

# STORMWATER REPORT

PREPARED FOR

## Surfside Crossing

FOR

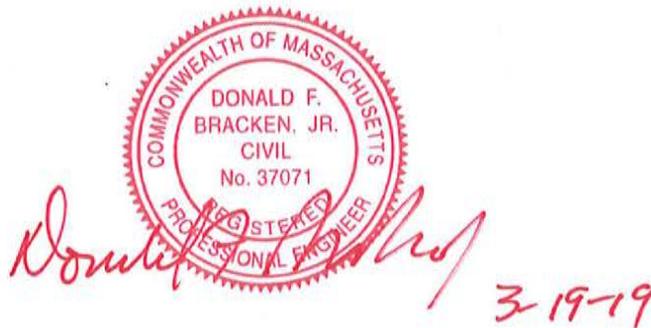
## Surfside Crossing, LLC

Map 67 – Parcels 336, 336.7, 336.8 & 336.9

PREPARED BY

**BRACKEN ENGINEERING, INC.**

**19 Old South Road  
Nantucket, MA 02532**



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

**February 15, 2018**

**Revised March 19, 2019**

# STORMWATER REPORT

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

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Pre-Development Watershed Plan dated 3/19/19

Post-Development Watershed Plan dated 3/19/19

## **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.

Most of the site is located within a designated Zone II Wellhead Protection Area.

## **PROPOSED CONDITIONS**

There are three components to the project: single family residential subdivision, multi-family condominium complex and a community center to serve the single family and condominium components.

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.

Runoff from impervious paved surfaces will be collected in deep sump catch basins equipped with a StormTree® biofiltration system. This system is proposed in addition to the deep sump catch basin and oil/grit chambers that achieve the 44% TSS removal required prior to discharge into the subsurface infiltration system. Therefore, no additional TSS removal credit is attributed to this system and the proposed sizes are intended to meet a minimum removal of 25% TSS in conjunction with the deep sump catch basin.

Roof runoff from single family homes will be discharged into individual on-site dry well systems.

## 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 in accordance with the Nantucket Subdivision Regulations and the two-year, ten-year and one hundred-year storm events per the Stormwater management standards. The precipitation was based on the Natural Resources Conservation Service Maps, revised in 1986.

The one hundred-year storm analysis was used for pre and post-development analysis for off site flows only. The site grades will contain the one hundred-year storm event within the site.

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.

The post development analysis demonstrates that there will not be an increase in flows off site. The following is a table of pre and post-development flows off site:

<b>Storm Event</b>	<b>2-year</b>	<b>10-year</b>	<b>25-year</b>	<b>100-year</b>
Pre-Development	0 CFS	0.06 CFS	0.19 CFS	0.80 CFS
Post-Development	0 CFS	0.02 CFS	0.12 CFS	0.48 CFS

## **COMPLIANCE WITH MADEP STORMWATER STANDARDS**

The project is subject to the Stormwater Management Standards since the majority of 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 Stormceptor manufactured stormwater treatment filter.

### ***Standard 2: Peak Rate Attenuation***

Peak runoff attenuation is demonstrated. Flows off site do not exceed pre-development flow rates.

### ***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 from 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.***

A Construction Period Pollution Control Plan has been added to the Stormwater Report.

### ***Standard 9: Operation and Maintenance Plan***

An Operations and Maintenance Plan has been added to the Stormwater Report.

### ***Standard 10: Prohibition of Illicit Discharges***

The proposed uses will not result in any illicit discharges.



# Checklist for Stormwater Report

## A. Introduction

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.<sup>1</sup> This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8<sup>2</sup>
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

<sup>1</sup> The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

<sup>2</sup> For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



# Checklist for Stormwater Report

## B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

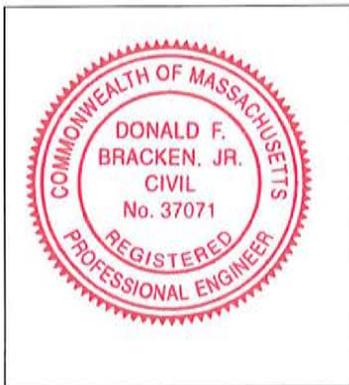
*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

### Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



*Donald F. Bracken, Jr.* 3-19-19  
Signature and Date

## Checklist

**Project Type:** Is the application for new development, redevelopment, or a mix of new and redevelopment?

- New development
- Redevelopment
- Mix of New Development and Redevelopment



# Checklist for Stormwater Report

## Checklist (continued)

**LID Measures:** Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- No disturbance to any Wetland Resource Areas
- Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- Reduced Impervious Area (Redevelopment Only)
- Minimizing disturbance to existing trees and shrubs
- LID Site Design Credit Requested:
  - Credit 1
  - Credit 2
  - Credit 3
- Use of "country drainage" versus curb and gutter conveyance and pipe
- Bioretention Cells (includes Rain Gardens)
- Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- Treebox Filter
- Water Quality Swale
- Grass Channel
- Green Roof
- Other (describe): \_\_\_\_\_

### Standard 1: No New Untreated Discharges

- No new untreated discharges
- Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



# Checklist for Stormwater Report

## Checklist (continued)

### Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

### Standard 3: Recharge

- Soil Analysis provided.
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
  - Static
  - Simple Dynamic
  - Dynamic Field<sup>1</sup>
- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - Site is comprised solely of C and D soils and/or bedrock at the land surface
  - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
  - Solid Waste Landfill pursuant to 310 CMR 19.000
  - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

<sup>1</sup> 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



# Checklist for Stormwater Report

## Checklist (continued)

### Standard 3: Recharge (continued)

- The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

### Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
  - Provisions for storing materials and waste products inside or under cover;
  - Vehicle washing controls;
  - Requirements for routine inspections and maintenance of stormwater BMPs;
  - Spill prevention and response plans;
  - Provisions for maintenance of lawns, gardens, and other landscaped areas;
  - Requirements for storage and use of fertilizers, herbicides, and pesticides;
  - Pet waste management provisions;
  - Provisions for operation and management of septic systems;
  - Provisions for solid waste management;
  - Snow disposal and plowing plans relative to Wetland Resource Areas;
  - Winter Road Salt and/or Sand Use and Storage restrictions;
  - Street sweeping schedules;
  - Provisions for prevention of illicit discharges to the stormwater management system;
  - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
  - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
  - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
  - Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
    - is within the Zone II or Interim Wellhead Protection Area
    - is near or to other critical areas
    - is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
    - involves runoff from land uses with higher potential pollutant loads.
  - The Required Water Quality Volume is reduced through use of the LID site Design Credits.
  - Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 4: Water Quality (continued)

- The BMP is sized (and calculations provided) based on:
  - The ½" or 1" Water Quality Volume or
  - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

### Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted *prior to* the discharge of stormwater to the post-construction stormwater BMPs.
- The NPDES Multi-Sector General Permit does *not* cover the land use.
- LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- All exposure has been eliminated.
- All exposure has *not* been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

### Standard 6: Critical Areas

- The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- Critical areas and BMPs are identified in the Stormwater Report.



# Checklist for Stormwater Report

## Checklist (continued)

### Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

- The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
- Limited Project
  - Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
  - Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
  - Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
  - Bike Path and/or Foot Path
  - Redevelopment Project
  - Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

### Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
  - Construction Period Operation and Maintenance Plan;
  - Names of Persons or Entity Responsible for Plan Compliance;
  - Construction Period Pollution Prevention Measures;
  - Erosion and Sedimentation Control Plan Drawings;
  - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
  - Vegetation Planning;
  - Site Development Plan;
  - Construction Sequencing Plan;
  - Sequencing of Erosion and Sedimentation Controls;
  - Operation and Maintenance of Erosion and Sedimentation Controls;
  - Inspection Schedule;
  - Maintenance Schedule;
  - Inspection and Maintenance Log Form.
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



# Checklist for Stormwater Report

## Checklist (continued)

### Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- The project is **not** covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

### Standard 9: Operation and Maintenance Plan

- The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
  - Name of the stormwater management system owners;
  - Party responsible for operation and maintenance;
  - Schedule for implementation of routine and non-routine maintenance tasks;
  - Plan showing the location of all stormwater BMPs maintenance access areas;
  - Description and delineation of public safety features;
  - Estimated operation and maintenance budget; and
  - Operation and Maintenance Log Form.
- The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
  - A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
  - A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

### Standard 10: Prohibition of Illicit Discharges

- The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- An Illicit Discharge Compliance Statement is attached;
- NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.



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 - 9

Date: 19-Mar-19  
Revised:  
Computed By: RMM/ERC  
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 (cfs)	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 (ft <sup>2</sup> )	Perimeter (ft)	
Run 1																								
CB 1	DMH 1	0.034	0.20																					
		0.180	0.30																					
		0.114	0.90	0.16	5.0	5.8	0.95	0.00	0.95	0.020	HDPE	0.012	10	3.37	5.17	0.28	24.46	25	27	0.4166667	0.2083333	0.545	2.618	
CB 3	DMH 1	0.000	0.20																					
		0.017	0.30																					
		0.027	0.90	0.03	5.0	5.8	0.17	0.00	0.17	0.024	HDPE	0.012	10	3.57	6.72	0.05	24.46	25.6	48	0.4166667	0.2083333	0.545	2.618	
DMH 1	DMH 2	0.000	0.20																					
		0.000	0.30																					
		0.000	0.90	0.00	5.0	5.8	0.00	1.12	1.12	0.151	HDPE	0.012	10	9.24	16.94	0.12	22.4	24.36	13	0.4166667	0.2083333	0.545	2.618	
CB 2	DMH 2	0.078	0.20																					
		0.065	0.30																					
		0.039	0.90	0.07	5.0	5.8	0.41	0.00	0.41	0.038	HDPE	0.012	10	4.51	8.45	0.09	22.4	22.7	8	0.4166667	0.2083333	0.545	2.618	
DMH 2	SWMA 1	0.000	0.20																					
		0.000	0.30																					
		0.000	0.90	0.00	5.0	5.8	0.00	1.53	1.53	0.012	HDPE	0.012	10	2.61	4.78	0.59	21.3	21.6	25	0.4166667	0.2083333	0.545	2.618	

From	To	Drainage Area (acres)	Total C x A (acres)	Tc (min)	Q = (CIA) (in/hr)	Flow from others (cfs)	Total Q (cfs)	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dia (in)	Q (full) (cfs)	V (full) (fps)	CIQ(full) < 17	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 0.150 0.112	0.20 0.30 0.90	5.0	5.8	0.85	0.00	0.85	0.011	0.012	10	2.54	4.66	0.33	25.3	25.7	35	0.4166667	0.2083333	0.545	2.618
CB 6	DMH 3	0.000 0.220 0.142	0.20 0.30 0.90	5.0	5.8	1.12	0.00	1.12	0.033	0.012	10	4.35	7.97	0.26	25.3	25.7	12	0.4166667	0.2083333	0.545	2.618
DMH 3	DMH 4	0.000 0.000 0.000	0.20 0.30 0.90	5.0	5.8	0.00	1.97	1.97	0.011	0.012	10	2.45	4.49	0.80	24.65	25.2	52	0.4166667	0.2083333	0.545	2.618
CB 4	DMH 4	0.000 0.124 0.107	0.20 0.30 0.90	5.0	5.8	0.77	0.00	0.77	0.026	0.012	10	3.80	6.97	0.20	24.65	25.9	49	0.4166667	0.2083333	0.545	2.618
CB 7	DMH 4	0.000 0.108 0.183	0.20 0.30 0.90	5.0	5.8	1.14	0.00	1.14	0.013	0.012	10	2.65	4.88	0.43	24.65	24.75	8	0.4166667	0.2083333	0.545	2.618
DMH 4	DMH 5	0.000 0.000 0.000	0.20 0.30 0.90	5.0	5.8	0.00	3.89	3.89	0.018	0.012	12	5.22	6.64	0.74	23.8	24.3	27.5	0.5	0.25	0.785	3.142
DMH 5	SWMA 2	0.000 0.000 0.000	0.20 0.30 0.90	5.0	5.8	0.00	3.89	3.89	0.057	0.012	12	9.25	11.78	0.42	22.6	23	7	0.5	0.25	0.785	3.142



From		To		Total C x A (acres)	Tc (min)	I(25) (in/hr)	Q = (CIA) (cfs)	Flow from others (cfs)	Total Q (cfs)	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dia (in)	Q (full) (cfs)	V (full) (fps)	QI(Qfull) < 12	INV. DOWN (ft)	INV. UP (ft)	Length (ft)	Pipe Rad. (ft)	Hydraulic Radius (ft)	Area (ft <sup>2</sup> )	Perimeter (ft)	
Run 5																								
CB 14	DMH 11	0.000	0.20	0.36	5.0	5.8	2.08	0.00	2.08	0.012	HDPE	0.012	10	2.51	4.78	0.80	23.6	23.9	25	0.4166667	0.2083333	0.545	2.618	
CB 15	DMH 11	0.000	0.20	0.27	5.0	5.8	1.58	0.00	1.58	0.012	HDPE	0.012	10	5.32	9.76	0.30	23.6	23.9	6	0.4166667	0.2083333	0.545	2.618	
DMH 11	DMH 12	0.000	0.20	0.00	5.0	5.8	0.00	3.66	3.66	0.007	HDPE	0.012	15	5.80	4.73	0.63	22.3	23.1	117	0.625	0.3125	1.227	3.927	
DMH 12	SWMA 1	0.000	0.20	0.00	5.0	5.8	0.00	3.66	3.66	0.014	HDPE	0.012	15	8.39	6.83	0.44	21.3	21.5	14	0.625	0.3125	1.227	3.927	
Run 6																								
Roof & Lawn	SWMA 5	0.000	0.20	0.21	5.0	5.8	1.22	0.00	1.22	0.010	HDPE	0.012	8	1.31	3.76	0.93	26	26.5	250	0.3333333	0.1666667	0.349	2.094	
CB 16	DMH 13	0.056	0.20	0.14	5.0	5.8	0.80	0.00	0.80	0.010	HDPE	0.012	10	2.41	4.41	0.33	26.4	27.3	88	0.4166667	0.2083333	0.545	2.618	
CB 17	DMH 13	0.158	0.20	0.16	5.0	5.8	0.94	0.00	0.94	0.013	HDPE	0.012	10	2.65	4.88	0.35	26.4	26.5	8	0.4166667	0.2083333	0.545	2.618	
DMH 13	DMH 14	0.000	0.20	0.00	5.0	5.8	0.00	1.74	1.74	0.010	HDPE	0.012	10	2.43	4.46	0.72	25.85	26.3	43	0.4166667	0.2083333	0.545	2.618	
CB 18	DMH 14	0.275	0.20	0.21	5.0	5.8	1.22	0.00	1.22	0.025	HDPE	0.012	10	3.80	6.96	0.32	25.85	27.3	57	0.4166667	0.2083333	0.545	2.618	
DMH 14	DMH 15	0.000	0.20	0.00	5.0	5.8	0.00	2.96	2.96	0.021	HDPE	0.012	10	3.48	6.39	0.85	25.6	25.75	7	0.4166667	0.2083333	0.545	2.618	
DMH 15	SWMA 6	0.000	0.20	0.00	5.0	5.8	0.00	2.96	2.96	0.020	HDPE	0.012	10	3.37	6.17	0.88	24.6	24.8	10	0.4166667	0.2083333	0.545	2.618	
Run 8																								
CB 19	DMH 16	0.076	0.20	0.16	5.0	5.8	0.90	0.00	0.90	0.011	HDPE	0.012	10	2.44	4.48	0.37	26.4	27	57	0.4166667	0.2083333	0.545	2.618	
CB 20	DMH 16	0.046	0.20	0.18	5.0	5.8	1.04	0.00	1.04	0.014	HDPE	0.012	10	2.84	5.22	0.37	26.4	26.6	14	0.4166667	0.2083333	0.545	2.618	
DMH 16	DMH 17	0.000	0.20	0.00	5.0	5.8	0.00	0.00	0.00	0.000	HDPE	0.012	10	0.00	0.00	0.00	26.4	26.4	14	0.4166667	0.2083333	0.545	2.618	

