STORMWATER REPORT

PREPARED FOR

Surfside Crossing

FOR

Surfside Crossing, LLC

Map 67 – Parcels 336, 336.7, 336.8 &336.9

PREPARED BY

BRACKEN ENGINEERING, INC.
19 Old South Road
Nantucket, MA 02532

COMMONWEALTH OF MASSACHUSETTS
DONALD F. BRACKEN, JR.
CIVIL
No. 37071
REGISTERED PROFESSIONAL ENGINEER

Donald F. Bracken, Jr., P.E.

February 15, 2018

STORMWATER REPORT

Surfside Crossing
3, 5, 7 & 9 South Shore Road
Nantucket, MA

TABLE of CONTENTS

1. Report Narrative
2. Compliance with MA DEP Standards
3. Pipe Sizing Calculations
4. Stormceptor® Sizing Reports
5. TSS Removal Calculations
6. HYRDOCAD Stormwater Report
7. Figures
    - USGS Topographic Map
    - Soil Survey

Pocket: Post-Development Watershed Plan dated 2/15/2018

1. Report Narrative

OBJECTIVE

To design stormwater management systems for a proposed subdivision and condominium complex in compliance with the Massachusetts Stormwater Management Standards.

EXISTING CONDITIONS

The site is a vacant parcel of land consisting of about 13.6 acres of woodland. The woodland is made up of mainly of pitch pine and scrub oak.

The site does not fall within a designated FEMA flood zone. There are no wetlands found on or adjacent to the site.

The site is mapped for Evesboro Series soils. These are deep, excessively drained soils formed on glacial outwash plains. These soils consist of fine to coarse sands and gravel offering high permeability rates and excellent groundwater recharge characteristics.

The site has gentle slopes and grades vary between elevations 29 and 33.

Groundwater is estimated to be approximately 20' deep based on local maps.

The site is located within a designated Zone II Wellhead Protection Area.

PROPOSED CONDITIONS

There are two components to the project: single family residential subdivision and multi-family condominium complex. The drainage systems for each will separated.

All runoff will be treated, and pollution prevention measures shall be incorporated into the design in accordance with best management practices determined by the Department of Environmental Protection (DEP) in the Stormwater Management Handbook.

HYDROLOGIC MODELING

To estimate what runoff would be generated under proposed watershed conditions and to determine the capacity of the infiltration system, a mathematical model of the watersheds was prepared. The model utilized the standard engineering practices based on the National Engineering Handbook, Section 4, Hydrology (NEH-4), and the Soil Conservation Services (SCS) Technical Release 20 (TR-20), Urban Hydrology for Small Watersheds. The system was analyzed using the rainfall data for the twenty-five (25) year, 24-hour duration storm frequency. The precipitation was based on the Natural Resources Conservation Service Maps, revised in 1986.

The "TR-20" program calculates the runoff based on the rainfall and watershed characteristics, and produces a runoff hydrograph, (a runoff rate versus time curve). The stage-storage-discharge curves for a specific infiltration area are used to compute an outflow hydrograph by hydraulically routing an inflow hydrograph through the infiltration area. This procedure calculates the relationship of the inflow hydrograph with the characteristics of the infiltration area to determine the outflow, stage, and storage capacity of the infiltration area for a given time during the specified storm event.

To assist in the analysis, the Stormwater Modeling System utilized was Hydrocad®. This program is largely based on hydrologic techniques developed by the Natural Resource Conservation Service, combined with other hydrologic and hydraulic calculations.

CONCLUSION

The drainage system has been designed to adequately handle the 25-year storm event and meet DEP Stormwater Standards.

2. Compliance with MA DEP Standards

COMPLIANCE WITH MADEP STORMWATER STANDARDS

The project is subject to the Stormwater Management Standards since the site falls designated Zone II recharge area for public water supply.

The following is a list of Stormwater Management Standards and accompanying documentation describing compliance for each Standard:

Standard 1: No New Untreated Discharges
There is no discharge off site or to any wetland areas. The Water Quality Volume (WQV) required for this project is the first one inch (1") of runoff from impervious surfaces via a Stormcepter manufactured stormwater treatment filter.

Standard 2: Peak Rate Attenuation
Peak runoff attenuation is not required since all runoff is contained on site.

Standard 3: Recharge
Recharge has been provided on site for all impervious surfaces including roof areas which directly discharge to infiltration systems.

Standard 4: Total Suspended Solids Removal
Systems have been designed to remove at least 80% of the Total Suspended Solids (TSS).

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)
Project does not provide land uses with higher potential pollutant loads.

Standard 6: Critical Areas
The site is in a Zone II wellhead protection recharge area. Drainage systems have been designed to treat the first 1" of runoff form impervious surfaces, remove at least 80% of TSS and maintain greater than 2' separation to groundwater below recharge systems.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable
The project is not considered a re-development project.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control.
Final plans will include this information.

Standard 9: Operation and Maintenance Plan
Final plans will include this information.

Standard 10: Prohibition of Illicit Discharges
The proposed uses will not result in any illicit discharges.

3. Pipe Sizing Calculations

BRACKEN ENGINEERING, INC.
49 HERRING POND ROAD
BUZZARDS BAY, MA 02532

Location: Nantucket, MA
Development: 3-9 South Shore Road
Project No.:
Storm Frequency: 25 Year
Runs: 1 - 11

Date: 15-Feb-18
Revised:
Computed By: RMM/RED
Checked By: DFB

From	To	Drainage Area (acres)	C	Total C x A (acres)	Tc (min)	I(25) (in/hr)	Q = (CIA) (cfs)	Flow from others (cfs)	Total Q	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dia (in)	Q (full) (cfs)	V (full) (fps)	Q/Q(full) < 1?	INV. DOWN (ft)	INV. UP (ft)	Length (ft)	Pipe Rad. (ft)	Hydraulic Radius (ft)	Area (ft2)	Perimeter (ft)
Run 1																							
CB 1	DMH 1	0.000	0.20																				
		0.242	0.30																				
		0.580	0.90																				
				0.59	5.0	5.8	3.45	0.00	3.45	0.031	HDPE	0.011	12	7.46	9.50	0.46	24.1	24.35	8	0.5	0.25	0.785	3.142
CB 2	DMH 1	0.000	0.20																				
		0.062	0.30																				
		0.131	0.90																				
				0.14	5.0	5.8	0.79	0.00	0.79	0.011	HDPE	0.011	12	4.50	5.73	0.18	24.1	24.35	22	0.5	0.25	0.785	3.142
DMH 1	STC 1	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	4.24	4.24	0.010	HDPE	0.011	12	4.28	5.45	0.99	21.5	24	243	0.5	0.25	0.785	3.142
CB 3	DMH 2	0.000	0.20																				
		0.035	0.30																				
		0.128	0.90																				
				0.13	5.0	5.8	0.73	0.00	0.73	0.031	HDPE	0.011	12	7.46	9.50	0.10	22.05	22.3	8	0.5	0.25	0.785	3.142
CB 4	DMH 2	0.000	0.20																				
		0.030	0.30																				
		0.062	0.90																				
				0.06	5.0	5.8	0.38	0.00	0.38	0.012	HDPE	0.011	12	4.61	5.87	0.08	22.05	22.3	21	0.5	0.25	0.785	3.142
DMH 2	STC 1	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	1.10	1.10	0.012	HDPE	0.011	12	4.59	5.85	0.24	21.5	21.95	38	0.5	0.25	0.785	3.142
STC 1	SWMA 1	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	5.35	5.35	0.014	HDPE	0.011	15	8.94	7.28	0.60	21.25	21.4	11	0.625	0.3125	1.227	3.927

From	To	Drainage Area (acres)	C	Total C x A (acres)	Tc (min)	I(25) (in/hr)	Q = (CIA) (cfs)	Flow from others (cfs)	Total Q	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dia (in)	Q (full) (cfs)	V (full) (fps)	Q/Q(full) < 1?	INV. DOWN (ft)	INV. UP (ft)	Length (ft)	Pipe Rad. (ft)	Hydraulic Radius (ft)	Area (ft2)	Perimeter (ft)
Run 2																							
CB 5	DMH 3	0.000	0.20																				
		0.177	0.30																				
		0.401	0.90																				
				0.41	5.0	5.8	2.40	0.00	2.40	0.015	HDPE	0.011	12	5.10	6.49	0.47	22.85	23.2	24	0.5	0.25	0.785	3.142
CB 6	DMH 3	0.000	0.20																				
		0.048	0.30																				
		0.178	0.90																				
				0.17	5.0	5.8	1.01	0.00	1.01	0.012	HDPE	0.011	12	4.72	6.01	0.21	22.85	23.2	28	0.5	0.25	0.785	3.142
DMH 3	STC 4	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	3.41	3.41	0.011	HDPE	0.011	12	4.48	5.70	0.76	22.3	22.75	40	0.5	0.25	0.785	3.142
CB 11	DMH 6	0.000	0.20																				
		0.140	0.30																				
		0.322	0.90																				
				0.33	5.0	5.8	1.92	0.00	1.92	0.008	HDPE	0.011	12	3.85	4.91	0.50	22.75	23	30	0.5	0.25	0.785	3.142
CB 12	DMH 6	0.000	0.20																				
		0.153	0.30																				
		0.382	0.90																				
				0.39	5.0	5.8	2.26	0.00	2.26	0.013	HDPE	0.011	12	4.84	6.17	0.47	22.75	23	19	0.5	0.25	0.785	3.142
DMH 6	STC 4	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	4.18	4.18	0.012	HDPE	0.011	12	4.56	5.81	0.92	22.3	22.65	30	0.5	0.25	0.785	3.142
STC 4	SWMA 3	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	7.60	7.60	0.010	HDPE	0.011	15	7.65	6.24	0.99	22.1	22.2	10	0.625	0.3125	1.227	3.927

From	To	Drainage Area (acres)	C	Total C x A (acres)	Tc (min)	I(25) (in/hr)	Q = (CIA) (cfs)	Flow from others (cfs)	Total Q	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dia (in)	Q (full) (cfs)	V (full) (fps)	Q/Q(full) < 1?	INV. DOWN (ft)	INV. UP (ft)	Length (ft)	Pipe Rad. (ft)	Hydraulic Radius (ft)	Area (ft2)	Perimeter (ft)
Run 3																							
CB 7	DMH 4	0.000	0.20																				
		0.191	0.30																				
		0.456	0.90																				
				0.47	5.0	5.8	2.71	0.00	2.71	0.011	HDPE	0.011	12	4.50	5.73	0.60	24.75	25	22	0.5	0.25	0.785	3.142
CB 8	DMH 4	0.000	0.20																				
		0.072	0.30																				
		0.227	0.90																				
				0.23	5.0	5.8	1.31	0.00	1.31	0.017	HDPE	0.011	12	5.45	6.94	0.24	24.75	25	15	0.5	0.25	0.785	3.142
DMH 4	STC 2	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	4.02	4.02	0.010	HDPE	0.011	12	4.32	5.49	0.93	23.95	24.65	67	0.5	0.25	0.785	3.142
STC 2	SWMA 2	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	4.02	4.02	0.011	HDPE	0.011	12	4.37	5.56	0.92	23.4	23.85	42	0.5	0.25	0.785	3.142
Run 4																							
CB 9	DMH 5	0.219	0.20																				
		0.359	0.30																				
		0.613	0.90																				
				0.70	5.0	5.8	4.08	0.00	4.08	0.010	HDPE	0.011	12	4.14	5.27	0.99	24.45	24.7	26	0.5	0.25	0.785	3.142
CB 10	DMH 5	0.000	0.20																				
		0.048	0.30																				
		0.184	0.90																				
				0.18	5.0	5.8	1.04	0.00	1.04	0.014	HDPE	0.011	12	4.98	6.34	0.21	24.45	24.7	18	0.5	0.25	0.785	3.142
DMH 5	STC 3	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	5.12	5.12	0.011	HDPE	0.011	15	8.07	6.58	0.63	23.95	24.35	36	0.625	0.3125	1.227	3.927
STC 3	SWMA 2	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	5.12	5.12	0.011	HDPE	0.011	15	8.02	6.53	0.64	23.4	23.85	41	0.625	0.3125	1.227	3.927

From	To	Drainage Area (acres)	C	Total C x A (acres)	Tc (min)	I(25) (in/hr)	Q = (CIA) (cfs)	Flow from others (cfs)	Total Q	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dia (in)	Q (full) (cfs)	V (full) (fps)	Q/Q(full) < 1?	INV. DOWN (ft)	INV. UP (ft)	Length (ft)	Pipe Rad. (ft)	Hydraulic Radius (ft)	Area (ft2)	Perimeter (ft)
Run 5																							
CB 13	STC 5	0.000	0.20																				
		0.222	0.30																				
		0.544	0.90																				
				0.56	5.0	5.8	3.23	0.00	3.23	0.013	HDPE	0.011	12	4.84	6.17	0.67	21.85	22.1	19	0.5	0.25	0.785	3.142
CB 14	STC 5	0.009	0.20																				
		0.079	0.30																				
		0.289	0.90																				
				0.29	5.0	5.8	1.66	0.00	1.66	0.023	HDPE	0.011	12	6.36	8.10	0.26	21.85	22.1	11	0.5	0.25	0.785	3.142
STC 5	SWMA 4	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	4.88	4.88	0.011	HDPE	0.011	15	7.98	6.50	0.61	20.75	21.75	92	0.625	0.3125	1.227	3.927
Run 6																							
CB 15	STC 6	0.000	0.20																				
		0.233	0.30																				
		0.539	0.90																				
				0.56	5.0	5.8	3.22	0.00	3.22	0.028	HDPE	0.011	12	7.04	8.96	0.46	24	24.25	9	0.5	0.25	0.785	3.142
CB 16	STC 6	0.000	0.20																				
		0.066	0.30																				
		0.229	0.90																				
				0.23	5.0	5.8	1.31	0.00	1.31	0.014	HDPE	0.011	12	4.98	6.34	0.26	24	24.25	18	0.5	0.25	0.785	3.142
STC 6	SWMA 5	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	4.53	4.53	0.014	HDPE	0.011	12	4.93	6.28	0.92	23.75	23.9	11	0.5	0.25	0.785	3.142

From	To	Drainage Area (acres)	C	Total C x A (acres)	Tc (min)	I(25) (in/hr)	Q = (CIA) (cfs)	Flow from others (cfs)	Total Q	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dia (in)	Q (full) (cfs)	V (full) (fps)	Q/Q(full) < 1?	INV. DOWN (ft)	INV. UP (ft)	Length (ft)	Pipe Rad. (ft)	Hydraulic Radius (ft)	Area (ft2)	Perimeter (ft)
Run 7																							
CB 17	DMH 7	0.000	0.20																				
		0.009	0.30																				
		0.067	0.90																				
				0.06	5.0	5.8	0.37	0.00	0.37	0.017	HDPE	0.011	12	5.45	6.94	0.07	25.25	25.5	15	0.5	0.25	0.785	3.142
CB 18	DMH 7	0.000	0.20																				
		0.009	0.30																				
		0.067	0.90																				
				0.06	5.0	5.8	0.37	0.00	0.37	0.009	HDPE	0.011	12	4.06	5.17	0.09	25.25	25.5	27	0.5	0.25	0.785	3.142
DMH 7	STC 7	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	0.73	0.73	0.010	HDPE	0.011	12	4.28	5.44	0.17	24.35	25.15	78	0.5	0.25	0.785	3.142
CB 19	DMH 8	0.000	0.20																				
		0.045	0.30																				
		0.098	0.90																				
				0.10	5.0	5.8	0.59	0.00	0.59	0.025	HDPE	0.011	12	6.68	8.50	0.09	25.1	25.5	16	0.5	0.25	0.785	3.142
CB 20	DMH 8	0.000	0.20																				
		0.045	0.30																				
		0.098	0.90																				
				0.10	5.0	5.8	0.59	0.00	0.59	0.015	HDPE	0.011	12	5.24	6.67	0.11	25.1	25.5	26	0.5	0.25	0.785	3.142
DMH 8	STC 7	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	1.18	1.18	0.011	HDPE	0.011	12	4.47	5.69	0.26	24.35	25	58	0.5	0.25	0.785	3.142
STC 7	SWMA 6	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	1.91	1.91	0.013	HDPE	0.011	12	4.84	6.17	0.39	24	24.25	19	0.5	0.25	0.785	3.142
Run 8																							
CB 21	STC 8	0.000	0.20																				
		0.014	0.30																				
		0.137	0.90																				
				0.13	5.0	5.8	0.74	0.00	0.74	0.011	HDPE	0.011	12	4.40	5.60	0.17	24	24.5	46	0.5	0.25	0.785	3.142
CB 22	STC 8	0.000	0.20																				
		0.047	0.30																				
		0.236	0.90																				
				0.23	5.0	5.8	1.31	0.00	1.31	0.011	HDPE	0.011	12	4.40	5.60	0.30	24	24.5	46	0.5	0.25	0.785	3.142
STC8	SWMA 7	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	2.05	2.05	0.020	HDPE	0.011	12	5.97	7.60	0.34	23.8	23.9	5	0.5	0.25	0.785	3.142

