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TULLER ROAD SITE

Stormwater Management Plan (SWMP)

Prepared For: Pulte Homes of Ohio, LLC

September 23, 2020

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PROJECT SUMMARY

Project:	Tuller Road Site
Location:	City of Dublin, Ohio
Type:	Stormwater Management Plan
Reviewing Agency:	City of Dublin, Ohio EPA

HYDROLOGIC SUMMARY

Rainfall Data: NOAA Atlas 14, Volume 2, Version 3, 2004

1-yr	2.20”
2-yr	2.63”
5-yr	3.24”
10-yr	3.74”
25-yr	4.44”
50-yr	5.02”
100-yr	5.63”

Rainfall Distribution:	NRCS Type II 24 hour
Detention Policy:	City of Dublin
Water Quality:	City of Dublin, Ohio EPA
Hydrology Modeling Program:	HydroCAD 10.10

DESIGN SUMMARY

Detention:	StormTech MC-4500 Underground Detention System
Water Quality:	ADS StormTech MC-4500 Chambers with Isolator Row
Receiving Water Body:	City of Dublin MS4 which discharges to the Scioto River

REVISIONS

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TABLES

APPENDICES

1.0 INTRODUCTION

The following report provides a detailed analysis and design of the Stormwater Management Plan for Tuller Road Site. The proposed site is located north of John Shields Parkway, south of Tuller Road, and west of Village Parkway. The proposed project area involves the development of an open space area into a multi-family development. The Stormwater Management Plan was prepared in accordance with the requirements of both the City of Dublin and the Ohio EPA. The runoff from this site will be routed through a multiple StormTech MC-4500 underground detention chambers for quantity and quality control before discharging to the existing City of Dublin storm sewer within John Shields parkway. The storm sewer within John Shields parkway ultimately discharges to the west to the Scioto River.

Figure 1 – Site Location Map

2.0 HYDROLOGIC ANALYSIS

Hydrologic parameters such as Runoff Curve Number (RCN) and Time of Concentration were determined using standard Natural Resources Conservation Service (NRCS) methodology. The 1-, 2-, 5-, 10-, 25-, 50-, and 100-year storm event discharge amounts were calculated using the NRCS TR-55 method. This analysis reflects the NRCS Type II distribution, 24-hr storm duration. Rainfall depths were obtained from NOAA Atlas 14, Volume 2, Version 3, 2004. The peak flow rates were computed using the HydroCAD 10.10 computer program.

3.0 PRE-DEVELOPED ANALYSIS

The pre-developed condition, as seen on Exhibit 1 in Appendix E, consists of open space located in Dublin Master Planned Sub-Basins 2040, 2130, and 2140. Pre-developed 01 naturally drains to the southwest to the storm sewer within John Shields Parkway. The storm sewer within John Shields parkway ultimately discharges to the west to the Scioto River. The project area is located within Hydrologic soil groups C (Kokomo silty clay loam and Crosby silt loam).

Hydrologic soil boundaries are provided on the exhibits within Appendix E. Pre-developed subarea characteristics are summarized in Table 1. The City of Dublin Master Planned Allowable Release Rates are provided in Table 2. Time of concentration calculations can be found in the HydroCAD output in Appendix D.

Table 1 -Pre-developed Subarea Characteristics

Subarea Identifier	Tributary Area (acres)	Land Usage	Runoff Curve Number	% Impervious (%)	Time of Concentration (min)	1-year Runoff Volume (ac-ft)
Pre-developed 01	10.98	Open Space	74	0%	27.9	0.409
Total	**10.98**	**-**	**74**	**0%**	**-**	**0.409**

Table 2 -City of Dublin Master Planned Allowable Release Rates

Allowable Release Rates per Acre *East Unconsolidated Watersheds*

Sub-Basin	1-year	2-year	5-year	10-year	25-year	50-year	100-year
2040	1.3	1.7	2.3	2.8	3.6	4.6	5.6
2130	1.9	2.5	3.3	3.9	4.7	5.7	6.5
2140	0.5	0.6	0.8	0.9	1.1	1.4	1.7

Post-Developed Area per Sub-Basin

Sub-Basin	Area (Acres)
2040	0.73
2130	0.03
2140	10.22
Total	10.98

Allowable Release Rates per Acre *East Unconsolidated Watersheds*

Sub-Basin	1-year	2-year	5-year	10-year	25-year	50-year	100-year
2040	0.95	1.24	1.68	2.04	2.63	3.36	4.09
2130	0.06	0.08	0.10	0.12	0.14	0.17	0.20
2140	5.11	6.13	8.18	9.20	11.24	14.31	17.37
Total	**6.12**	**7.45**	**9.95**	**11.36**	**14.01**	**17.84**	**21.66**

Note: Allowable Release Rates per Acre were taken from the City of Dublin Master Plan. These values were then multiplied by the total acreage in that Sub-Basin to generate the Allowable Release Rates. Due to all of the Sub-Basins being located in the East Unconsolidated watersheds the Sub-Basin Allowable Release Rates were then summed up to calculate the "Total" shown in bold in the table above.

4.0 POST-DEVELOPED ANALYSIS

Exhibit 2, provided within Appendix E, shows the post-developed condition. The Tuller Road Site project will utilize six StormTech Mc-4500 underground detention chambers to provide quantity and quality control for the proposed development. Each subarea is tributary to its respective StormTech (example: Subarea 01 is tributary to StormTech 01, Subarea 02 is tributary to StormTech 02). The site will discharge to the existing storm sewer within John Shields Parkway to the south.

The post-developed subarea characteristics are summarized in Table 3. The post-developed allowable release rates and proposed release rates can be found in Table 4. StormTech performance summaries are provided in Table 5-10.

Table 3 -Post-developed Subarea Characteristics

Subarea Identifier	Tributary Area (acres)	Land Usage	Runoff Curve Number	% Impervious (%)	Time of Concentration (min)	1-year Runoff Volume (ac-ft)
Subarea 01	2.48	Open Space, Impervious cover	90	65%	10.00	0.262
Subarea 02	1.63	Open Space, Impervious cover	90	65%	10.00	0.172
Subarea 03	1.81	Open Space, Impervious cover	90	65%	10.00	0.191
Subarea 04	1.88	Open Space, Impervious cover	90	65%	10.00	0.198
Subarea 05	1.56	Open Space, Impervious cover	90	65%	10.00	0.165
Subarea 06	1.62	Open Space, Impervious cover	90	65%	10.00	0.171
Total	**10.98**	**-**	**90**	**65%**	**-**	**1.159**

The 1-year runoff volume for the post-developed site increases to 1.159 ac-ft, an increase of 183.37% from the existing condition, which results in 25-year critical storm event.

$$\% \text{ Increase} = [(1.159 - 0.409)/0.409] \times 100 = 183.37\%$$

25-Yr Critical Storm

Table 4 -Allowable vs. Proposed Release Rates

Storm Event (yr.)	Pre-developed 01 Peak Flow Rates (cfs.)	Allowable Release Rates (cfs.)	Proposed Release Rates* (cfs.)
1	6.12	6.12	0.59
2	7.45	6.12	1.70
5	9.95	6.12	3.43
10	11.36	6.12	4.49
25	14.01	6.12	5.98
50	17.84	17.84	7.26
100	21.66	21.66	8.86

*Proposed Release Rates is the combination of release rates from StormTech 01 through StormTech 06.

Table 5 -StormTech 01 Proposed Release Rates

Storm Event (yr.)	Peak Inflow Rates (cfs.)	StormTech 01 Proposed Release Rates (cfs.)	Maximum W.S.E., T.O.B. = 872.95 (feet)	Storage Volume Utilized (ac-ft)
1	4.81	0.38	868.01	0.142
2	6.22	0.59	868.40	0.180
5	8.22	0.83	869.05	0.242
10	9.88	1.00	869.65	0.296
25	12.19	1.22	870.58	0.374
50	14.09	1.40	871.52	0.440
100	16.09	1.62	872.93	0.508

Storage Utilized (100-yr event): 0.507 ac-ft
Storage Provided (Top of Bank = 872.95 ft.): 0.509 ac-ft

Table 6 -StormTech 02 Proposed Release Rates

Storm Event (yr.)	Peak Inflow Rates (cfs.)	StormTech 01 Proposed Release Rates (cfs.)	Maximum W.S.E., T.O.B. = 881.47 (feet)	Storage Volume Utilized (ac-ft)
1	3.16	0.24	876.51	0.093
2	4.09	0.38	876.89	0.119
5	5.41	0.53	877.53	0.160
10	6.49	0.64	878.12	0.196
25	8.01	0.77	879.03	0.248
50	9.26	0.88	879.94	0.291
100	10.58	0.97	881.33	0.337

Storage Utilized (100-yr event): 0.337 ac-ft
Storage Provided (Top of Bank = 881.47 ft.): 0.342 ac-ft

Table 7 -StormTech 03 Proposed Release Rates

Storm Event (yr.)	Peak Inflow Rates (cfs.)	StormTech 01 Proposed Release Rates (cfs.)	Maximum W.S.E., T.O.B. = 868.28 (feet)	Storage Volume Utilized (ac-ft)
1	3.58	0.19	864.64	0.209
2	4.61	0.72	864.75	0.216
5	6.50	1.19	864.93	0.229
10	7.88	1.63	865.24	0.250
25	9.77	2.31	865.94	0.296
50	11.30	2.88	866.70	0.339
100	12.89	3.57	867.87	0.385

Storage Utilized (100-yr event): 0.385 ac-ft
Storage Provided (Top of Bank = 868.28 ft.): 0.400 ac-ft

Table 8 -StormTech 04 Proposed Release Rates

Storm Event (yr.)	Peak Inflow Rates (cfs.)	StormTech 01 Proposed Release Rates (cfs.)	Maximum W.S.E., T.O.B. = 869.43 (feet)	Storage Volume Utilized (ac-ft)
1	3.65	0.38	864.56	0.104
2	4.71	0.65	864.91	0.128
5	6.23	0.95	865.54	0.170
10	7.49	1.15	866.12	0.207
25	9.24	1.41	867.03	0.261
50	10.68	1.63	867.93	0.306
100	12.20	1.91	869.28	0.352

Storage Utilized (100-yr event): 0.352 ac-ft
Storage Provided (Top of Bank = 869.43 ft.): 0.357 ac-ft

Table 9 -StormTech 05 Proposed Release Rates

Storm Event (yr.)	Peak Inflow Rates (cfs.)	StormTech 01 Proposed Release Rates (cfs.)	Maximum W.S.E., T.O.B. = 877.40 (feet)	Storage Volume Utilized (ac-ft)
1	3.11	0.17	873.50	0.193
2	4.00	0.66	874.13	0.239
5	6.15	1.45	874.44	0.260
10	7.55	1.85	874.75	0.282
25	9.39	2.37	875.29	0.315
50	10.87	2.84	875.89	0.349
100	12.38	3.45	876.84	0.387

Storage Utilized (100-yr event): 0.387 ac-ft
Storage Provided (Top of Bank = 877.40 ft.): 0.408 ac-ft

Table 10 -StormTech 06 Proposed Release Rates

Storm Event (yr.)	Peak Inflow Rates (cfs.)	StormTech 01 Proposed Release Rates (cfs.)	Maximum W.S.E., T.O.B. = 879.50 (feet)	Storage Volume Utilized (ac-ft)
1	3.14	0.34	874.65	0.090
2	4.06	0.69	874.96	0.108
5	5.37	1.03	875.56	0.143
10	6.45	1.26	876.12	0.174
25	7.96	1.51	876.98	0.218
50	9.21	1.57	877.87	0.258
100	10.51	1.64	879.23	0.299

Storage Utilized (100-yr event): 0.299 ac-ft
Storage Provided (Top of Bank = 879.50 ft.): 0.307 ac-ft

5.0 OUTLET DESIGN

The outlet structures for the StormTech system are described below. The location of these structures can be seen on Exhibit 2 in Appendix D.

StormTech 01 - Outlet Control Structure

- MC-4500 Detention System
- Bottom of Stone – 866.20 ft.
- Bottom of Chamber – 866.95 ft.
- Top of Chamber – 871.95 ft.
- Top of Stone – 872.95 ft.
- 1st stage outlet – 1.5-inch orifice, cut into underdrain, invert at 866.20 ft.
- 2nd stage outlet – 5-inch horizontal orifice, cut into underdrain cap, invert at 867.80 ft.
- Tailwater Control –12-inch outlet pipe with 0.50% slope, invert at 866.20 ft. (controls 1st through 2nd stage outlets – Discharges to Outfall)

StormTech 02 - Outlet Control Structure

- MC-4500 Detention System
- Bottom of Stone – 874.72 ft.
- Bottom of Chamber – 875.47 ft.
- Top of Chamber – 880.47 ft.
- Top of Stone – 881.47 ft.
- 1st stage outlet – 1.25-inch orifice, cut into underdrain, invert at 874.72 ft.
- 2nd stage outlet – 4-inch horizontal orifice, cut into underdrain cap, invert at 876.30 ft.
- Tailwater Control –12-inch outlet pipe with 0.50% slope, invert at 874.72 ft. (controls 1st through 2nd stage outlets – Discharges to Outfall)

StormTech 03 - Outlet Control Structure

- MC-4500 Detention System
- Bottom of Stone – 861.53 ft.
- Bottom of Chamber – 862.28 ft.
- Top of Chamber – 867.28 ft.
- Top of Stone – 868.28 ft.
- 1st stage outlet – 1.5-inch orifice, cut into underdrain, invert at 861.53 ft.
- 2nd stage outlet – Two 6-inch horizontal orifices, top of upturned underdrain, invert at 864.60 ft.
- Tailwater Control –12-inch outlet pipe with 0.50% slope, invert at 861.53 ft. (controls 1st through 2nd stage outlets – Discharges to Outfall)

StormTech 04 - Outlet Control Structure

- MC-4500 Detention System
- Bottom of Stone – 862.68 ft.
- Bottom of Chamber – 863.43 ft.
- Top of Chamber – 868.43 ft.
- Top of Stone – 869.43 ft.
- 1st stage outlet – 1.5-inch orifice, cut into underdrain, invert at 862.68 ft.
- 2nd stage outlet – 5.5-inch horizontal orifice, cut into underdrain cap, invert at 864.40 ft.
- Tailwater Control –12-inch outlet pipe with 0.50% slope, invert at 862.68 ft. (controls 1st through 2nd stage outlets – Discharges to Outfall)

StormTech 05 - Outlet Control Structure

- MC-4500 Detention System
- Bottom of Stone – 870.65 ft.
- Bottom of Chamber – 871.40 ft.
- Top of Chamber – 876.40 ft.
- Top of Stone – 877.40 ft.
- 1st stage outlet – 2.0-inch orifice, cut into underdrain, invert at 870.65 ft.
- 2nd stage outlet – Two 6-inch horizontal orifices, top of upturned underdrain, invert at 874.00 ft.
- Tailwater Control –12-inch outlet pipe with 0.50% slope, invert at 870.65 ft. (controls 1st through 2nd stage outlets – Discharges to Outfall)

StormTech 06 - Outlet Control Structure

- MC-4500 Detention System
- Bottom of Stone – 872.75 ft.
- Bottom of Chamber – 873.50 ft.
- Top of Chamber – 878.50 ft.
- Top of Stone – 879.50 ft.
- 1st stage outlet – 1.25-inch orifice, cut into underdrain, invert at 872.75 ft.
- 2nd stage outlet – 6.0-inch horizontal orifice, cut into underdrain cap, invert at 874.50 ft.

- Tailwater Control –12-inch outlet pipe with 0.50% slope, invert at 872.75 ft. (controls 1st through 2nd stage outlets – Discharges to Outfall)

6.0 WATER QUALITY

The Ohio EPA requires that the water quality volume for underground detention be detained for a period of 24 hours while not discharging more than the first half of the water quality volume in less than 8 hours. Water quality drawdown for the StormTech systems will be provided by the 1st stage outlets listed in Section 5.0.

Table 11 -Water Quality Calculations

Basin Identifier	Tributary area (acres)	Percent Impervious (%)	Water Quality Volume (ac-ft)	Water Quality Elevation (feet)
StormTech 01	2.48	65%	0.118	867.78
StormTech 02	1.63	65%	0.078	876.28
StormTech 03	1.81	65%	0.086	863.13
StormTech 04	1.88	65%	0.090	864.26
StormTech 05	1.56	65%	0.074	872.25
StormTech 06	1.62	65%	0.077	874.35

7.0 CONCLUSION

The proposed stormwater management plan for Tuller Road Site meets all requirements for detention and water quality as set forth by the City of Dublin and the Ohio EPA.

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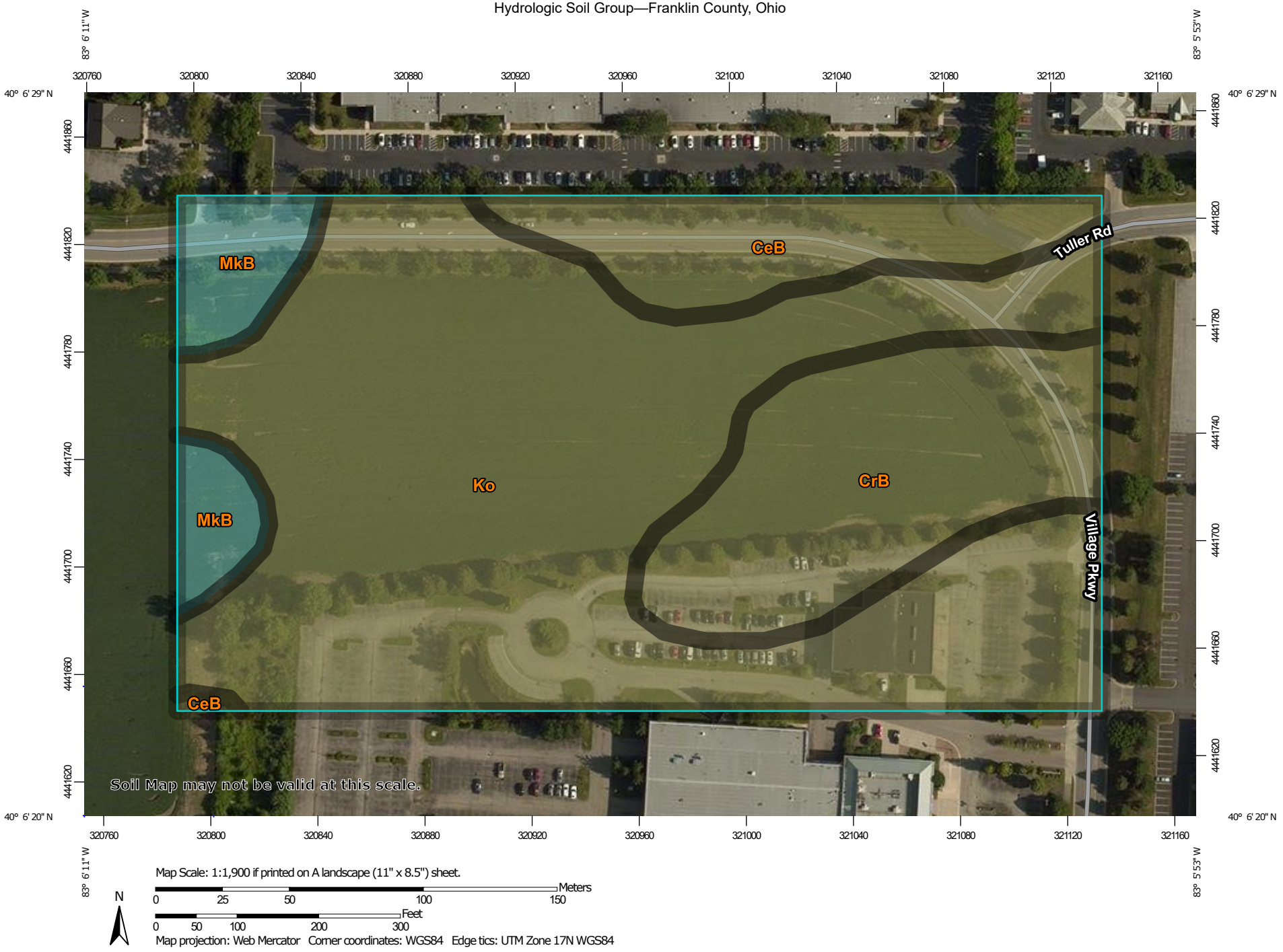
APPENDIX A:

USDA Soils Report



Map Scale: 1:1,900 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Franklin County, Ohio
Survey Area Data: Version 19, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 4, 2014—Aug 27, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CeB	Celina silt loam, 2 to 6 percent slopes	C/D	1.7	10.4%
CrB	Crosby silt loam, Southern Ohio Till Plain, 2 to 6 percent slopes	C/D	3.2	19.3%
Ko	Kokomo silty clay loam, 0 to 2 percent slopes	C/D	10.5	64.1%
MkB	Miamian silt loam, 2 to 6 percent slopes	C	1.0	6.2%
Totals for Area of Interest			**16.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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APPENDIX B:

Storm Sewer Calculations

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APPENDIX C:

Water Quality and Sediment Basin Calculations

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STORMTECH ISOLATOR ROW CALCULATION

Subarea 01 Isolator Row

C =	0.45	
Tc =	10.00	minutes
intensity =	1.85	in/hr
Water Quality Flow =	2.06	cfs
Chamber Model =	MC-4500	
Flow Per Chamber =	0.07	cfs
Required Chambers =	32	
Provided Chambers =	32	

WATER QUALITY VOLUME CALCULATIONS

BMP	Subarea Identifier	Area (acres)	Percent Impervious (%)	Rv	Water Quality Volume (ac-ft)	Water Quality Volume Elevation (feet)
StormTech 01	Subarea 01	2.48	65%	0.64	0.118	-
	Total	**2.48**	**65%**	**0.64**	**0.118**	867.78

Water Quality Volume calculated using the Ohio EPA formula:

$$WQ_v = \frac{R_v \times P \times A}{12}$$

where:
A = area draining into the BMP (acres)
P = 0.90" precipitation depth
Rv = the volumetric runoff coefficient
Rv = 0.05+0.9i
Where i = fraction of post-construction impervious surface

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STORMTECH ISOLATOR ROW CALCULATION

Subarea 01 Isolator Row

C =	0.45	
Tc =	10.00	minutes
intensity =	1.85	in/hr
Water Quality Flow =	1.35	cfs
Chamber Model =	MC-4500	
Flow Per Chamber =	0.07	cfs
Required Chambers =	21	
Provided Chambers =	21	

WATER QUALITY VOLUME CALCULATIONS

BMP	Subarea Identifier	Area (acres)	Percent Impervious (%)	Rv	Water Quality Volume (ac-ft)	Water Quality Volume Elevation (feet)
StormTech 02	Subarea 02	1.63	65%	0.64	0.078	-
	Total	**1.63**	**65%**	**0.64**	**0.078**	876.28

Water Quality Volume calculated using the Ohio EPA formula:

$$WQ_v = \frac{R_v \times P \times A}{12}$$

where:
A = area draining into the BMP (acres)
P = 0.90" precipitation depth
Rv = the volumetric runoff coefficient
Rv = 0.05+0.9i
Where i = fraction of post-construction impervious surface

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STORMTECH ISOLATOR ROW CALCULATION

Subarea 01 Isolator Row

C =	0.45	
Tc =	10.00	minutes
intensity =	1.85	in/hr
Water Quality Flow =	3.56	cfs
Chamber Model =	MC-4500	
Flow Per Chamber =	0.07	cfs
Required Chambers =	54	
Provided Chambers =	54	

WATER QUALITY VOLUME CALCULATIONS

BMP	Subarea Identifier	Area (acres)	Percent Impervious (%)	Rv	Water Quality Volume (ac-ft)	Water Quality Volume Elevation (feet)
StormTech 03	Subarea 01	2.48	65%	0.64	0.118	-
	Subarea 03	1.81	65%	0.64	0.086	-
	Total	**4.29**	**65%**	**0.64**	**0.204**	864.59

Water Quality Volume calculated using the Ohio EPA formula:

$$WQ_v = \frac{R_v \times P \times A}{12}$$

where:
A = area draining into the BMP (acres)
P = 0.90" precipitation depth
Rv = the volumetric runoff coefficient
Rv = 0.05+0.9i
Where i = fraction of post-construction impervious surface

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STORMTECH ISOLATOR ROW CALCULATION

Subarea 01 Isolator Row

C =	0.45	
Tc =	10.00	minutes
intensity =	1.85	in/hr
Water Quality Flow =	1.56	cfs
Chamber Model =	MC-4500	
Flow Per Chamber =	0.07	cfs
Required Chambers =	24	
Provided Chambers =	24	

WATER QUALITY VOLUME CALCULATIONS

BMP	Subarea Identifier	Area (acres)	Percent Impervious (%)	Rv	Water Quality Volume (ac-ft)	Water Quality Volume Elevation (feet)
StormTech 04	Subarea 04	1.88	65%	0.64	0.090	-
	Total	**1.88**	**65%**	**0.64**	**0.090**	864.36

Water Quality Volume calculated using the Ohio EPA formula:

$$WQ_v = \frac{R_v \times P \times A}{12}$$

where:
A = area draining into the BMP (acres)
P = 0.90" precipitation depth
Rv = the volumetric runoff coefficient
Rv = 0.05+0.9i
Where i = fraction of post-construction impervious surface

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STORMTECH ISOLATOR ROW CALCULATION

Subarea 01 Isolator Row

C =	0.45	
Tc =	10.00	minutes
intensity =	1.85	in/hr
Water Quality Flow =	4.00	cfs
Chamber Model =	MC-4500	
Flow Per Chamber =	0.07	cfs
Required Chambers =	61	
Provided Chambers =	61	

WATER QUALITY VOLUME CALCULATIONS

BMP	Subarea Identifier	Area (acres)	Percent Impervious (%)	Rv	Water Quality Volume (ac-ft)	Water Quality Volume Elevation (feet)
StormTech 05	Subarea 02	1.63	65%	0.64	0.078	-
	Subarea 05	1.56	65%	0.64	0.074	-
	Subarea 06	1.62	65%	0.64	0.077	-
	Total	**4.81**	**65%**	**0.64**	**0.229**	873.99

Water Quality Volume calculated using the Ohio EPA formula:

$$WQ_v = \frac{R_v \times P \times A}{12}$$

where:
A = area draining into the BMP (acres)
P = 0.90" precipitation depth
Rv = the volumetric runoff coefficient
Rv = 0.05+0.9i
Where i = fraction of post-construction impervious surface

EMH&T

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TULLER ROAD SITE

STORMTECH ISOLATOR ROW CALCULATION

Subarea 01 Isolator Row

C =	0.45	
Tc =	10.00	minutes
intensity =	1.85	in/hr
Water Quality Flow =	1.35	cfs
Chamber Model =	MC-4500	
Flow Per Chamber =	0.07	cfs
Required Chambers =	21	
Provided Chambers =	21	

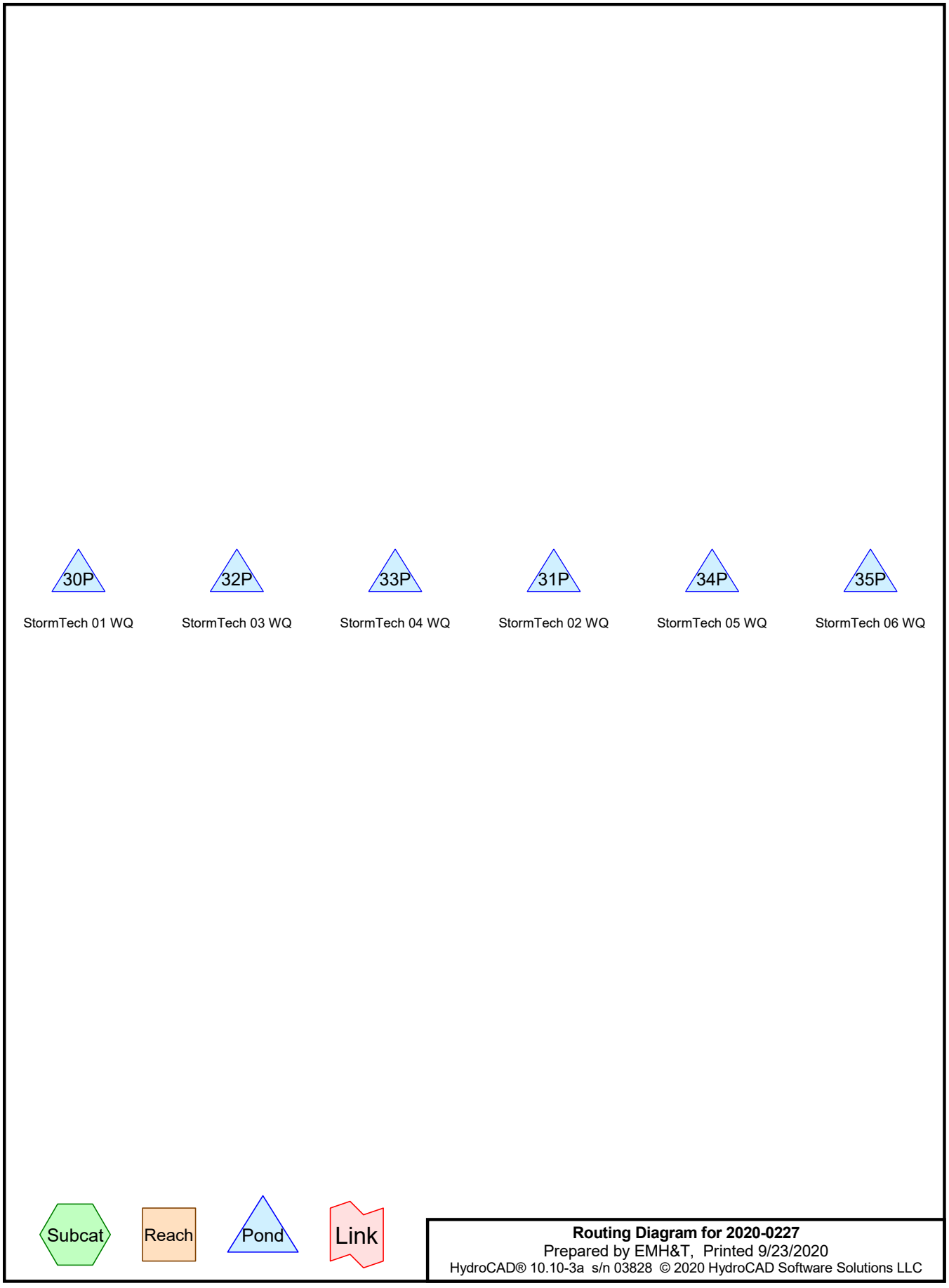
WATER QUALITY VOLUME CALCULATIONS

BMP	Subarea Identifier	Area (acres)	Percent Impervious (%)	Rv	Water Quality Volume (ac-ft)	Water Quality Volume Elevation (feet)
StormTech 06	Subarea 06	1.62	65%	0.64	0.077	-
	Total	**1.62**	**65%**	**0.64**	**0.077**	874.43

Water Quality Volume calculated using the Ohio EPA formula:

$$WQ_v = \frac{R_v \times P \times A}{12}$$

where:
A = area draining into the BMP (acres)
P = 0.90" precipitation depth
Rv = the volumetric runoff coefficient
Rv = 0.05+0.9i
Where i = fraction of post-construction impervious surface



Routing Diagram for 2020-0227
Prepared by EMH&T, Printed 9/23/2020

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 year	Type II 24-hr		Default	24.00	1	2.20	2
2	2 year	Type II 24-hr		Default	24.00	1	2.63	2
3	5 year	Type II 24-hr		Default	24.00	1	3.24	2
4	10 year	Type II 24-hr		Default	24.00	1	3.74	2
5	25 year	Type II 24-hr		Default	24.00	1	4.44	2
6	50 year	Type II 24-hr		Default	24.00	1	5.02	2
7	100 year	Type II 24-hr		Default	24.00	1	5.63	2

Summary for Pond 30P: StormTech 01 WQ

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.07 cfs @	0.00 hrs,	Volume=	0.118 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.07 cfs @	0.00 hrs,	Volume=	0.118 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Starting Elev= 867.78' Surf.Area= 0.118 ac Storage= 0.119 af
Peak Elev= 867.78' @ 0.00 hrs Surf.Area= 0.118 ac Storage= 0.119 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	866.20'	0.190 af	**55.75'W x 91.99'L x 6.75'H Field A** 0.795 af Overall - 0.319 af Embedded = 0.476 af x 40.0% Voids
#2A	866.95'	0.319 af	**ADS_StormTech MC-4500 b +Cap** x 126 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 126 Chambers in 6 Rows Cap Storage= +39.5 cf x 2 x 6 rows = 474.0 cf
		0.509 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	866.20'	**12.0" Round RCP_Round 12"** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.20' / 865.92' S= 0.0048 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	866.20'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	867.80'	**5.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 0.00 hrs HW=867.78' (Free Discharge)
└─**1=RCP_Round 12"** (Passes 0.07 cfs of 3.21 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.07 cfs @ 5.93 fps)
  └─**3=Orifice** (Controls 0.00 cfs)

Pond 30P: StormTech 01 WQ - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 6 rows = 474.0 cf

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

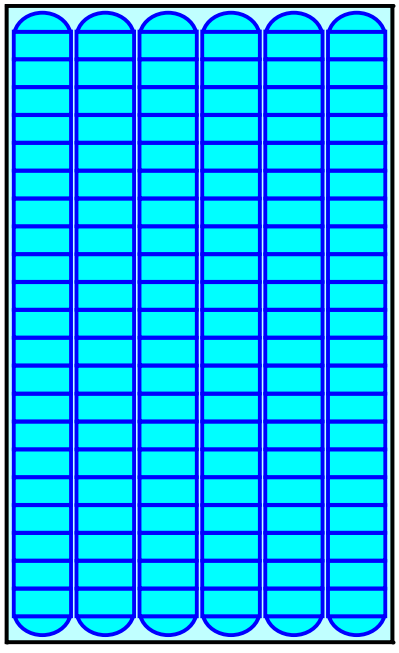
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

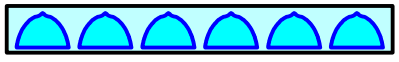
126 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 6 Rows = 13,891.8 cf Chamber Storage

34,617.6 cf Field - 13,891.8 cf Chambers = 20,725.8 cf Stone x 40.0% Voids = 8,290.3 cf Stone Storage

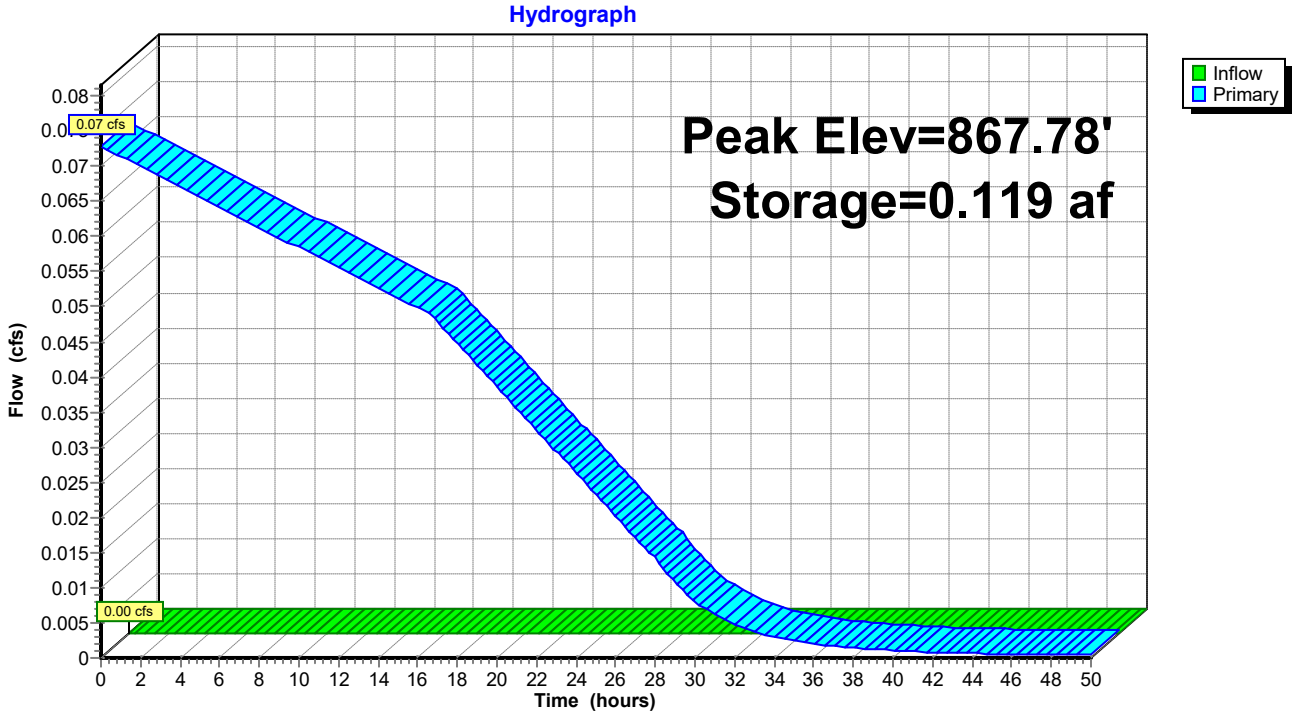
Chamber Storage + Stone Storage = 22,182.1 cf = 0.509 af
Overall Storage Efficiency = 64.1%
Overall System Size = 91.99' x 55.75' x 6.75'

126 Chambers
1,282.1 cy Field
767.6 cy Stone





Pond 30P: StormTech 01 WQ



Hydrograph for Pond 30P: StormTech 01 WQ

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0.119**	**867.78**	**0.07**
1.00	0.00	0.113	867.72	0.07
2.00	0.00	0.107	867.66	0.07
3.00	0.00	0.101	867.60	0.07
4.00	0.00	0.096	867.55	0.07
5.00	0.00	0.090	867.49	0.07
6.00	0.00	0.085	867.44	0.06
7.00	0.00	0.080	867.39	0.06
8.00	0.00	0.075	867.34	0.06
9.00	0.00	0.070	867.29	0.06
10.00	0.00	0.065	867.24	0.06
11.00	0.00	0.060	867.19	0.06
12.00	0.00	0.055	867.15	0.06
13.00	0.00	0.051	867.10	0.05
14.00	0.00	0.046	867.06	0.05
15.00	0.00	0.042	867.02	0.05
16.00	0.00	0.038	866.97	0.05
17.00	0.00	0.034	866.92	0.05
18.00	0.00	0.030	866.84	0.04
19.00	0.00	0.026	866.76	0.04
20.00	0.00	0.023	866.69	0.04
21.00	0.00	0.020	866.62	0.04
22.00	0.00	0.017	866.56	0.03
23.00	0.00	0.015	866.51	0.03
24.00	0.00	0.012	866.46	0.03
25.00	0.00	0.010	866.42	0.02
26.00	0.00	0.008	866.38	0.02
27.00	0.00	0.007	866.35	0.02
28.00	0.00	0.006	866.32	0.01
29.00	0.00	0.005	866.30	0.01
30.00	0.00	0.004	866.28	0.01
31.00	0.00	0.003	866.27	0.01
32.00	0.00	0.003	866.26	0.00
33.00	0.00	0.002	866.25	0.00
34.00	0.00	0.002	866.25	0.00
35.00	0.00	0.002	866.24	0.00
36.00	0.00	0.002	866.24	0.00
37.00	0.00	0.002	866.23	0.00
38.00	0.00	0.001	866.23	0.00
39.00	0.00	0.001	866.23	0.00
40.00	0.00	0.001	866.23	0.00
41.00	0.00	0.001	866.23	0.00
42.00	0.00	0.001	866.22	0.00
43.00	0.00	0.001	866.22	0.00
44.00	0.00	0.001	866.22	0.00
45.00	0.00	0.001	866.22	0.00
46.00	0.00	0.001	866.22	0.00
47.00	0.00	0.001	866.22	0.00
48.00	0.00	0.001	866.22	0.00
49.00	0.00	0.001	866.22	0.00
50.00	0.00	0.001	866.22	0.00

Summary for Pond 31P: StormTech 02 WQ

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.05 cfs @	0.00 hrs,	Volume=	0.078 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.05 cfs @	0.00 hrs,	Volume=	0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Starting Elev= 876.28' Surf.Area= 0.079 ac Storage= 0.078 af
Peak Elev= 876.28' @ 0.00 hrs Surf.Area= 0.079 ac Storage= 0.078 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	874.72'	0.129 af	**37.58'W x 91.99'L x 6.75'H Field A** 0.536 af Overall - 0.213 af Embedded = 0.323 af x 40.0% Voids
#2A	875.47'	0.213 af	**ADS_StormTech MC-4500 b +Cap** x 84 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 84 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.342 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	874.72'	**12.0" Round RCP_Round 12"** L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 874.72' / 874.31' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	874.72'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.30'	**4.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.05 cfs @ 0.00 hrs HW=876.28' (Free Discharge)
↑└─**1=RCP_Round 12"** (Passes 0.05 cfs of 3.08 cfs potential flow)
↑ ├─**2=WQ Orifice** (Orifice Controls 0.05 cfs @ 5.92 fps)
└─**3=Orifice** (Controls 0.00 cfs)

Pond 31P: StormTech 02 WQ - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 4 rows = 316.0 cf

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

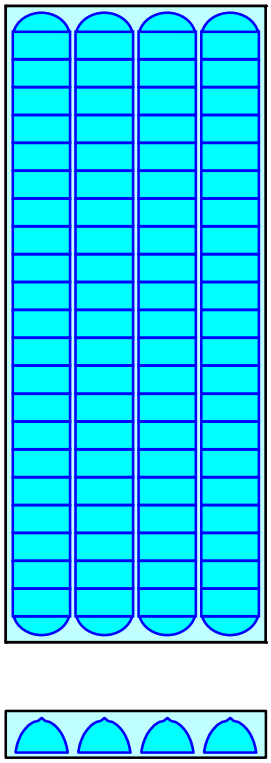
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

84 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,261.2 cf Chamber Storage

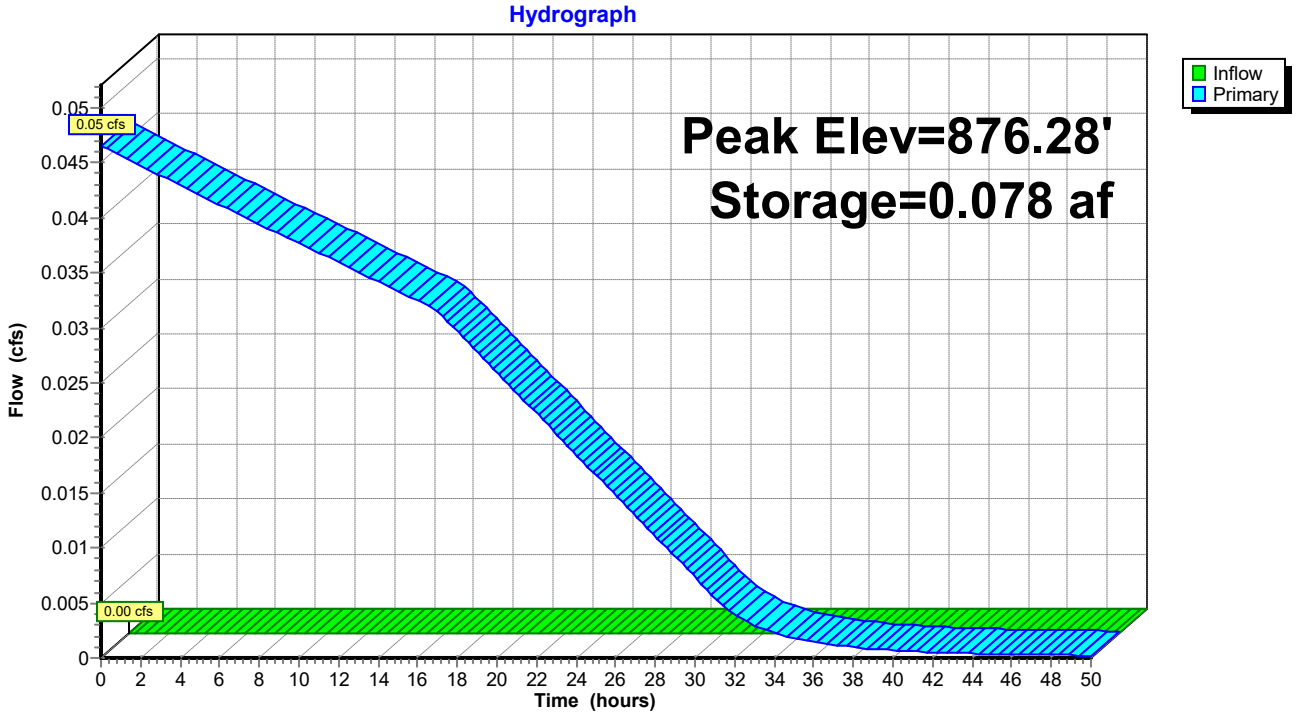
23,337.1 cf Field - 9,261.2 cf Chambers = 14,075.9 cf Stone x 40.0% Voids = 5,630.4 cf Stone Storage

Chamber Storage + Stone Storage = 14,891.6 cf = 0.342 af
Overall Storage Efficiency = 63.8%
Overall System Size = 91.99' x 37.58' x 6.75'

84 Chambers
864.3 cy Field
521.3 cy Stone



Pond 31P: StormTech 02 WQ



Hydrograph for Pond 31P: StormTech 02 WQ

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0.078**	**876.28**	**0.05**
1.00	0.00	0.075	876.22	0.05
2.00	0.00	0.071	876.17	0.04
3.00	0.00	0.067	876.11	0.04
4.00	0.00	0.064	876.06	0.04
5.00	0.00	0.060	876.01	0.04
6.00	0.00	0.057	875.96	0.04
7.00	0.00	0.053	875.91	0.04
8.00	0.00	0.050	875.86	0.04
9.00	0.00	0.047	875.81	0.04
10.00	0.00	0.044	875.76	0.04
11.00	0.00	0.041	875.72	0.04
12.00	0.00	0.038	875.67	0.04
13.00	0.00	0.035	875.63	0.04
14.00	0.00	0.032	875.59	0.03
15.00	0.00	0.029	875.55	0.03
16.00	0.00	0.026	875.51	0.03
17.00	0.00	0.024	875.46	0.03
18.00	0.00	0.021	875.39	0.03
19.00	0.00	0.019	875.31	0.03
20.00	0.00	0.017	875.24	0.03
21.00	0.00	0.014	875.18	0.02
22.00	0.00	0.013	875.11	0.02
23.00	0.00	0.011	875.06	0.02
24.00	0.00	0.009	875.01	0.02
25.00	0.00	0.008	874.96	0.02
26.00	0.00	0.006	874.92	0.01
27.00	0.00	0.005	874.89	0.01
28.00	0.00	0.004	874.86	0.01
29.00	0.00	0.003	874.83	0.01
30.00	0.00	0.003	874.81	0.01
31.00	0.00	0.002	874.79	0.01
32.00	0.00	0.002	874.78	0.00
33.00	0.00	0.002	874.77	0.00
34.00	0.00	0.001	874.76	0.00
35.00	0.00	0.001	874.76	0.00
36.00	0.00	0.001	874.75	0.00
37.00	0.00	0.001	874.75	0.00
38.00	0.00	0.001	874.75	0.00
39.00	0.00	0.001	874.75	0.00
40.00	0.00	0.001	874.74	0.00
41.00	0.00	0.001	874.74	0.00
42.00	0.00	0.001	874.74	0.00
43.00	0.00	0.001	874.74	0.00
44.00	0.00	0.001	874.74	0.00
45.00	0.00	0.001	874.74	0.00
46.00	0.00	0.000	874.74	0.00
47.00	0.00	0.000	874.73	0.00
48.00	0.00	0.000	874.73	0.00
49.00	0.00	0.000	874.73	0.00
50.00	0.00	0.000	874.73	0.00

Summary for Pond 32P: StormTech 03 WQ

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.10 cfs @	0.00 hrs,	Volume=	0.204 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.10 cfs @	0.00 hrs,	Volume=	0.204 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Starting Elev= 864.59' Surf.Area= 0.093 ac Storage= 0.205 af
Peak Elev= 864.59' @ 0.00 hrs Surf.Area= 0.093 ac Storage= 0.205 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	861.53'	0.152 af	**19.42'W x 208.72'L x 6.75'H Field A** 0.628 af Overall - 0.248 af Embedded = 0.380 af x 40.0% Voids
#2A	862.28'	0.248 af	**ADS_StormTech MC-4500 b +Cap** x 100 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 100 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.400 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	861.53'	**12.0" Round RCP_Round 12"** L= 19.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.53' / 861.43' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	861.53'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.60'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.10 cfs @ 0.00 hrs HW=864.59' (Free Discharge)
└─**1=RCP_Round 12"** (Passes 0.10 cfs of 6.05 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.10 cfs @ 8.34 fps)
  └─**3=Orifice** (Controls 0.00 cfs)

Pond 32P: StormTech 03 WQ - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 2 rows = 158.0 cf

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

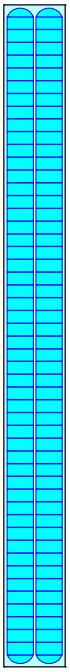
50 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 206.72' Row Length +12.0" End Stone x 2 = 208.72' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

100 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 10,807.0 cf Chamber Storage

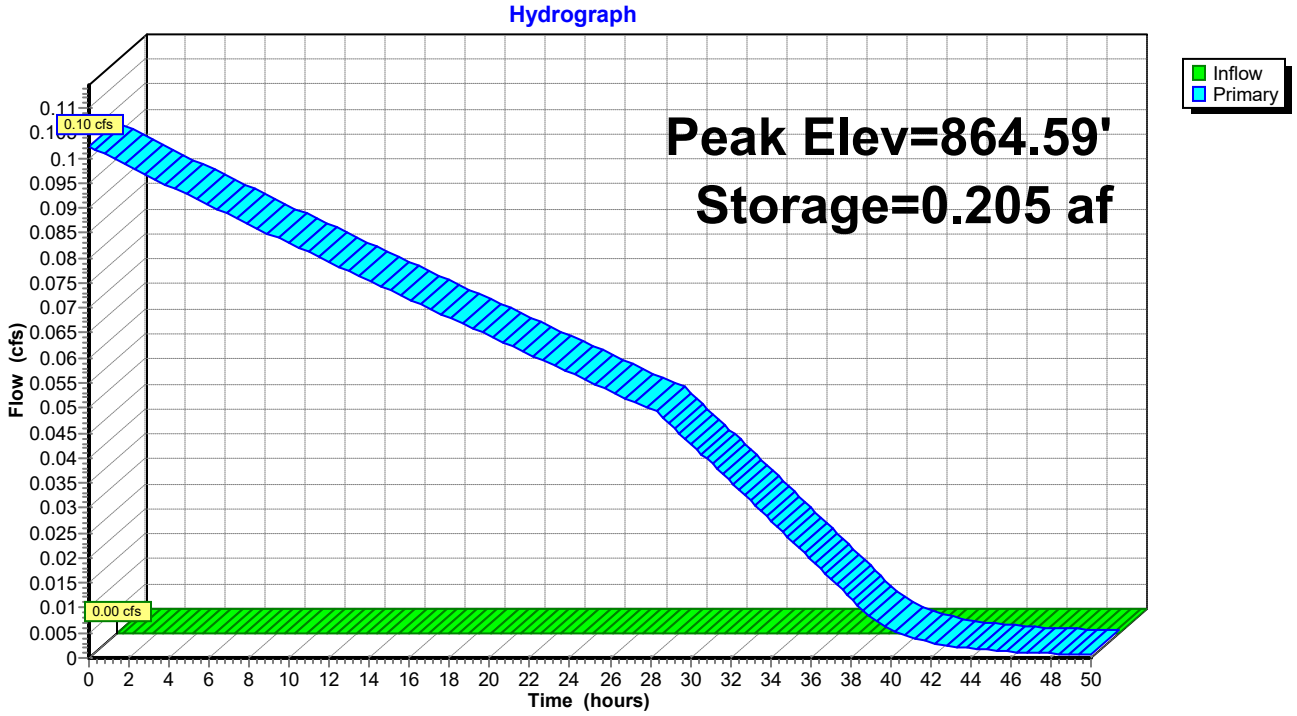
27,354.9 cf Field - 10,807.0 cf Chambers = 16,547.9 cf Stone x 40.0% Voids = 6,619.2 cf Stone Storage

Chamber Storage + Stone Storage = 17,426.2 cf = 0.400 af
Overall Storage Efficiency = 63.7%
Overall System Size = 208.72' x 19.42' x 6.75'

100 Chambers
1,013.1 cy Field
612.9 cy Stone



Pond 32P: StormTech 03 WQ



Hydrograph for Pond 32P: StormTech 03 WQ

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0.205**	**864.59**	**0.10**
1.00	0.00	0.196	864.47	0.10
2.00	0.00	0.188	864.36	0.10
3.00	0.00	0.180	864.25	0.10
4.00	0.00	0.172	864.15	0.09
5.00	0.00	0.165	864.04	0.09
6.00	0.00	0.157	863.94	0.09
7.00	0.00	0.150	863.84	0.09
8.00	0.00	0.142	863.75	0.09
9.00	0.00	0.135	863.65	0.08
10.00	0.00	0.128	863.56	0.08
11.00	0.00	0.122	863.47	0.08
12.00	0.00	0.115	863.39	0.08
13.00	0.00	0.108	863.30	0.08
14.00	0.00	0.102	863.22	0.08
15.00	0.00	0.096	863.14	0.07
16.00	0.00	0.090	863.07	0.07
17.00	0.00	0.084	862.99	0.07
18.00	0.00	0.078	862.92	0.07
19.00	0.00	0.073	862.85	0.07
20.00	0.00	0.067	862.78	0.06
21.00	0.00	0.062	862.71	0.06
22.00	0.00	0.057	862.65	0.06
23.00	0.00	0.052	862.59	0.06
24.00	0.00	0.047	862.53	0.06
25.00	0.00	0.043	862.47	0.06
26.00	0.00	0.038	862.41	0.05
27.00	0.00	0.034	862.36	0.05
28.00	0.00	0.030	862.30	0.05
29.00	0.00	0.026	862.22	0.05
30.00	0.00	0.022	862.12	0.04
31.00	0.00	0.019	862.03	0.04
32.00	0.00	0.016	861.95	0.04
33.00	0.00	0.013	861.87	0.03
34.00	0.00	0.010	861.81	0.03
35.00	0.00	0.008	861.75	0.02
36.00	0.00	0.006	861.70	0.02
37.00	0.00	0.005	861.66	0.02
38.00	0.00	0.004	861.63	0.01
39.00	0.00	0.003	861.61	0.01
40.00	0.00	0.002	861.60	0.01
41.00	0.00	0.002	861.59	0.00
42.00	0.00	0.002	861.58	0.00
43.00	0.00	0.002	861.57	0.00
44.00	0.00	0.001	861.57	0.00
45.00	0.00	0.001	861.56	0.00
46.00	0.00	0.001	861.56	0.00
47.00	0.00	0.001	861.56	0.00
48.00	0.00	0.001	861.55	0.00
49.00	0.00	0.001	861.55	0.00
50.00	0.00	0.001	861.55	0.00

Summary for Pond 33P: StormTech 04 WQ

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.08 cfs @	0.00 hrs,	Volume=	0.090 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.08 cfs @	0.00 hrs,	Volume=	0.090 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Starting Elev= 864.36' Surf.Area= 0.083 ac Storage= 0.090 af
Peak Elev= 864.36' @ 0.00 hrs Surf.Area= 0.083 ac Storage= 0.090 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	862.68'	0.135 af	**37.58'W x 96.02'L x 6.75'H Field A** 0.559 af Overall - 0.222 af Embedded = 0.337 af x 40.0% Voids
#2A	863.43'	0.222 af	**ADS_StormTech MC-4500 b +Cap** x 88 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 88 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.357 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	862.68'	**12.0" Round RCP_Round 12"** L= 70.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 862.68' / 862.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	862.68'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.40'	**5.5" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.08 cfs @ 0.00 hrs HW=864.36' (Free Discharge)
↑—**1=RCP_Round 12"** (Passes 0.08 cfs of 3.32 cfs potential flow)
↑—**2=WQ Orifice** (Orifice Controls 0.08 cfs @ 6.12 fps)
—**3=Orifice** (Controls 0.00 cfs)

Pond 33P: StormTech 04 WQ - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 4 rows = 316.0 cf

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

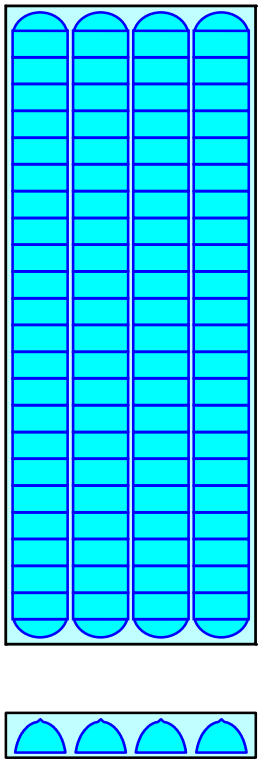
22 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 94.02' Row Length +12.0" End Stone x 2 = 96.02' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

88 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,687.2 cf Chamber Storage

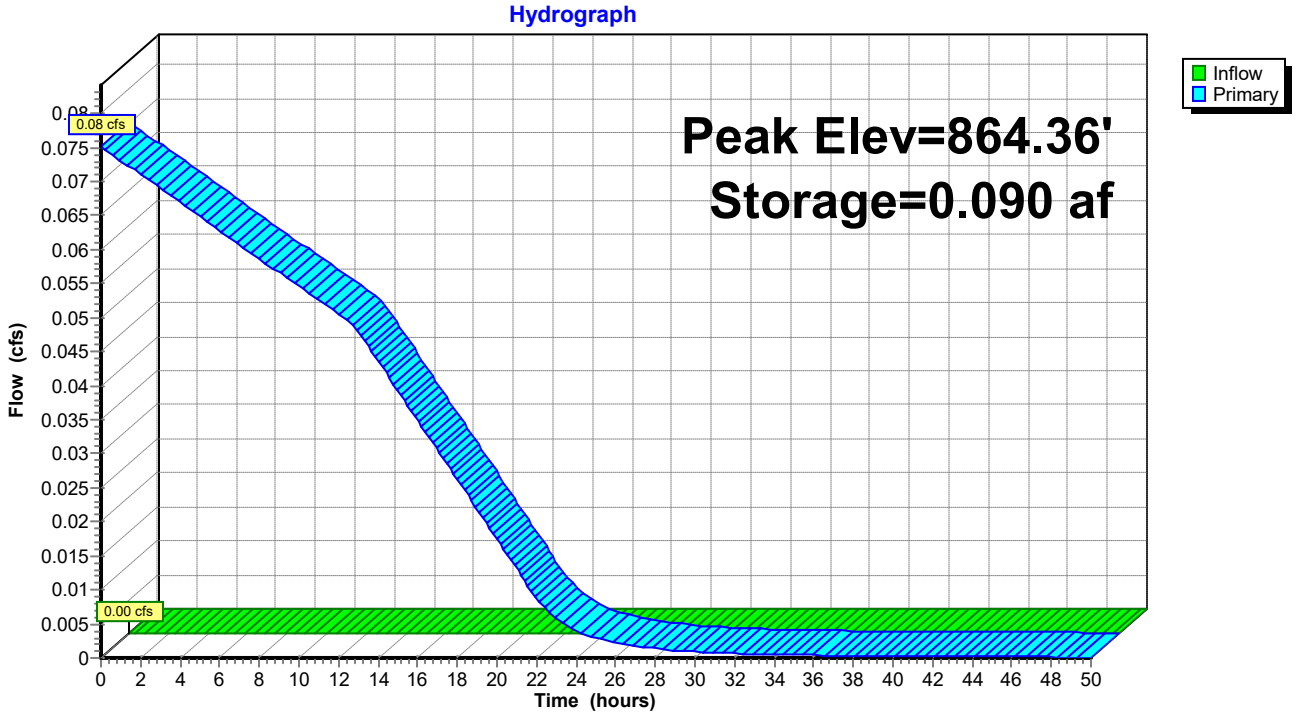
24,358.2 cf Field - 9,687.2 cf Chambers = 14,671.1 cf Stone x 40.0% Voids = 5,868.4 cf Stone Storage

Chamber Storage + Stone Storage = 15,555.6 cf = 0.357 af
Overall Storage Efficiency = 63.9%
Overall System Size = 96.02' x 37.58' x 6.75'

88 Chambers
902.2 cy Field
543.4 cy Stone



Pond 33P: StormTech 04 WQ



Hydrograph for Pond 33P: StormTech 04 WQ

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0.090**	**864.36**	**0.08**
1.00	0.00	0.084	864.27	0.07
2.00	0.00	0.078	864.19	0.07
3.00	0.00	0.072	864.10	0.07
4.00	0.00	0.067	864.02	0.07
5.00	0.00	0.061	863.95	0.06
6.00	0.00	0.056	863.87	0.06
7.00	0.00	0.051	863.80	0.06
8.00	0.00	0.046	863.73	0.06
9.00	0.00	0.041	863.66	0.06
10.00	0.00	0.037	863.60	0.05
11.00	0.00	0.032	863.53	0.05
12.00	0.00	0.028	863.47	0.05
13.00	0.00	0.024	863.40	0.05
14.00	0.00	0.020	863.29	0.04
15.00	0.00	0.017	863.18	0.04
16.00	0.00	0.014	863.09	0.03
17.00	0.00	0.011	863.01	0.03
18.00	0.00	0.009	862.94	0.03
19.00	0.00	0.007	862.88	0.02
20.00	0.00	0.005	862.83	0.02
21.00	0.00	0.004	862.79	0.01
22.00	0.00	0.003	862.76	0.01
23.00	0.00	0.002	862.75	0.01
24.00	0.00	0.002	862.73	0.00
25.00	0.00	0.002	862.73	0.00
26.00	0.00	0.001	862.72	0.00
27.00	0.00	0.001	862.71	0.00
28.00	0.00	0.001	862.71	0.00
29.00	0.00	0.001	862.71	0.00
30.00	0.00	0.001	862.70	0.00
31.00	0.00	0.001	862.70	0.00
32.00	0.00	0.001	862.70	0.00
33.00	0.00	0.001	862.70	0.00
34.00	0.00	0.001	862.70	0.00
35.00	0.00	0.001	862.70	0.00
36.00	0.00	0.001	862.70	0.00
37.00	0.00	0.000	862.69	0.00
38.00	0.00	0.000	862.69	0.00
39.00	0.00	0.000	862.69	0.00
40.00	0.00	0.000	862.69	0.00
41.00	0.00	0.000	862.69	0.00
42.00	0.00	0.000	862.69	0.00
43.00	0.00	0.000	862.69	0.00
44.00	0.00	0.000	862.69	0.00
45.00	0.00	0.000	862.69	0.00
46.00	0.00	0.000	862.69	0.00
47.00	0.00	0.000	862.69	0.00
48.00	0.00	0.000	862.69	0.00
49.00	0.00	0.000	862.69	0.00
50.00	0.00	0.000	862.69	0.00