From	To	Drainage Area (acres)	C	Tc (min)	I(25) (in/hr)	Q = (CIA) (cfs)	Flow from others (cfs)	Total Q (cfs)	Min. Slope (ft/ft)	Pipe Material	Manning's n	Dis (in)	Q (full) (cfs)	V (full) (fps)	Q/Q(full) < 17	INV. DOWN (ft)	INV. UP (ft)	Length (ft)	Pipe Rad. (ft)	Hydraulic Radius (ft)	Area (ft <sup>2</sup> )	Perimeter (ft)
CB 21	DMH 17	0.000	0.80	5.0	5.8	0.00	1.94	1.94	0.010	HDPE	0.012	10	2.38	4.36	0.82	25.4	26.3	90	0.4166667	0.2083333	0.545	2.618
		0.041	0.20																			
		0.124	0.30																			
		0.150	0.80																			
CB 22	DMH 17	0.053	0.20	5.0	5.8	1.05	0.00	1.05	0.014	HDPE	0.012	10	2.84	5.22	0.37	25.4	25.6	14	0.4166667	0.2083333	0.545	2.618
		0.090	0.30																			
		0.108	0.90																			
DMH 17	DMH 18	0.000	0.20	5.0	5.8	0.78	0.00	0.78	0.018	HDPE	0.012	10	3.20	5.86	0.24	25.4	26.5	61	0.4166667	0.2083333	0.545	2.618
		0.000	0.30																			
		0.000	0.90																			
DMH 18	SWMA 7	0.000	0.20	5.0	5.8	0.00	3.77	3.77	0.033	HDPE	0.012	10	4.35	7.97	0.87	25	25.3	9	0.4166667	0.2083333	0.545	2.618
		0.000	0.30																			
		0.000	0.90																			
Run 9																						
CB 25	DMH 19	0.020	0.20	5.0	5.8	1.03	0.00	1.03	0.009	HDPE	0.012	10	2.30	4.23	0.45	25.5	26.4	96	0.4166667	0.2083333	0.545	2.618
		0.148	0.30																			
		0.143	0.90																			
CB 24	DMH 19	0.000	0.20	5.0	5.8	0.64	0.00	0.64	0.033	HDPE	0.012	10	4.35	7.97	0.15	25.5	25.7	6	0.4166667	0.2083333	0.545	2.618
		0.045	0.30																			
		0.108	0.90																			
DMH 19	DMH 20	0.000	0.20	5.0	5.8	0.00	1.67	1.67	0.010	HDPE	0.012	10	2.40	4.40	0.70	24.7	25.4	69	0.4166667	0.2083333	0.545	2.618
		0.000	0.30																			
		0.000	0.90																			
CB 23	DMH 20	0.000	0.20	5.0	5.8	0.83	0.00	0.83	0.012	HDPE	0.012	10	2.51	4.78	0.32	24.7	25	25	0.4166667	0.2083333	0.545	2.618
		0.040	0.30																			
		0.146	0.90																			
DMH 20	DMH 21	0.000	0.20	5.0	5.8	0.00	2.50	2.50	0.025	HDPE	0.012	10	3.76	6.90	0.66	24.4	24.6	8	0.4166667	0.2083333	0.545	2.618
		0.000	0.30																			
		0.000	0.90																			
DMH 21	SWMA 8	0.000	0.20	5.0	5.8	0.00	2.50	2.50	0.040	HDPE	0.012	10	4.76	8.73	0.53	23.4	23.6	5	0.4166667	0.2083333	0.545	2.618
		0.000	0.30																			
		0.000	0.90																			

## Oil Grit Sizing Requirements

Drainage Area	ImperVIOUS Area (s.f.)	WQ Volume Required (c.f.) (@ 400 cf/imp ac.)	Oil Grit Separator Size Required (gal.)	First Compartment Provided (gal.)	Oil Grit Separator Provided (gal.)
WQI #1	7879	72	541	1052	2000
WQI #2	23715	218	1629	1952	3000
WQI #3	15208	140	1045	1052	2000
WQI #4	7807	72	536	1052	2000
WQI #5	14414	132	990	1052	2000
WQI #6	14683	135	1009	1052	2000
WQI #7	23233	213	1596	1952	3000
WQI #8	17308	159	1189	1952	3000

## RECHARGE CALCULATIONS

SWMA #	Impervious Area (s.f.)	Recharge Volume (c.f.)	Volume Provided (c.f.)	Bottom Area	Draw-down time (hrs.)
1	22,293	1115	3879	1,826	0.88
2	28,629	1431	4,728	2,196	0.94
3	15,208	760	2871	1,342	0.82
4	7,807	390	1,482	704	0.80
5	18,077	904	3833	1,793	0.73
6	19,043	952	2574	1,209	1.14
7	24,964	1248	4355	2,028	0.89
8	22,011	1101	3576	1,669	0.96

Recharge Volume (Rv)=F x impervious area

F= 0.6" for HSG "A"

$Rv = (.6" / 12) (\text{impervious area})$

Draw down time =  $Rv / (k) (\text{bot. area})$

K=8.27 in/hr, 0.69 ft/hr

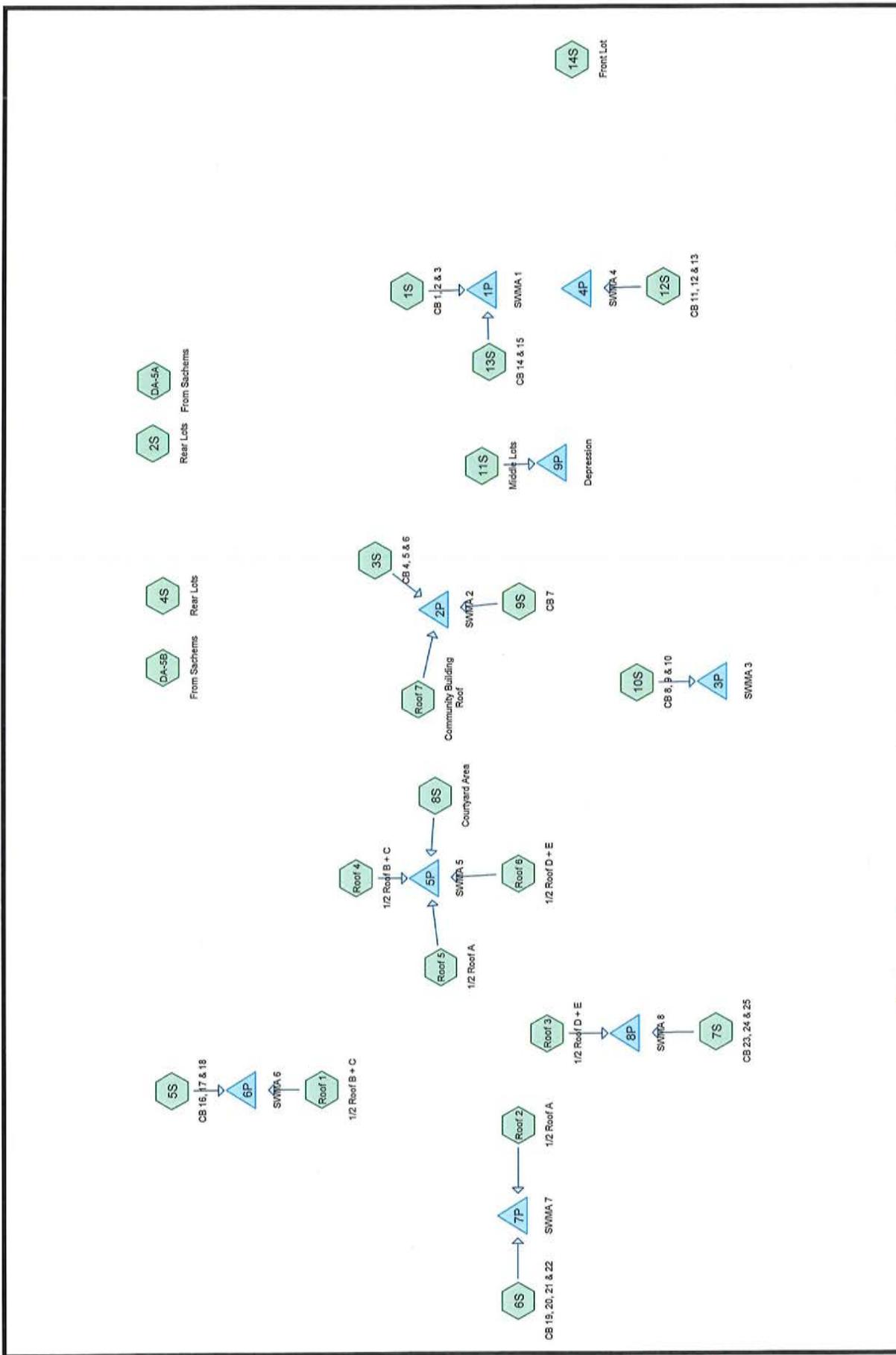


Project: Surfside Crossing  
 3,5,7 & 9 South Shore Rd.  
 Nantucket, MA 02554

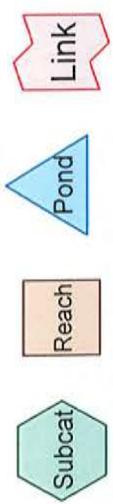
Prepared By: DFB  
 Date: 03-19-19

## TSS Removal Calculation Worksheet

A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)
DEEP SUMP CATCH BASINS W/STORM TREE	25%	1.00	0.25	0.75
OIL GRIT SEPARATOR	25%	0.75	0.19	0.56
INFILTRATION SYSTEM	80%	0.56	0.45	0.11
<b>Total TSS Removal =</b>			<b>89%</b>	



**Routing Diagram for Surfside Crossing (rev3)**  
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**Surfside Crossing (rev3)**

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**Summary for Subcatchment 1S: CB 1, 2 & 3**

Runoff = 0.24 cfs @ 12.10 hrs, Volume= 0.025 af, Depth= 0.53"

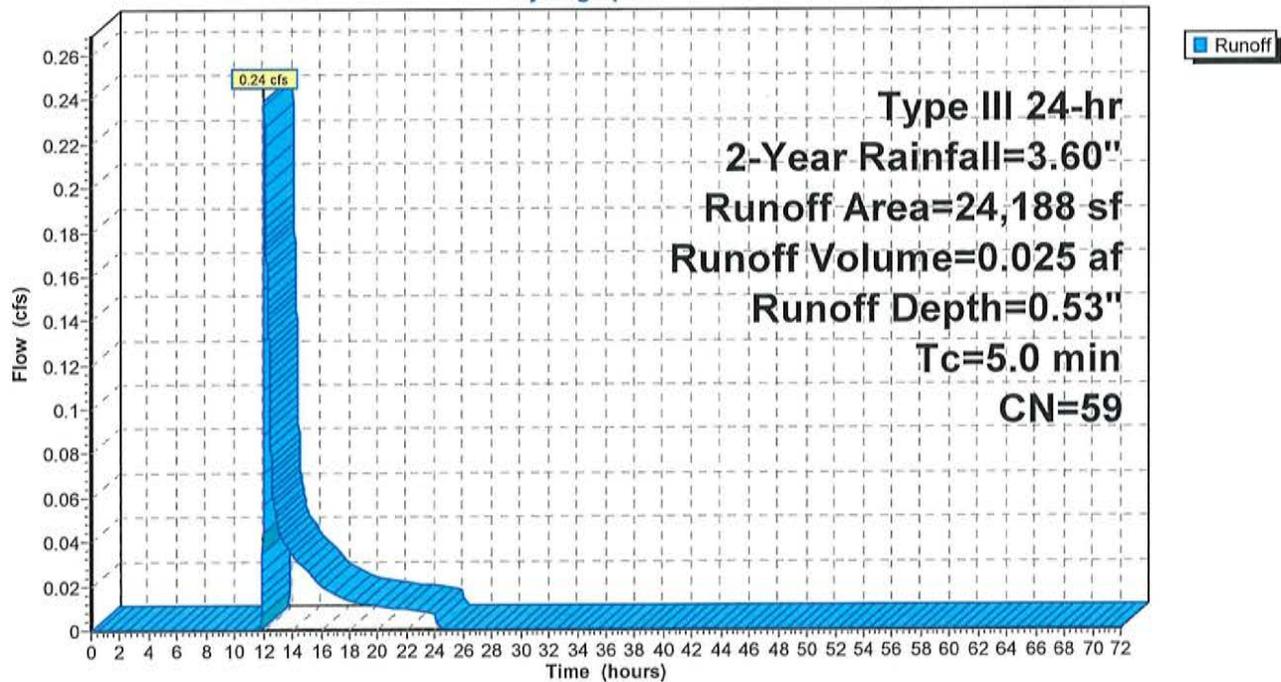
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
9,944	39	>75% Grass cover, Good, HSG A
7,879	98	Paved roads w/curbs & sewers, HSG A
* 1,463	76	Gravel driveways, HSG A
4,902	30	Woods, Good, HSG A
24,188	59	Weighted Average
16,309		67.43% Pervious Area
7,879		32.57% Impervious Area

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

**Subcatchment 1S: CB 1, 2 & 3**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 2-Year Rainfall=3.60"

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**Summary for Subcatchment 2S: Rear Lots**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

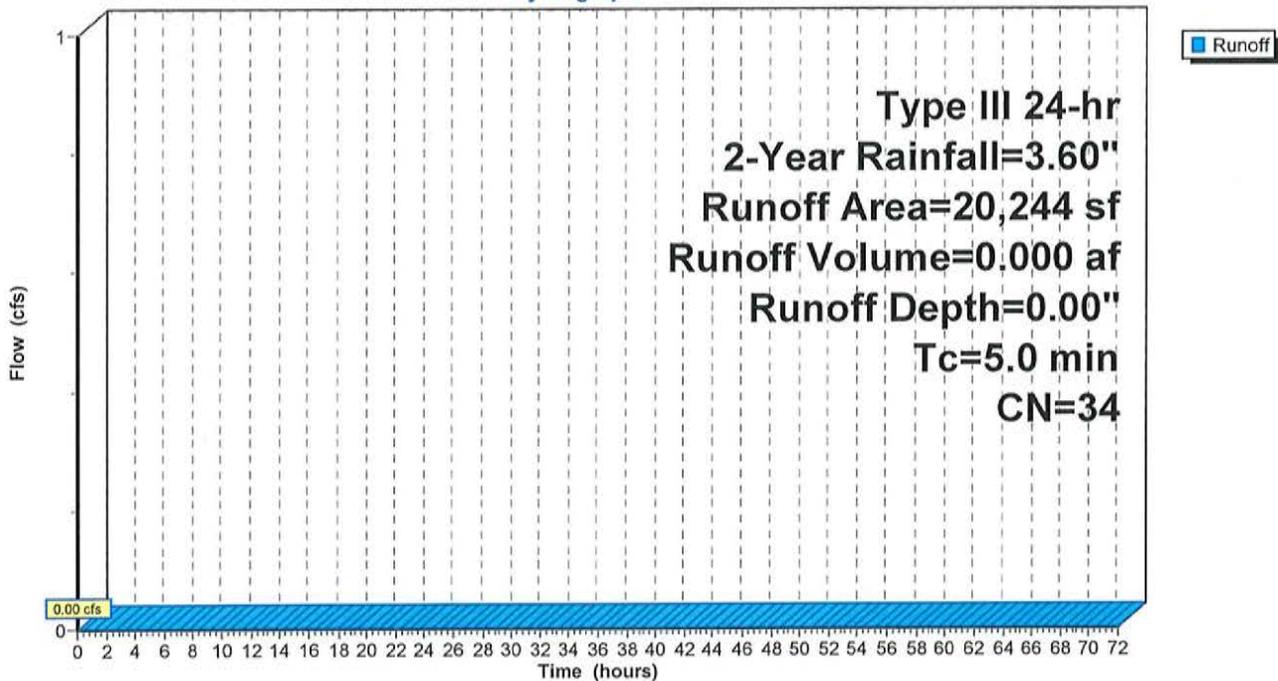
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
9,210	39	>75% Grass cover, Good, HSG A
11,034	30	Woods, Good, HSG A
20,244	34	Weighted Average
20,244		100.00% Pervious Area