From	To	Drainage Area (acres)	C	Total C x A (acres)	Tc (min)	I(25) (in/hr)	Q = (CIA) (cfs)	Flow from others (cfs)	Total Q	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dia (in)	Q (full) (cfs)	V (full) (fps)	Q/Q(full) < 1?	INV. DOWN (ft)	INV. UP (ft)	Length (ft)	Pipe Rad. (ft)	Hydraulic Radius (ft)	Area (ft2)	Perimeter (ft)
Run 9																							
CB 23	STC 9	0.000	0.20																				
		0.014	0.30																				
		0.137	0.90																				
				0.13	5.0	5.8	0.74	0.00	0.74	0.011	HDPE	0.011	12	4.40	5.60	0.17	24	24.5	46	0.5	0.25	0.785	3.142
CB 24	STC 9	0.000	0.20																				
		0.047	0.30																				
		0.236	0.90																				
				0.23	5.0	5.8	1.31	0.00	1.31	0.011	HDPE	0.011	12	4.40	5.60	0.30	24	24.5	46	0.5	0.25	0.785	3.142
STC9	SWMA 8	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	2.05	2.05	0.020	HDPE	0.011	12	5.97	7.60	0.34	23.8	23.9	5	0.5	0.25	0.785	3.142
Run 10																							
CB 25	STC 10	0.000	0.20																				
		0.021	0.30																				
		0.217	0.90																				
				0.20	5.0	5.8	1.17	0.00	1.17	0.017	HDPE	0.011	12	5.45	6.94	0.21	24.9	25	6	0.5	0.25	0.785	3.142
STC10	SWMA 9	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	1.17	1.17	0.020	HDPE	0.011	12	5.97	7.60	0.20	24.7	24.8	5	0.5	0.25	0.785	3.142
Run 11																							
CB 26	DMH 9	0.000	0.20																				
		0.011	0.30																				
		0.067	0.90																				
				0.06	5.0	5.8	0.37	0.00	0.37	0.012	HDPE	0.011	12	4.55	5.80	0.08	25	25.5	43	0.5	0.25	0.785	3.142
CB 27	DMH 9	0.000	0.20																				
		0.011	0.30																				
		0.067	0.90																				
				0.06	5.0	5.8	0.37	0.00	0.37	0.012	HDPE	0.011	12	4.61	5.87	0.08	25	25.25	21	0.5	0.25	0.785	3.142
DMH 9	STC 11	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	0.74	0.74	0.011	HDPE	0.011	12	4.40	5.60	0.17	24.4	24.9	46	0.5	0.25	0.785	3.142
CB 28	STC 11	0.000	0.20																				
		0.043	0.30																				
		0.217	0.90																				
				0.21	5.0	5.8	1.21	0.00	1.21	0.011	HDPE	0.011	12	4.35	5.54	0.28	24.4	24.75	33	0.5	0.25	0.785	3.142
STC 11	SWMA 10	0.000	0.20																				
		0.000	0.30																				
		0.000	0.90																				
				0.00	5.0	5.8	0.00	1.95	1.95	0.012	HDPE	0.011	12	4.54	5.77	0.43	24.15	24.3	13	0.5	0.25	0.785	3.142

4. Stormceptor® Sizing Reports

Stormceptor®

Rinker MATERIALS™

Brief Stormceptor Sizing Report - STC 1

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 1
Target TSS Removal (%)	80
TSS Removal (%) Provided	85
Recommended Stormceptor Model	STC 900

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	77
STC 900	85
STC 1200	85
STC 1800	85
STC 2400	88
STC 3600	89
STC 4800	91
STC 6000	91
STC 7200	93
STC 11000	95
STC 13000	95
STC 16000	96
StormceptorMAX	Custom

Stormceptor®

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Sizing Details

Drainage Area	
Total Area (acres)	1.27
Imperviousness %	71.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
- For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
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Brief Stormceptor Sizing Report - STC 2

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 2
Target TSS Removal (%)	80
TSS Removal (%) Provided	80
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	80
STC 900	87
STC 1200	87
STC 1800	87
STC 2400	90
STC 3600	91
STC 4800	93
STC 6000	93
STC 7200	94
STC 11000	96
STC 13000	96
STC 16000	97
StormceptorMAX	Custom

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Sizing Details

Drainage Area	
Total Area (acres)	0.95
Imperviousness %	72.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
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Brief Stormceptor Sizing Report - STC 3

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 3
Target TSS Removal (%)	80
TSS Removal (%) Provided	86
Recommended Stormceptor Model	STC 900

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	78
STC 900	86
STC 1200	86
STC 1800	86
STC 2400	89
STC 3600	90
STC 4800	92
STC 6000	92
STC 7200	94
STC 11000	95
STC 13000	96
STC 16000	96
StormceptorMAX	Custom

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Sizing Details

Drainage Area	
Total Area (acres)	1.42
Imperviousness %	56.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
- For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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Brief Stormceptor Sizing Report - STC 4

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 4
Target TSS Removal (%)	80
TSS Removal (%) Provided	81
Recommended Stormceptor Model	STC 900

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	73
STC 900	81
STC 1200	81
STC 1800	82
STC 2400	86
STC 3600	86
STC 4800	89
STC 6000	89
STC 7200	91
STC 11000	93
STC 13000	94
STC 16000	95
StormceptorMAX	Custom

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Sizing Details

Drainage Area	
Total Area (acres)	1.8
Imperviousness %	71.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
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Brief Stormceptor Sizing Report - STC 5

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 5
Target TSS Removal (%)	80
TSS Removal (%) Provided	85
Recommended Stormceptor Model	STC 900

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	78
STC 900	85
STC 1200	85
STC 1800	86
STC 2400	89
STC 3600	89
STC 4800	92
STC 6000	92
STC 7200	93
STC 11000	95
STC 13000	95
STC 16000	96
StormceptorMAX	Custom

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Sizing Details

Drainage Area	
Total Area (acres)	1.14
Imperviousness %	73.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
- For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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Brief Stormceptor Sizing Report - STC 6

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 6
Target TSS Removal (%)	80
TSS Removal (%) Provided	86
Recommended Stormceptor Model	STC 900

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	79
STC 900	86
STC 1200	86
STC 1800	86
STC 2400	89
STC 3600	90
STC 4800	92
STC 6000	92
STC 7200	94
STC 11000	95
STC 13000	96
STC 16000	96
StormceptorMAX	Custom

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Sizing Details

Drainage Area	
Total Area (acres)	1.07
Imperviousness %	72.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
- For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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Brief Stormceptor Sizing Report - STC 7

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 7
Target TSS Removal (%)	80
TSS Removal (%) Provided	86
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	86
STC 900	91
STC 1200	91
STC 1800	92
STC 2400	94
STC 3600	94
STC 4800	95
STC 6000	96
STC 7200	97
STC 11000	98
STC 13000	98
STC 16000	98
StormceptorMAX	Custom

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Sizing Details

Drainage Area	
Total Area (acres)	0.44
Imperviousness %	76.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
- For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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Brief Stormceptor Sizing Report - STC 8

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 8
Target TSS Removal (%)	80
TSS Removal (%) Provided	85
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	85
STC 900	91
STC 1200	91
STC 1800	91
STC 2400	93
STC 3600	94
STC 4800	95
STC 6000	95
STC 7200	96
STC 11000	97
STC 13000	98
STC 16000	98
StormceptorMAX	Custom

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Sizing Details

Drainage Area	
Total Area (acres)	0.43
Imperviousness %	86.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
- For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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Brief Stormceptor Sizing Report - STC 9

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 9
Target TSS Removal (%)	80
TSS Removal (%) Provided	85
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	85
STC 900	91
STC 1200	91
STC 1800	91
STC 2400	93
STC 3600	94
STC 4800	95
STC 6000	95
STC 7200	96
STC 11000	97
STC 13000	98
STC 16000	98
StormceptorMAX	Custom

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Sizing Details

Drainage Area	
Total Area (acres)	0.43
Imperviousness %	86.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
- For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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http://www.imbriumsystems.com/technical-specifications

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Brief Stormceptor Sizing Report - STC 10

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 10
Target TSS Removal (%)	80
TSS Removal (%) Provided	89
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	89
STC 900	93
STC 1200	94
STC 1800	94
STC 2400	95
STC 3600	96
STC 4800	97
STC 6000	97
STC 7200	98
STC 11000	98
STC 13000	98
STC 16000	99
StormceptorMAX	Custom

Stormceptor®

Rinker MATERIALS™

Sizing Details

Drainage Area	
Total Area (acres)	0.23
Imperviousness %	91.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
- For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

Stormceptor®

Rinker MATERIALS™

Brief Stormceptor Sizing Report - STC 11

Project Information & Location			
Project Name	South Shore Road (40B Development)	Project Number	6312
City	Nantucket	State/ Province	Massachusetts
Country	United States of America	Date	2/13/2018
Designer Information		**EOR Information (optional)**	
Name	ryan maxwell	Name	
Company	bracken engineering	Company	
Phone #	508-833-0070	Phone #	
Email	ryan@brackeneng.com	Email	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	STC 11
Target TSS Removal (%)	80
TSS Removal (%) Provided	85
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	85
STC 900	91
STC 1200	91
STC 1800	91
STC 2400	93
STC 3600	94
STC 4800	95
STC 6000	95
STC 7200	96
STC 11000	97
STC 13000	98
STC 16000	98
StormceptorMAX	Custom

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Rinker MATERIALS™

Sizing Details

Drainage Area	
Total Area (acres)	0.42
Imperviousness %	84.0

Rainfall	
Station Name	NANTUCKET FAA AIRPORT
State/Province	Massachusetts
Station ID #	5159
Years of Records	22
Latitude	41°15'0"N
Longitude	70°4'0"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
- For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

5. TSS Removal Calculations

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 1
Subcatchment Area(s): 1S & 3S

Prepared By: RED
Date: 02-15-18

TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	85%	0.72	0.61	0.11

Total TSS Removal = 89%

19 Old South Road
Nantucket, MA 02554
ph: 508-325-0044
fx: 505-833-2282

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 2
Subcatchment Area(s): 6S

Prepared By: RED
Date: 02-15-18

TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	80%	0.72	0.58	0.14

Total TSS Removal = 86%

19 Old South Road
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ph: 508-325-0044
fx: 505-833-2282

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 3
Subcatchment Area(s): 8S

Prepared By: RED
Date: 02-15-18

TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	86%	0.72	0.62	0.10

Total TSS Removal = 90%

19 Old South Road
Nantucket, MA 02554
ph: 508-325-0044
fx: 505-833-2282

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 4
Subcatchment Area(s): 5S & 9S

Prepared By: RED
Date: 02-15-18

TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	81%	0.72	0.58	0.14

Total TSS Removal = 86%

19 Old South Road
Nantucket, MA 02554
ph: 508-325-0044
fx: 505-833-2282

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 5
Subcatchment Area(s): 4S

Prepared By: RED
Date: 02-15-18

TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	85%	0.72	0.61	0.11

Total TSS Removal = 89%

19 Old South Road
Nantucket, MA 02554
ph: 508-325-0044
fx: 505-833-2282

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 6
Subcatchment Area(s): 2S

Prepared By: RED
Date: 02-15-18

TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	86%	0.72	0.62	0.10

Total TSS Removal = 90%

19 Old South Road
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ph: 508-325-0044
fx: 505-833-2282

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 7
Subcatchment Area(s): 11S

Prepared By: RED
Date: 02-15-18

TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	86%	0.72	0.62	0.10

Total TSS Removal = 90%

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ph: 508-325-0044
fx: 505-833-2282

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 8
Subcatchment Area(s): 10S

Prepared By: RED
Date: 02-15-18

TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	85%	0.72	0.60	0.12

Total TSS Removal = 88%

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ph: 508-325-0044
fx: 505-833-2282

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 9
Subcatchment Area(s): 12S

Prepared By: RED
Date: 02-15-18

TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	85%	0.72	0.60	0.12

Total TSS Removal = 88%

19 Old South Road
Nantucket, MA 02554
ph: 508-325-0044
fx: 505-833-2282

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 10
Subcatchment Area(s): 13S

Prepared By: RED
Date: 02-15-18

TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	89%	0.72	0.64	0.08

Total TSS Removal = 92%

19 Old South Road
Nantucket, MA 02554
ph: 508-325-0044
fx: 505-833-2282

BRACKEN ENGINEERING, INC.

Project: Surfside Crossing
3,5,7 & 9 South Shore Rd.
Nantucket, MA 02554

Stormceptor #: 11
Subcatchment Area(s): 14S & 15S

Prepared By: RED
Date: 02-15-18

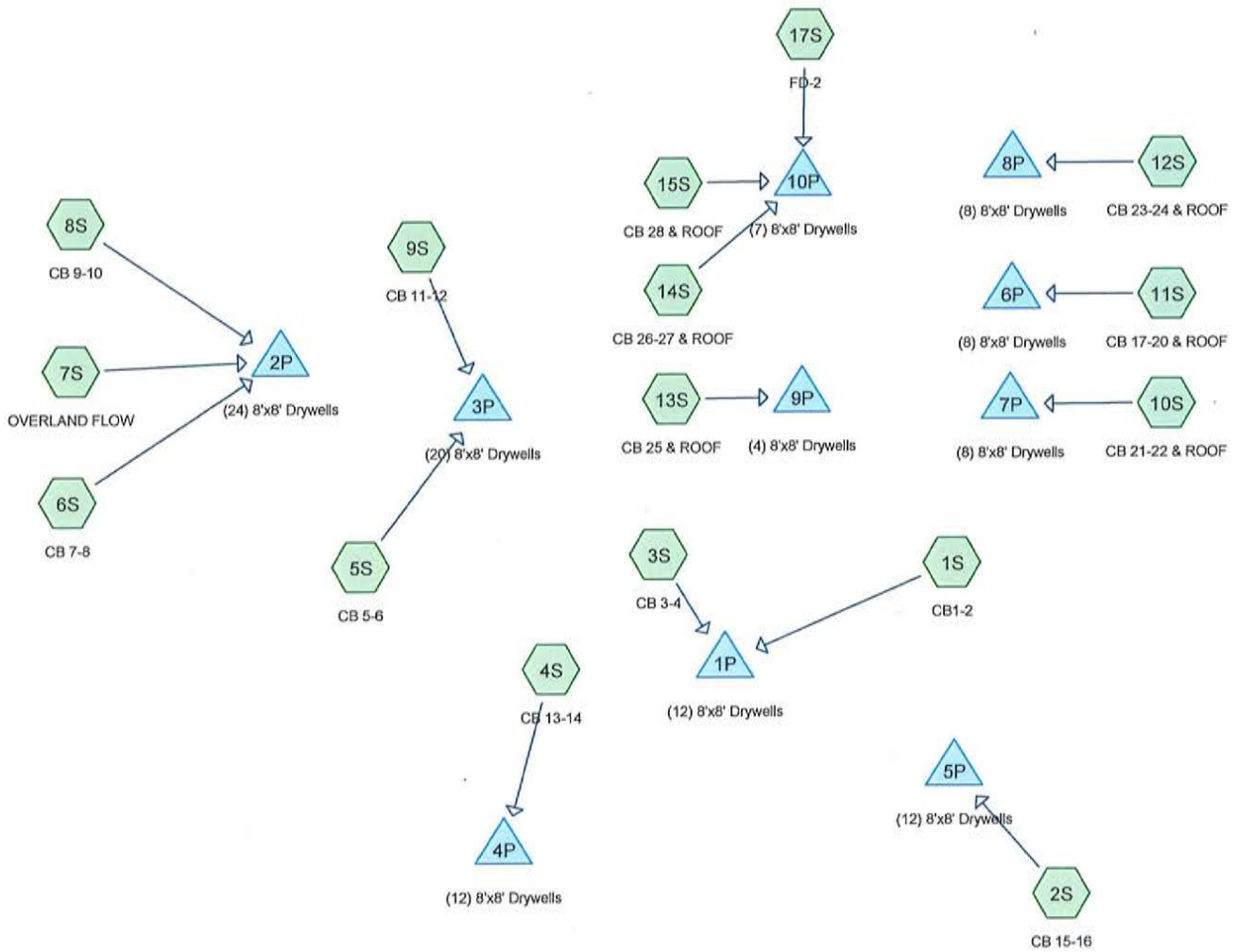
TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
STREET SWEEPING	5%	1.00	0.05	0.95
DEEP SUMP & HOODED CATCH BASINS	25%	0.95	0.23	0.72
STORMCEPTOR UNIT	85%	0.72	0.61	0..11

Total TSS Removal = 89%

19 Old South Road
Nantucket, MA 02554
ph: 508-325-0044
fx: 505-833-2282

6. HYRDOCAD Stormwater Report



Subcat Reach Pond Link

Routing Diagram for Surfside Crossing - Copy Don
Prepared by Bracken Engineering, Inc.
HydroCAD® 10.00-18 s/n 03102 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: CB1-2

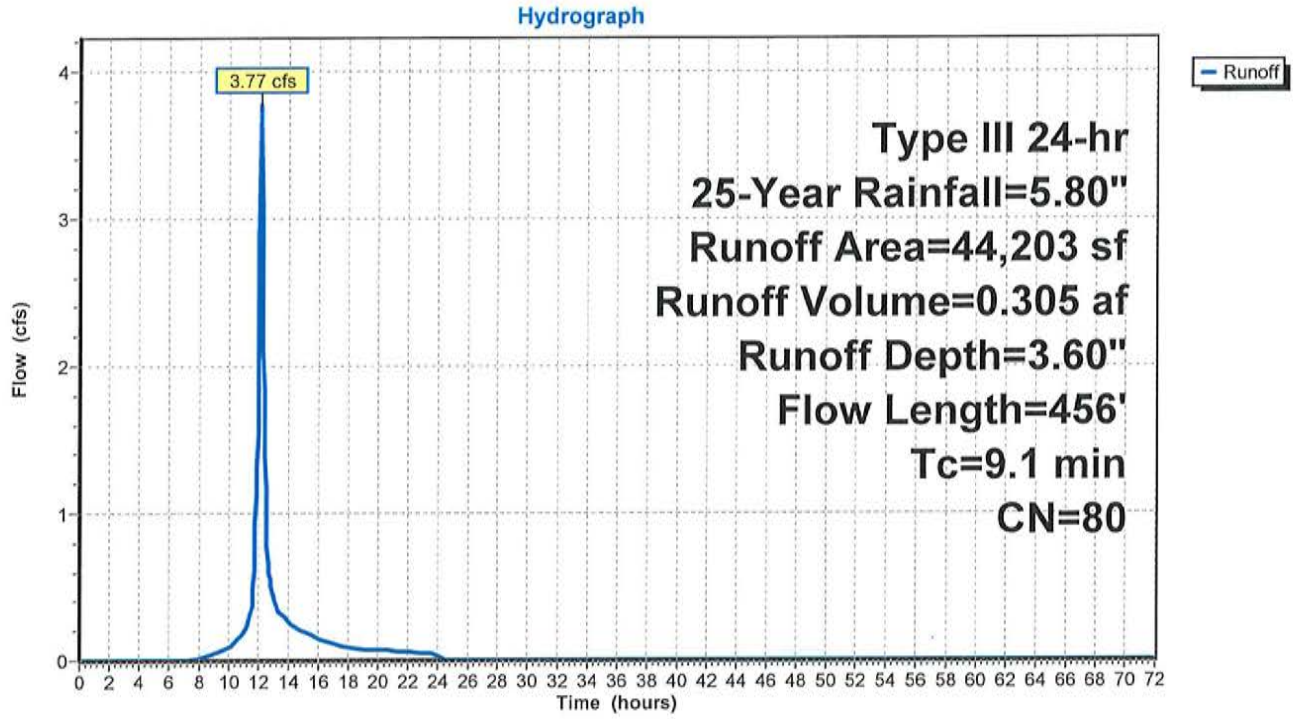
Runoff = 3.77 cfs @ 12.13 hrs, Volume= 0.305 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	11,401	98	Paved
	2,696	39	>75% Grass cover, Good, HSG A
	30,106	77	1/8 acre lots, 65% imp, HSG A
	44,203	80	Weighted Average
	13,233		29.94% Pervious Area
	30,970		70.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0100	0.12		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
0.5	43	0.0100	1.50		**Shallow Concentrated Flow, BC** Grassed Waterway Kv= 15.0 fps
0.7	95	0.0120	2.22		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
0.0	12	0.2620	27.44	21.55	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.8	243	0.0100	5.36	4.21	**Pipe Channel, EE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	13	0.0120	6.81	8.36	**Pipe Channel, EF** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
9.1	456	Total			

