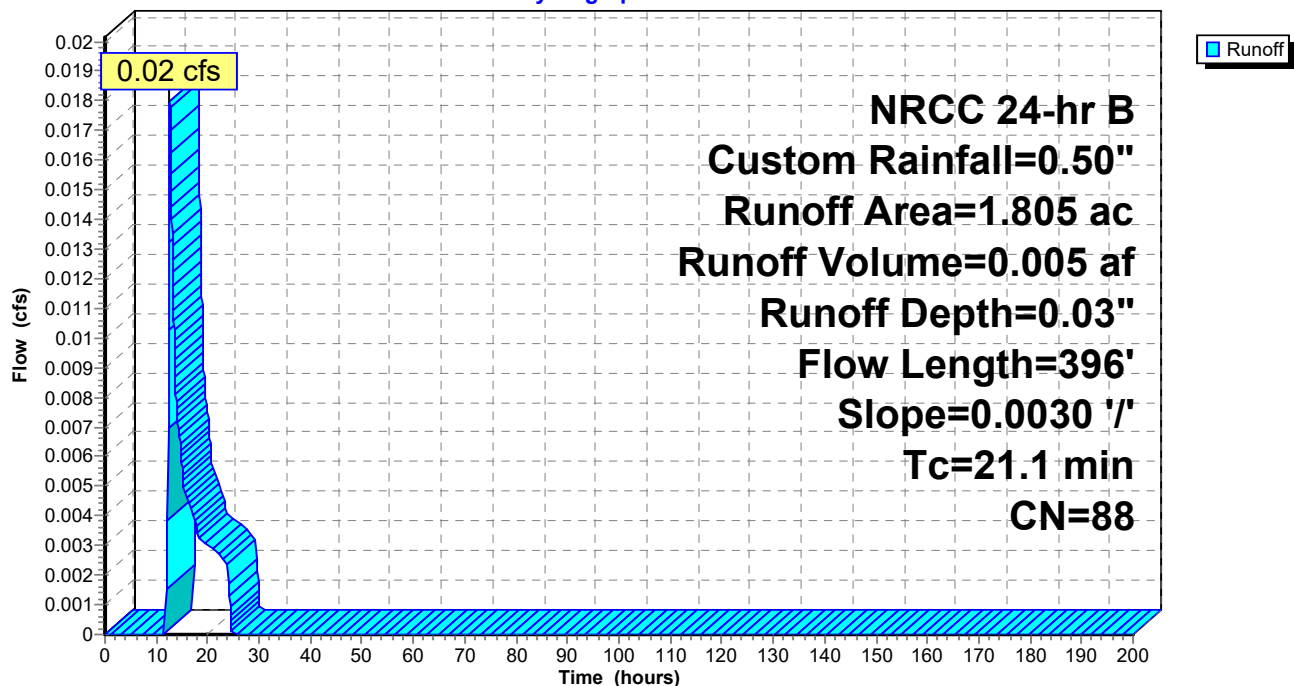
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B Custom Rainfall=0.50"

Area (ac)	CN	Description
* 1.805	88	
1.805		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	396	0.0030	0.31		Lag/CN Method, Contour Length= 234' Interval= 1'

Subcatchment DA_2: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_3: 1/2 WQv

Runoff = 0.02 cfs @ 13.76 hrs, Volume= 0.009 af, Depth= 0.02"

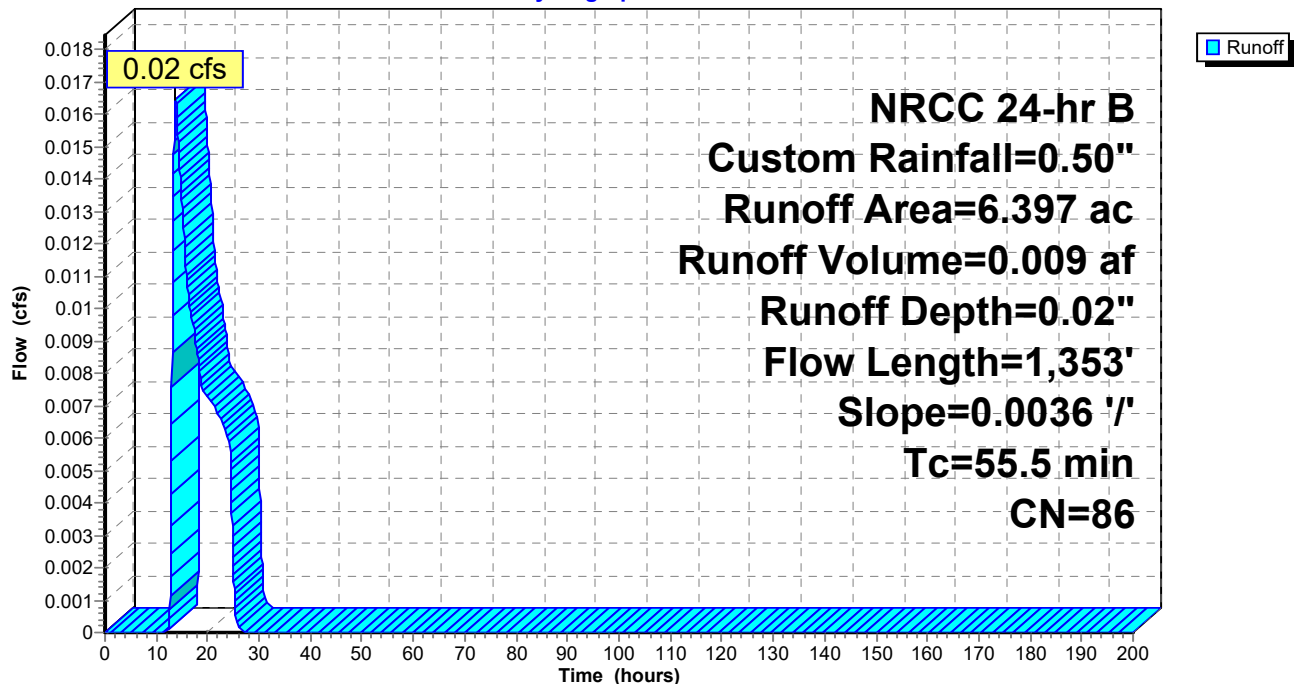
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B Custom Rainfall=0.50"

Area (ac)	CN	Description
* 6.397	86	
6.397		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
55.5	1,353	0.0036	0.41		Lag/CN Method, Contour Length= 993' Interval= 1'

Subcatchment DA_3: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_6: 1/2 WQv

Runoff = 0.17 cfs @ 12.51 hrs, Volume= 0.025 af, Depth= 0.09"