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

**Subcatchment 2S: Rear Lots**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 3S: CB 4, 5 & 6**

Runoff = 0.85 cfs @ 12.08 hrs, Volume= 0.065 af, Depth= 0.96"

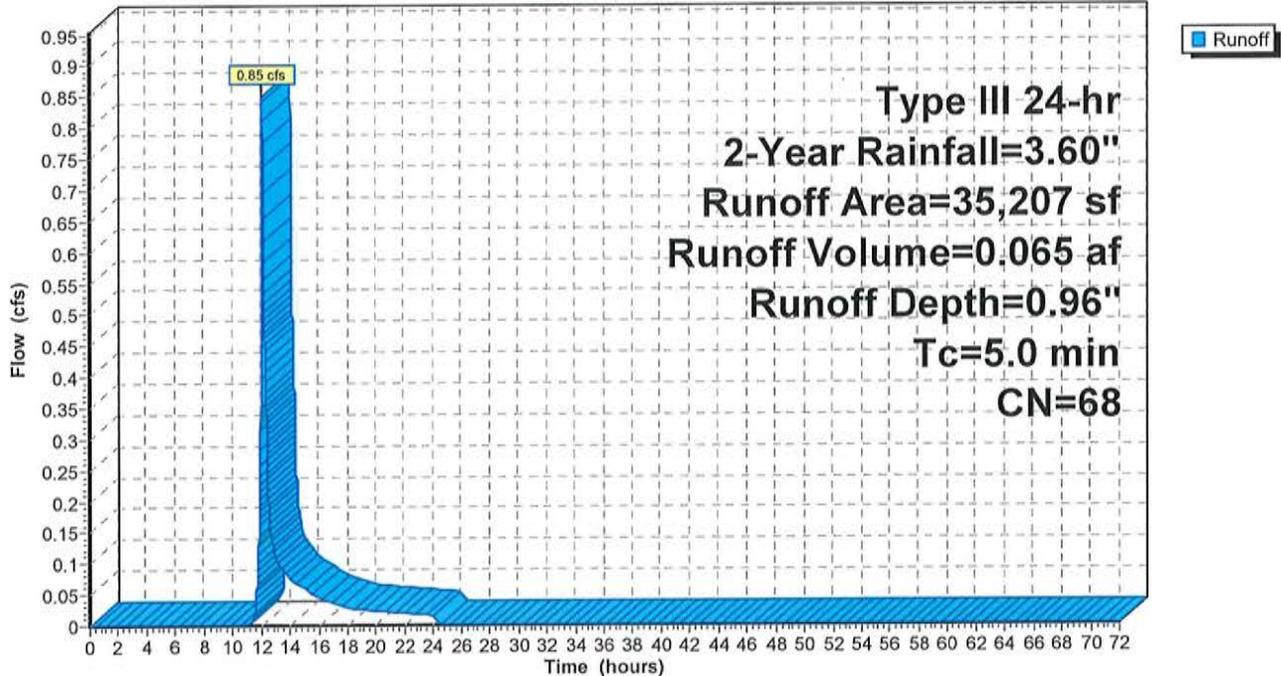
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
16,757	39	>75% Grass cover, Good, HSG A
15,914	98	Paved roads w/curbs & sewers, HSG A
* 2,536	76	Gravel driveways, HSG A
35,207	68	Weighted Average
19,293		54.80% Pervious Area
15,914		45.20% Impervious Area

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

**Subcatchment 3S: CB 4, 5 & 6**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 2-Year Rainfall=3.60"

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**Summary for Subcatchment 4S: Rear Lots**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

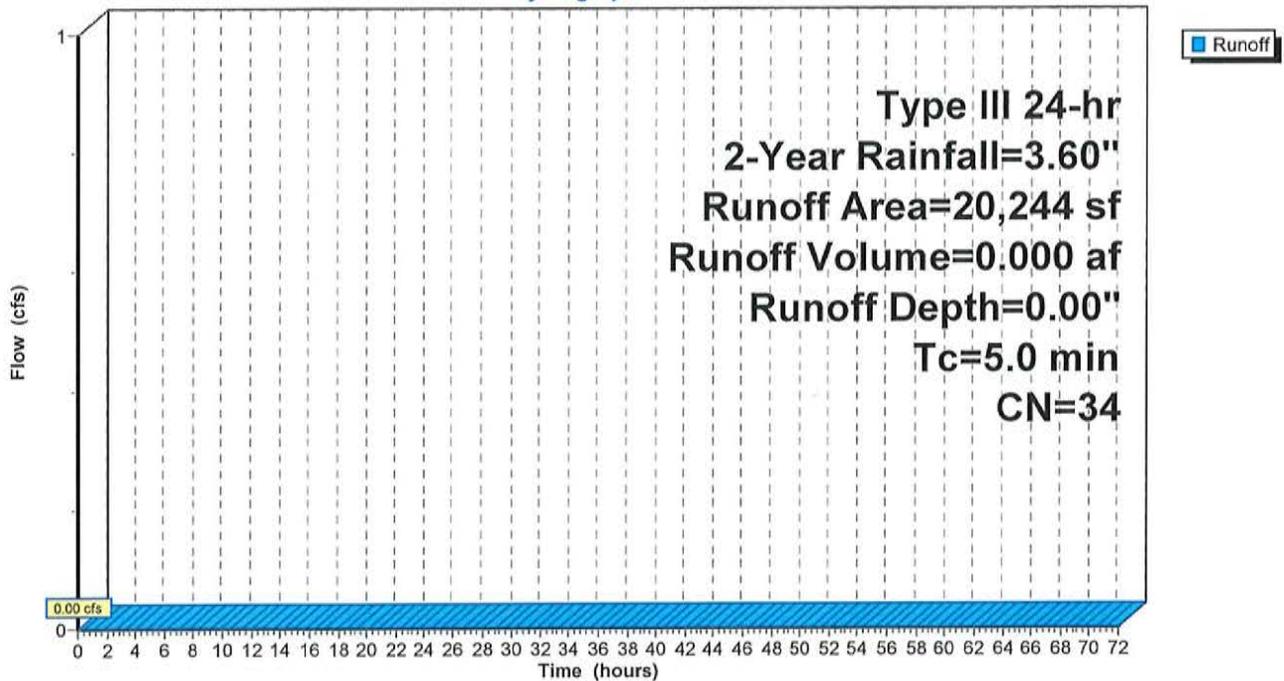
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
9,210	39	>75% Grass cover, Good, HSG A
11,034	30	Woods, Good, HSG A
20,244	34	Weighted Average
20,244		100.00% Pervious Area

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

**Subcatchment 4S: Rear Lots**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 5S: CB 16, 17 & 18**

Runoff = 0.14 cfs @ 12.32 hrs, Volume= 0.028 af, Depth= 0.28"

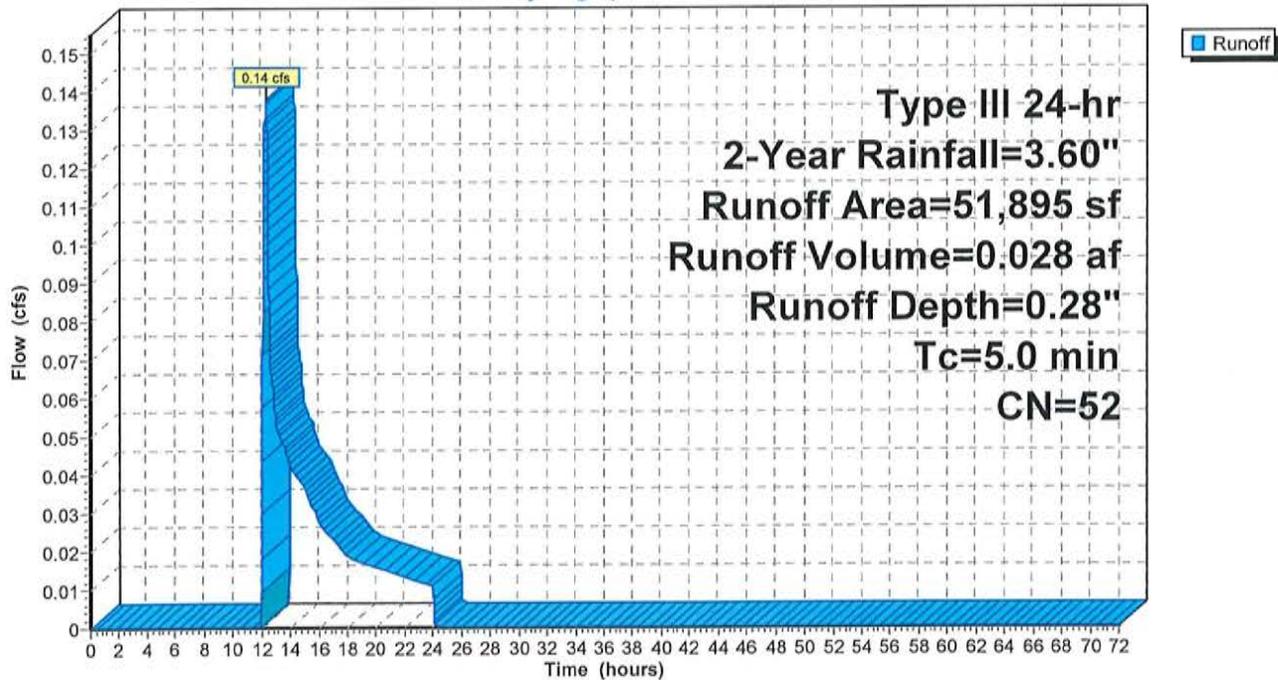
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

	Area (sf)	CN	Description
*	14,683	98	Paved
	15,690	39	>75% Grass cover, Good, HSG A
	21,328	30	Woods, Good, HSG A
*	194	72	Boardwalk w/ Gravel Base
	51,895	52	Weighted Average
	37,212		71.71% Pervious Area
	14,683		28.29% Impervious Area

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

**Subcatchment 5S: CB 16, 17 & 18**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 6S: CB 19, 20, 21 & 22**

Runoff = 1.06 cfs @ 12.09 hrs, Volume= 0.083 af, Depth= 0.86"

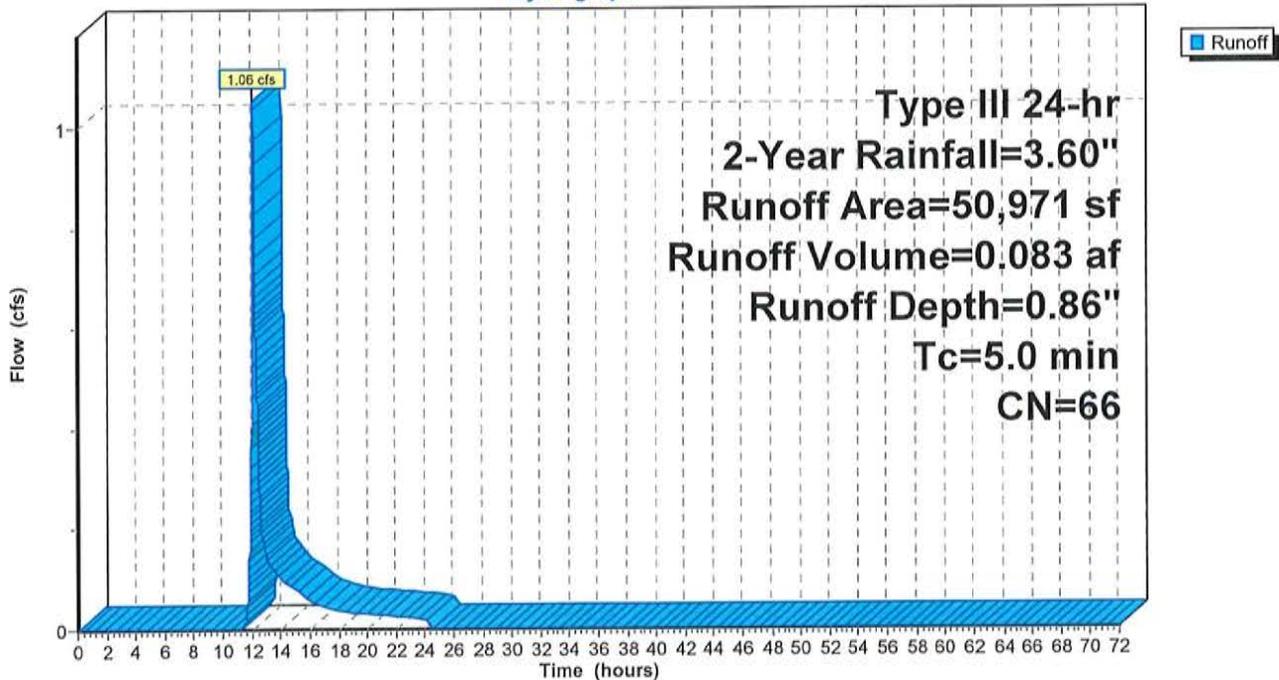
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

	Area (sf)	CN	Description
*	23,234	98	Paved
	17,968	39	>75% Grass cover, Good, HSG A
*	327	72	Boardwalk w/ Gravel Base
	9,442	36	Woods, Fair, HSG A
	50,971	66	Weighted Average
	27,737		54.42% Pervious Area
	23,234		45.58% Impervious Area