Subcatchment 1S: CB1-2



Summary for Subcatchment 2S: CB 15-16

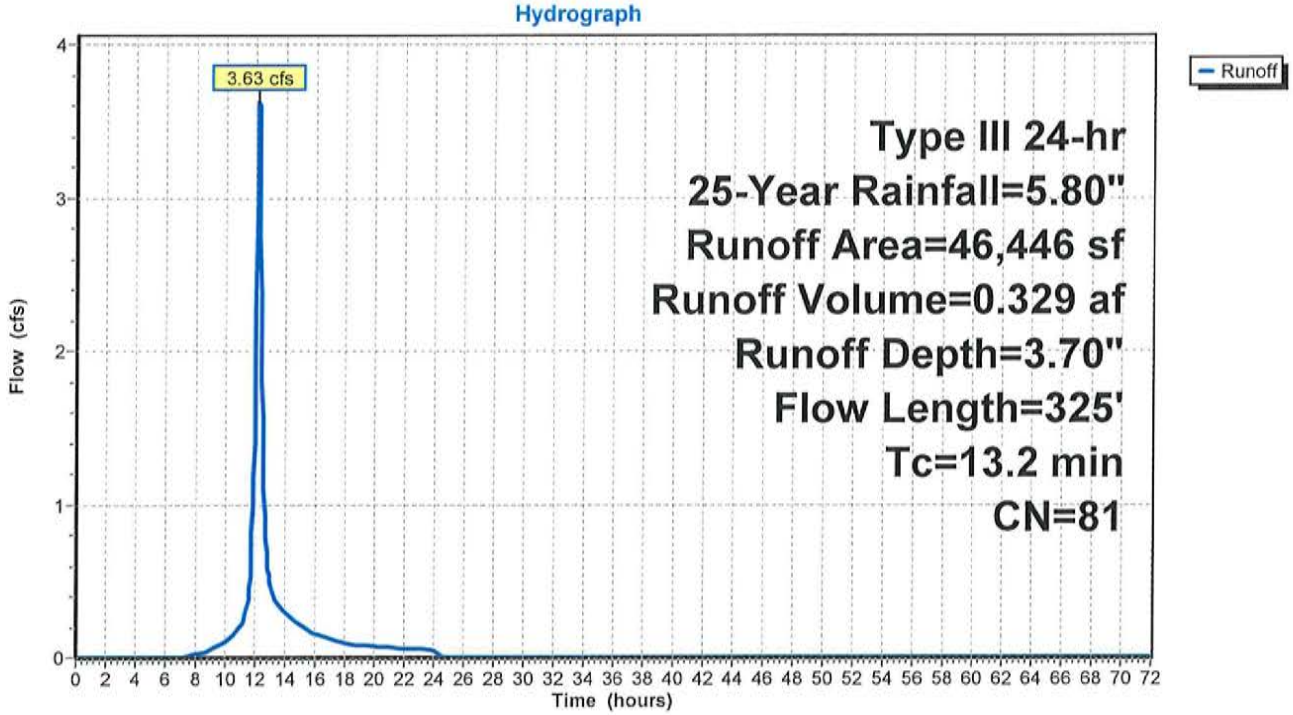
Runoff = 3.63 cfs @ 12.18 hrs, Volume= 0.329 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	9,252	98	Paved
	37,194	77	1/8 acre lots, 65% imp, HSG A
	46,446	81	Weighted Average
	13,018		28.03% Pervious Area
	33,428		71.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.0044	0.08		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
1.4	83	0.0042	0.97		**Shallow Concentrated Flow, BC** Grassed Waterway Kv= 15.0 fps
1.9	172	0.0055	1.51		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
0.0	9	0.0280	8.97	7.05	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	11	0.0140	6.34	4.98	**Pipe Channel, EF** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
13.2	325	Total			

Subcatchment 2S: CB 15-16



Summary for Subcatchment 3S: CB 3-4

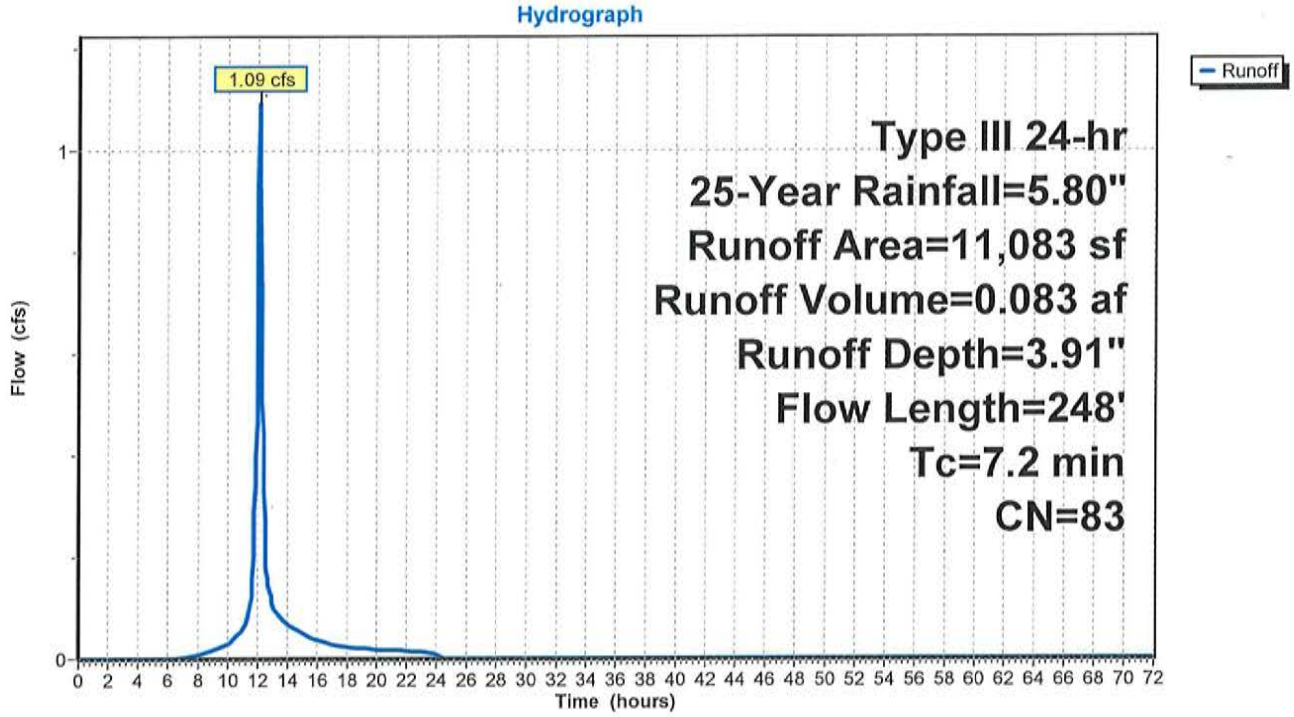
Runoff = 1.09 cfs @ 12.10 hrs, Volume= 0.083 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	5,421	98	Paved
	1,298	39	>75% Grass cover, Good, HSG A
	4,364	77	1/8 acre lots, 65% imp, HSG A
	11,083	83	Weighted Average
	2,825		25.49% Pervious Area
	8,258		74.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	45	0.0120	0.12		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
1.0	144	0.0130	2.31		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
0.0	8	0.0310	9.44	7.41	**Pipe Channel, CD** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.1	38	0.0120	5.87	4.61	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	13	0.0120	6.81	8.36	**Pipe Channel, EF** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
7.2	248	Total			

Subcatchment 3S: CB 3-4



Summary for Subcatchment 4S: CB 13-14

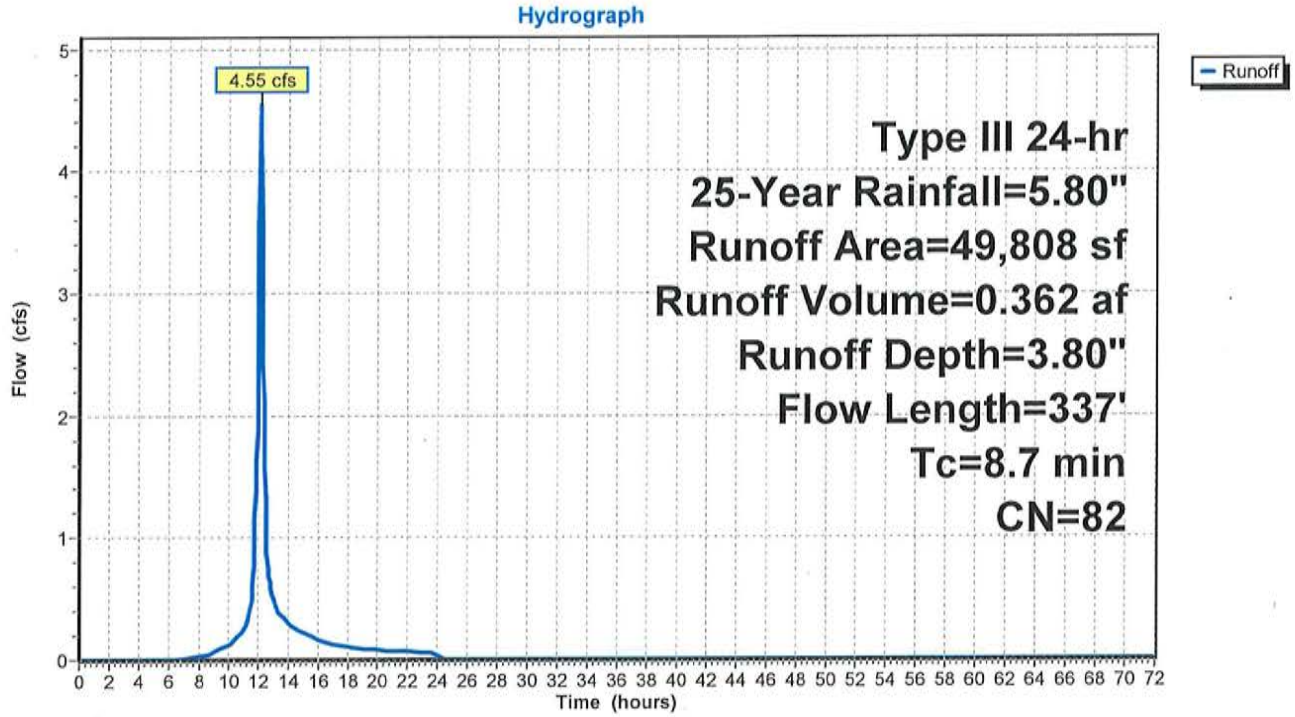
Runoff = 4.55 cfs @ 12.12 hrs, Volume= 0.362 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	12,969	98	Paved
	414	30	Woods, Good, HSG A
	35,872	77	1/8 acre lots, 65% imp, HSG A
	553	39	>75% Grass cover, Good, HSG A
	49,808	82	Weighted Average
	13,522		27.15% Pervious Area
	36,286		72.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0100	0.12		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
0.8	101	0.0200	2.12		**Shallow Concentrated Flow, BC** Grassed Waterway Kv= 15.0 fps
0.2	25	0.0100	2.03		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
0.3	50	0.0140	2.40		**Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps
0.1	19	0.0130	6.11	4.80	**Pipe Channel, EF** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.2	92	0.0110	6.52	8.01	**Pipe Channel, FG** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
8.7	337	Total			

Subcatchment 4S: CB 13-14



Summary for Subcatchment 5S: CB 5-6

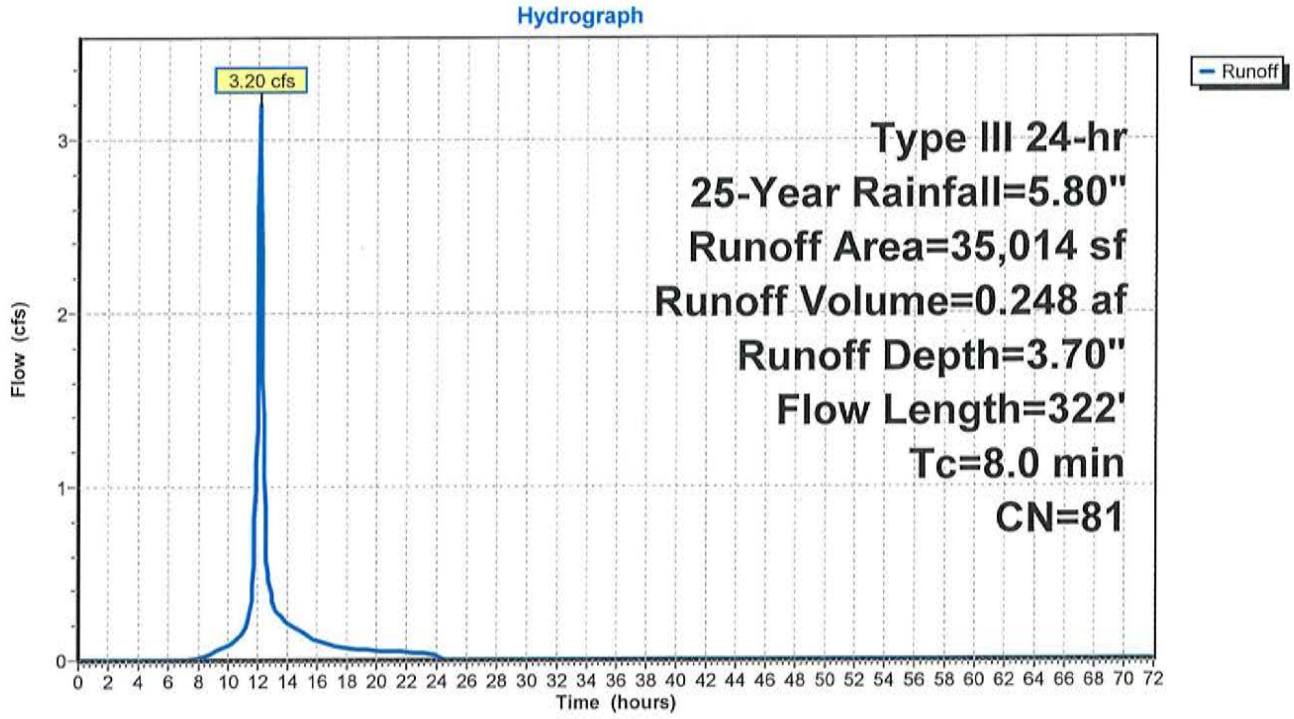
Runoff = 3.20 cfs @ 12.11 hrs, Volume= 0.248 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	7,011	98	Paved
	28,003	77	1/8 acre lots, 65% imp, HSG A
	35,014	81	Weighted Average
	9,801		27.99% Pervious Area
	25,213		72.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	59	0.0190	0.16		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
0.4	45	0.0110	2.13		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.1	144	0.0120	2.22		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
0.1	24	0.0150	6.57	5.16	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.1	40	0.0110	5.62	4.42	**Pipe Channel, EF** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	10	0.0100	6.22	7.63	**Pipe Channel, FG** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
8.0	322	Total			

Subcatchment 5S: CB 5-6



Summary for Subcatchment 6S: CB 7-8

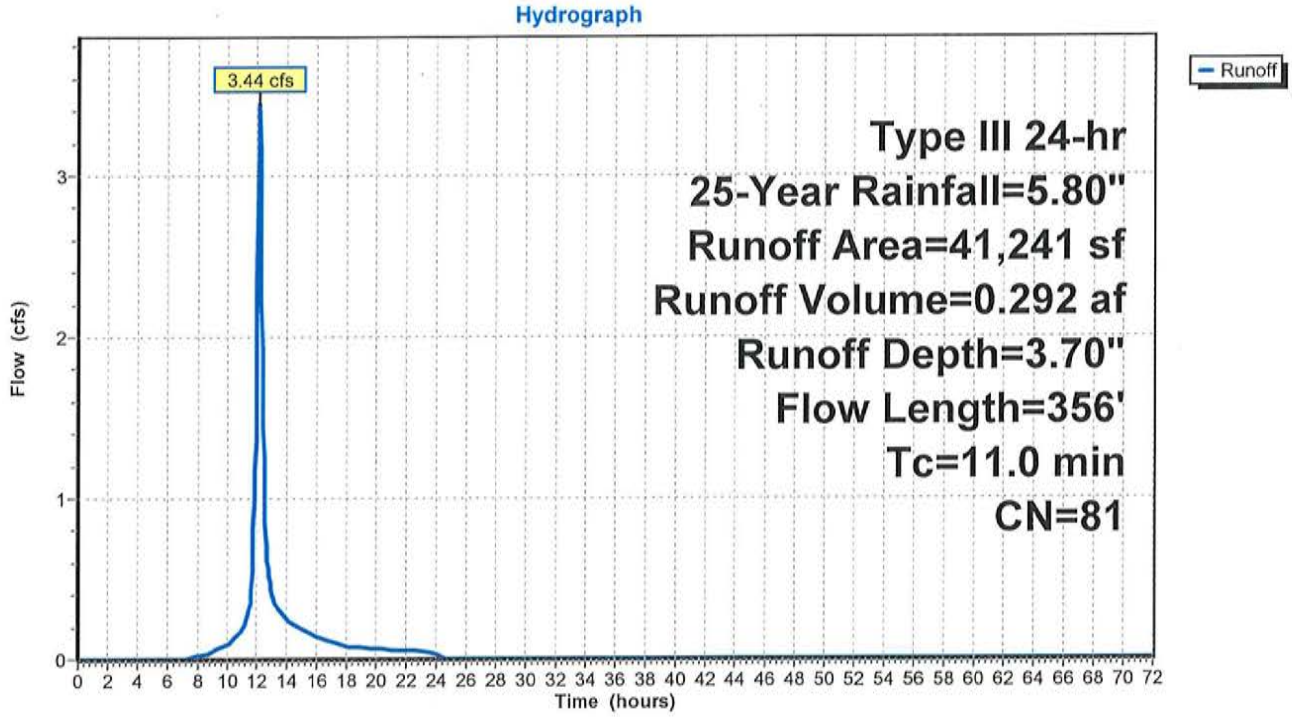
Runoff = 3.44 cfs @ 12.15 hrs, Volume= 0.292 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	8,468	98	Paved
	32,773	77	1/8 acre lots, 65% imp, HSG A
	41,241	81	Weighted Average
	11,471		27.81% Pervious Area
	29,770		72.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	77	0.0130	0.14		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
0.0	5	0.0100	2.03		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
1.9	237	0.0100	2.03		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
0.1	22	0.0110	5.62	4.42	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	15	0.0100	5.36	4.21	**Pipe Channel, EF** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
11.0	356	Total			