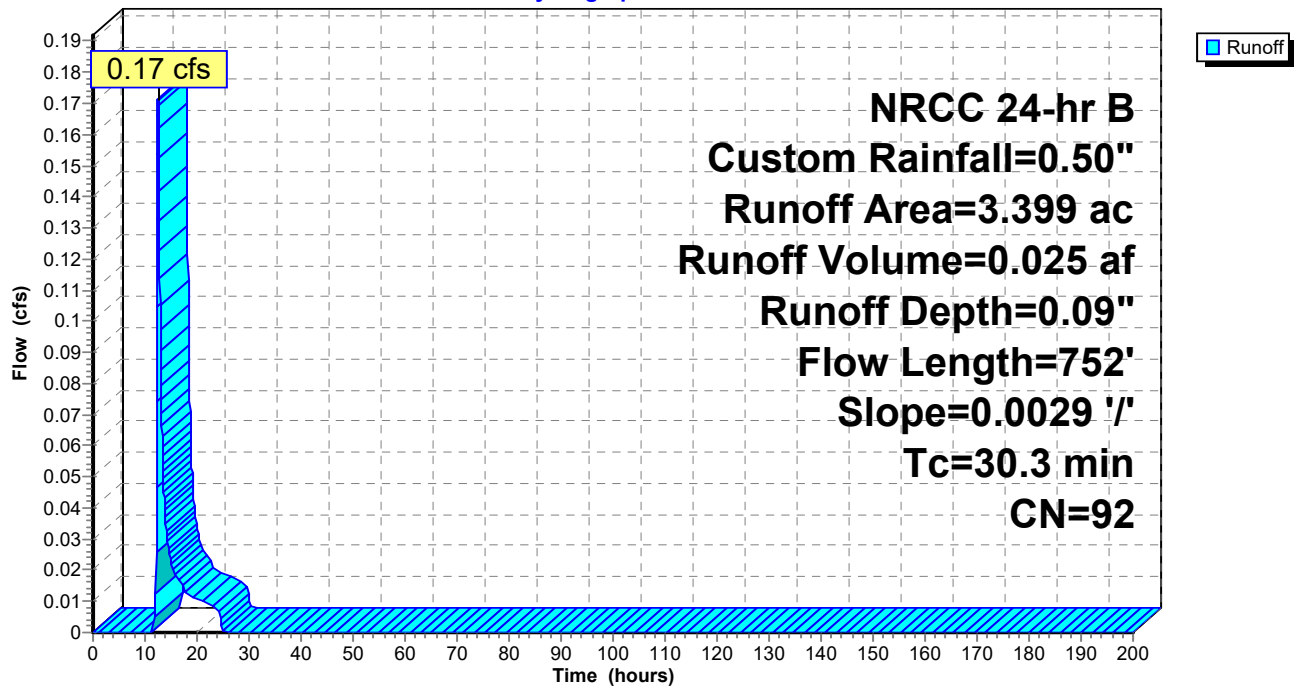
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B Custom Rainfall=0.50"

Area (ac)	CN	Description
* 3.399	92	
3.399		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	752	0.0029	0.41		Lag/CN Method, Contour Length= 429' Interval= 1'

Subcatchment DA_6: 1/2 WQv

Hydrograph



Summary for Pond 1P: Stormtech

Inflow Area = 2.615 ac, 71.55% Impervious, Inflow Depth = 0.23" for Custom event
 Inflow = 0.52 cfs @ 12.32 hrs, Volume= 0.050 af
 Outflow = 0.22 cfs @ 12.15 hrs, Volume= 0.050 af, Atten= 58%, Lag= 0.0 min
 Discarded = 0.22 cfs @ 12.15 hrs, Volume= 0.050 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 0.69' @ 12.68 hrs Surf.Area= 0.031 ac Storage= 0.009 af

Plug-Flow detention time= 10.6 min calculated for 0.050 af (100% of inflow)
 Center-of-Mass det. time= 10.6 min (838.4 - 827.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.052 af	28.50'W x 47.37'L x 6.75'H Field A 0.209 af Overall - 0.078 af Embedded = 0.131 af x 40.0% Voids
#2A	0.75'	0.078 af	ADS_StormTech MC-4500 +Cap x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 30 Chambers in 3 Rows Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
0.131 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	7.000 in/hr Exfiltration over Surface area
#2	Primary	6.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 12.15 hrs HW=0.09' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
 ↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 1P: Stormtech - Chamber Wizard Field A**Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)**

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 = 47.37' Base Length

3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

30 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,408.9 cf Chamber Storage

9,112.2 cf Field - 3,408.9 cf Chambers = 5,703.2 cf Stone x 40.0% Voids = 2,281.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,690.2 cf = 0.131 af

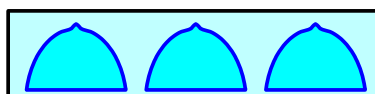
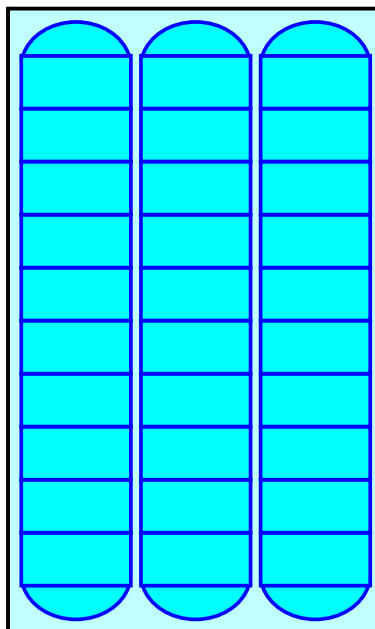
Overall Storage Efficiency = 62.4%

Overall System Size = 47.37' x 28.50' x 6.75'