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

**Subcatchment 6S: CB 19, 20, 21 & 22**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 7S: CB 23, 24 & 25**

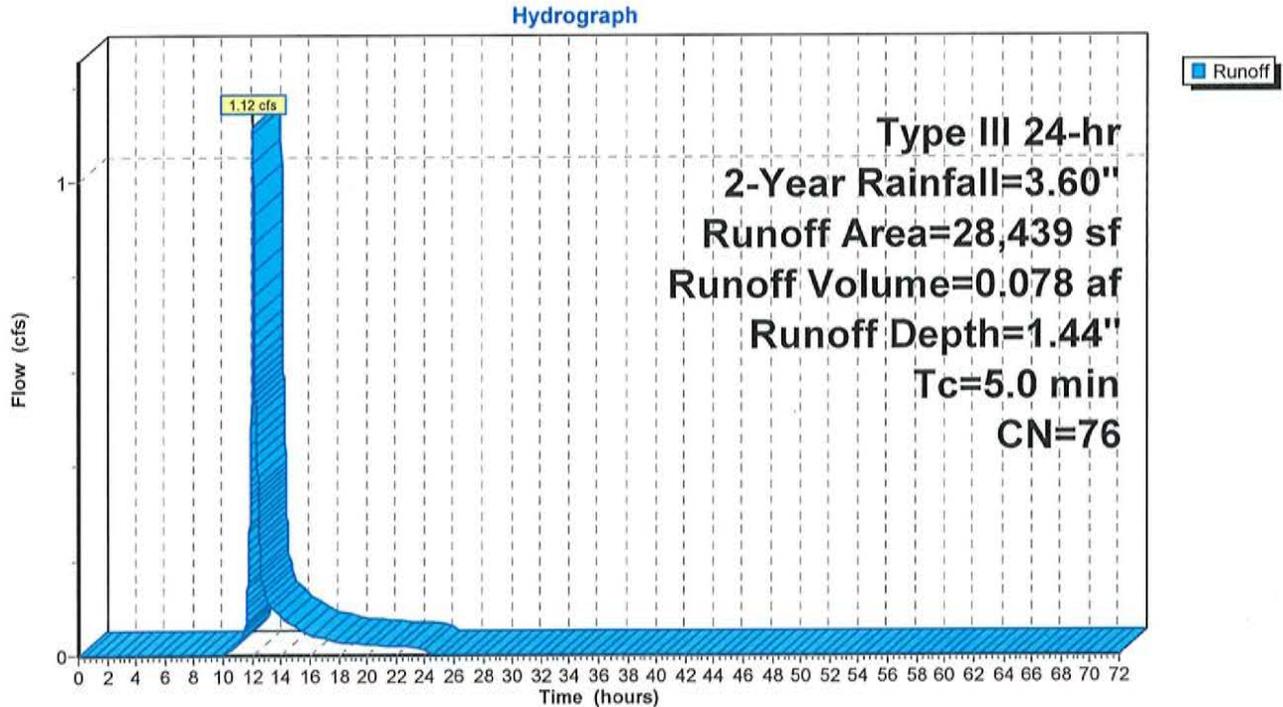
Runoff = 1.12 cfs @ 12.08 hrs, Volume= 0.078 af, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

	Area (sf)	CN	Description
*	17,308	98	Paved
	10,058	39	>75% Grass cover, Good, HSG A
*	582	72	Boardwalk w/ Gravel Base
*	491	72	Gravel Driveways
	28,439	76	Weighted Average
	11,131		39.14% Pervious Area
	17,308		60.86% Impervious Area

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

**Subcatchment 7S: CB 23, 24 & 25**



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**Summary for Subcatchment 8S: Courtyard Area**

Runoff = 0.03 cfs @ 12.46 hrs, Volume= 0.014 af, Depth= 0.14"

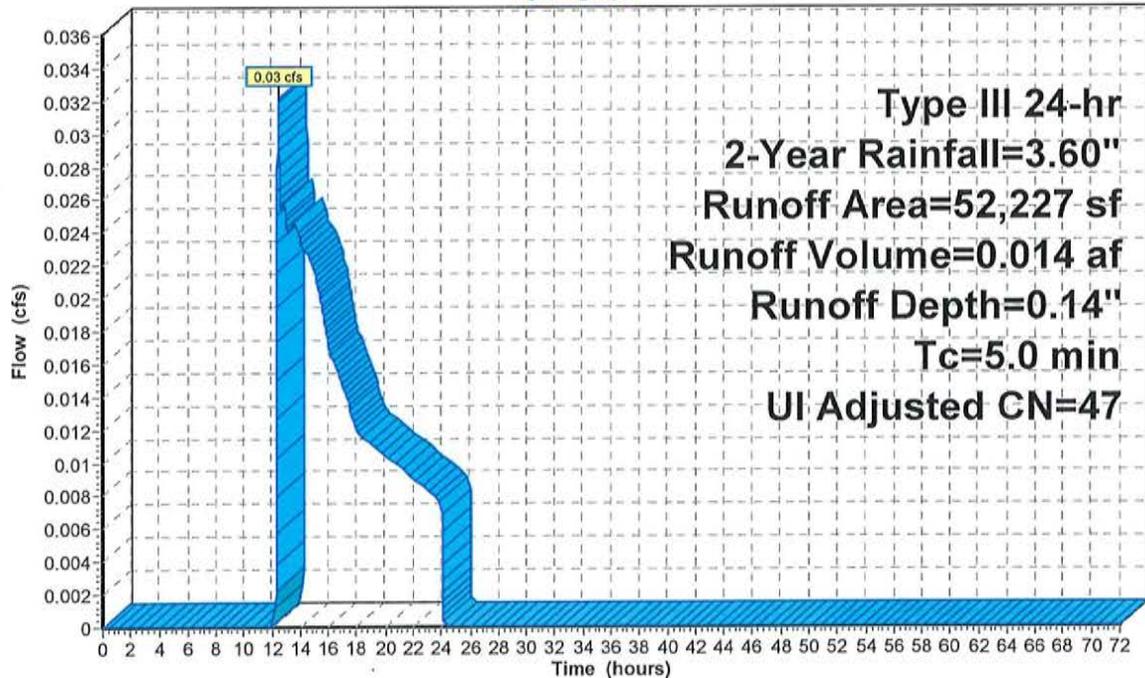
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Adj	Description
39,463	39		>75% Grass cover, Good, HSG A
* 9,231	72		Boardwalk w/ Gravel Base
3,533	98		Unconnected pavement, HSG A
52,227	49	47	Weighted Average, UI Adjusted
48,694			93.24% Pervious Area
3,533			6.76% Impervious Area
3,533			100.00% Unconnected

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

**Subcatchment 8S: Courtyard Area**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 9S: CB 7**

Runoff = 0.50 cfs @ 12.08 hrs, Volume= 0.035 af, Depth= 1.44"

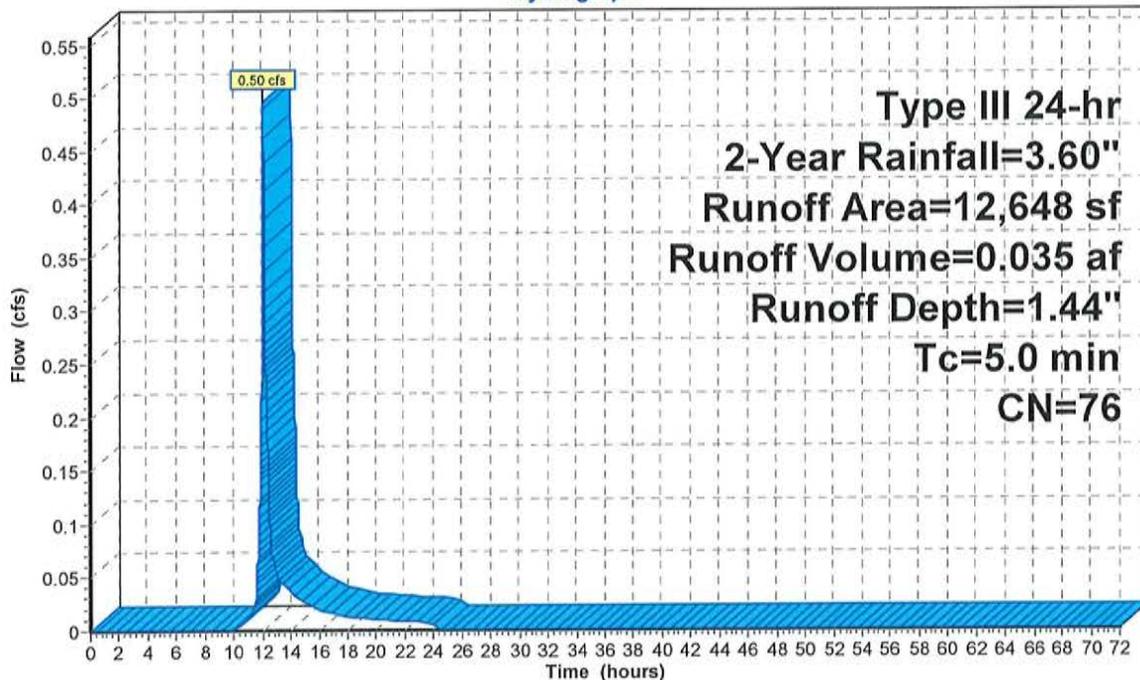
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
4,694	39	>75% Grass cover, Good, HSG A
7,954	98	Paved roads w/curbs & sewers, HSG A
12,648	76	Weighted Average
4,694		37.11% Pervious Area
7,954		62.89% Impervious Area

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

**Subcatchment 9S: CB 7**

Hydrograph



Runoff

**Surfside Crossing (rev3)**

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**Summary for Subcatchment 10S: CB 8, 9 & 10**

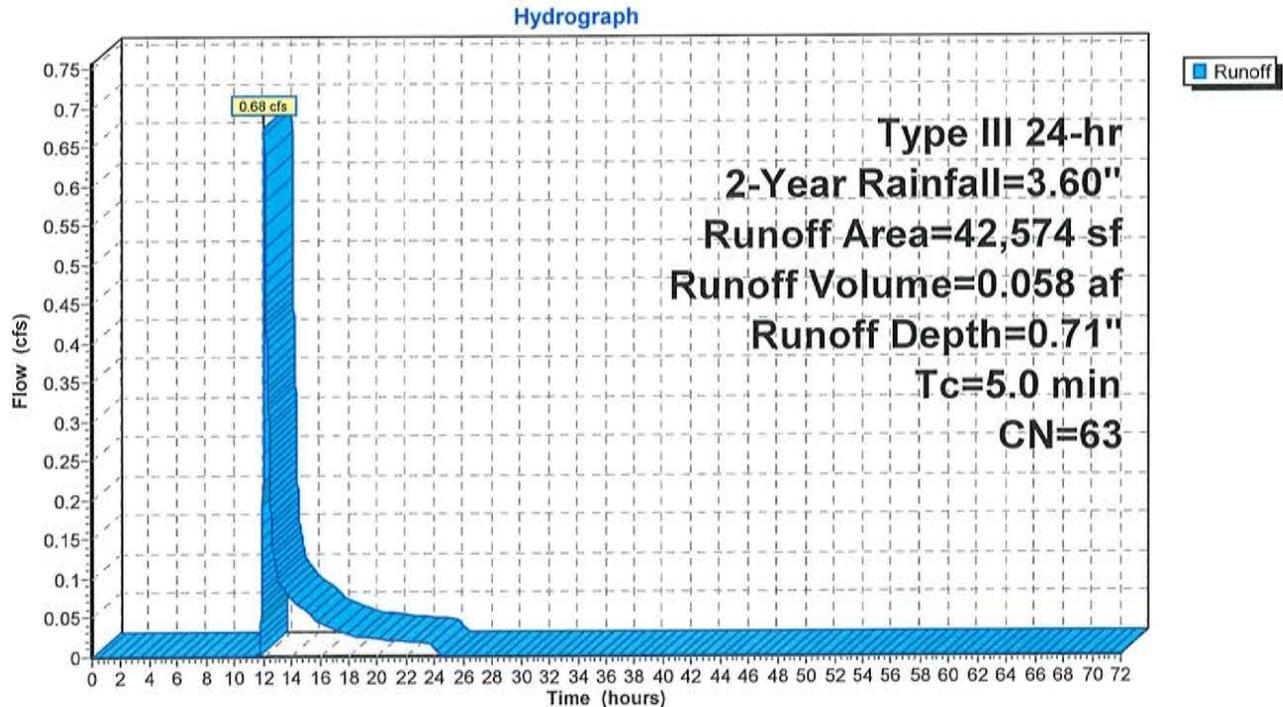
Runoff = 0.68 cfs @ 12.09 hrs, Volume= 0.058 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
23,508	39	>75% Grass cover, Good, HSG A
15,208	98	Paved roads w/curbs & sewers, HSG A
* 3,585	76	Gravel driveways, HSG A
* 273	72	Boardwalk w/ Gravel Base
42,574	63	Weighted Average
27,366		64.28% Pervious Area
15,208		35.72% Impervious Area

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

**Subcatchment 10S: CB 8, 9 & 10**





**Surfside Crossing (rev3)**

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**Summary for Subcatchment 12S: CB 11, 12 & 13**

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 0.76"

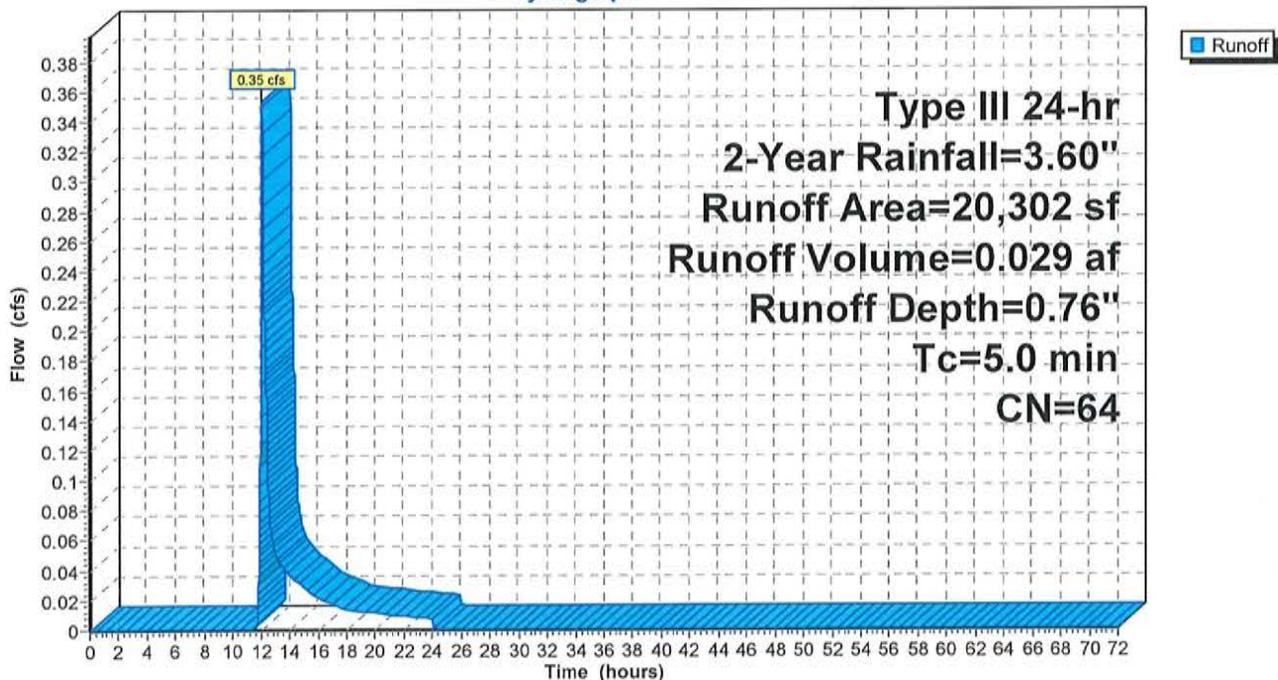
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
9,585	39	>75% Grass cover, Good, HSG A
7,807	98	Paved roads w/curbs & sewers, HSG A
* 1,449	76	Gravel driveways, HSG A
1,461	30	Woods, Good, HSG A
20,302	64	Weighted Average
12,495		61.55% Pervious Area
7,807		38.45% Impervious Area

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

**Subcatchment 12S: CB 11, 12 & 13**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 13S: CB 14 & 15**

Runoff = 0.30 cfs @ 12.13 hrs, Volume= 0.046 af, Depth= 0.38"