Subcatchment 6S: CB 7-8



Summary for Subcatchment 7S: OVERLAND FLOW

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

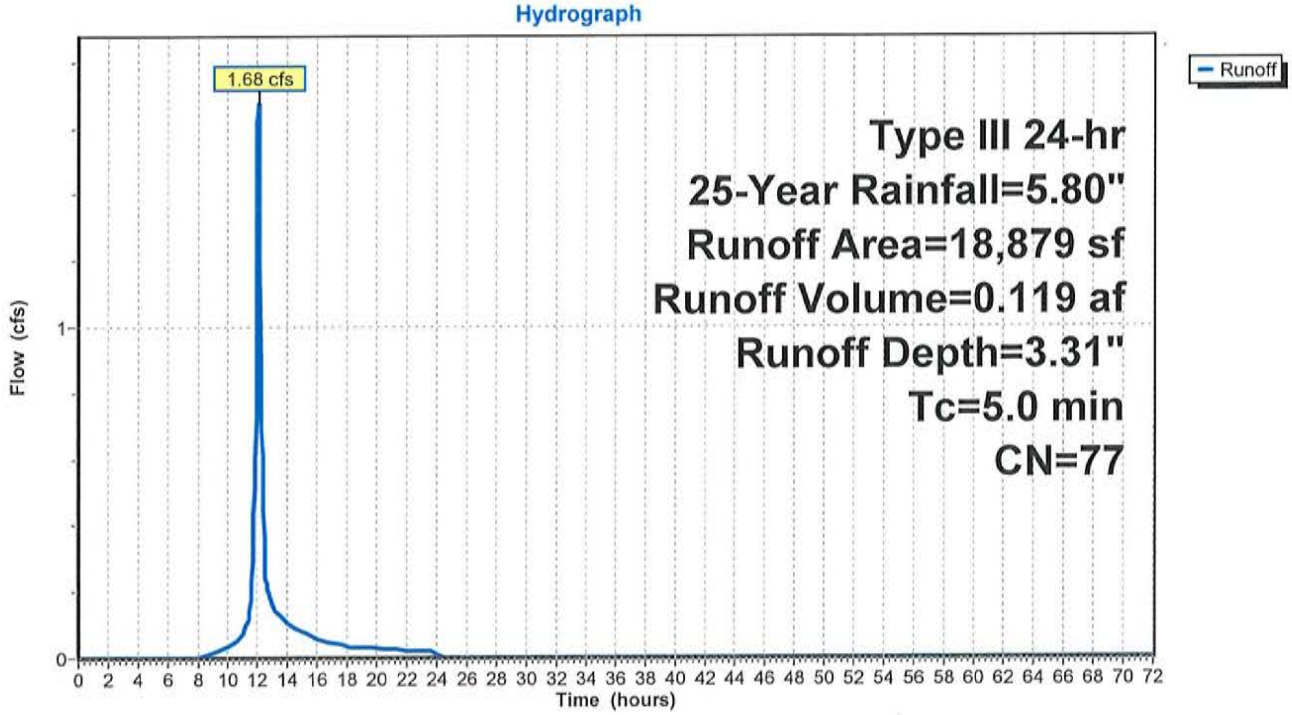
Runoff = 1.68 cfs @ 12.08 hrs, Volume= 0.119 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
18,879	77	1/8 acre lots, 65% imp, HSG A
6,608		35.00% Pervious Area
12,271		65.00% Impervious Area

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

Subcatchment 7S: OVERLAND FLOW



Summary for Subcatchment 8S: CB 9-10

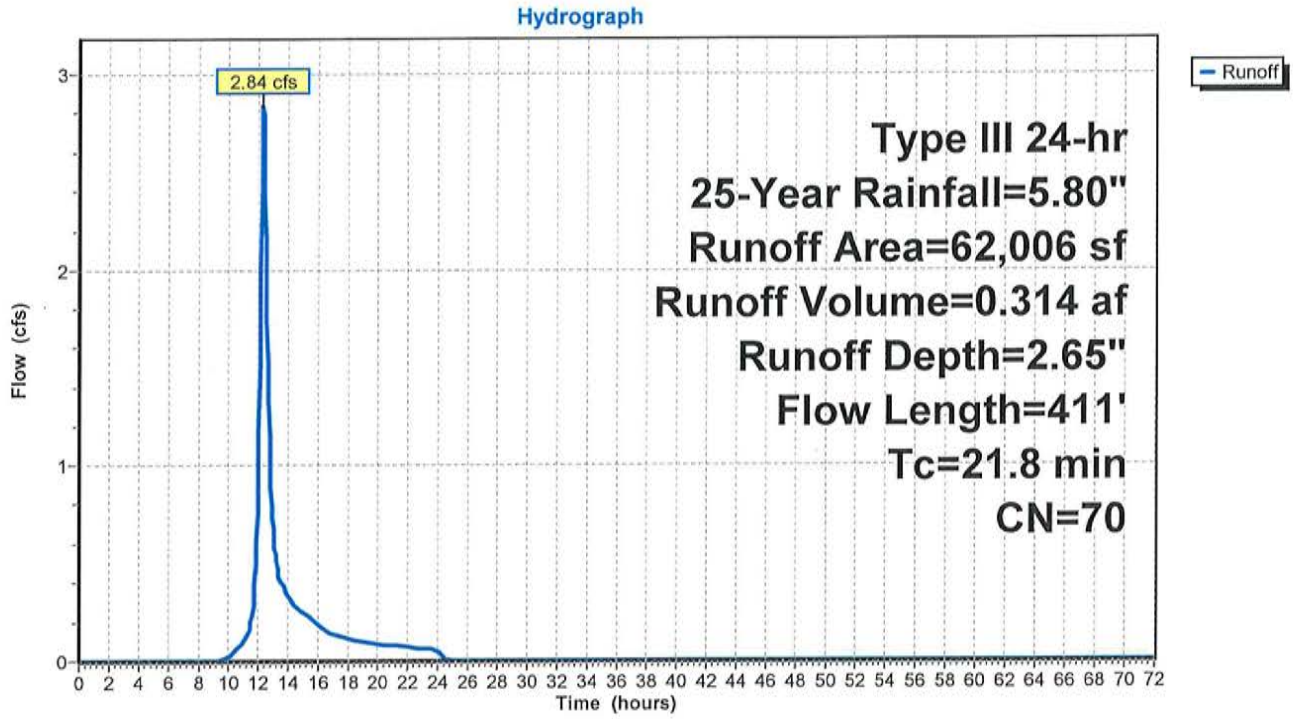
Runoff = 2.84 cfs @ 12.31 hrs, Volume= 0.314 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	8,517	98	Paved
	3,643	39	>75% Grass cover, Good, HSG A
	9,547	30	Woods, Good, HSG A
	40,299	77	1/8 acre lots, 65% imp, HSG A
	62,006	70	Weighted Average
	27,295		44.02% Pervious Area
	34,711		55.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.4	75	0.0130	0.06		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 3.50"
0.9	106	0.0190	2.07		**Shallow Concentrated Flow, BC** Grassed Waterway Kv= 15.0 fps
0.4	45	0.0110	2.13		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
0.8	82	0.0080	1.82		**Shallow Concentrated Flow, DE** Paved Kv= 20.3 fps
0.1	26	0.0100	5.36	4.21	**Pipe Channel, EF** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.1	36	0.0110	6.52	8.01	**Pipe Channel, FG** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
0.1	41	0.0110	6.52	8.01	**Pipe Channel, GH** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
21.8	411	Total			

Subcatchment 8S: CB 9-10



Summary for Subcatchment 9S: CB 11-12

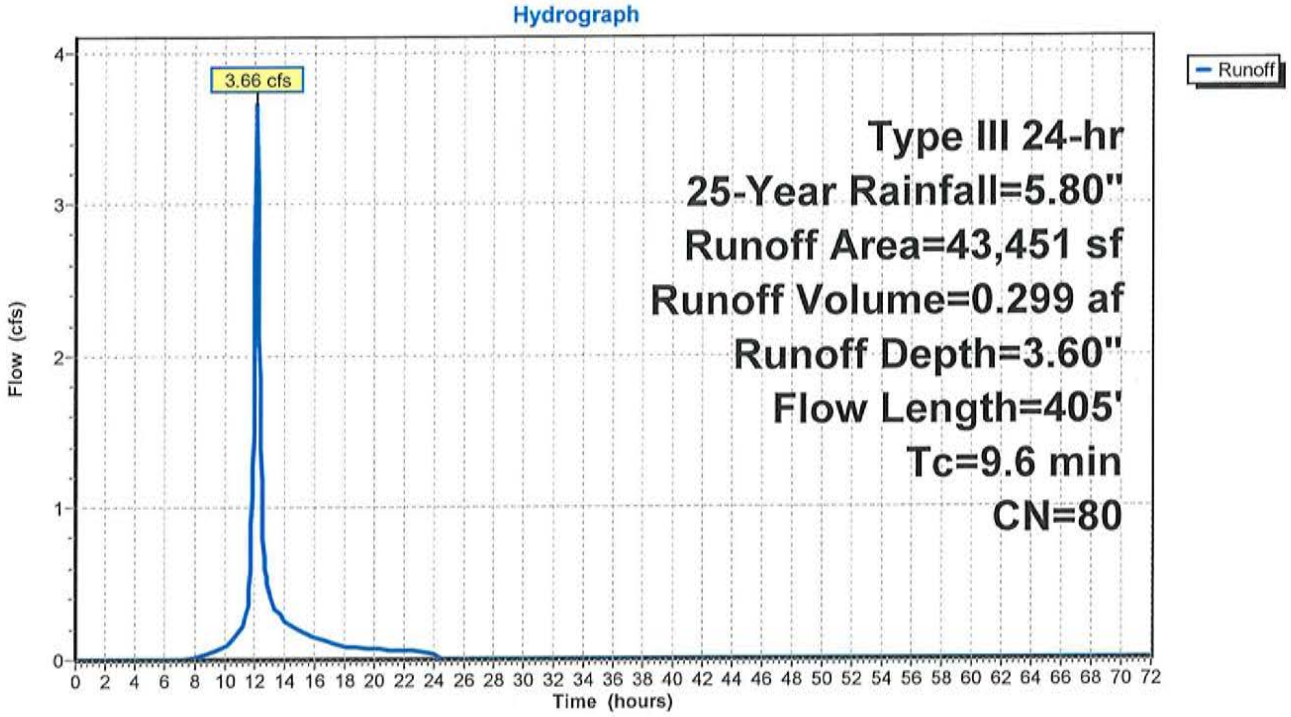
Runoff = 3.66 cfs @ 12.14 hrs, Volume= 0.299 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	8,940	98	Paved
	33,458	77	1/8 acre lots, 65% imp, HSG A
	1,053	39	>75% Grass cover, Good, HSG A
	43,451	80	Weighted Average
	12,763		29.37% Pervious Area
	30,688		70.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0100	0.12		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
2.3	285	0.0100	2.03		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
0.1	30	0.0110	5.62	4.42	**Pipe Channel, CD** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.1	30	0.0120	5.87	4.61	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	10	0.0100	6.22	7.63	**Pipe Channel, EF** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011
9.6	405	Total			

Subcatchment 9S: CB 11-12



Summary for Subcatchment 10S: CB 21-22 & ROOF

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

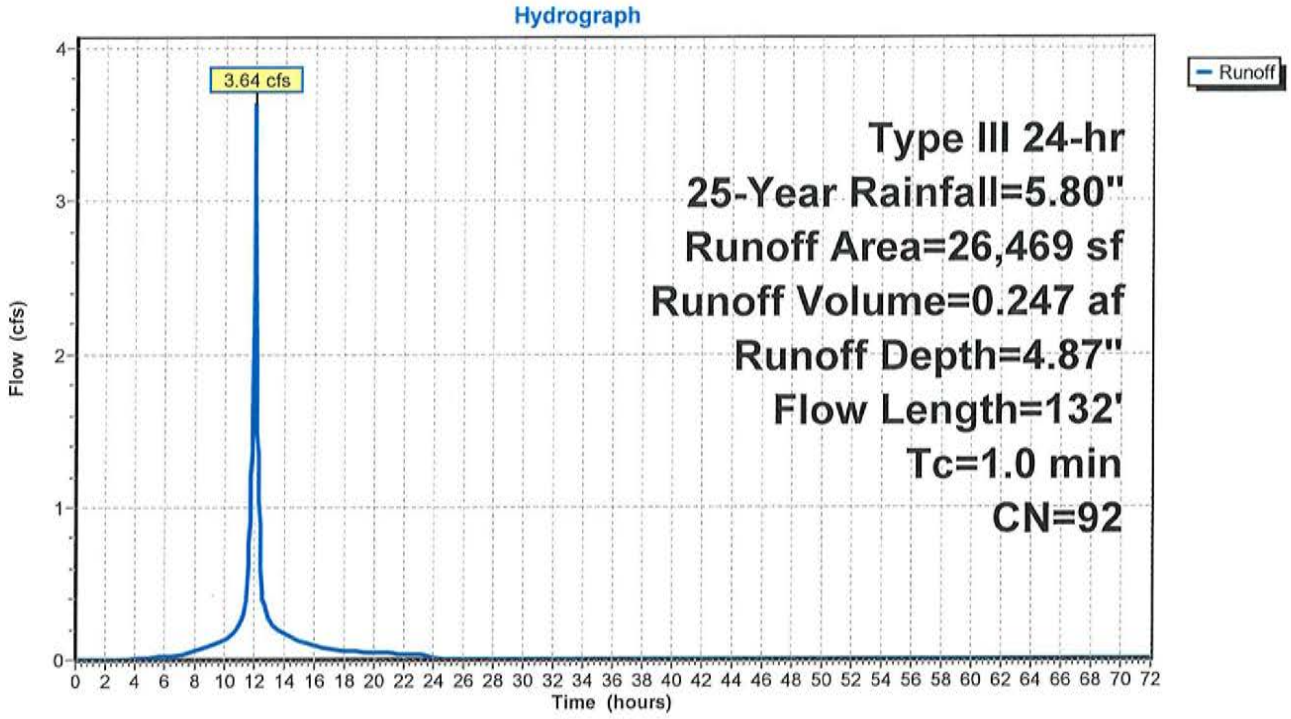
Runoff = 3.64 cfs @ 12.01 hrs, Volume= 0.247 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	7,563	98	Roofs
*	16,264	98	Paved
	2,642	39	>75% Grass cover, Good, HSG A
	26,469	92	Weighted Average
	2,642		9.98% Pervious Area
	23,827		90.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.25		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.50"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
0.2	50	0.0100	5.36	4.21	**Pipe Channel, CD** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	7	0.0140	6.34	4.98	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
1.0	132	Total			

Subcatchment 10S: CB 21-22 & ROOF



Summary for Subcatchment 11S: CB 17-20 & ROOF

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

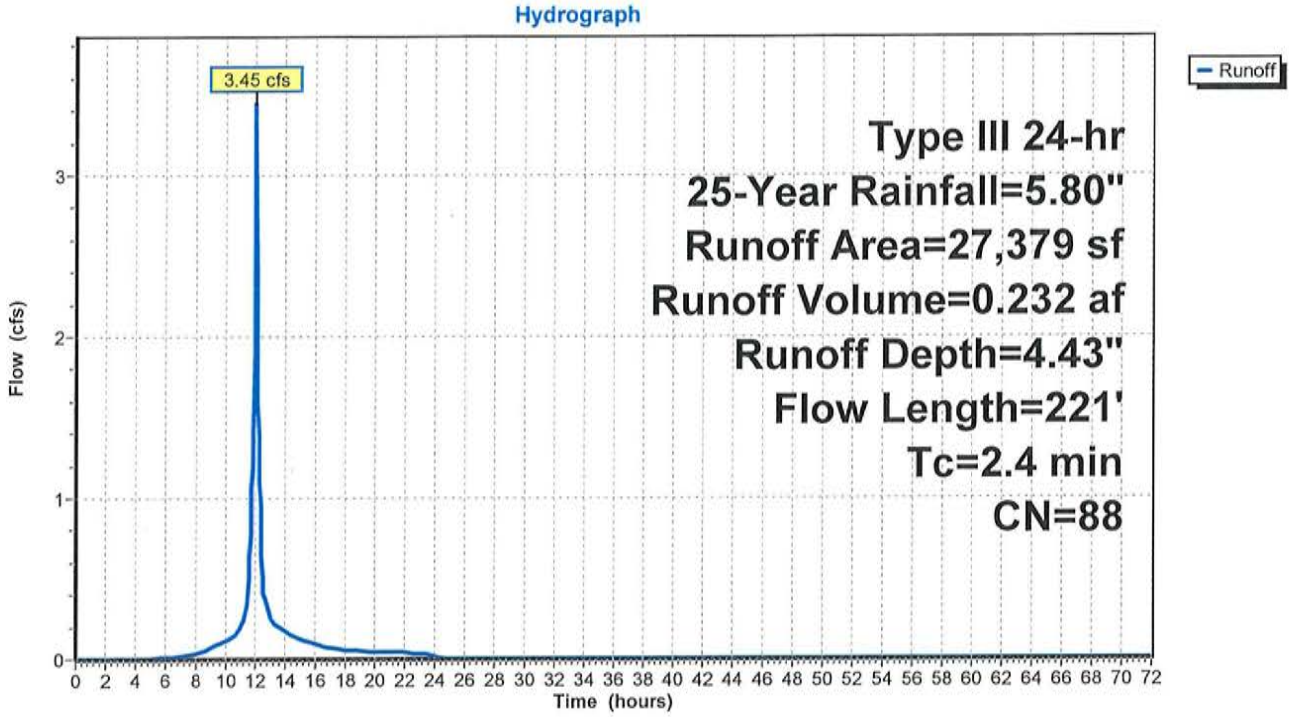
Runoff = 3.45 cfs @ 12.04 hrs, Volume= 0.232 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	8,349	98	Roofs
*	14,294	98	Paved
	4,736	39	>75% Grass cover, Good, HSG A
	27,379	88	Weighted Average
	4,736		17.30% Pervious Area
	22,643		82.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	5	0.0260	0.88		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.50"
1.3	10	0.0260	0.12		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.50"
0.6	103	0.0170	2.65		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
0.1	20	0.0130	6.11	4.80	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.2	62	0.0100	5.36	4.21	**Pipe Channel, EF** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.1	21	0.0120	5.87	4.61	**Pipe Channel, FG** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
2.4	221	Total			