30 Chambers

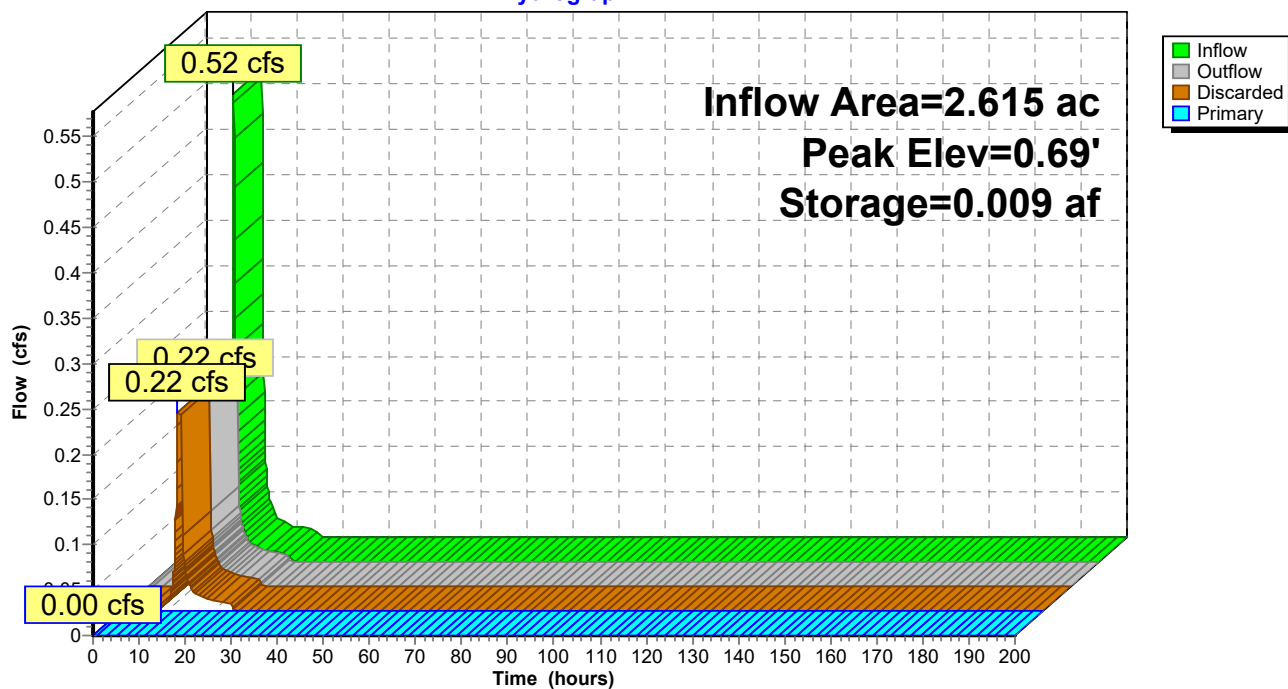
337.5 cy Field

211.2 cy Stone



Pond 1P: Stormtech

Hydrograph



Summary for Pond 2P: Stormtech

Inflow Area = 6.397 ac, 0.00% Impervious, Inflow Depth = 0.02" for Custom event
 Inflow = 0.02 cfs @ 13.76 hrs, Volume= 0.009 af
 Outflow = 0.02 cfs @ 13.86 hrs, Volume= 0.009 af, Atten= 1%, Lag= 6.0 min
 Discarded = 0.02 cfs @ 13.86 hrs, Volume= 0.009 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 0.02' @ 13.86 hrs Surf.Area= 0.018 ac Storage= 0.000 af

Plug-Flow detention time= 5.1 min calculated for 0.009 af (100% of inflow)
 Center-of-Mass det. time= 5.1 min (1,075.4 - 1,070.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.027 af	22.75'W x 34.38'L x 5.50'H Field A 0.099 af Overall - 0.032 af Embedded = 0.066 af x 40.0% Voids
#2A	0.75'	0.032 af	ADS_StormTech MC-3500 d +Cap x 12 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 12 Chambers in 3 Rows Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf
0.059 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	3.120 in/hr Exfiltration over Surface area
#2	Primary	5.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 13.86 hrs HW=0.02' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
 ↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +12.0" End Stone x 2 = 34.38' Base Length

3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

12 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 1,408.8 cf Chamber Storage

4,301.8 cf Field - 1,408.8 cf Chambers = 2,893.0 cf Stone x 40.0% Voids = 1,157.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,566.0 cf = 0.059 af

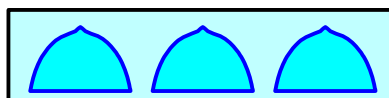
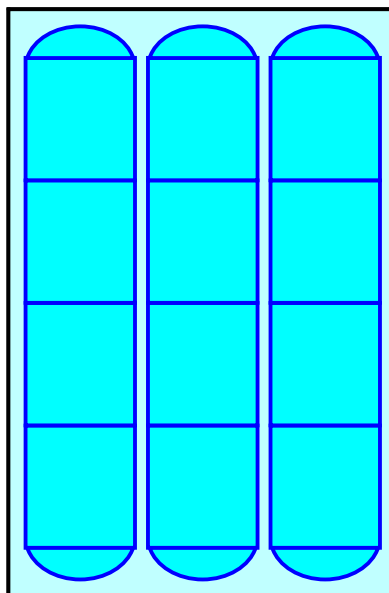
Overall Storage Efficiency = 59.6%

Overall System Size = 34.38' x 22.75' x 5.50'

12 Chambers

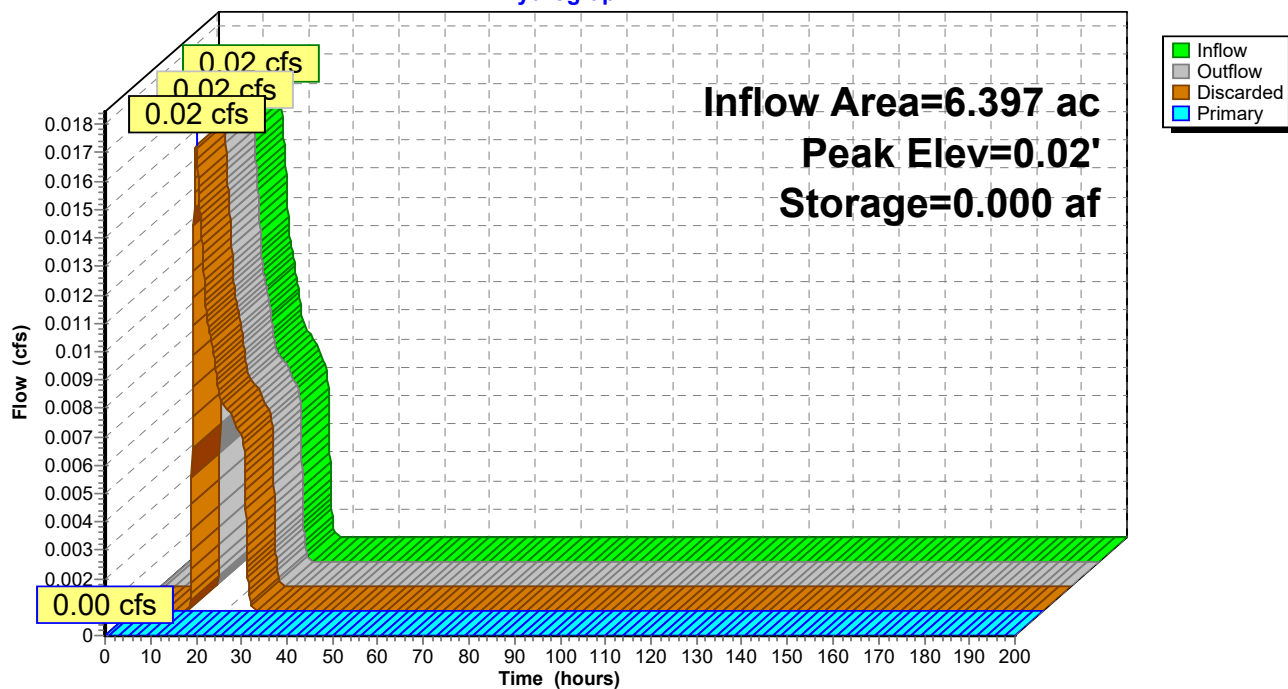
159.3 cy Field

107.1 cy Stone



Pond 2P: Stormtech

Hydrograph



Summary for Pond 6P: Infiltration Basin and Stormtech

[42] Hint: Gap in defined storage above volume #2 at 614.00'

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 0.07" for Custom event
 Inflow = 0.19 cfs @ 12.52 hrs, Volume= 0.030 af
 Outflow = 0.06 cfs @ 12.30 hrs, Volume= 0.030 af, Atten= 70%, Lag= 0.0 min
 Discarded = 0.06 cfs @ 12.30 hrs, Volume= 0.030 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 609.99' @ 13.60 hrs Surf.Area= 350 sf Storage= 305 cf