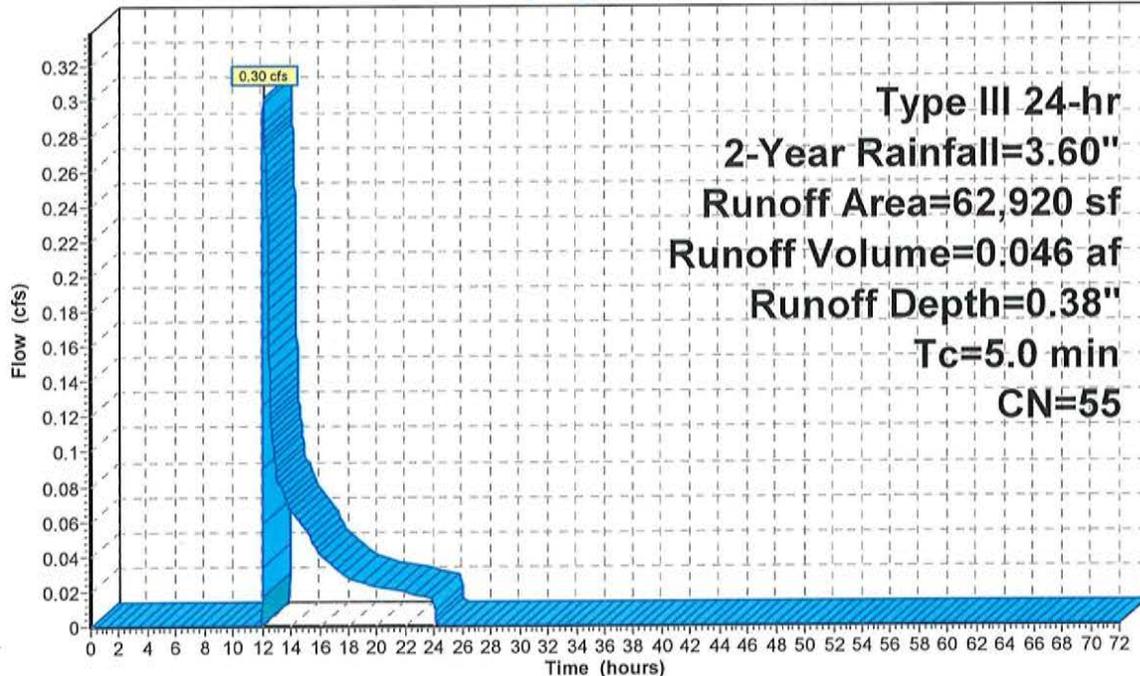
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
44,213	39	>75% Grass cover, Good, HSG A
14,414	98	Paved roads w/curbs & sewers, HSG A
* 4,293	76	Gravel driveways, HSG A
62,920	55	Weighted Average
48,506		77.09% Pervious Area
14,414		22.91% Impervious Area

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

**Subcatchment 13S: CB 14 & 15**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 2-Year Rainfall=3.60"

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**Summary for Subcatchment 14S: Front Lot**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

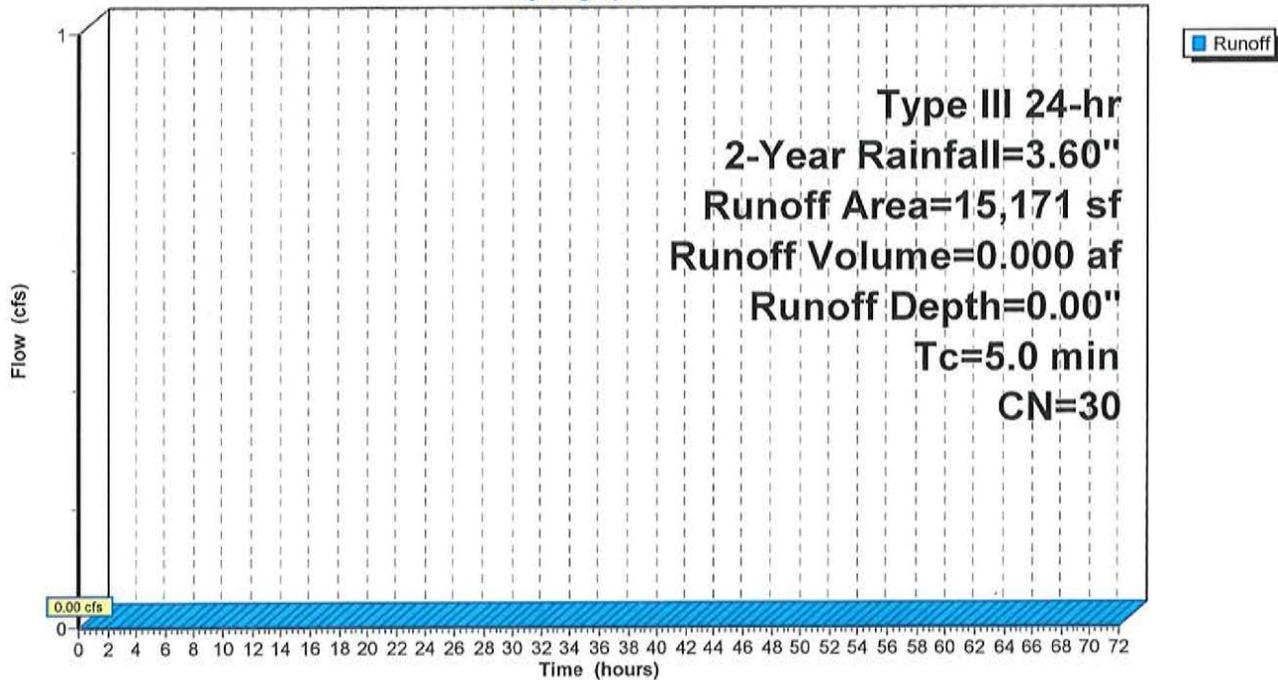
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
14,422	30	Woods, Good, HSG A
749	39	>75% Grass cover, Good, HSG A
15,171	30	Weighted Average
15,171		100.00% Pervious Area

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

**Subcatchment 14S: Front Lot**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment DA-5A: From Sachems**

Runoff = 0.00 cfs @ 24.12 hrs, Volume= 0.000 af, Depth= 0.00"

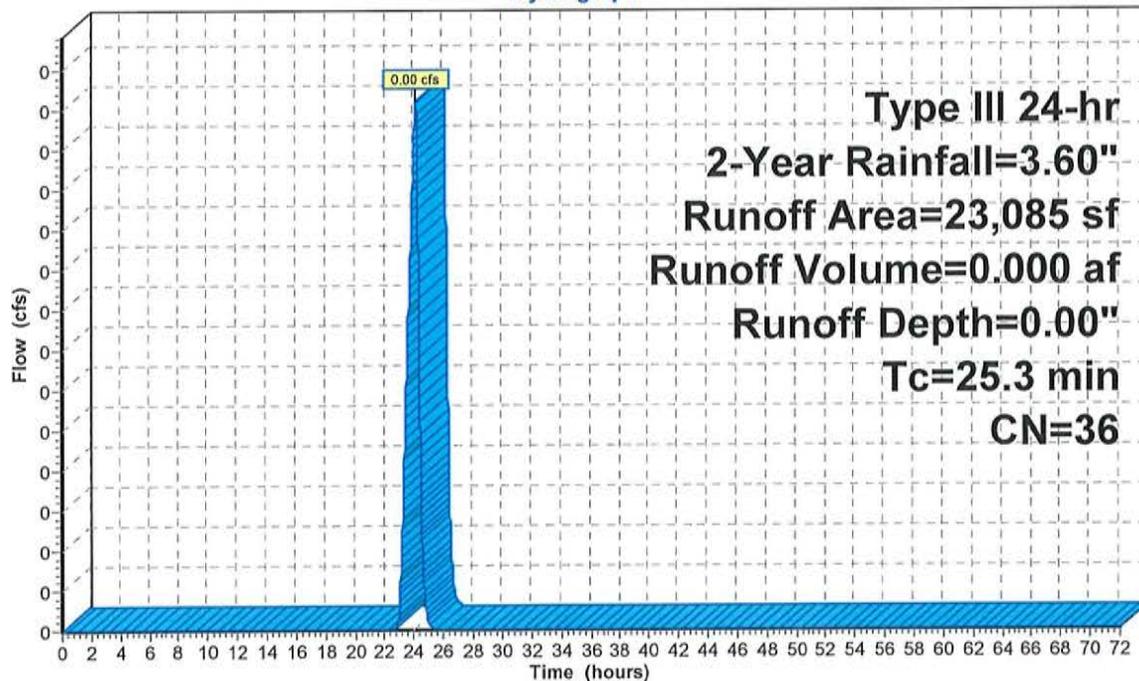
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
14,485	39	>75% Grass cover, Good, HSG A
8,600	30	Woods, Good, HSG A
23,085	36	Weighted Average
23,085		100.00% Pervious Area

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

**Subcatchment DA-5A: From Sachems**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 2-Year Rainfall=3.60"

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**Summary for Subcatchment DA-5B: From Sachems**

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

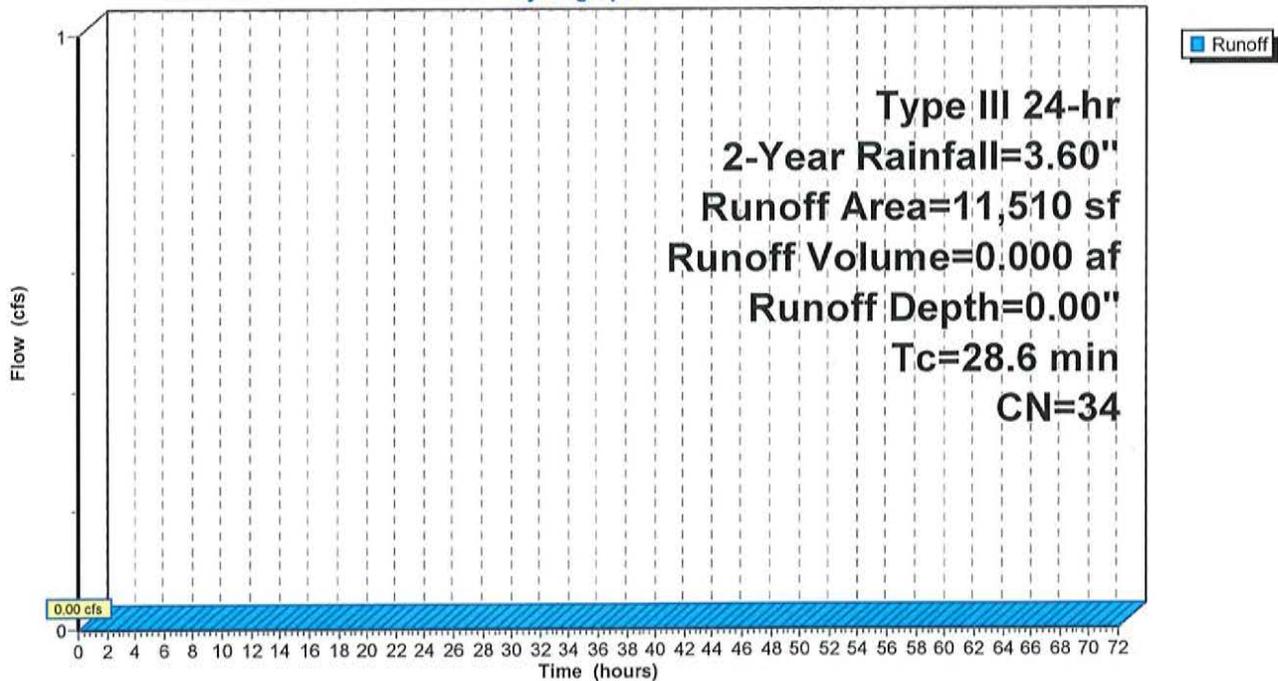
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
5,404	39	>75% Grass cover, Good, HSG A
6,106	30	Woods, Good, HSG A
11,510	34	Weighted Average
11,510		100.00% Pervious Area

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

**Subcatchment DA-5B: From Sachems**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment Roof 1: 1/2 Roof B + C**

Runoff = 0.39 cfs @ 12.07 hrs, Volume= 0.030 af, Depth= 3.37"

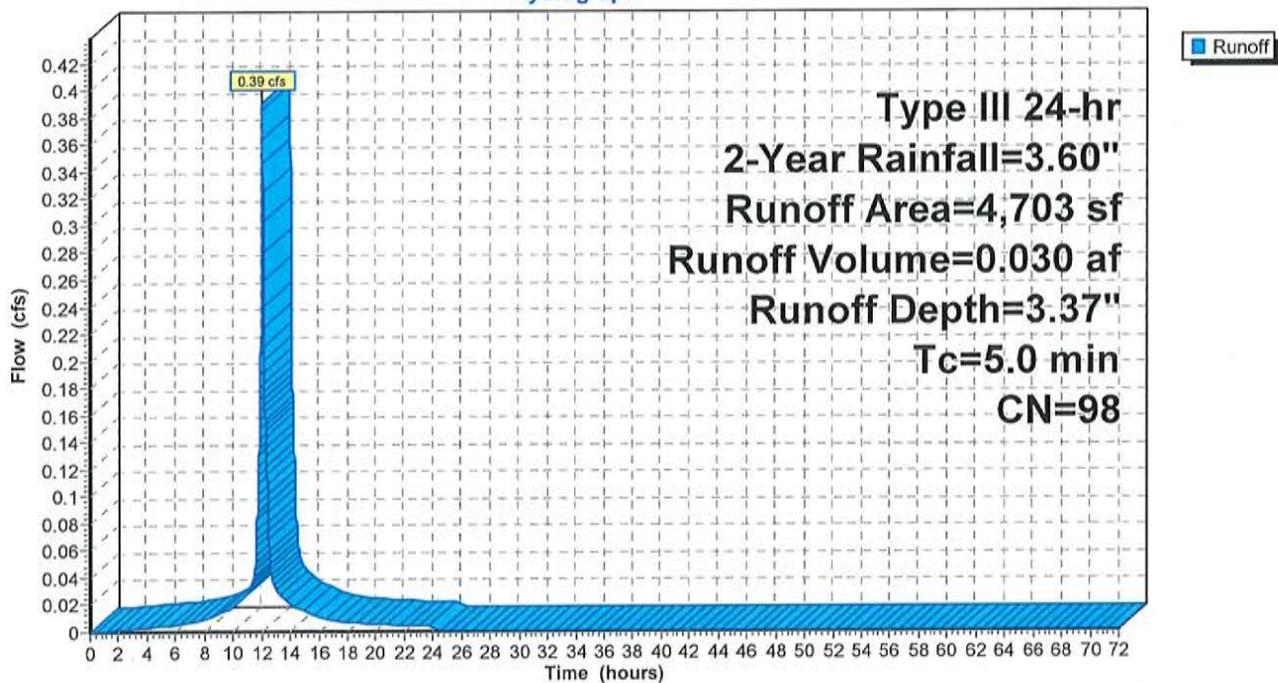
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
4,703	98	Roofs, HSG A
4,703		100.00% Impervious Area

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

**Subcatchment Roof 1: 1/2 Roof B + C**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment Roof 2: 1/2 Roof A**

Runoff = 0.14 cfs @ 12.07 hrs, Volume= 0.011 af, Depth= 3.37"