Subcatchment 11S: CB 17-20 & ROOF



Summary for Subcatchment 12S: CB 23-24 & ROOF

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

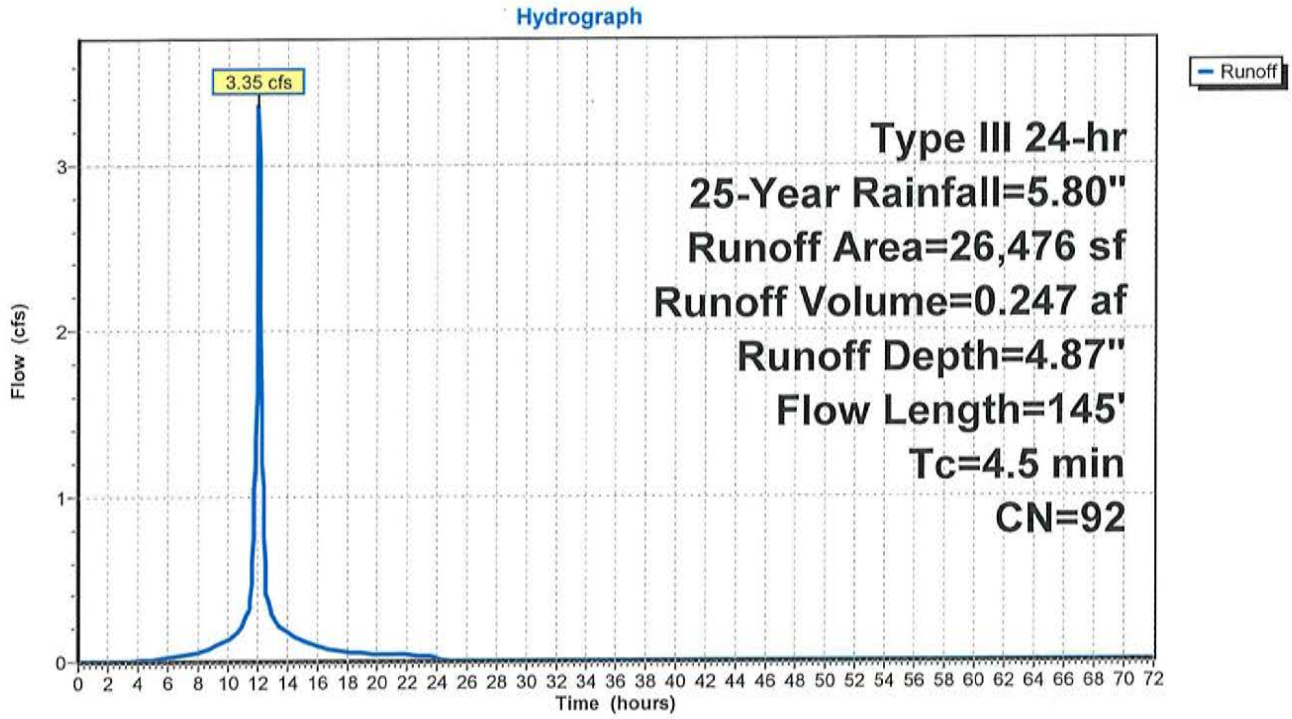
Runoff = 3.35 cfs @ 12.06 hrs, Volume= 0.247 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	7,563	98	Roofs
*	16,264	98	Paved
	2,649	39	>75% Grass cover, Good, HSG A
	26,476	92	Weighted Average
	2,649		10.01% Pervious Area
	23,827		89.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	39	0.0240	0.16		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
0.2	49	0.0420	4.16		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
0.2	50	0.0100	5.36	4.21	**Pipe Channel, CD** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	7	0.0140	6.34	4.98	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
4.5	145	Total			

Subcatchment 12S: CB 23-24 & ROOF



Summary for Subcatchment 13S: CB 25 & ROOF

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

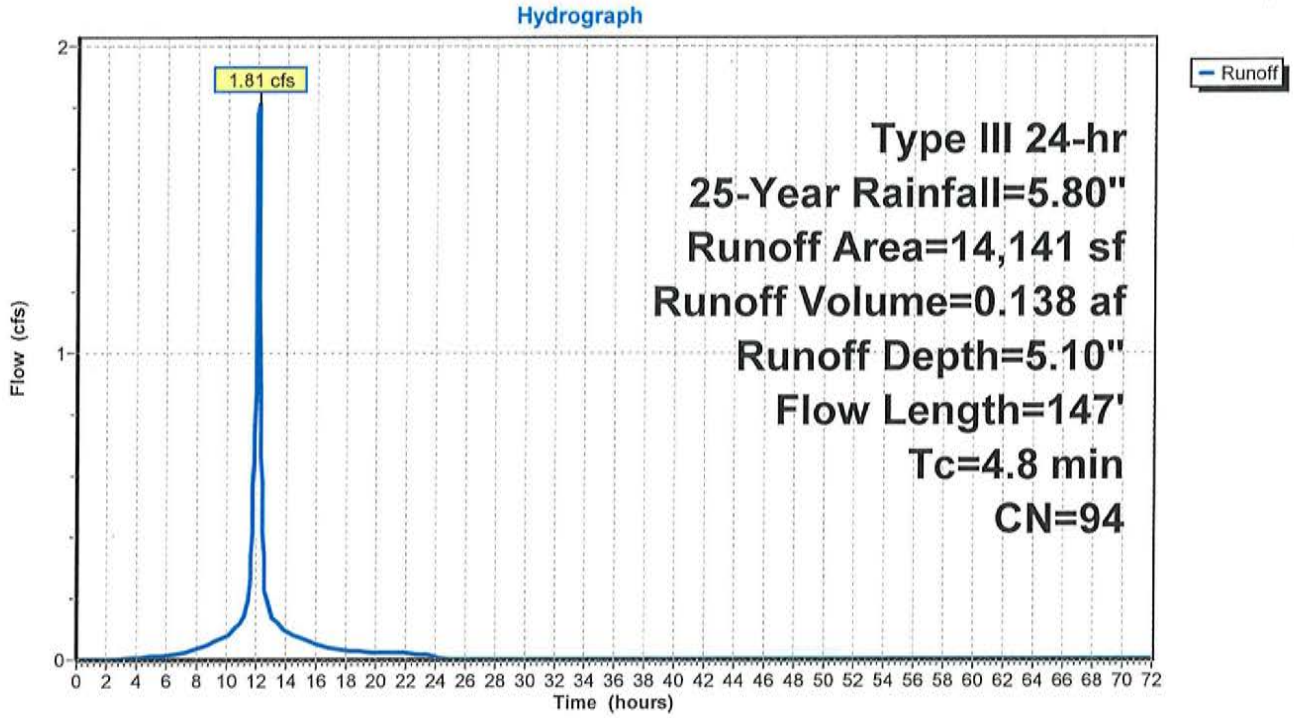
Runoff = 1.81 cfs @ 12.07 hrs, Volume= 0.138 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	3,781	98	Roofs
*	9,448	98	Paved
	912	39	>75% Grass cover, Good, HSG A
	14,141	94	Weighted Average
	912		6.45% Pervious Area
	13,229		93.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	26	0.0110	0.11		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
0.7	104	0.0140	2.40		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
0.0	10	0.0110	5.62	4.42	**Pipe Channel, CD** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	7	0.0140	6.34	4.98	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
4.8	147	Total			

Subcatchment 13S: CB 25 & ROOF



Summary for Subcatchment 14S: CB 26-27 & ROOF

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

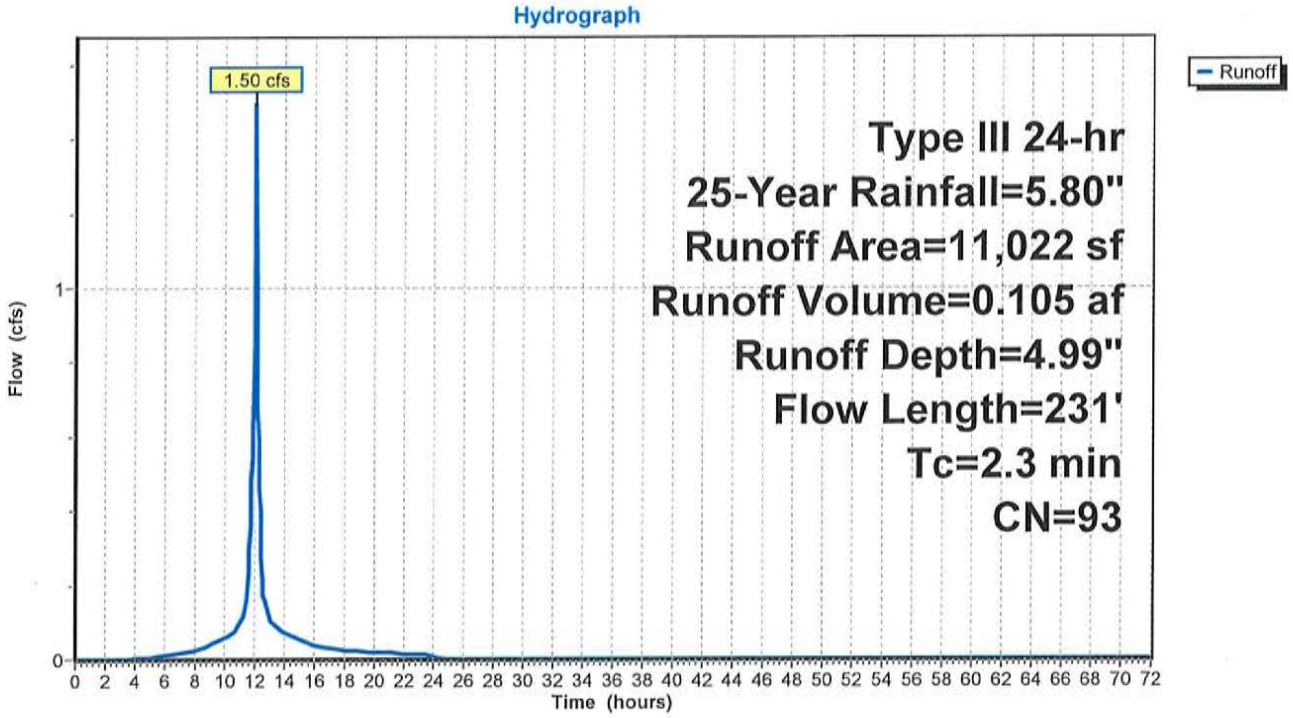
Runoff = 1.50 cfs @ 12.04 hrs, Volume= 0.105 af, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	4,174	98	Roofs
*	5,858	98	Paved
	990	39	>75% Grass cover, Good, HSG A
	11,022	93	Weighted Average
	990		8.98% Pervious Area
	10,032		91.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	5	0.0260	0.88		**Sheet Flow, AB** Smooth surfaces n= 0.011 P2= 3.50"
1.3	10	0.0260	0.12		**Sheet Flow, BC** Grass: Short n= 0.150 P2= 3.50"
0.6	104	0.0180	2.72		**Shallow Concentrated Flow, CD** Paved Kv= 20.3 fps
0.1	47	0.0110	5.62	4.42	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.2	50	0.0100	5.36	4.21	**Pipe Channel, EF** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	15	0.0100	5.36	4.21	**Pipe Channel, FG** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
2.3	231	Total			

Subcatchment 14S: CB 26-27 & ROOF



Summary for Subcatchment 15S: CB 28 & ROOF

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

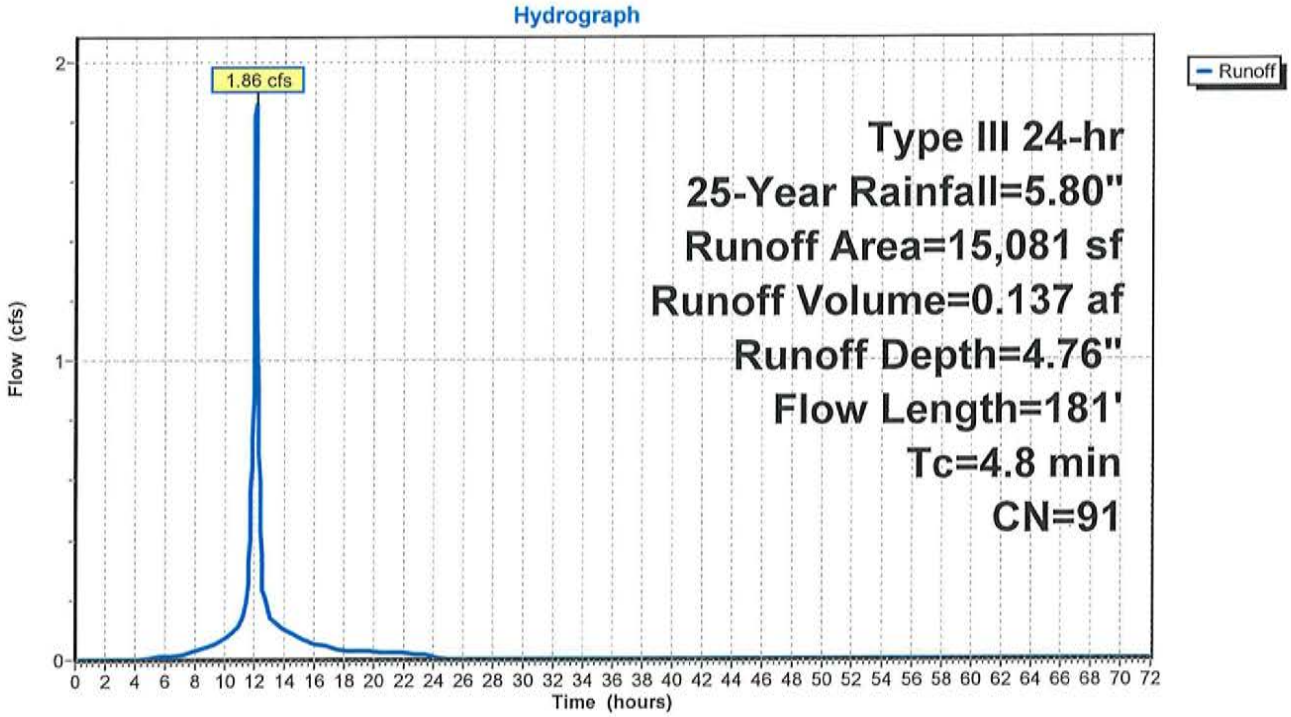
Runoff = 1.86 cfs @ 12.07 hrs, Volume= 0.137 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	3,781	98	Roofs
*	9,448	98	Paved
	1,852	39	>75% Grass cover, Good, HSG A
	15,081	91	Weighted Average
	1,852		12.28% Pervious Area
	13,229		87.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	27	0.0120	0.11		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
0.7	102	0.0150	2.49		**Shallow Concentrated Flow, BC** Paved Kv= 20.3 fps
0.1	37	0.0090	5.09	3.99	**Pipe Channel, CD** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
0.0	15	0.0100	5.36	4.21	**Pipe Channel, DE** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
4.8	181	Total			