Plug-Flow detention time= 40.9 min calculated for 0.030 af (100% of inflow)
 Center-of-Mass det. time= 40.8 min (969.8 - 929.0)

Volume	Invert	Avail.Storage	Storage Description
#1	615.00'	7,058 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	608.50'	538 cf	8.42'W x 41.55'L x 5.50'H Field A
			1,923 cf Overall - 580 cf Embedded = 1,344 cf x 40.0% Voids
#3A	609.25'	580 cf	ADS_StormTech MC-3500 d +Cap x 5 Inside #2
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		8,175 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
615.00	0	0	0
616.00	610	305	305
617.00	871	741	1,046
618.00	1,133	1,002	2,048
619.00	1,481	1,307	3,355
620.00	1,917	1,699	5,054
621.00	2,091	2,004	7,058

Device	Routing	Invert	Outlet Devices
#1	Discarded	608.50'	7.000 in/hr Exfiltration over Surface area
#2	Primary	617.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.30 hrs HW=608.65' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=608.50' (Free Discharge)
 ↑2=Orifice/Grate (Controls 0.00 cfs)

Pond 6P: Infiltration Basin and Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length

1 Rows x 77.0" Wide + 12.0" Side Stone x 2 = 8.42' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

5 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 579.6 cf Chamber Storage

1,923.4 cf Field - 579.6 cf Chambers = 1,343.9 cf Stone x 40.0% Voids = 537.5 cf Stone Storage

Chamber Storage + Stone Storage = 1,117.1 cf = 0.026 af

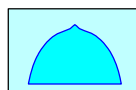
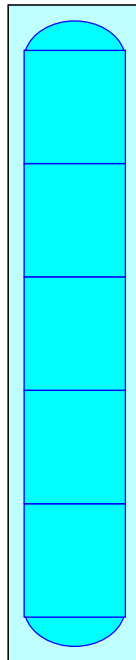
Overall Storage Efficiency = 58.1%

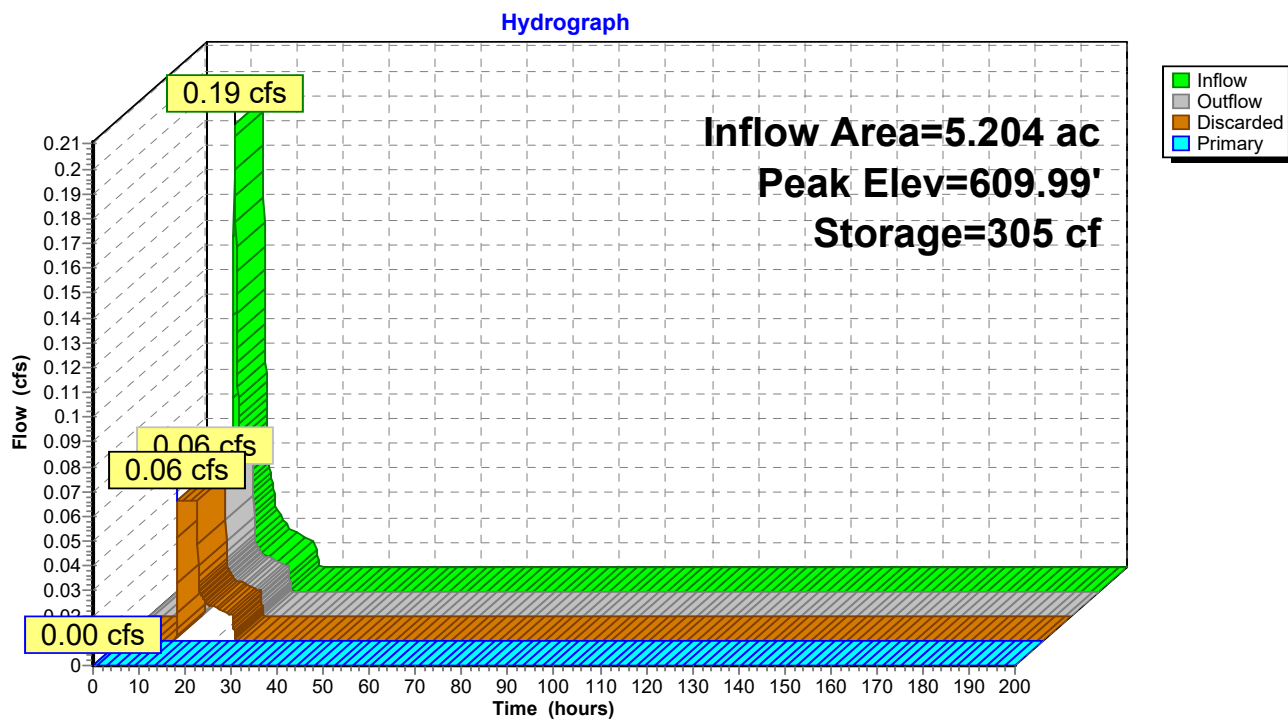
Overall System Size = 41.55' x 8.42' x 5.50'

5 Chambers

71.2 cy Field

49.8 cy Stone



Pond 6P: Infiltration Basin and Stormtech

HydePark_SWMP_Top3_11-5-19

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

NRCC 24-hr B WQ Rainfall=1.00"

Printed 11/14/2019

Page 117

Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentDA_1: CPv

Runoff Area=2.615 ac 71.55% Impervious Runoff Depth=0.57"

Flow Length=488' Slope=0.0063 '/' Tc=21.8 min CN=WQ Runoff=1.24 cfs 0.123 af

SubcatchmentDA_2: 1/2 WQv

Runoff Area=1.805 ac 0.00% Impervious Runoff Depth=0.25"

Flow Length=396' Slope=0.0030 '/' Tc=21.1 min CN=88 Runoff=0.36 cfs 0.038 af

SubcatchmentDA_3: 1/2 WQv

Runoff Area=6.397 ac 0.00% Impervious Runoff Depth=0.20"

Flow Length=1,353' Slope=0.0036 '/' Tc=55.5 min CN=86 Runoff=0.53 cfs 0.105 af

SubcatchmentDA_6: 1/2 WQv

Runoff Area=3.399 ac 0.00% Impervious Runoff Depth=0.40"

Flow Length=752' Slope=0.0029 '/' Tc=30.3 min CN=92 Runoff=0.98 cfs 0.114 af

Pond 1P: Stormtech

Peak Elev=2.02' Storage=0.042 af Inflow=1.24 cfs 0.123 af

Discarded=0.22 cfs 0.123 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.123 af

Pond 2P: Stormtech

Peak Elev=4.99' Storage=0.055 af Inflow=0.53 cfs 0.105 af

Discarded=0.06 cfs 0.105 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.105 af