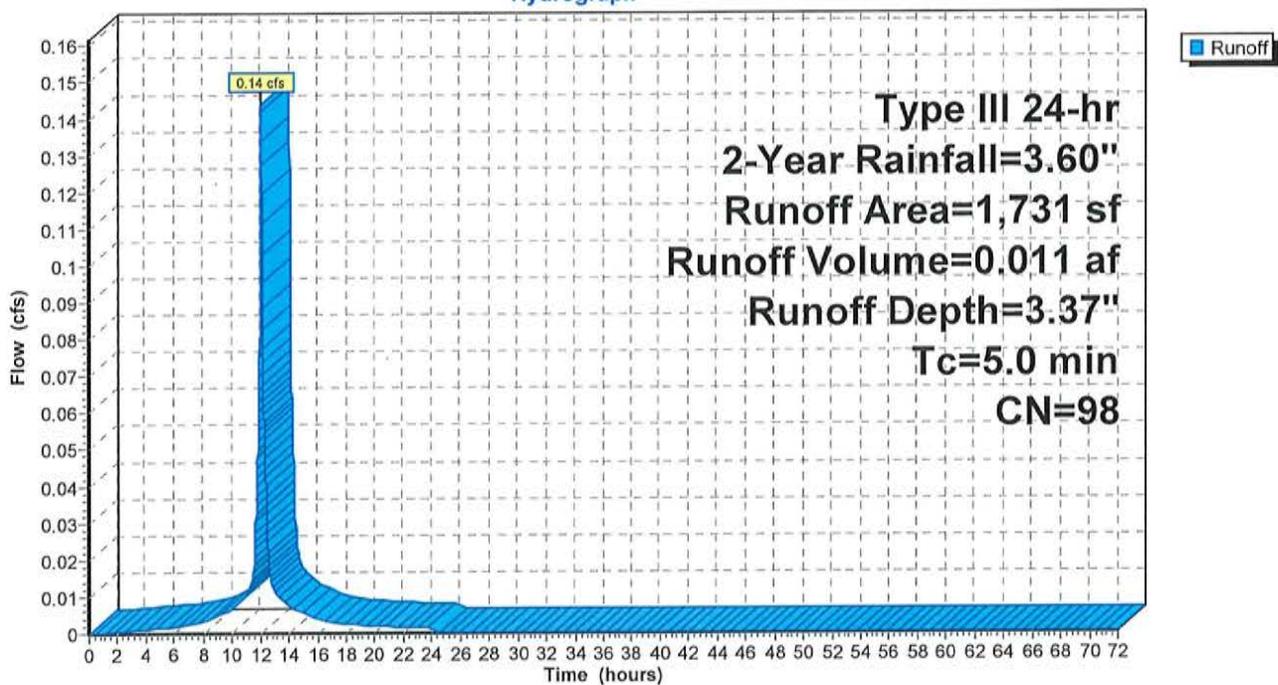
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
1,731	98	Roofs, HSG A
1,731		100.00% Impervious Area

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

**Subcatchment Roof 2: 1/2 Roof A**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment Roof 3: 1/2 Roof D + E**

Runoff = 0.39 cfs @ 12.07 hrs, Volume= 0.030 af, Depth= 3.37"

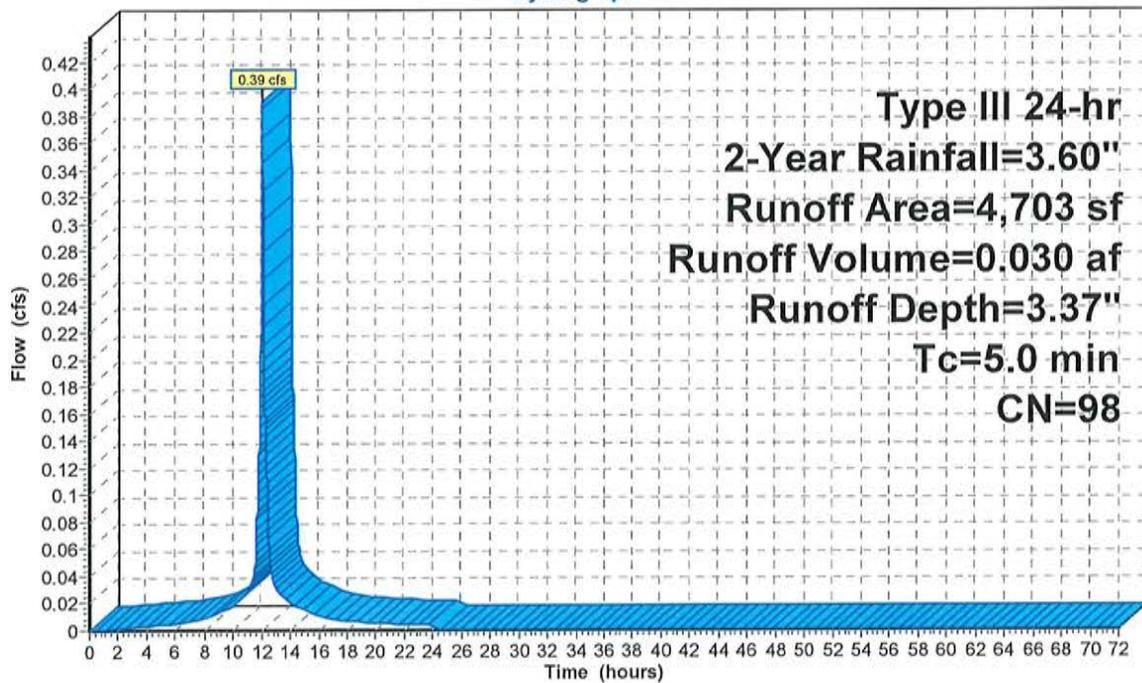
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
4,703	98	Roofs, HSG A
4,703		100.00% Impervious Area

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

**Subcatchment Roof 3: 1/2 Roof D + E**

Hydrograph



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**Summary for Subcatchment Roof 4: 1/2 Roof B + C**

Runoff = 0.55 cfs @ 12.07 hrs, Volume= 0.043 af, Depth= 3.37"

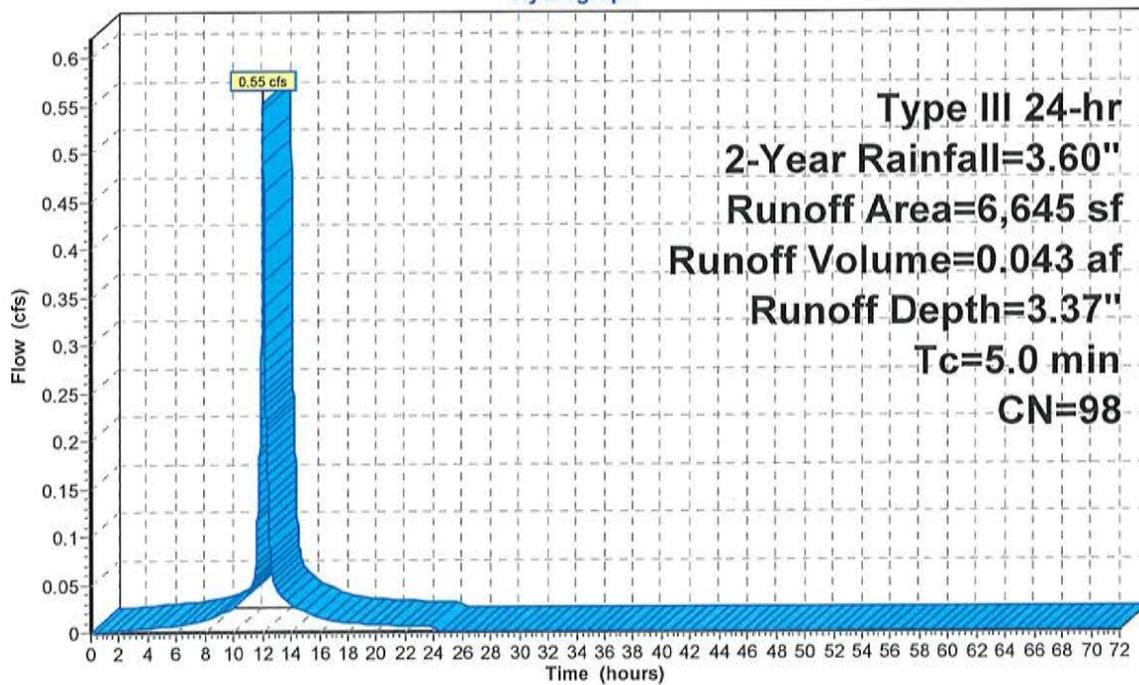
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
6,645	98	Roofs, HSG A
6,645		100.00% Impervious Area

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

**Subcatchment Roof 4: 1/2 Roof B + C**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment Roof 5: 1/2 Roof A**

Runoff = 0.40 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 3.37"

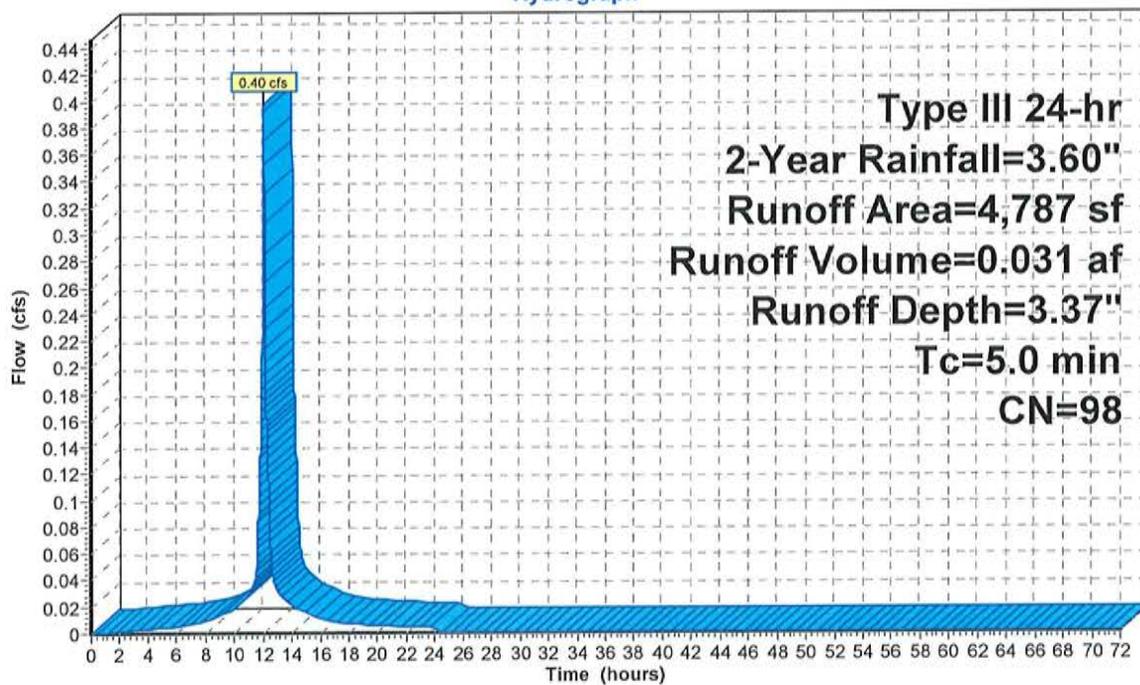
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
4,787	98	Roofs, HSG A
4,787		100.00% Impervious Area

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

**Subcatchment Roof 5: 1/2 Roof A**

Hydrograph



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**Summary for Subcatchment Roof 6: 1/2 Roof D + E**

Runoff = 0.55 cfs @ 12.07 hrs, Volume= 0.043 af, Depth= 3.37"

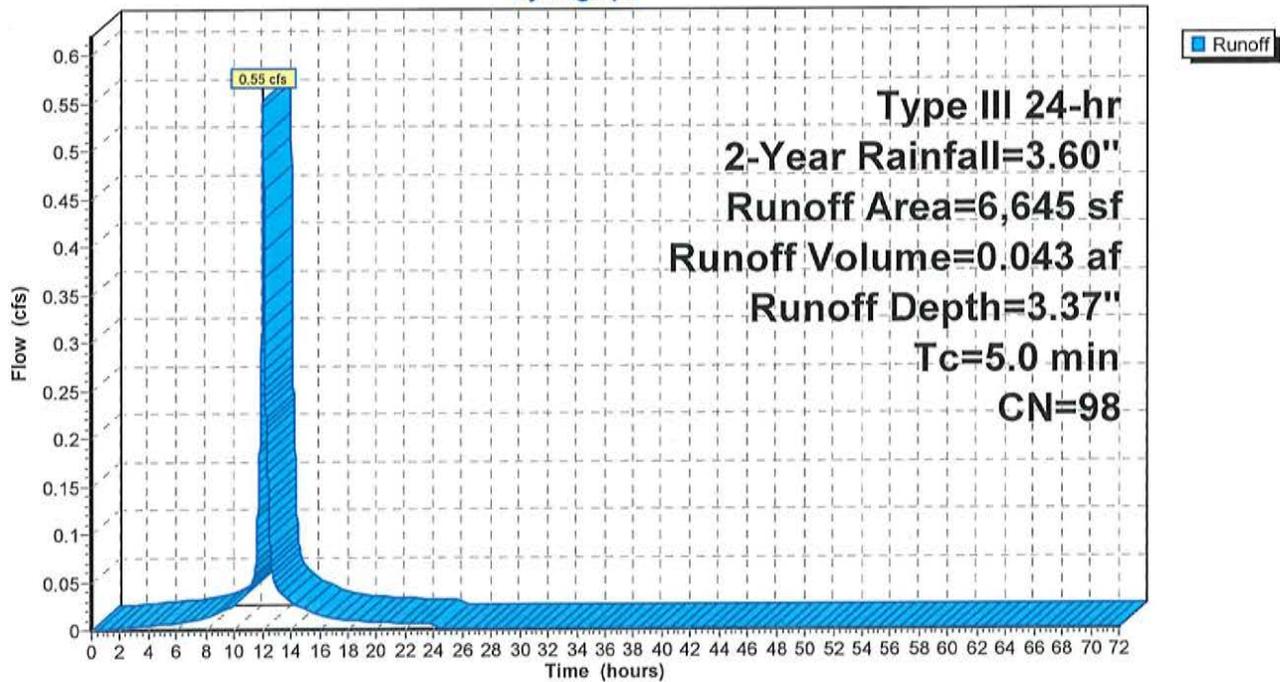
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
6,645	98	Roofs, HSG A
6,645		100.00% Impervious Area

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

**Subcatchment Roof 6: 1/2 Roof D + E**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 2-Year Rainfall=3.60"

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**Summary for Subcatchment Roof 7: Community Building Roof**

Runoff = 0.41 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 3.37"

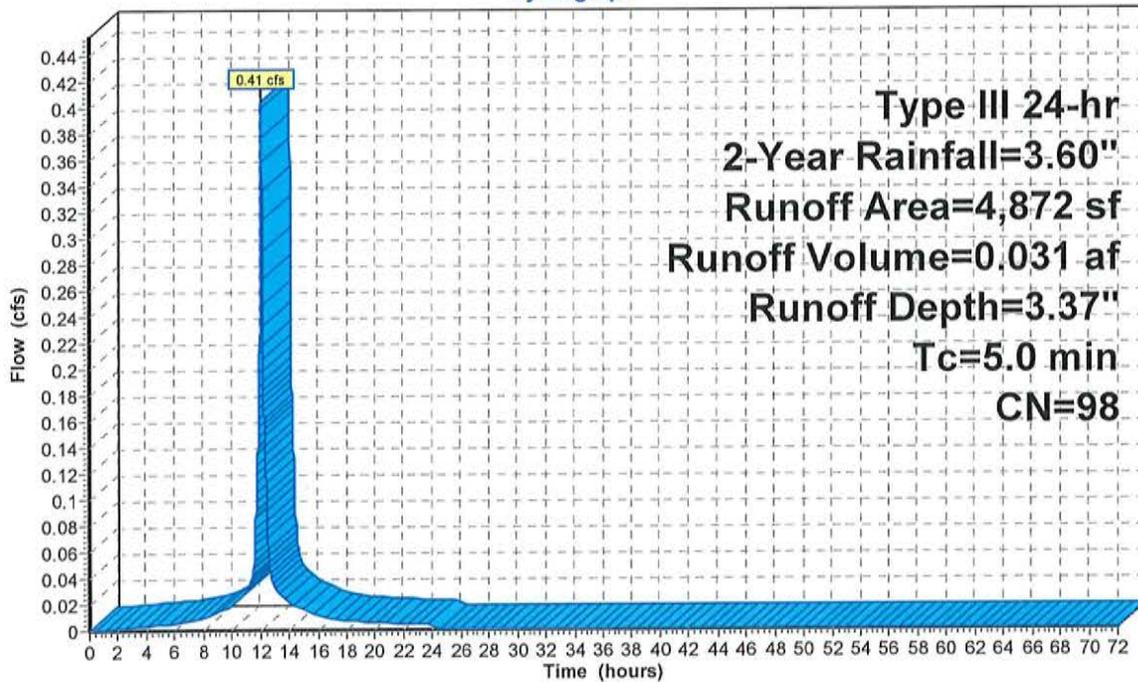
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
4,872	98	Roofs, HSG A
4,872		100.00% Impervious Area