Subcatchment 15S: CB 28 & ROOF



Summary for Subcatchment 17S: FD-2

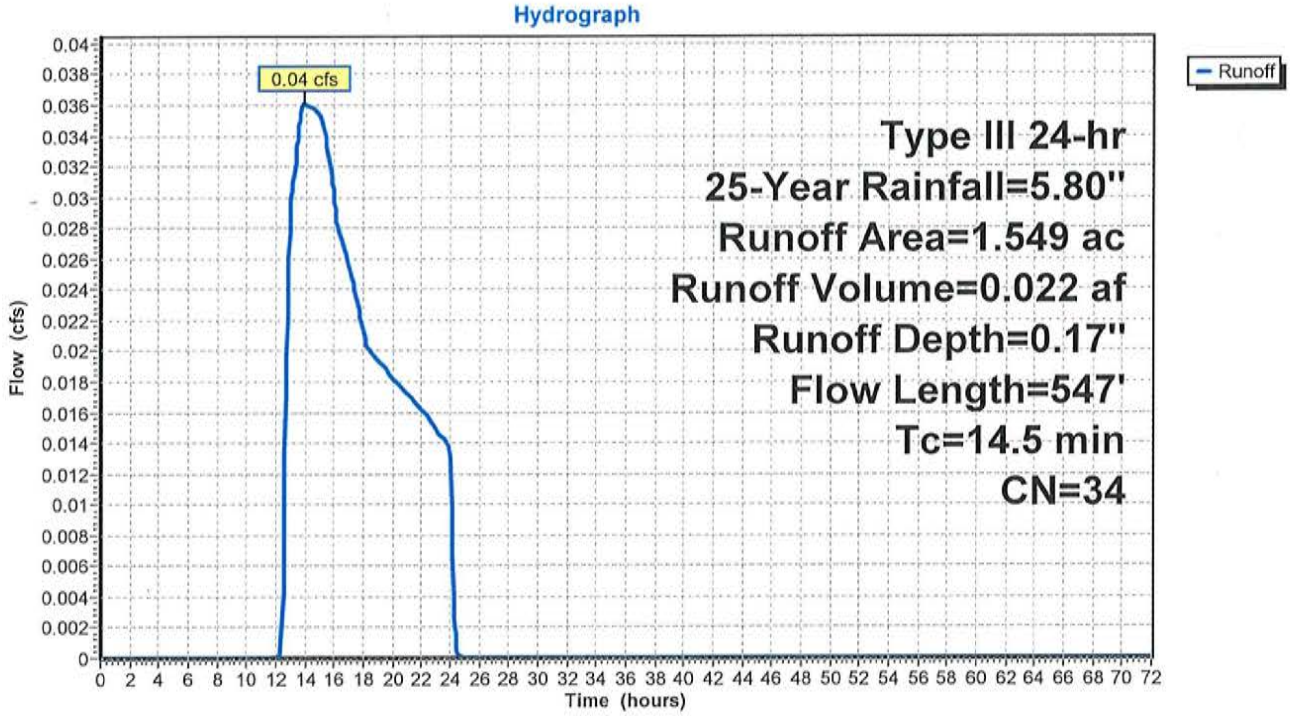
Runoff = 0.04 cfs @ 13.93 hrs, Volume= 0.022 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (ac)	CN	Description
0.754	39	>75% Grass cover, Good, HSG A
0.795	30	Woods, Good, HSG A
1.549	34	Weighted Average
1.549		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0180	0.15		**Sheet Flow, AB** Grass: Short n= 0.150 P2= 3.50"
0.7	74	0.0160	1.90		**Shallow Concentrated Flow, BC** Grassed Waterway Kv= 15.0 fps
8.1	398	0.0030	0.82		**Shallow Concentrated Flow, CD** Grassed Waterway Kv= 15.0 fps
0.1	25	0.0200	6.71	3.66	**Pipe Channel, DE** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.011
14.5	547	Total			

Subcatchment 17S: FD-2



Summary for Pond 1P: (12) 8'x8' Drywells

Inflow Area =	1.269 ac, 70.95% Impervious, Inflow Depth = 3.66" for 25-Year event			
Inflow =	4.85 cfs @ 12.12 hrs, Volume=	0.387 af		
Outflow =	0.52 cfs @ 13.03 hrs, Volume=	0.387 af, Atten= 89%, Lag= 54.7 min		
Discarded =	0.52 cfs @ 13.03 hrs, Volume=	0.387 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 21.72' @ 13.03 hrs Surf.Area= 1,200 sf Storage= 7,020 cf

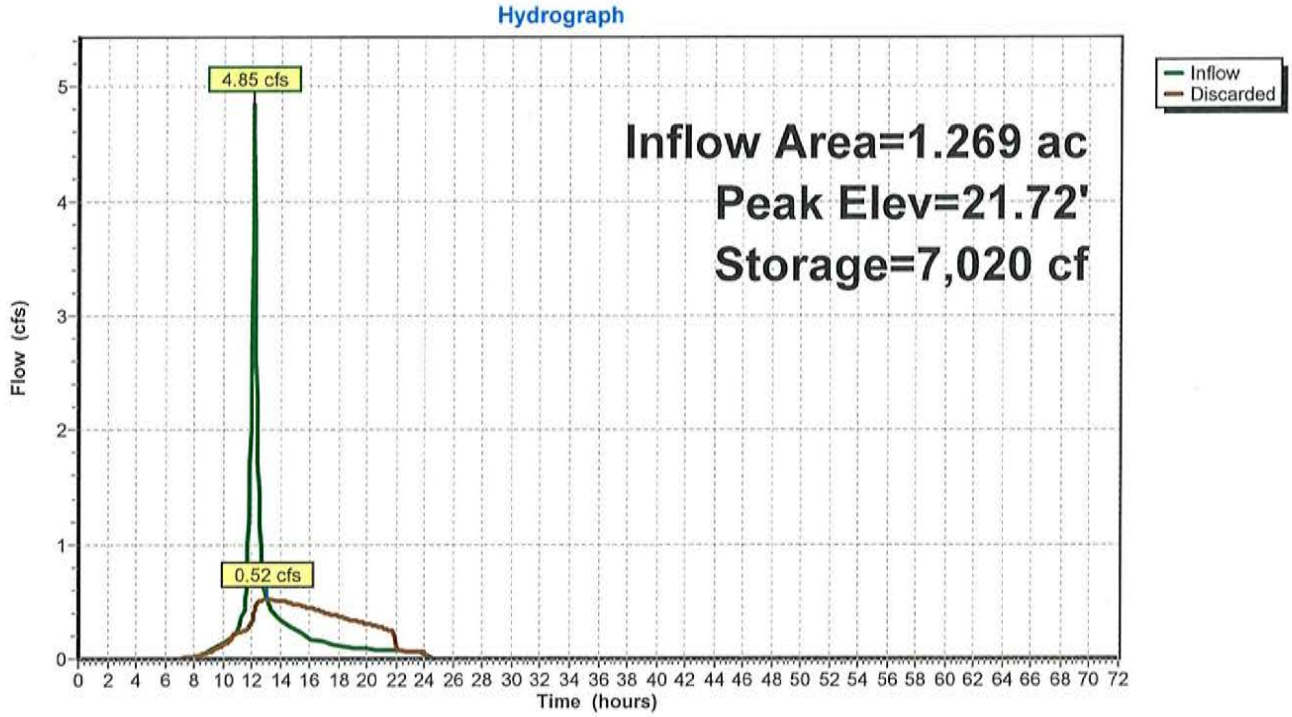
Plug-Flow detention time= 138.4 min calculated for 0.387 af (100% of inflow)
Center-of-Mass det. time= 138.3 min (954.6 - 816.3)

Volume	Invert	Avail.Storage	Storage Description
#1	12.25'	2,621 cf	**20.00'W x 60.00'L x 10.00'H Prismatoid** 12,000 cf Overall - 5,448 cf Embedded = 6,552 cf x 40.0% Voids
#2	14.25'	4,825 cf	**8.00'D x 8.00'H Vertical Cone/Cylinder** x 12 Inside #1 5,448 cf Overall - 3.0" Wall Thickness = 4,825 cf
		7,446 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	12.25'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.52 cfs @ 13.03 hrs HW=21.72' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.52 cfs)

Pond 1P: (12) 8'x8' Drywells



Summary for Pond 2P: (24) 8'x8' Drywells

Inflow Area =	2.804 ac, 62.85% Impervious, Inflow Depth = 3.11" for 25-Year event			
Inflow =	6.63 cfs @ 12.16 hrs, Volume=	0.725 af		
Outflow =	0.83 cfs @ 13.58 hrs, Volume=	0.725 af, Atten= 88%, Lag= 84.9 min		
Discarded =	0.83 cfs @ 13.58 hrs, Volume=	0.725 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 24.13' @ 13.58 hrs Surf.Area= 2,400 sf Storage= 13,495 cf

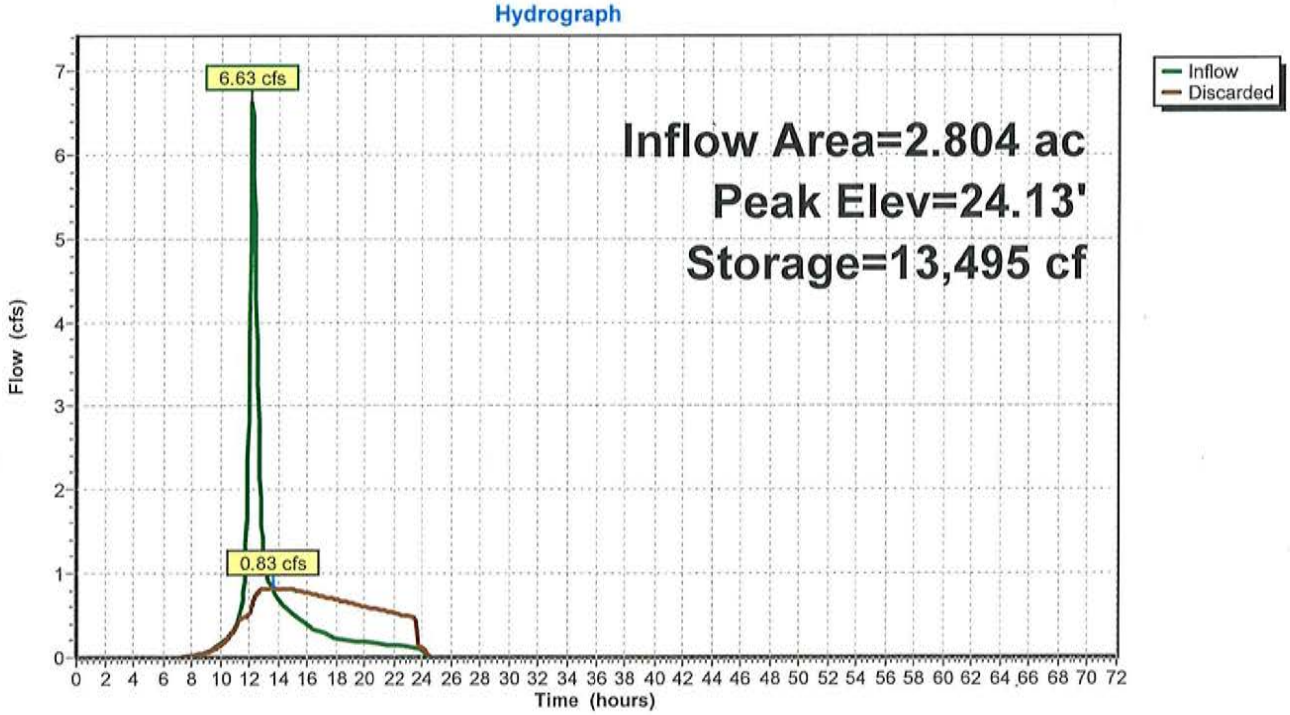
Plug-Flow detention time= 172.0 min calculated for 0.725 af (100% of inflow)
Center-of-Mass det. time= 171.8 min (1,006.2 - 834.3)

Volume	Invert	Avail.Storage	Storage Description
#1	15.40'	4,282 cf	**30.00'W x 80.00'L x 9.00'H Prismatoid** 21,600 cf Overall - 10,895 cf Embedded = 10,705 cf x 40.0% Voids
#2	16.40'	9,651 cf	**8.00'D x 8.00'H Vertical Cone/Cylinder** x 24 Inside #1 10,895 cf Overall - 3.0" Wall Thickness = 9,651 cf
		13,933 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	15.40'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.83 cfs @ 13.58 hrs HW=24.13' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.83 cfs)

Pond 2P: (24) 8'x8' Drywells



Summary for Pond 3P: (20) 8'x8' Drywells

Inflow Area =	1.801 ac, 71.24% Impervious, Inflow Depth = 3.65" for 25-Year event			
Inflow =	6.82 cfs @ 12.12 hrs, Volume=	0.547 af		
Outflow =	0.73 cfs @ 13.04 hrs, Volume=	0.547 af, Atten= 89%, Lag= 55.0 min		
Discarded =	0.73 cfs @ 13.04 hrs, Volume=	0.547 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 21.72' @ 13.04 hrs Surf.Area= 2,000 sf Storage= 9,743 cf

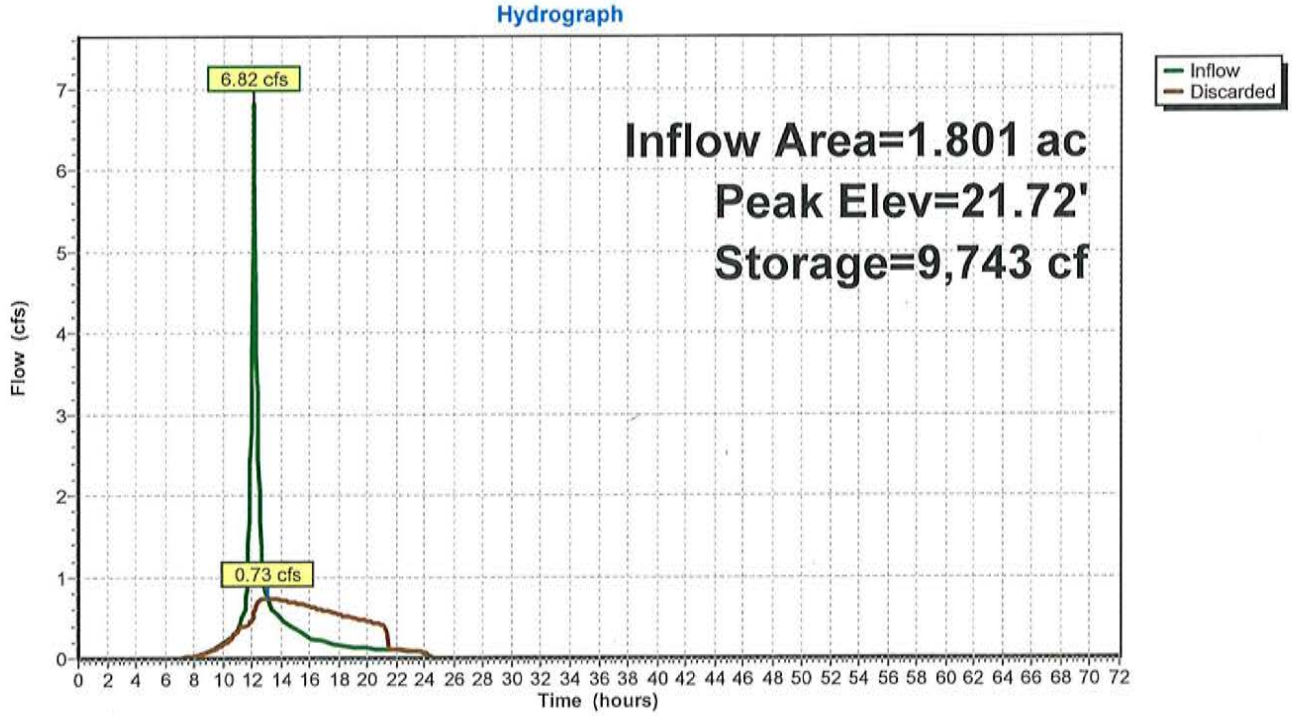
Plug-Flow detention time= 131.5 min calculated for 0.547 af (100% of inflow)
Center-of-Mass det. time= 131.4 min (948.4 - 817.0)

Volume	Invert	Avail.Storage	Storage Description
#1	14.10'	3,568 cf	**20.00'W x 100.00'L x 9.00'H Prismatoid** 18,000 cf Overall - 9,079 cf Embedded = 8,921 cf x 40.0% Voids
#2	15.10'	8,042 cf	**8.00'D x 8.00'H Vertical Cone/Cylinder** x 20 Inside #1 9,079 cf Overall - 3.0" Wall Thickness = 8,042 cf
		11,611 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	14.10'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.73 cfs @ 13.04 hrs HW=21.72' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.73 cfs)

Pond 3P: (20) 8'x8' Drywells



Summary for Pond 4P: (12) 8'x8' Drywells

Inflow Area =	1.143 ac, 72.85% Impervious, Inflow Depth = 3.80" for 25-Year event				
Inflow =	4.55 cfs @ 12.12 hrs, Volume=	0.362 af			
Outflow =	0.49 cfs @ 13.01 hrs, Volume=	0.362 af, Atten= 89%, Lag= 53.5 min			
Discarded =	0.49 cfs @ 13.01 hrs, Volume=	0.362 af			

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 21.19' @ 13.01 hrs Surf.Area= 1,200 sf Storage= 6,512 cf

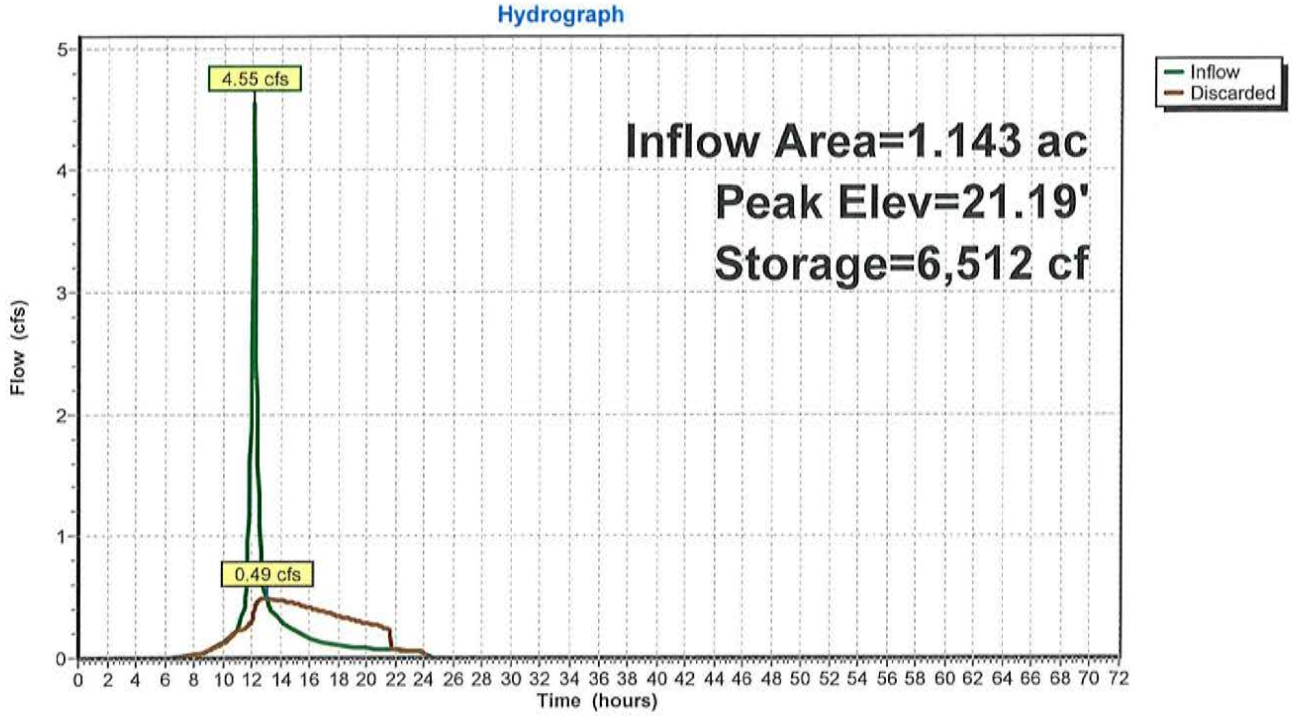
Plug-Flow detention time= 134.2 min calculated for 0.362 af (100% of inflow)
Center-of-Mass det. time= 134.1 min (946.9 - 812.8)