Summary for Pond 34P: StormTech 05 WQ

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.19 cfs @	0.00 hrs,	Volume=	0.229 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.19 cfs @	0.00 hrs,	Volume=	0.229 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Starting Elev= 873.99' Surf.Area= 0.095 ac Storage= 0.229 af
Peak Elev= 873.99' @ 0.00 hrs Surf.Area= 0.095 ac Storage= 0.229 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	870.65'	0.155 af	**19.42'W x 212.74'L x 6.75'H Field A** 0.640 af Overall - 0.253 af Embedded = 0.387 af x 40.0% Voids
#2A	871.40'	0.253 af	**ADS_StormTech MC-4500 b +Cap** x 102 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 102 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.408 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	870.65'	**12.0" Round RCP_Round 12"** L= 64.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 870.65' / 870.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	870.65'	**2.0" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.00'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.19 cfs @ 0.00 hrs HW=873.99' (Free Discharge)
└─**1=RCP_Round 12"** (Passes 0.19 cfs of 5.48 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.19 cfs @ 8.69 fps)
  └─**3=Orifice** (Controls 0.00 cfs)

Pond 34P: StormTech 05 WQ - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 2 rows = 158.0 cf

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

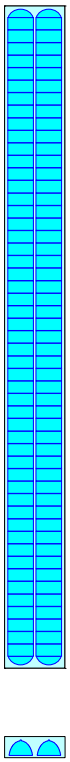
51 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 210.74' Row Length +12.0" End Stone x 2 = 212.74' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

102 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 11,020.0 cf Chamber Storage

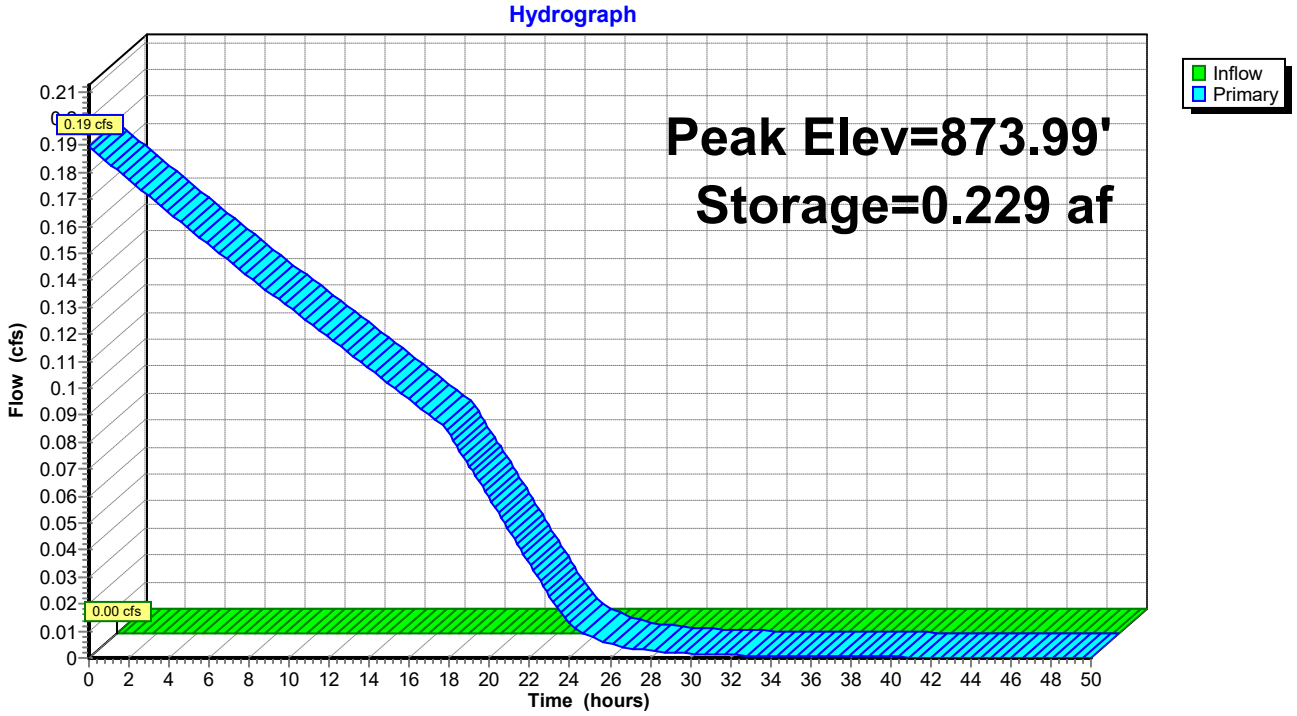
27,882.5 cf Field - 11,020.0 cf Chambers = 16,862.4 cf Stone x 40.0% Voids = 6,745.0 cf Stone Storage

Chamber Storage + Stone Storage = 17,765.0 cf = 0.408 af
Overall Storage Efficiency = 63.7%
Overall System Size = 212.74' x 19.42' x 6.75'

102 Chambers
1,032.7 cy Field
624.5 cy Stone



Pond 34P: StormTech 05 WQ



Hydrograph for Pond 34P: StormTech 05 WQ

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0.229**	**873.99**	**0.19**
1.00	0.00	0.214	873.78	0.18
2.00	0.00	0.199	873.57	0.18
3.00	0.00	0.184	873.38	0.17
4.00	0.00	0.171	873.20	0.16
5.00	0.00	0.157	873.02	0.16
6.00	0.00	0.144	872.86	0.15
7.00	0.00	0.132	872.70	0.15
8.00	0.00	0.120	872.54	0.14
9.00	0.00	0.109	872.40	0.14
10.00	0.00	0.098	872.26	0.13
11.00	0.00	0.087	872.13	0.12
12.00	0.00	0.077	872.00	0.12
13.00	0.00	0.068	871.88	0.11
14.00	0.00	0.058	871.77	0.11
15.00	0.00	0.050	871.66	0.10
16.00	0.00	0.042	871.56	0.10
17.00	0.00	0.034	871.47	0.09
18.00	0.00	0.027	871.36	0.08
19.00	0.00	0.020	871.19	0.07
20.00	0.00	0.015	871.05	0.06
21.00	0.00	0.011	870.93	0.05
22.00	0.00	0.007	870.84	0.03
23.00	0.00	0.005	870.78	0.02
24.00	0.00	0.004	870.74	0.01
25.00	0.00	0.003	870.72	0.01
26.00	0.00	0.002	870.71	0.01
27.00	0.00	0.002	870.70	0.00
28.00	0.00	0.002	870.69	0.00
29.00	0.00	0.001	870.68	0.00
30.00	0.00	0.001	870.68	0.00
31.00	0.00	0.001	870.68	0.00
32.00	0.00	0.001	870.67	0.00
33.00	0.00	0.001	870.67	0.00
34.00	0.00	0.001	870.67	0.00
35.00	0.00	0.001	870.67	0.00
36.00	0.00	0.001	870.67	0.00
37.00	0.00	0.001	870.67	0.00
38.00	0.00	0.001	870.67	0.00
39.00	0.00	0.001	870.66	0.00
40.00	0.00	0.001	870.66	0.00
41.00	0.00	0.001	870.66	0.00
42.00	0.00	0.000	870.66	0.00
43.00	0.00	0.000	870.66	0.00
44.00	0.00	0.000	870.66	0.00
45.00	0.00	0.000	870.66	0.00
46.00	0.00	0.000	870.66	0.00
47.00	0.00	0.000	870.66	0.00
48.00	0.00	0.000	870.66	0.00
49.00	0.00	0.000	870.66	0.00
50.00	0.00	0.000	870.66	0.00

Summary for Pond 35P: StormTech 06 WQ

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.05 cfs @	0.00 hrs,	Volume=	0.077 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.05 cfs @	0.00 hrs,	Volume=	0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Starting Elev= 874.43' Surf.Area= 0.072 ac Storage= 0.078 af
Peak Elev= 874.43' @ 0.00 hrs Surf.Area= 0.072 ac Storage= 0.078 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	872.75'	0.117 af	**19.42'W x 160.42'L x 6.75'H Field A** 0.483 af Overall - 0.189 af Embedded = 0.293 af x 40.0% Voids
#2A	873.50'	0.189 af	**ADS_StormTech MC-4500 b +Cap** x 76 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 76 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.307 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	872.75'	**12.0" Round RCP_Round 12"** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 872.75' / 872.52' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	872.75'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.50'	**6.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.05 cfs @ 0.00 hrs HW=874.43' (Free Discharge)
└─**1=RCP_Round 12"** (Passes 0.05 cfs of 3.50 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.05 cfs @ 6.15 fps)
  └─**3=Orifice** (Controls 0.00 cfs)

Pond 35P: StormTech 06 WQ - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 2 rows = 158.0 cf

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

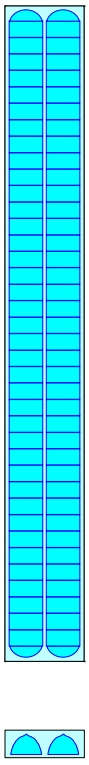
38 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 158.42' Row Length +12.0" End Stone x 2 = 160.42' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

76 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 8,251.3 cf Chamber Storage

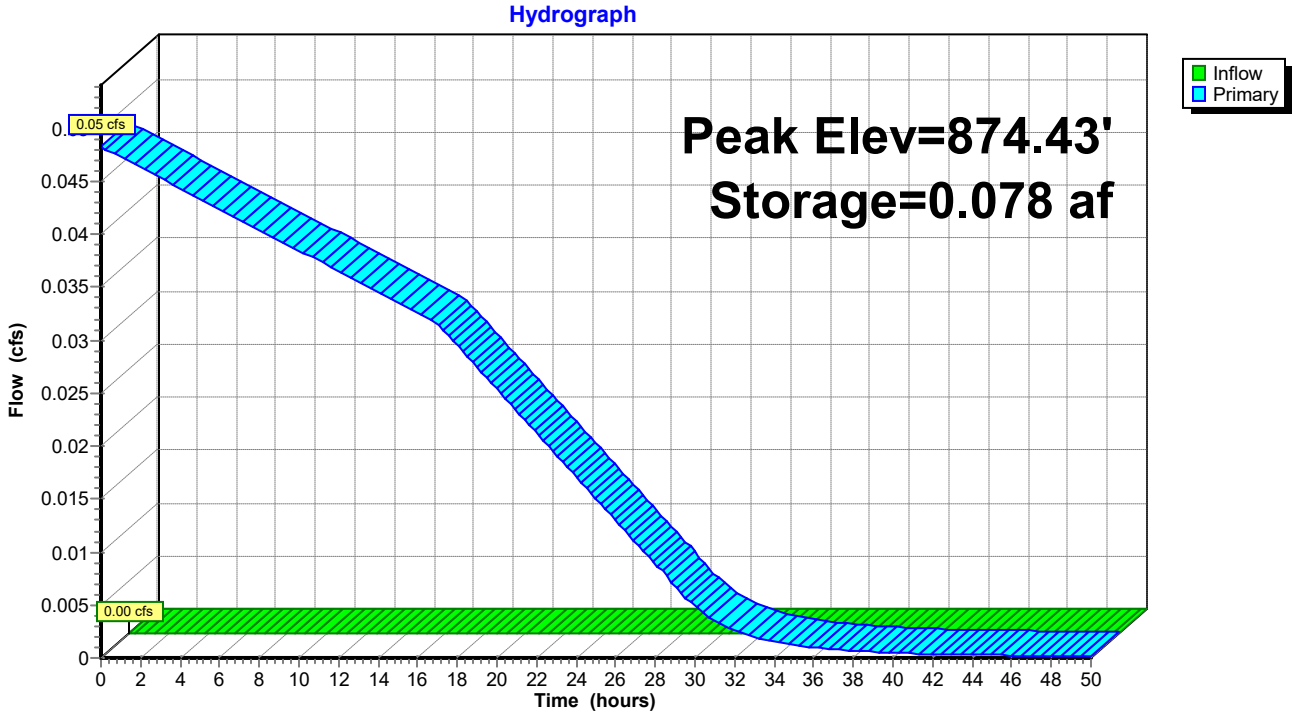
21,024.6 cf Field - 8,251.3 cf Chambers = 12,773.3 cf Stone x 40.0% Voids = 5,109.3 cf Stone Storage

Chamber Storage + Stone Storage = 13,360.6 cf = 0.307 af
Overall Storage Efficiency = 63.5%
Overall System Size = 160.42' x 19.42' x 6.75'

76 Chambers
778.7 cy Field
473.1 cy Stone



Pond 35P: StormTech 06 WQ



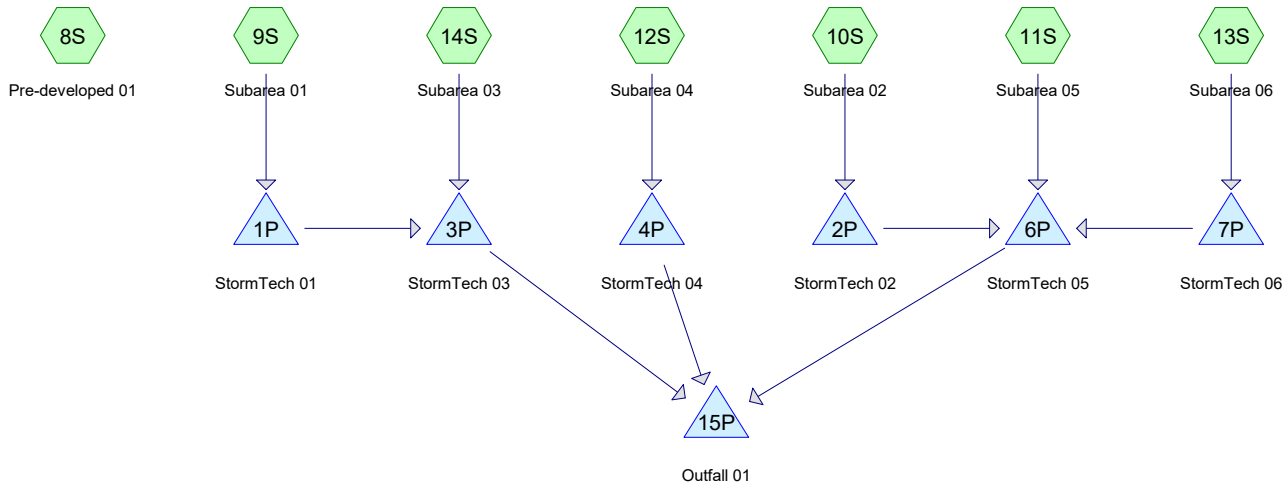
Hydrograph for Pond 35P: StormTech 06 WQ

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	**0.00**	**0.078**	**874.43**	**0.05**
1.00	0.00	0.074	874.36	0.05
2.00	0.00	0.070	874.30	0.05
3.00	0.00	0.066	874.24	0.05
4.00	0.00	0.062	874.17	0.04
5.00	0.00	0.059	874.11	0.04
6.00	0.00	0.055	874.05	0.04
7.00	0.00	0.052	874.00	0.04
8.00	0.00	0.048	873.94	0.04
9.00	0.00	0.045	873.89	0.04
10.00	0.00	0.042	873.83	0.04
11.00	0.00	0.039	873.78	0.04
12.00	0.00	0.036	873.73	0.04
13.00	0.00	0.033	873.68	0.04
14.00	0.00	0.030	873.63	0.03
15.00	0.00	0.027	873.59	0.03
16.00	0.00	0.024	873.54	0.03
17.00	0.00	0.021	873.50	0.03
18.00	0.00	0.019	873.41	0.03
19.00	0.00	0.017	873.33	0.03
20.00	0.00	0.014	873.25	0.03
21.00	0.00	0.012	873.18	0.02
22.00	0.00	0.011	873.12	0.02
23.00	0.00	0.009	873.06	0.02
24.00	0.00	0.007	873.01	0.02
25.00	0.00	0.006	872.96	0.02
26.00	0.00	0.005	872.92	0.01
27.00	0.00	0.004	872.88	0.01
28.00	0.00	0.003	872.86	0.01
29.00	0.00	0.002	872.83	0.01
30.00	0.00	0.002	872.82	0.00
31.00	0.00	0.002	872.80	0.00
32.00	0.00	0.001	872.80	0.00
33.00	0.00	0.001	872.79	0.00
34.00	0.00	0.001	872.78	0.00
35.00	0.00	0.001	872.78	0.00
36.00	0.00	0.001	872.78	0.00
37.00	0.00	0.001	872.77	0.00
38.00	0.00	0.001	872.77	0.00
39.00	0.00	0.001	872.77	0.00
40.00	0.00	0.001	872.77	0.00
41.00	0.00	0.001	872.77	0.00
42.00	0.00	0.000	872.77	0.00
43.00	0.00	0.000	872.77	0.00
44.00	0.00	0.000	872.76	0.00
45.00	0.00	0.000	872.76	0.00
46.00	0.00	0.000	872.76	0.00
47.00	0.00	0.000	872.76	0.00
48.00	0.00	0.000	872.76	0.00
49.00	0.00	0.000	872.76	0.00
50.00	0.00	0.000	872.76	0.00

EMH&T

APPENDIX D:

HydroCAD Output



Subcat Reach Pond Link

Routing Diagram for 2020-0227
Prepared by EMH&T, Printed 9/23/2020

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 year	Type II 24-hr		Default	24.00	1	2.20	2
2	2 year	Type II 24-hr		Default	24.00	1	2.63	2
3	5 year	Type II 24-hr		Default	24.00	1	3.24	2
4	10 year	Type II 24-hr		Default	24.00	1	3.74	2
5	25 year	Type II 24-hr		Default	24.00	1	4.44	2
6	50 year	Type II 24-hr		Default	24.00	1	5.02	2
7	100 year	Type II 24-hr		Default	24.00	1	5.63	2

Summary for Subcatchment 8S: Pre-developed 01

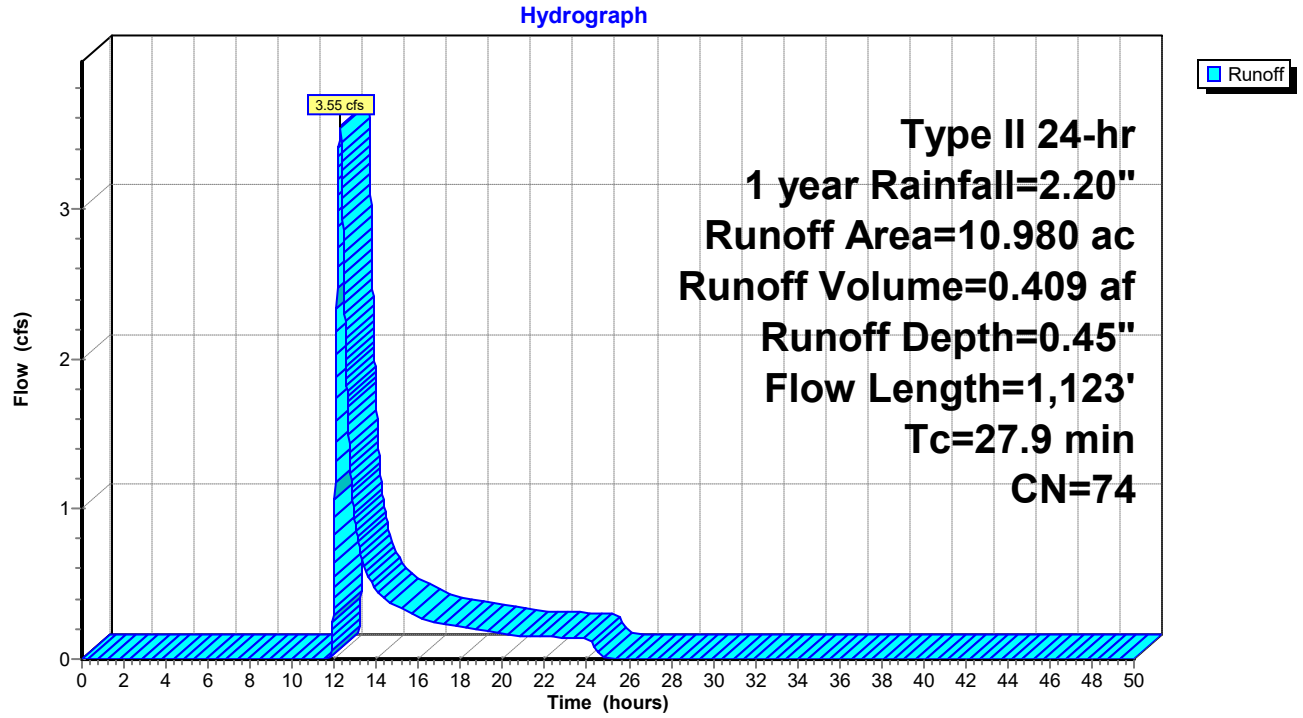
Runoff = 3.55 cfs @ 12.25 hrs, Volume= 0.409 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.20"

Area (ac)	CN	Description
10.980	74	>75% Grass cover, Good, HSG C
10.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0242	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
17.9	1,023	0.0186	0.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.9	1,123	Total			

Subcatchment 8S: Pre-developed 01



Summary for Subcatchment 9S: Subarea 01

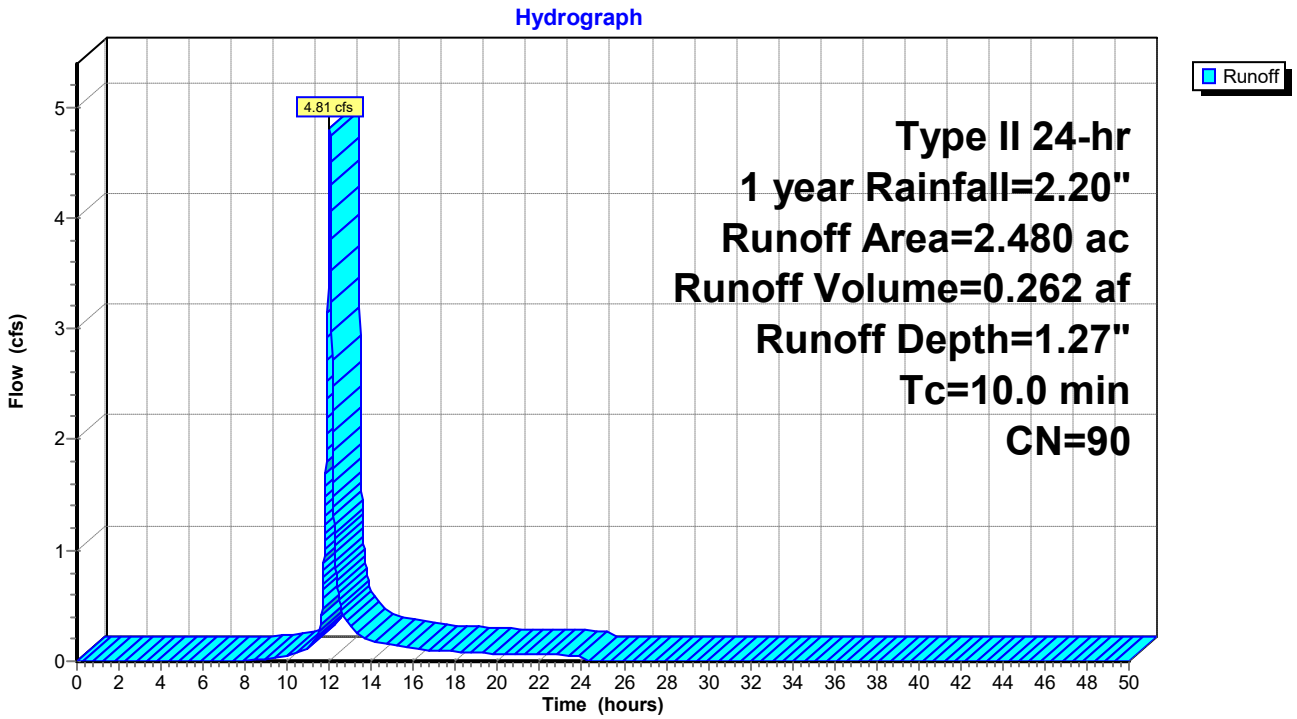
Runoff = 4.81 cfs @ 12.02 hrs, Volume= 0.262 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.20"

Area (ac)	CN	Description
2.480	90	1/8 acre lots, 65% imp, HSG C
0.868		35.00% Pervious Area
1.612		65.00% Impervious Area

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

Subcatchment 9S: Subarea 01



Summary for Subcatchment 10S: Subarea 02

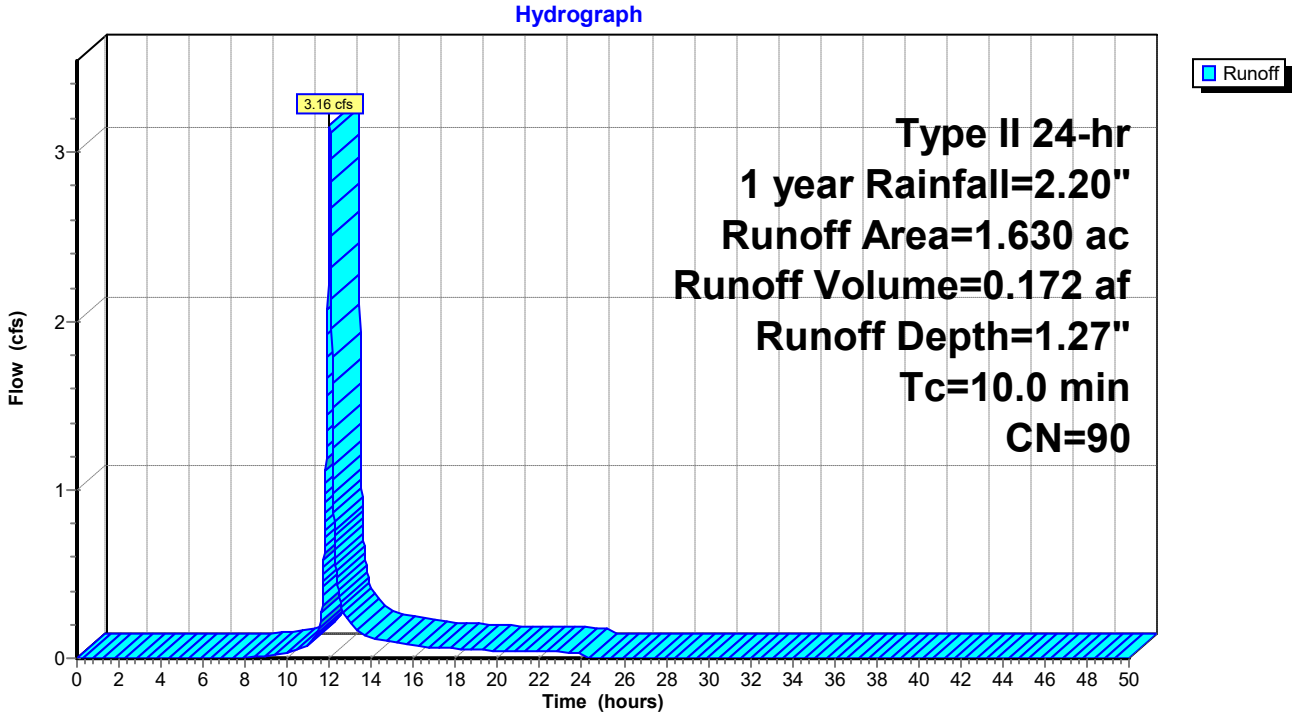
Runoff = 3.16 cfs @ 12.02 hrs, Volume= 0.172 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.20"

Area (ac)	CN	Description
1.630	90	1/8 acre lots, 65% imp, HSG C
0.570		35.00% Pervious Area
1.060		65.00% Impervious Area

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

Subcatchment 10S: Subarea 02



Summary for Subcatchment 11S: Subarea 05

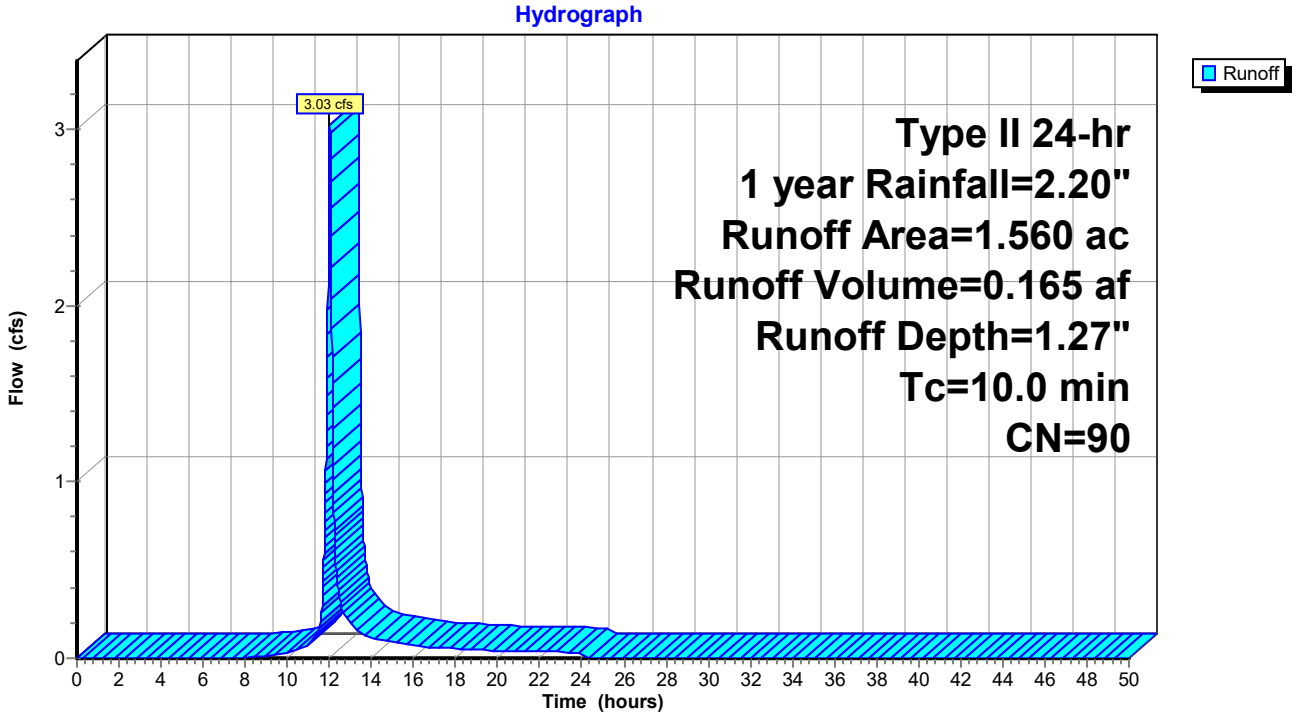
Runoff = 3.03 cfs @ 12.02 hrs, Volume= 0.165 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.20"

Area (ac)	CN	Description
1.560	90	1/8 acre lots, 65% imp, HSG C
0.546		35.00% Pervious Area
1.014		65.00% Impervious Area

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

Subcatchment 11S: Subarea 05



Summary for Subcatchment 12S: Subarea 04

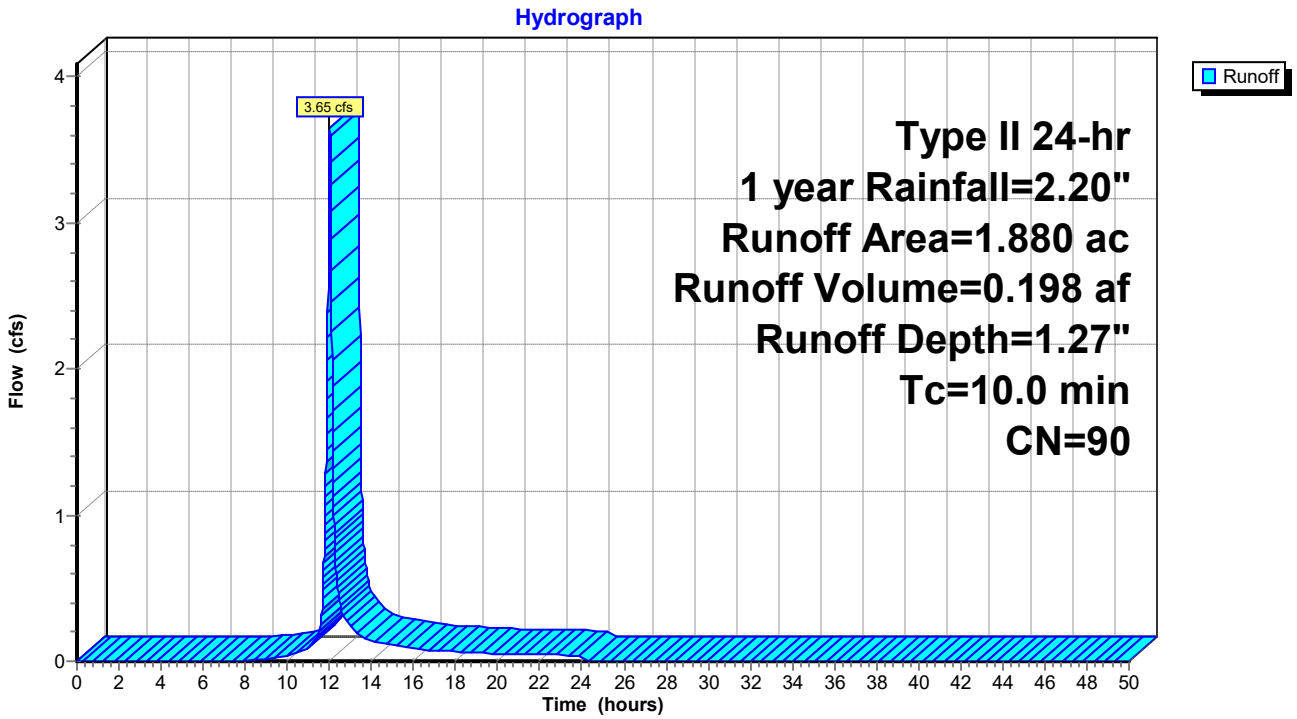
Runoff = 3.65 cfs @ 12.02 hrs, Volume= 0.198 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.20"

Area (ac)	CN	Description
1.880	90	1/8 acre lots, 65% imp, HSG C
0.658		35.00% Pervious Area
1.222		65.00% Impervious Area

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

Subcatchment 12S: Subarea 04



Summary for Subcatchment 13S: Subarea 06

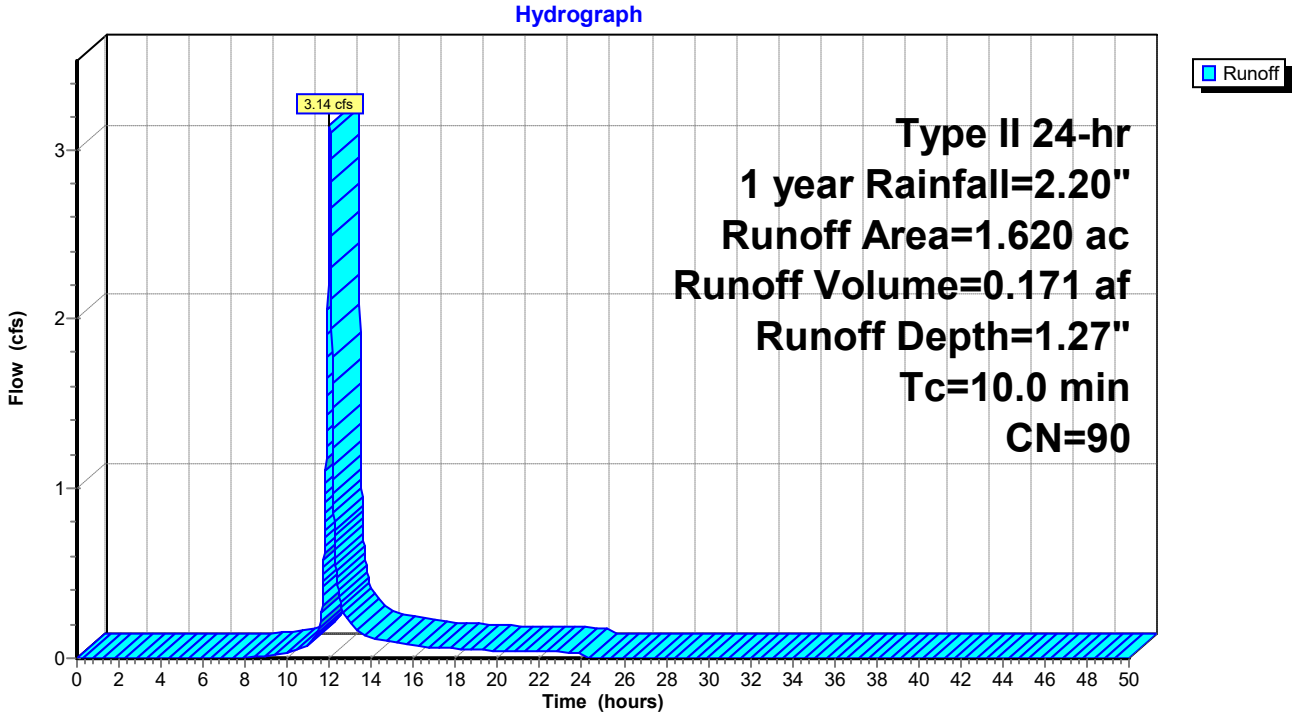
Runoff = 3.14 cfs @ 12.02 hrs, Volume= 0.171 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.20"

Area (ac)	CN	Description
1.620	90	1/8 acre lots, 65% imp, HSG C
0.567		35.00% Pervious Area
1.053		65.00% Impervious Area

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

Subcatchment 13S: Subarea 06



Summary for Subcatchment 14S: Subarea 03

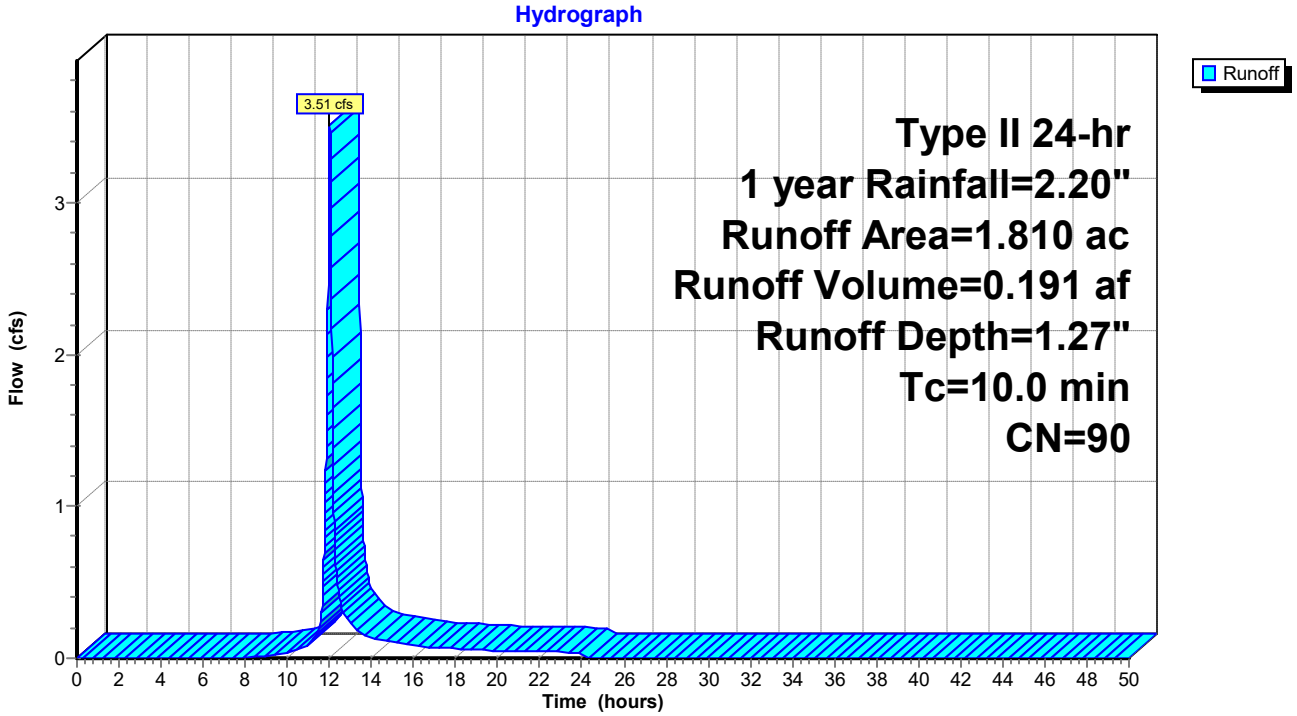
Runoff = 3.51 cfs @ 12.02 hrs, Volume= 0.191 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 year Rainfall=2.20"

Area (ac)	CN	Description
1.810	90	1/8 acre lots, 65% imp, HSG C
0.634		35.00% Pervious Area
1.177		65.00% Impervious Area

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

Subcatchment 14S: Subarea 03



Summary for Pond 1P: StormTech 01

Inflow Area = 2.480 ac, 65.00% Impervious, Inflow Depth = 1.27" for 1 year event
Inflow = 4.81 cfs @ 12.02 hrs, Volume= 0.262 af
Outflow = 0.38 cfs @ 12.71 hrs, Volume= 0.254 af, Atten= 92%, Lag= 41.9 min
Primary = 0.38 cfs @ 12.71 hrs, Volume= 0.254 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 868.01' @ 12.71 hrs Surf.Area= 0.118 ac Storage= 0.142 af

Plug-Flow detention time= 641.7 min calculated for 0.254 af (97% of inflow)
Center-of-Mass det. time= 623.8 min (1,446.6 - 822.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	866.20'	0.190 af	**55.75'W x 91.99'L x 6.75'H Field A** 0.795 af Overall - 0.319 af Embedded = 0.476 af x 40.0% Voids
#2A	866.95'	0.319 af	**ADS_StormTech MC-4500 b +Cap** x 126 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 126 Chambers in 6 Rows Cap Storage= +39.5 cf x 2 x 6 rows = 474.0 cf
		0.509 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	866.20'	**12.0" Round RCP_Round 12"** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.20' / 865.92' S= 0.0048 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	866.20'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	867.80'	**5.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.38 cfs @ 12.71 hrs HW=868.01' TW=863.58' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.38 cfs of 3.61 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.08 cfs @ 6.37 fps)
  └─**3=Orifice** (Orifice Controls 0.30 cfs @ 2.22 fps)

Pond 1P: StormTech 01 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 6 rows = 474.0 cf

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

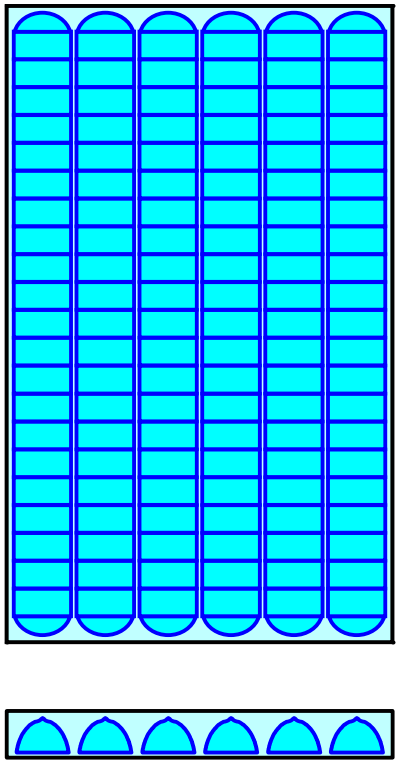
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

126 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 6 Rows = 13,891.8 cf Chamber Storage

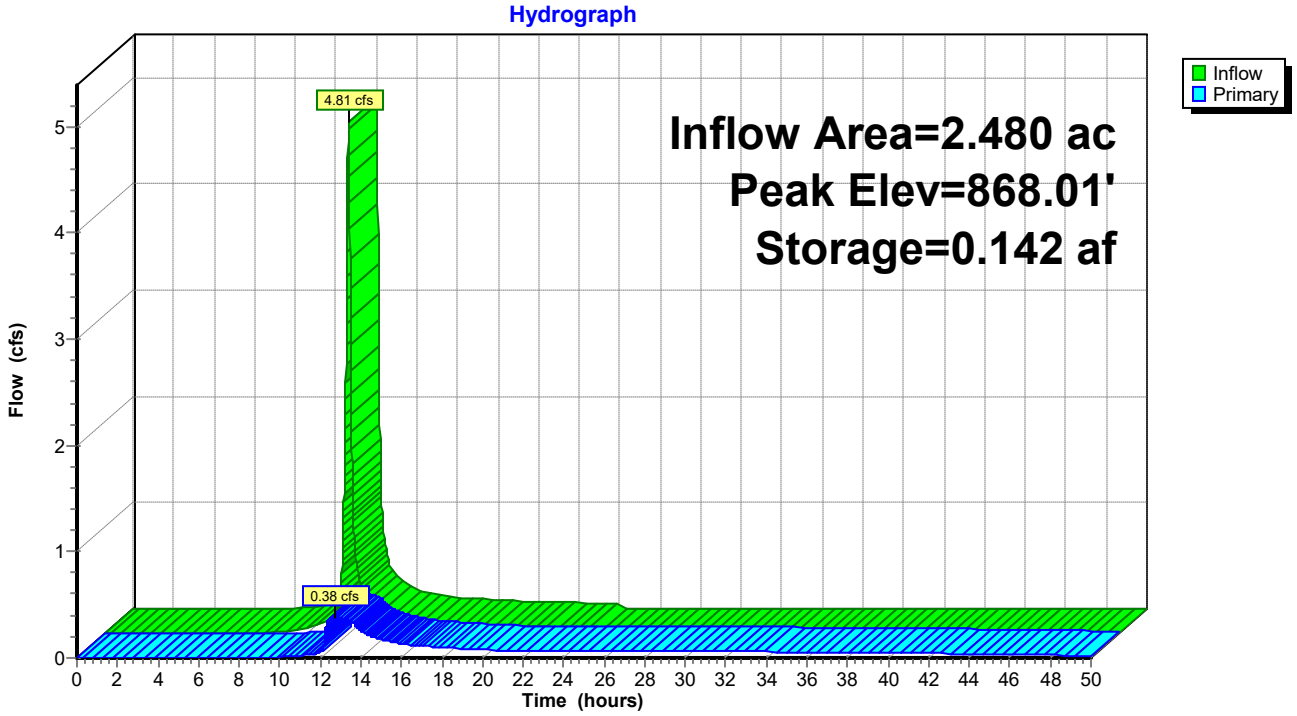
34,617.6 cf Field - 13,891.8 cf Chambers = 20,725.8 cf Stone x 40.0% Voids = 8,290.3 cf Stone Storage

Chamber Storage + Stone Storage = 22,182.1 cf = 0.509 af
Overall Storage Efficiency = 64.1%
Overall System Size = 91.99' x 55.75' x 6.75'

126 Chambers
1,282.1 cy Field
767.6 cy Stone



Pond 1P: StormTech 01



Summary for Pond 2P: StormTech 02

Inflow Area = 1.630 ac, 65.00% Impervious, Inflow Depth = 1.27" for 1 year event
Inflow = 3.16 cfs @ 12.02 hrs, Volume= 0.172 af
Outflow = 0.24 cfs @ 12.76 hrs, Volume= 0.166 af, Atten= 92%, Lag= 44.5 min
Primary = 0.24 cfs @ 12.76 hrs, Volume= 0.166 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 876.51' @ 12.76 hrs Surf.Area= 0.079 ac Storage= 0.093 af

Plug-Flow detention time= 650.2 min calculated for 0.166 af (96% of inflow)
Center-of-Mass det. time= 629.2 min (1,452.0 - 822.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	874.72'	0.129 af	**37.58'W x 91.99'L x 6.75'H Field A** 0.536 af Overall - 0.213 af Embedded = 0.323 af x 40.0% Voids
#2A	875.47'	0.213 af	**ADS_StormTech MC-4500 b +Cap** x 84 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 84 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.342 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	874.72'	**12.0" Round RCP_Round 12"** L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 874.72' / 874.31' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	874.72'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.30'	**4.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.24 cfs @ 12.76 hrs HW=876.51' TW=872.54' (Dynamic Tailwater)
↑└─**1=RCP_Round 12"** (Passes 0.24 cfs of 3.42 cfs potential flow)
↑ ├─**2=WQ Orifice** (Orifice Controls 0.05 cfs @ 6.35 fps)
└─**3=Orifice** (Orifice Controls 0.19 cfs @ 2.19 fps)

Pond 2P: StormTech 02 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 4 rows = 316.0 cf

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

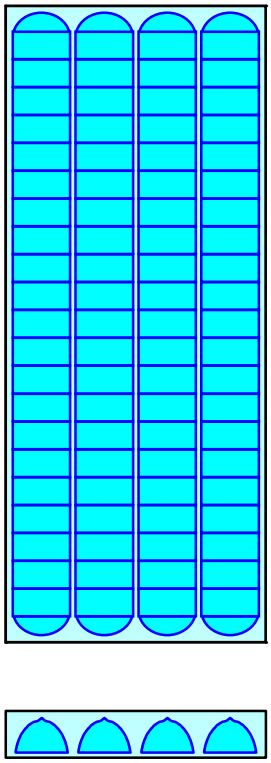
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

84 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,261.2 cf Chamber Storage

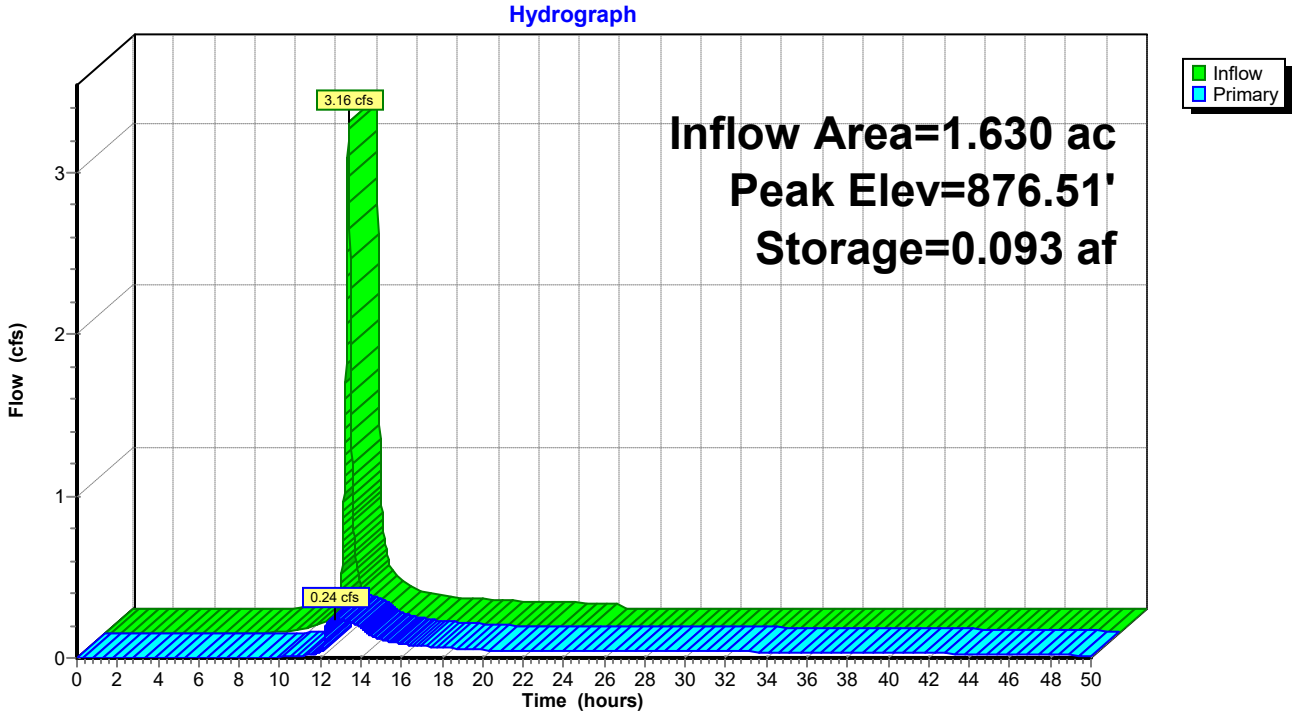
23,337.1 cf Field - 9,261.2 cf Chambers = 14,075.9 cf Stone x 40.0% Voids = 5,630.4 cf Stone Storage

Chamber Storage + Stone Storage = 14,891.6 cf = 0.342 af
Overall Storage Efficiency = 63.8%
Overall System Size = 91.99' x 37.58' x 6.75'

84 Chambers
864.3 cy Field
521.3 cy Stone



Pond 2P: StormTech 02



Summary for Pond 3P: StormTech 03

Inflow Area = 4.290 ac, 65.00% Impervious, Inflow Depth > 1.24" for 1 year event
Inflow = 3.58 cfs @ 12.02 hrs, Volume= 0.445 af
Outflow = 0.19 cfs @ 16.65 hrs, Volume= 0.328 af, Atten= 95%, Lag= 278.3 min
Primary = 0.19 cfs @ 16.65 hrs, Volume= 0.328 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 864.64' @ 16.65 hrs Surf.Area= 0.093 ac Storage= 0.209 af

Plug-Flow detention time= 883.2 min calculated for 0.328 af (74% of inflow)
Center-of-Mass det. time= 574.3 min (1,753.0 - 1,178.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	861.53'	0.152 af	**19.42'W x 208.72'L x 6.75'H Field A** 0.628 af Overall - 0.248 af Embedded = 0.380 af x 40.0% Voids
#2A	862.28'	0.248 af	**ADS_StormTech MC-4500 b +Cap** x 100 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 100 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.400 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	861.53'	**12.0" Round RCP_Round 12"** L= 19.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.53' / 861.43' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	861.53'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.60'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.19 cfs @ 16.65 hrs HW=864.64' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.19 cfs of 6.11 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.10 cfs @ 8.41 fps)
  └─**3=Orifice** (Weir Controls 0.09 cfs @ 0.67 fps)

Pond 3P: StormTech 03 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

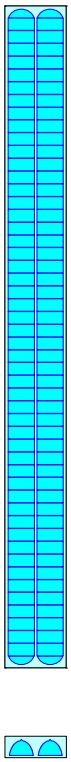
50 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 206.72' Row Length +12.0" End Stone x 2 = 208.72' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

100 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 10,807.0 cf Chamber Storage

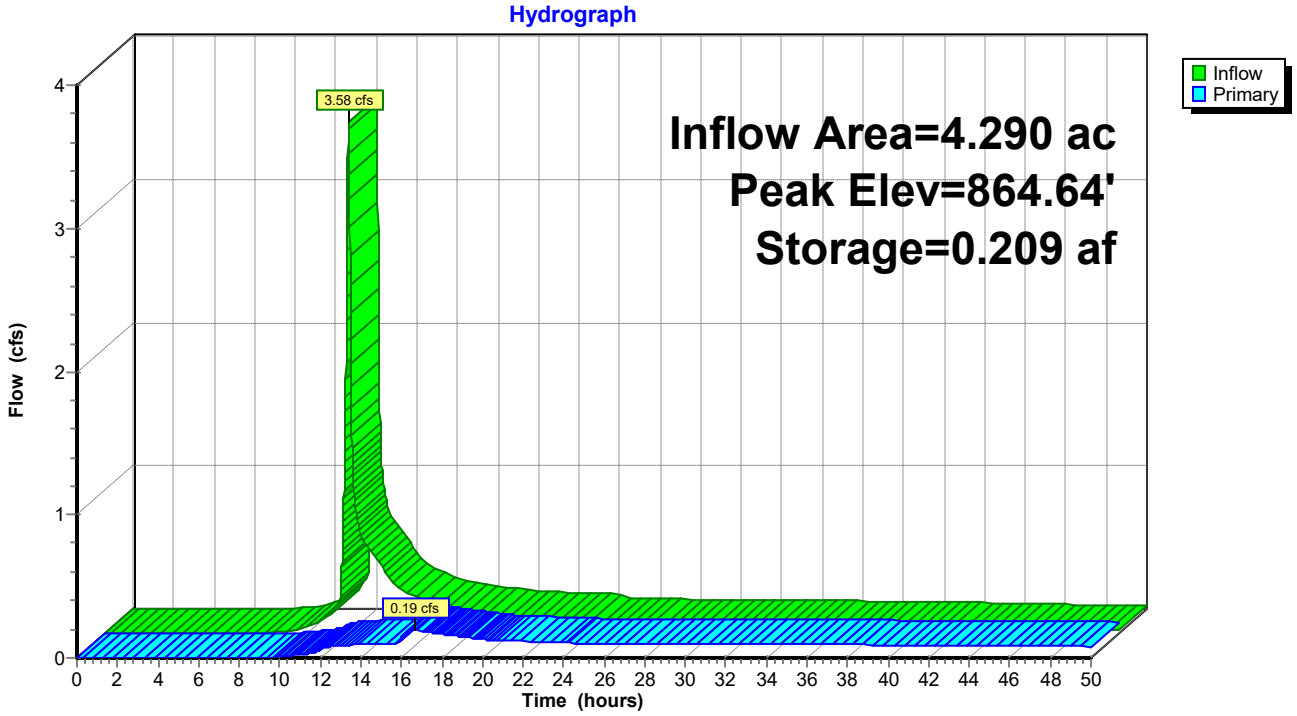
27,354.9 cf Field - 10,807.0 cf Chambers = 16,547.9 cf Stone x 40.0% Voids = 6,619.2 cf Stone Storage

Chamber Storage + Stone Storage = 17,426.2 cf = 0.400 af
Overall Storage Efficiency = 63.7%
Overall System Size = 208.72' x 19.42' x 6.75'

100 Chambers
1,013.1 cy Field
612.9 cy Stone



Pond 3P: StormTech 03



Summary for Pond 4P: StormTech 04

Inflow Area = 1.880 ac, 65.00% Impervious, Inflow Depth = 1.27" for 1 year event
Inflow = 3.65 cfs @ 12.02 hrs, Volume= 0.198 af
Outflow = 0.38 cfs @ 12.54 hrs, Volume= 0.197 af, Atten= 90%, Lag= 31.4 min
Primary = 0.38 cfs @ 12.54 hrs, Volume= 0.197 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 864.56' @ 12.54 hrs Surf.Area= 0.083 ac Storage= 0.104 af

Plug-Flow detention time= 541.9 min calculated for 0.197 af (99% of inflow)
Center-of-Mass det. time= 538.8 min (1,361.6 - 822.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	862.68'	0.135 af	**37.58'W x 96.02'L x 6.75'H Field A** 0.559 af Overall - 0.222 af Embedded = 0.337 af x 40.0% Voids
#2A	863.43'	0.222 af	**ADS_StormTech MC-4500 b +Cap** x 88 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 88 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.357 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	862.68'	**12.0" Round RCP_Round 12"** L= 70.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 862.68' / 862.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	862.68'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.40'	**5.5" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.38 cfs @ 12.54 hrs HW=864.56' TW=0.00' (Dynamic Tailwater)
↑└─**1=RCP_Round 12"** (Passes 0.38 cfs of 3.63 cfs potential flow)
↑ ├─**2=WQ Orifice** (Orifice Controls 0.08 cfs @ 6.49 fps)
└─**3=Orifice** (Weir Controls 0.30 cfs @ 1.30 fps)

Pond 4P: StormTech 04 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf

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

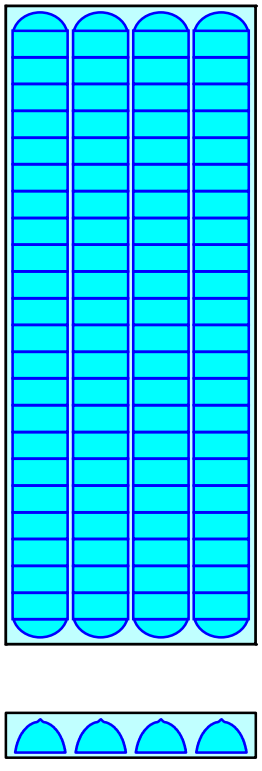
22 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 94.02' Row Length +12.0" End Stone x 2 = 96.02' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

88 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,687.2 cf Chamber Storage

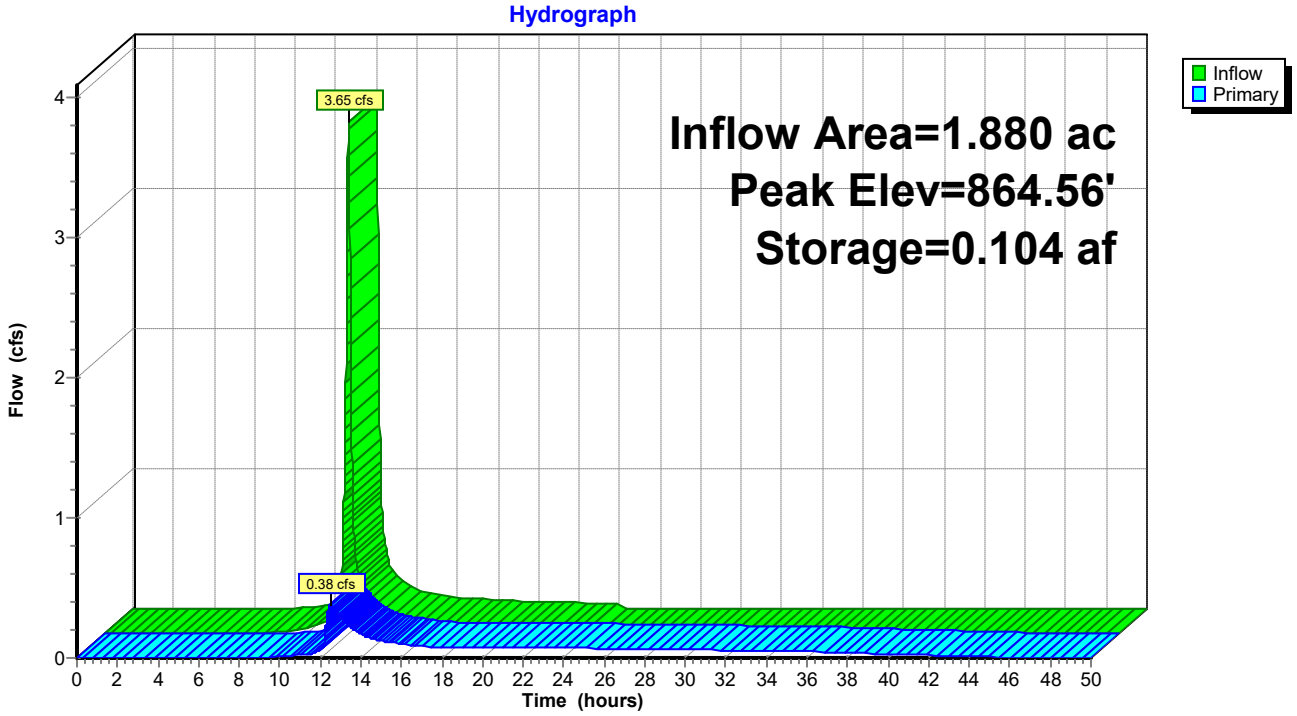
24,358.2 cf Field - 9,687.2 cf Chambers = 14,671.1 cf Stone x 40.0% Voids = 5,868.4 cf Stone Storage

Chamber Storage + Stone Storage = 15,555.6 cf = 0.357 af
Overall Storage Efficiency = 63.9%
Overall System Size = 96.02' x 37.58' x 6.75'