Pond 6P: Infiltration Basin and Stormtech

Peak Elev=617.07' Storage=2,225 cf Inflow=1.31 cfs 0.152 af

Discarded=0.20 cfs 0.134 af Primary=0.66 cfs 0.018 af Outflow=0.86 cfs 0.152 af

Total Runoff Area = 14.216 ac Runoff Volume = 0.381 af Average Runoff Depth = 0.32"
86.84% Pervious = 12.345 ac 13.16% Impervious = 1.871 ac

Summary for Subcatchment DA_1: CPv

Runoff = 1.24 cfs @ 12.31 hrs, Volume= 0.123 af, Depth= 0.57"

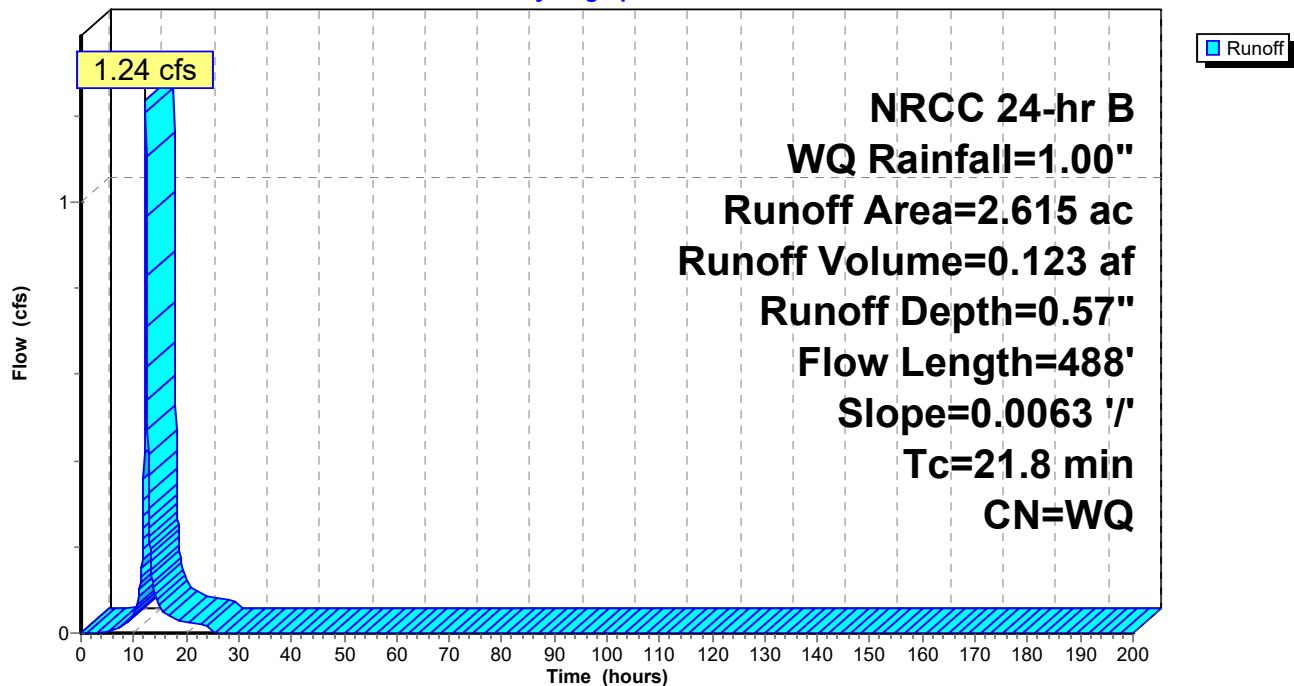
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQ Rainfall=1.00"

Area (ac)	CN	Description
0.744	39	>75% Grass cover, Good, HSG A
1.871	98	Paved Parking, HSG A
2.615		Weighted Average
0.744		28.45% Pervious Area
1.871		71.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.8	488	0.0063	0.37		Lag/CN Method, Contour Length= 718' Interval= 1'

Subcatchment DA_1: CPv

Hydrograph



Summary for Subcatchment DA_2: 1/2 WQv

Runoff = 0.36 cfs @ 12.34 hrs, Volume= 0.038 af, Depth= 0.25"

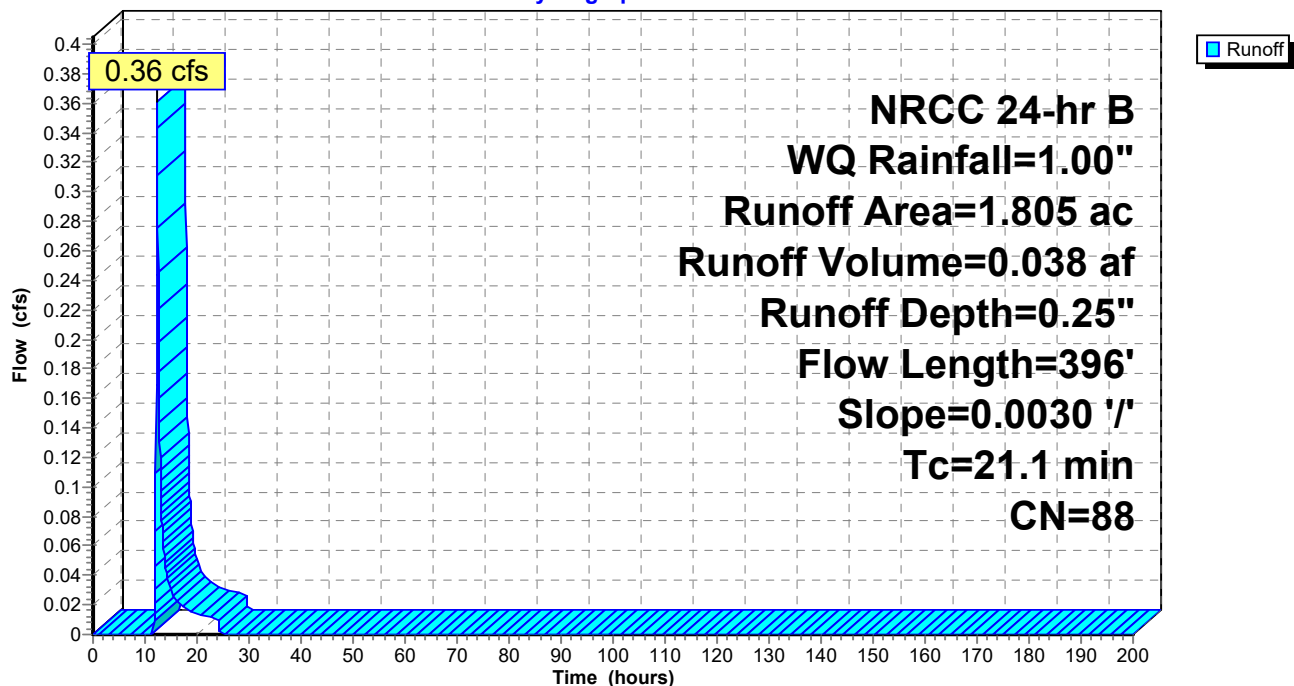
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQ Rainfall=1.00"

Area (ac)	CN	Description
* 1.805	88	
1.805		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1	396	0.0030	0.31		Lag/CN Method, Contour Length= 234' Interval= 1'