Volume	Invert	Avail.Storage	Storage Description
#1	12.75'	2,141 cf	**20.00'W x 60.00'L x 9.00'H Prismatoid** 10,800 cf Overall - 5,448 cf Embedded = 5,352 cf x 40.0% Voids
#2	13.75'	4,825 cf	**8.00'D x 8.00'H Vertical Cone/Cylinder** x 12 Inside #1 5,448 cf Overall - 3.0" Wall Thickness = 4,825 cf
		6,966 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	12.75'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.49 cfs @ 13.01 hrs HW=21.19' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.49 cfs)

Pond 4P: (12) 8'x8' Drywells



Summary for Pond 5P: (12) 8'x8' Drywells

Inflow Area =	1.066 ac, 71.97% Impervious, Inflow Depth = 3.70" for 25-Year event			
Inflow =	3.63 cfs @ 12.18 hrs, Volume=	0.329 af		
Outflow =	0.46 cfs @ 13.06 hrs, Volume=	0.329 af, Atten= 87%, Lag= 52.8 min		
Discarded =	0.46 cfs @ 13.06 hrs, Volume=	0.329 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 23.28' @ 13.06 hrs Surf.Area= 1,200 sf Storage= 5,778 cf

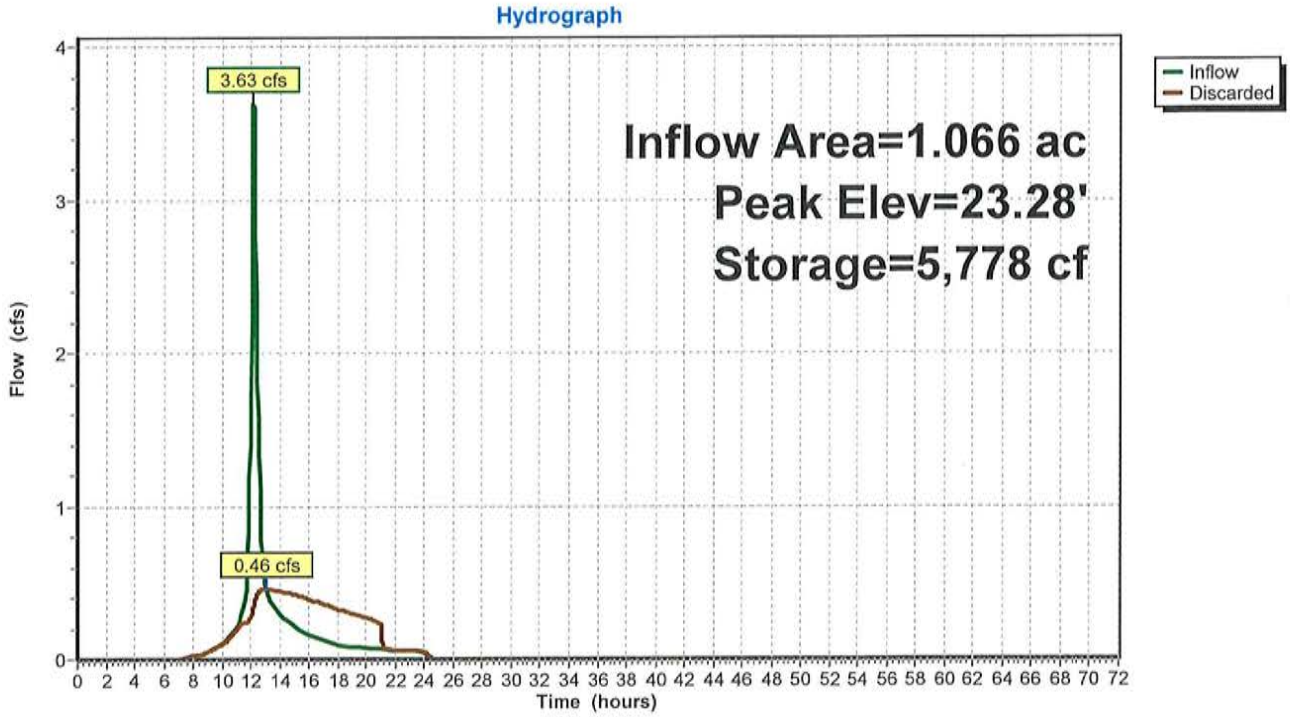
Plug-Flow detention time= 123.5 min calculated for 0.329 af (100% of inflow)
Center-of-Mass det. time= 123.4 min (943.1 - 819.6)

Volume	Invert	Avail.Storage	Storage Description
#1	15.75'	2,141 cf	**20.00'W x 60.00'L x 9.00'H Prismatoid** 10,800 cf Overall - 5,448 cf Embedded = 5,352 cf x 40.0% Voids
#2	16.75'	4,825 cf	**8.00'D x 8.00'H Vertical Cone/Cylinder** x 12 Inside #1 5,448 cf Overall - 3.0" Wall Thickness = 4,825 cf
		6,966 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	15.75'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.46 cfs @ 13.06 hrs HW=23.28' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.46 cfs)

Pond 5P: (12) 8'x8' Drywells



Summary for Pond 6P: (8) 8'x8' Drywells

Inflow Area =	0.629 ac, 82.70% Impervious, Inflow Depth = 4.43" for 25-Year event			
Inflow =	3.45 cfs @ 12.04 hrs, Volume=	0.232 af		
Outflow =	0.33 cfs @ 12.78 hrs, Volume=	0.232 af, Atten= 90%, Lag= 44.1 min		
Discarded =	0.33 cfs @ 12.78 hrs, Volume=	0.232 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 23.84' @ 12.78 hrs Surf.Area= 800 sf Storage= 4,018 cf

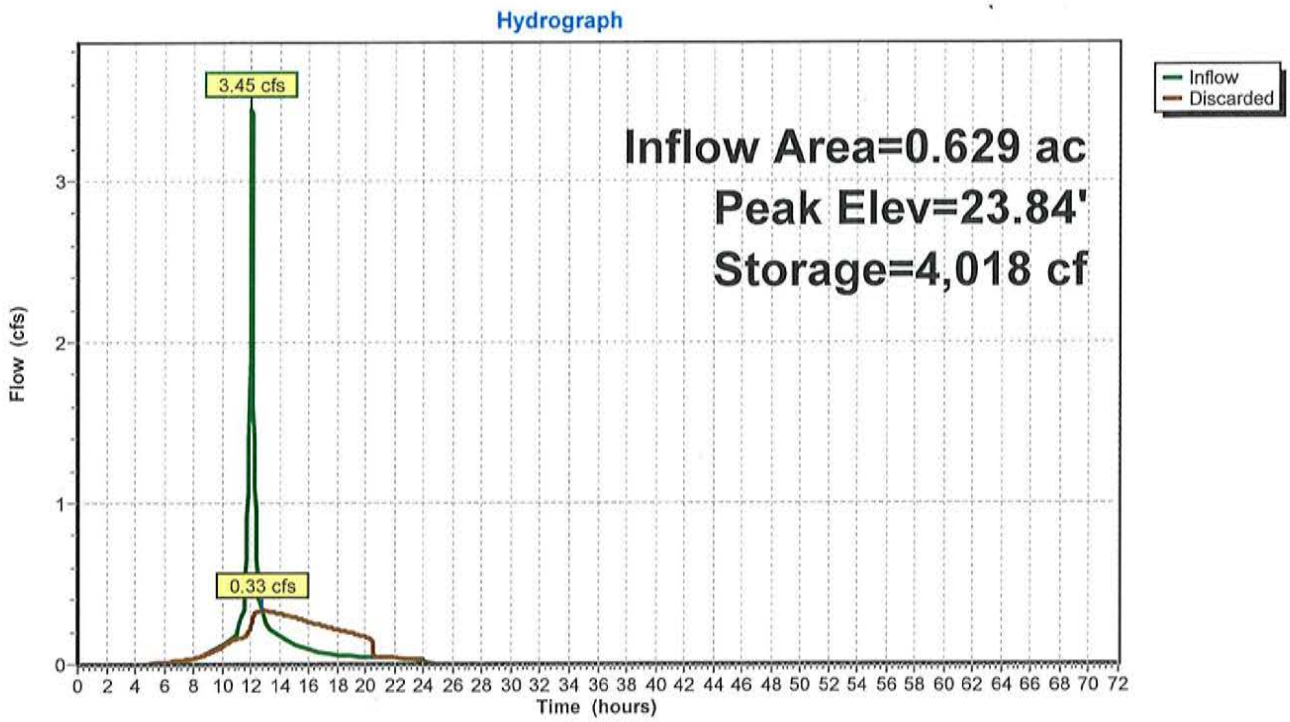
Plug-Flow detention time= 113.9 min calculated for 0.232 af (100% of inflow)
Center-of-Mass det. time= 113.8 min (903.1 - 789.3)

Volume	Invert	Avail.Storage	Storage Description
#1	16.00'	1,427 cf	**20.00'W x 40.00'L x 9.00'H Prismatoid** 7,200 cf Overall - 3,632 cf Embedded = 3,568 cf x 40.0% Voids
#2	17.00'	3,217 cf	**8.00'D x 8.00'H Vertical Cone/Cylinder** x 8 Inside #1 3,632 cf Overall - 3.0" Wall Thickness = 3,217 cf
		4,644 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	16.00'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.33 cfs @ 12.78 hrs HW=23.84' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.33 cfs)

Pond 6P: (8) 8'x8' Drywells



Summary for Pond 7P: (8) 8'x8' Drywells

Inflow Area =	0.608 ac, 90.02% Impervious, Inflow Depth = 4.87" for 25-Year event			
Inflow =	3.64 cfs @ 12.01 hrs, Volume=	0.247 af		
Outflow =	0.34 cfs @ 12.73 hrs, Volume=	0.247 af, Atten= 91%, Lag= 42.8 min		
Discarded =	0.34 cfs @ 12.73 hrs, Volume=	0.247 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 24.06' @ 12.73 hrs Surf.Area= 800 sf Storage= 4,244 cf

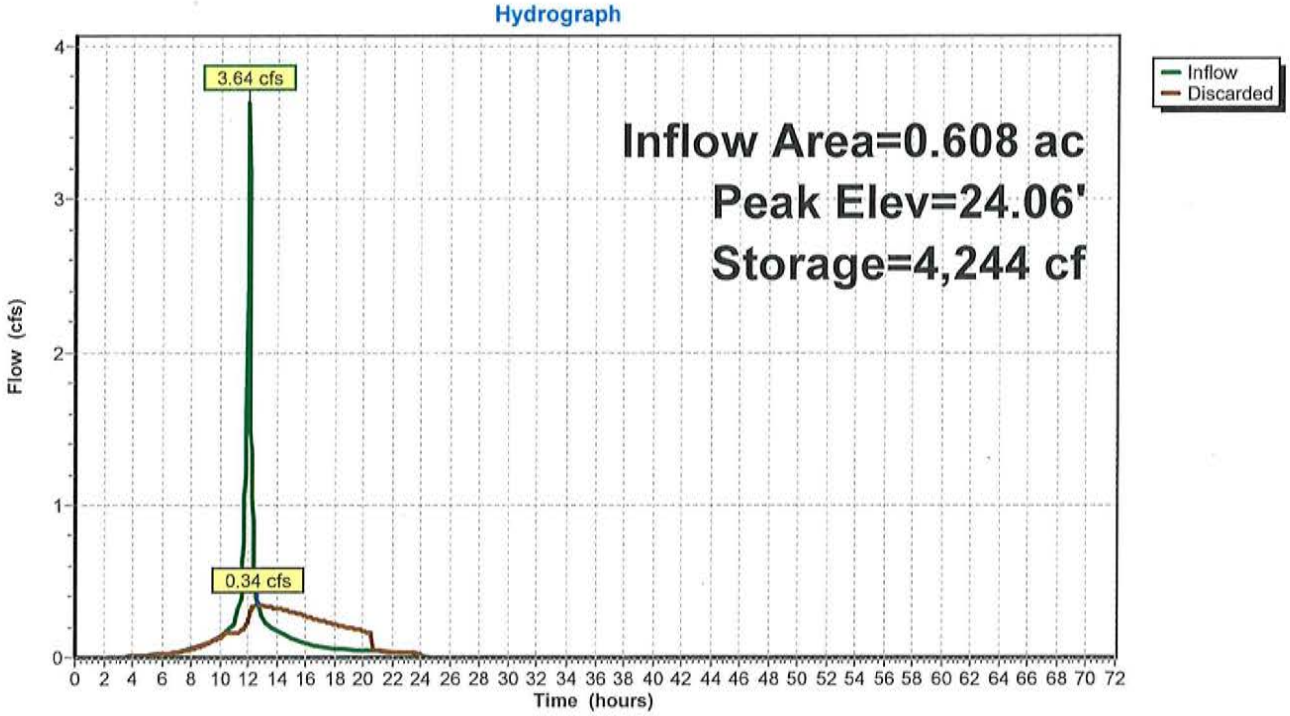
Plug-Flow detention time= 114.4 min calculated for 0.247 af (100% of inflow)
Center-of-Mass det. time= 114.4 min (887.9 - 773.5)

Volume	Invert	Avail.Storage	Storage Description
#1	15.80'	1,427 cf	**20.00'W x 40.00'L x 9.00'H Prismatoid** 7,200 cf Overall - 3,632 cf Embedded = 3,568 cf x 40.0% Voids
#2	16.80'	3,217 cf	**8.00'D x 8.00'H Vertical Cone/Cylinder** x 8 Inside #1 3,632 cf Overall - 3.0" Wall Thickness = 3,217 cf
		4,644 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	15.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.34 cfs @ 12.73 hrs HW=24.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.34 cfs)

Pond 7P: (8) 8'x8' Drywells



Summary for Pond 8P: (8) 8'x8' Drywells

Inflow Area =	0.608 ac, 89.99% Impervious, Inflow Depth = 4.87" for 25-Year event			
Inflow =	3.35 cfs @ 12.06 hrs, Volume=	0.247 af		
Outflow =	0.34 cfs @ 12.78 hrs, Volume=	0.247 af, Atten= 90%, Lag= 43.0 min		
Discarded =	0.34 cfs @ 12.78 hrs, Volume=	0.247 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 24.06' @ 12.78 hrs Surf.Area= 800 sf Storage= 4,245 cf

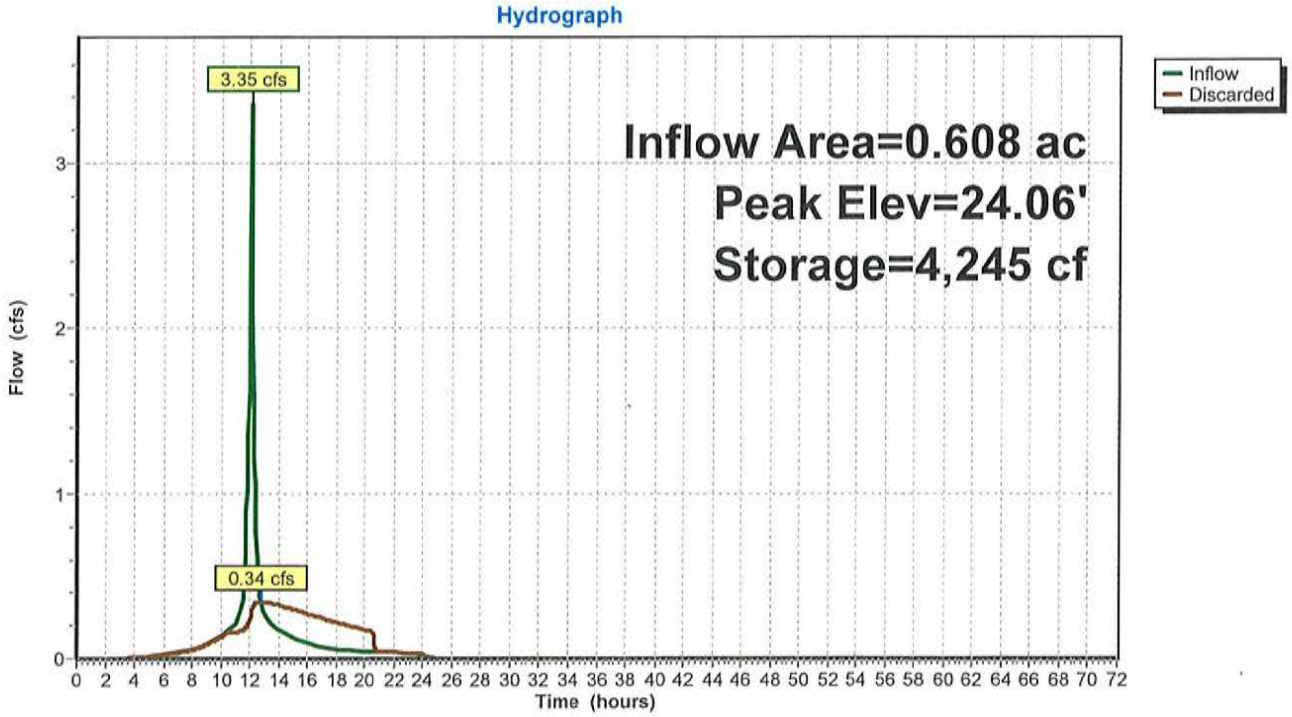
Plug-Flow detention time= 114.5 min calculated for 0.247 af (100% of inflow)
Center-of-Mass det. time= 114.4 min (891.1 - 776.8)