88 Chambers
902.2 cy Field
543.4 cy Stone



Pond 4P: StormTech 04



Summary for Pond 6P: StormTech 05

Inflow Area = 4.810 ac, 65.00% Impervious, Inflow Depth > 1.23" for 1 year event
Inflow = 3.11 cfs @ 12.02 hrs, Volume= 0.495 af
Outflow = 0.17 cfs @ 18.17 hrs, Volume= 0.456 af, Atten= 94%, Lag= 369.3 min
Primary = 0.17 cfs @ 18.17 hrs, Volume= 0.456 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 873.50' @ 18.17 hrs Surf.Area= 0.095 ac Storage= 0.193 af

Plug-Flow detention time= 611.4 min calculated for 0.456 af (92% of inflow)
Center-of-Mass det. time= 490.8 min (1,743.2 - 1,252.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	870.65'	0.155 af	**19.42'W x 212.74'L x 6.75'H Field A** 0.640 af Overall - 0.253 af Embedded = 0.387 af x 40.0% Voids
#2A	871.40'	0.253 af	**ADS_StormTech MC-4500 b +Cap** x 102 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 102 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.408 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	870.65'	**12.0" Round RCP_Round 12"** L= 64.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 870.65' / 870.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	870.65'	**2.0" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.00'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.17 cfs @ 18.17 hrs HW=873.50' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.17 cfs of 4.96 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.17 cfs @ 8.01 fps)
  └─**3=Orifice** (Controls 0.00 cfs)

Pond 6P: StormTech 05 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

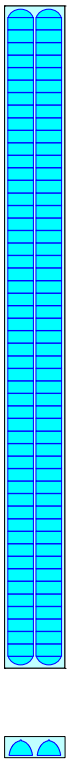
51 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 210.74' Row Length +12.0" End Stone x 2 = 212.74' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

102 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 11,020.0 cf Chamber Storage

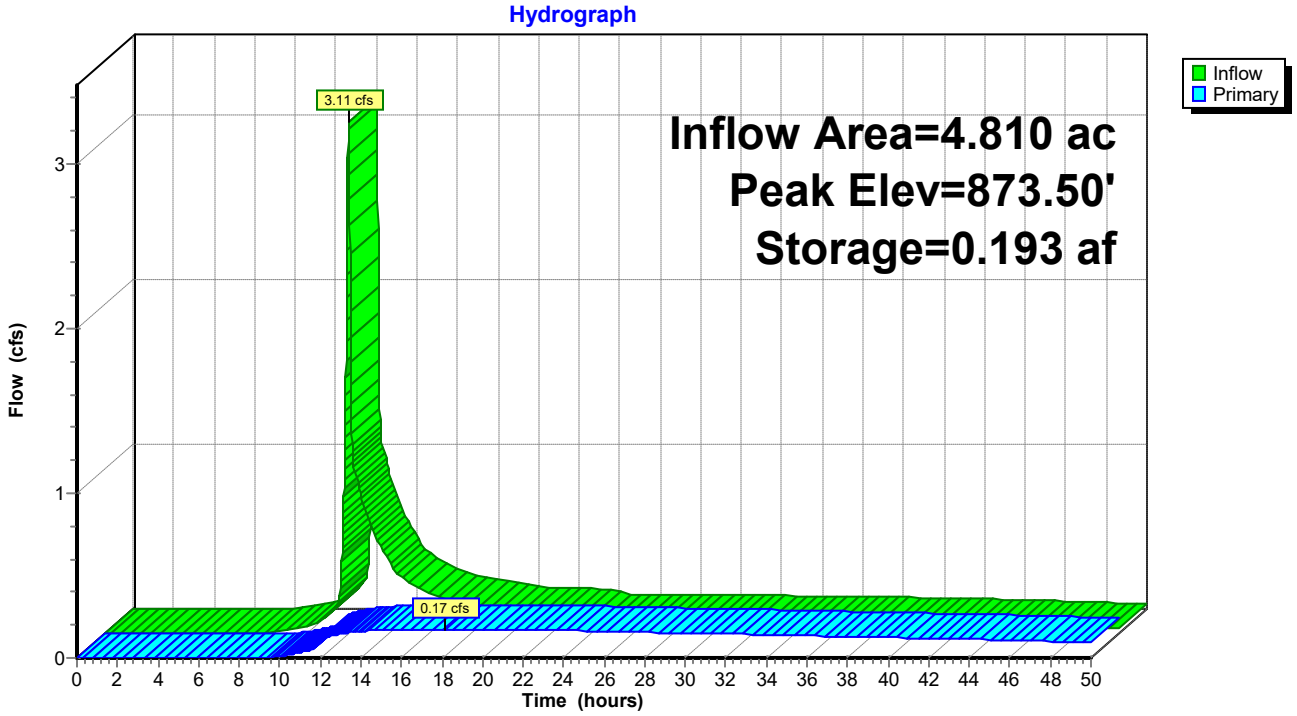
27,882.5 cf Field - 11,020.0 cf Chambers = 16,862.4 cf Stone x 40.0% Voids = 6,745.0 cf Stone Storage

Chamber Storage + Stone Storage = 17,765.0 cf = 0.408 af
Overall Storage Efficiency = 63.7%
Overall System Size = 212.74' x 19.42' x 6.75'

102 Chambers
1,032.7 cy Field
624.5 cy Stone



Pond 6P: StormTech 05



Summary for Pond 7P: StormTech 06

Inflow Area = 1.620 ac, 65.00% Impervious, Inflow Depth = 1.27" for 1 year event
Inflow = 3.14 cfs @ 12.02 hrs, Volume= 0.171 af
Outflow = 0.34 cfs @ 12.52 hrs, Volume= 0.164 af, Atten= 89%, Lag= 30.0 min
Primary = 0.34 cfs @ 12.52 hrs, Volume= 0.164 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 874.65' @ 12.52 hrs Surf.Area= 0.072 ac Storage= 0.090 af

Plug-Flow detention time= 680.4 min calculated for 0.164 af (96% of inflow)
Center-of-Mass det. time= 658.4 min (1,481.2 - 822.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	872.75'	0.117 af	**19.42'W x 160.42'L x 6.75'H Field A** 0.483 af Overall - 0.189 af Embedded = 0.293 af x 40.0% Voids
#2A	873.50'	0.189 af	**ADS_StormTech MC-4500 b +Cap** x 76 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 76 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.307 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	872.75'	**12.0" Round RCP_Round 12"** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 872.75' / 872.52' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	872.75'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.50'	**6.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.34 cfs @ 12.52 hrs HW=874.65' TW=872.36' (Dynamic Tailwater)
↑└─**1=RCP_Round 12"** (Passes 0.34 cfs of 3.90 cfs potential flow)
↑ ├─**2=WQ Orifice** (Orifice Controls 0.05 cfs @ 6.54 fps)
└─**3=Orifice** (Weir Controls 0.29 cfs @ 1.25 fps)

Pond 7P: StormTech 06 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

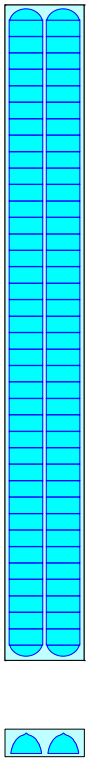
38 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 158.42' Row Length +12.0" End Stone x 2 = 160.42' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

76 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 8,251.3 cf Chamber Storage

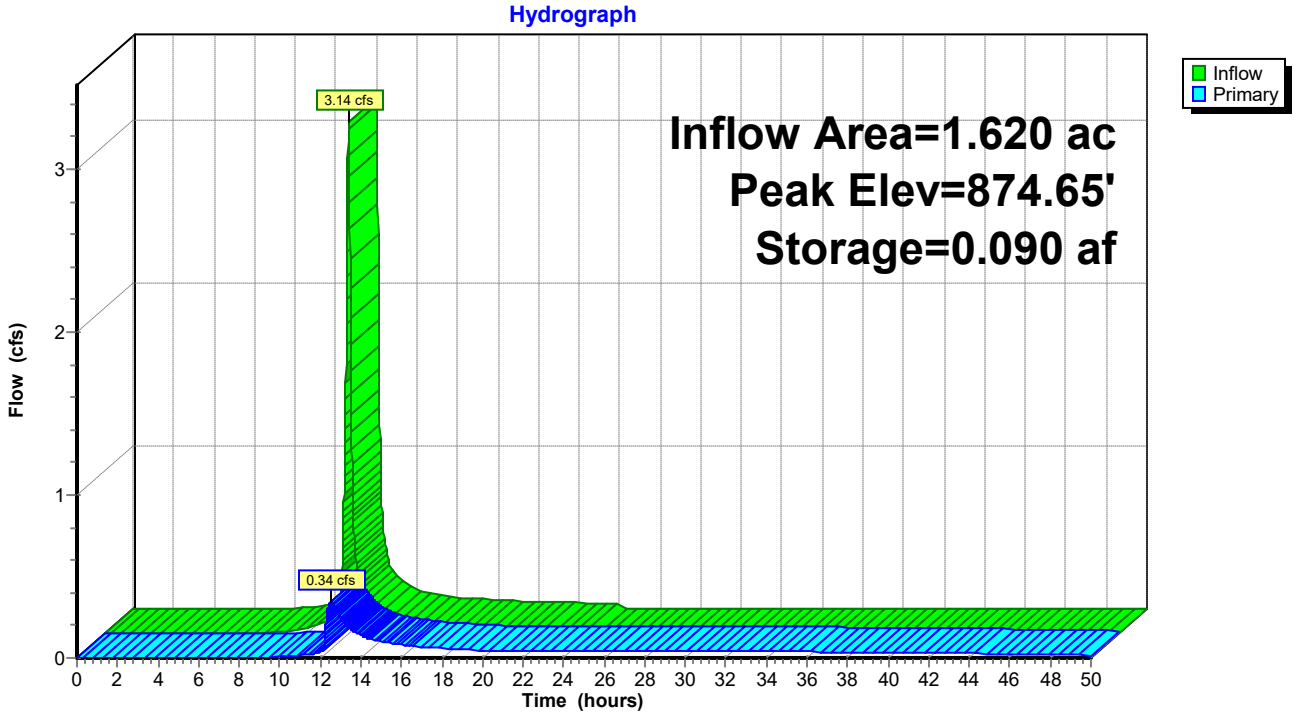
21,024.6 cf Field - 8,251.3 cf Chambers = 12,773.3 cf Stone x 40.0% Voids = 5,109.3 cf Stone Storage

Chamber Storage + Stone Storage = 13,360.6 cf = 0.307 af
Overall Storage Efficiency = 63.5%
Overall System Size = 160.42' x 19.42' x 6.75'

76 Chambers
778.7 cy Field
473.1 cy Stone



Pond 7P: StormTech 06



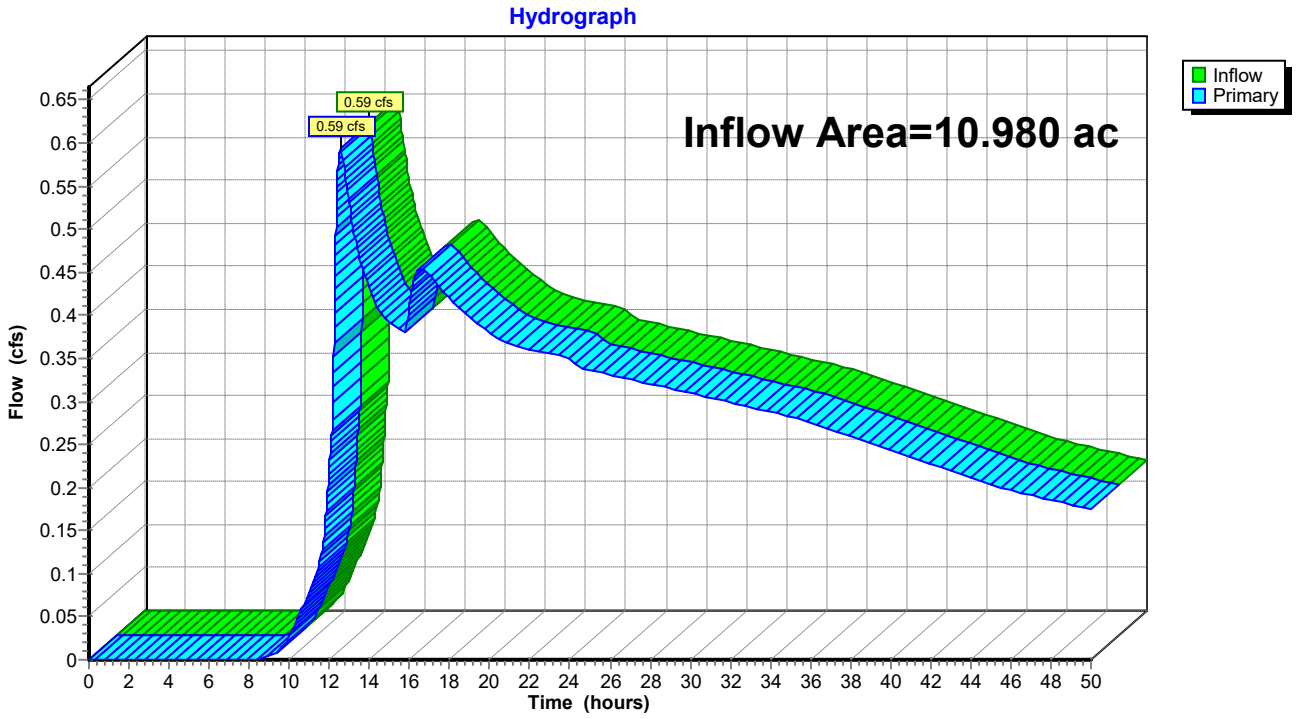
Summary for Pond 15P: Outfall 01

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.980 ac, 65.00% Impervious, Inflow Depth > 1.07" for 1 year event
Inflow = 0.59 cfs @ 12.56 hrs, Volume= 0.982 af
Primary = 0.59 cfs @ 12.56 hrs, Volume= 0.982 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Pond 15P: Outfall 01



Summary for Subcatchment 8S: Pre-developed 01

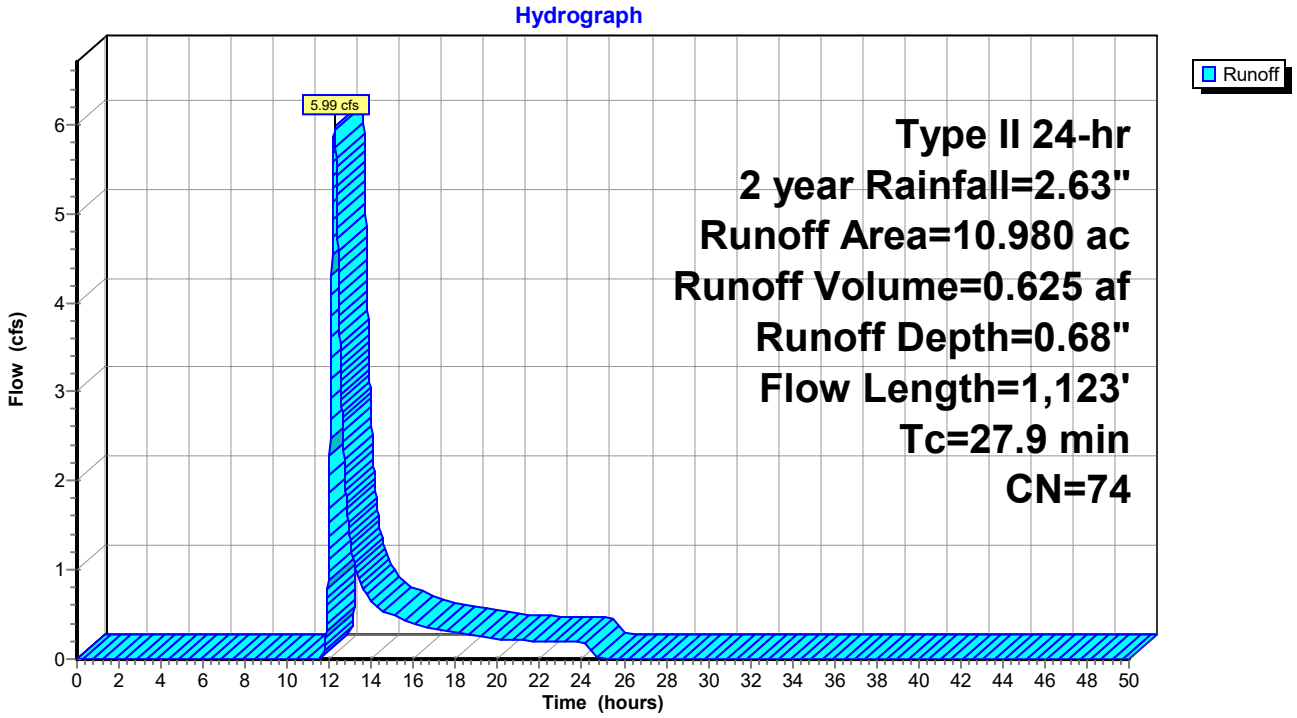
Runoff = 5.99 cfs @ 12.25 hrs, Volume= 0.625 af, Depth= 0.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=2.63"

Area (ac)	CN	Description
10.980	74	>75% Grass cover, Good, HSG C
10.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0242	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
17.9	1,023	0.0186	0.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.9	1,123	Total			

Subcatchment 8S: Pre-developed 01



Summary for Subcatchment 9S: Subarea 01

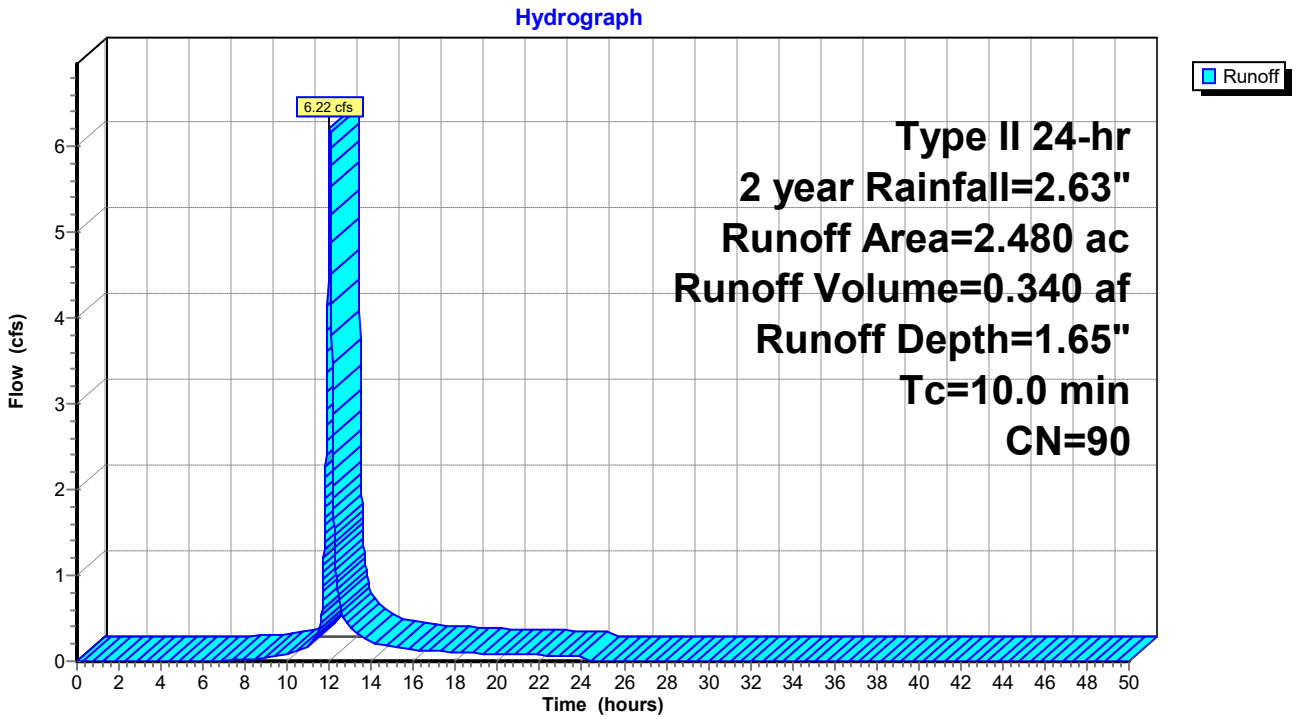
Runoff = 6.22 cfs @ 12.01 hrs, Volume= 0.340 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=2.63"

Area (ac)	CN	Description
2.480	90	1/8 acre lots, 65% imp, HSG C
0.868		35.00% Pervious Area
1.612		65.00% Impervious Area

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

Subcatchment 9S: Subarea 01



Summary for Subcatchment 10S: Subarea 02

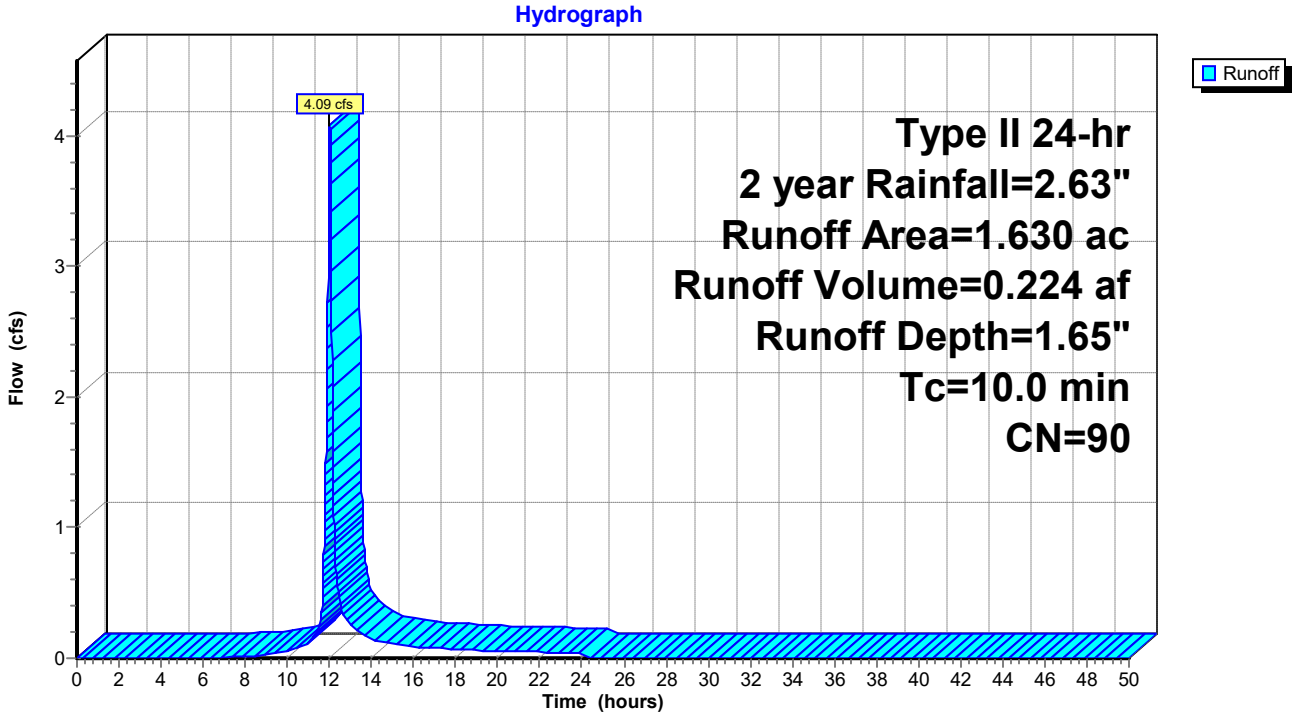
Runoff = 4.09 cfs @ 12.01 hrs, Volume= 0.224 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=2.63"

Area (ac)	CN	Description
1.630	90	1/8 acre lots, 65% imp, HSG C
0.570		35.00% Pervious Area
1.060		65.00% Impervious Area

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

Subcatchment 10S: Subarea 02



Summary for Subcatchment 11S: Subarea 05

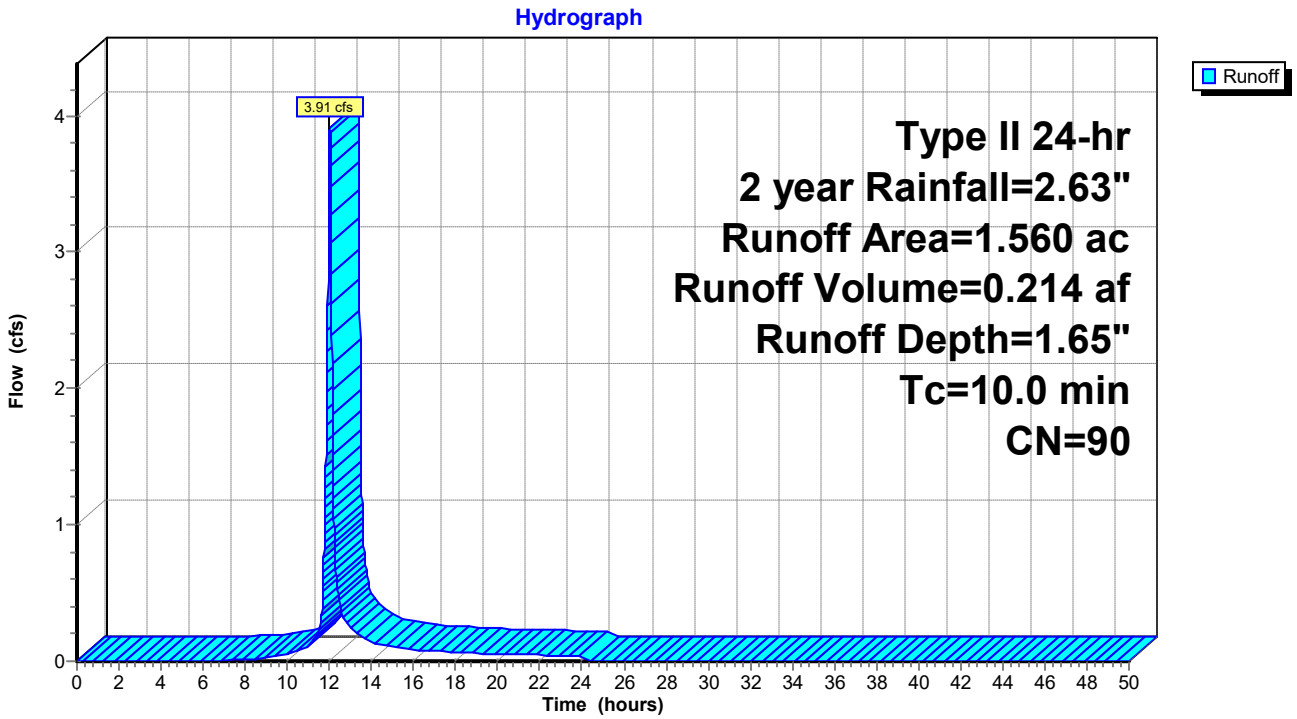
Runoff = 3.91 cfs @ 12.01 hrs, Volume= 0.214 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=2.63"

Area (ac)	CN	Description
1.560	90	1/8 acre lots, 65% imp, HSG C
0.546		35.00% Pervious Area
1.014		65.00% Impervious Area

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

Subcatchment 11S: Subarea 05



Summary for Subcatchment 12S: Subarea 04

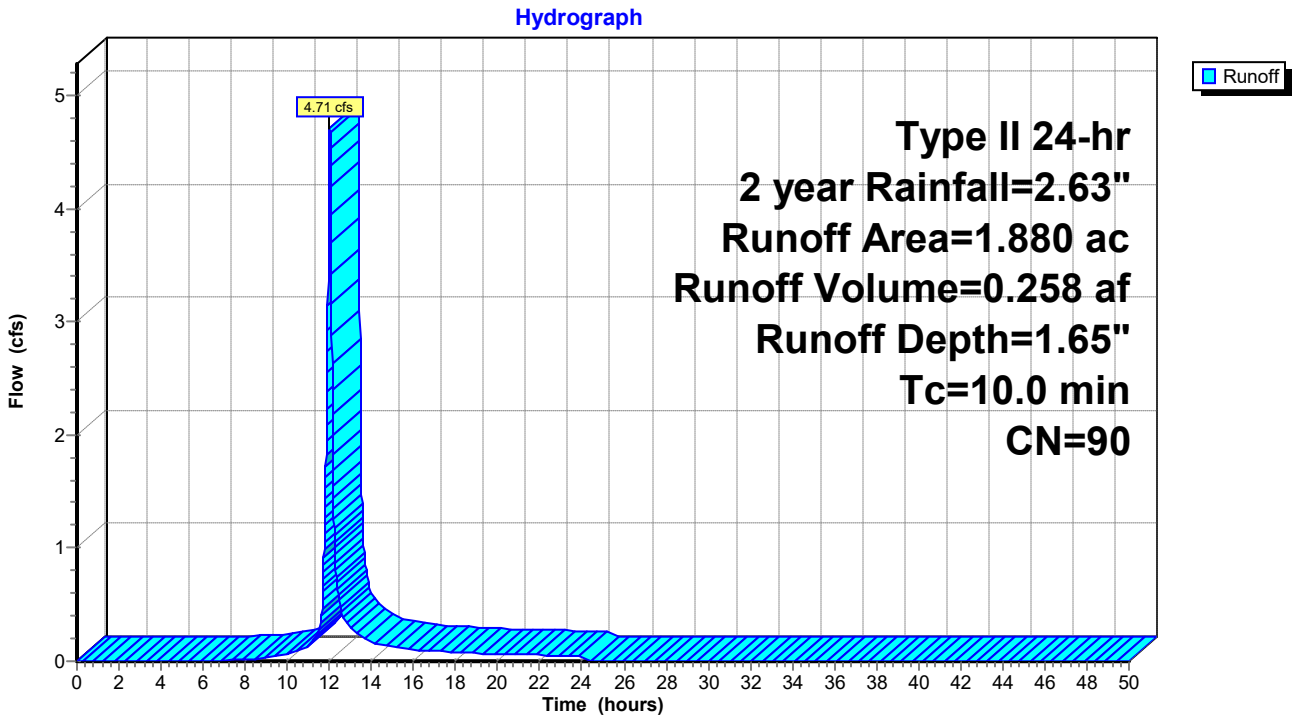
Runoff = 4.71 cfs @ 12.01 hrs, Volume= 0.258 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=2.63"

Area (ac)	CN	Description
1.880	90	1/8 acre lots, 65% imp, HSG C
0.658		35.00% Pervious Area
1.222		65.00% Impervious Area

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

Subcatchment 12S: Subarea 04



Summary for Subcatchment 13S: Subarea 06

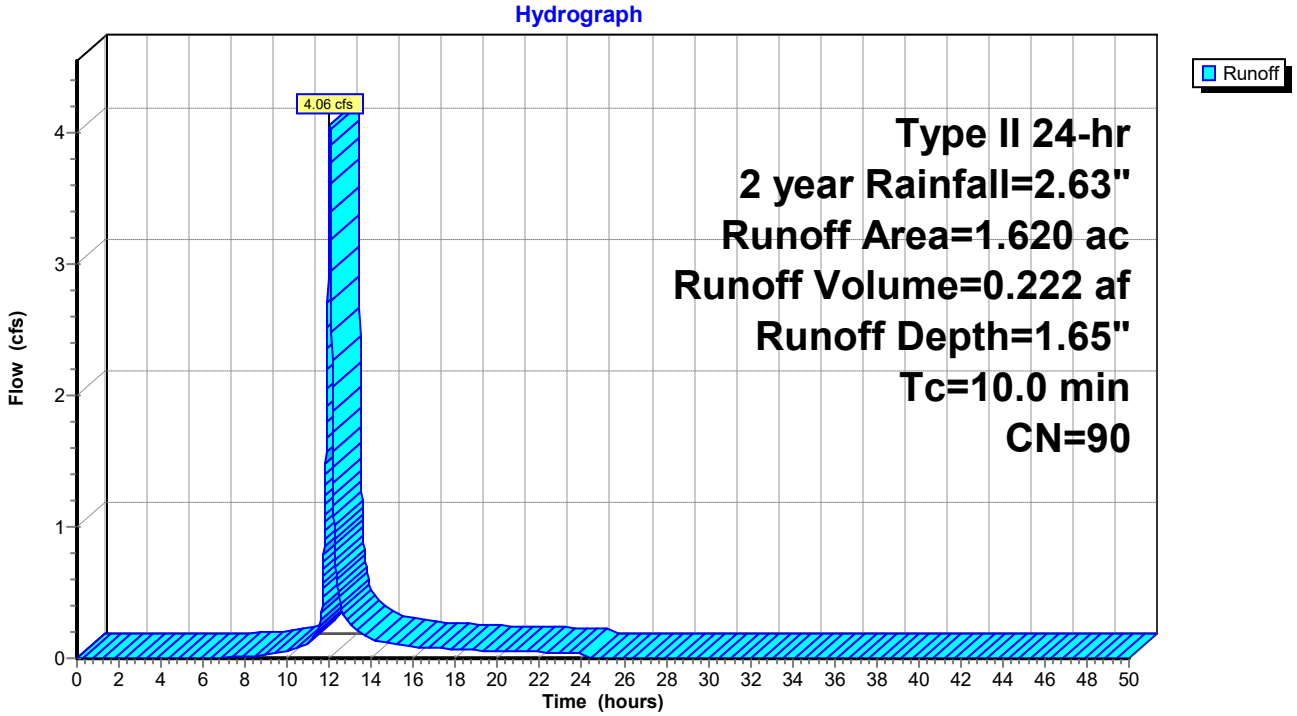
Runoff = 4.06 cfs @ 12.01 hrs, Volume= 0.222 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=2.63"

Area (ac)	CN	Description
1.620	90	1/8 acre lots, 65% imp, HSG C
0.567		35.00% Pervious Area
1.053		65.00% Impervious Area

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

Subcatchment 13S: Subarea 06



Summary for Subcatchment 14S: Subarea 03

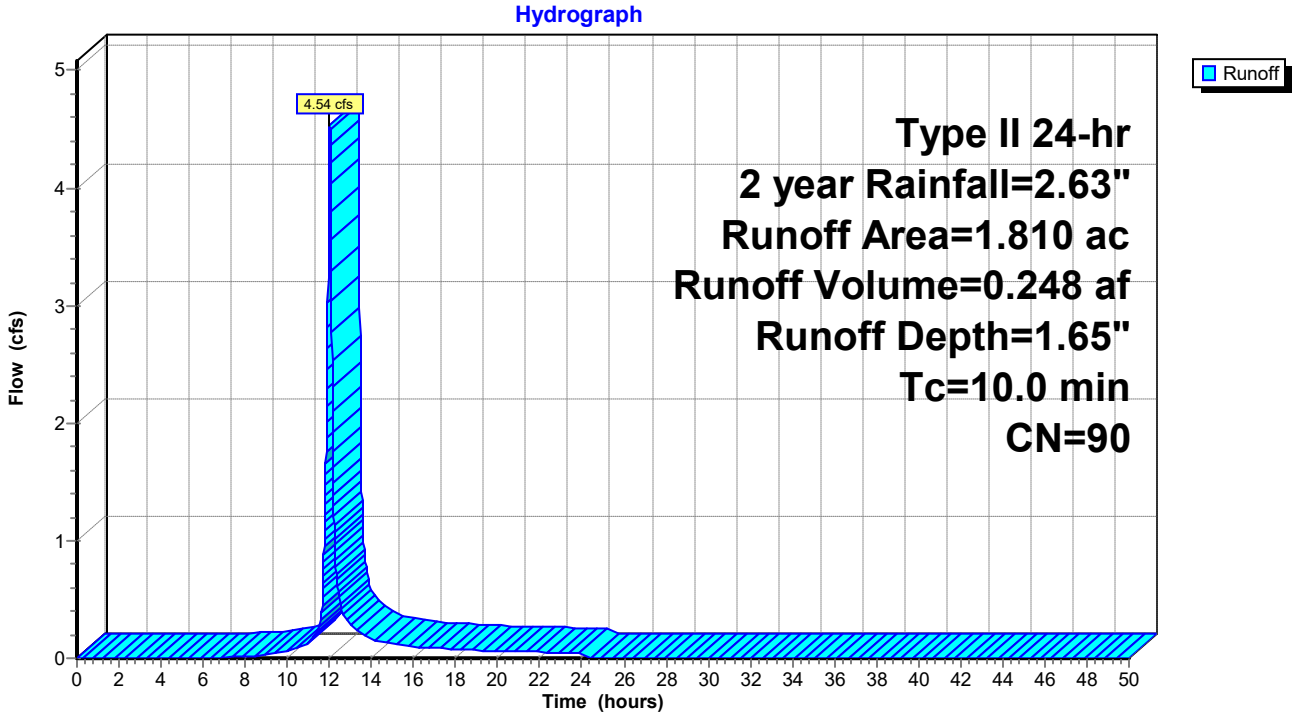
Runoff = 4.54 cfs @ 12.01 hrs, Volume= 0.248 af, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 2 year Rainfall=2.63"

Area (ac)	CN	Description
1.810	90	1/8 acre lots, 65% imp, HSG C
0.634		35.00% Pervious Area
1.177		65.00% Impervious Area

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

Subcatchment 14S: Subarea 03



Summary for Pond 1P: StormTech 01

Inflow Area = 2.480 ac, 65.00% Impervious, Inflow Depth = 1.65" for 2 year event
Inflow = 6.22 cfs @ 12.01 hrs, Volume= 0.340 af
Outflow = 0.59 cfs @ 12.57 hrs, Volume= 0.331 af, Atten= 90%, Lag= 33.1 min
Primary = 0.59 cfs @ 12.57 hrs, Volume= 0.331 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 868.40' @ 12.57 hrs Surf.Area= 0.118 ac Storage= 0.180 af

Plug-Flow detention time= 522.9 min calculated for 0.331 af (97% of inflow)
Center-of-Mass det. time= 506.6 min (1,322.0 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	866.20'	0.190 af	**55.75'W x 91.99'L x 6.75'H Field A** 0.795 af Overall - 0.319 af Embedded = 0.476 af x 40.0% Voids
#2A	866.95'	0.319 af	**ADS_StormTech MC-4500 b +Cap** x 126 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 126 Chambers in 6 Rows Cap Storage= +39.5 cf x 2 x 6 rows = 474.0 cf
		0.509 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	866.20'	**12.0" Round RCP_Round 12"** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.20' / 865.92' S= 0.0048 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	866.20'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	867.80'	**5.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.59 cfs @ 12.57 hrs HW=868.40' TW=864.15' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.59 cfs of 4.21 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.09 cfs @ 7.04 fps)
  └─**3=Orifice** (Orifice Controls 0.51 cfs @ 3.73 fps)

Pond 1P: StormTech 01 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 6 rows = 474.0 cf

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

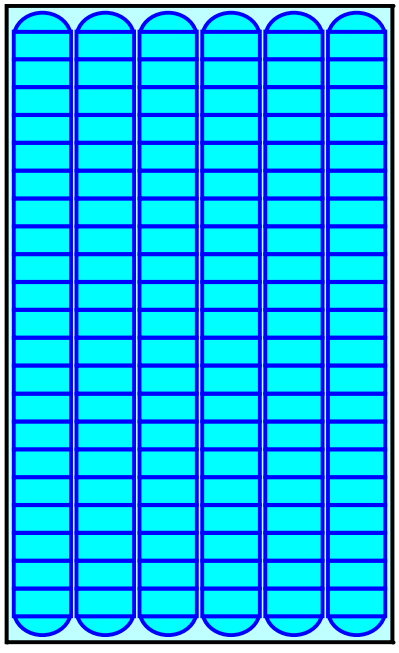
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

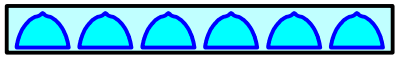
126 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 6 Rows = 13,891.8 cf Chamber Storage

34,617.6 cf Field - 13,891.8 cf Chambers = 20,725.8 cf Stone x 40.0% Voids = 8,290.3 cf Stone Storage

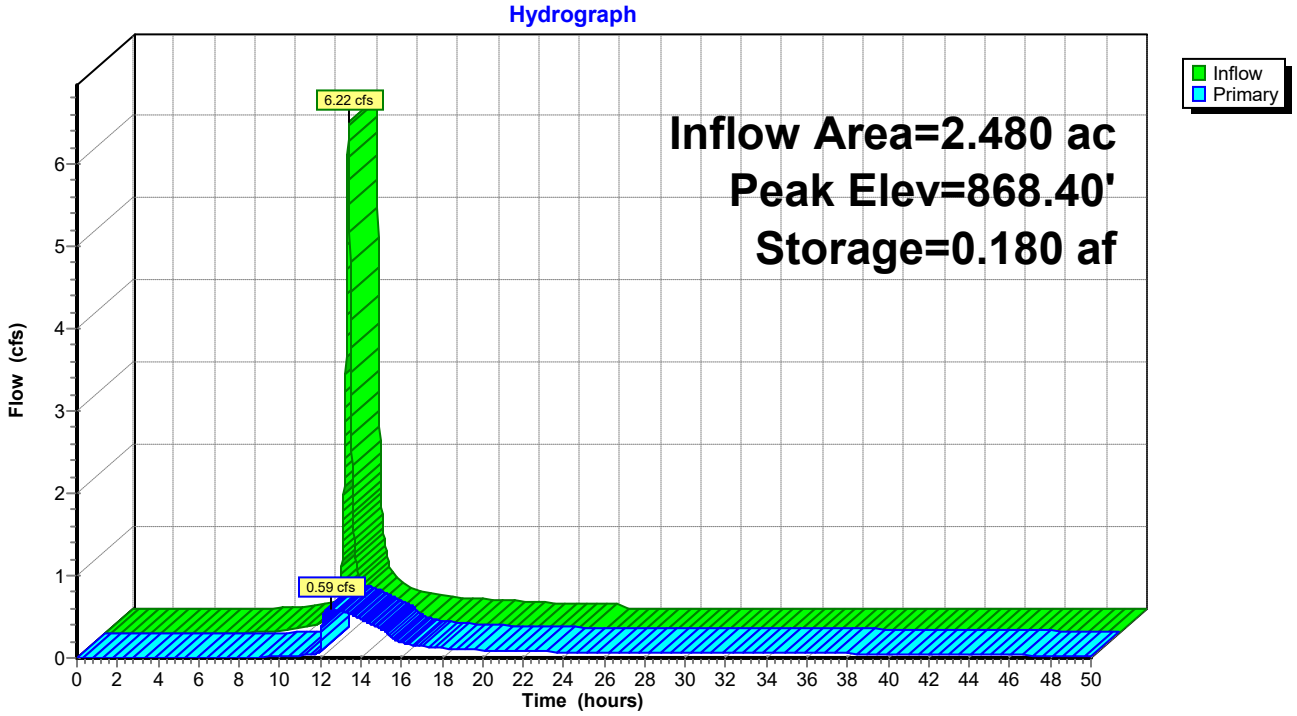
Chamber Storage + Stone Storage = 22,182.1 cf = 0.509 af
Overall Storage Efficiency = 64.1%
Overall System Size = 91.99' x 55.75' x 6.75'

126 Chambers
1,282.1 cy Field
767.6 cy Stone





Pond 1P: StormTech 01



Summary for Pond 2P: StormTech 02

Inflow Area = 1.630 ac, 65.00% Impervious, Inflow Depth = 1.65" for 2 year event
Inflow = 4.09 cfs @ 12.01 hrs, Volume= 0.224 af
Outflow = 0.38 cfs @ 12.58 hrs, Volume= 0.217 af, Atten= 91%, Lag= 34.1 min
Primary = 0.38 cfs @ 12.58 hrs, Volume= 0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 876.89' @ 12.58 hrs Surf.Area= 0.079 ac Storage= 0.119 af

Plug-Flow detention time= 528.4 min calculated for 0.217 af (97% of inflow)
Center-of-Mass det. time= 509.7 min (1,325.0 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	874.72'	0.129 af	**37.58'W x 91.99'L x 6.75'H Field A** 0.536 af Overall - 0.213 af Embedded = 0.323 af x 40.0% Voids
#2A	875.47'	0.213 af	**ADS_StormTech MC-4500 b +Cap** x 84 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 84 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.342 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	874.72'	**12.0" Round RCP_Round 12"** L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 874.72' / 874.31' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	874.72'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.30'	**4.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.38 cfs @ 12.58 hrs HW=876.89' TW=873.17' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.38 cfs of 3.93 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.06 cfs @ 7.01 fps)
  └─**3=Orifice** (Orifice Controls 0.32 cfs @ 3.70 fps)

Pond 2P: StormTech 02 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 4 rows = 316.0 cf

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

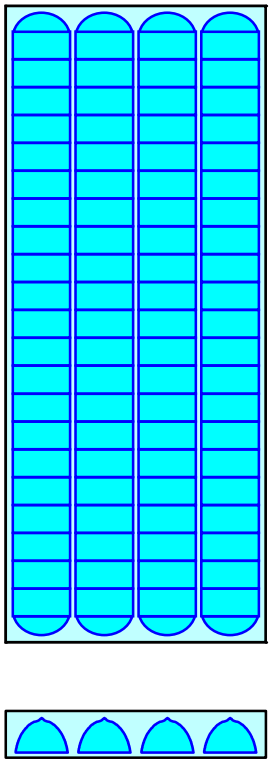
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

84 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,261.2 cf Chamber Storage

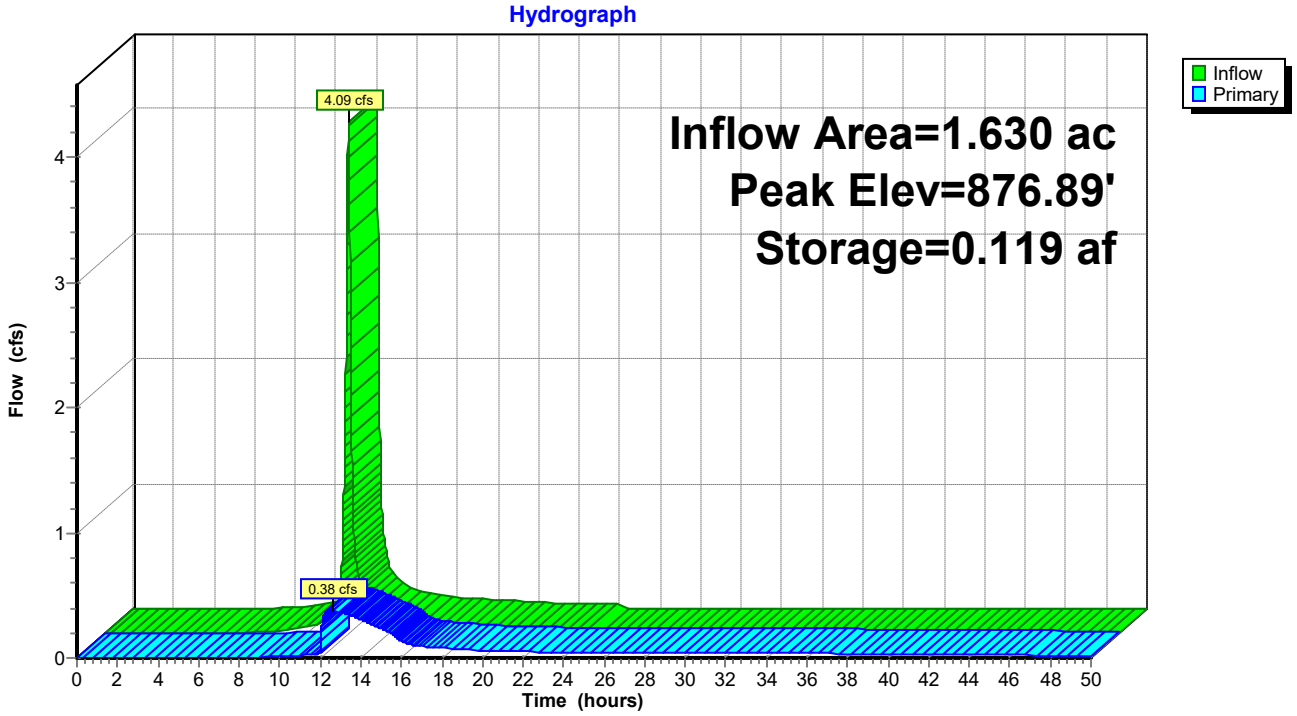
23,337.1 cf Field - 9,261.2 cf Chambers = 14,075.9 cf Stone x 40.0% Voids = 5,630.4 cf Stone Storage

Chamber Storage + Stone Storage = 14,891.6 cf = 0.342 af
Overall Storage Efficiency = 63.8%
Overall System Size = 91.99' x 37.58' x 6.75'

84 Chambers
864.3 cy Field
521.3 cy Stone



Pond 2P: StormTech 02



Summary for Pond 3P: StormTech 03

Inflow Area = 4.290 ac, 65.00% Impervious, Inflow Depth > 1.62" for 2 year event
Inflow = 4.61 cfs @ 12.01 hrs, Volume= 0.580 af
Outflow = 0.72 cfs @ 13.59 hrs, Volume= 0.461 af, Atten= 84%, Lag= 94.5 min
Primary = 0.72 cfs @ 13.59 hrs, Volume= 0.461 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 864.75' @ 13.59 hrs Surf.Area= 0.093 ac Storage= 0.216 af

Plug-Flow detention time= 652.4 min calculated for 0.461 af (79% of inflow)
Center-of-Mass det. time= 405.4 min (1,510.2 - 1,104.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	861.53'	0.152 af	**19.42'W x 208.72'L x 6.75'H Field A** 0.628 af Overall - 0.248 af Embedded = 0.380 af x 40.0% Voids
#2A	862.28'	0.248 af	**ADS_StormTech MC-4500 b +Cap** x 100 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 100 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.400 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	861.53'	**12.0" Round RCP_Round 12"** L= 19.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.53' / 861.43' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	861.53'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.60'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.72 cfs @ 13.59 hrs HW=864.75' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.72 cfs of 6.24 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.11 cfs @ 8.56 fps)
  └─**3=Orifice** (Weir Controls 0.62 cfs @ 1.28 fps)

Pond 3P: StormTech 03 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

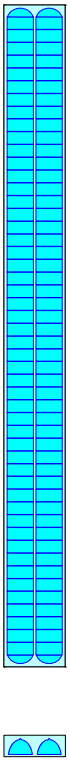
50 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 206.72' Row Length +12.0" End Stone x 2 = 208.72' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

100 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 10,807.0 cf Chamber Storage

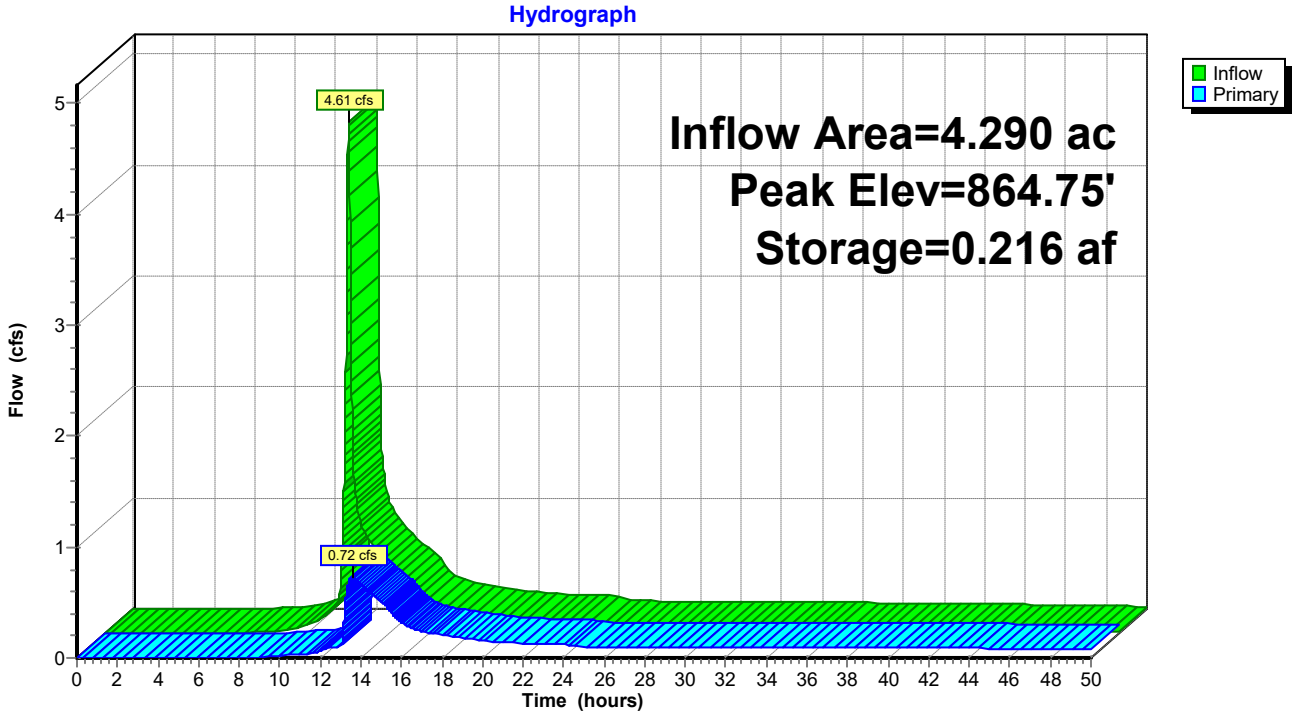
27,354.9 cf Field - 10,807.0 cf Chambers = 16,547.9 cf Stone x 40.0% Voids = 6,619.2 cf Stone Storage

Chamber Storage + Stone Storage = 17,426.2 cf = 0.400 af
Overall Storage Efficiency = 63.7%
Overall System Size = 208.72' x 19.42' x 6.75'

100 Chambers
1,013.1 cy Field
612.9 cy Stone



Pond 3P: StormTech 03



Summary for Pond 4P: StormTech 04

Inflow Area = 1.880 ac, 65.00% Impervious, Inflow Depth = 1.65" for 2 year event
Inflow = 4.71 cfs @ 12.01 hrs, Volume= 0.258 af
Outflow = 0.65 cfs @ 12.39 hrs, Volume= 0.257 af, Atten= 86%, Lag= 22.2 min
Primary = 0.65 cfs @ 12.39 hrs, Volume= 0.257 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 864.91' @ 12.39 hrs Surf.Area= 0.083 ac Storage= 0.128 af

Plug-Flow detention time= 450.2 min calculated for 0.257 af (100% of inflow)
Center-of-Mass det. time= 447.3 min (1,262.7 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	862.68'	0.135 af	**37.58'W x 96.02'L x 6.75'H Field A** 0.559 af Overall - 0.222 af Embedded = 0.337 af x 40.0% Voids
#2A	863.43'	0.222 af	**ADS_StormTech MC-4500 b +Cap** x 88 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 88 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.357 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	862.68'	**12.0" Round RCP_Round 12"** L= 70.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 862.68' / 862.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	862.68'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.40'	**5.5" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.65 cfs @ 12.39 hrs HW=864.91' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.65 cfs of 4.11 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.09 cfs @ 7.08 fps)
  └─**3=Orifice** (Orifice Controls 0.57 cfs @ 3.43 fps)

Pond 4P: StormTech 04 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf

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

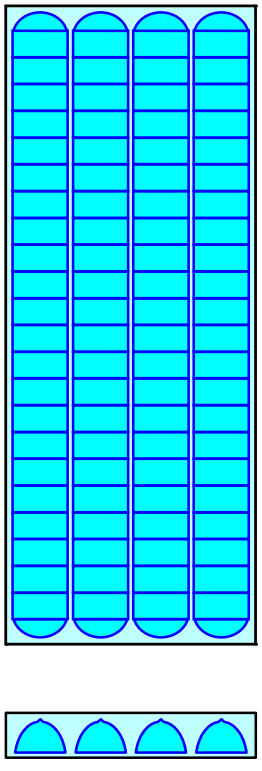
22 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 94.02' Row Length +12.0" End Stone x 2 = 96.02' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

88 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,687.2 cf Chamber Storage

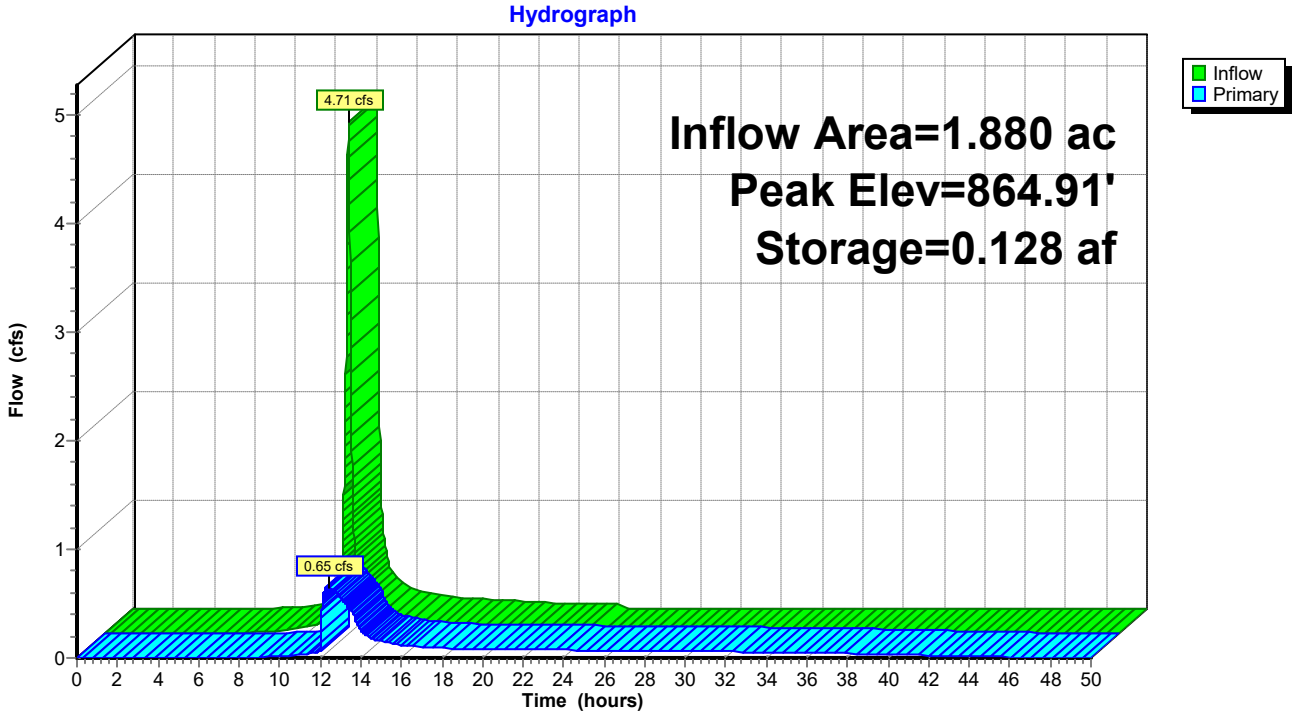
24,358.2 cf Field - 9,687.2 cf Chambers = 14,671.1 cf Stone x 40.0% Voids = 5,868.4 cf Stone Storage

Chamber Storage + Stone Storage = 15,555.6 cf = 0.357 af
Overall Storage Efficiency = 63.9%
Overall System Size = 96.02' x 37.58' x 6.75'

88 Chambers
902.2 cy Field
543.4 cy Stone



Pond 4P: StormTech 04



Summary for Pond 6P: StormTech 05

Inflow Area = 4.810 ac, 65.00% Impervious, Inflow Depth > 1.61" for 2 year event
Inflow = 4.00 cfs @ 12.01 hrs, Volume= 0.644 af
Outflow = 0.66 cfs @ 13.88 hrs, Volume= 0.591 af, Atten= 84%, Lag= 111.9 min
Primary = 0.66 cfs @ 13.88 hrs, Volume= 0.591 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 874.13' @ 13.88 hrs Surf.Area= 0.095 ac Storage= 0.239 af

Plug-Flow detention time= 580.8 min calculated for 0.591 af (92% of inflow)
Center-of-Mass det. time= 448.7 min (1,609.8 - 1,161.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	870.65'	0.155 af	**19.42'W x 212.74'L x 6.75'H Field A** 0.640 af Overall - 0.253 af Embedded = 0.387 af x 40.0% Voids
#2A	871.40'	0.253 af	**ADS_StormTech MC-4500 b +Cap** x 102 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 102 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.408 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	870.65'	**12.0" Round RCP_Round 12"** L= 64.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 870.65' / 870.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	870.65'	**2.0" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.00'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.66 cfs @ 13.88 hrs HW=874.13' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.66 cfs of 5.62 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.19 cfs @ 8.87 fps)
  └─**3=Orifice** (Weir Controls 0.46 cfs @ 1.16 fps)

Pond 6P: StormTech 05 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

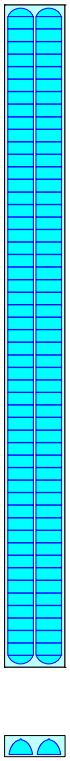
51 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 210.74' Row Length +12.0" End Stone x 2 = 212.74' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

102 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 11,020.0 cf Chamber Storage

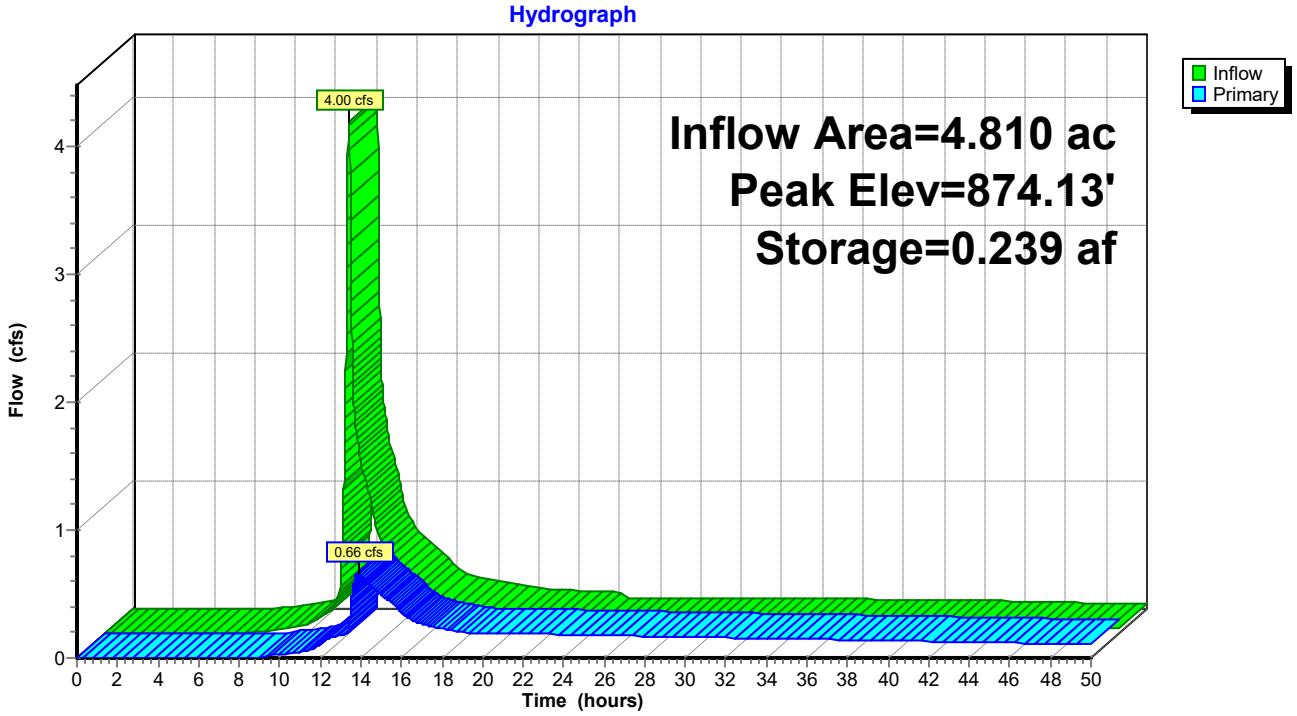
27,882.5 cf Field - 11,020.0 cf Chambers = 16,862.4 cf Stone x 40.0% Voids = 6,745.0 cf Stone Storage