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

**Subcatchment Roof 7: Community Building Roof**

Hydrograph



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**Summary for Pond 1P: SWMA 1**

Inflow Area = 2.000 ac, 25.59% Impervious, Inflow Depth = 0.42" for 2-Year event  
 Inflow = 0.54 cfs @ 12.12 hrs, Volume= 0.070 af  
 Outflow = 0.35 cfs @ 12.09 hrs, Volume= 0.070 af, Atten= 35%, Lag= 0.0 min  
 Discarded = 0.35 cfs @ 12.09 hrs, Volume= 0.070 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 18.30' @ 12.42 hrs Surf.Area= 1,826 sf Storage= 149 cf

Plug-Flow detention time= 2.6 min calculated for 0.070 af (100% of inflow)  
 Center-of-Mass det. time= 2.6 min ( 927.1 - 924.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	18.10'	2,769 cf	<b>15.75'W x 115.92'L x 5.00'H Prismatic</b> 9,129 cf Overall - 2,205 cf Embedded = 6,924 cf x 40.0% Voids
#2	20.10'	2,205 cf	<b>ADS StormTech SC-740 +Cap</b> x 48 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 48 Chambers in 3 Rows
		4,975 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	18.10'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.35 cfs @ 12.09 hrs HW=18.15' (Free Discharge)  
 ↑=Exfiltration (Exfiltration Controls 0.35 cfs)

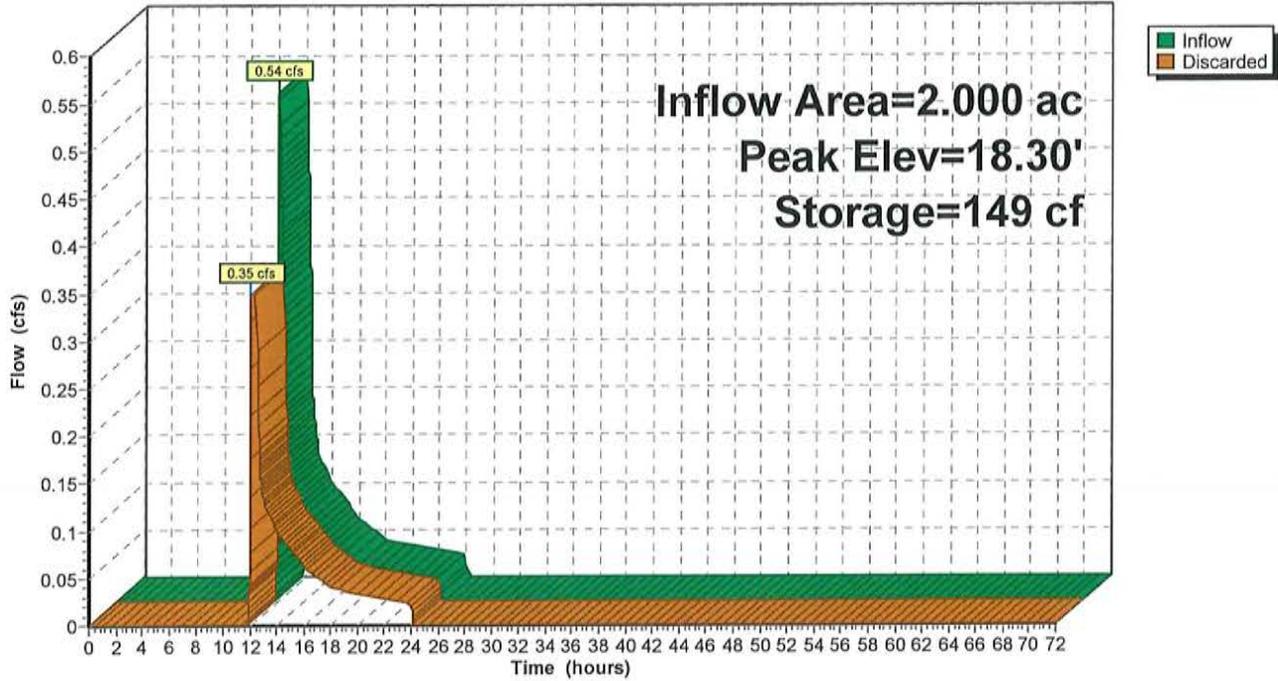
Surfside Crossing (rev3)

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Pond 1P: SWMA 1

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 2P: SWMA 2**

Inflow Area = 1.210 ac, 54.51% Impervious, Inflow Depth = 1.30" for 2-Year event  
 Inflow = 1.75 cfs @ 12.08 hrs, Volume= 0.131 af  
 Outflow = 0.42 cfs @ 11.89 hrs, Volume= 0.131 af, Atten= 76%, Lag= 0.0 min  
 Discarded = 0.42 cfs @ 11.89 hrs, Volume= 0.131 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 20.72' @ 12.51 hrs Surf.Area= 2,196 sf Storage= 1,159 cf

Plug-Flow detention time= 15.2 min calculated for 0.131 af (100% of inflow)  
 Center-of-Mass det. time= 15.2 min ( 852.7 - 837.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	19.40'	3,289 cf	<b>30.00'W x 73.20'L x 5.00'H Prismaoid</b> 10,980 cf Overall - 2,756 cf Embedded = 8,224 cf x 40.0% Voids
#2	21.40'	2,756 cf	<b>ADS_StormTech SC-740 +Cap</b> x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 60 Chambers in 6 Rows
		6,046 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.40'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.42 cfs @ 11.89 hrs HW=19.45' (Free Discharge)  
 ↑=Exfiltration (Exfiltration Controls 0.42 cfs)

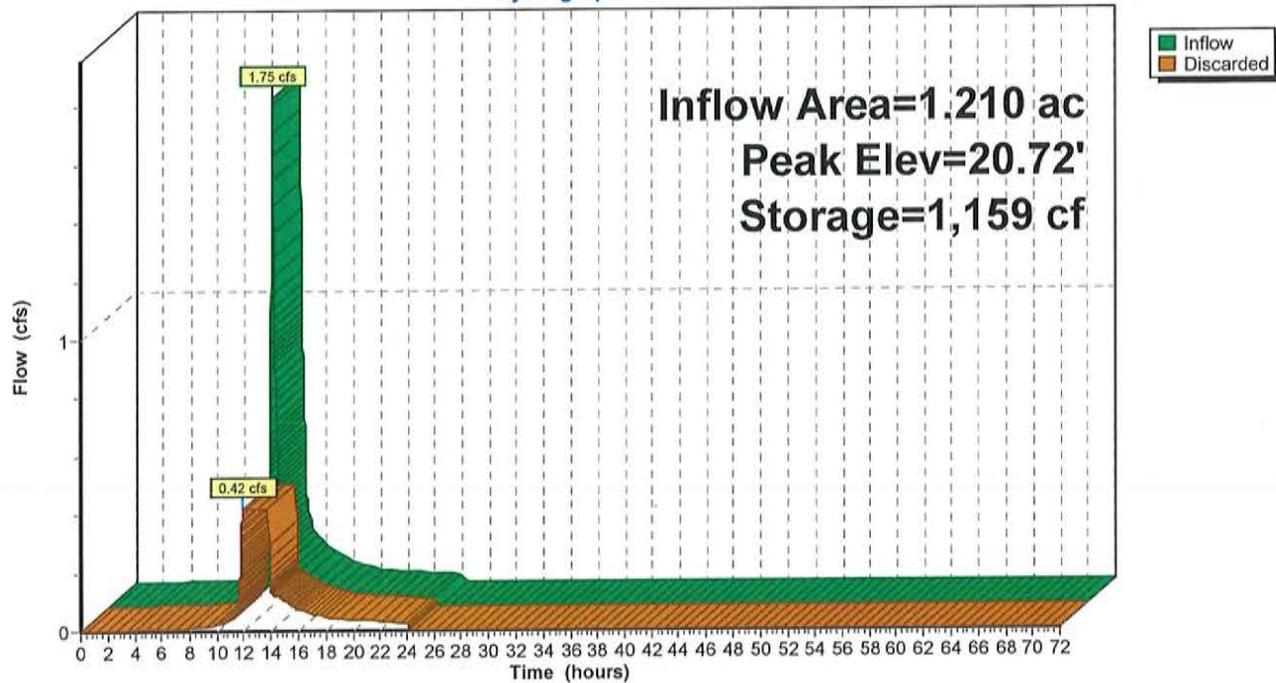
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**Pond 2P: SWMA 2**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 3P: SWMA 3**

Inflow Area = 0.977 ac, 35.72% Impervious, Inflow Depth = 0.71" for 2-Year event  
 Inflow = 0.68 cfs @ 12.09 hrs, Volume= 0.058 af  
 Outflow = 0.26 cfs @ 12.02 hrs, Volume= 0.058 af, Atten= 62%, Lag= 0.0 min  
 Discarded = 0.26 cfs @ 12.02 hrs, Volume= 0.058 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 20.40' @ 12.46 hrs Surf.Area= 1,342 sf Storage= 321 cf

Plug-Flow detention time= 6.4 min calculated for 0.058 af (100% of inflow)  
 Center-of-Mass det. time= 6.4 min ( 897.9 - 891.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	19.80'	1,753 cf	<b>30.00'W x 44.72'L x 4.50'H Prismatic</b> 6,037 cf Overall - 1,654 cf Embedded = 4,383 cf x 40.0% Voids
#2	21.30'	1,654 cf	<b>ADS_StormTech SC-740 +Cap</b> x 36 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 36 Chambers in 6 Rows
		3,407 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.80'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.26 cfs @ 12.02 hrs HW=19.85' (Free Discharge)  
 ↑=Exfiltration (Exfiltration Controls 0.26 cfs)

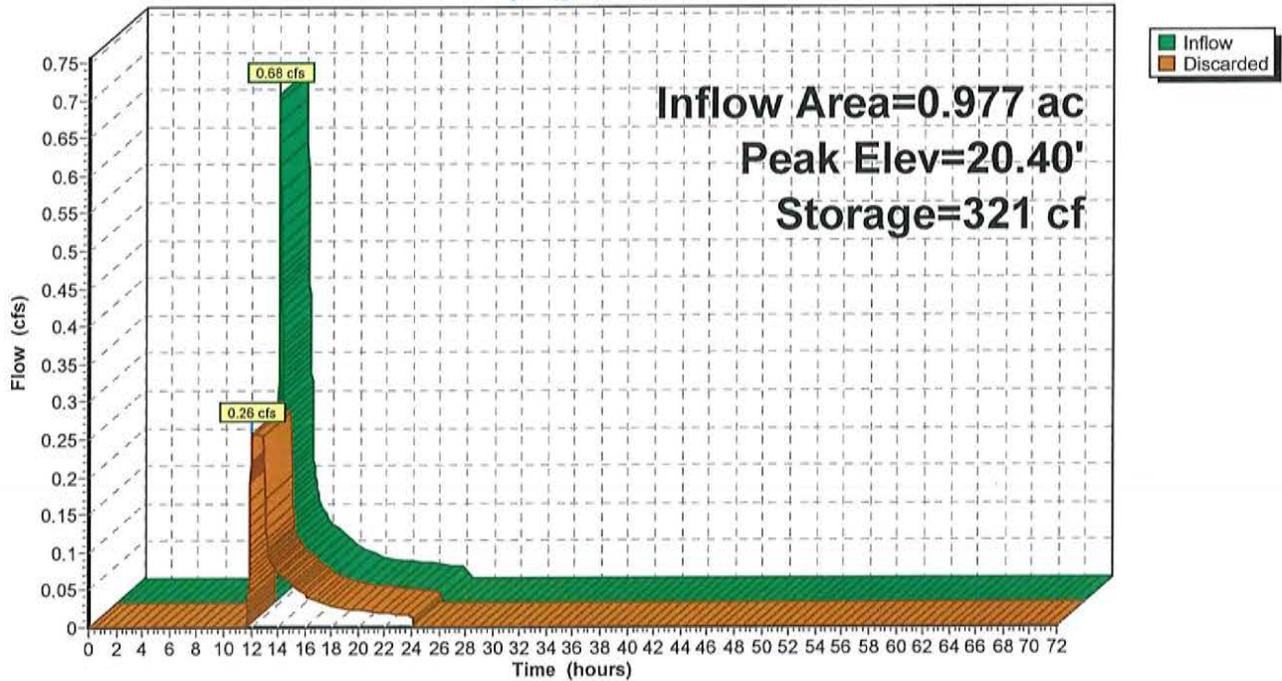
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**Pond 3P: SWMA 3**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 4P: SWMA 4**

Inflow Area = 0.466 ac, 38.45% Impervious, Inflow Depth = 0.76" for 2-Year event  
 Inflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af  
 Outflow = 0.13 cfs @ 12.01 hrs, Volume= 0.029 af, Atten= 62%, Lag= 0.0 min  
 Discarded = 0.13 cfs @ 12.01 hrs, Volume= 0.029 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 20.48' @ 12.45 hrs Surf.Area= 704 sf Storage= 164 cf

Plug-Flow detention time= 6.3 min calculated for 0.029 af (100% of inflow)  
 Center-of-Mass det. time= 6.3 min ( 893.8 - 887.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	19.90'	937 cf	<b>15.75'W x 44.72'L x 4.50'H Prismatic</b> 3,170 cf Overall - 827 cf Embedded = 2,343 cf x 40.0% Voids
#2	21.40'	827 cf	<b>ADS_StormTech SC-740 +Cap</b> x 18 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 18 Chambers in 3 Rows
		1,764 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.90'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.13 cfs @ 12.01 hrs HW=19.95' (Free Discharge)  
 ↑=Exfiltration (Exfiltration Controls 0.13 cfs)