Subcatchment DA_2: 1/2 WQv

Hydrograph



Summary for Subcatchment DA_3: 1/2 WQv

Runoff = 0.53 cfs @ 12.89 hrs, Volume= 0.105 af, Depth= 0.20"

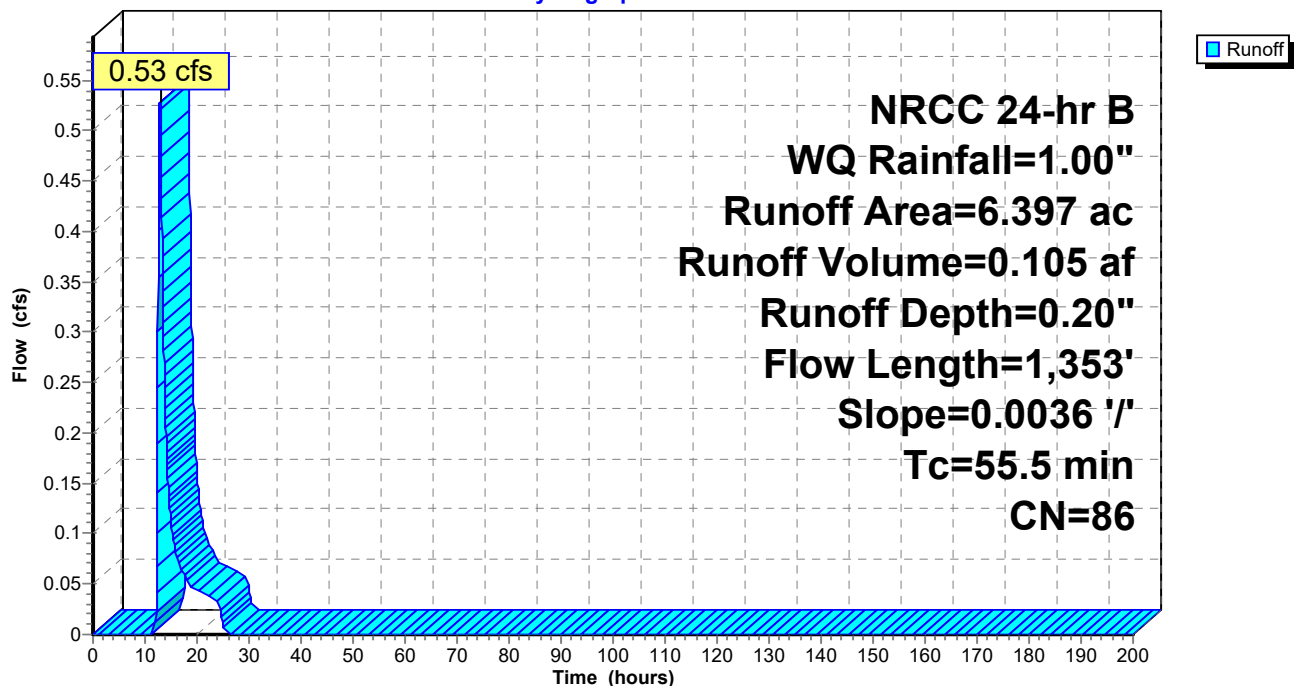
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQ Rainfall=1.00"

Area (ac)	CN	Description
* 6.397	86	
6.397		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
55.5	1,353	0.0036	0.41		Lag/CN Method, Contour Length= 993' Interval= 1'

Subcatchment DA_3: 1/2 WQv

Hydrograph



HydePark_SWMP_Top3_11-5-19

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-25 s/n 03593 © 2019 HydroCAD Software Solutions LLC

NRCC 24-hr B WQ Rainfall=1.00"

Printed 11/14/2019

Page 121

Summary for Subcatchment DA_6: 1/2 WQv

Runoff = 0.98 cfs @ 12.45 hrs, Volume= 0.114 af, Depth= 0.40"

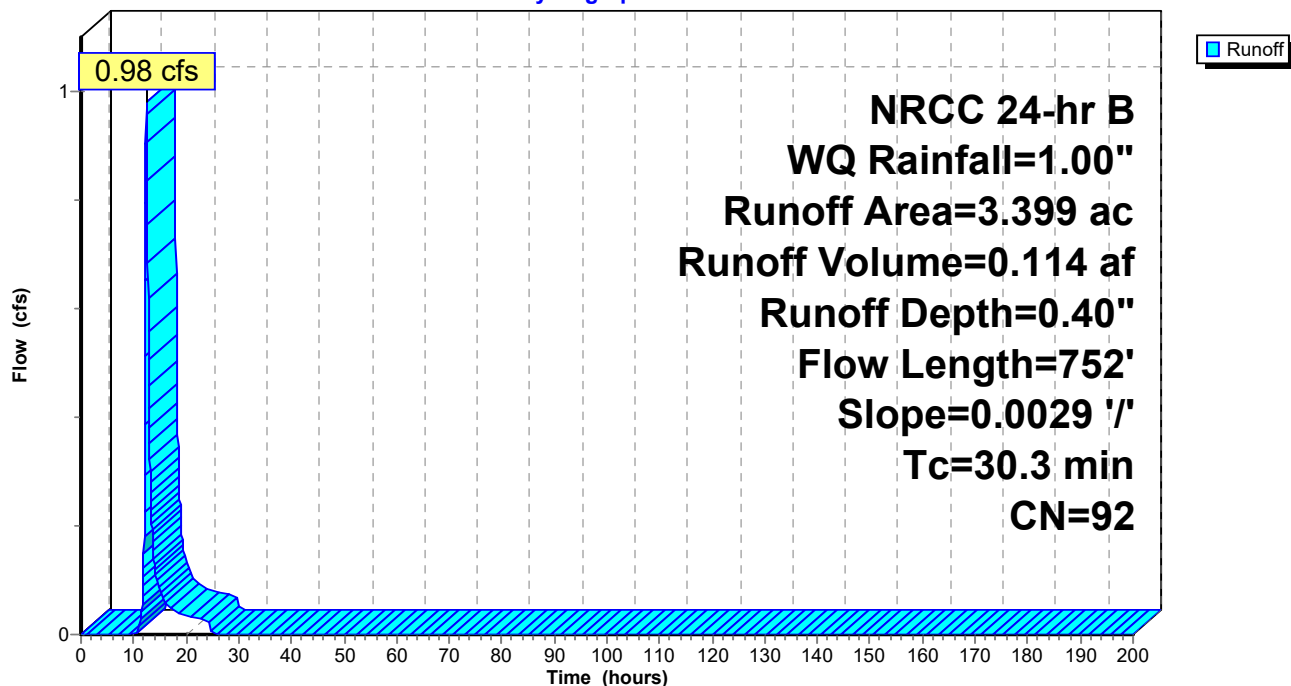
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQ Rainfall=1.00"

Area (ac)	CN	Description
* 3.399	92	
3.399		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	752	0.0029	0.41		Lag/CN Method, Contour Length= 429' Interval= 1'