Chamber Storage + Stone Storage = 17,765.0 cf = 0.408 af
Overall Storage Efficiency = 63.7%
Overall System Size = 212.74' x 19.42' x 6.75'

102 Chambers
1,032.7 cy Field
624.5 cy Stone



Pond 6P: StormTech 05



Summary for Pond 7P: StormTech 06

Inflow Area = 1.620 ac, 65.00% Impervious, Inflow Depth = 1.65" for 2 year event
Inflow = 4.06 cfs @ 12.01 hrs, Volume= 0.222 af
Outflow = 0.69 cfs @ 12.31 hrs, Volume= 0.213 af, Atten= 83%, Lag= 17.6 min
Primary = 0.69 cfs @ 12.31 hrs, Volume= 0.213 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 874.96' @ 12.31 hrs Surf.Area= 0.072 ac Storage= 0.108 af

Plug-Flow detention time= 549.8 min calculated for 0.213 af (96% of inflow)
Center-of-Mass det. time= 526.2 min (1,341.5 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	872.75'	0.117 af	**19.42'W x 160.42'L x 6.75'H Field A** 0.483 af Overall - 0.189 af Embedded = 0.293 af x 40.0% Voids
#2A	873.50'	0.189 af	**ADS_StormTech MC-4500 b +Cap** x 76 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 76 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.307 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	872.75'	**12.0" Round RCP_Round 12"** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 872.75' / 872.52' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	872.75'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.50'	**6.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 12.31 hrs HW=874.96' TW=872.76' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.69 cfs of 4.40 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.06 cfs @ 7.07 fps)
  └─**3=Orifice** (Orifice Controls 0.64 cfs @ 3.25 fps)

Pond 7P: StormTech 06 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

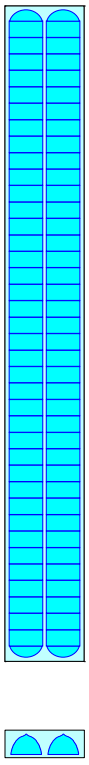
38 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 158.42' Row Length +12.0" End Stone x 2 = 160.42' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

76 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 8,251.3 cf Chamber Storage

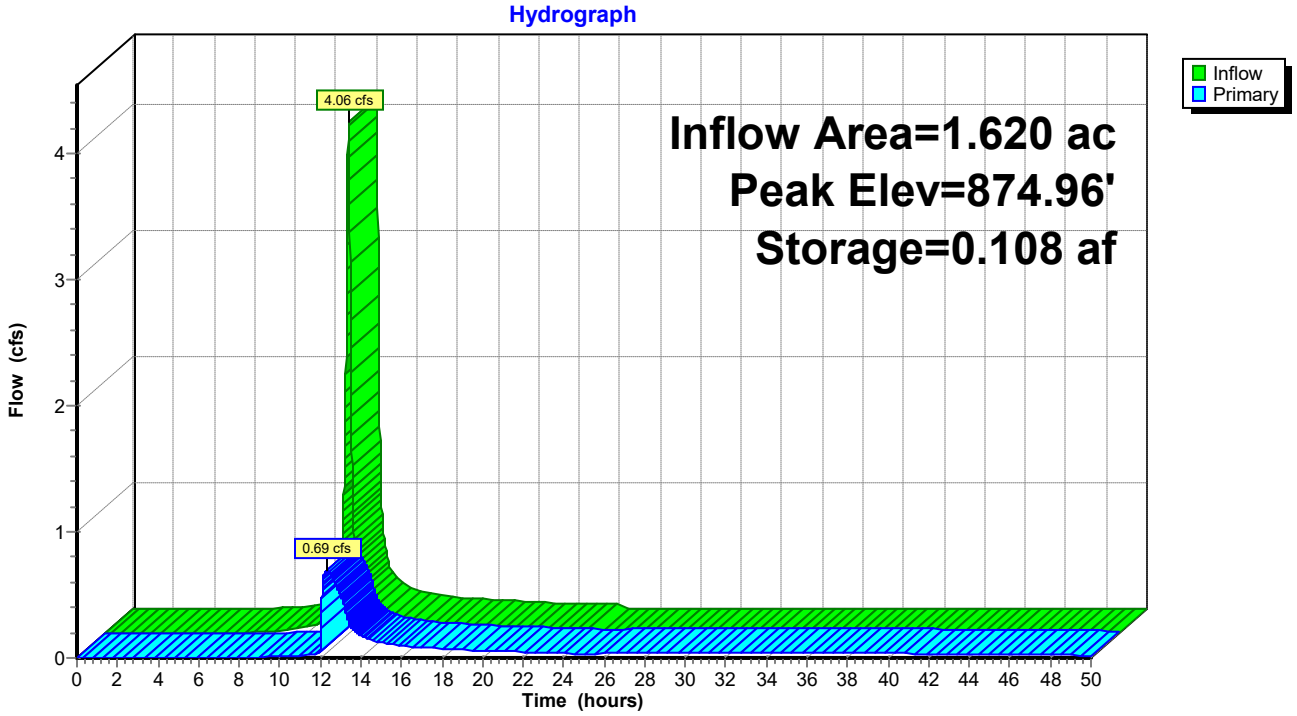
21,024.6 cf Field - 8,251.3 cf Chambers = 12,773.3 cf Stone x 40.0% Voids = 5,109.3 cf Stone Storage

Chamber Storage + Stone Storage = 13,360.6 cf = 0.307 af
Overall Storage Efficiency = 63.5%
Overall System Size = 160.42' x 19.42' x 6.75'

76 Chambers
778.7 cy Field
473.1 cy Stone



Pond 7P: StormTech 06



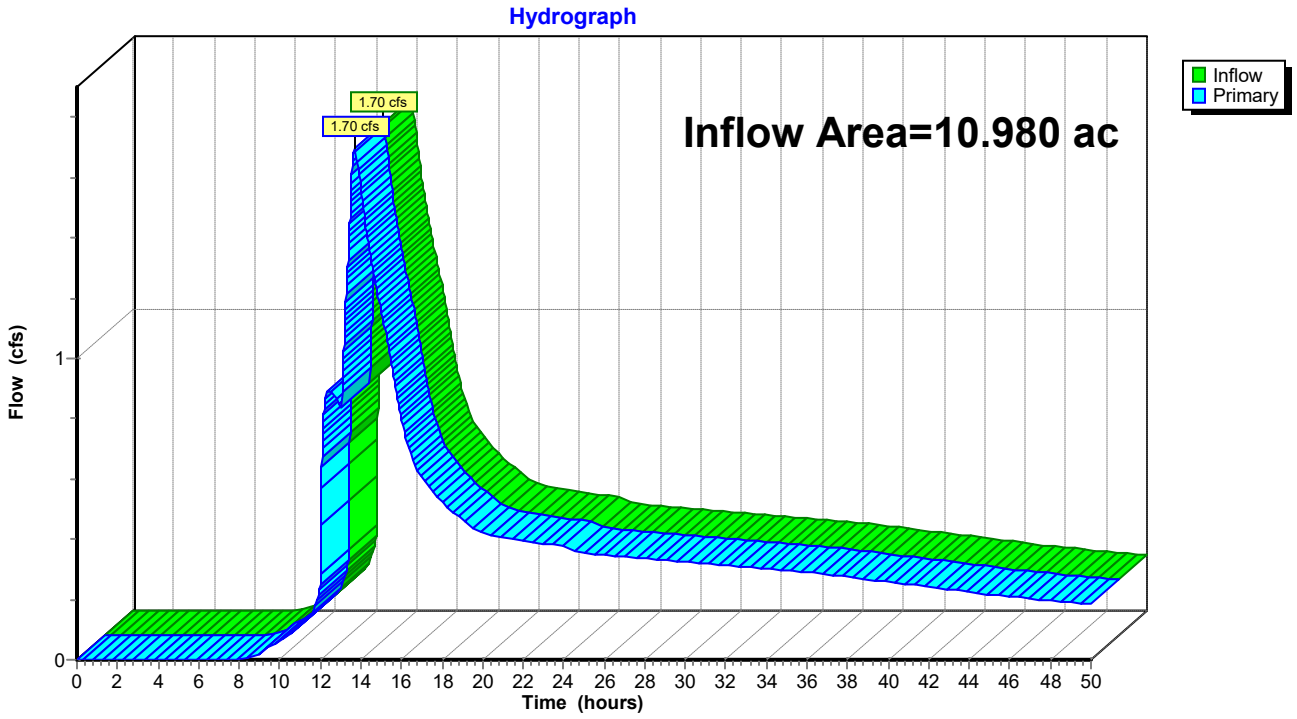
Summary for Pond 15P: Outfall 01

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.980 ac, 65.00% Impervious, Inflow Depth > 1.43" for 2 year event
Inflow = 1.70 cfs @ 13.67 hrs, Volume= 1.308 af
Primary = 1.70 cfs @ 13.67 hrs, Volume= 1.308 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Pond 15P: Outfall 01



Summary for Subcatchment 8S: Pre-developed 01

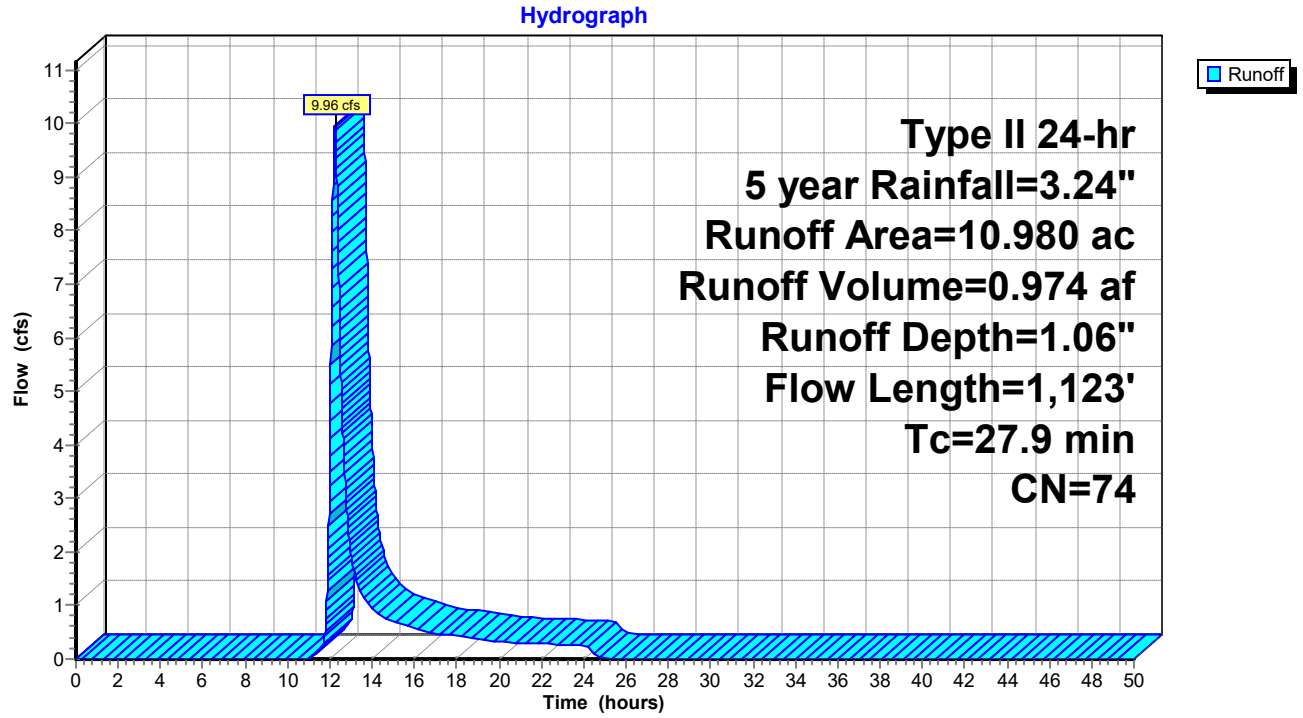
Runoff = 9.96 cfs @ 12.24 hrs, Volume= 0.974 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 year Rainfall=3.24"

Area (ac)	CN	Description
10.980	74	>75% Grass cover, Good, HSG C
10.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0242	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
17.9	1,023	0.0186	0.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.9	1,123	Total			

Subcatchment 8S: Pre-developed 01



Summary for Subcatchment 9S: Subarea 01

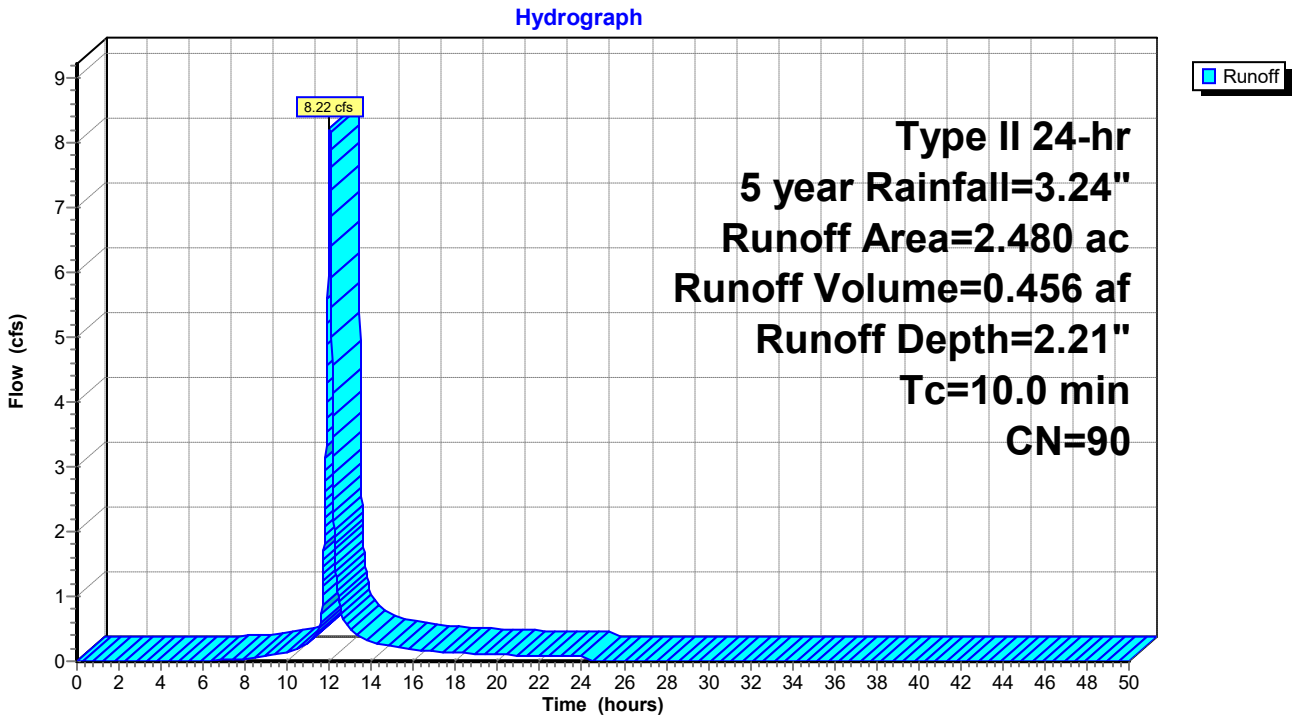
Runoff = 8.22 cfs @ 12.01 hrs, Volume= 0.456 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 year Rainfall=3.24"

Area (ac)	CN	Description
2.480	90	1/8 acre lots, 65% imp, HSG C
0.868		35.00% Pervious Area
1.612		65.00% Impervious Area

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

Subcatchment 9S: Subarea 01



Summary for Subcatchment 10S: Subarea 02

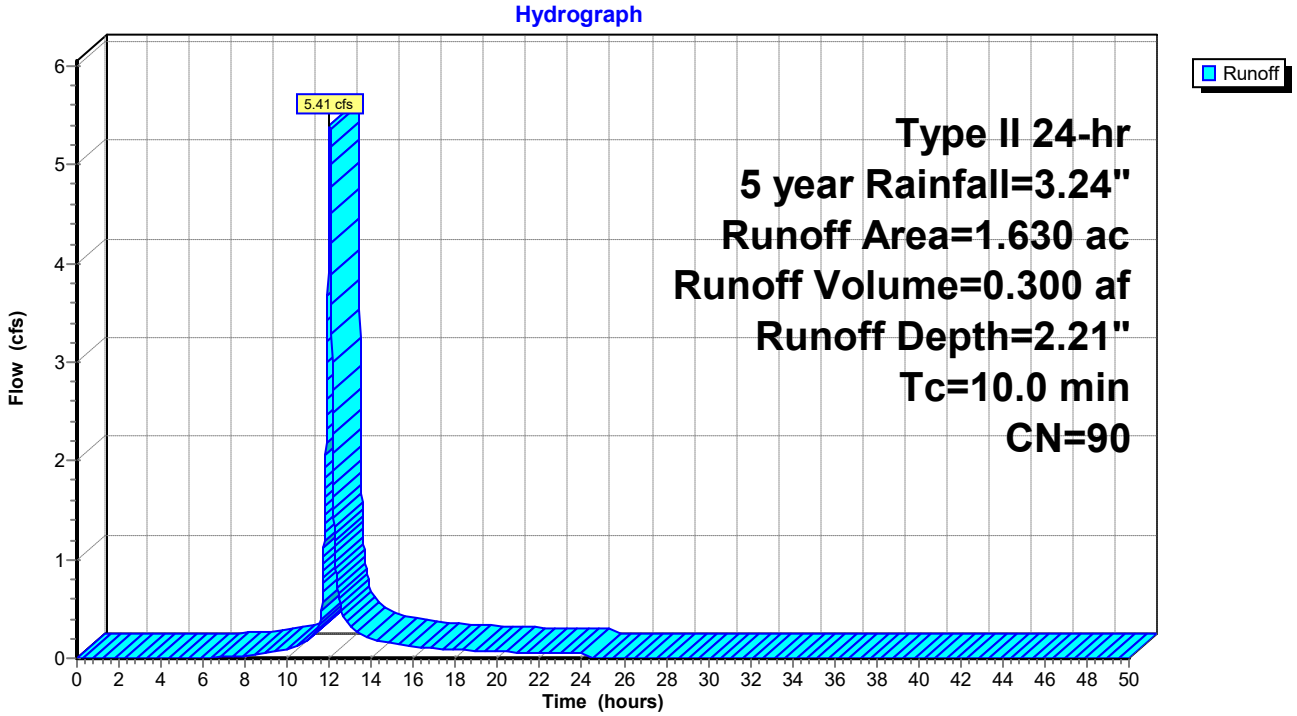
Runoff = 5.41 cfs @ 12.01 hrs, Volume= 0.300 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 year Rainfall=3.24"

Area (ac)	CN	Description
1.630	90	1/8 acre lots, 65% imp, HSG C
0.570		35.00% Pervious Area
1.060		65.00% Impervious Area

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

Subcatchment 10S: Subarea 02



Summary for Subcatchment 11S: Subarea 05

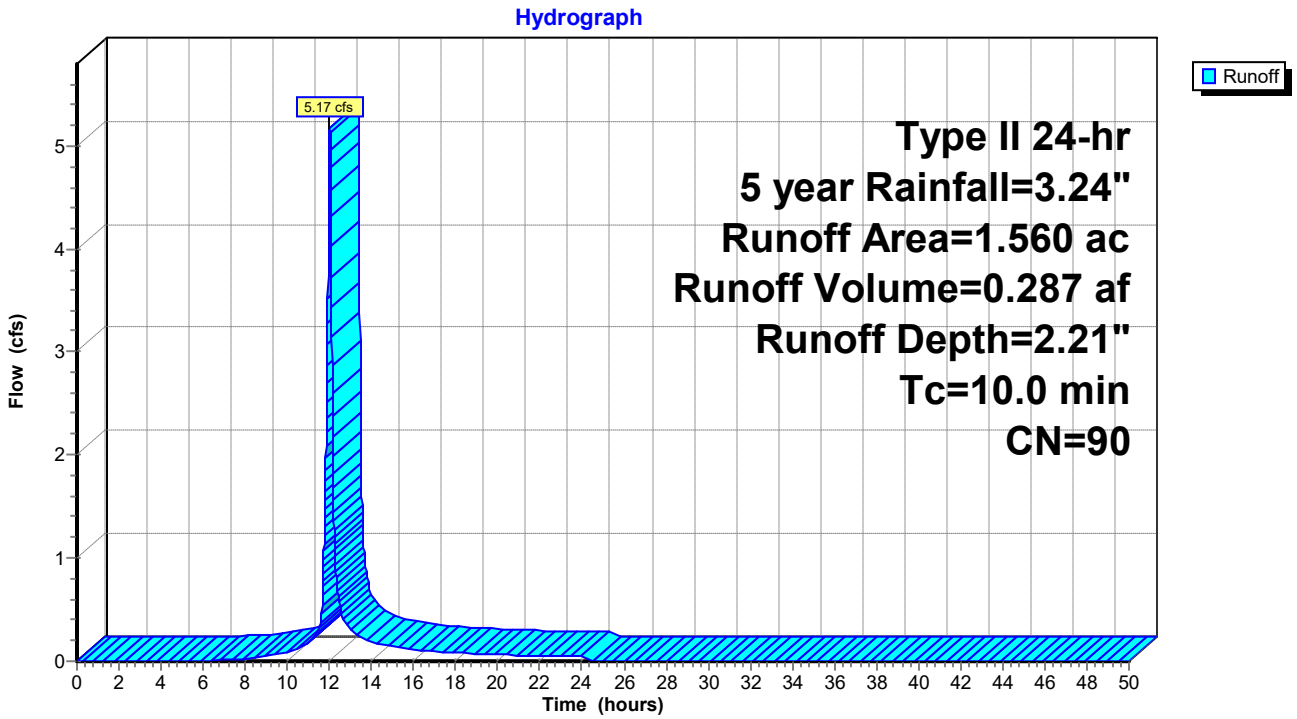
Runoff = 5.17 cfs @ 12.01 hrs, Volume= 0.287 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 year Rainfall=3.24"

Area (ac)	CN	Description
1.560	90	1/8 acre lots, 65% imp, HSG C
0.546		35.00% Pervious Area
1.014		65.00% Impervious Area

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

Subcatchment 11S: Subarea 05



Summary for Subcatchment 12S: Subarea 04

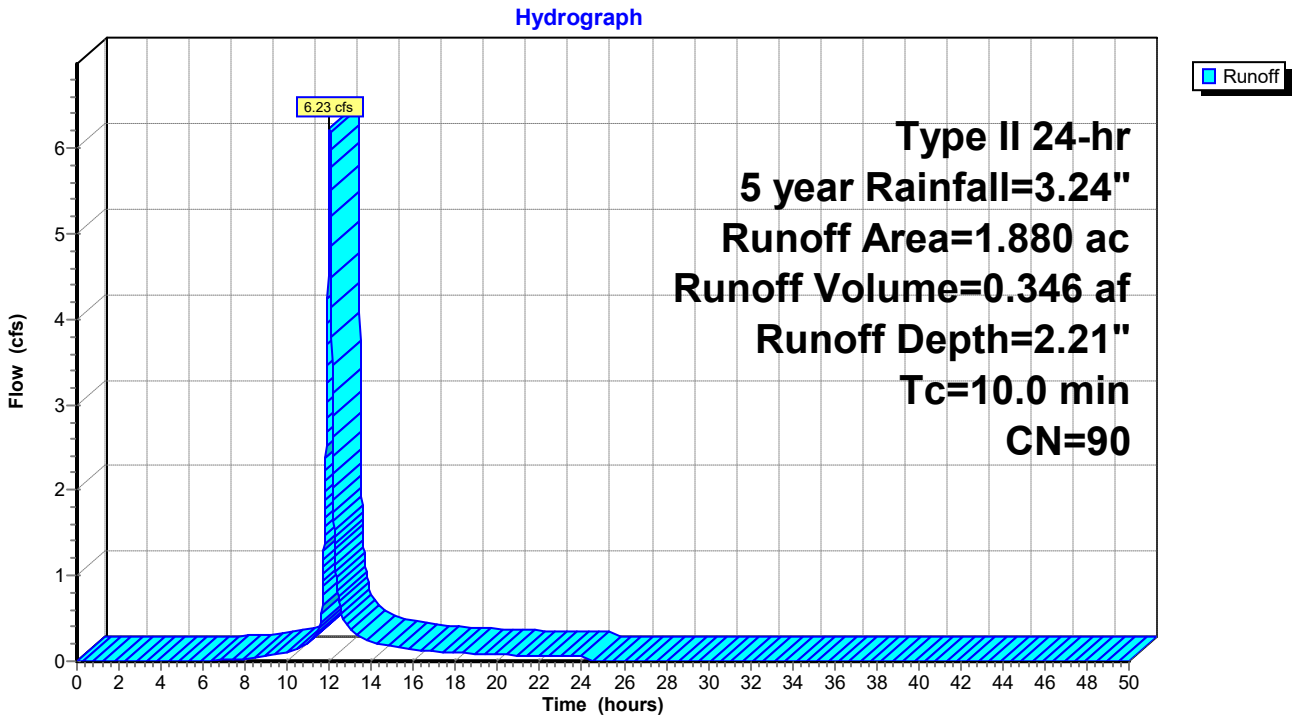
Runoff = 6.23 cfs @ 12.01 hrs, Volume= 0.346 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 year Rainfall=3.24"

Area (ac)	CN	Description
1.880	90	1/8 acre lots, 65% imp, HSG C
0.658		35.00% Pervious Area
1.222		65.00% Impervious Area

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

Subcatchment 12S: Subarea 04



Summary for Subcatchment 13S: Subarea 06

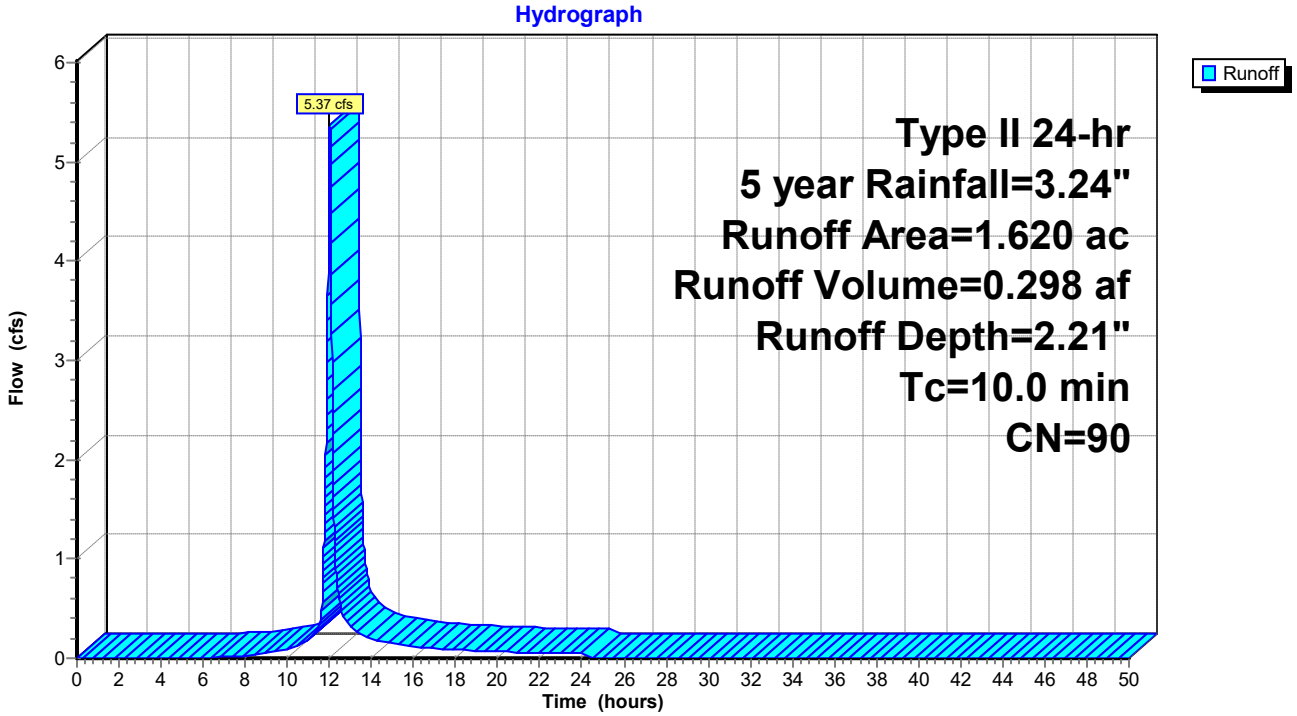
Runoff = 5.37 cfs @ 12.01 hrs, Volume= 0.298 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 year Rainfall=3.24"

Area (ac)	CN	Description
1.620	90	1/8 acre lots, 65% imp, HSG C
0.567		35.00% Pervious Area
1.053		65.00% Impervious Area

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

Subcatchment 13S: Subarea 06



Summary for Subcatchment 14S: Subarea 03

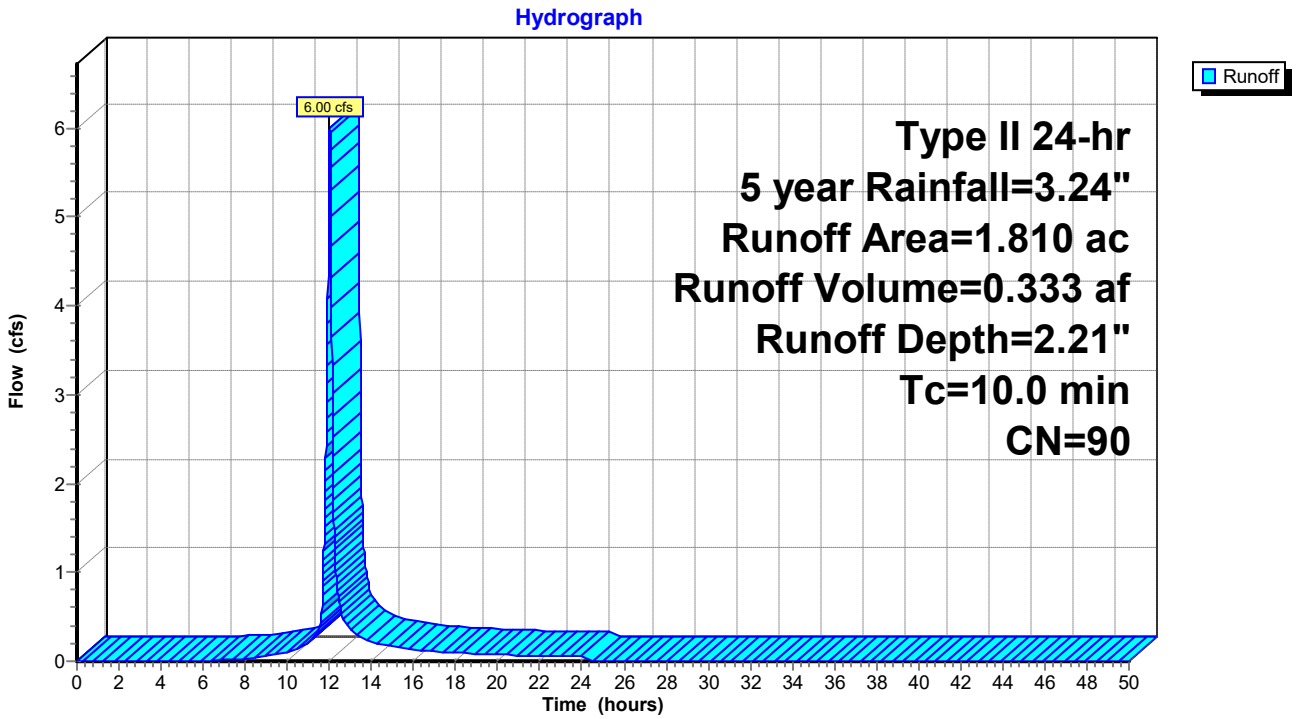
Runoff = 6.00 cfs @ 12.01 hrs, Volume= 0.333 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 5 year Rainfall=3.24"

Area (ac)	CN	Description
1.810	90	1/8 acre lots, 65% imp, HSG C
0.634		35.00% Pervious Area
1.177		65.00% Impervious Area

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

Subcatchment 14S: Subarea 03



Summary for Pond 1P: StormTech 01

Inflow Area = 2.480 ac, 65.00% Impervious, Inflow Depth = 2.21" for 5 year event
Inflow = 8.22 cfs @ 12.01 hrs, Volume= 0.456 af
Outflow = 0.83 cfs @ 12.52 hrs, Volume= 0.446 af, Atten= 90%, Lag= 30.7 min
Primary = 0.83 cfs @ 12.52 hrs, Volume= 0.446 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 869.05' @ 12.52 hrs Surf.Area= 0.118 ac Storage= 0.242 af

Plug-Flow detention time= 424.4 min calculated for 0.446 af (98% of inflow)
Center-of-Mass det. time= 411.1 min (1,218.2 - 807.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	866.20'	0.190 af	**55.75'W x 91.99'L x 6.75'H Field A** 0.795 af Overall - 0.319 af Embedded = 0.476 af x 40.0% Voids
#2A	866.95'	0.319 af	**ADS_StormTech MC-4500 b +Cap** x 126 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 126 Chambers in 6 Rows Cap Storage= +39.5 cf x 2 x 6 rows = 474.0 cf
		0.509 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	866.20'	**12.0" Round RCP_Round 12"** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.20' / 865.92' S= 0.0048 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	866.20'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	867.80'	**5.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.83 cfs @ 12.52 hrs HW=869.05' TW=864.86' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.83 cfs of 5.05 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.10 cfs @ 8.04 fps)
  └─**3=Orifice** (Orifice Controls 0.74 cfs @ 5.39 fps)

Pond 1P: StormTech 01 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 6 rows = 474.0 cf

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

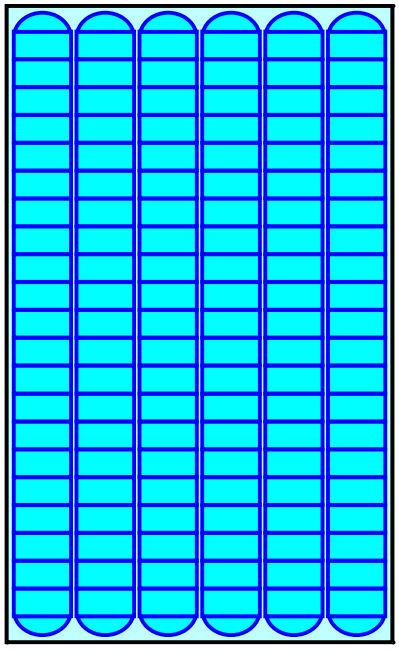
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

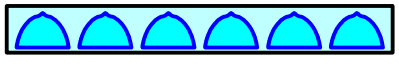
126 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 6 Rows = 13,891.8 cf Chamber Storage

34,617.6 cf Field - 13,891.8 cf Chambers = 20,725.8 cf Stone x 40.0% Voids = 8,290.3 cf Stone Storage

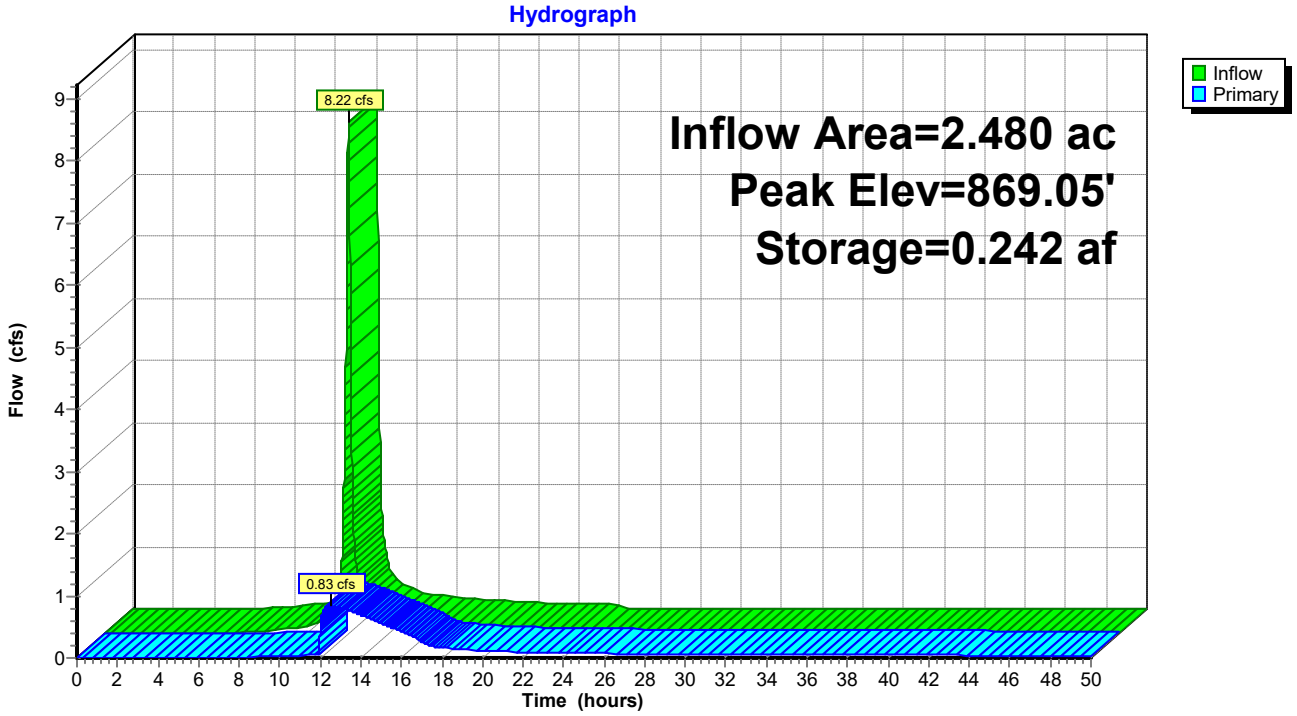
Chamber Storage + Stone Storage = 22,182.1 cf = 0.509 af
Overall Storage Efficiency = 64.1%
Overall System Size = 91.99' x 55.75' x 6.75'

126 Chambers
1,282.1 cy Field
767.6 cy Stone





Pond 1P: StormTech 01



Summary for Pond 2P: StormTech 02

Inflow Area = 1.630 ac, 65.00% Impervious, Inflow Depth = 2.21" for 5 year event
Inflow = 5.41 cfs @ 12.01 hrs, Volume= 0.300 af
Outflow = 0.53 cfs @ 12.54 hrs, Volume= 0.292 af, Atten= 90%, Lag= 31.7 min
Primary = 0.53 cfs @ 12.54 hrs, Volume= 0.292 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 877.53' @ 12.54 hrs Surf.Area= 0.079 ac Storage= 0.160 af

Plug-Flow detention time= 428.6 min calculated for 0.292 af (97% of inflow)
Center-of-Mass det. time= 413.7 min (1,220.7 - 807.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	874.72'	0.129 af	**37.58'W x 91.99'L x 6.75'H Field A** 0.536 af Overall - 0.213 af Embedded = 0.323 af x 40.0% Voids
#2A	875.47'	0.213 af	**ADS_StormTech MC-4500 b +Cap** x 84 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 84 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.342 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	874.72'	**12.0" Round RCP_Round 12"** L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 874.72' / 874.31' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	874.72'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.30'	**4.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.53 cfs @ 12.54 hrs HW=877.53' TW=874.09' (Dynamic Tailwater)
↑└─**1=RCP_Round 12"** (Passes 0.53 cfs of 4.66 cfs potential flow)
↑ ├─**2=WQ Orifice** (Orifice Controls 0.06 cfs @ 8.01 fps)
└─**3=Orifice** (Orifice Controls 0.47 cfs @ 5.35 fps)

Pond 2P: StormTech 02 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 4 rows = 316.0 cf

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

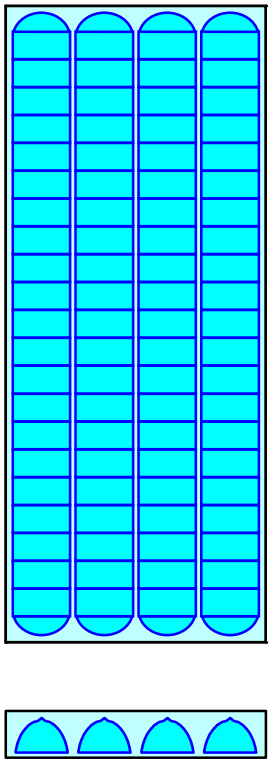
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

84 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,261.2 cf Chamber Storage

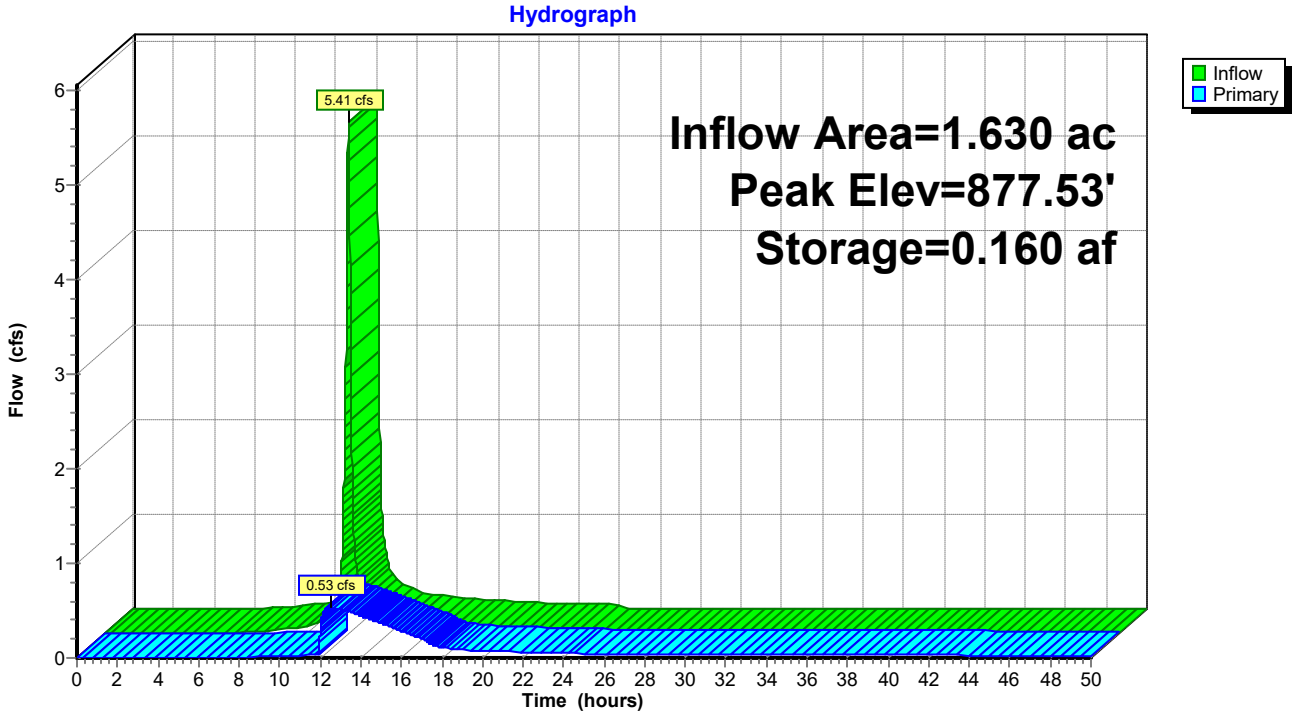
23,337.1 cf Field - 9,261.2 cf Chambers = 14,075.9 cf Stone x 40.0% Voids = 5,630.4 cf Stone Storage

Chamber Storage + Stone Storage = 14,891.6 cf = 0.342 af
Overall Storage Efficiency = 63.8%
Overall System Size = 91.99' x 37.58' x 6.75'

84 Chambers
864.3 cy Field
521.3 cy Stone



Pond 2P: StormTech 02



Summary for Pond 3P: StormTech 03

Inflow Area = 4.290 ac, 65.00% Impervious, Inflow Depth > 2.18" for 5 year event
Inflow = 6.50 cfs @ 12.02 hrs, Volume= 0.779 af
Outflow = 1.19 cfs @ 12.95 hrs, Volume= 0.658 af, Atten= 82%, Lag= 55.8 min
Primary = 1.19 cfs @ 12.95 hrs, Volume= 0.658 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 864.93' @ 12.95 hrs Surf.Area= 0.093 ac Storage= 0.229 af

Plug-Flow detention time= 467.4 min calculated for 0.658 af (85% of inflow)
Center-of-Mass det. time= 280.3 min (1,322.9 - 1,042.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	861.53'	0.152 af	**19.42'W x 208.72'L x 6.75'H Field A** 0.628 af Overall - 0.248 af Embedded = 0.380 af x 40.0% Voids
#2A	862.28'	0.248 af	**ADS_StormTech MC-4500 b +Cap** x 100 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 100 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.400 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	861.53'	**12.0" Round RCP_Round 12"** L= 19.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.53' / 861.43' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	861.53'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.60'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.19 cfs @ 12.95 hrs HW=864.93' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 1.19 cfs of 6.44 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.11 cfs @ 8.79 fps)
  └─**3=Orifice** (Orifice Controls 1.08 cfs @ 2.75 fps)

Pond 3P: StormTech 03 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

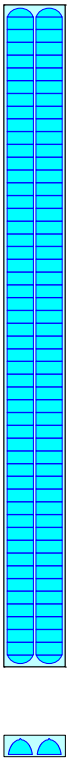
50 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 206.72' Row Length +12.0" End Stone x 2 = 208.72' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

100 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 10,807.0 cf Chamber Storage

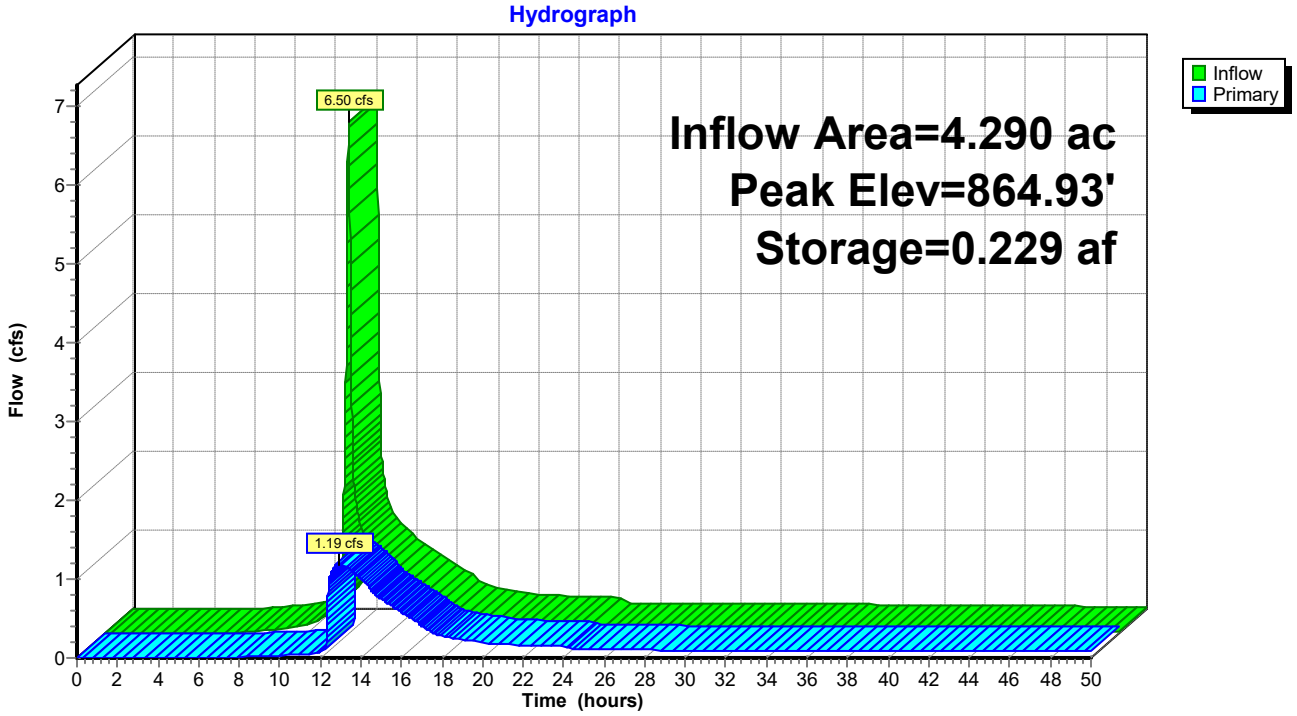
27,354.9 cf Field - 10,807.0 cf Chambers = 16,547.9 cf Stone x 40.0% Voids = 6,619.2 cf Stone Storage

Chamber Storage + Stone Storage = 17,426.2 cf = 0.400 af
Overall Storage Efficiency = 63.7%
Overall System Size = 208.72' x 19.42' x 6.75'

100 Chambers
1,013.1 cy Field
612.9 cy Stone



Pond 3P: StormTech 03



Summary for Pond 4P: StormTech 04

Inflow Area = 1.880 ac, 65.00% Impervious, Inflow Depth = 2.21" for 5 year event
Inflow = 6.23 cfs @ 12.01 hrs, Volume= 0.346 af
Outflow = 0.95 cfs @ 12.34 hrs, Volume= 0.344 af, Atten= 85%, Lag= 19.5 min
Primary = 0.95 cfs @ 12.34 hrs, Volume= 0.344 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 865.54' @ 12.34 hrs Surf.Area= 0.083 ac Storage= 0.170 af

Plug-Flow detention time= 370.0 min calculated for 0.344 af (100% of inflow)
Center-of-Mass det. time= 367.7 min (1,174.8 - 807.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	862.68'	0.135 af	**37.58'W x 96.02'L x 6.75'H Field A** 0.559 af Overall - 0.222 af Embedded = 0.337 af x 40.0% Voids
#2A	863.43'	0.222 af	**ADS_StormTech MC-4500 b +Cap** x 88 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 88 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.357 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	862.68'	**12.0" Round RCP_Round 12"** L= 70.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 862.68' / 862.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	862.68'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.40'	**5.5" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.95 cfs @ 12.34 hrs HW=865.54' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.95 cfs of 4.87 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.10 cfs @ 8.06 fps)
  └─**3=Orifice** (Orifice Controls 0.85 cfs @ 5.15 fps)

Pond 4P: StormTech 04 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf

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

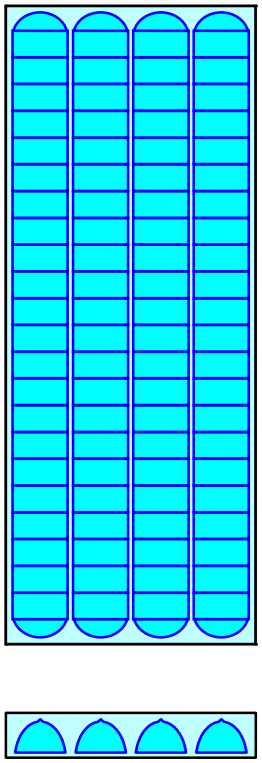
22 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 94.02' Row Length +12.0" End Stone x 2 = 96.02' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

88 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,687.2 cf Chamber Storage

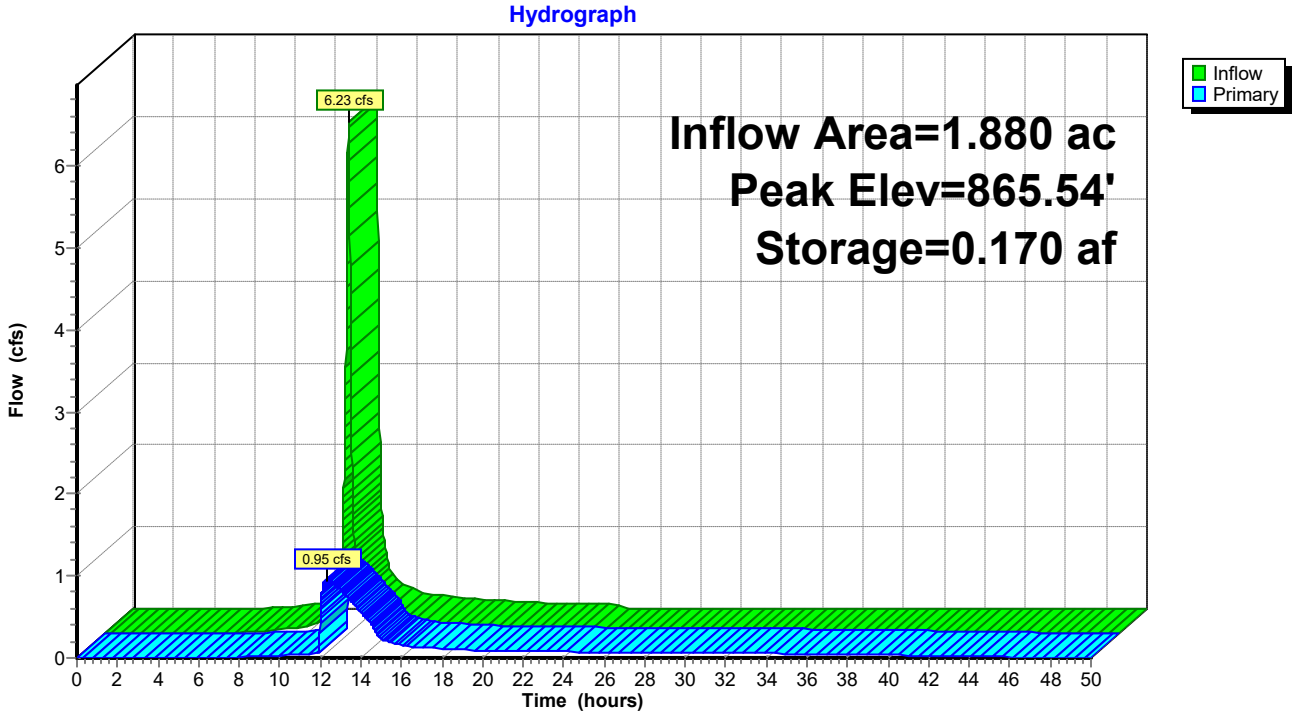
24,358.2 cf Field - 9,687.2 cf Chambers = 14,671.1 cf Stone x 40.0% Voids = 5,868.4 cf Stone Storage

Chamber Storage + Stone Storage = 15,555.6 cf = 0.357 af
Overall Storage Efficiency = 63.9%
Overall System Size = 96.02' x 37.58' x 6.75'

88 Chambers
902.2 cy Field
543.4 cy Stone



Pond 4P: StormTech 04



Summary for Pond 6P: StormTech 05

Inflow Area = 4.810 ac, 65.00% Impervious, Inflow Depth > 2.16" for 5 year event
Inflow = 6.15 cfs @ 12.03 hrs, Volume= 0.866 af
Outflow = 1.45 cfs @ 13.24 hrs, Volume= 0.808 af, Atten= 76%, Lag= 73.1 min
Primary = 1.45 cfs @ 13.24 hrs, Volume= 0.808 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 874.44' @ 13.24 hrs Surf.Area= 0.095 ac Storage= 0.260 af

Plug-Flow detention time= 446.7 min calculated for 0.808 af (93% of inflow)
Center-of-Mass det. time= 337.0 min (1,418.4 - 1,081.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	870.65'	0.155 af	**19.42'W x 212.74'L x 6.75'H Field A** 0.640 af Overall - 0.253 af Embedded = 0.387 af x 40.0% Voids
#2A	871.40'	0.253 af	**ADS_StormTech MC-4500 b +Cap** x 102 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 102 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.408 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	870.65'	**12.0" Round RCP_Round 12"** L= 64.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 870.65' / 870.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	870.65'	**2.0" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.00'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.45 cfs @ 13.24 hrs HW=874.44' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 1.45 cfs of 5.93 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.20 cfs @ 9.27 fps)
  └─**3=Orifice** (Orifice Controls 1.25 cfs @ 3.18 fps)

Pond 6P: StormTech 05 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

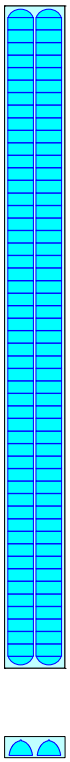
51 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 210.74' Row Length +12.0" End Stone x 2 = 212.74' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

102 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 11,020.0 cf Chamber Storage

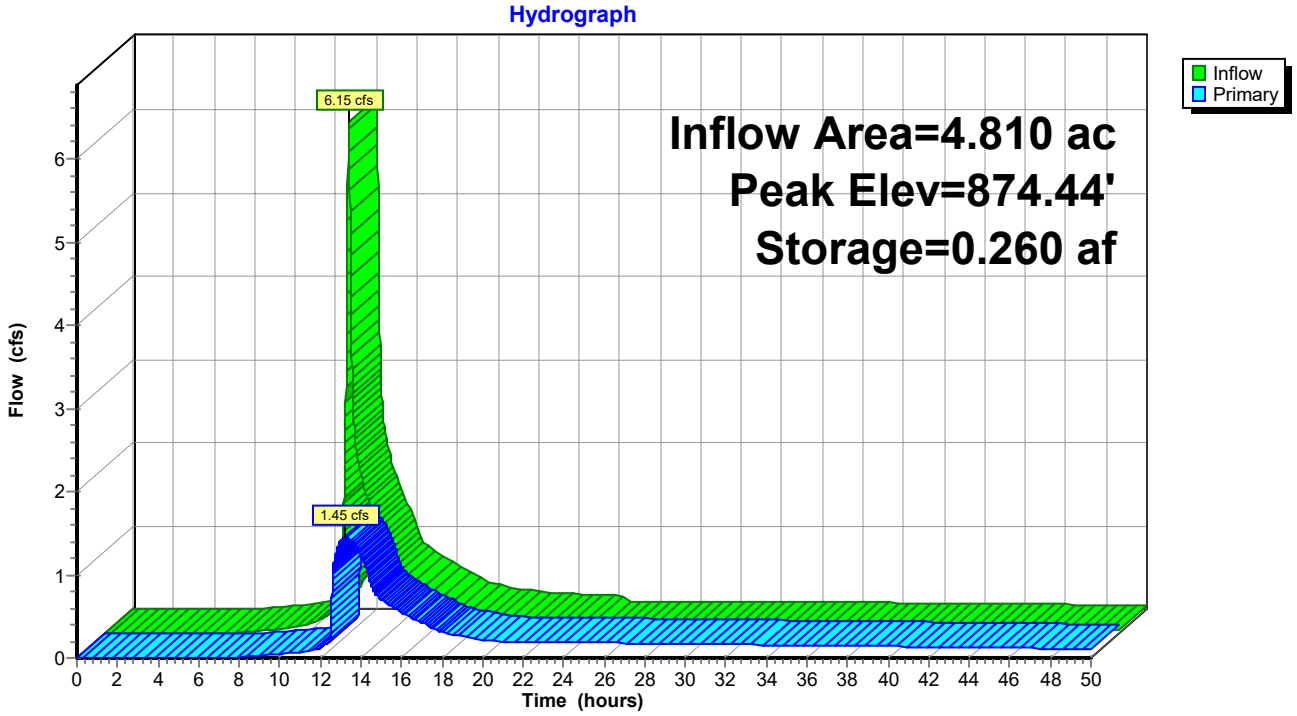
27,882.5 cf Field - 11,020.0 cf Chambers = 16,862.4 cf Stone x 40.0% Voids = 6,745.0 cf Stone Storage

Chamber Storage + Stone Storage = 17,765.0 cf = 0.408 af
Overall Storage Efficiency = 63.7%
Overall System Size = 212.74' x 19.42' x 6.75'

102 Chambers
1,032.7 cy Field
624.5 cy Stone



Pond 6P: StormTech 05



Summary for Pond 7P: StormTech 06

Inflow Area = 1.620 ac, 65.00% Impervious, Inflow Depth = 2.21" for 5 year event
Inflow = 5.37 cfs @ 12.01 hrs, Volume= 0.298 af
Outflow = 1.03 cfs @ 12.26 hrs, Volume= 0.288 af, Atten= 81%, Lag= 14.8 min
Primary = 1.03 cfs @ 12.26 hrs, Volume= 0.288 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 875.56' @ 12.27 hrs Surf.Area= 0.072 ac Storage= 0.143 af

Plug-Flow detention time= 426.8 min calculated for 0.288 af (97% of inflow)
Center-of-Mass det. time= 406.4 min (1,213.4 - 807.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	872.75'	0.117 af	**19.42'W x 160.42'L x 6.75'H Field A** 0.483 af Overall - 0.189 af Embedded = 0.293 af x 40.0% Voids
#2A	873.50'	0.189 af	**ADS_StormTech MC-4500 b +Cap** x 76 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 76 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.307 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	872.75'	**12.0" Round RCP_Round 12"** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 872.75' / 872.52' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	872.75'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.50'	**6.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.03 cfs @ 12.26 hrs HW=875.56' TW=873.44' (Dynamic Tailwater)
↑—**1=RCP_Round 12"** (Passes 1.03 cfs of 5.25 cfs potential flow)
↑—**2=WQ Orifice** (Orifice Controls 0.06 cfs @ 7.01 fps)
—**3=Orifice** (Orifice Controls 0.97 cfs @ 4.96 fps)

Pond 7P: StormTech 06 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

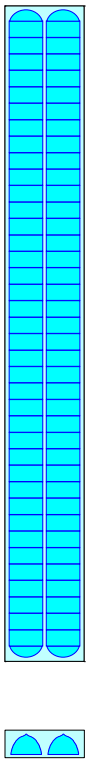
38 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 158.42' Row Length +12.0" End Stone x 2 = 160.42' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

76 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 8,251.3 cf Chamber Storage