Volume	Invert	Avail.Storage	Storage Description
#1	15.80'	1,427 cf	**20.00'W x 40.00'L x 9.00'H Prismatoid** 7,200 cf Overall - 3,632 cf Embedded = 3,568 cf x 40.0% Voids
#2	16.80'	3,217 cf	**8.00'D x 8.00'H Vertical Cone/Cylinder** x 8 Inside #1 3,632 cf Overall - 3.0" Wall Thickness = 3,217 cf
		4,644 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	15.80'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.34 cfs @ 12.78 hrs HW=24.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.34 cfs)

Pond 8P: (8) 8'x8' Drywells



Summary for Pond 9P: (4) 8'x8' Drywells

Inflow Area =	0.325 ac, 93.55% Impervious, Inflow Depth = 5.10" for 25-Year event			
Inflow =	1.81 cfs @ 12.07 hrs, Volume=	0.138 af		
Outflow =	0.22 cfs @ 12.62 hrs, Volume=	0.138 af, Atten= 88%, Lag= 33.4 min		
Discarded =	0.22 cfs @ 12.62 hrs, Volume=	0.138 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 24.99' @ 12.62 hrs Surf.Area= 400 sf Storage= 2,291 cf

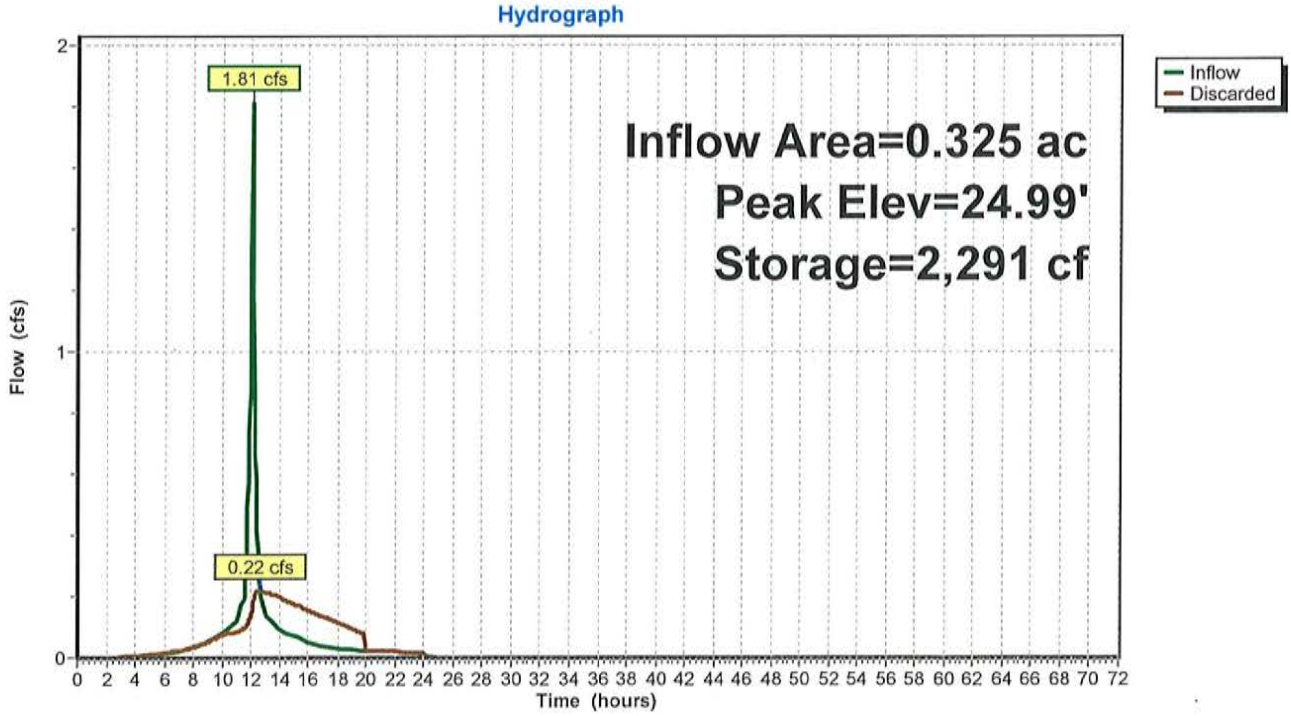
Plug-Flow detention time= 96.4 min calculated for 0.138 af (100% of inflow)
Center-of-Mass det. time= 96.4 min (864.7 - 768.3)

Volume	Invert	Avail.Storage	Storage Description
#1	15.70'	874 cf	**20.00'W x 20.00'L x 10.00'H Prismatoid** 4,000 cf Overall - 1,816 cf Embedded = 2,184 cf x 40.0% Voids
#2	17.70'	1,608 cf	**8.00'D x 8.00'H Vertical Cone/Cylinder** x 4 Inside #1 1,816 cf Overall - 3.0" Wall Thickness = 1,608 cf
		2,482 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	15.70'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.22 cfs @ 12.62 hrs HW=24.99' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Pond 9P: (4) 8'x8' Drywells



Summary for Pond 10P: (7) 8'x8' Drywells

Inflow Area =	2.148 ac, 24.86% Impervious, Inflow Depth = 1.48" for 25-Year event			
Inflow =	3.30 cfs @ 12.05 hrs, Volume=	0.265 af		
Outflow =	0.42 cfs @ 12.60 hrs, Volume=	0.265 af, Atten= 87%, Lag= 32.9 min		
Discarded =	0.42 cfs @ 12.60 hrs, Volume=	0.265 af		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 24.46' @ 12.60 hrs Surf.Area= 700 sf Storage= 4,016 cf

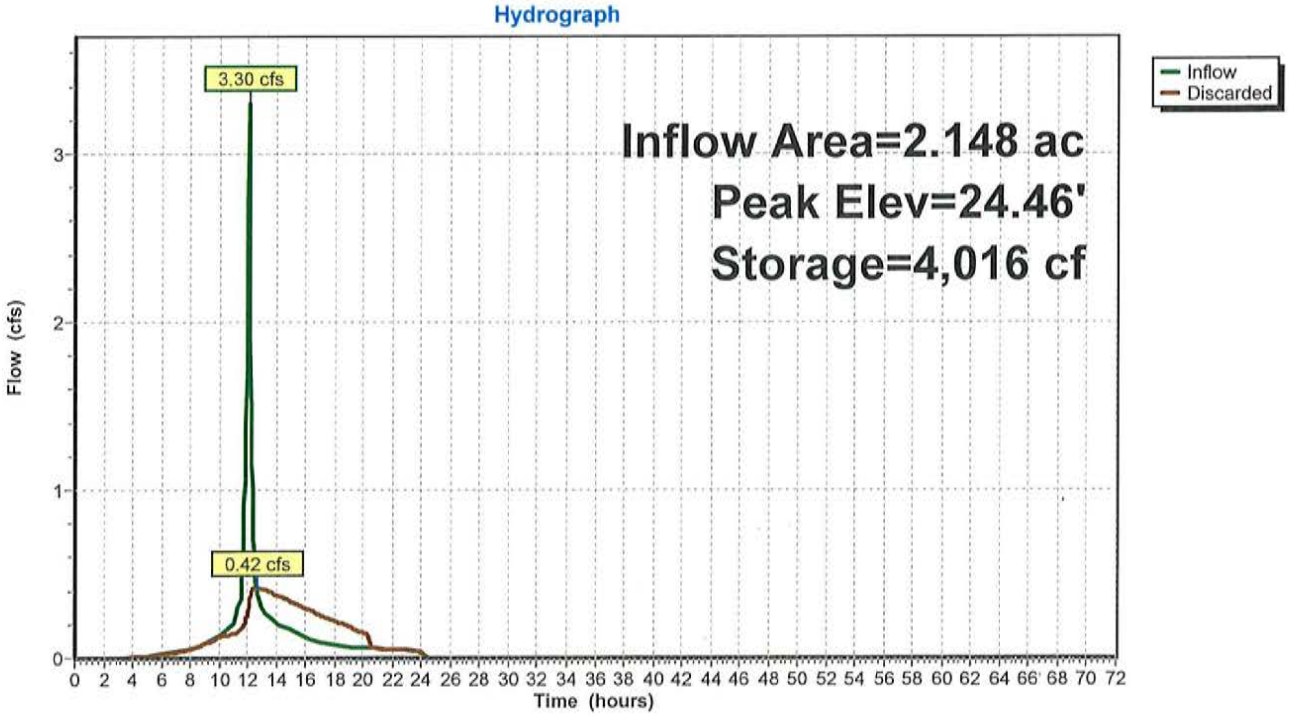
Plug-Flow detention time= 91.7 min calculated for 0.265 af (100% of inflow)
Center-of-Mass det. time= 91.7 min (890.7 - 799.0)

Volume	Invert	Avail.Storage	Storage Description
#1	15.15'	1,529 cf	**10.00'W x 70.00'L x 10.00'H Prismatoid** 7,000 cf Overall - 3,178 cf Embedded = 3,822 cf x 40.0% Voids
#2	17.15'	2,815 cf	**8.00'D x 8.00'H Vertical Cone/Cylinder** x 7 Inside #1 3,178 cf Overall - 3.0" Wall Thickness = 2,815 cf
		4,344 cf	Total Available Storage

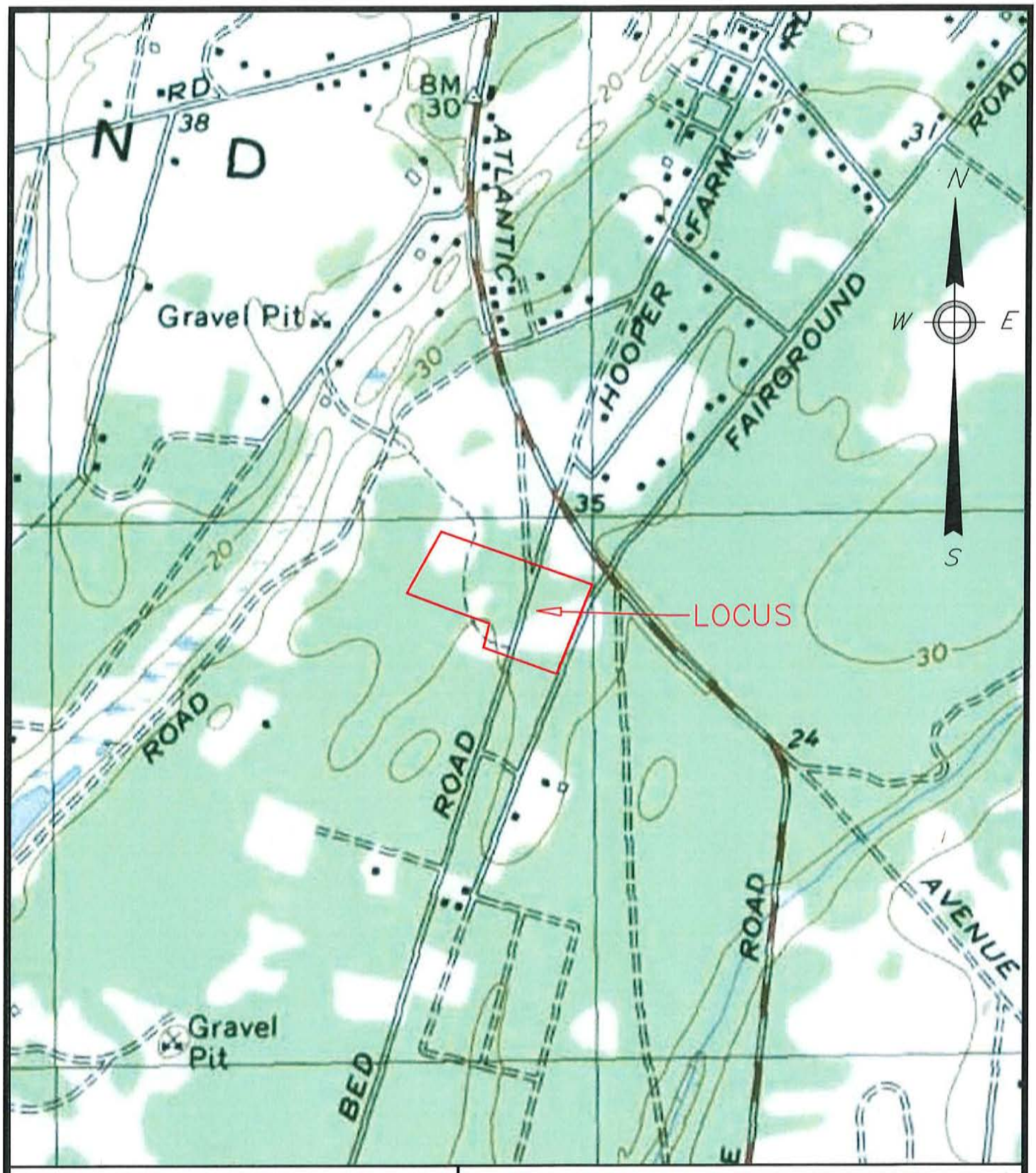
Device	Routing	Invert	Outlet Devices
#1	Discarded	15.15'	**8.270 in/hr Exfiltration over Wetted area**

Discarded OutFlow Max=0.42 cfs @ 12.60 hrs HW=24.46' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.42 cfs)

Pond 10P: (7) 8'x8' Drywells



7. Figures



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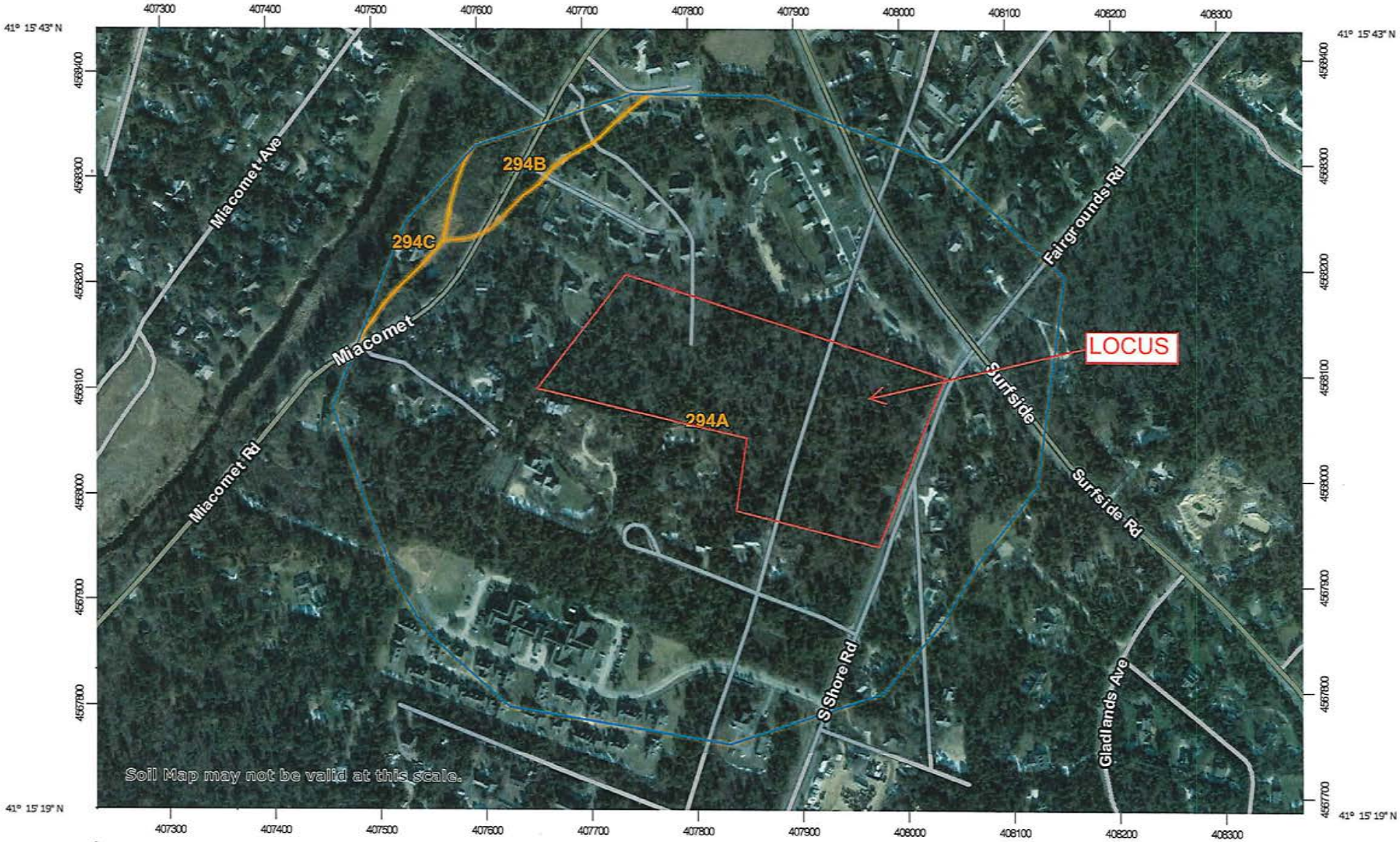
USGS TOPOGRAPHICAL MAP (N.T.S.)

3,5,7,9 SOUTH SHORE ROAD
NANTUCKET, MASSACHUSETTS
MAP 67, PARCEL 336, 336.7,
336.8, 336.9

S:\Autocad Drawings\Nantucket\South Shore Rd\3-9 South Shore Road\Hydrology\Drainage area calcs.dwg

Soil Map—Nantucket County, Massachusetts
(Surfside Crossing)



Map Scale: 1:5,220 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:20,000.

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: Nantucket County, Massachusetts
Survey Area Data: Version 14, Oct 6, 2017

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

Date(s) aerial images were photographed: Dec 31, 2009—Jan 15, 2017

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
294A	Evesboro sand, 0 to 3 percent slopes	77.0	96.0%
294B	Evesboro sand, 3 to 8 percent slopes	2.3	2.9%
294C	Evesboro sand, 8 to 15 percent slopes	0.9	1.1%
Totals for Area of Interest		**80.2**	**100.0%**

POCKET