Subcatchment DA_6: 1/2 WQv

Hydrograph



Summary for Pond 1P: Stormtech

Inflow Area = 2.615 ac, 71.55% Impervious, Inflow Depth = 0.57" for WQ event
 Inflow = 1.24 cfs @ 12.31 hrs, Volume= 0.123 af
 Outflow = 0.22 cfs @ 11.80 hrs, Volume= 0.123 af, Atten= 82%, Lag= 0.0 min
 Discarded = 0.22 cfs @ 11.80 hrs, Volume= 0.123 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 2.02' @ 13.07 hrs Surf.Area= 0.031 ac Storage= 0.042 af

Plug-Flow detention time= 56.7 min calculated for 0.123 af (100% of inflow)
 Center-of-Mass det. time= 56.7 min (859.7 - 803.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.052 af	28.50'W x 47.37'L x 6.75'H Field A 0.209 af Overall - 0.078 af Embedded = 0.131 af x 40.0% Voids
#2A	0.75'	0.078 af	ADS_StormTech MC-4500 +Cap x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 30 Chambers in 3 Rows Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		0.131 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	7.000 in/hr Exfiltration over Surface area
#2	Primary	6.50'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.22 cfs @ 11.80 hrs HW=0.07' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
 ↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 1P: Stormtech - Chamber Wizard Field A**Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)**

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

10 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 45.37' Row Length +12.0" End Stone x 2 =
47.37' Base Length

3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

30 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 3,408.9 cf Chamber Storage

9,112.2 cf Field - 3,408.9 cf Chambers = 5,703.2 cf Stone x 40.0% Voids = 2,281.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,690.2 cf = 0.131 af

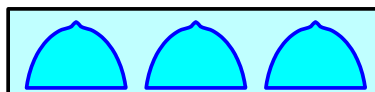
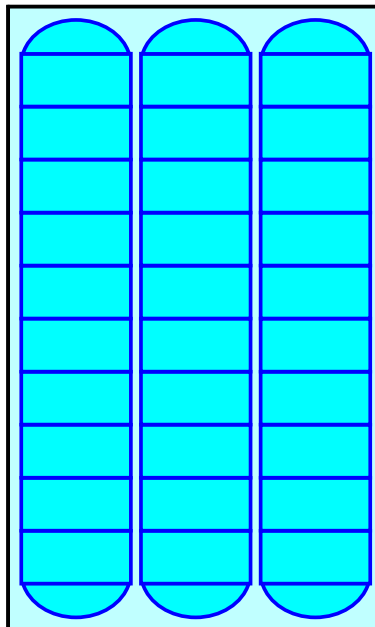
Overall Storage Efficiency = 62.4%

Overall System Size = 47.37' x 28.50' x 6.75'

30 Chambers

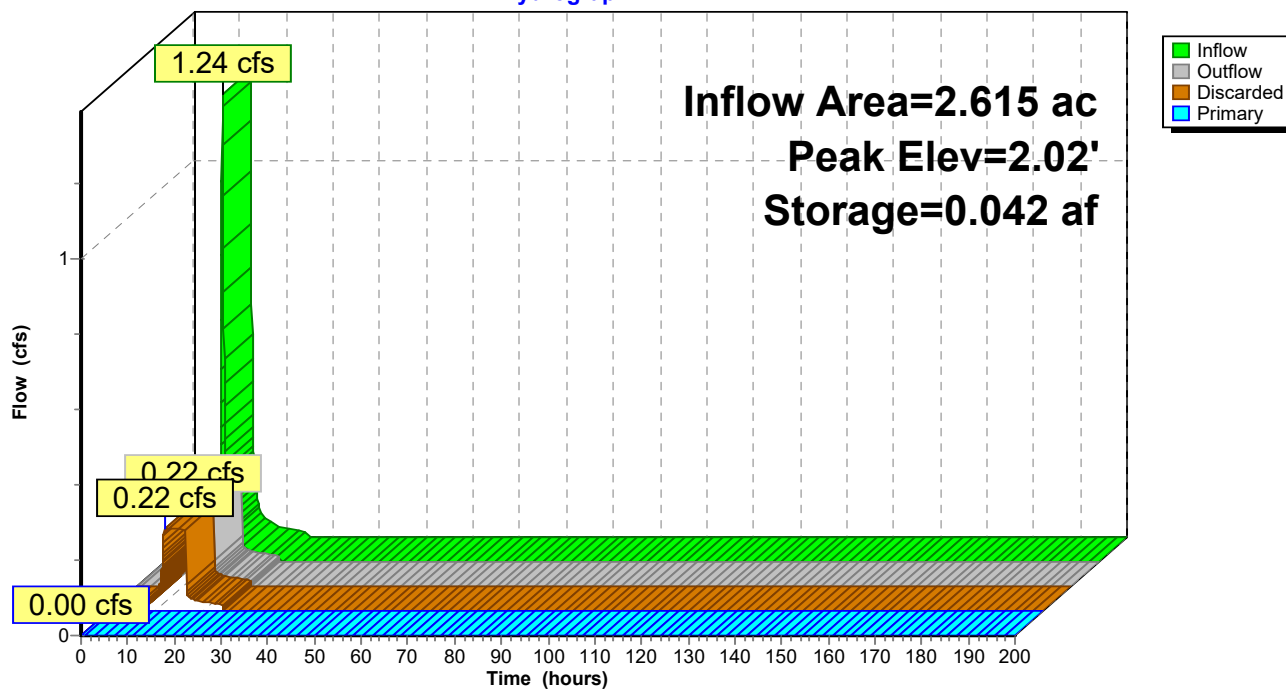
337.5 cy Field

211.2 cy Stone



Pond 1P: Stormtech

Hydrograph



Summary for Pond 2P: Stormtech

Inflow Area = 6.397 ac, 0.00% Impervious, Inflow Depth = 0.20" for WQ event
 Inflow = 0.53 cfs @ 12.89 hrs, Volume= 0.105 af
 Outflow = 0.06 cfs @ 12.30 hrs, Volume= 0.105 af, Atten= 89%, Lag= 0.0 min
 Discarded = 0.06 cfs @ 12.30 hrs, Volume= 0.105 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 4.99' @ 17.93 hrs Surf.Area= 0.018 ac Storage= 0.055 af

Plug-Flow detention time= 473.6 min calculated for 0.105 af (100% of inflow)
 Center-of-Mass det. time= 473.6 min (1,409.2 - 935.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.027 af	22.75'W x 34.38'L x 5.50'H Field A 0.099 af Overall - 0.032 af Embedded = 0.066 af x 40.0% Voids
#2A	0.75'	0.032 af	ADS_StormTech MC-3500 d +Cap x 12 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 12 Chambers in 3 Rows Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf
0.059 af			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	3.120 in/hr Exfiltration over Surface area
#2	Primary	5.00'	24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.30 hrs HW=0.06' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
 ↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

4 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 32.38' Row Length +12.0" End Stone x 2 = 34.38' Base Length

3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

12 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 1,408.8 cf Chamber Storage

4,301.8 cf Field - 1,408.8 cf Chambers = 2,893.0 cf Stone x 40.0% Voids = 1,157.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,566.0 cf = 0.059 af