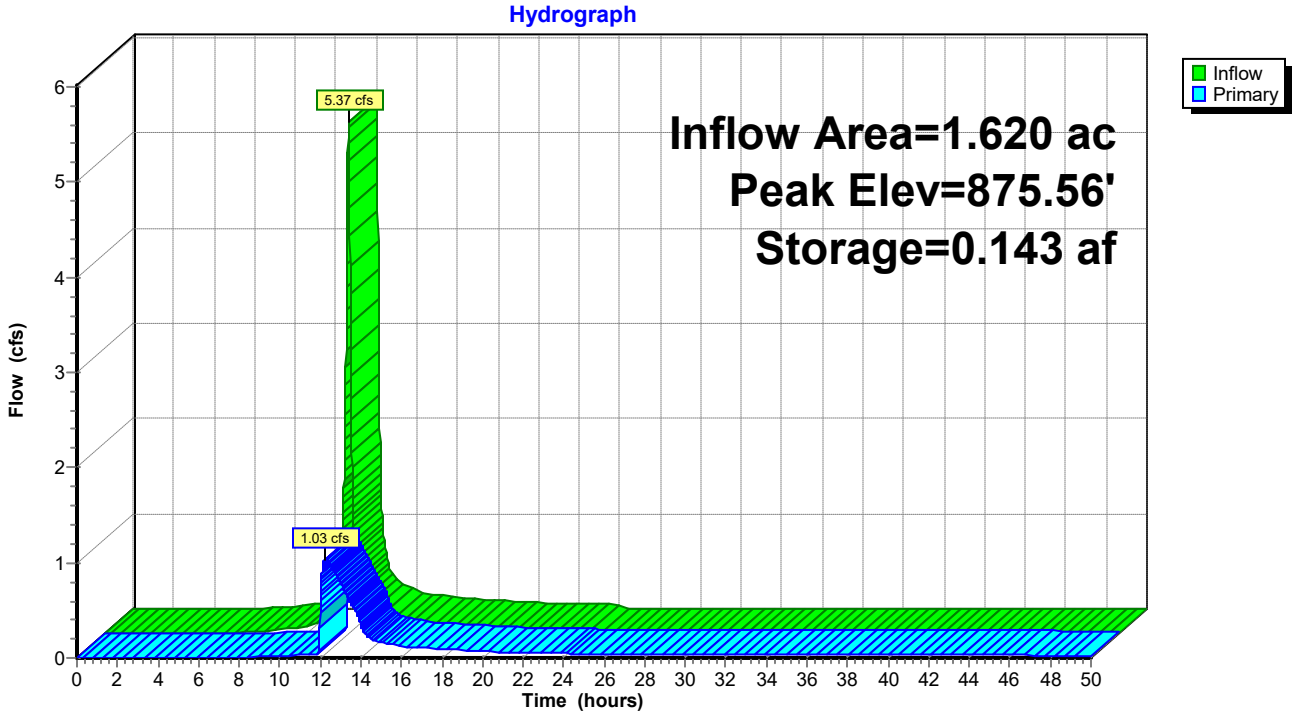
21,024.6 cf Field - 8,251.3 cf Chambers = 12,773.3 cf Stone x 40.0% Voids = 5,109.3 cf Stone Storage

Chamber Storage + Stone Storage = 13,360.6 cf = 0.307 af
Overall Storage Efficiency = 63.5%
Overall System Size = 160.42' x 19.42' x 6.75'

76 Chambers
778.7 cy Field
473.1 cy Stone



Pond 7P: StormTech 06



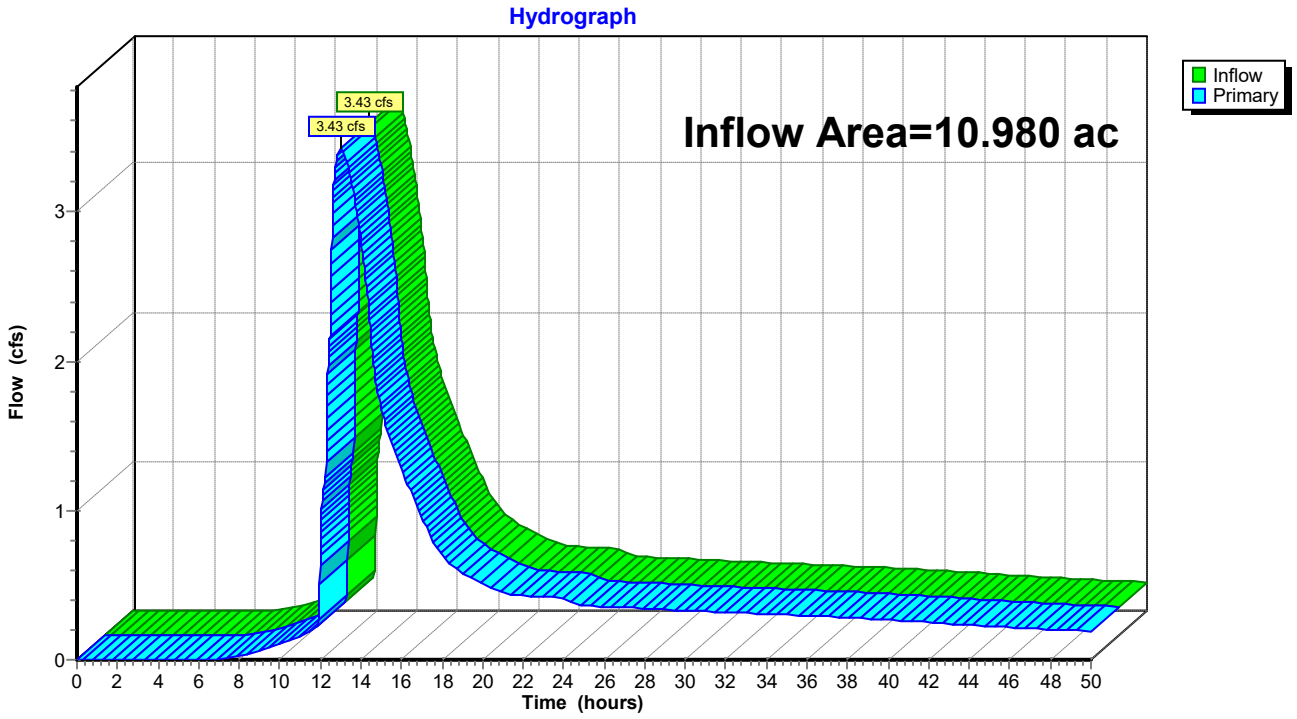
Summary for Pond 15P: Outfall 01

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.980 ac, 65.00% Impervious, Inflow Depth > 1.98" for 5 year event
Inflow = 3.43 cfs @ 13.03 hrs, Volume= 1.810 af
Primary = 3.43 cfs @ 13.03 hrs, Volume= 1.810 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Pond 15P: Outfall 01



Summary for Subcatchment 8S: Pre-developed 01

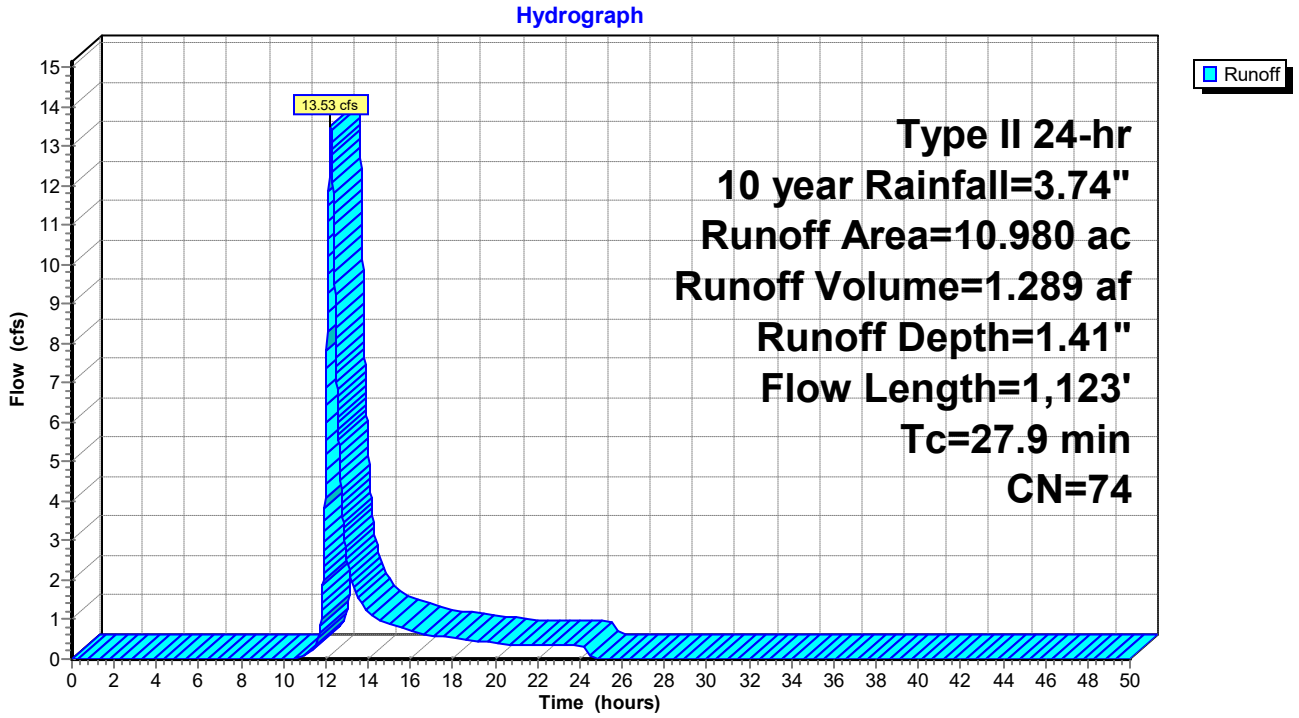
Runoff = 13.53 cfs @ 12.24 hrs, Volume= 1.289 af, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.74"

Area (ac)	CN	Description
10.980	74	>75% Grass cover, Good, HSG C
10.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0242	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
17.9	1,023	0.0186	0.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.9	1,123	Total			

Subcatchment 8S: Pre-developed 01



Summary for Subcatchment 9S: Subarea 01

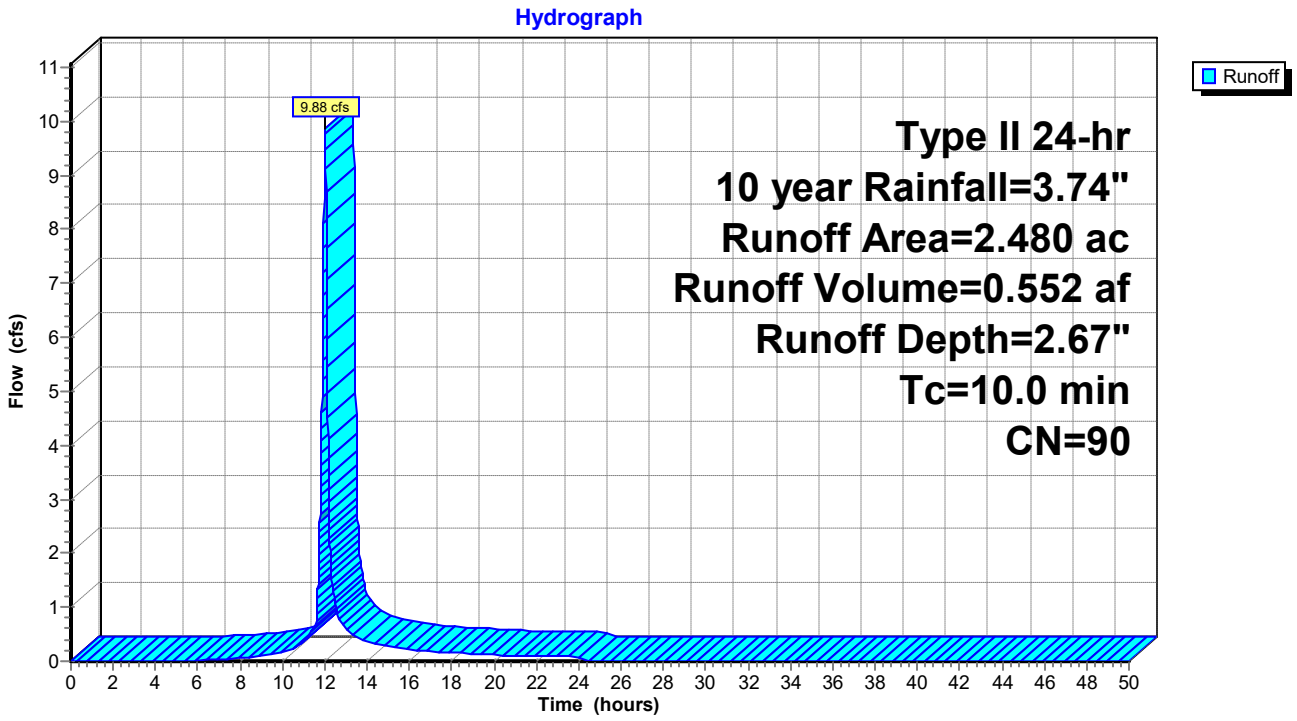
Runoff = 9.88 cfs @ 12.01 hrs, Volume= 0.552 af, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.74"

Area (ac)	CN	Description
2.480	90	1/8 acre lots, 65% imp, HSG C
0.868		35.00% Pervious Area
1.612		65.00% Impervious Area

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

Subcatchment 9S: Subarea 01



Summary for Subcatchment 10S: Subarea 02

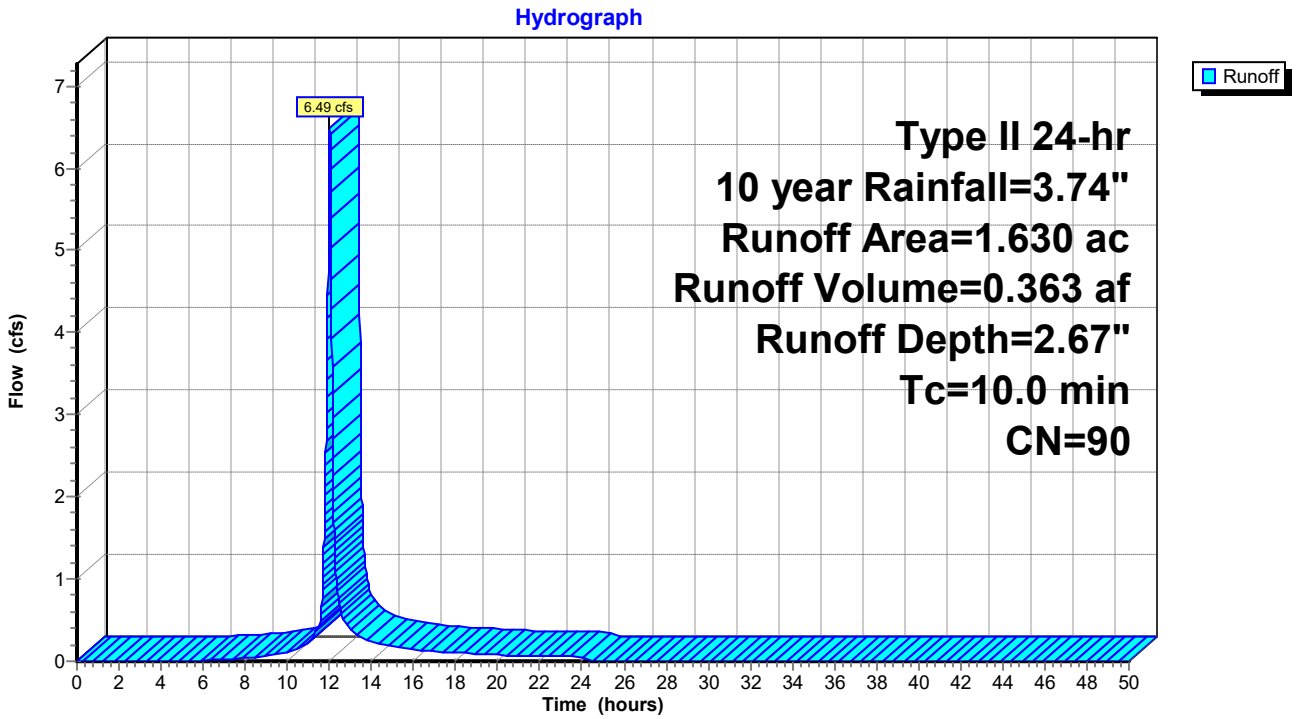
Runoff = 6.49 cfs @ 12.01 hrs, Volume= 0.363 af, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.74"

Area (ac)	CN	Description
1.630	90	1/8 acre lots, 65% imp, HSG C
0.570		35.00% Pervious Area
1.060		65.00% Impervious Area

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

Subcatchment 10S: Subarea 02



Summary for Subcatchment 11S: Subarea 05

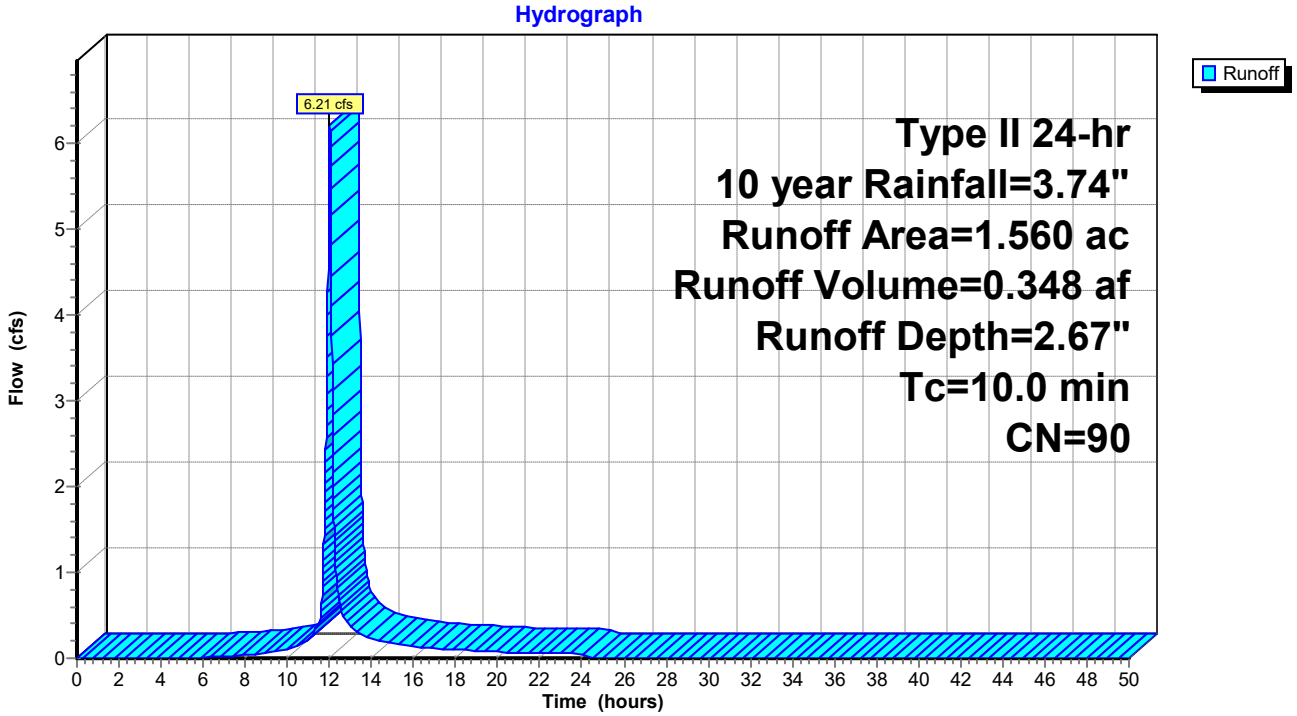
Runoff = 6.21 cfs @ 12.01 hrs, Volume= 0.348 af, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.74"

Area (ac)	CN	Description
1.560	90	1/8 acre lots, 65% imp, HSG C
0.546		35.00% Pervious Area
1.014		65.00% Impervious Area

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

Subcatchment 11S: Subarea 05



Summary for Subcatchment 12S: Subarea 04

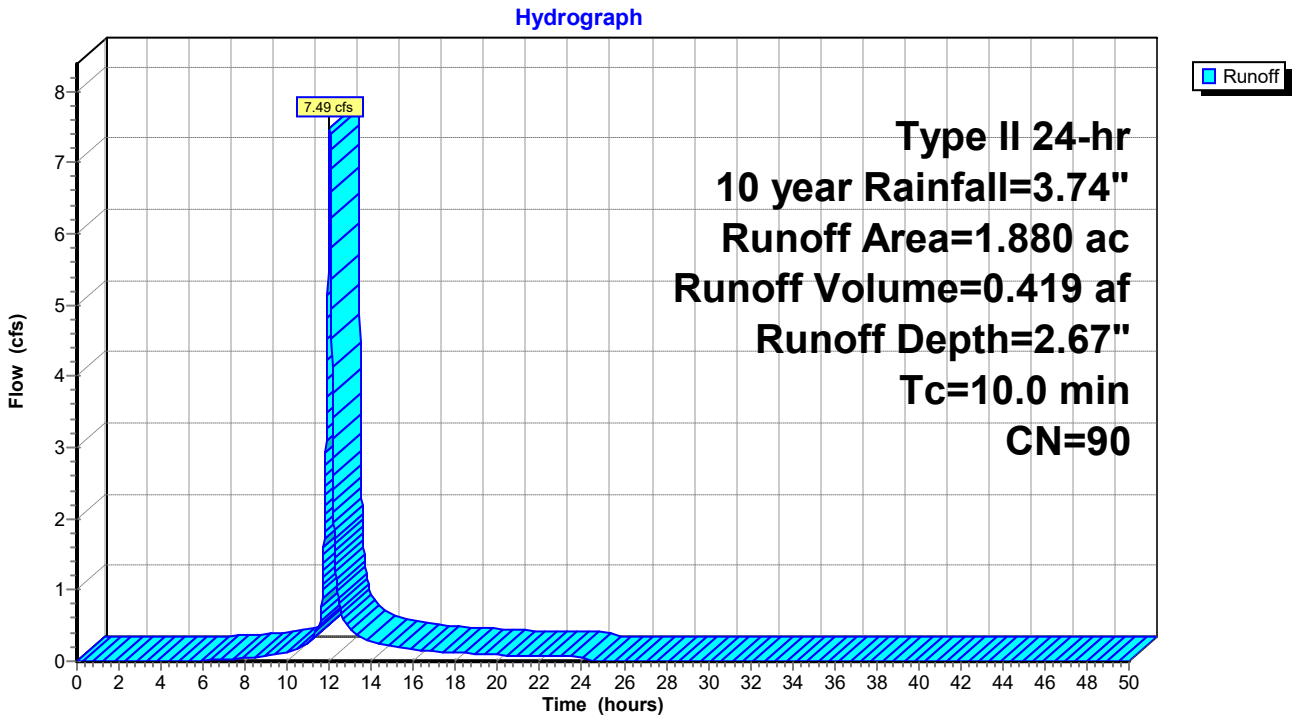
Runoff = 7.49 cfs @ 12.01 hrs, Volume= 0.419 af, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.74"

Area (ac)	CN	Description
1.880	90	1/8 acre lots, 65% imp, HSG C
0.658		35.00% Pervious Area
1.222		65.00% Impervious Area

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

Subcatchment 12S: Subarea 04



Summary for Subcatchment 13S: Subarea 06

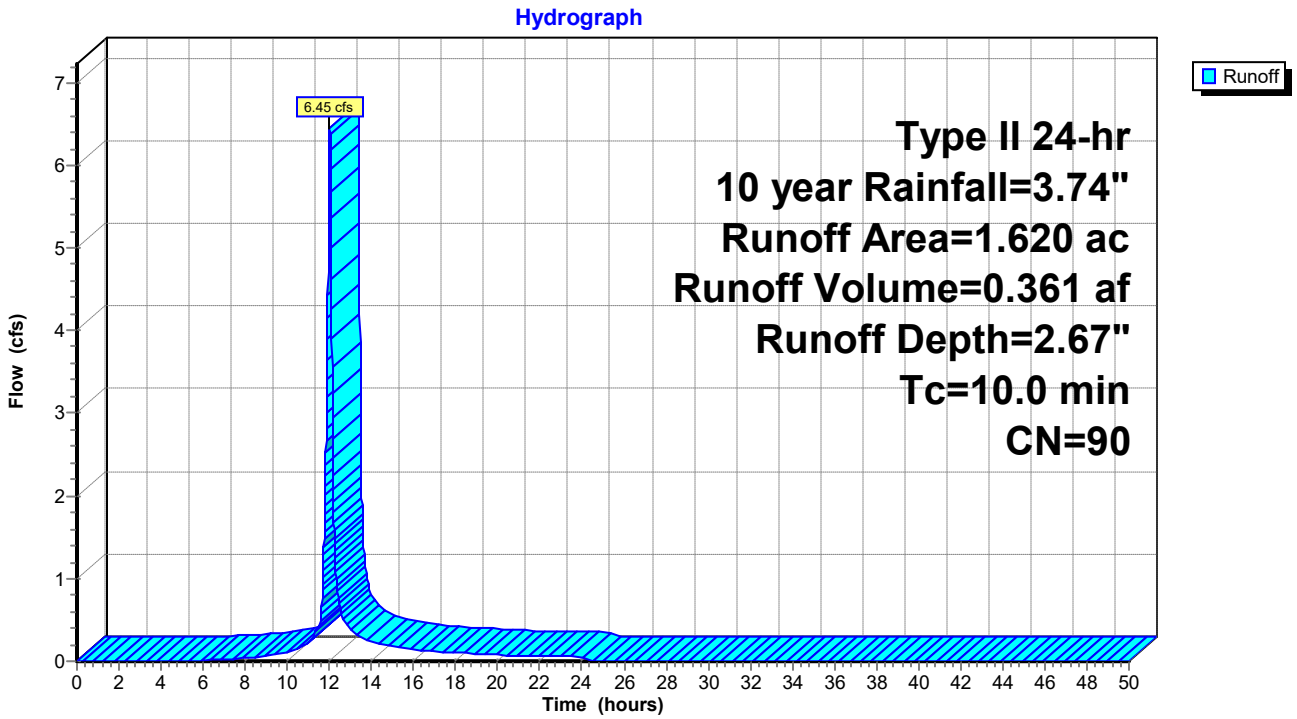
Runoff = 6.45 cfs @ 12.01 hrs, Volume= 0.361 af, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.74"

Area (ac)	CN	Description
1.620	90	1/8 acre lots, 65% imp, HSG C
0.567		35.00% Pervious Area
1.053		65.00% Impervious Area

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

Subcatchment 13S: Subarea 06



Summary for Subcatchment 14S: Subarea 03

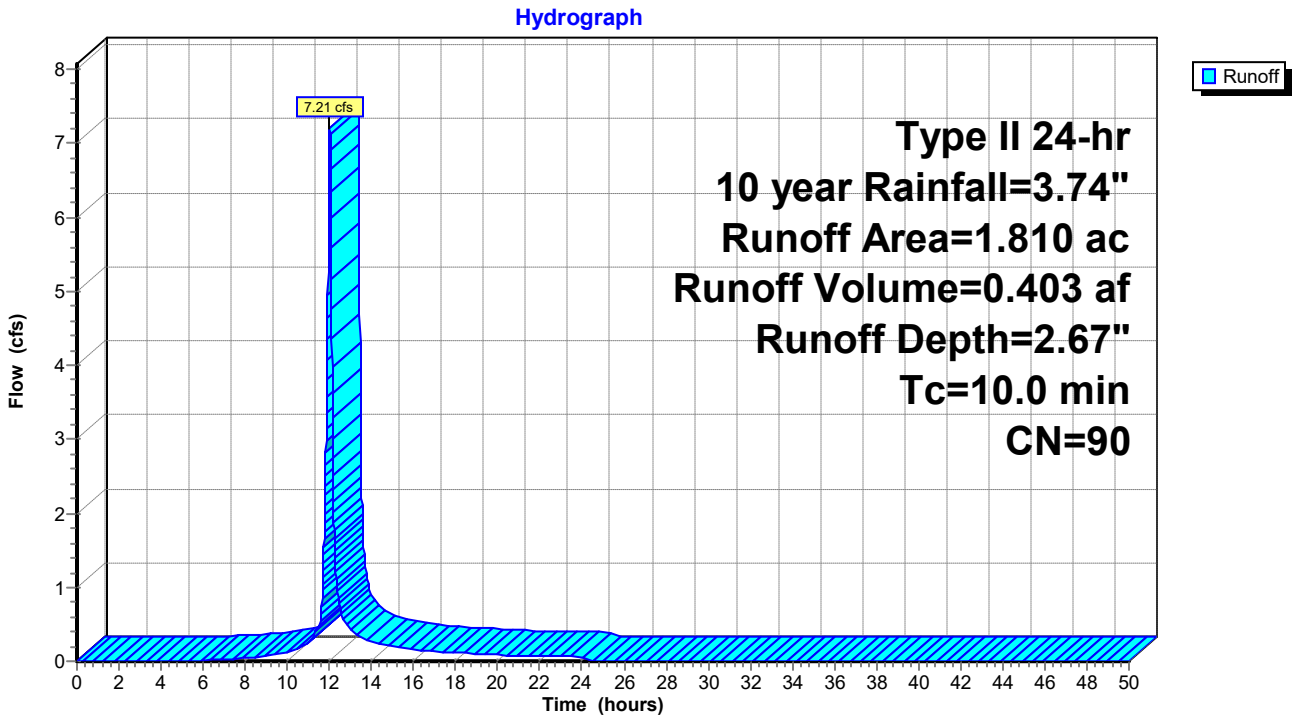
Runoff = 7.21 cfs @ 12.01 hrs, Volume= 0.403 af, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 10 year Rainfall=3.74"

Area (ac)	CN	Description
1.810	90	1/8 acre lots, 65% imp, HSG C
0.634		35.00% Pervious Area
1.177		65.00% Impervious Area

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

Subcatchment 14S: Subarea 03



Summary for Pond 1P: StormTech 01

Inflow Area = 2.480 ac, 65.00% Impervious, Inflow Depth = 2.67" for 10 year event
Inflow = 9.88 cfs @ 12.01 hrs, Volume= 0.552 af
Outflow = 1.00 cfs @ 12.52 hrs, Volume= 0.542 af, Atten= 90%, Lag= 30.3 min
Primary = 1.00 cfs @ 12.52 hrs, Volume= 0.542 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 869.65' @ 12.52 hrs Surf.Area= 0.118 ac Storage= 0.296 af

Plug-Flow detention time= 377.8 min calculated for 0.542 af (98% of inflow)
Center-of-Mass det. time= 366.4 min (1,168.0 - 801.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	866.20'	0.190 af	**55.75'W x 91.99'L x 6.75'H Field A** 0.795 af Overall - 0.319 af Embedded = 0.476 af x 40.0% Voids
#2A	866.95'	0.319 af	**ADS_StormTech MC-4500 b +Cap** x 126 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 126 Chambers in 6 Rows Cap Storage= +39.5 cf x 2 x 6 rows = 474.0 cf
		0.509 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	866.20'	**12.0" Round RCP_Round 12"** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.20' / 865.92' S= 0.0048 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	866.20'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	867.80'	**5.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.00 cfs @ 12.52 hrs HW=869.65' TW=865.23' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 1.00 cfs of 5.71 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.11 cfs @ 8.86 fps)
  └─**3=Orifice** (Orifice Controls 0.89 cfs @ 6.55 fps)

Pond 1P: StormTech 01 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 6 rows = 474.0 cf

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

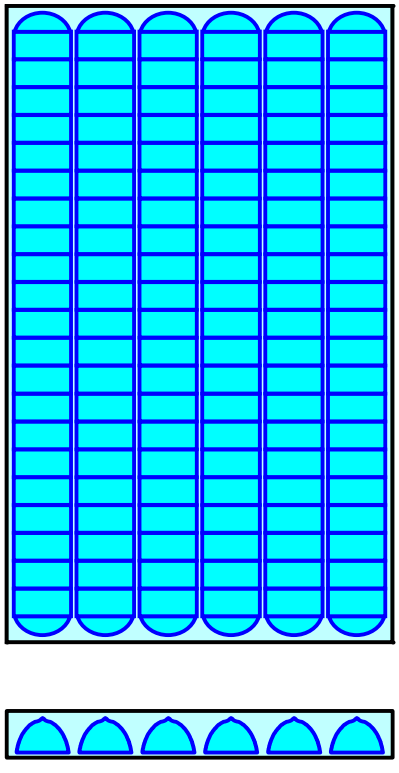
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

126 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 6 Rows = 13,891.8 cf Chamber Storage

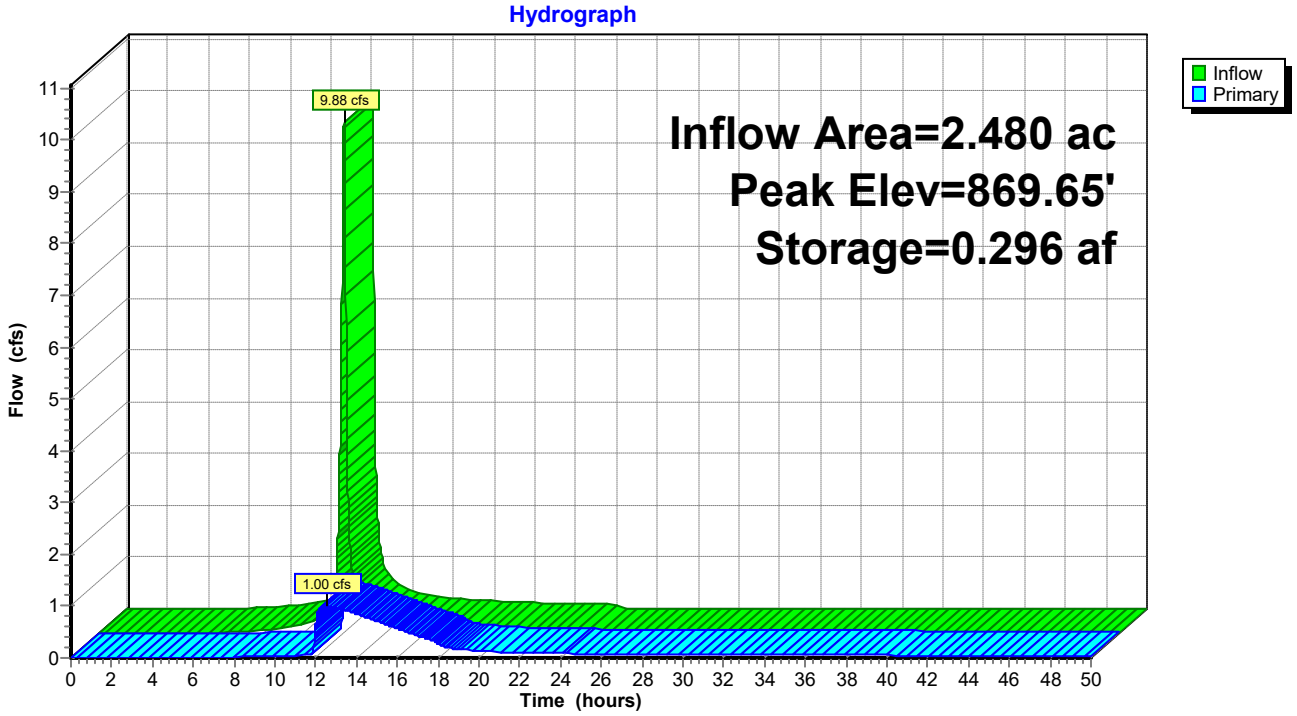
34,617.6 cf Field - 13,891.8 cf Chambers = 20,725.8 cf Stone x 40.0% Voids = 8,290.3 cf Stone Storage

Chamber Storage + Stone Storage = 22,182.1 cf = 0.509 af
Overall Storage Efficiency = 64.1%
Overall System Size = 91.99' x 55.75' x 6.75'

126 Chambers
1,282.1 cy Field
767.6 cy Stone



Pond 1P: StormTech 01



Summary for Pond 2P: StormTech 02

Inflow Area = 1.630 ac, 65.00% Impervious, Inflow Depth = 2.67" for 10 year event
Inflow = 6.49 cfs @ 12.01 hrs, Volume= 0.363 af
Outflow = 0.64 cfs @ 12.53 hrs, Volume= 0.355 af, Atten= 90%, Lag= 31.3 min
Primary = 0.64 cfs @ 12.53 hrs, Volume= 0.355 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 878.12' @ 12.53 hrs Surf.Area= 0.079 ac Storage= 0.196 af

Plug-Flow detention time= 382.3 min calculated for 0.355 af (98% of inflow)
Center-of-Mass det. time= 369.2 min (1,170.8 - 801.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	874.72'	0.129 af	**37.58'W x 91.99'L x 6.75'H Field A** 0.536 af Overall - 0.213 af Embedded = 0.323 af x 40.0% Voids
#2A	875.47'	0.213 af	**ADS_StormTech MC-4500 b +Cap** x 84 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 84 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.342 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	874.72'	**12.0" Round RCP_Round 12"** L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 874.72' / 874.31' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	874.72'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.30'	**4.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.64 cfs @ 12.53 hrs HW=878.12' TW=874.56' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 0.64 cfs of 5.23 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.07 cfs @ 8.81 fps)
  └─**3=Orifice** (Orifice Controls 0.57 cfs @ 6.50 fps)

Pond 2P: StormTech 02 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 4 rows = 316.0 cf

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

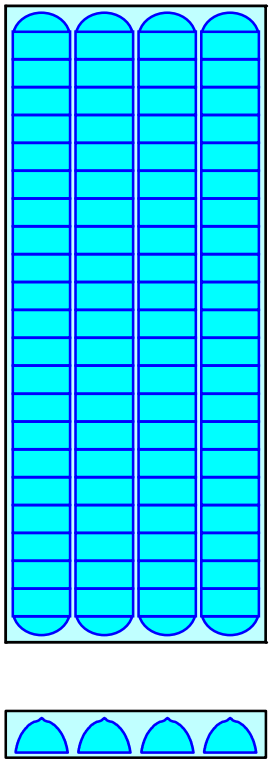
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

84 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,261.2 cf Chamber Storage

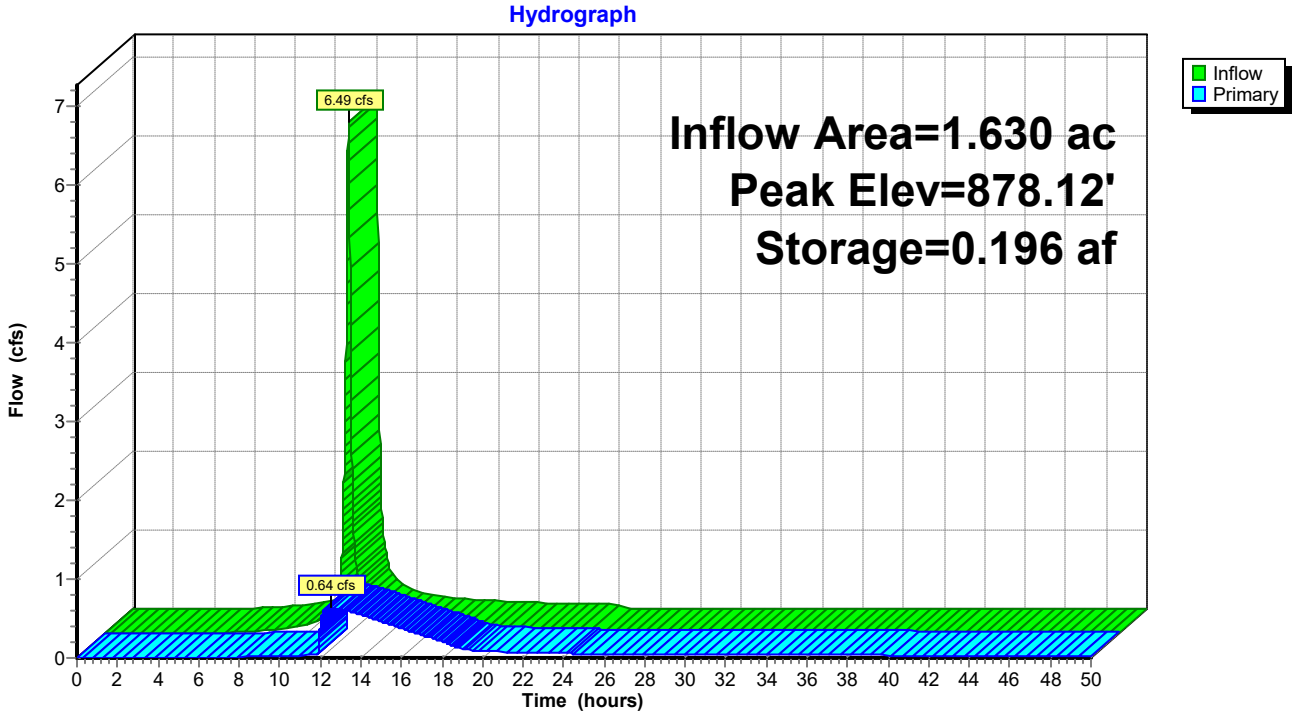
23,337.1 cf Field - 9,261.2 cf Chambers = 14,075.9 cf Stone x 40.0% Voids = 5,630.4 cf Stone Storage

Chamber Storage + Stone Storage = 14,891.6 cf = 0.342 af
Overall Storage Efficiency = 63.8%
Overall System Size = 91.99' x 37.58' x 6.75'

84 Chambers
864.3 cy Field
521.3 cy Stone



Pond 2P: StormTech 02



Summary for Pond 3P: StormTech 03

Inflow Area = 4.290 ac, 65.00% Impervious, Inflow Depth > 2.64" for 10 year event
Inflow = 7.88 cfs @ 12.02 hrs, Volume= 0.946 af
Outflow = 1.63 cfs @ 12.60 hrs, Volume= 0.824 af, Atten= 79%, Lag= 34.8 min
Primary = 1.63 cfs @ 12.60 hrs, Volume= 0.824 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 865.24' @ 12.60 hrs Surf.Area= 0.093 ac Storage= 0.250 af

Plug-Flow detention time= 380.6 min calculated for 0.824 af (87% of inflow)
Center-of-Mass det. time= 225.4 min (1,237.1 - 1,011.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	861.53'	0.152 af	**19.42'W x 208.72'L x 6.75'H Field A** 0.628 af Overall - 0.248 af Embedded = 0.380 af x 40.0% Voids
#2A	862.28'	0.248 af	**ADS_StormTech MC-4500 b +Cap** x 100 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 100 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.400 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	861.53'	**12.0" Round RCP_Round 12"** L= 19.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.53' / 861.43' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	861.53'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.60'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.63 cfs @ 12.60 hrs HW=865.24' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 1.63 cfs of 6.77 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.11 cfs @ 9.20 fps)
  └─**3=Orifice** (Orifice Controls 1.51 cfs @ 3.85 fps)

Pond 3P: StormTech 03 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

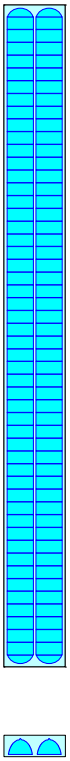
50 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 206.72' Row Length +12.0" End Stone x 2 = 208.72' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

100 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 10,807.0 cf Chamber Storage

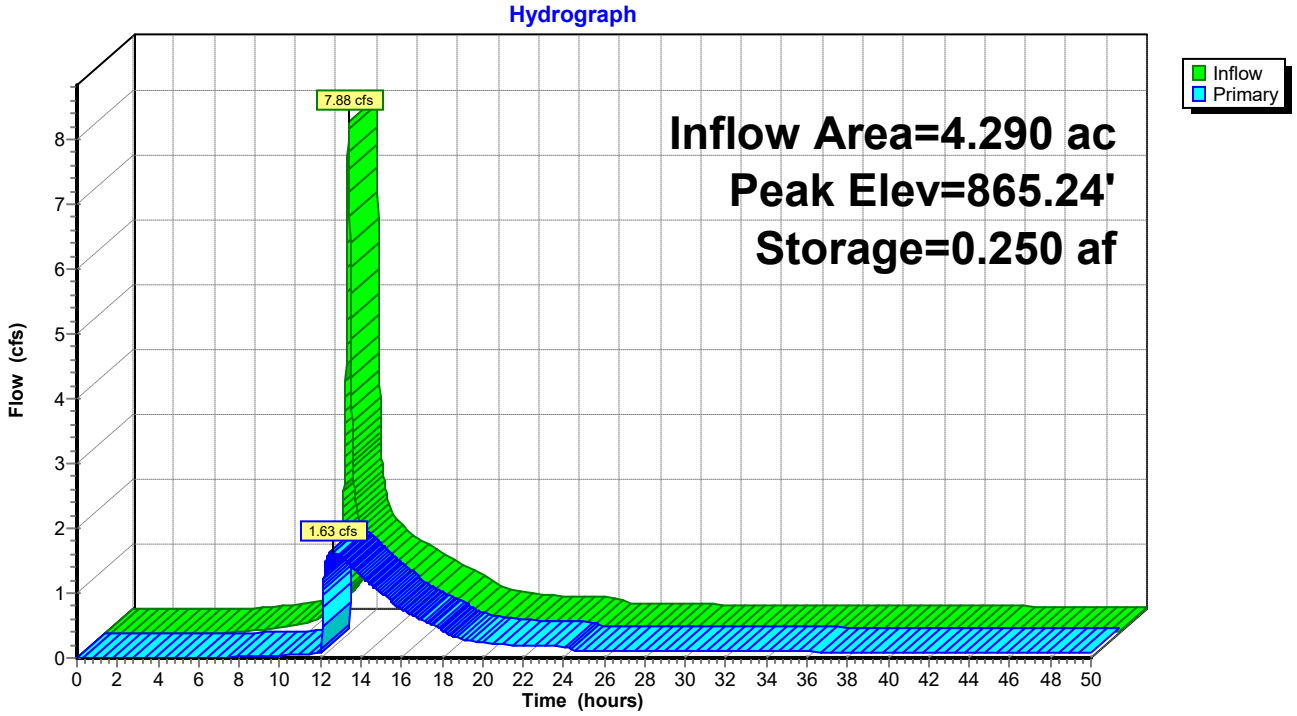
27,354.9 cf Field - 10,807.0 cf Chambers = 16,547.9 cf Stone x 40.0% Voids = 6,619.2 cf Stone Storage

Chamber Storage + Stone Storage = 17,426.2 cf = 0.400 af
Overall Storage Efficiency = 63.7%
Overall System Size = 208.72' x 19.42' x 6.75'

100 Chambers
1,013.1 cy Field
612.9 cy Stone



Pond 3P: StormTech 03



Summary for Pond 4P: StormTech 04

Inflow Area = 1.880 ac, 65.00% Impervious, Inflow Depth = 2.67" for 10 year event
Inflow = 7.49 cfs @ 12.01 hrs, Volume= 0.419 af
Outflow = 1.15 cfs @ 12.33 hrs, Volume= 0.417 af, Atten= 85%, Lag= 19.1 min
Primary = 1.15 cfs @ 12.33 hrs, Volume= 0.417 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 866.12' @ 12.33 hrs Surf.Area= 0.083 ac Storage= 0.207 af

Plug-Flow detention time= 325.9 min calculated for 0.417 af (100% of inflow)
Center-of-Mass det. time= 323.9 min (1,125.5 - 801.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	862.68'	0.135 af	**37.58'W x 96.02'L x 6.75'H Field A** 0.559 af Overall - 0.222 af Embedded = 0.337 af x 40.0% Voids
#2A	863.43'	0.222 af	**ADS_StormTech MC-4500 b +Cap** x 88 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 88 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.357 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	862.68'	**12.0" Round RCP_Round 12"** L= 70.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 862.68' / 862.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	862.68'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.40'	**5.5" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.15 cfs @ 12.33 hrs HW=866.12' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 1.15 cfs of 5.47 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.11 cfs @ 8.86 fps)
  └─**3=Orifice** (Orifice Controls 1.04 cfs @ 6.32 fps)

Pond 4P: StormTech 04 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf

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

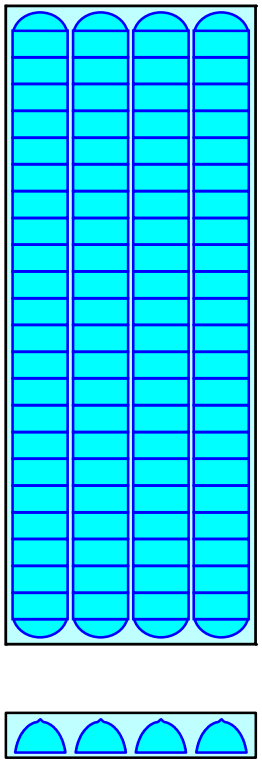
22 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 94.02' Row Length +12.0" End Stone x 2 = 96.02' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

88 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,687.2 cf Chamber Storage

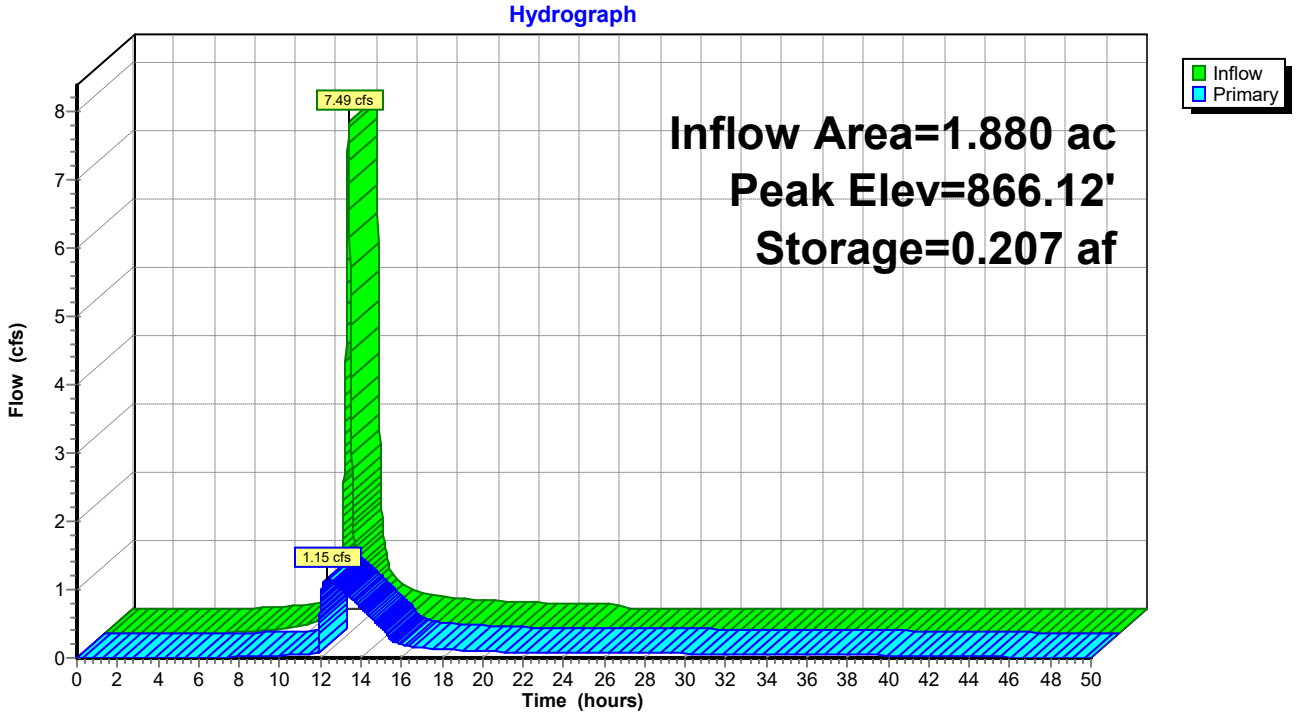
24,358.2 cf Field - 9,687.2 cf Chambers = 14,671.1 cf Stone x 40.0% Voids = 5,868.4 cf Stone Storage

Chamber Storage + Stone Storage = 15,555.6 cf = 0.357 af
Overall Storage Efficiency = 63.9%
Overall System Size = 96.02' x 37.58' x 6.75'

88 Chambers
902.2 cy Field
543.4 cy Stone



Pond 4P: StormTech 04



Summary for Pond 6P: StormTech 05

Inflow Area = 4.810 ac, 65.00% Impervious, Inflow Depth > 2.63" for 10 year event
Inflow = 7.55 cfs @ 12.02 hrs, Volume= 1.053 af
Outflow = 1.85 cfs @ 13.05 hrs, Volume= 0.993 af, Atten= 75%, Lag= 61.8 min
Primary = 1.85 cfs @ 13.05 hrs, Volume= 0.993 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 874.75' @ 13.05 hrs Surf.Area= 0.095 ac Storage= 0.282 af

Plug-Flow detention time= 373.0 min calculated for 0.993 af (94% of inflow)
Center-of-Mass det. time= 279.1 min (1,321.1 - 1,042.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	870.65'	0.155 af	**19.42'W x 212.74'L x 6.75'H Field A** 0.640 af Overall - 0.253 af Embedded = 0.387 af x 40.0% Voids
#2A	871.40'	0.253 af	**ADS_StormTech MC-4500 b +Cap** x 102 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 102 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.408 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	870.65'	**12.0" Round RCP_Round 12"** L= 64.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 870.65' / 870.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	870.65'	**2.0" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.00'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.85 cfs @ 13.05 hrs HW=874.75' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 1.85 cfs of 6.22 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.21 cfs @ 9.65 fps)
  └─**3=Orifice** (Orifice Controls 1.64 cfs @ 4.17 fps)

Pond 6P: StormTech 05 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

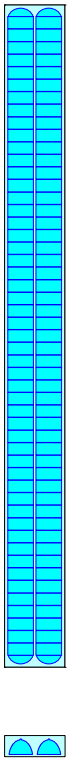
51 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 210.74' Row Length +12.0" End Stone x 2 = 212.74' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

102 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 11,020.0 cf Chamber Storage

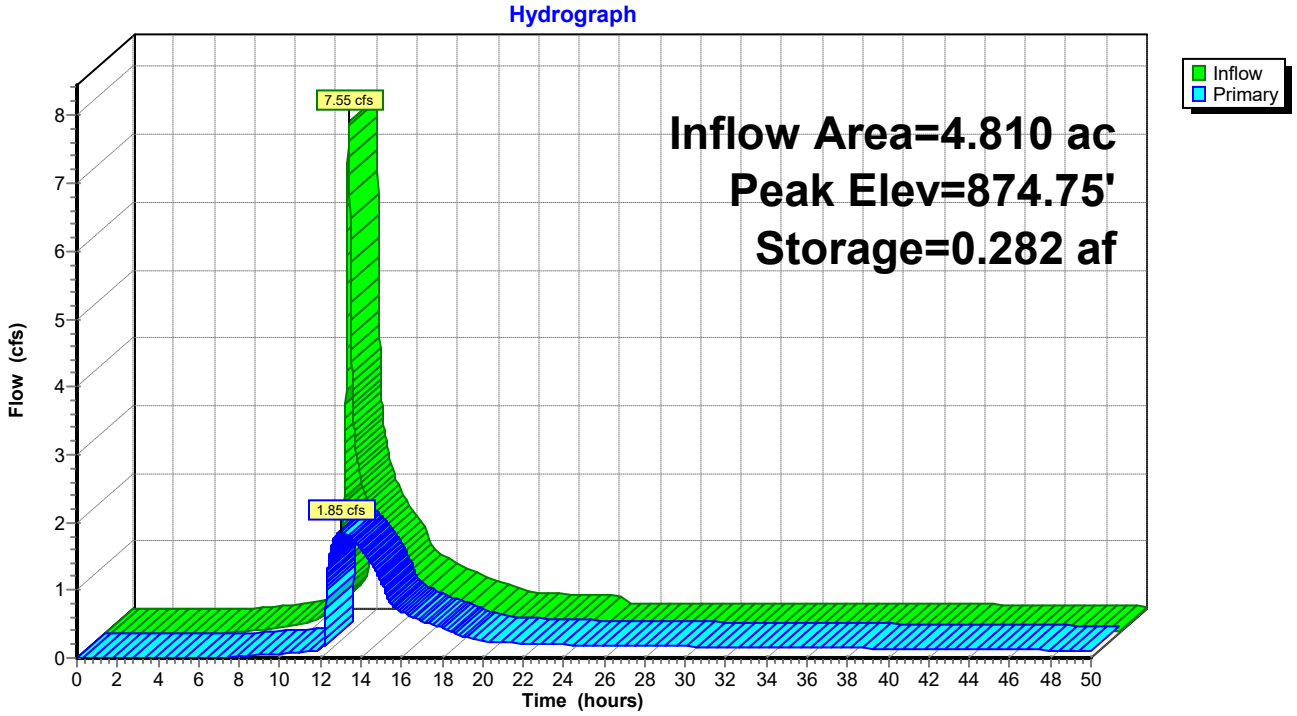
27,882.5 cf Field - 11,020.0 cf Chambers = 16,862.4 cf Stone x 40.0% Voids = 6,745.0 cf Stone Storage

Chamber Storage + Stone Storage = 17,765.0 cf = 0.408 af
Overall Storage Efficiency = 63.7%
Overall System Size = 212.74' x 19.42' x 6.75'

102 Chambers
1,032.7 cy Field
624.5 cy Stone



Pond 6P: StormTech 05



Summary for Pond 7P: StormTech 06

Inflow Area = 1.620 ac, 65.00% Impervious, Inflow Depth = 2.67" for 10 year event
Inflow = 6.45 cfs @ 12.01 hrs, Volume= 0.361 af
Outflow = 1.26 cfs @ 12.25 hrs, Volume= 0.350 af, Atten= 81%, Lag= 14.4 min
Primary = 1.26 cfs @ 12.25 hrs, Volume= 0.350 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 876.12' @ 12.26 hrs Surf.Area= 0.072 ac Storage= 0.174 af

Plug-Flow detention time= 366.1 min calculated for 0.350 af (97% of inflow)
Center-of-Mass det. time= 348.2 min (1,149.8 - 801.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	872.75'	0.117 af	**19.42'W x 160.42'L x 6.75'H Field A** 0.483 af Overall - 0.189 af Embedded = 0.293 af x 40.0% Voids
#2A	873.50'	0.189 af	**ADS_StormTech MC-4500 b +Cap** x 76 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 76 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.307 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	872.75'	**12.0" Round RCP_Round 12"** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 872.75' / 872.52' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	872.75'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.50'	**6.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.26 cfs @ 12.25 hrs HW=876.12' TW=874.08' (Dynamic Tailwater)
↑—**1=RCP_Round 12"** (Passes 1.26 cfs of 5.24 cfs potential flow)
↑—**2=WQ Orifice** (Orifice Controls 0.05 cfs @ 6.86 fps)
—**3=Orifice** (Orifice Controls 1.20 cfs @ 6.12 fps)

Pond 7P: StormTech 06 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

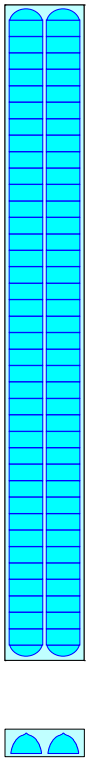
38 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 158.42' Row Length +12.0" End Stone x 2 = 160.42' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

76 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 8,251.3 cf Chamber Storage

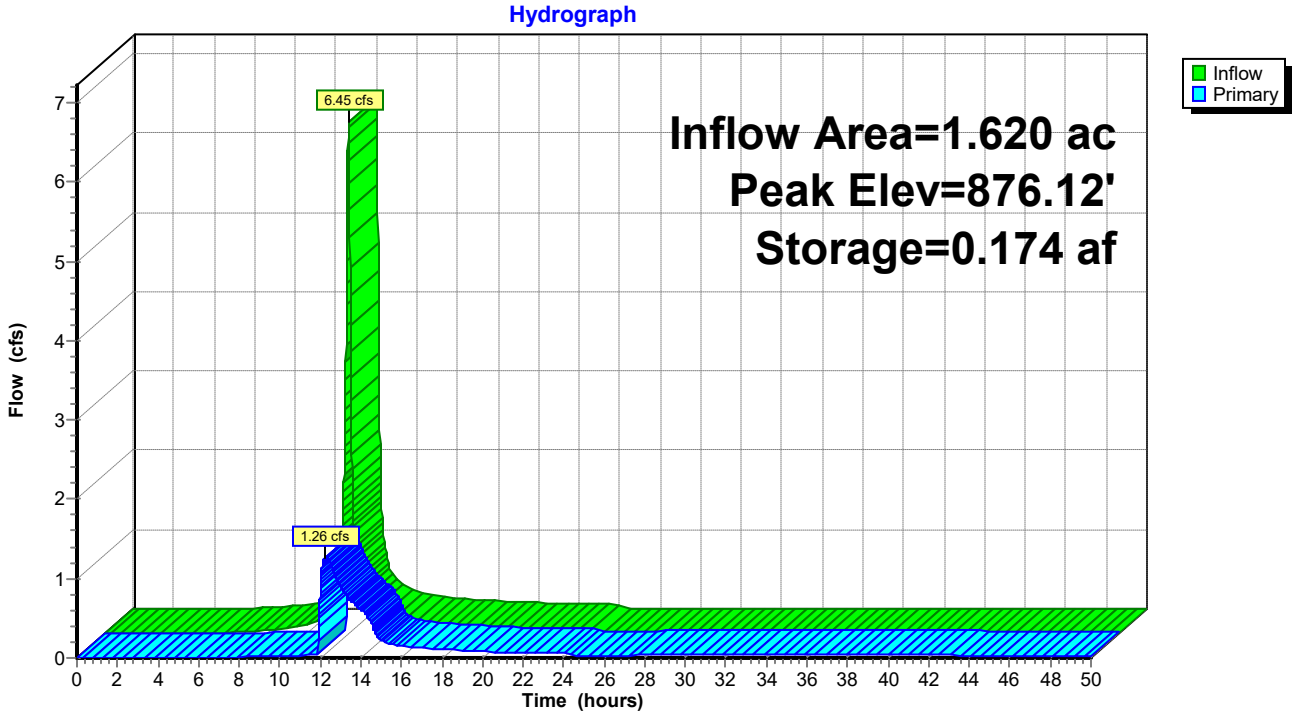
21,024.6 cf Field - 8,251.3 cf Chambers = 12,773.3 cf Stone x 40.0% Voids = 5,109.3 cf Stone Storage

Chamber Storage + Stone Storage = 13,360.6 cf = 0.307 af
Overall Storage Efficiency = 63.5%
Overall System Size = 160.42' x 19.42' x 6.75'

76 Chambers
778.7 cy Field
473.1 cy Stone



Pond 7P: StormTech 06



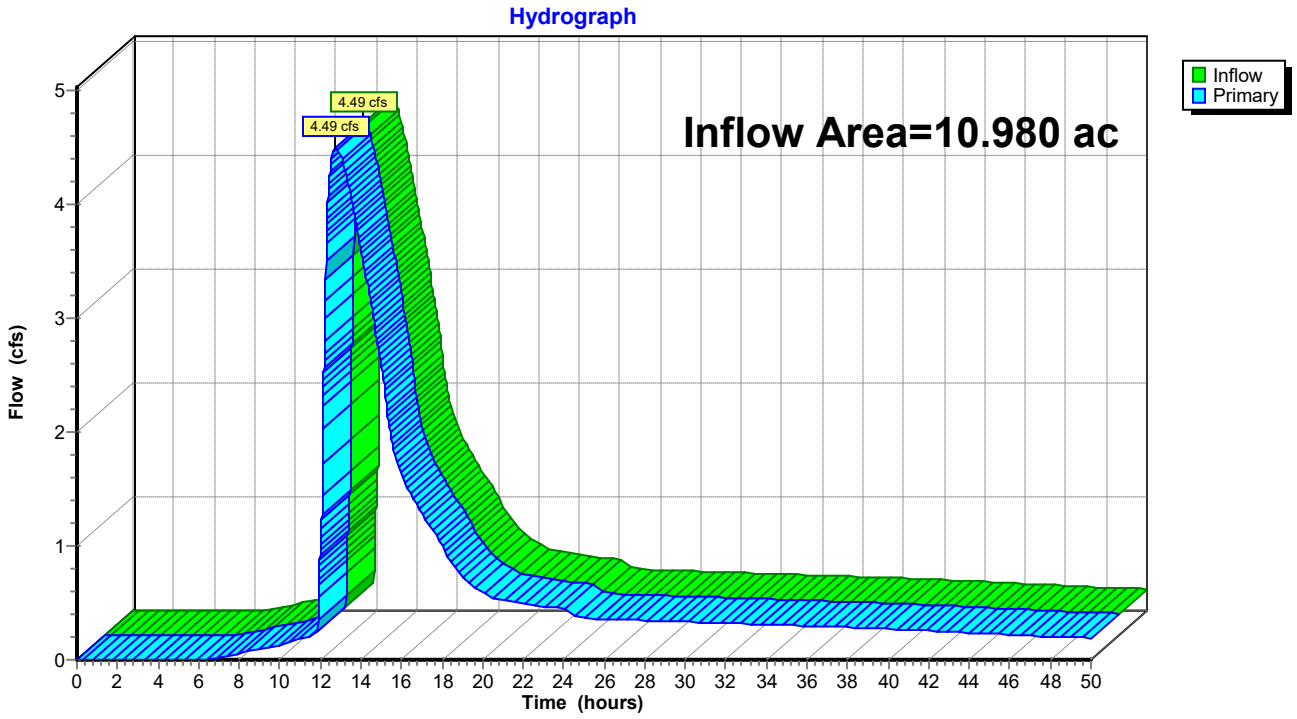
Summary for Pond 15P: Outfall 01

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.980 ac, 65.00% Impervious, Inflow Depth > 2.44" for 10 year event
Inflow = 4.49 cfs @ 12.77 hrs, Volume= 2.235 af
Primary = 4.49 cfs @ 12.77 hrs, Volume= 2.235 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Pond 15P: Outfall 01



Summary for Subcatchment 8S: Pre-developed 01

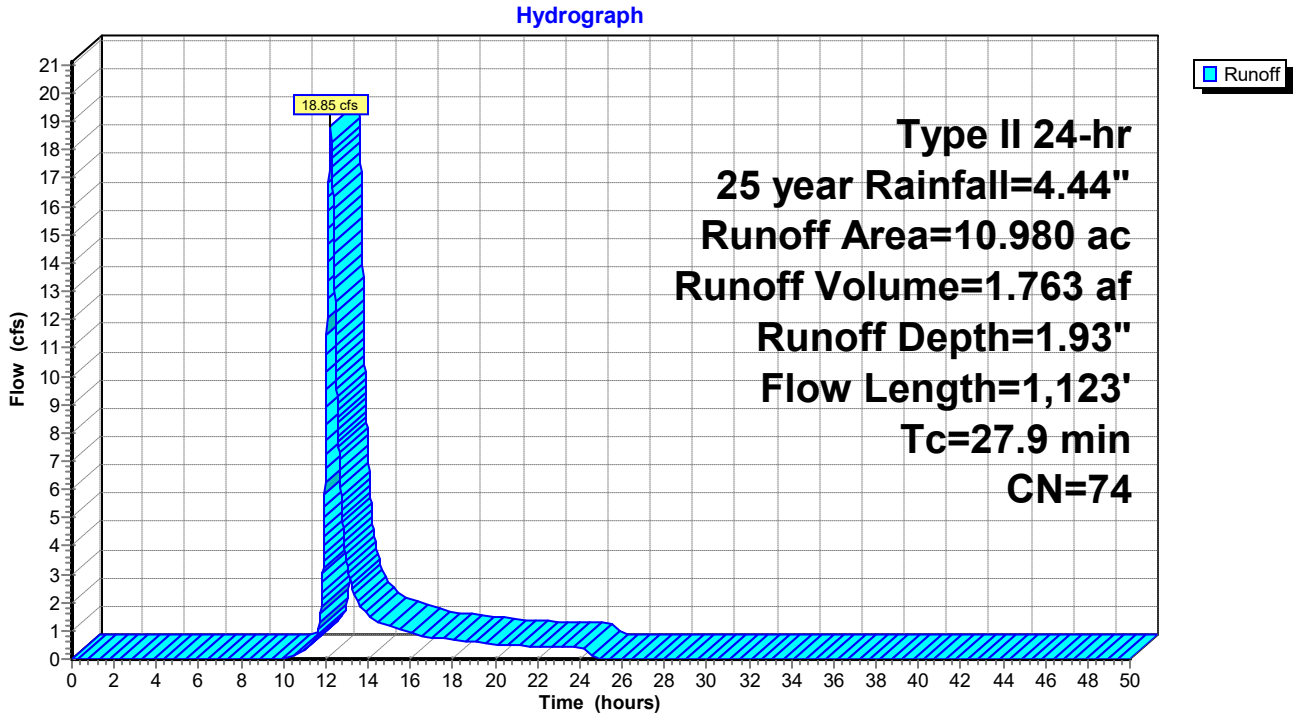
Runoff = 18.85 cfs @ 12.24 hrs, Volume= 1.763 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 year Rainfall=4.44"

Area (ac)	CN	Description
10.980	74	>75% Grass cover, Good, HSG C
10.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0242	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
17.9	1,023	0.0186	0.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.9	1,123	Total			

Subcatchment 8S: Pre-developed 01



Summary for Subcatchment 9S: Subarea 01

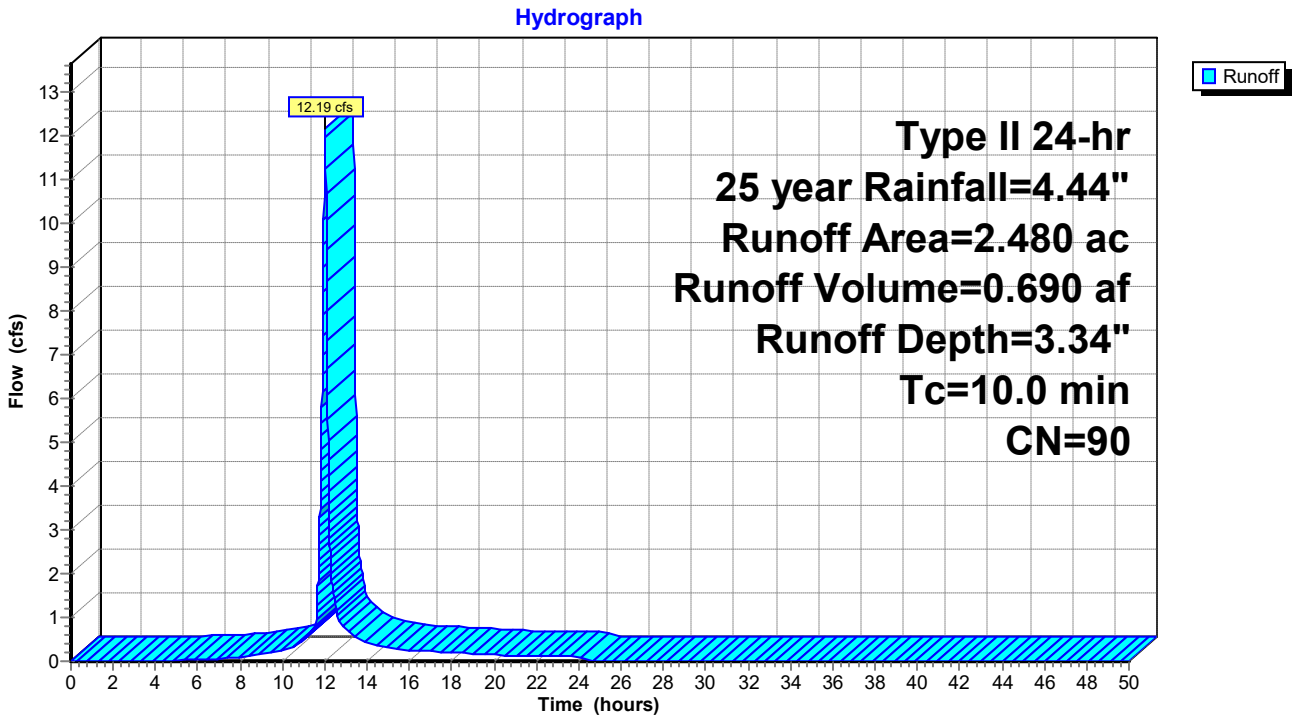
Runoff = 12.19 cfs @ 12.01 hrs, Volume= 0.690 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 year Rainfall=4.44"

Area (ac)	CN	Description
2.480	90	1/8 acre lots, 65% imp, HSG C
0.868		35.00% Pervious Area
1.612		65.00% Impervious Area

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

Subcatchment 9S: Subarea 01



Summary for Subcatchment 10S: Subarea 02

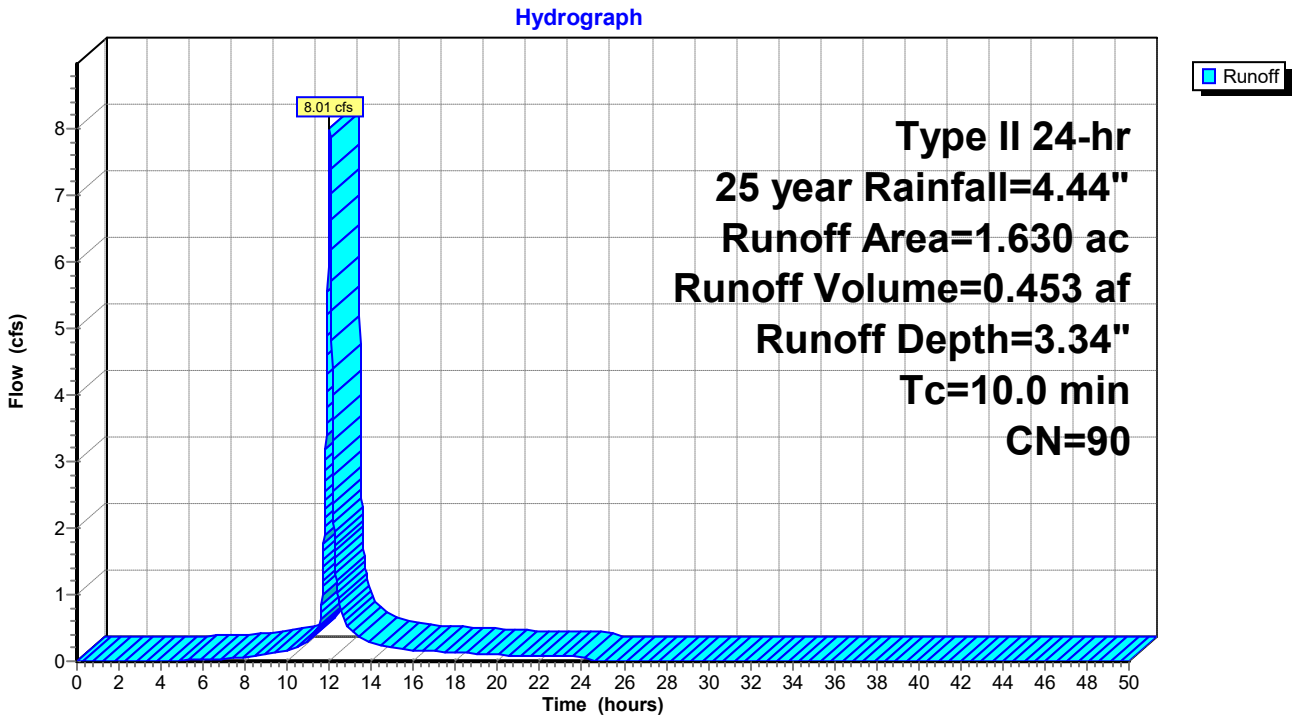
Runoff = 8.01 cfs @ 12.01 hrs, Volume= 0.453 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 year Rainfall=4.44"

Area (ac)	CN	Description
1.630	90	1/8 acre lots, 65% imp, HSG C
0.570		35.00% Pervious Area
1.060		65.00% Impervious Area

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

Subcatchment 10S: Subarea 02



Summary for Subcatchment 11S: Subarea 05

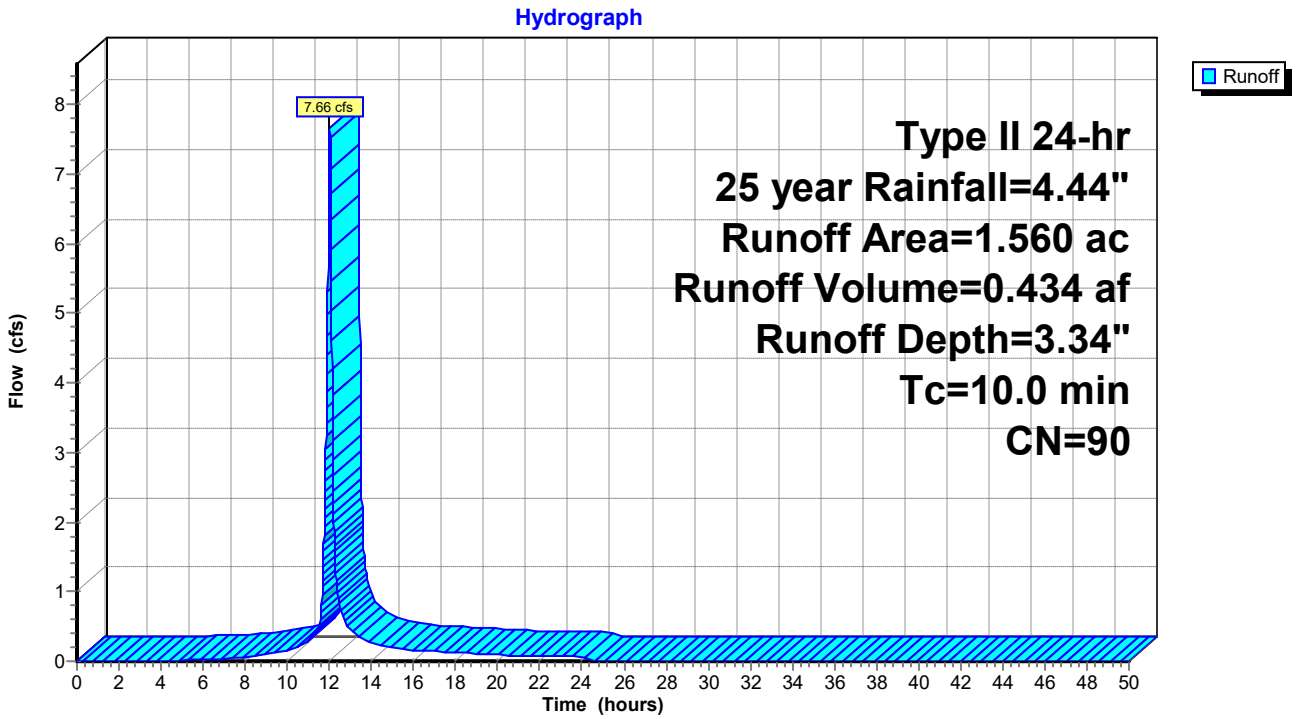
Runoff = 7.66 cfs @ 12.01 hrs, Volume= 0.434 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 year Rainfall=4.44"

Area (ac)	CN	Description
1.560	90	1/8 acre lots, 65% imp, HSG C
0.546		35.00% Pervious Area
1.014		65.00% Impervious Area

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

Subcatchment 11S: Subarea 05



Summary for Subcatchment 12S: Subarea 04

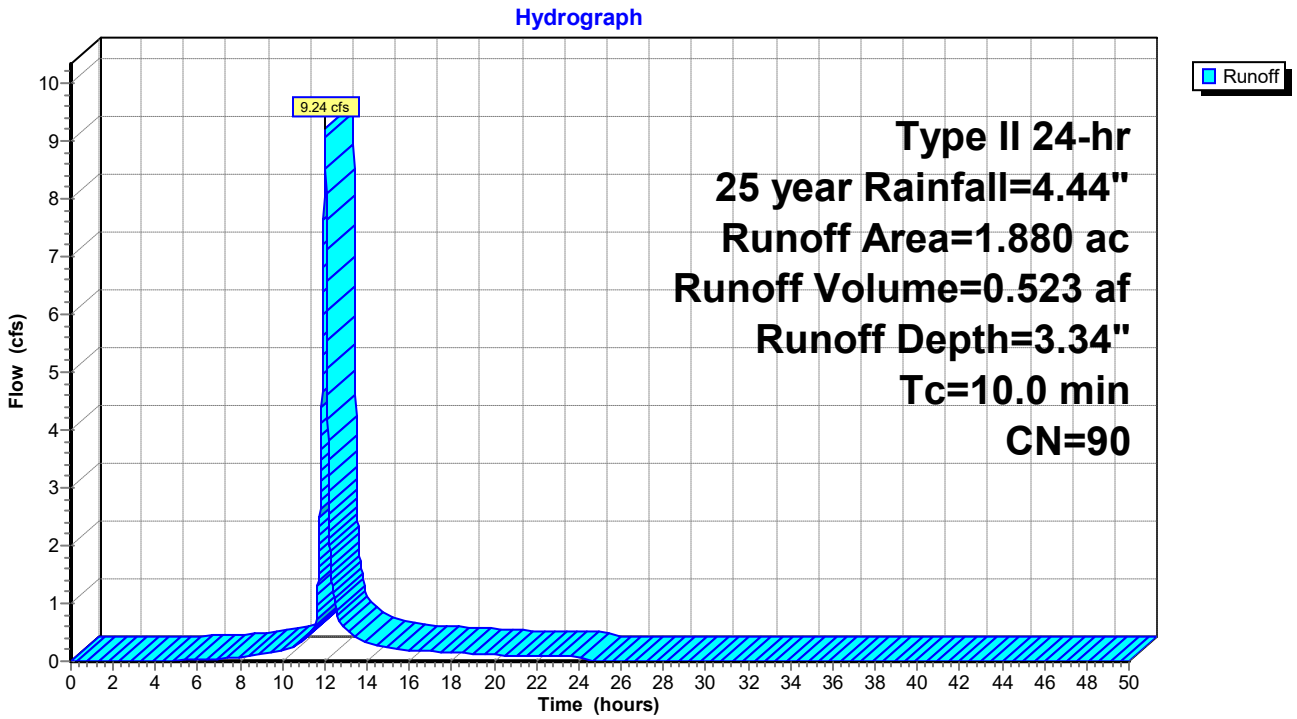
Runoff = 9.24 cfs @ 12.01 hrs, Volume= 0.523 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 year Rainfall=4.44"

Area (ac)	CN	Description
1.880	90	1/8 acre lots, 65% imp, HSG C
0.658		35.00% Pervious Area
1.222		65.00% Impervious Area

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

Subcatchment 12S: Subarea 04



Summary for Subcatchment 13S: Subarea 06

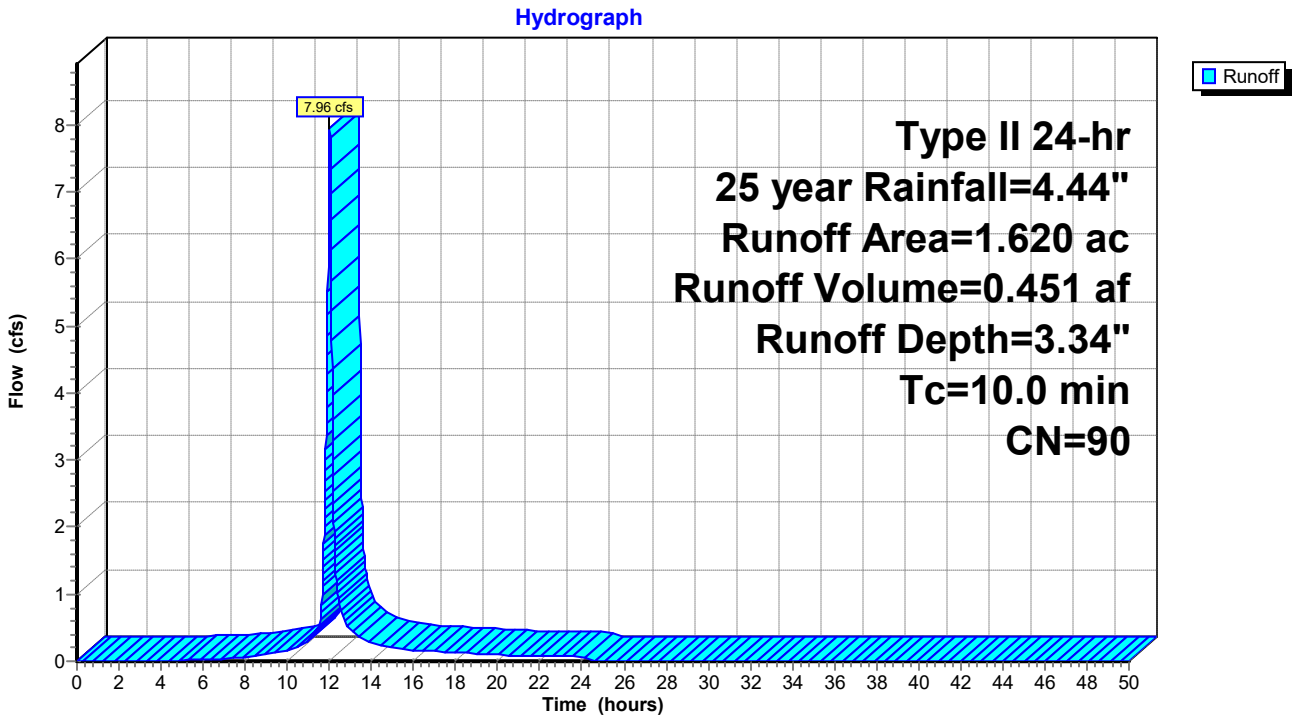
Runoff = 7.96 cfs @ 12.01 hrs, Volume= 0.451 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 year Rainfall=4.44"

Area (ac)	CN	Description
1.620	90	1/8 acre lots, 65% imp, HSG C
0.567		35.00% Pervious Area
1.053		65.00% Impervious Area

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

Subcatchment 13S: Subarea 06



Summary for Subcatchment 14S: Subarea 03

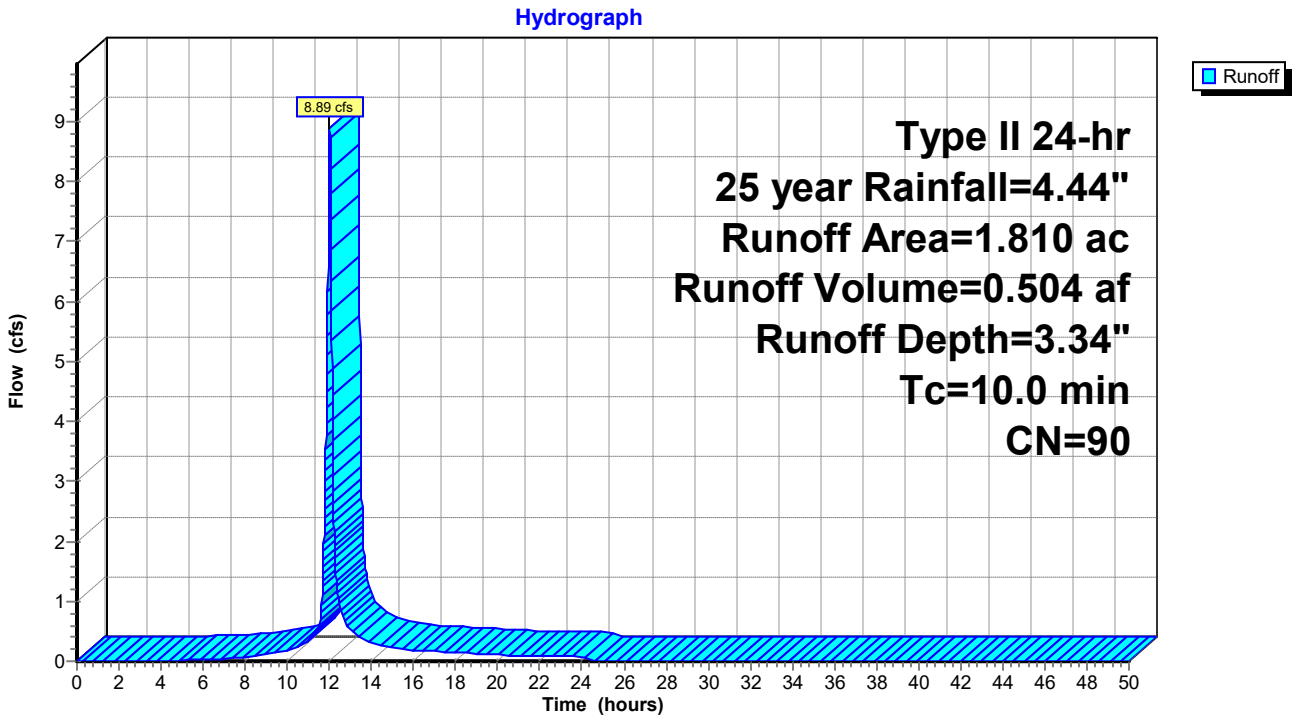
Runoff = 8.89 cfs @ 12.01 hrs, Volume= 0.504 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 year Rainfall=4.44"

Area (ac)	CN	Description
1.810	90	1/8 acre lots, 65% imp, HSG C
0.634		35.00% Pervious Area
1.177		65.00% Impervious Area

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

Subcatchment 14S: Subarea 03



Summary for Pond 1P: StormTech 01

Inflow Area = 2.480 ac, 65.00% Impervious, Inflow Depth = 3.34" for 25 year event
Inflow = 12.19 cfs @ 12.01 hrs, Volume= 0.690 af
Outflow = 1.22 cfs @ 12.52 hrs, Volume= 0.679 af, Atten= 90%, Lag= 30.3 min
Primary = 1.22 cfs @ 12.52 hrs, Volume= 0.679 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 870.58' @ 12.52 hrs Surf.Area= 0.118 ac Storage= 0.374 af

Plug-Flow detention time= 338.6 min calculated for 0.679 af (98% of inflow)
Center-of-Mass det. time= 329.2 min (1,124.6 - 795.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	866.20'	0.190 af	**55.75'W x 91.99'L x 6.75'H Field A** 0.795 af Overall - 0.319 af Embedded = 0.476 af x 40.0% Voids
#2A	866.95'	0.319 af	**ADS_StormTech MC-4500 b +Cap** x 126 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 126 Chambers in 6 Rows Cap Storage= +39.5 cf x 2 x 6 rows = 474.0 cf
		0.509 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	866.20'	**12.0" Round RCP_Round 12"** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.20' / 865.92' S= 0.0048 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	866.20'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	867.80'	**5.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.22 cfs @ 12.52 hrs HW=870.58' TW=865.92' (Dynamic Tailwater)
↑└─**1=RCP_Round 12"** (Passes 1.22 cfs of 6.62 cfs potential flow)
↑ ├─**2=WQ Orifice** (Orifice Controls 0.12 cfs @ 10.00 fps)
└─**3=Orifice** (Orifice Controls 1.09 cfs @ 8.03 fps)

Pond 1P: StormTech 01 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 6 rows = 474.0 cf

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

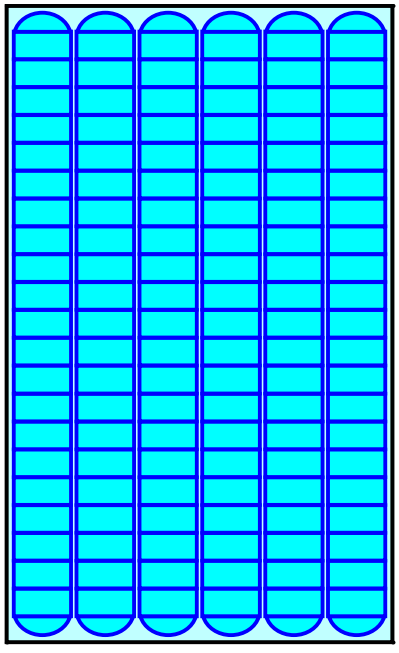
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

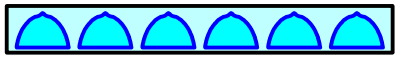
126 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 6 Rows = 13,891.8 cf Chamber Storage

34,617.6 cf Field - 13,891.8 cf Chambers = 20,725.8 cf Stone x 40.0% Voids = 8,290.3 cf Stone Storage

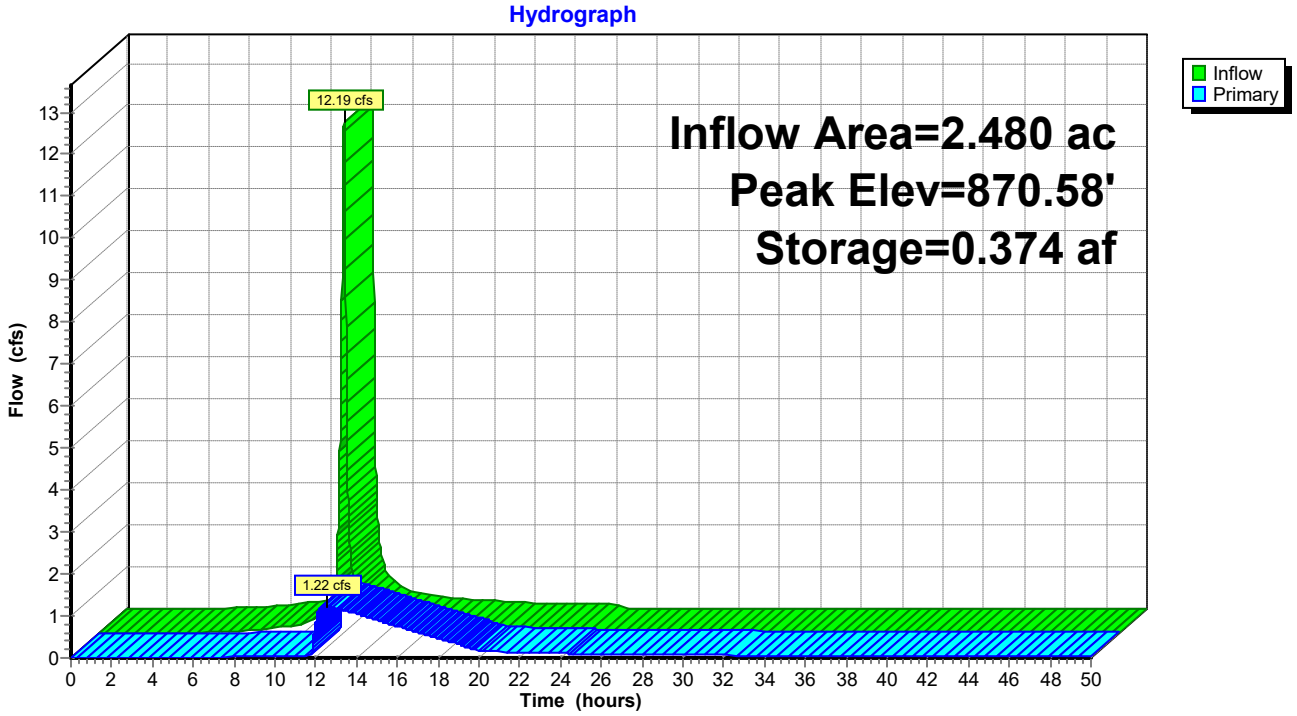
Chamber Storage + Stone Storage = 22,182.1 cf = 0.509 af
Overall Storage Efficiency = 64.1%
Overall System Size = 91.99' x 55.75' x 6.75'

126 Chambers
1,282.1 cy Field
767.6 cy Stone





Pond 1P: StormTech 01



Summary for Pond 2P: StormTech 02

Inflow Area = 1.630 ac, 65.00% Impervious, Inflow Depth = 3.34" for 25 year event
Inflow = 8.01 cfs @ 12.01 hrs, Volume= 0.453 af
Outflow = 0.77 cfs @ 12.52 hrs, Volume= 0.446 af, Atten= 90%, Lag= 30.2 min
Primary = 0.77 cfs @ 12.52 hrs, Volume= 0.446 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 879.03' @ 12.54 hrs Surf.Area= 0.079 ac Storage= 0.248 af

Plug-Flow detention time= 343.7 min calculated for 0.445 af (98% of inflow)
Center-of-Mass det. time= 333.1 min (1,128.4 - 795.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	874.72'	0.129 af	**37.58'W x 91.99'L x 6.75'H Field A** 0.536 af Overall - 0.213 af Embedded = 0.323 af x 40.0% Voids
#2A	875.47'	0.213 af	**ADS_StormTech MC-4500 b +Cap** x 84 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 84 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.342 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	874.72'	**12.0" Round RCP_Round 12"** L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 874.72' / 874.31' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	874.72'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.30'	**4.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.77 cfs @ 12.52 hrs HW=879.03' TW=875.19' (Dynamic Tailwater)
↑—**1=RCP_Round 12"** (Passes 0.77 cfs of 6.02 cfs potential flow)
↑—**2=WQ Orifice** (Orifice Controls 0.07 cfs @ 9.43 fps)
—**3=Orifice** (Orifice Controls 0.69 cfs @ 7.96 fps)

Pond 2P: StormTech 02 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 4 rows = 316.0 cf

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

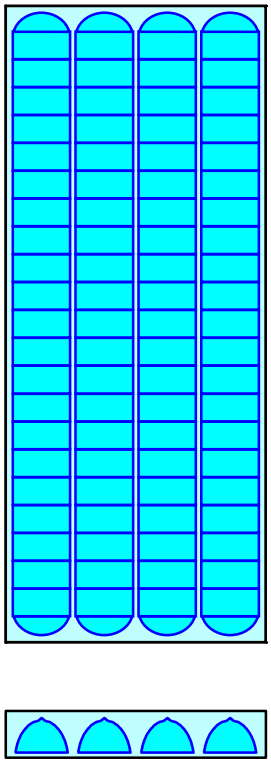
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

84 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,261.2 cf Chamber Storage

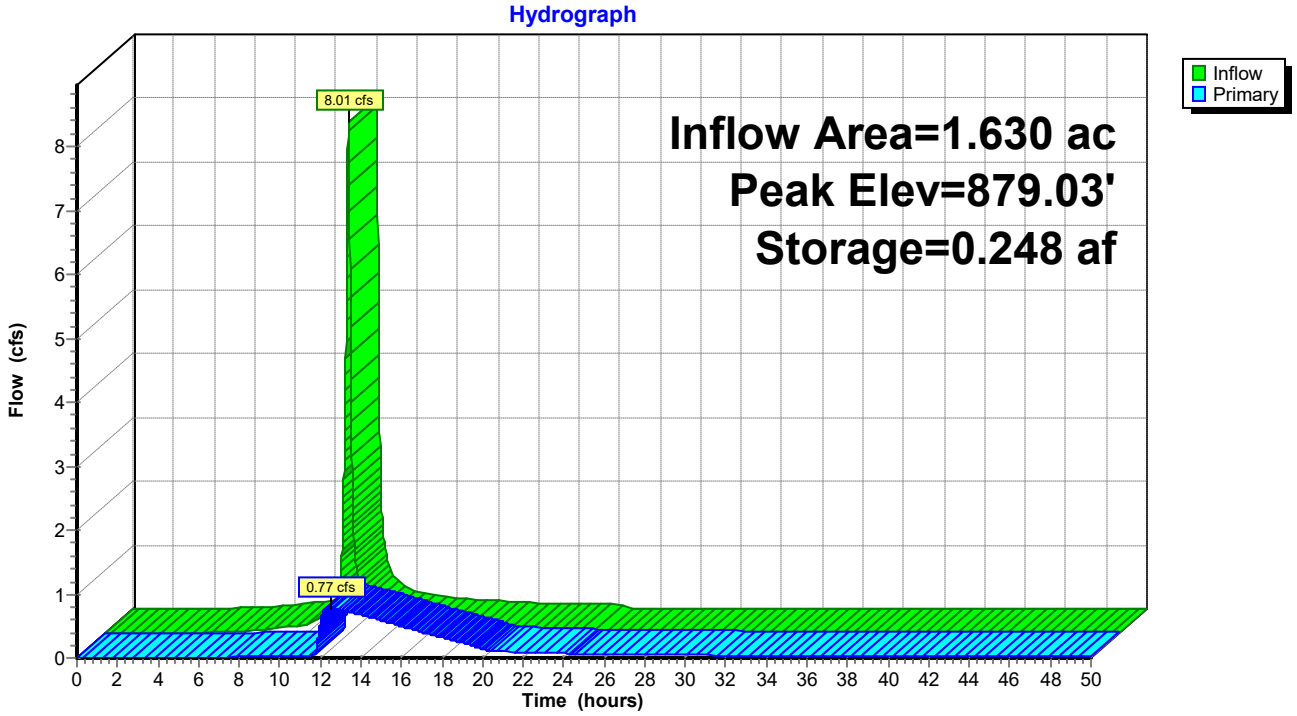
23,337.1 cf Field - 9,261.2 cf Chambers = 14,075.9 cf Stone x 40.0% Voids = 5,630.4 cf Stone Storage

Chamber Storage + Stone Storage = 14,891.6 cf = 0.342 af
Overall Storage Efficiency = 63.8%
Overall System Size = 91.99' x 37.58' x 6.75'

84 Chambers
864.3 cy Field
521.3 cy Stone



Pond 2P: StormTech 02



Summary for Pond 3P: StormTech 03

Inflow Area = 4.290 ac, 65.00% Impervious, Inflow Depth > 3.31" for 25 year event
Inflow = 9.77 cfs @ 12.01 hrs, Volume= 1.183 af
Outflow = 2.31 cfs @ 12.42 hrs, Volume= 1.061 af, Atten= 76%, Lag= 24.0 min
Primary = 2.31 cfs @ 12.42 hrs, Volume= 1.061 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 865.94' @ 12.42 hrs Surf.Area= 0.093 ac Storage= 0.296 af

Plug-Flow detention time= 304.9 min calculated for 1.061 af (90% of inflow)
Center-of-Mass det. time= 180.5 min (1,164.9 - 984.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	861.53'	0.152 af	**19.42'W x 208.72'L x 6.75'H Field A** 0.628 af Overall - 0.248 af Embedded = 0.380 af x 40.0% Voids
#2A	862.28'	0.248 af	**ADS_StormTech MC-4500 b +Cap** x 100 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 100 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.400 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	861.53'	**12.0" Round RCP_Round 12"** L= 19.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.53' / 861.43' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	861.53'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.60'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.31 cfs @ 12.42 hrs HW=865.94' TW=0.00' (Dynamic Tailwater)
↑**1=RCP_Round 12"** (Passes 2.31 cfs of 7.48 cfs potential flow)
↑**2=WQ Orifice** (Orifice Controls 0.12 cfs @ 10.04 fps)
3=Orifice (Orifice Controls 2.19 cfs @ 5.57 fps)

Pond 3P: StormTech 03 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

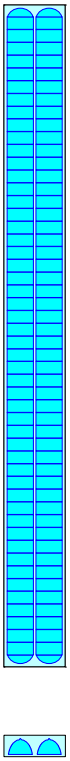
50 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 206.72' Row Length +12.0" End Stone x 2 = 208.72' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

100 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 10,807.0 cf Chamber Storage

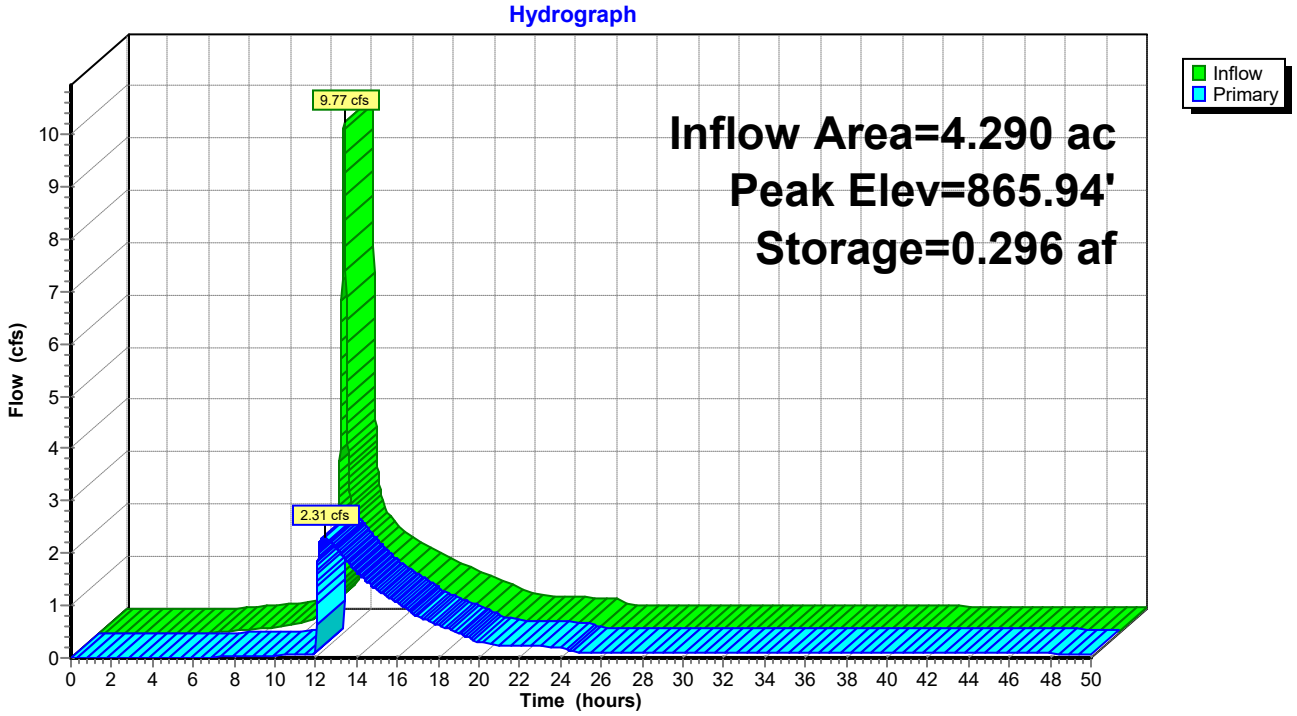
27,354.9 cf Field - 10,807.0 cf Chambers = 16,547.9 cf Stone x 40.0% Voids = 6,619.2 cf Stone Storage

Chamber Storage + Stone Storage = 17,426.2 cf = 0.400 af
Overall Storage Efficiency = 63.7%
Overall System Size = 208.72' x 19.42' x 6.75'

100 Chambers
1,013.1 cy Field
612.9 cy Stone



Pond 3P: StormTech 03



Summary for Pond 4P: StormTech 04

Inflow Area = 1.880 ac, 65.00% Impervious, Inflow Depth = 3.34" for 25 year event
Inflow = 9.24 cfs @ 12.01 hrs, Volume= 0.523 af
Outflow = 1.41 cfs @ 12.33 hrs, Volume= 0.522 af, Atten= 85%, Lag= 19.0 min
Primary = 1.41 cfs @ 12.33 hrs, Volume= 0.522 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 867.03' @ 12.33 hrs Surf.Area= 0.083 ac Storage= 0.261 af

Plug-Flow detention time= 283.8 min calculated for 0.522 af (100% of inflow)
Center-of-Mass det. time= 282.0 min (1,077.3 - 795.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	862.68'	0.135 af	**37.58'W x 96.02'L x 6.75'H Field A** 0.559 af Overall - 0.222 af Embedded = 0.337 af x 40.0% Voids
#2A	863.43'	0.222 af	**ADS_StormTech MC-4500 b +Cap** x 88 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 88 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.357 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	862.68'	**12.0" Round RCP_Round 12"** L= 70.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 862.68' / 862.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	862.68'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.40'	**5.5" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.41 cfs @ 12.33 hrs HW=867.03' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 1.41 cfs of 6.29 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.12 cfs @ 9.97 fps)
  └─**3=Orifice** (Orifice Controls 1.29 cfs @ 7.81 fps)

Pond 4P: StormTech 04 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf

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

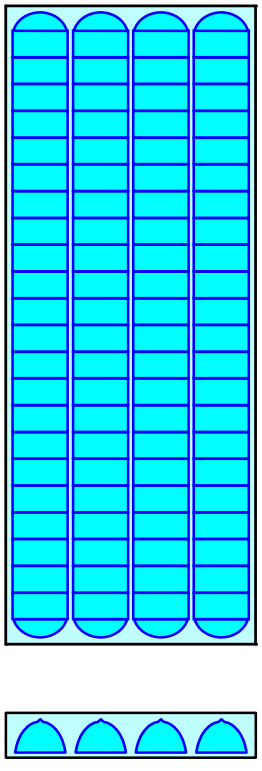
22 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 94.02' Row Length +12.0" End Stone x 2 = 96.02' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

88 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,687.2 cf Chamber Storage

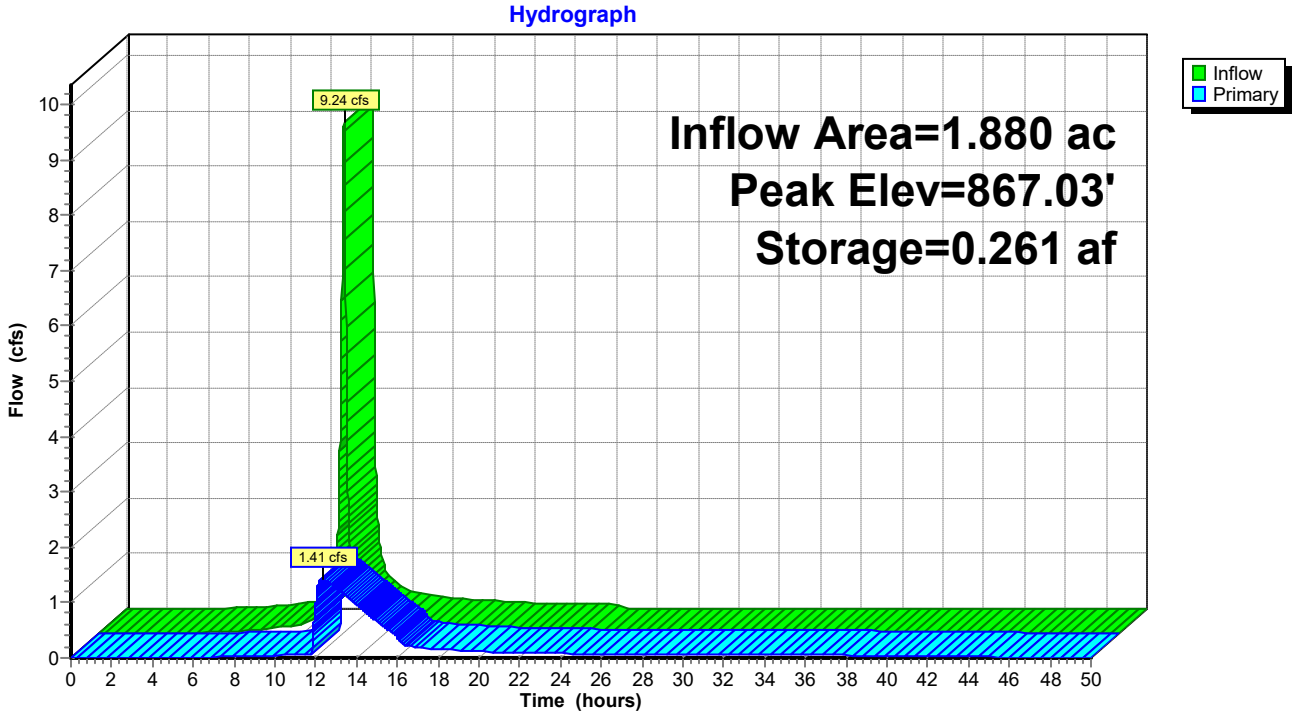
24,358.2 cf Field - 9,687.2 cf Chambers = 14,671.1 cf Stone x 40.0% Voids = 5,868.4 cf Stone Storage

Chamber Storage + Stone Storage = 15,555.6 cf = 0.357 af
Overall Storage Efficiency = 63.9%
Overall System Size = 96.02' x 37.58' x 6.75'

88 Chambers
902.2 cy Field
543.4 cy Stone



Pond 4P: StormTech 04



Summary for Pond 6P: StormTech 05

Inflow Area = 4.810 ac, 65.00% Impervious, Inflow Depth > 3.29" for 25 year event
Inflow = 9.39 cfs @ 12.02 hrs, Volume= 1.319 af
Outflow = 2.37 cfs @ 12.85 hrs, Volume= 1.258 af, Atten= 75%, Lag= 49.8 min
Primary = 2.37 cfs @ 12.85 hrs, Volume= 1.258 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 875.29' @ 12.85 hrs Surf.Area= 0.095 ac Storage= 0.315 af

Plug-Flow detention time= 303.5 min calculated for 1.258 af (95% of inflow)
Center-of-Mass det. time= 226.7 min (1,234.5 - 1,007.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	870.65'	0.155 af	**19.42'W x 212.74'L x 6.75'H Field A** 0.640 af Overall - 0.253 af Embedded = 0.387 af x 40.0% Voids
#2A	871.40'	0.253 af	**ADS_StormTech MC-4500 b +Cap** x 102 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 102 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.408 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	870.65'	**12.0" Round RCP_Round 12"** L= 64.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 870.65' / 870.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	870.65'	**2.0" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.00'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.37 cfs @ 12.85 hrs HW=875.29' TW=0.00' (Dynamic Tailwater)
↑**1=RCP_Round 12"** (Passes 2.37 cfs of 6.69 cfs potential flow)
↑**2=WQ Orifice** (Orifice Controls 0.22 cfs @ 10.27 fps)
3=Orifice (Orifice Controls 2.14 cfs @ 5.46 fps)

Pond 6P: StormTech 05 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

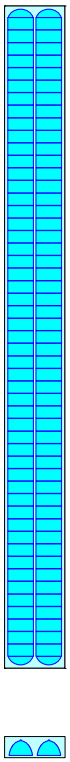
51 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 210.74' Row Length +12.0" End Stone x 2 = 212.74' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

102 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 11,020.0 cf Chamber Storage

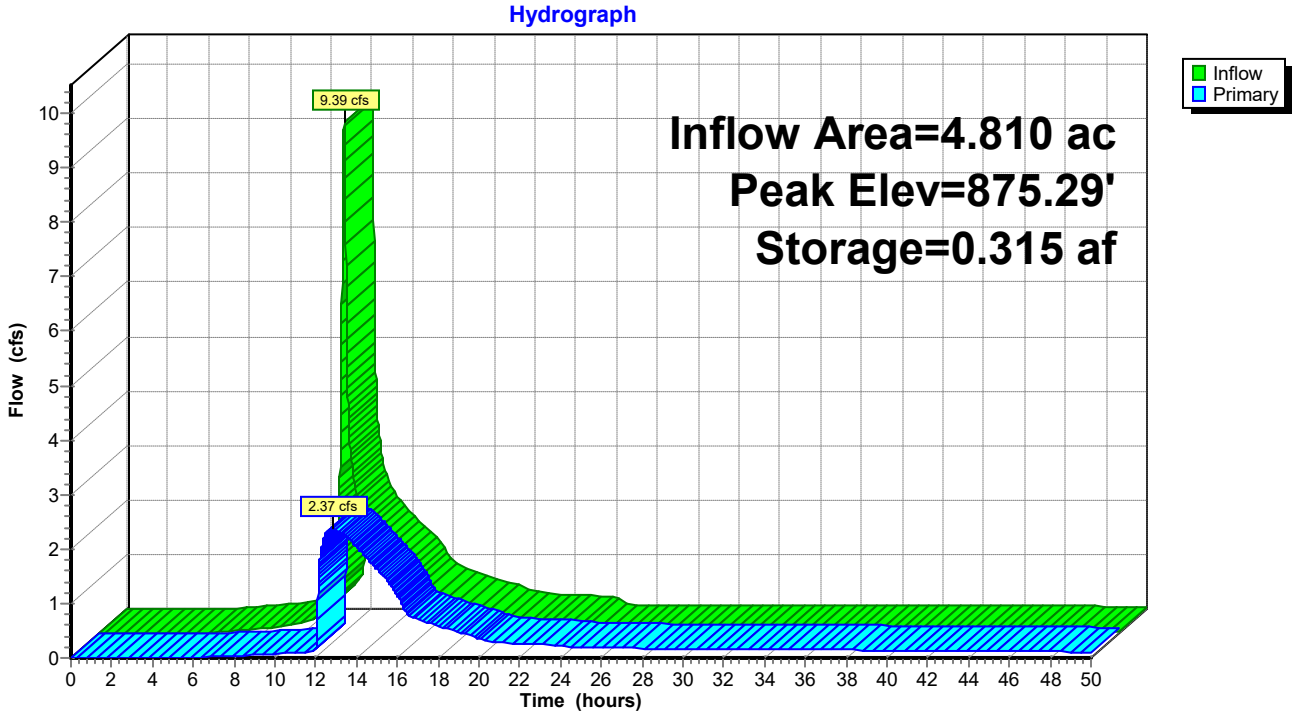
27,882.5 cf Field - 11,020.0 cf Chambers = 16,862.4 cf Stone x 40.0% Voids = 6,745.0 cf Stone Storage

Chamber Storage + Stone Storage = 17,765.0 cf = 0.408 af
Overall Storage Efficiency = 63.7%
Overall System Size = 212.74' x 19.42' x 6.75'

102 Chambers
1,032.7 cy Field
624.5 cy Stone



Pond 6P: StormTech 05



Summary for Pond 7P: StormTech 06

Inflow Area = 1.620 ac, 65.00% Impervious, Inflow Depth = 3.34" for 25 year event
Inflow = 7.96 cfs @ 12.01 hrs, Volume= 0.451 af
Outflow = 1.51 cfs @ 12.16 hrs, Volume= 0.440 af, Atten= 81%, Lag= 8.9 min
Primary = 1.51 cfs @ 12.16 hrs, Volume= 0.440 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 876.98' @ 12.28 hrs Surf.Area= 0.072 ac Storage= 0.218 af

Plug-Flow detention time= 314.5 min calculated for 0.440 af (98% of inflow)
Center-of-Mass det. time= 299.8 min (1,095.2 - 795.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	872.75'	0.117 af	**19.42'W x 160.42'L x 6.75'H Field A** 0.483 af Overall - 0.189 af Embedded = 0.293 af x 40.0% Voids
#2A	873.50'	0.189 af	**ADS_StormTech MC-4500 b +Cap** x 76 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 76 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.307 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	872.75'	**12.0" Round RCP_Round 12"** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 872.75' / 872.52' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	872.75'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.50'	**6.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.50 cfs @ 12.16 hrs HW=876.87' TW=874.55' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 1.50 cfs of 5.60 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.06 cfs @ 7.34 fps)
  └─**3=Orifice** (Orifice Controls 1.44 cfs @ 7.34 fps)

Pond 7P: StormTech 06 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

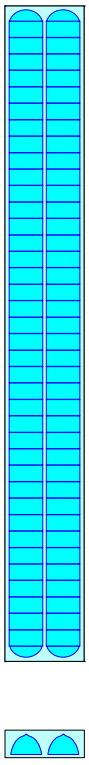
38 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 158.42' Row Length +12.0" End Stone x 2 = 160.42' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

76 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 8,251.3 cf Chamber Storage

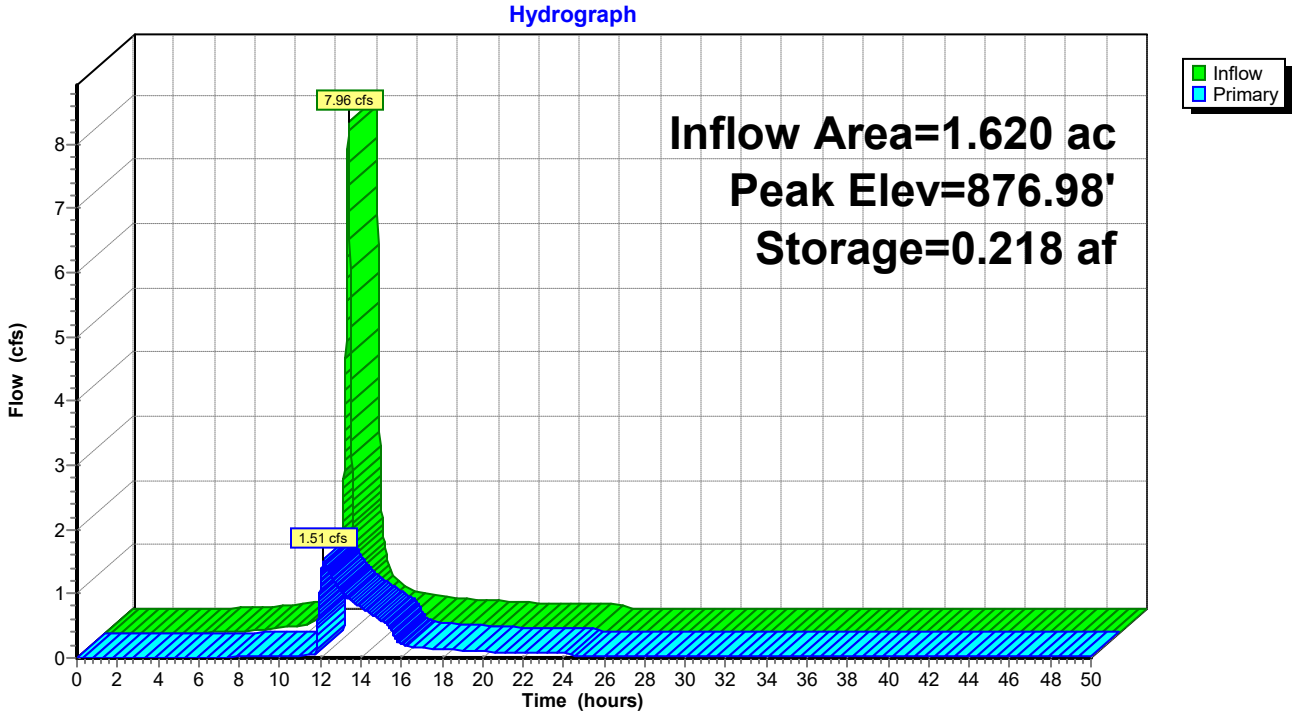
21,024.6 cf Field - 8,251.3 cf Chambers = 12,773.3 cf Stone x 40.0% Voids = 5,109.3 cf Stone Storage

Chamber Storage + Stone Storage = 13,360.6 cf = 0.307 af
Overall Storage Efficiency = 63.5%
Overall System Size = 160.42' x 19.42' x 6.75'

76 Chambers
778.7 cy Field
473.1 cy Stone



Pond 7P: StormTech 06



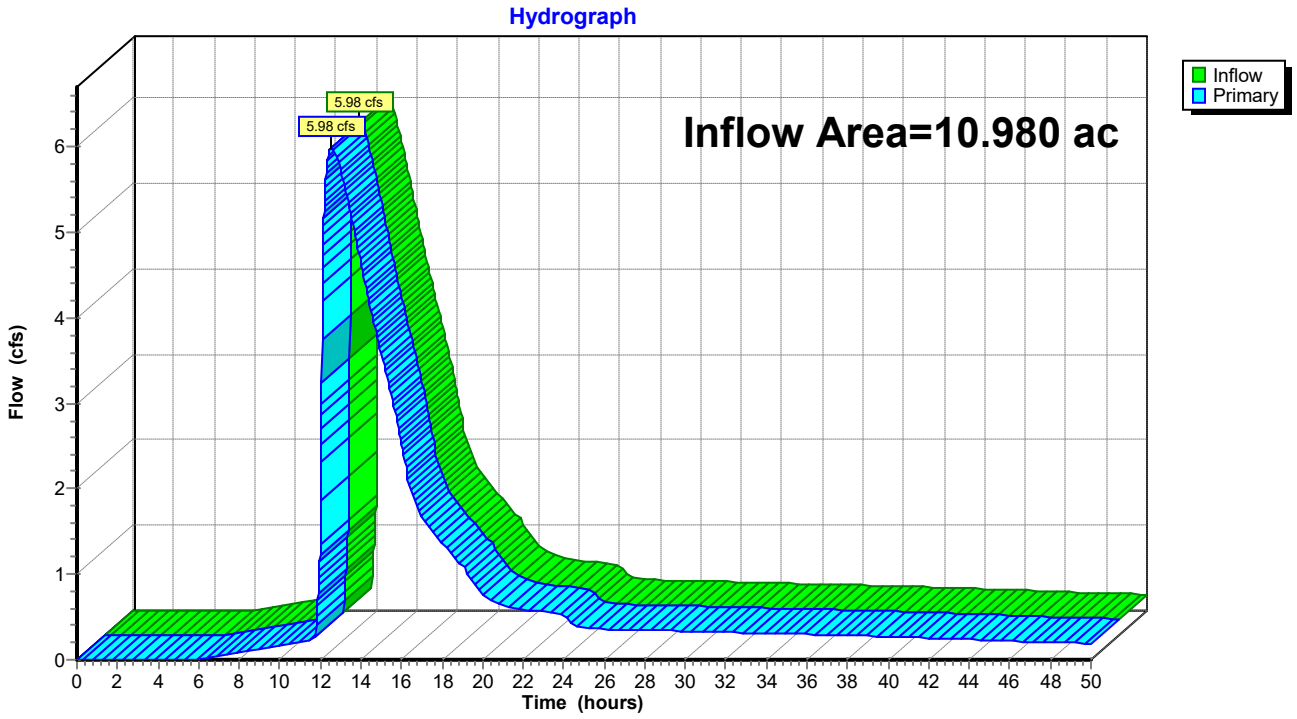
Summary for Pond 15P: Outfall 01

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.980 ac, 65.00% Impervious, Inflow Depth > 3.10" for 25 year event
Inflow = 5.98 cfs @ 12.56 hrs, Volume= 2.841 af
Primary = 5.98 cfs @ 12.56 hrs, Volume= 2.841 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Pond 15P: Outfall 01