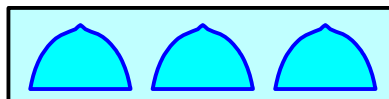
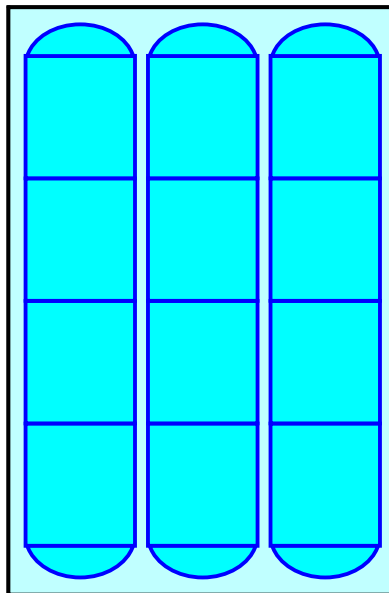
Overall Storage Efficiency = 59.6%

Overall System Size = 34.38' x 22.75' x 5.50'

12 Chambers

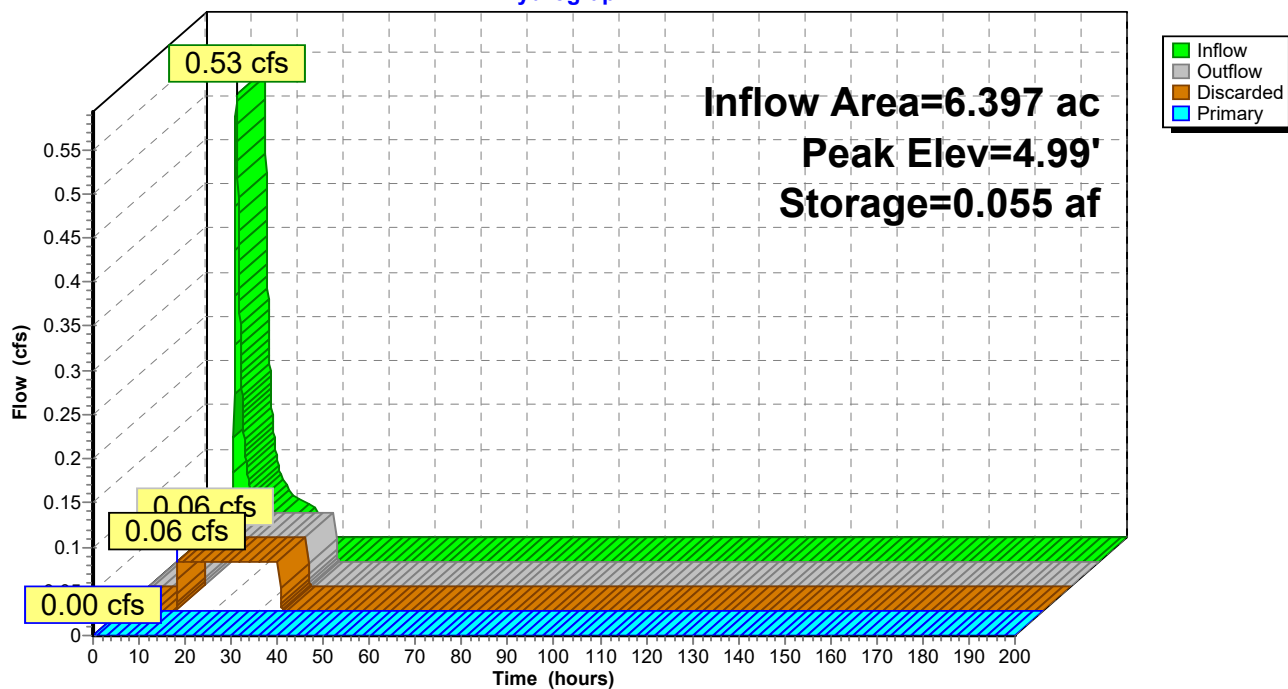
159.3 cy Field

107.1 cy Stone



Pond 2P: Stormtech

Hydrograph



Summary for Pond 6P: Infiltration Basin and Stormtech

[42] Hint: Gap in defined storage above volume #2 at 614.00'

Inflow Area = 5.204 ac, 0.00% Impervious, Inflow Depth = 0.35" for WQ event
 Inflow = 1.31 cfs @ 12.41 hrs, Volume= 0.152 af
 Outflow = 0.86 cfs @ 12.77 hrs, Volume= 0.152 af, Atten= 35%, Lag= 21.5 min
 Discarded = 0.20 cfs @ 12.77 hrs, Volume= 0.134 af
 Primary = 0.66 cfs @ 12.77 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 617.07' @ 12.77 hrs Surf.Area= 1,239 sf Storage= 2,225 cf

Plug-Flow detention time= 166.8 min calculated for 0.152 af (100% of inflow)
 Center-of-Mass det. time= 166.8 min (1,041.0 - 874.3)

Volume	Invert	Avail.Storage	Storage Description
#1	615.00'	7,058 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	608.50'	538 cf	8.42'W x 41.55'L x 5.50'H Field A
			1,923 cf Overall - 580 cf Embedded = 1,344 cf x 40.0% Voids
#3A	609.25'	580 cf	ADS_StormTech MC-3500 d +Cap x 5 Inside #2
			Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
			Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
			Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf
		8,175 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
615.00	0	0	0
616.00	610	305	305
617.00	871	741	1,046
618.00	1,133	1,002	2,048
619.00	1,481	1,307	3,355
620.00	1,917	1,699	5,054
621.00	2,091	2,004	7,058

Device	Routing	Invert	Outlet Devices
#1	Discarded	608.50'	7.000 in/hr Exfiltration over Surface area
#2	Primary	617.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.20 cfs @ 12.77 hrs HW=617.06' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.41 cfs @ 12.77 hrs HW=617.06' (Free Discharge)
 ↑2=Orifice/Grate (Weir Controls 0.41 cfs @ 0.82 fps)

Pond 6P: Infiltration Basin and Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 1 rows = 29.8 cf

5 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 39.55' Row Length +12.0" End Stone x 2 = 41.55' Base Length

1 Rows x 77.0" Wide + 12.0" Side Stone x 2 = 8.42' Base Width

9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

5 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 1 Rows = 579.6 cf Chamber Storage

1,923.4 cf Field - 579.6 cf Chambers = 1,343.9 cf Stone x 40.0% Voids = 537.5 cf Stone Storage

Chamber Storage + Stone Storage = 1,117.1 cf = 0.026 af

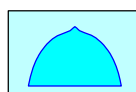
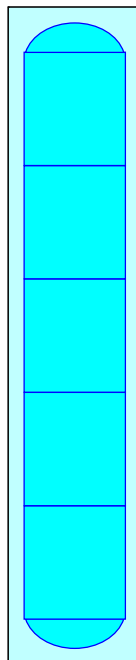
Overall Storage Efficiency = 58.1%

Overall System Size = 41.55' x 8.42' x 5.50'

5 Chambers

71.2 cy Field

49.8 cy Stone



Pond 6P: Infiltration Basin and Stormtech