Summary for Subcatchment 8S: Pre-developed 01

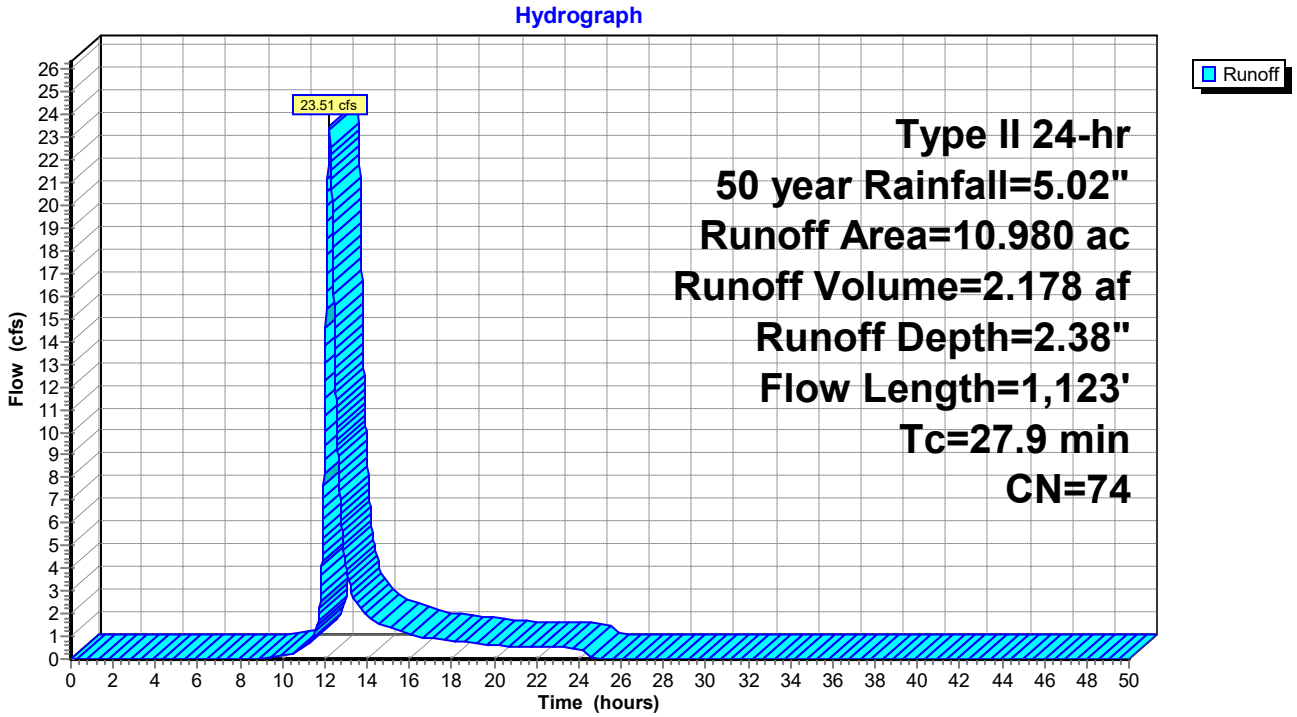
Runoff = 23.51 cfs @ 12.22 hrs, Volume= 2.178 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 year Rainfall=5.02"

Area (ac)	CN	Description
10.980	74	>75% Grass cover, Good, HSG C
10.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0242	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
17.9	1,023	0.0186	0.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.9	1,123	Total			

Subcatchment 8S: Pre-developed 01



Summary for Subcatchment 9S: Subarea 01

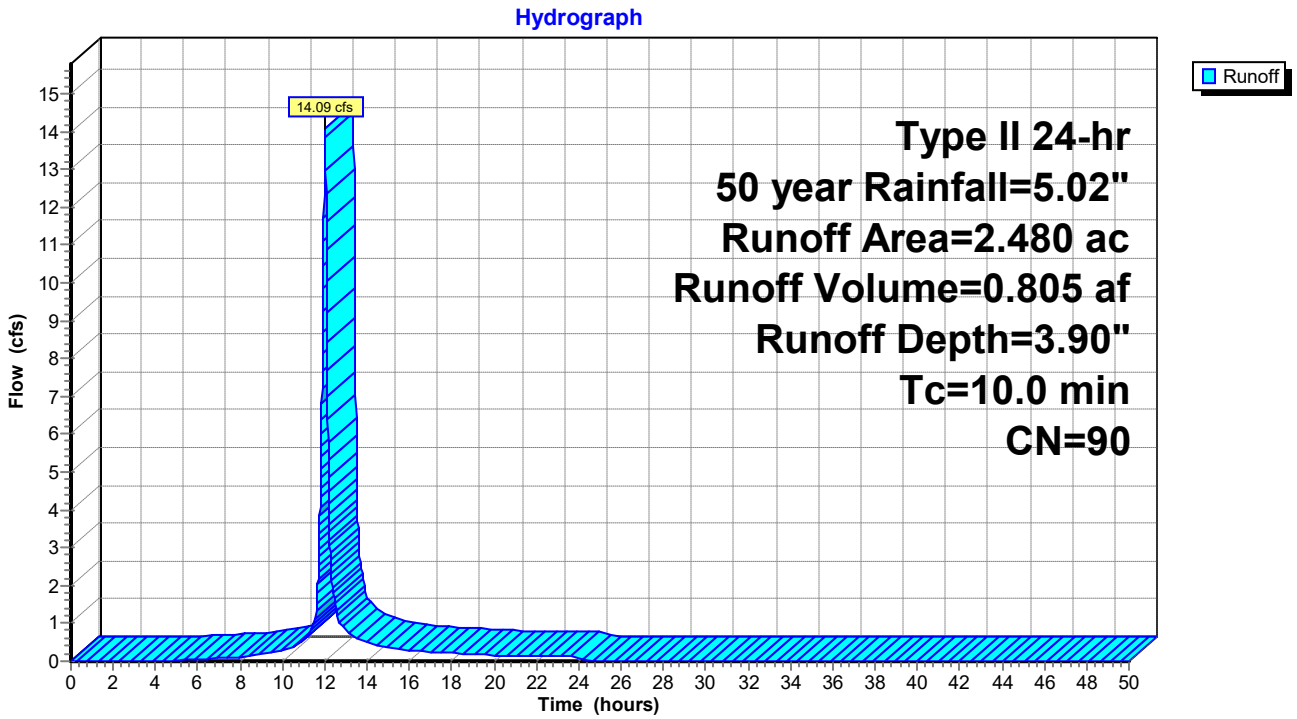
Runoff = 14.09 cfs @ 12.01 hrs, Volume= 0.805 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 year Rainfall=5.02"

Area (ac)	CN	Description
2.480	90	1/8 acre lots, 65% imp, HSG C
0.868		35.00% Pervious Area
1.612		65.00% Impervious Area

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

Subcatchment 9S: Subarea 01



Summary for Subcatchment 10S: Subarea 02

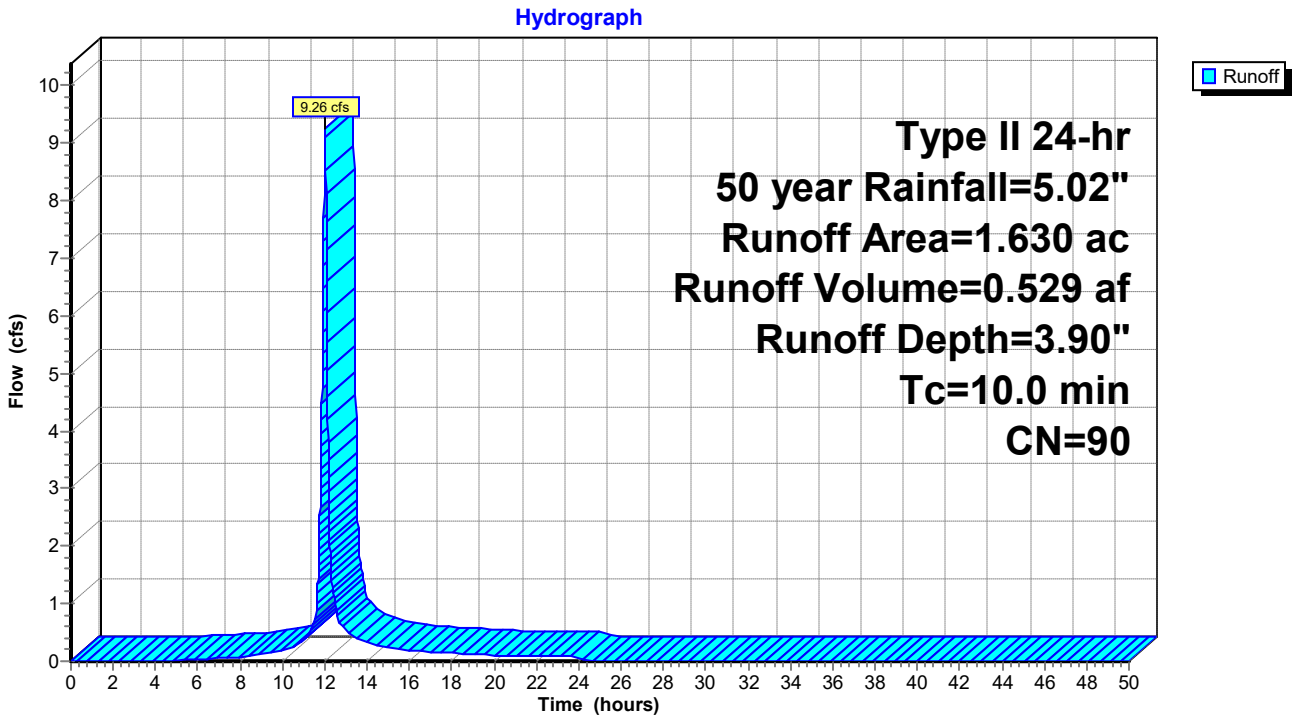
Runoff = 9.26 cfs @ 12.01 hrs, Volume= 0.529 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 year Rainfall=5.02"

Area (ac)	CN	Description
1.630	90	1/8 acre lots, 65% imp, HSG C
0.570		35.00% Pervious Area
1.060		65.00% Impervious Area

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

Subcatchment 10S: Subarea 02



Summary for Subcatchment 11S: Subarea 05

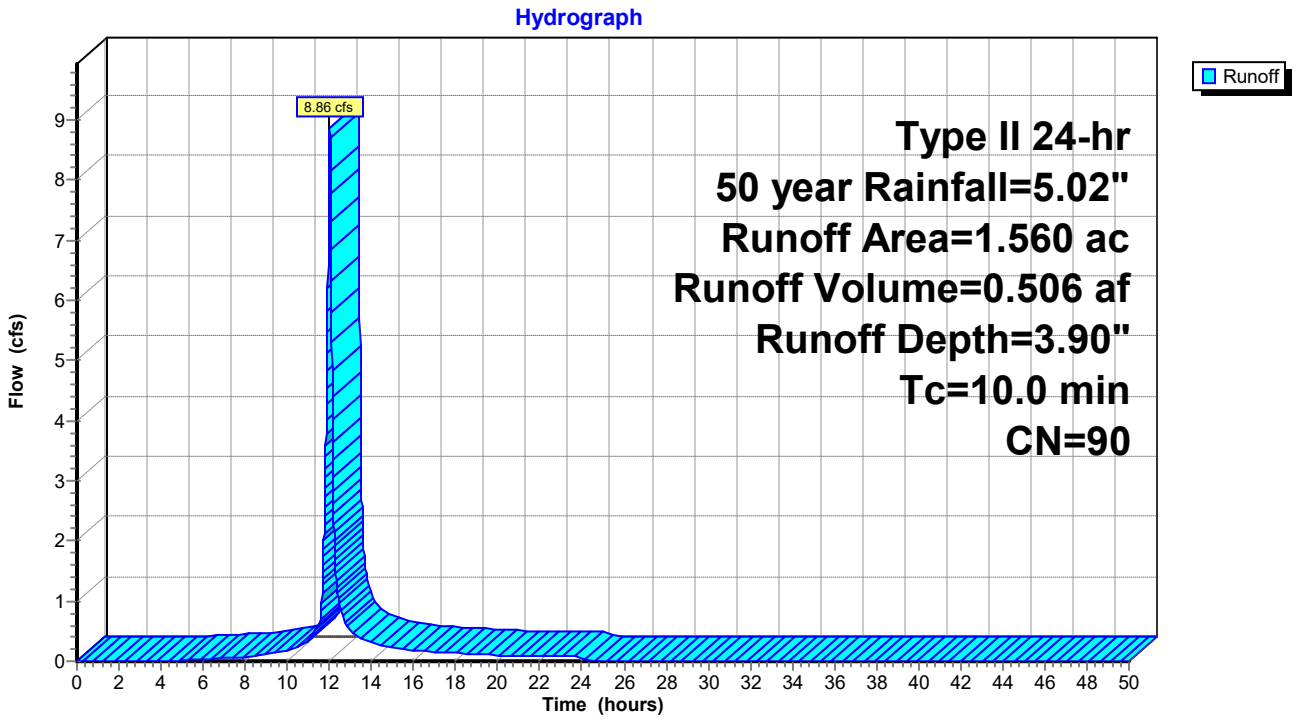
Runoff = 8.86 cfs @ 12.01 hrs, Volume= 0.506 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 year Rainfall=5.02"

Area (ac)	CN	Description
1.560	90	1/8 acre lots, 65% imp, HSG C
0.546		35.00% Pervious Area
1.014		65.00% Impervious Area

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

Subcatchment 11S: Subarea 05



Summary for Subcatchment 12S: Subarea 04

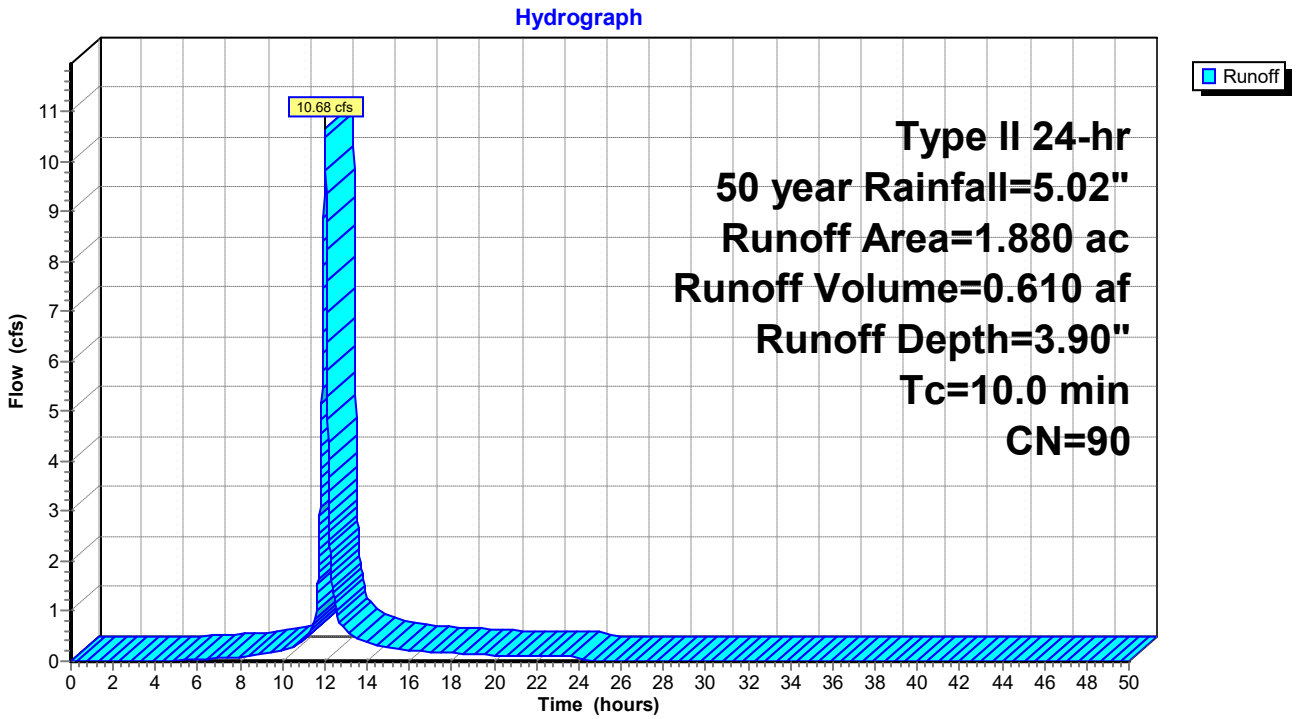
Runoff = 10.68 cfs @ 12.01 hrs, Volume= 0.610 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 year Rainfall=5.02"

Area (ac)	CN	Description
1.880	90	1/8 acre lots, 65% imp, HSG C
0.658		35.00% Pervious Area
1.222		65.00% Impervious Area

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

Subcatchment 12S: Subarea 04



Summary for Subcatchment 13S: Subarea 06

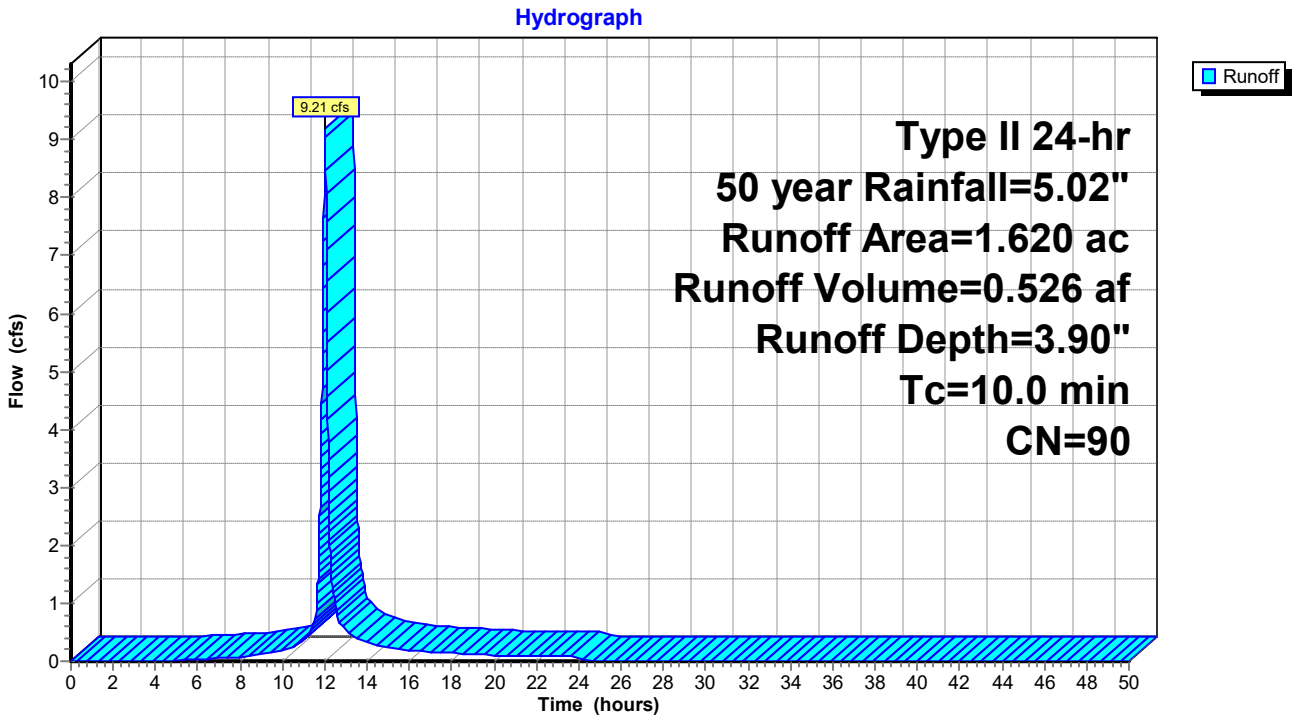
Runoff = 9.21 cfs @ 12.01 hrs, Volume= 0.526 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 year Rainfall=5.02"

Area (ac)	CN	Description
1.620	90	1/8 acre lots, 65% imp, HSG C
0.567		35.00% Pervious Area
1.053		65.00% Impervious Area

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

Subcatchment 13S: Subarea 06



Summary for Subcatchment 14S: Subarea 03

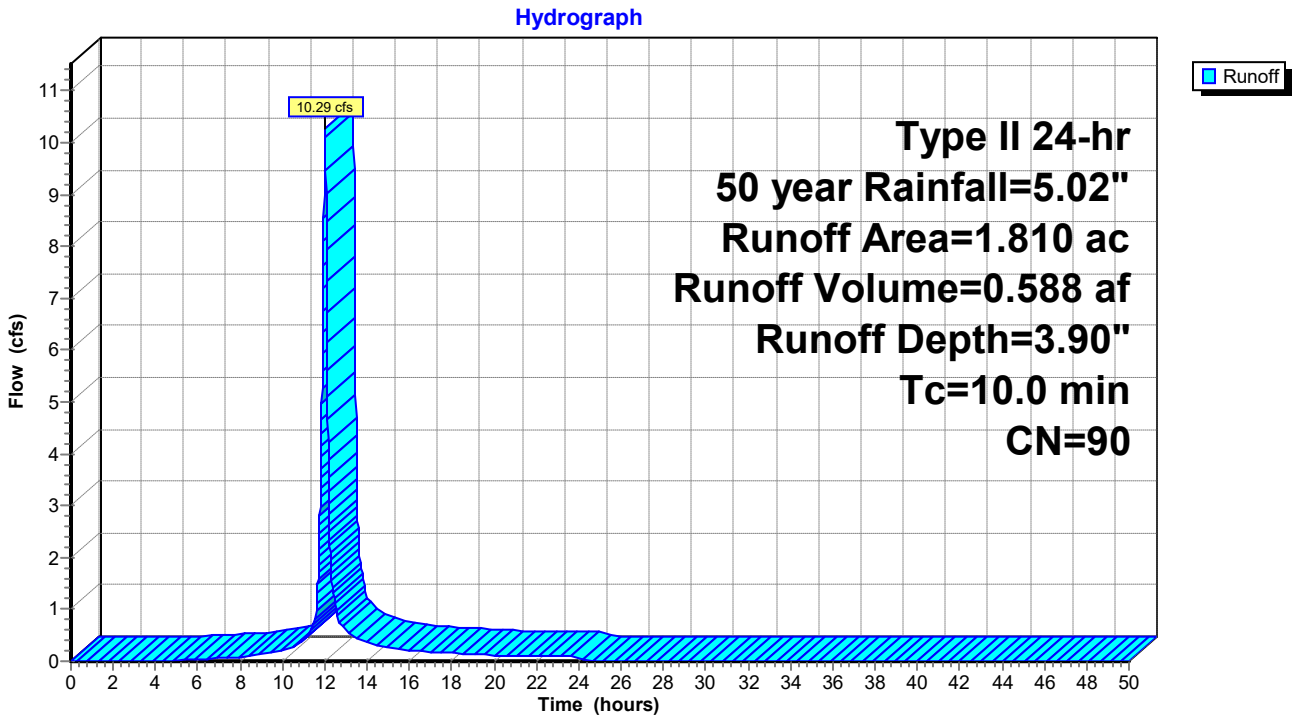
Runoff = 10.29 cfs @ 12.01 hrs, Volume= 0.588 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 year Rainfall=5.02"

Area (ac)	CN	Description
1.810	90	1/8 acre lots, 65% imp, HSG C
0.634		35.00% Pervious Area
1.177		65.00% Impervious Area

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

Subcatchment 14S: Subarea 03



Summary for Pond 1P: StormTech 01

Inflow Area = 2.480 ac, 65.00% Impervious, Inflow Depth = 3.90" for 50 year event
Inflow = 14.09 cfs @ 12.01 hrs, Volume= 0.805 af
Outflow = 1.40 cfs @ 12.53 hrs, Volume= 0.794 af, Atten= 90%, Lag= 31.1 min
Primary = 1.40 cfs @ 12.53 hrs, Volume= 0.794 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 871.52' @ 12.52 hrs Surf.Area= 0.118 ac Storage= 0.440 af

Plug-Flow detention time= 318.8 min calculated for 0.794 af (99% of inflow)
Center-of-Mass det. time= 310.6 min (1,101.7 - 791.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	866.20'	0.190 af	**55.75'W x 91.99'L x 6.75'H Field A** 0.795 af Overall - 0.319 af Embedded = 0.476 af x 40.0% Voids
#2A	866.95'	0.319 af	**ADS_StormTech MC-4500 b +Cap** x 126 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 126 Chambers in 6 Rows Cap Storage= +39.5 cf x 2 x 6 rows = 474.0 cf
		0.509 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	866.20'	**12.0" Round RCP_Round 12"** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.20' / 865.92' S= 0.0048 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	866.20'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	867.80'	**5.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.40 cfs @ 12.53 hrs HW=871.52' TW=866.63' (Dynamic Tailwater)
↑—**1=RCP_Round 12"** (Passes 1.40 cfs of 7.42 cfs potential flow)
↑—**2=WQ Orifice** (Orifice Controls 0.13 cfs @ 10.65 fps)
—**3=Orifice** (Orifice Controls 1.27 cfs @ 9.29 fps)

Pond 1P: StormTech 01 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 6 rows = 474.0 cf

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

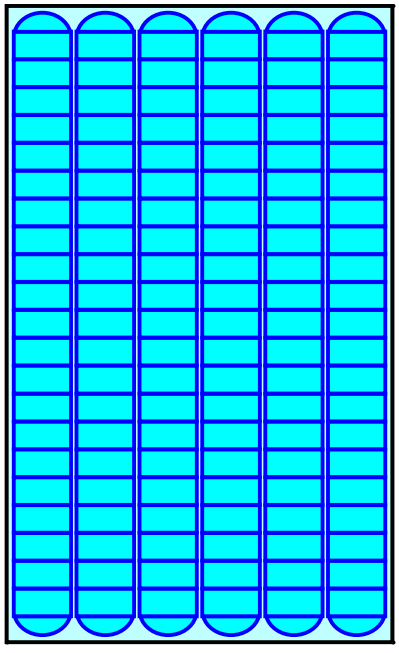
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

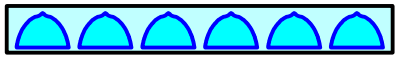
126 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 6 Rows = 13,891.8 cf Chamber Storage

34,617.6 cf Field - 13,891.8 cf Chambers = 20,725.8 cf Stone x 40.0% Voids = 8,290.3 cf Stone Storage

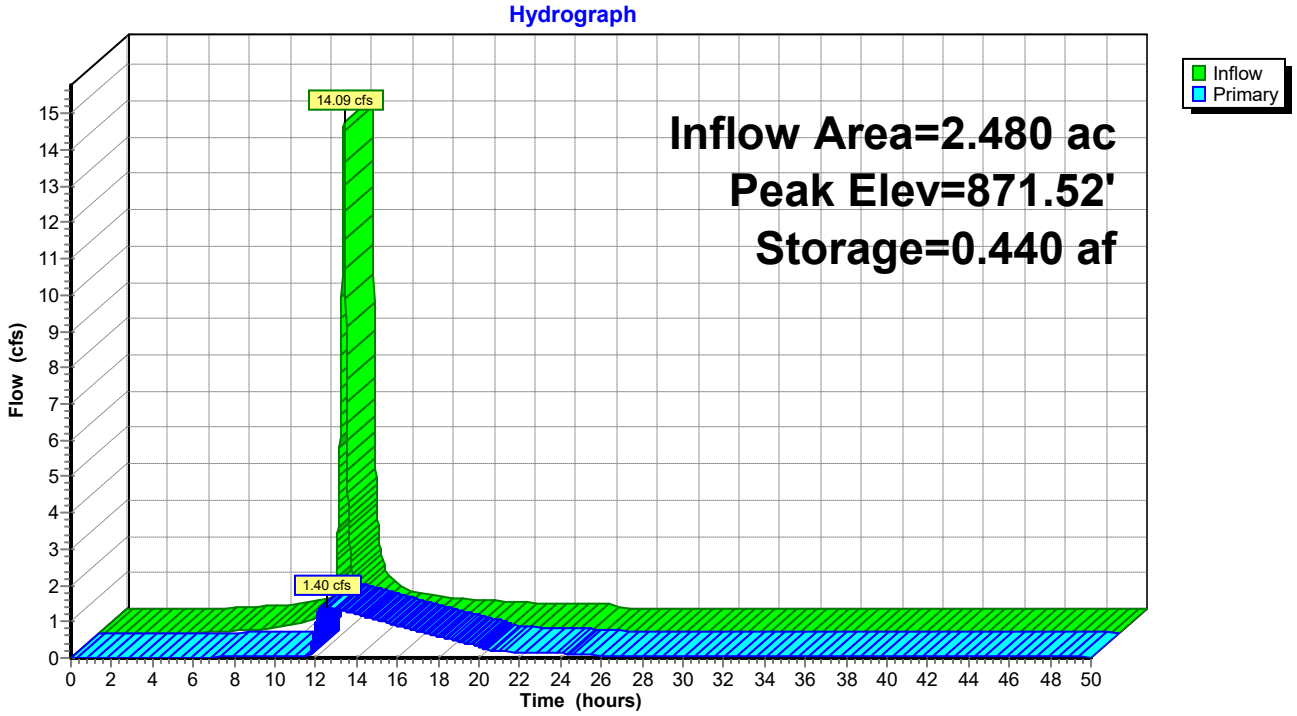
Chamber Storage + Stone Storage = 22,182.1 cf = 0.509 af
Overall Storage Efficiency = 64.1%
Overall System Size = 91.99' x 55.75' x 6.75'

126 Chambers
1,282.1 cy Field
767.6 cy Stone





Pond 1P: StormTech 01



Summary for Pond 2P: StormTech 02

Inflow Area = 1.630 ac, 65.00% Impervious, Inflow Depth = 3.90" for 50 year event
Inflow = 9.26 cfs @ 12.01 hrs, Volume= 0.529 af
Outflow = 0.88 cfs @ 12.53 hrs, Volume= 0.521 af, Atten= 91%, Lag= 31.0 min
Primary = 0.88 cfs @ 12.53 hrs, Volume= 0.521 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 879.94' @ 12.54 hrs Surf.Area= 0.079 ac Storage= 0.291 af

Plug-Flow detention time= 325.1 min calculated for 0.521 af (98% of inflow)
Center-of-Mass det. time= 315.5 min (1,106.5 - 791.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	874.72'	0.129 af	**37.58'W x 91.99'L x 6.75'H Field A** 0.536 af Overall - 0.213 af Embedded = 0.323 af x 40.0% Voids
#2A	875.47'	0.213 af	**ADS_StormTech MC-4500 b +Cap** x 84 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 84 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.342 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	874.72'	**12.0" Round RCP_Round 12"** L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 874.72' / 874.31' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	874.72'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.30'	**4.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.88 cfs @ 12.53 hrs HW=879.94' TW=875.86' (Dynamic Tailwater)
↑—**1=RCP_Round 12"** (Passes 0.88 cfs of 6.30 cfs potential flow)
↑—**2=WQ Orifice** (Orifice Controls 0.08 cfs @ 9.72 fps)
—**3=Orifice** (Orifice Controls 0.80 cfs @ 9.19 fps)

Pond 2P: StormTech 02 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 4 rows = 316.0 cf

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

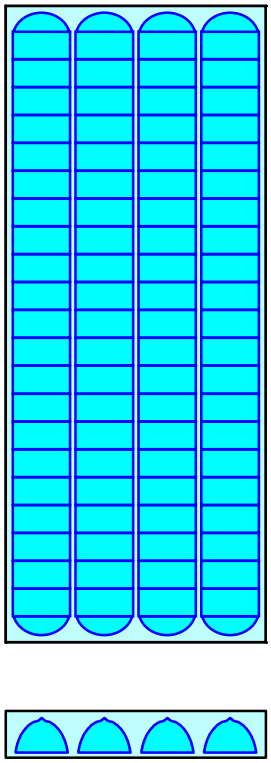
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

84 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,261.2 cf Chamber Storage

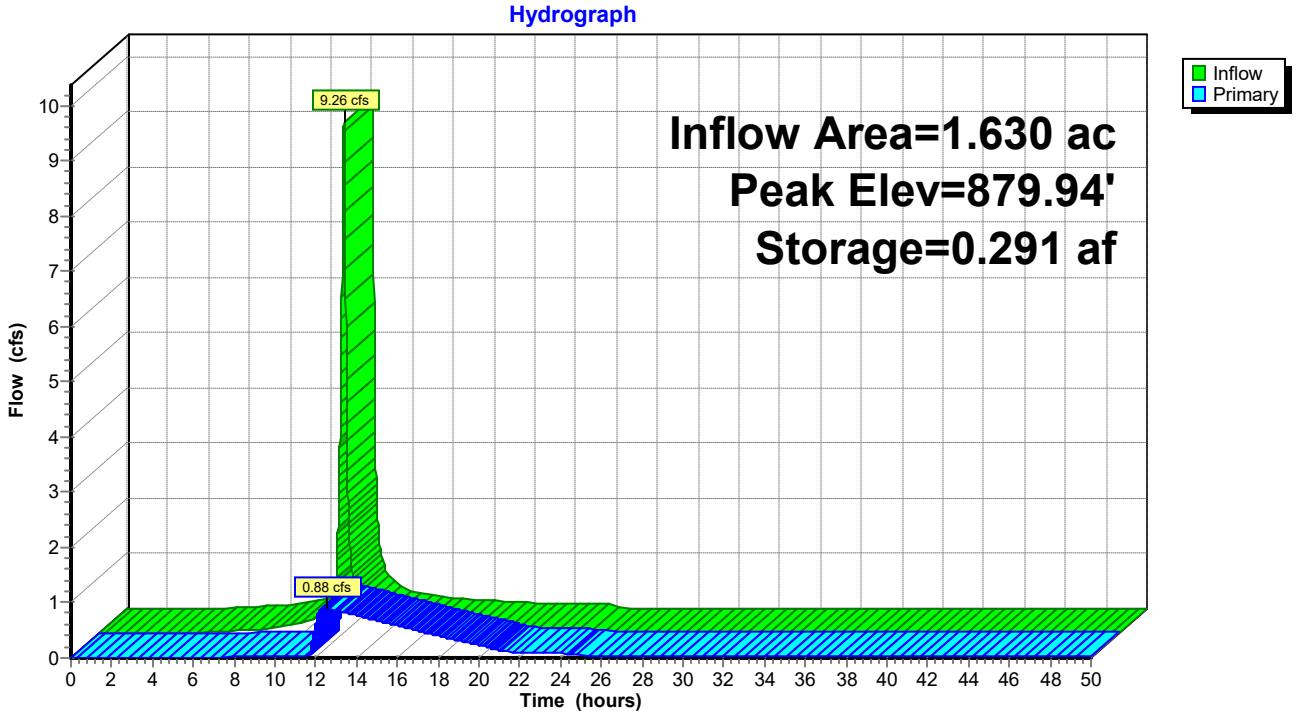
23,337.1 cf Field - 9,261.2 cf Chambers = 14,075.9 cf Stone x 40.0% Voids = 5,630.4 cf Stone Storage

Chamber Storage + Stone Storage = 14,891.6 cf = 0.342 af
Overall Storage Efficiency = 63.8%
Overall System Size = 91.99' x 37.58' x 6.75'

84 Chambers
864.3 cy Field
521.3 cy Stone



Pond 2P: StormTech 02



Summary for Pond 3P: StormTech 03

Inflow Area = 4.290 ac, 65.00% Impervious, Inflow Depth > 3.87" for 50 year event
Inflow = 11.30 cfs @ 12.01 hrs, Volume= 1.382 af
Outflow = 2.88 cfs @ 12.34 hrs, Volume= 1.259 af, Atten= 75%, Lag= 19.9 min
Primary = 2.88 cfs @ 12.34 hrs, Volume= 1.259 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 866.70' @ 12.34 hrs Surf.Area= 0.093 ac Storage= 0.339 af

Plug-Flow detention time= 264.4 min calculated for 1.259 af (91% of inflow)
Center-of-Mass det. time= 157.7 min (1,127.3 - 969.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	861.53'	0.152 af	**19.42'W x 208.72'L x 6.75'H Field A** 0.628 af Overall - 0.248 af Embedded = 0.380 af x 40.0% Voids
#2A	862.28'	0.248 af	**ADS_StormTech MC-4500 b +Cap** x 100 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 100 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.400 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	861.53'	**12.0" Round RCP_Round 12"** L= 19.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.53' / 861.43' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	861.53'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.60'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.88 cfs @ 12.34 hrs HW=866.70' TW=0.00' (Dynamic Tailwater)
↑**1=RCP_Round 12"** (Passes 2.88 cfs of 8.17 cfs potential flow)
↑**2=WQ Orifice** (Orifice Controls 0.13 cfs @ 10.88 fps)
3=Orifice (Orifice Controls 2.74 cfs @ 6.98 fps)

Pond 3P: StormTech 03 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

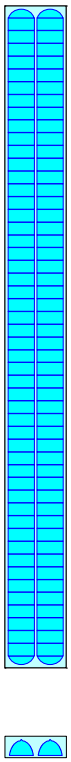
50 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 206.72' Row Length +12.0" End Stone x 2 = 208.72' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

100 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 10,807.0 cf Chamber Storage

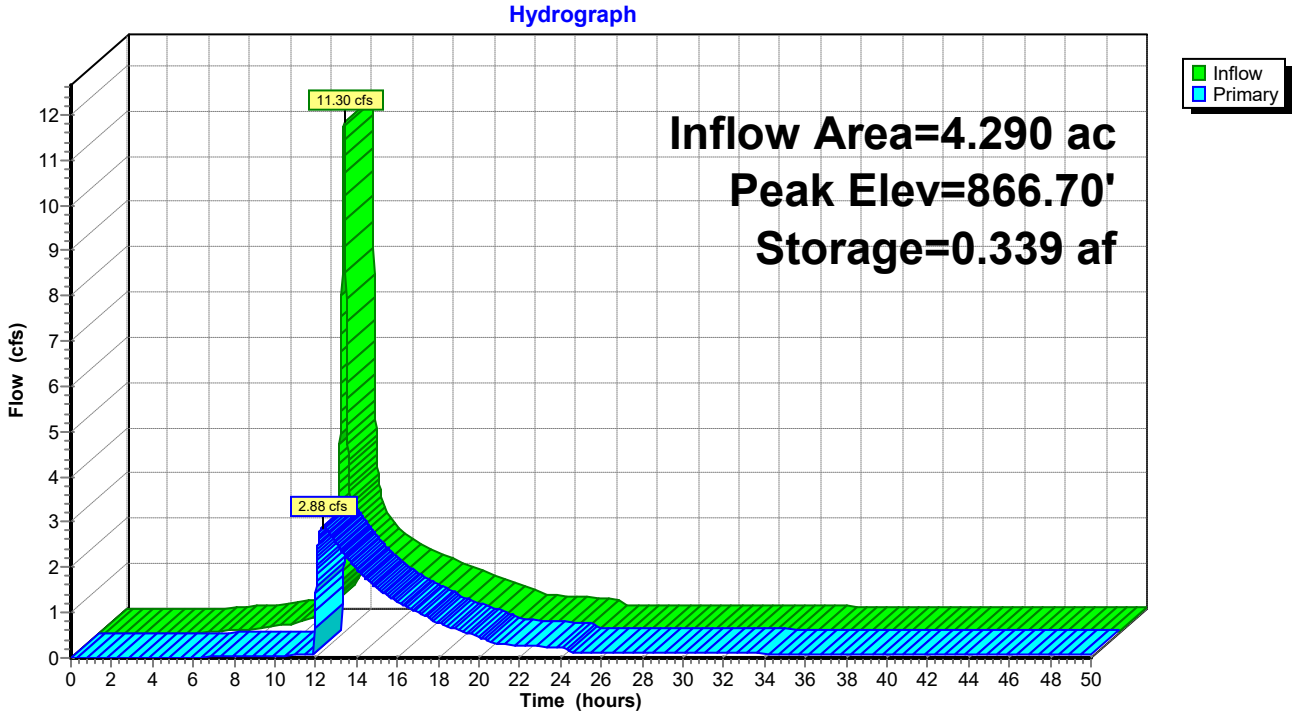
27,354.9 cf Field - 10,807.0 cf Chambers = 16,547.9 cf Stone x 40.0% Voids = 6,619.2 cf Stone Storage

Chamber Storage + Stone Storage = 17,426.2 cf = 0.400 af
Overall Storage Efficiency = 63.7%
Overall System Size = 208.72' x 19.42' x 6.75'

100 Chambers
1,013.1 cy Field
612.9 cy Stone



Pond 3P: StormTech 03



Summary for Pond 4P: StormTech 04

Inflow Area = 1.880 ac, 65.00% Impervious, Inflow Depth = 3.90" for 50 year event
Inflow = 10.68 cfs @ 12.01 hrs, Volume= 0.610 af
Outflow = 1.63 cfs @ 12.33 hrs, Volume= 0.609 af, Atten= 85%, Lag= 19.0 min
Primary = 1.63 cfs @ 12.33 hrs, Volume= 0.609 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 867.93' @ 12.33 hrs Surf.Area= 0.083 ac Storage= 0.306 af

Plug-Flow detention time= 260.6 min calculated for 0.609 af (100% of inflow)
Center-of-Mass det. time= 259.0 min (1,050.0 - 791.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	862.68'	0.135 af	**37.58'W x 96.02'L x 6.75'H Field A** 0.559 af Overall - 0.222 af Embedded = 0.337 af x 40.0% Voids
#2A	863.43'	0.222 af	**ADS_StormTech MC-4500 b +Cap** x 88 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 88 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.357 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	862.68'	**12.0" Round RCP_Round 12"** L= 70.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 862.68' / 862.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	862.68'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.40'	**5.5" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.63 cfs @ 12.33 hrs HW=867.93' TW=0.00' (Dynamic Tailwater)
↑└─**1=RCP_Round 12"** (Passes 1.63 cfs of 7.02 cfs potential flow)
↑ ├─**2=WQ Orifice** (Orifice Controls 0.13 cfs @ 10.97 fps)
└─**3=Orifice** (Orifice Controls 1.49 cfs @ 9.05 fps)

Pond 4P: StormTech 04 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf

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

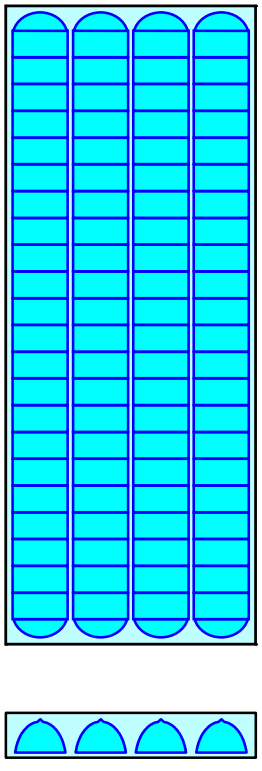
22 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 94.02' Row Length +12.0" End Stone x 2 = 96.02' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

88 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,687.2 cf Chamber Storage

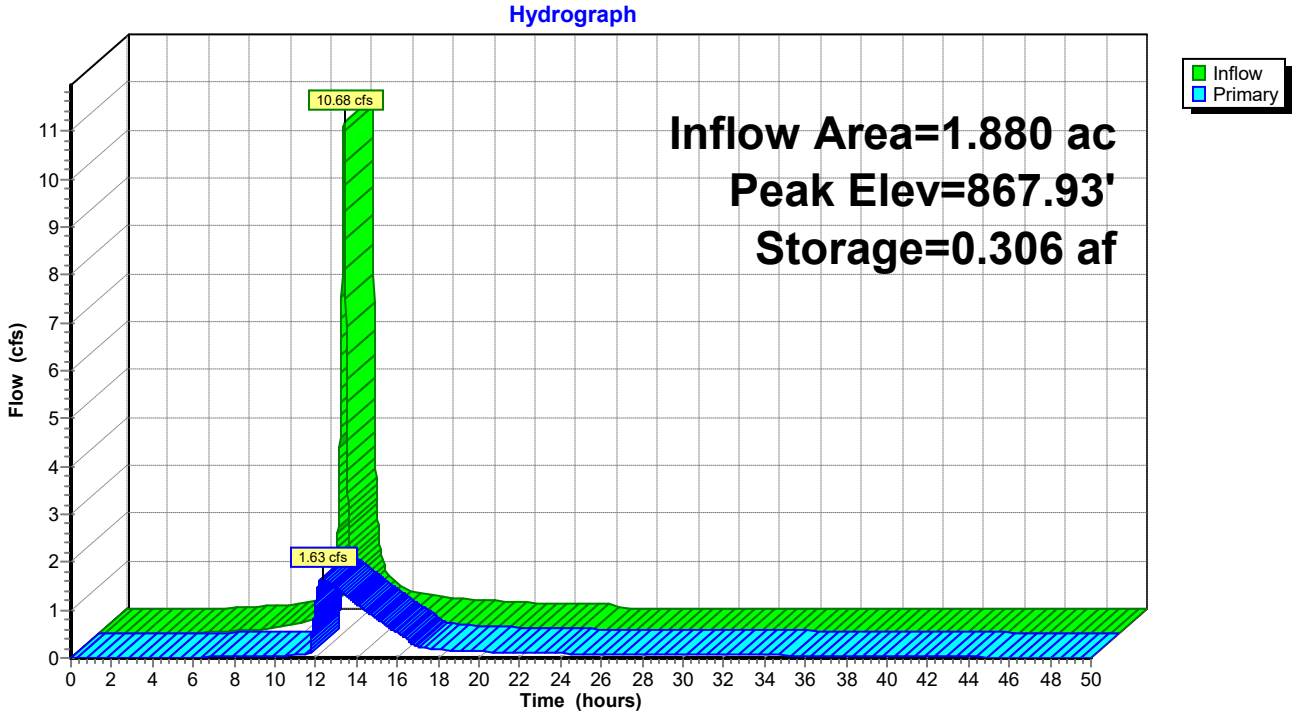
24,358.2 cf Field - 9,687.2 cf Chambers = 14,671.1 cf Stone x 40.0% Voids = 5,868.4 cf Stone Storage

Chamber Storage + Stone Storage = 15,555.6 cf = 0.357 af
Overall Storage Efficiency = 63.9%
Overall System Size = 96.02' x 37.58' x 6.75'

88 Chambers
902.2 cy Field
543.4 cy Stone



Pond 4P: StormTech 04



Summary for Pond 6P: StormTech 05

Inflow Area = 4.810 ac, 65.00% Impervious, Inflow Depth > 3.85" for 50 year event
Inflow = 10.87 cfs @ 12.02 hrs, Volume= 1.542 af
Outflow = 2.84 cfs @ 12.66 hrs, Volume= 1.481 af, Atten= 74%, Lag= 38.7 min
Primary = 2.84 cfs @ 12.66 hrs, Volume= 1.481 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 875.89' @ 12.66 hrs Surf.Area= 0.095 ac Storage= 0.349 af

Plug-Flow detention time= 264.9 min calculated for 1.481 af (96% of inflow)
Center-of-Mass det. time= 198.4 min (1,188.0 - 989.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	870.65'	0.155 af	**19.42'W x 212.74'L x 6.75'H Field A** 0.640 af Overall - 0.253 af Embedded = 0.387 af x 40.0% Voids
#2A	871.40'	0.253 af	**ADS_StormTech MC-4500 b +Cap** x 102 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 102 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.408 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	870.65'	**12.0" Round RCP_Round 12"** L= 64.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 870.65' / 870.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	870.65'	**2.0" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.00'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.84 cfs @ 12.66 hrs HW=875.89' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 2.84 cfs of 7.18 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.24 cfs @ 10.94 fps)
  └─**3=Orifice** (Orifice Controls 2.60 cfs @ 6.62 fps)

Pond 6P: StormTech 05 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

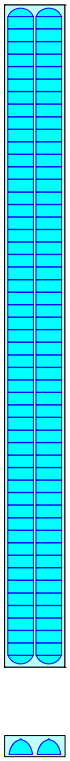
51 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 210.74' Row Length +12.0" End Stone x 2 = 212.74' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

102 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 11,020.0 cf Chamber Storage

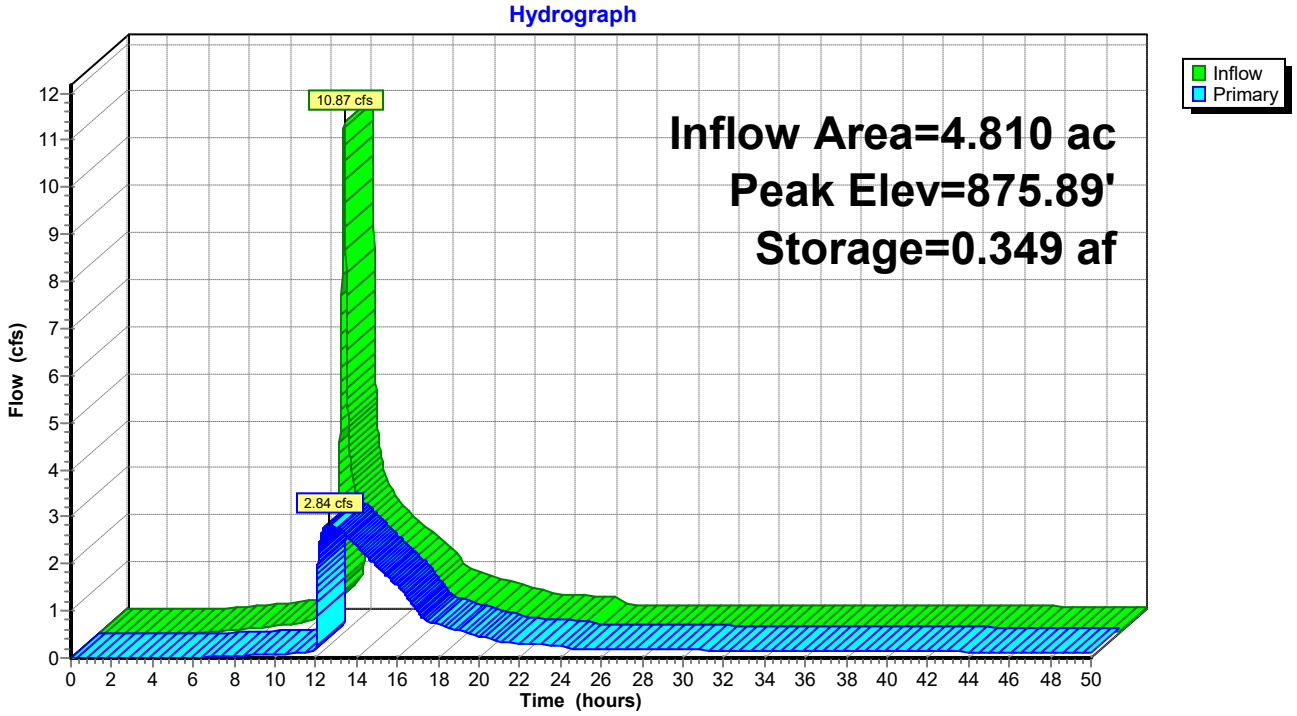
27,882.5 cf Field - 11,020.0 cf Chambers = 16,862.4 cf Stone x 40.0% Voids = 6,745.0 cf Stone Storage

Chamber Storage + Stone Storage = 17,765.0 cf = 0.408 af
Overall Storage Efficiency = 63.7%
Overall System Size = 212.74' x 19.42' x 6.75'

102 Chambers
1,032.7 cy Field
624.5 cy Stone



Pond 6P: StormTech 05



Summary for Pond 7P: StormTech 06

Inflow Area = 1.620 ac, 65.00% Impervious, Inflow Depth = 3.90" for 50 year event
Inflow = 9.21 cfs @ 12.01 hrs, Volume= 0.526 af
Outflow = 1.57 cfs @ 12.08 hrs, Volume= 0.515 af, Atten= 83%, Lag= 4.2 min
Primary = 1.57 cfs @ 12.08 hrs, Volume= 0.515 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 877.87' @ 12.31 hrs Surf.Area= 0.072 ac Storage= 0.258 af

Plug-Flow detention time= 288.4 min calculated for 0.515 af (98% of inflow)
Center-of-Mass det. time= 275.6 min (1,066.7 - 791.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	872.75'	0.117 af	**19.42'W x 160.42'L x 6.75'H Field A** 0.483 af Overall - 0.189 af Embedded = 0.293 af x 40.0% Voids
#2A	873.50'	0.189 af	**ADS_StormTech MC-4500 b +Cap** x 76 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 76 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.307 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	872.75'	**12.0" Round RCP_Round 12"** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 872.75' / 872.52' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	872.75'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.50'	**6.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.54 cfs @ 12.08 hrs HW=877.15' TW=874.70' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 1.54 cfs of 5.75 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.06 cfs @ 7.54 fps)
  └─**3=Orifice** (Orifice Controls 1.48 cfs @ 7.54 fps)

Pond 7P: StormTech 06 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

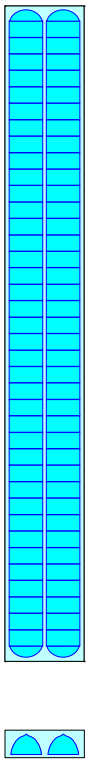
38 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 158.42' Row Length +12.0" End Stone x 2 = 160.42' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

76 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 8,251.3 cf Chamber Storage

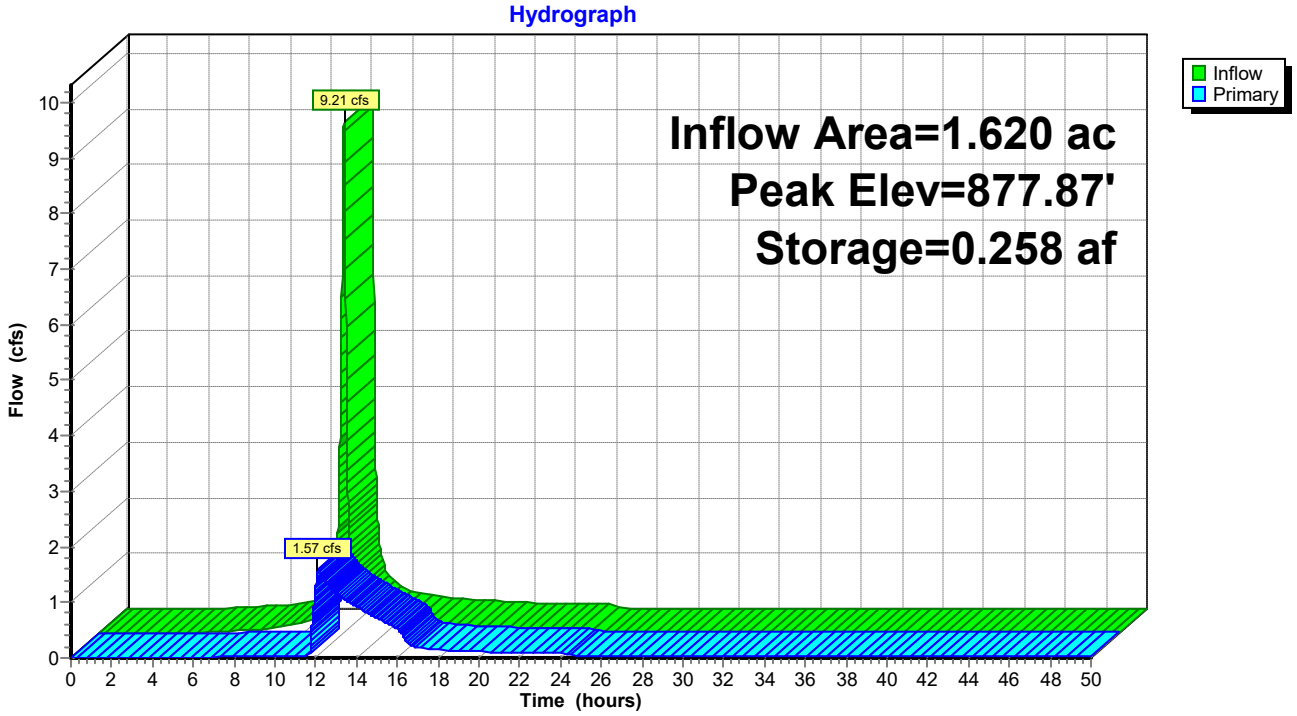
21,024.6 cf Field - 8,251.3 cf Chambers = 12,773.3 cf Stone x 40.0% Voids = 5,109.3 cf Stone Storage

Chamber Storage + Stone Storage = 13,360.6 cf = 0.307 af
Overall Storage Efficiency = 63.5%
Overall System Size = 160.42' x 19.42' x 6.75'

76 Chambers
778.7 cy Field
473.1 cy Stone



Pond 7P: StormTech 06



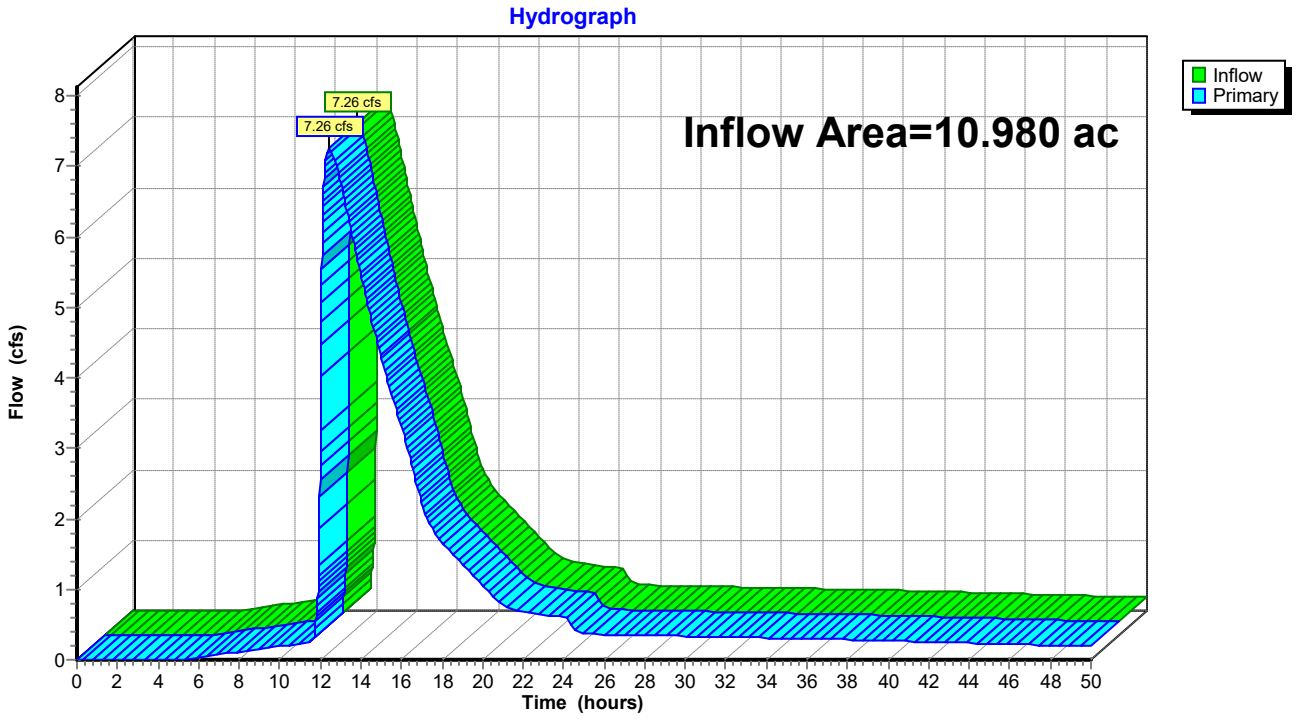
Summary for Pond 15P: Outfall 01

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.980 ac, 65.00% Impervious, Inflow Depth > 3.66" for 50 year event
Inflow = 7.26 cfs @ 12.46 hrs, Volume= 3.349 af
Primary = 7.26 cfs @ 12.46 hrs, Volume= 3.349 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Pond 15P: Outfall 01



Summary for Subcatchment 8S: Pre-developed 01

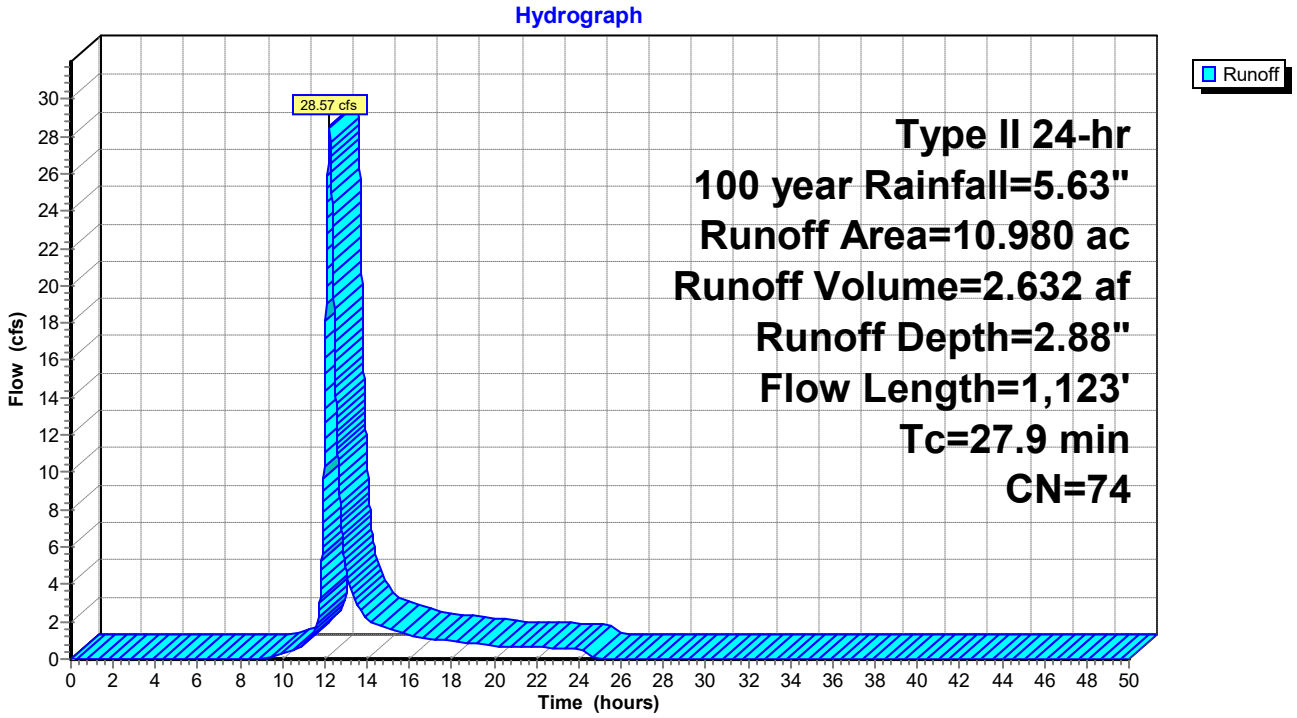
Runoff = 28.57 cfs @ 12.22 hrs, Volume= 2.632 af, Depth= 2.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.63"

Area (ac)	CN	Description
10.980	74	>75% Grass cover, Good, HSG C
10.980		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0242	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
17.9	1,023	0.0186	0.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.9	1,123	Total			

Subcatchment 8S: Pre-developed 01



Summary for Subcatchment 9S: Subarea 01

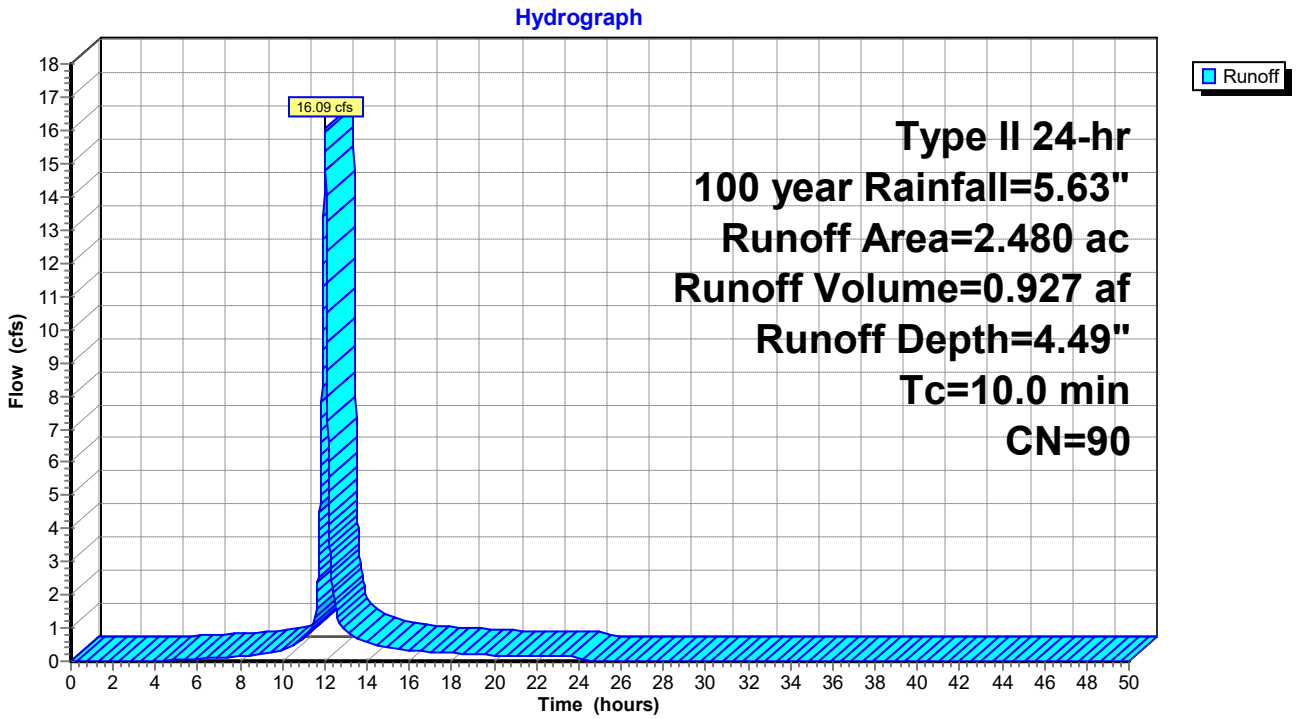
Runoff = 16.09 cfs @ 12.01 hrs, Volume= 0.927 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.63"

Area (ac)	CN	Description
2.480	90	1/8 acre lots, 65% imp, HSG C
0.868		35.00% Pervious Area
1.612		65.00% Impervious Area

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

Subcatchment 9S: Subarea 01



Summary for Subcatchment 10S: Subarea 02

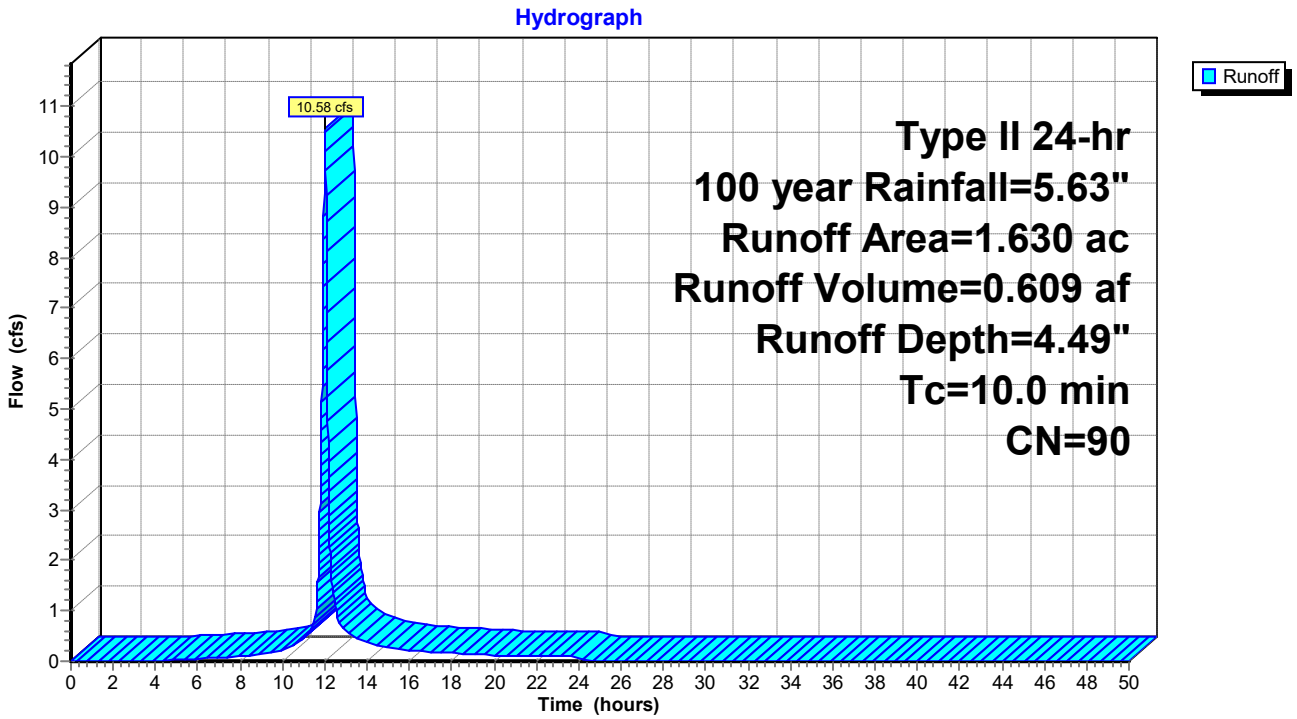
Runoff = 10.58 cfs @ 12.01 hrs, Volume= 0.609 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.63"

Area (ac)	CN	Description
1.630	90	1/8 acre lots, 65% imp, HSG C
0.570		35.00% Pervious Area
1.060		65.00% Impervious Area

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

Subcatchment 10S: Subarea 02



Summary for Subcatchment 11S: Subarea 05

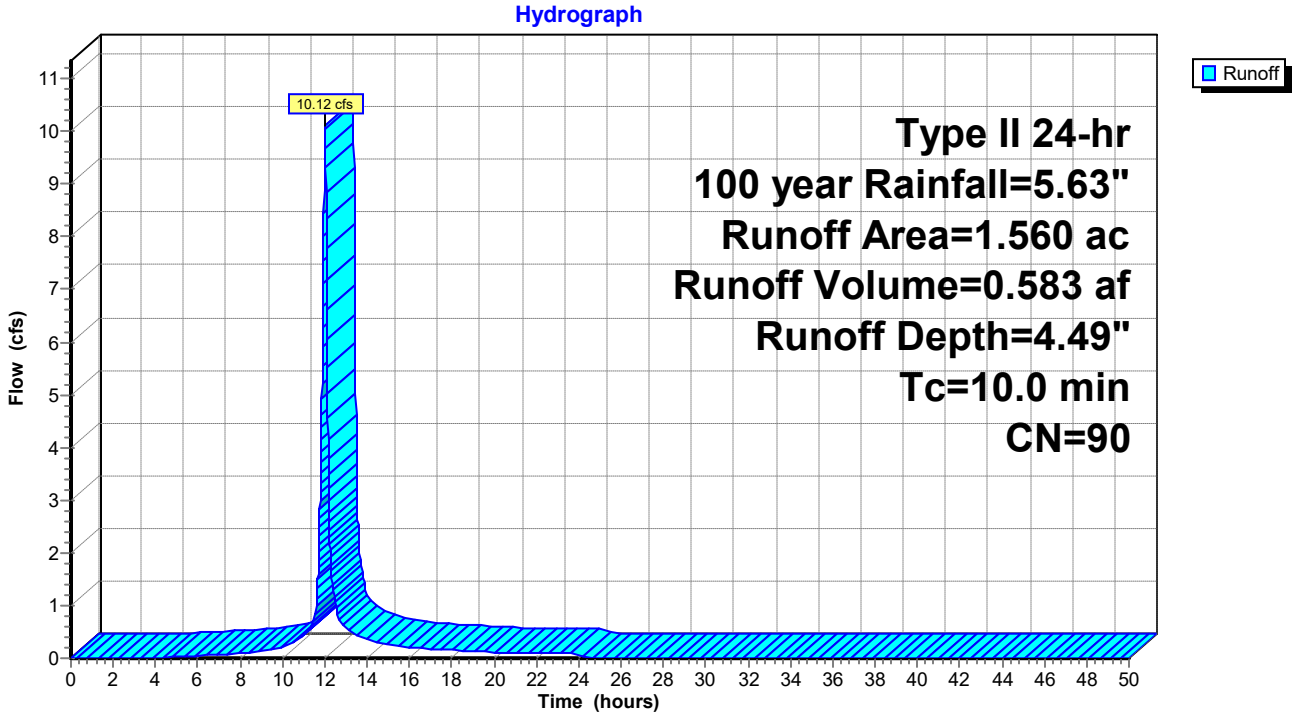
Runoff = 10.12 cfs @ 12.01 hrs, Volume= 0.583 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.63"

Area (ac)	CN	Description
1.560	90	1/8 acre lots, 65% imp, HSG C
0.546		35.00% Pervious Area
1.014		65.00% Impervious Area

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

Subcatchment 11S: Subarea 05



Summary for Subcatchment 12S: Subarea 04

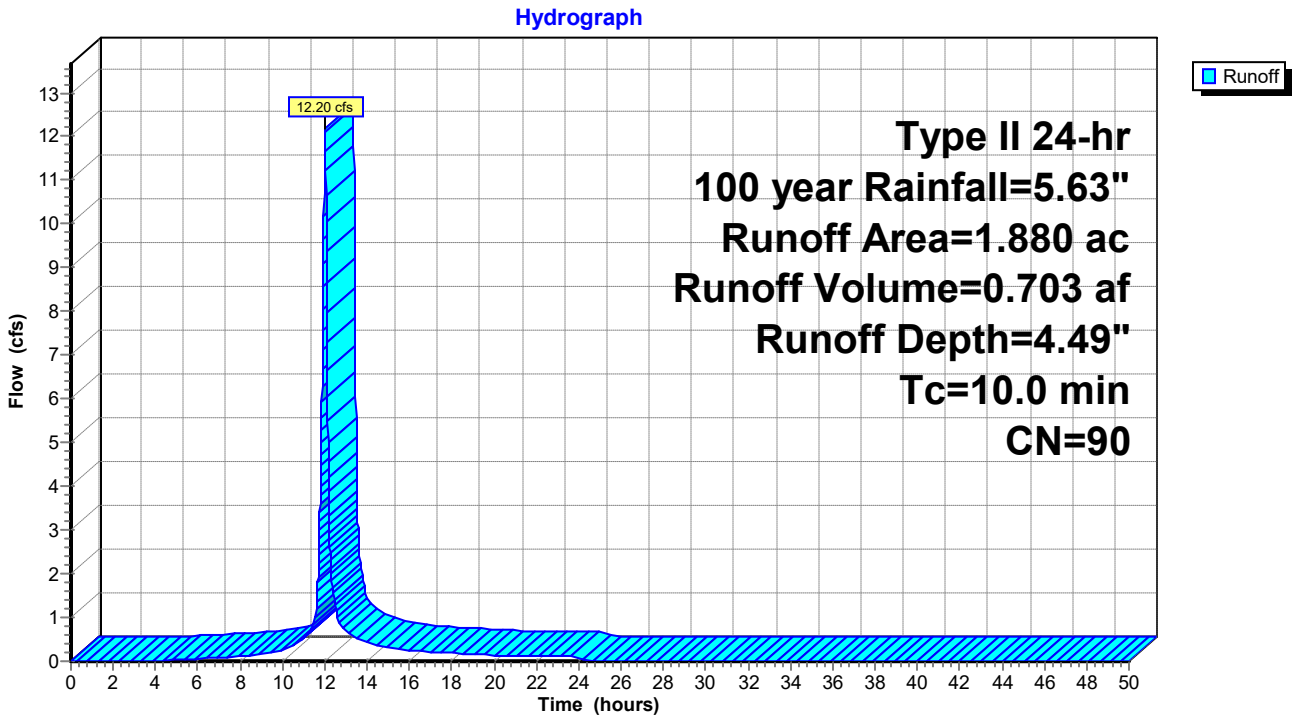
Runoff = 12.20 cfs @ 12.01 hrs, Volume= 0.703 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.63"

Area (ac)	CN	Description
1.880	90	1/8 acre lots, 65% imp, HSG C
0.658		35.00% Pervious Area
1.222		65.00% Impervious Area

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

Subcatchment 12S: Subarea 04



Summary for Subcatchment 13S: Subarea 06

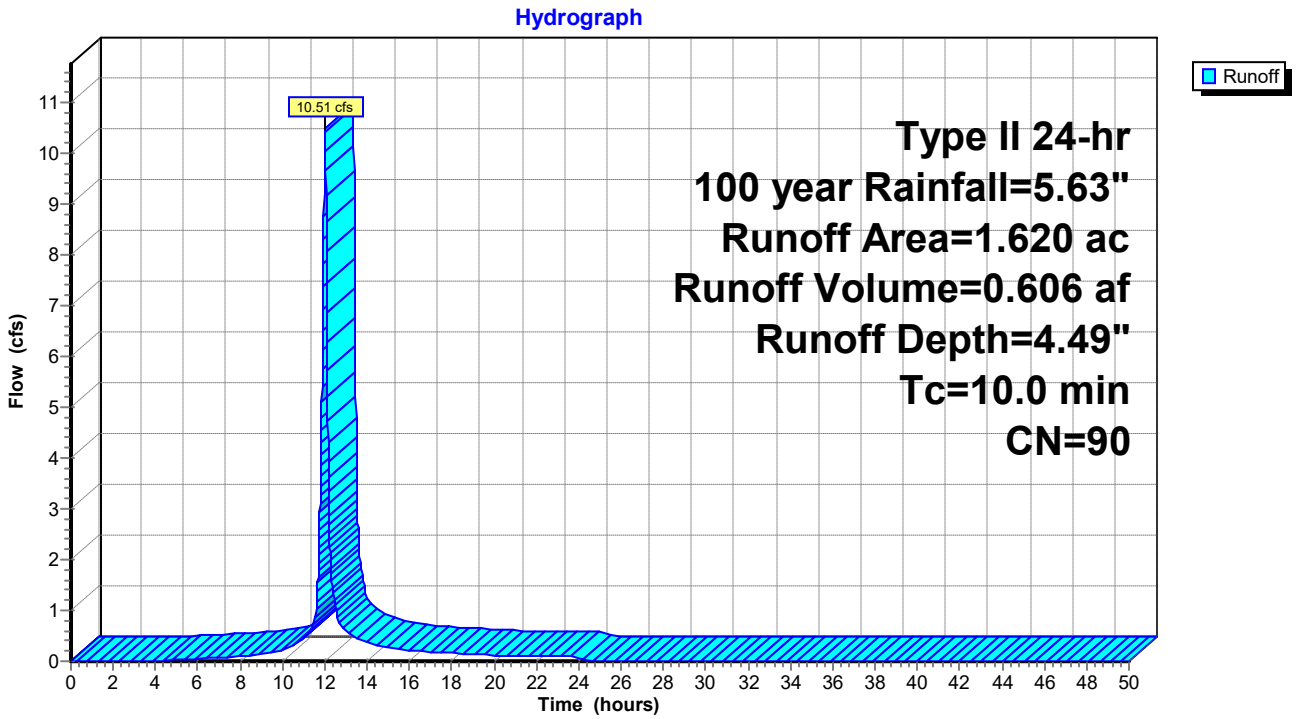
Runoff = 10.51 cfs @ 12.01 hrs, Volume= 0.606 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.63"

Area (ac)	CN	Description
1.620	90	1/8 acre lots, 65% imp, HSG C
0.567		35.00% Pervious Area
1.053		65.00% Impervious Area

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

Subcatchment 13S: Subarea 06



Summary for Subcatchment 14S: Subarea 03

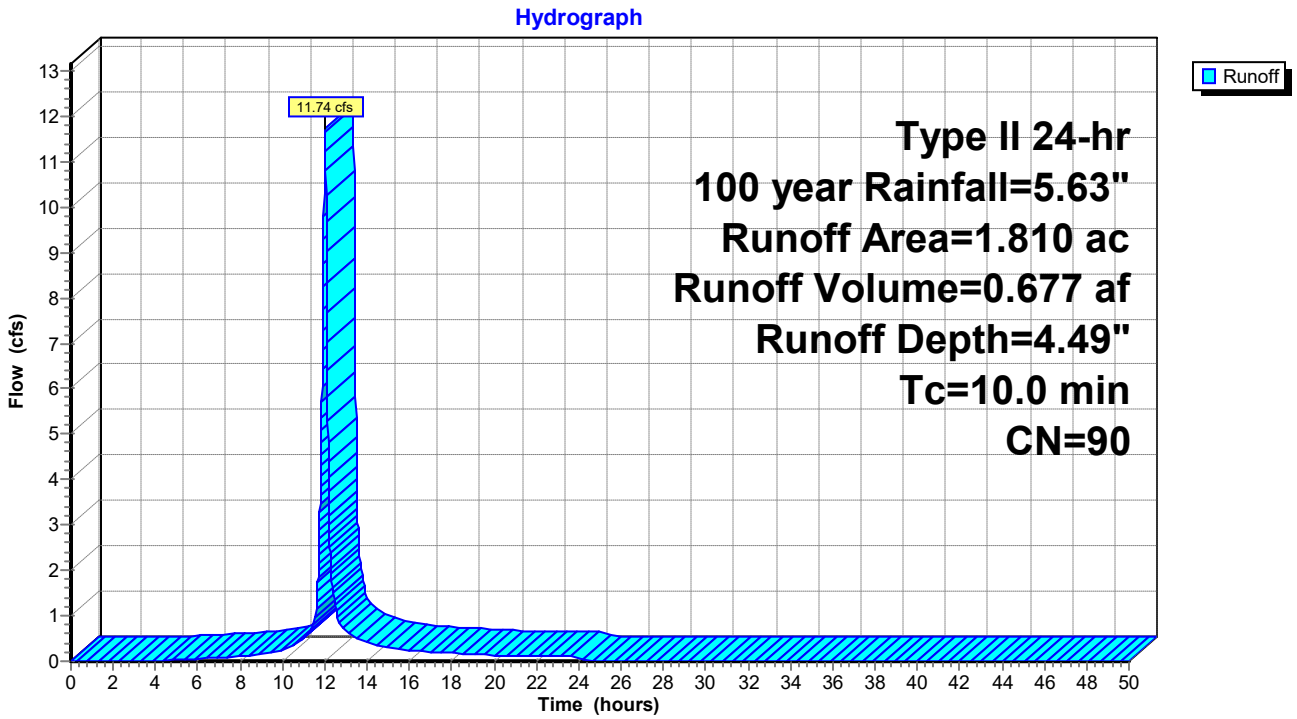
Runoff = 11.74 cfs @ 12.01 hrs, Volume= 0.677 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.63"

Area (ac)	CN	Description
1.810	90	1/8 acre lots, 65% imp, HSG C
0.634		35.00% Pervious Area
1.177		65.00% Impervious Area

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

Subcatchment 14S: Subarea 03



Summary for Pond 1P: StormTech 01

Inflow Area = 2.480 ac, 65.00% Impervious, Inflow Depth = 4.49" for 100 year event
Inflow = 16.09 cfs @ 12.01 hrs, Volume= 0.927 af
Outflow = 1.62 cfs @ 12.53 hrs, Volume= 0.916 af, Atten= 90%, Lag= 31.0 min
Primary = 1.62 cfs @ 12.53 hrs, Volume= 0.916 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 872.93' @ 12.51 hrs Surf.Area= 0.118 ac Storage= 0.508 af

Plug-Flow detention time= 303.9 min calculated for 0.916 af (99% of inflow)
Center-of-Mass det. time= 296.4 min (1,083.6 - 787.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	866.20'	0.190 af	**55.75'W x 91.99'L x 6.75'H Field A** 0.795 af Overall - 0.319 af Embedded = 0.476 af x 40.0% Voids
#2A	866.95'	0.319 af	**ADS_StormTech MC-4500 b +Cap** x 126 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 126 Chambers in 6 Rows Cap Storage= +39.5 cf x 2 x 6 rows = 474.0 cf
		0.509 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	866.20'	**12.0" Round RCP_Round 12"** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 866.20' / 865.92' S= 0.0048 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	866.20'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	867.80'	**5.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.62 cfs @ 12.53 hrs HW=872.93' TW=867.65' (Dynamic Tailwater)
↑**1=RCP_Round 12"** (Passes 1.62 cfs of 7.95 cfs potential flow)
↑**2=WQ Orifice** (Orifice Controls 0.14 cfs @ 11.06 fps)
3=Orifice (Orifice Controls 1.49 cfs @ 10.90 fps)

Pond 1P: StormTech 01 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 6 rows = 474.0 cf

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

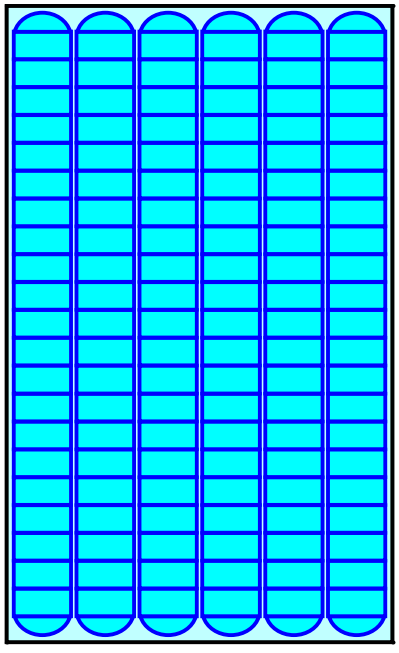
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
6 Rows x 100.0" Wide + 9.0" Spacing x 5 + 12.0" Side Stone x 2 = 55.75' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

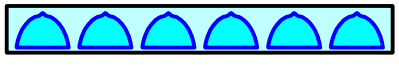
126 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 6 Rows = 13,891.8 cf Chamber Storage

34,617.6 cf Field - 13,891.8 cf Chambers = 20,725.8 cf Stone x 40.0% Voids = 8,290.3 cf Stone Storage

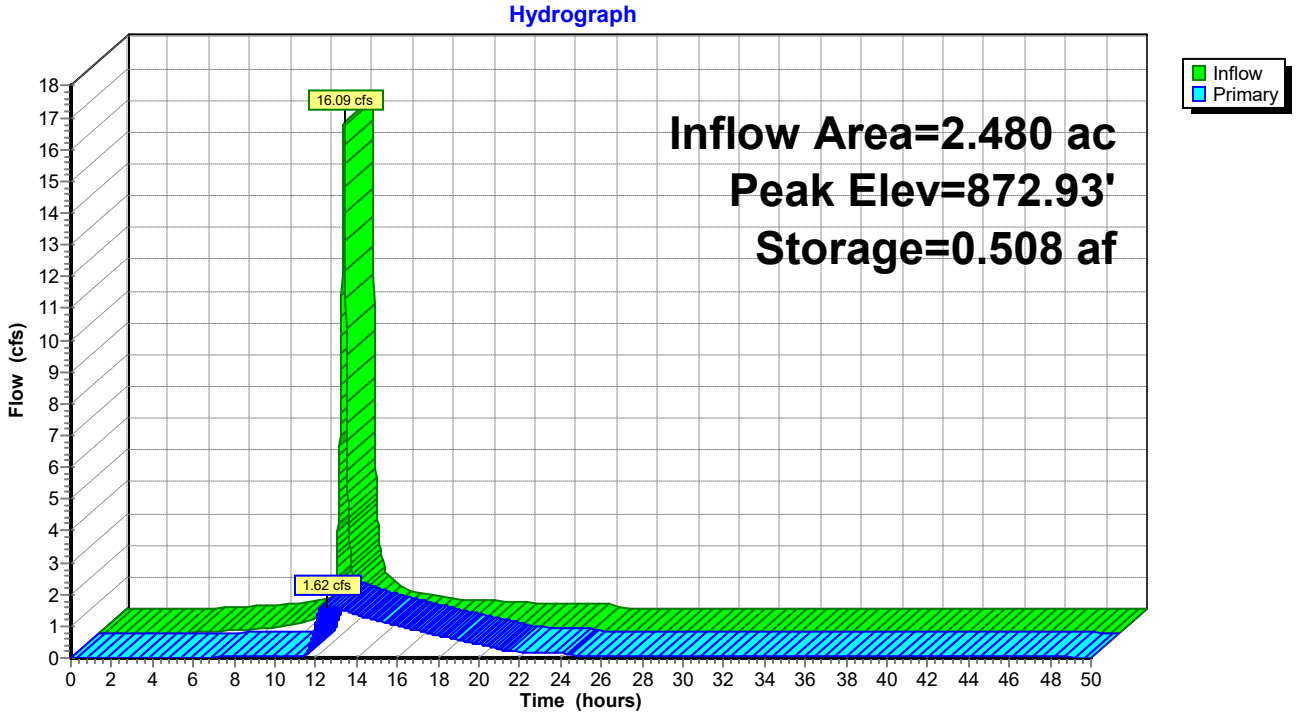
Chamber Storage + Stone Storage = 22,182.1 cf = 0.509 af
Overall Storage Efficiency = 64.1%
Overall System Size = 91.99' x 55.75' x 6.75'

126 Chambers
1,282.1 cy Field
767.6 cy Stone





Pond 1P: StormTech 01



Summary for Pond 2P: StormTech 02

Inflow Area = 1.630 ac, 65.00% Impervious, Inflow Depth = 4.49" for 100 year event
Inflow = 10.58 cfs @ 12.01 hrs, Volume= 0.609 af
Outflow = 0.97 cfs @ 12.93 hrs, Volume= 0.601 af, Atten= 91%, Lag= 55.3 min
Primary = 0.97 cfs @ 12.93 hrs, Volume= 0.601 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 881.33' @ 12.55 hrs Surf.Area= 0.079 ac Storage= 0.337 af

Plug-Flow detention time= 311.6 min calculated for 0.601 af (99% of inflow)
Center-of-Mass det. time= 303.1 min (1,090.3 - 787.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	874.72'	0.129 af	**37.58'W x 91.99'L x 6.75'H Field A** 0.536 af Overall - 0.213 af Embedded = 0.323 af x 40.0% Voids
#2A	875.47'	0.213 af	**ADS_StormTech MC-4500 b +Cap** x 84 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 84 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.342 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	874.72'	**12.0" Round RCP_Round 12"** L= 82.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 874.72' / 874.31' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	874.72'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.30'	**4.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.97 cfs @ 12.93 hrs HW=881.12' TW=876.59' (Dynamic Tailwater)
↑—**1=RCP_Round 12"** (Passes 0.97 cfs of 6.65 cfs potential flow)
↑—**2=WQ Orifice** (Orifice Controls 0.08 cfs @ 10.25 fps)
—**3=Orifice** (Orifice Controls 0.89 cfs @ 10.25 fps)

Pond 2P: StormTech 02 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +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= +39.5 cf x 2 x 4 rows = 316.0 cf

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

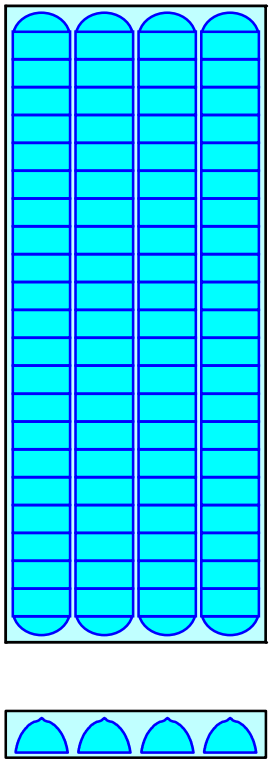
21 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 89.99' Row Length +12.0" End Stone x 2 = 91.99' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

84 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,261.2 cf Chamber Storage

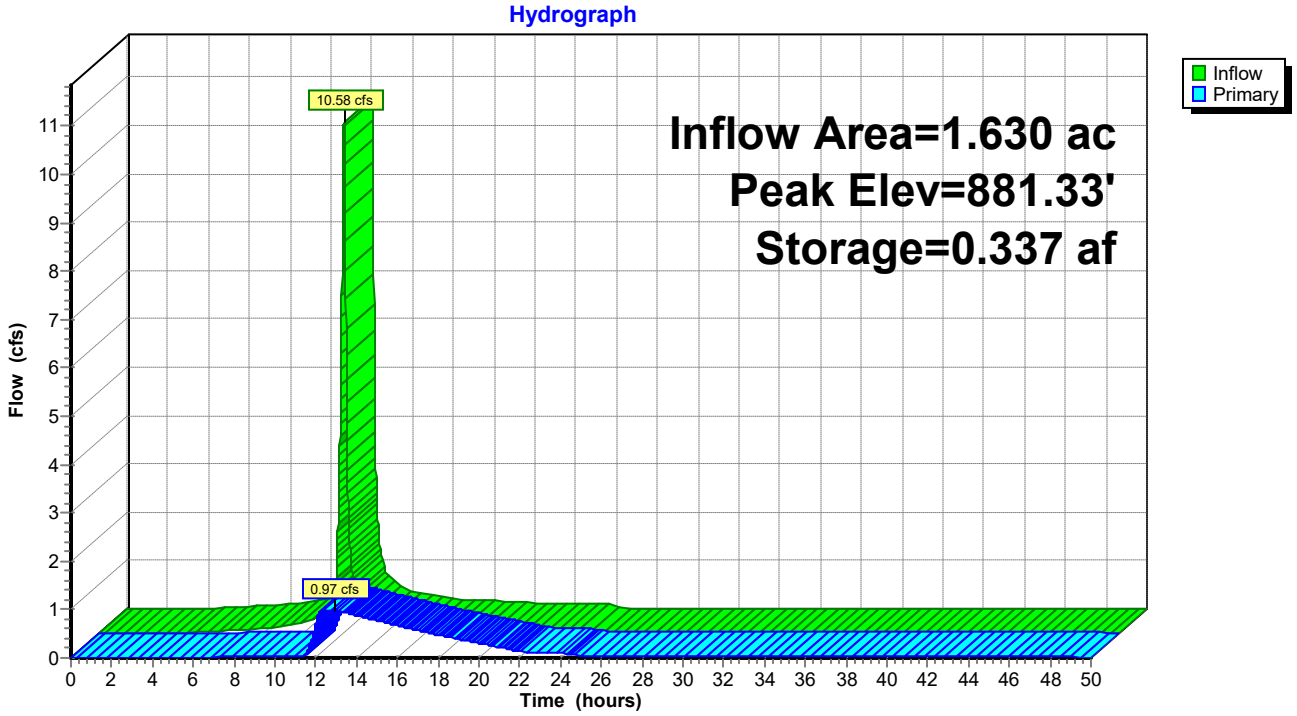
23,337.1 cf Field - 9,261.2 cf Chambers = 14,075.9 cf Stone x 40.0% Voids = 5,630.4 cf Stone Storage

Chamber Storage + Stone Storage = 14,891.6 cf = 0.342 af
Overall Storage Efficiency = 63.8%
Overall System Size = 91.99' x 37.58' x 6.75'

84 Chambers
864.3 cy Field
521.3 cy Stone



Pond 2P: StormTech 02



Summary for Pond 3P: StormTech 03

Inflow Area = 4.290 ac, 65.00% Impervious, Inflow Depth > 4.46" for 100 year event
Inflow = 12.89 cfs @ 12.01 hrs, Volume= 1.593 af
Outflow = 3.57 cfs @ 12.29 hrs, Volume= 1.470 af, Atten= 72%, Lag= 16.9 min
Primary = 3.57 cfs @ 12.29 hrs, Volume= 1.470 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 867.87' @ 12.29 hrs Surf.Area= 0.093 ac Storage= 0.385 af

Plug-Flow detention time= 233.9 min calculated for 1.470 af (92% of inflow)
Center-of-Mass det. time= 141.1 min (1,098.8 - 957.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	861.53'	0.152 af	**19.42'W x 208.72'L x 6.75'H Field A** 0.628 af Overall - 0.248 af Embedded = 0.380 af x 40.0% Voids
#2A	862.28'	0.248 af	**ADS_StormTech MC-4500 b +Cap** x 100 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 100 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.400 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	861.53'	**12.0" Round RCP_Round 12"** L= 19.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 861.53' / 861.43' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	861.53'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.60'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.57 cfs @ 12.29 hrs HW=867.87' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 3.57 cfs of 9.14 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.15 cfs @ 12.06 fps)
  └─**3=Orifice** (Orifice Controls 3.42 cfs @ 8.71 fps)

Pond 3P: StormTech 03 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

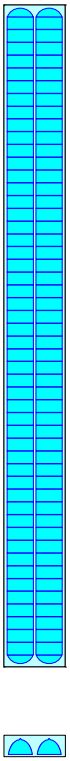
50 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 206.72' Row Length +12.0" End Stone x 2 = 208.72' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

100 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 10,807.0 cf Chamber Storage

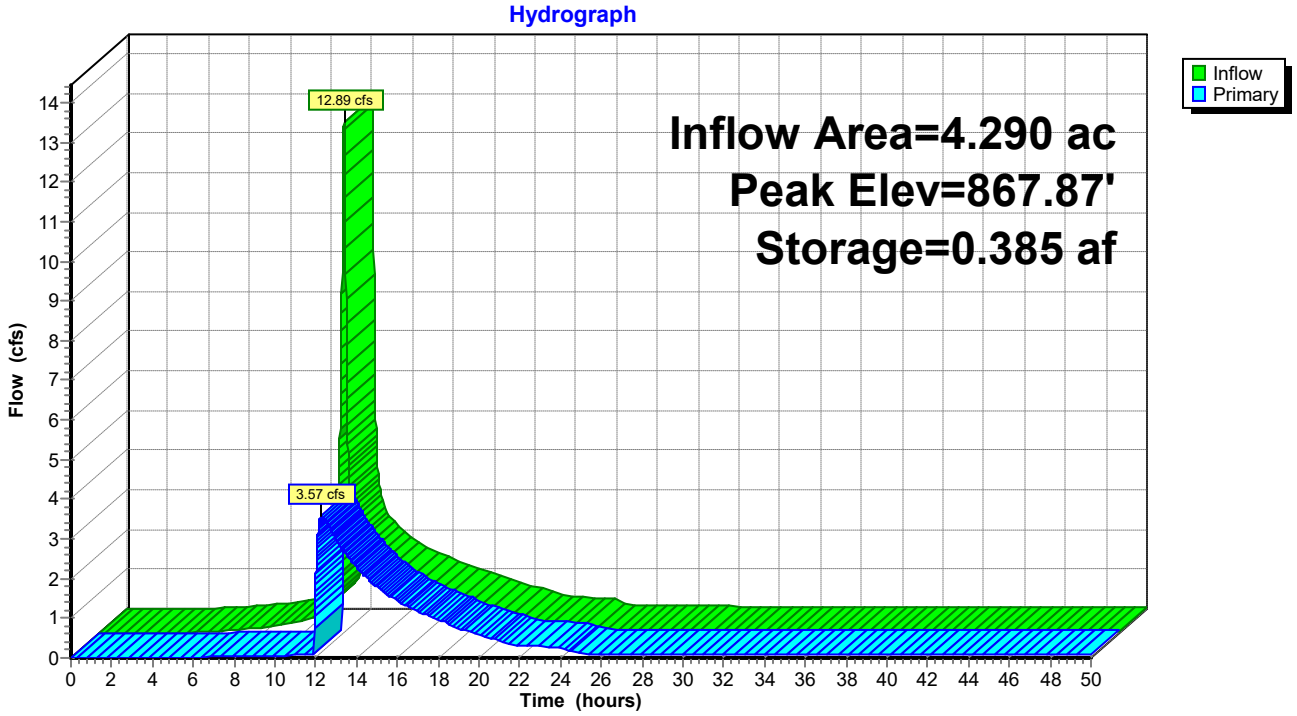
27,354.9 cf Field - 10,807.0 cf Chambers = 16,547.9 cf Stone x 40.0% Voids = 6,619.2 cf Stone Storage

Chamber Storage + Stone Storage = 17,426.2 cf = 0.400 af
Overall Storage Efficiency = 63.7%
Overall System Size = 208.72' x 19.42' x 6.75'

100 Chambers
1,013.1 cy Field
612.9 cy Stone



Pond 3P: StormTech 03



Summary for Pond 4P: StormTech 04

Inflow Area = 1.880 ac, 65.00% Impervious, Inflow Depth = 4.49" for 100 year event
Inflow = 12.20 cfs @ 12.01 hrs, Volume= 0.703 af
Outflow = 1.91 cfs @ 12.32 hrs, Volume= 0.701 af, Atten= 84%, Lag= 18.4 min
Primary = 1.91 cfs @ 12.32 hrs, Volume= 0.701 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 869.28' @ 12.32 hrs Surf.Area= 0.083 ac Storage= 0.352 af

Plug-Flow detention time= 242.2 min calculated for 0.701 af (100% of inflow)
Center-of-Mass det. time= 241.0 min (1,028.2 - 787.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	862.68'	0.135 af	**37.58'W x 96.02'L x 6.75'H Field A** 0.559 af Overall - 0.222 af Embedded = 0.337 af x 40.0% Voids
#2A	863.43'	0.222 af	**ADS_StormTech MC-4500 b +Cap** x 88 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 88 Chambers in 4 Rows Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf
		0.357 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	862.68'	**12.0" Round RCP_Round 12"** L= 70.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 862.68' / 862.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	862.68'	**1.5" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	864.40'	**5.5" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.91 cfs @ 12.32 hrs HW=869.28' TW=0.00' (Dynamic Tailwater)
↑—**1=RCP_Round 12"** (Passes 1.91 cfs of 7.98 cfs potential flow)
↑—**2=WQ Orifice** (Orifice Controls 0.15 cfs @ 12.31 fps)
—**3=Orifice** (Orifice Controls 1.75 cfs @ 10.64 fps)

Pond 4P: StormTech 04 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 4 rows = 316.0 cf

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

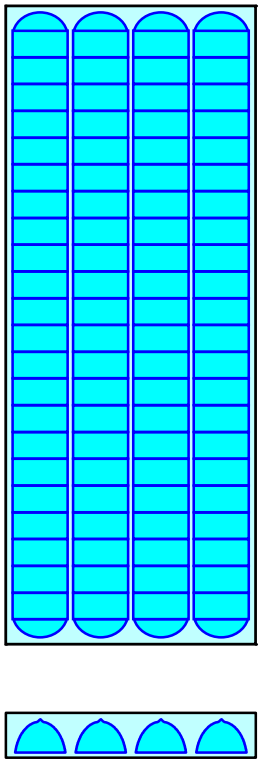
22 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 94.02' Row Length +12.0" End Stone x 2 = 96.02' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

88 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 9,687.2 cf Chamber Storage

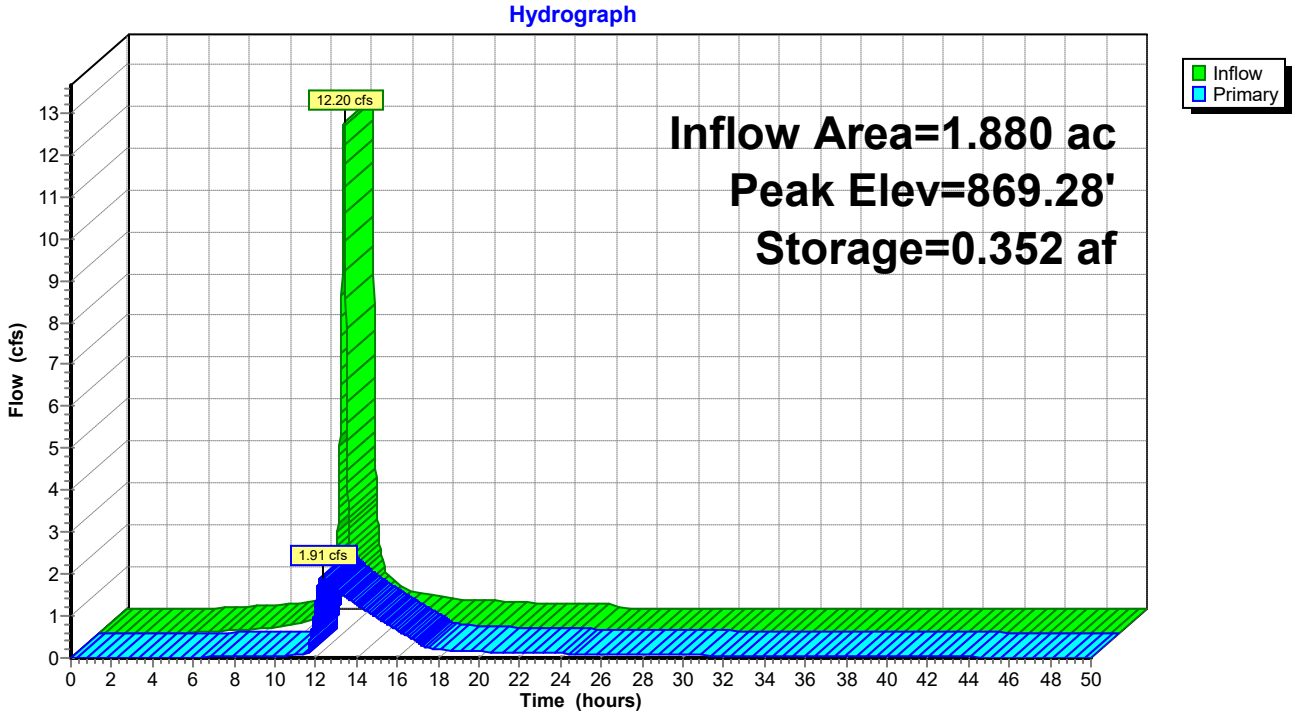
24,358.2 cf Field - 9,687.2 cf Chambers = 14,671.1 cf Stone x 40.0% Voids = 5,868.4 cf Stone Storage

Chamber Storage + Stone Storage = 15,555.6 cf = 0.357 af
Overall Storage Efficiency = 63.9%
Overall System Size = 96.02' x 37.58' x 6.75'

88 Chambers
902.2 cy Field
543.4 cy Stone



Pond 4P: StormTech 04



Summary for Pond 6P: StormTech 05

Inflow Area = 4.810 ac, 65.00% Impervious, Inflow Depth > 4.44" for 100 year event
Inflow = 12.38 cfs @ 12.01 hrs, Volume= 1.779 af
Outflow = 3.45 cfs @ 12.52 hrs, Volume= 1.717 af, Atten= 72%, Lag= 30.0 min
Primary = 3.45 cfs @ 12.52 hrs, Volume= 1.717 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 876.84' @ 12.52 hrs Surf.Area= 0.095 ac Storage= 0.387 af

Plug-Flow detention time= 235.0 min calculated for 1.717 af (96% of inflow)
Center-of-Mass det. time= 176.8 min (1,152.7 - 975.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	870.65'	0.155 af	**19.42'W x 212.74'L x 6.75'H Field A** 0.640 af Overall - 0.253 af Embedded = 0.387 af x 40.0% Voids
#2A	871.40'	0.253 af	**ADS_StormTech MC-4500 b +Cap** x 102 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 102 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.408 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	870.65'	**12.0" Round RCP_Round 12"** L= 64.1' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 870.65' / 870.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	870.65'	**2.0" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.00'	**6.0" Horiz. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.45 cfs @ 12.52 hrs HW=876.84' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 3.45 cfs of 7.89 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.26 cfs @ 11.90 fps)
  └─**3=Orifice** (Orifice Controls 3.19 cfs @ 8.12 fps)

Pond 6P: StormTech 05 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

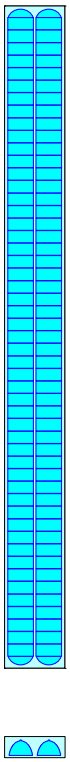
51 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 210.74' Row Length +12.0" End Stone x 2 = 212.74' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

102 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 11,020.0 cf Chamber Storage

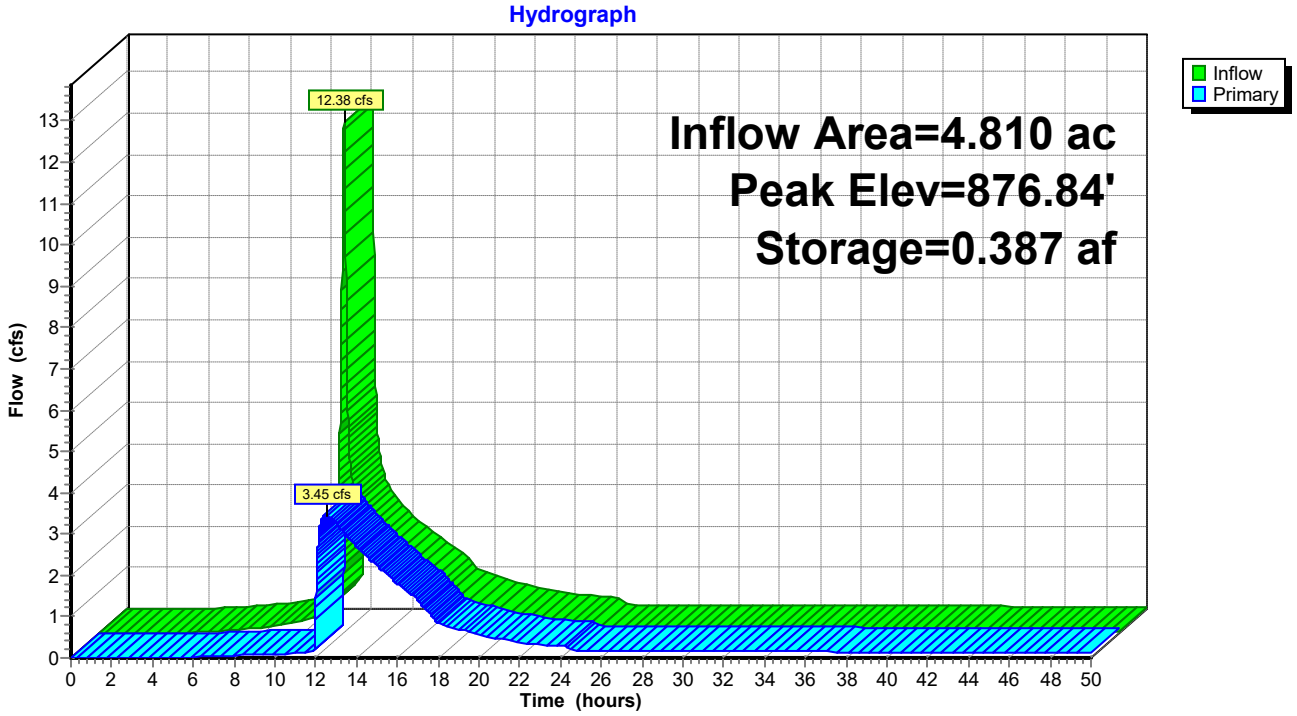
27,882.5 cf Field - 11,020.0 cf Chambers = 16,862.4 cf Stone x 40.0% Voids = 6,745.0 cf Stone Storage

Chamber Storage + Stone Storage = 17,765.0 cf = 0.408 af
Overall Storage Efficiency = 63.7%
Overall System Size = 212.74' x 19.42' x 6.75'

102 Chambers
1,032.7 cy Field
624.5 cy Stone



Pond 6P: StormTech 05



Summary for Pond 7P: StormTech 06

Inflow Area = 1.620 ac, 65.00% Impervious, Inflow Depth = 4.49" for 100 year event
Inflow = 10.51 cfs @ 12.01 hrs, Volume= 0.606 af
Outflow = 1.64 cfs @ 12.15 hrs, Volume= 0.594 af, Atten= 84%, Lag= 8.2 min
Primary = 1.64 cfs @ 12.15 hrs, Volume= 0.594 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 879.23' @ 12.33 hrs Surf.Area= 0.072 ac Storage= 0.299 af

Plug-Flow detention time= 269.5 min calculated for 0.594 af (98% of inflow)
Center-of-Mass det. time= 257.9 min (1,045.1 - 787.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	872.75'	0.117 af	**19.42'W x 160.42'L x 6.75'H Field A** 0.483 af Overall - 0.189 af Embedded = 0.293 af x 40.0% Voids
#2A	873.50'	0.189 af	**ADS_StormTech MC-4500 b +Cap** x 76 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 76 Chambers in 2 Rows Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf
		0.307 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	872.75'	**12.0" Round RCP_Round 12"** L= 46.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 872.75' / 872.52' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	872.75'	**1.2" Vert. WQ Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	874.50'	**6.0" Horiz. Orifice** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.62 cfs @ 12.15 hrs HW=878.76' TW=876.05' (Dynamic Tailwater)
└─**1=RCP_Round 12"** (Passes 1.62 cfs of 6.04 cfs potential flow)
  ├─**2=WQ Orifice** (Orifice Controls 0.06 cfs @ 7.92 fps)
  └─**3=Orifice** (Orifice Controls 1.56 cfs @ 7.92 fps)

Pond 7P: StormTech 06 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 b +Cap (ADS StormTech® MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.02'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= +39.5 cf x 2 x 2 rows = 158.0 cf

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

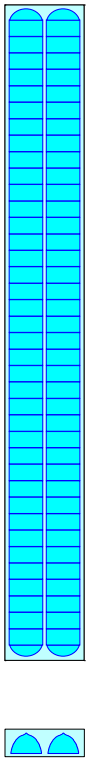
38 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 158.42' Row Length +12.0" End Stone x 2 = 160.42' Base Length
2 Rows x 100.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 19.42' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

76 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 2 Rows = 8,251.3 cf Chamber Storage

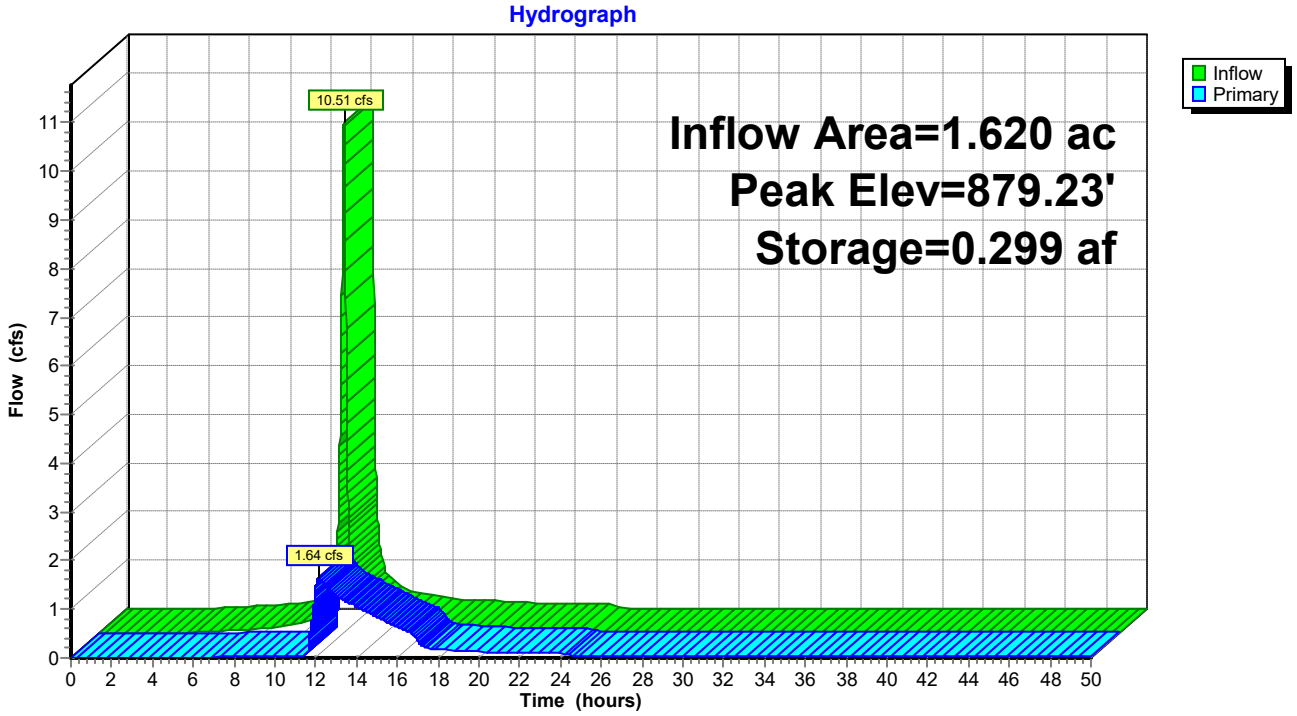
21,024.6 cf Field - 8,251.3 cf Chambers = 12,773.3 cf Stone x 40.0% Voids = 5,109.3 cf Stone Storage

Chamber Storage + Stone Storage = 13,360.6 cf = 0.307 af
Overall Storage Efficiency = 63.5%
Overall System Size = 160.42' x 19.42' x 6.75'

76 Chambers
778.7 cy Field
473.1 cy Stone



Pond 7P: StormTech 06



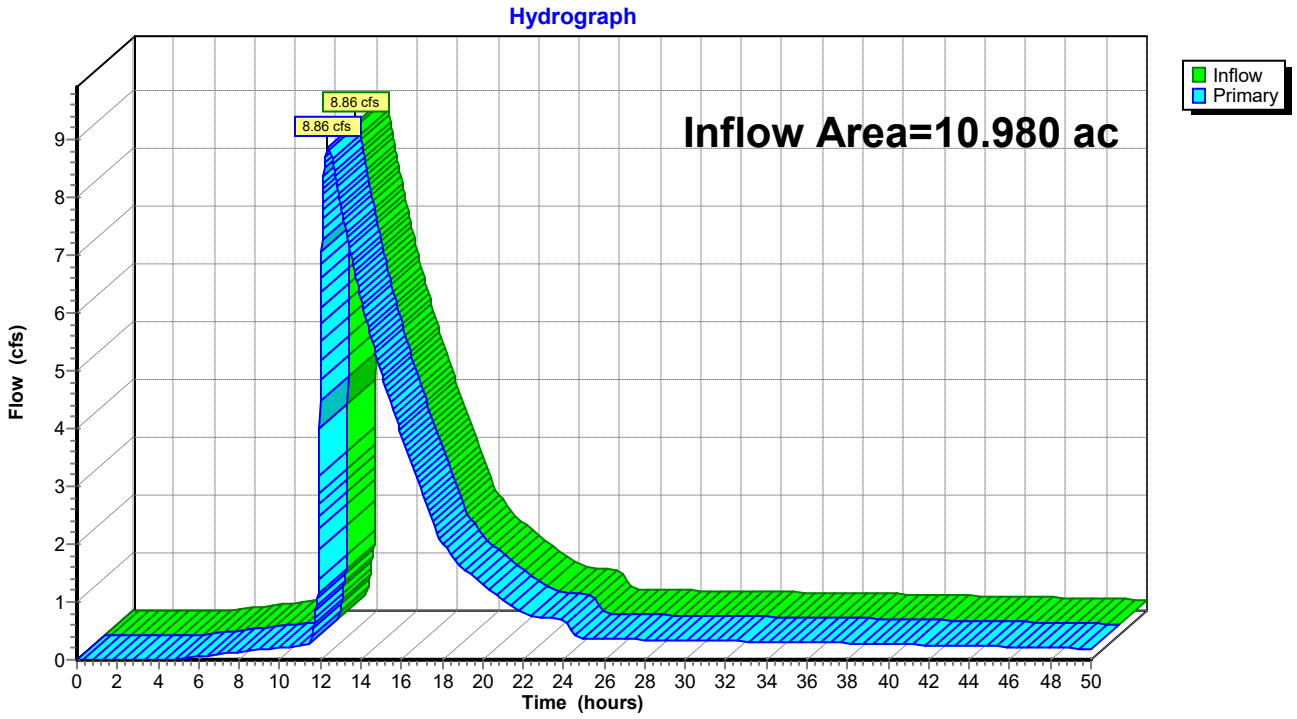
Summary for Pond 15P: Outfall 01

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.980 ac, 65.00% Impervious, Inflow Depth > 4.25" for 100 year event
Inflow = 8.86 cfs @ 12.37 hrs, Volume= 3.888 af
Primary = 8.86 cfs @ 12.37 hrs, Volume= 3.888 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs

Pond 15P: Outfall 01



Events for Subcatchment 8S: Pre-developed 01

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 year	2.20	3.55	0.409	0.45
2 year	2.63	5.99	0.625	0.68
5 year	3.24	9.96	0.974	1.06
10 year	3.74	13.53	1.289	1.41
25 year	4.44	18.85	1.763	1.93
50 year	5.02	23.51	2.178	2.38
100 year	**5.63**	**28.57**	**2.632**	**2.88**

Events for Subcatchment 9S: Subarea 01

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 year	2.20	4.81	0.262	1.27
2 year	2.63	6.22	0.340	1.65
5 year	3.24	8.22	0.456	2.21
10 year	3.74	9.88	0.552	2.67
25 year	4.44	12.19	0.690	3.34
50 year	5.02	14.09	0.805	3.90
100 year	**5.63**	**16.09**	**0.927**	**4.49**

Events for Subcatchment 10S: Subarea 02

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 year	2.20	3.16	0.172	1.27
2 year	2.63	4.09	0.224	1.65
5 year	3.24	5.41	0.300	2.21
10 year	3.74	6.49	0.363	2.67
25 year	4.44	8.01	0.453	3.34
50 year	5.02	9.26	0.529	3.90
100 year	**5.63**	**10.58**	**0.609**	**4.49**

Events for Subcatchment 11S: Subarea 05

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 year	2.20	3.03	0.165	1.27
2 year	2.63	3.91	0.214	1.65
5 year	3.24	5.17	0.287	2.21
10 year	3.74	6.21	0.348	2.67
25 year	4.44	7.66	0.434	3.34
50 year	5.02	8.86	0.506	3.90
100 year	**5.63**	**10.12**	**0.583**	**4.49**

Events for Subcatchment 12S: Subarea 04

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 year	2.20	3.65	0.198	1.27
2 year	2.63	4.71	0.258	1.65
5 year	3.24	6.23	0.346	2.21
10 year	3.74	7.49	0.419	2.67
25 year	4.44	9.24	0.523	3.34
50 year	5.02	10.68	0.610	3.90
100 year	**5.63**	**12.20**	**0.703**	**4.49**

Events for Subcatchment 13S: Subarea 06

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 year	2.20	3.14	0.171	1.27
2 year	2.63	4.06	0.222	1.65
5 year	3.24	5.37	0.298	2.21
10 year	3.74	6.45	0.361	2.67
25 year	4.44	7.96	0.451	3.34
50 year	5.02	9.21	0.526	3.90
100 year	**5.63**	**10.51**	**0.606**	**4.49**

Events for Subcatchment 14S: Subarea 03

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 year	2.20	3.51	0.191	1.27
2 year	2.63	4.54	0.248	1.65
5 year	3.24	6.00	0.333	2.21
10 year	3.74	7.21	0.403	2.67
25 year	4.44	8.89	0.504	3.34
50 year	5.02	10.29	0.588	3.90
100 year	**5.63**	**11.74**	**0.677**	**4.49**

Events for Pond 1P: StormTech 01

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 year	4.81	0.38	868.01	0.142
2 year	6.22	0.59	868.40	0.180
5 year	8.22	0.83	869.05	0.242
10 year	9.88	1.00	869.65	0.296
25 year	12.19	1.22	870.58	0.374
50 year	14.09	1.40	871.52	0.440
100 year	**16.09**	**1.62**	**872.93**	**0.508**

Events for Pond 2P: StormTech 02

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 year	3.16	0.24	876.51	0.093
2 year	4.09	0.38	876.89	0.119
5 year	5.41	0.53	877.53	0.160
10 year	6.49	0.64	878.12	0.196
25 year	8.01	0.77	879.03	0.248
50 year	9.26	0.88	879.94	0.291
100 year	**10.58**	**0.97**	**881.33**	**0.337**

Events for Pond 3P: StormTech 03

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 year	3.58	0.19	864.64	0.209
2 year	4.61	0.72	864.75	0.216
5 year	6.50	1.19	864.93	0.229
10 year	7.88	1.63	865.24	0.250
25 year	9.77	2.31	865.94	0.296
50 year	11.30	2.88	866.70	0.339
100 year	**12.89**	**3.57**	**867.87**	**0.385**

Events for Pond 4P: StormTech 04

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 year	3.65	0.38	864.56	0.104
2 year	4.71	0.65	864.91	0.128
5 year	6.23	0.95	865.54	0.170
10 year	7.49	1.15	866.12	0.207
25 year	9.24	1.41	867.03	0.261
50 year	10.68	1.63	867.93	0.306
100 year	**12.20**	**1.91**	**869.28**	**0.352**

Events for Pond 6P: StormTech 05

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 year	3.11	0.17	873.50	0.193
2 year	4.00	0.66	874.13	0.239
5 year	6.15	1.45	874.44	0.260
10 year	7.55	1.85	874.75	0.282
25 year	9.39	2.37	875.29	0.315
50 year	10.87	2.84	875.89	0.349
100 year	**12.38**	**3.45**	**876.84**	**0.387**

Events for Pond 7P: StormTech 06

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 year	3.14	0.34	874.65	0.090
2 year	4.06	0.69	874.96	0.108
5 year	5.37	1.03	875.56	0.143
10 year	6.45	1.26	876.12	0.174
25 year	7.96	1.51	876.98	0.218
50 year	9.21	1.57	877.87	0.258
100 year	**10.51**	**1.64**	**879.23**	**0.299**

Events for Pond 15P: Outfall 01

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 year	0.59	0.59	**0.00**	**0.000**
2 year	1.70	1.70	0.00	0.000
5 year	3.43	3.43	0.00	0.000
10 year	4.49	4.49	0.00	0.000
25 year	5.98	5.98	0.00	0.000
50 year	7.26	7.26	0.00	0.000
100 year	**8.86**	**8.86**	0.00	0.000

TABLE OF CONTENTS

100 year Event

Multi-Event Tables

EMH&T

APPENDIX E:

Exhibits

2030

2040

2140

2050 2130 2120

Ø884.41

Ø884.99

Pre-developed 01
Area = 10.98 acres
RCN = 74
TC = 27.9 minutes

GRAPHIC SCALE
0 25 50 100
1 inch = 50 feet

CITY OF DUBLIN, FRANKLIN COUNTY, OHIO
STORMWATER MANAGEMENT PLAN
FOR
TULLER ROAD SITE
PRE-DEVELOPED STORMWATER TRIBUTARY MAP

EMHT
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43054
Phone: 614.775.4500 Toll free: 888.775.3648
emht.com

DATE:	September 15, 2020
SCALE:	1" = 50'
JOB NO.:	2020-0227
SHEET:	1 of 2


Subarea 05
Area = 1.56 acres
RCN = 90
TC = 10 minutes
Subarea 01
Area = 2.48 acres
RCN = 90
TC = 10 minutes
StormTech 02
Subarea 02
Area = 1.63 acres
RCN = 90
TC = 10 minutes
StormTech 01
Subarea 03
Area = 1.81 acres
RCN = 90
TC = 10 minutes
StormTech 05
Subarea 04
Area = 1.88 acres
RCN = 90
TC = 10 minutes
Subarea 06
Area = 1.62 acres
RCN = 90
TC = 10 minutes
StormTech 03
StormTech 04
StormTech 06
Prop. Structure
24" Estimated Invert = 869.30
Ex. Structure 36 (Constructed by John Sheilds Parkway Phase 2)
24" Invert = 861.32
Ex. Structure 13 (Constructed by John Sheilds Parkway Phase 2)
24" Invert = 861.00
GRAPHIC SCALE
0 25 50 100
1 inch = 50 feet

CITY OF DUBLIN, FRANKLIN COUNTY, OHIO
STORMWATER MANAGEMENT PLAN
FOR
TULLER ROAD SITE
POST-DEVELOPED STORMWATER TRIBUTARY MAP

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5500 New Albany Road, Columbus, OH 43054
Phone: 614.775.4500 Toll Free: 888.775.3648
emht.com

DATE:	September 23, 2020
SCALE:	1" = 50'
JOB NO.:	2020-0227
SHEET:	2 of 2