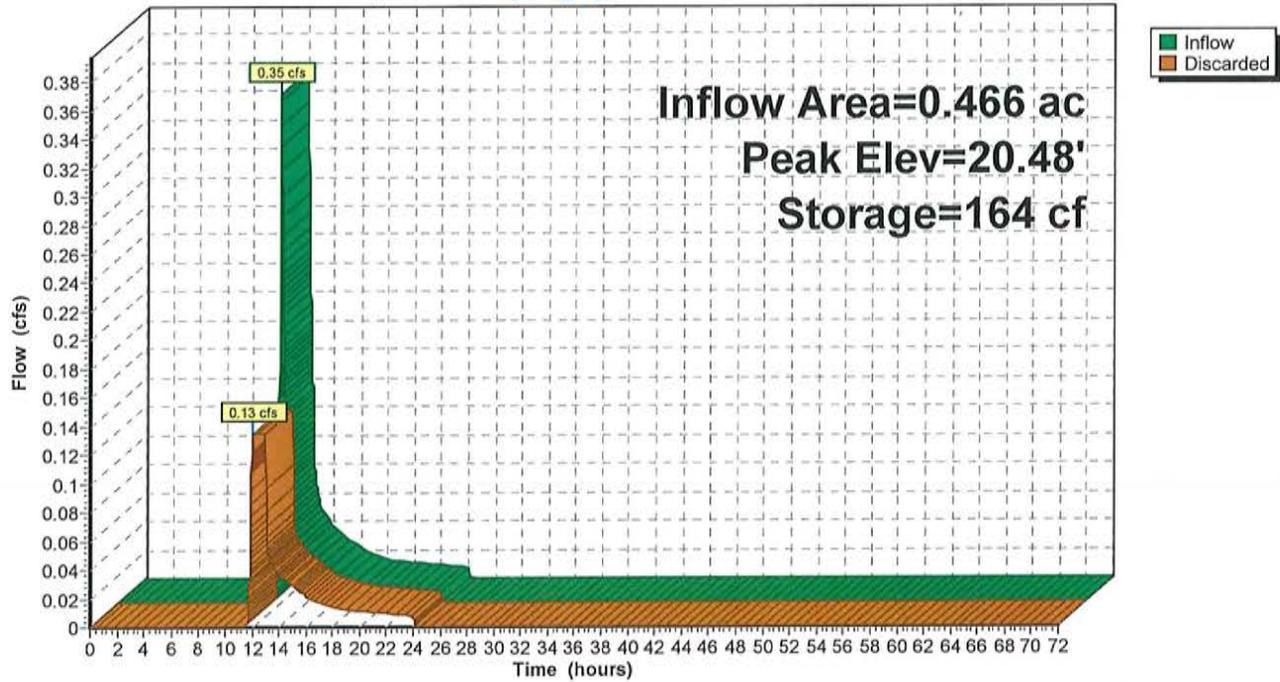
**Surfside Crossing (rev3)**

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**Pond 4P: SWMA 4**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 2-Year Rainfall=3.60"

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**Summary for Pond 5P: SWMA 5**

Inflow Area = 1.614 ac, 30.74% Impervious, Inflow Depth = 0.97" for 2-Year event  
 Inflow = 1.51 cfs @ 12.07 hrs, Volume= 0.131 af  
 Outflow = 0.34 cfs @ 11.74 hrs, Volume= 0.131 af, Atten= 78%, Lag= 0.0 min  
 Discarded = 0.34 cfs @ 11.74 hrs, Volume= 0.131 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.10' @ 12.48 hrs Surf.Area= 1,769 sf Storage= 1,060 cf

Plug-Flow detention time= 14.9 min calculated for 0.131 af (100% of inflow)  
 Center-of-Mass det. time= 14.9 min ( 796.1 - 781.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	22.60'	2,656 cf	<b>30.00'W x 58.96'L x 5.00'H Prismatic</b> 8,844 cf Overall - 2,205 cf Embedded = 6,639 cf x 40.0% Voids
#2	24.60'	2,205 cf	<b>ADS_StormTech SC-740 +Cap</b> x 48 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 48 Chambers in 6 Rows
		4,861 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.60'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.34 cfs @ 11.74 hrs HW=22.65' (Free Discharge)  
 ↳ **1=Exfiltration** (Exfiltration Controls 0.34 cfs)

**Surfside Crossing (rev3)**

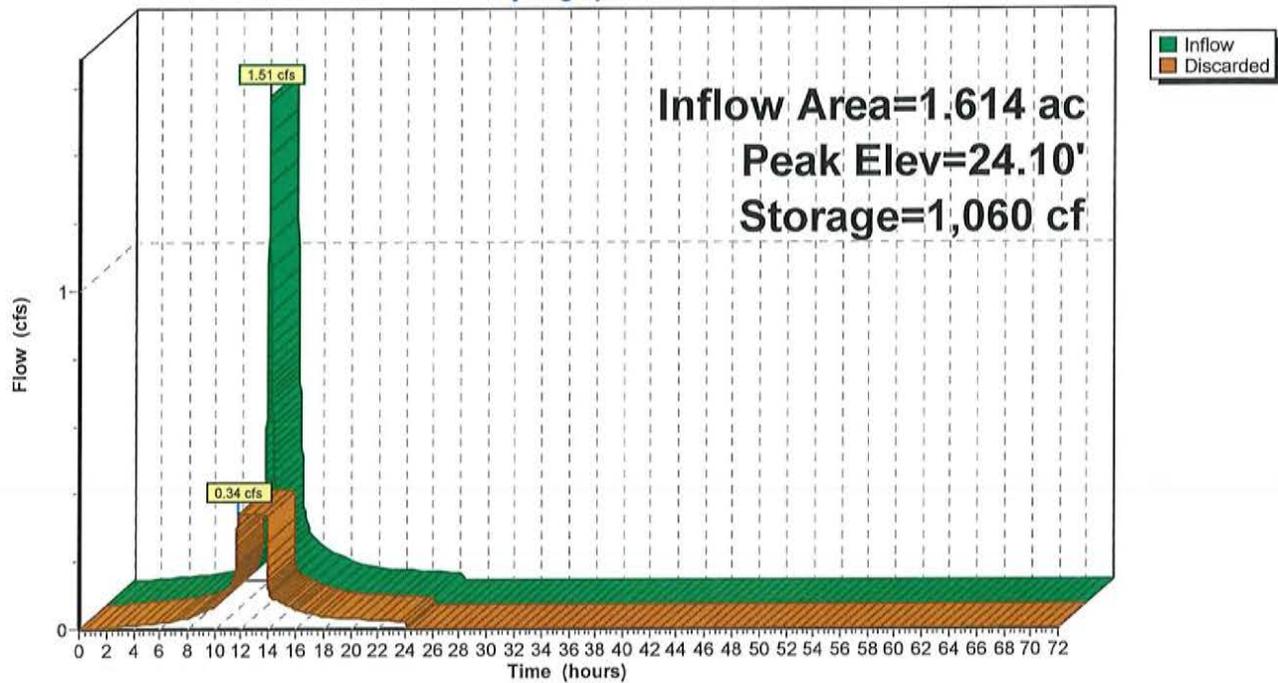
Type III 24-hr 2-Year Rainfall=3.60"

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**Pond 5P: SWMA 5**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 2-Year Rainfall=3.60"

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**Summary for Pond 6P: SWMA 6**

Inflow Area = 1.299 ac, 34.25% Impervious, Inflow Depth = 0.54" for 2-Year event  
 Inflow = 0.42 cfs @ 12.09 hrs, Volume= 0.058 af  
 Outflow = 0.23 cfs @ 12.01 hrs, Volume= 0.058 af, Atten= 45%, Lag= 0.0 min  
 Discarded = 0.23 cfs @ 12.01 hrs, Volume= 0.058 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 21.72' @ 12.41 hrs Surf.Area= 1,209 sf Storage= 153 cf

Plug-Flow detention time= 3.3 min calculated for 0.058 af (100% of inflow)  
 Center-of-Mass det. time= 3.3 min ( 853.0 - 849.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	21.40'	1,829 cf	<b>20.50'W x 58.96'L x 5.00'H Prismatic</b> 6,043 cf Overall - 1,470 cf Embedded = 4,573 cf x 40.0% Voids
#2	23.40'	1,470 cf	<b>ADS_StormTech SC-740 +Cap</b> x 32 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 32 Chambers in 4 Rows
		3,299 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.40'	<b>8.270 in/hr Exfiltration over Surface area</b>

Discarded OutFlow Max=0.23 cfs @ 12.01 hrs HW=21.45' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.23 cfs)

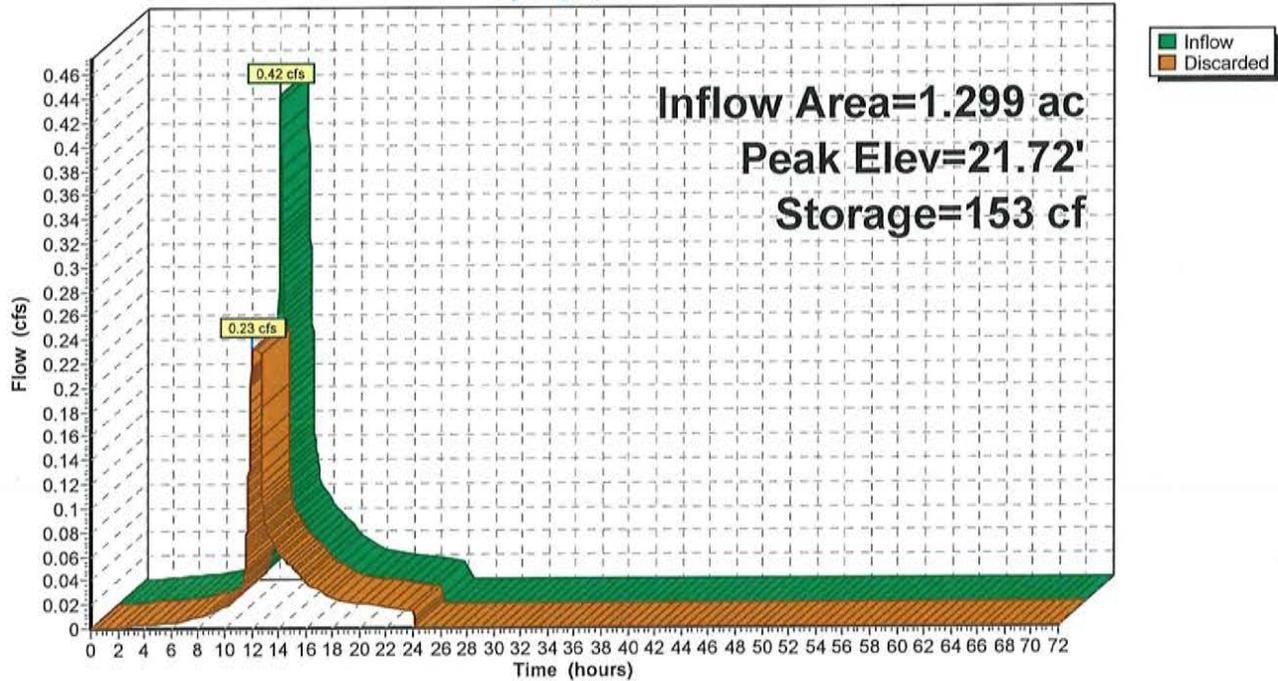
**Surfside Crossing (rev3)**

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**Pond 6P: SWMA 6**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 2-Year Rainfall=3.60"

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**Summary for Pond 7P: SWMA 7**

Inflow Area = 1.210 ac, 47.37% Impervious, Inflow Depth = 0.94" for 2-Year event  
 Inflow = 1.20 cfs @ 12.09 hrs, Volume= 0.095 af  
 Outflow = 0.39 cfs @ 11.98 hrs, Volume= 0.095 af, Atten= 68%, Lag= 0.0 min  
 Discarded = 0.39 cfs @ 11.98 hrs, Volume= 0.095 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 21.78' @ 12.46 hrs Surf.Area= 2,028 sf Storage= 632 cf

Plug-Flow detention time= 8.4 min calculated for 0.095 af (100% of inflow)  
 Center-of-Mass det. time= 8.4 min ( 873.4 - 865.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	2,640 cf	<b>25.25'W x 80.32'L x 4.50'H Prismatic</b> 9,126 cf Overall - 2,527 cf Embedded = 6,600 cf x 40.0% Voids
#2	22.50'	2,527 cf	<b>ADS_StormTech SC-740 +Cap</b> x 55 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 55 Chambers in 5 Rows
		5,167 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.00'	<b>8.270 in/hr Exfiltration over Surface area</b>

Discarded OutFlow Max=0.39 cfs @ 11.98 hrs HW=21.05' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.39 cfs)

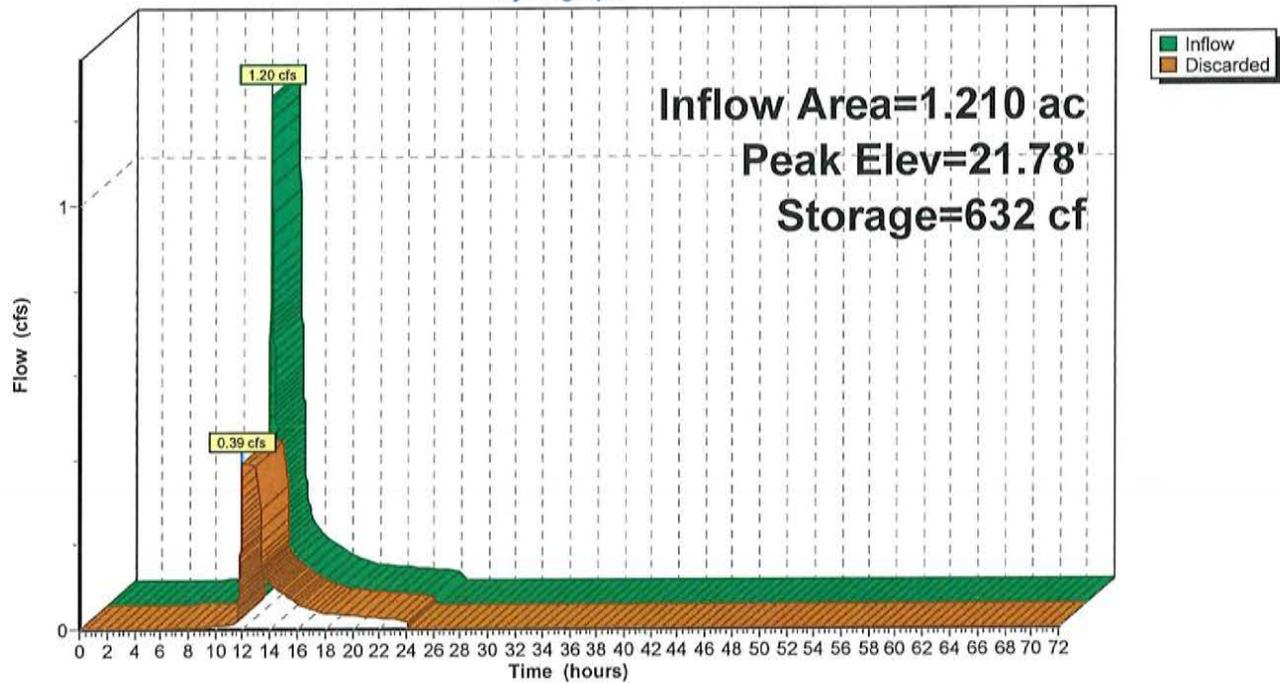
**Surfside Crossing (rev3)**

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**Pond 7P: SWMA 7**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 8P: SWMA 8**

Inflow Area = 0.761 ac, 66.41% Impervious, Inflow Depth = 1.71" for 2-Year event  
 Inflow = 1.51 cfs @ 12.08 hrs, Volume= 0.109 af  
 Outflow = 0.33 cfs @ 11.82 hrs, Volume= 0.109 af, Atten= 78%, Lag= 0.0 min  
 Discarded = 0.33 cfs @ 11.82 hrs, Volume= 0.109 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 21.72' @ 12.50 hrs Surf.Area= 1,735 sf Storage= 1,055 cf

Plug-Flow detention time= 17.8 min calculated for 0.109 af (100% of inflow)  
 Center-of-Mass det. time= 17.8 min ( 839.3 - 821.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	20.20'	2,642 cf	<b>26.25'W x 66.08'L x 5.00'H Prismatic</b> 8,673 cf Overall - 2,067 cf Embedded = 6,606 cf x 40.0% Voids
#2	22.20'	2,067 cf	<b>ADS_StormTech SC-740 +Cap</b> x 45 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 45 Chambers in 5 Rows
		4,710 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.20'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.33 cfs @ 11.82 hrs HW=20.25' (Free Discharge)  
 ↳ **1=Exfiltration** (Exfiltration Controls 0.33 cfs)

**Surfside Crossing (rev3)**

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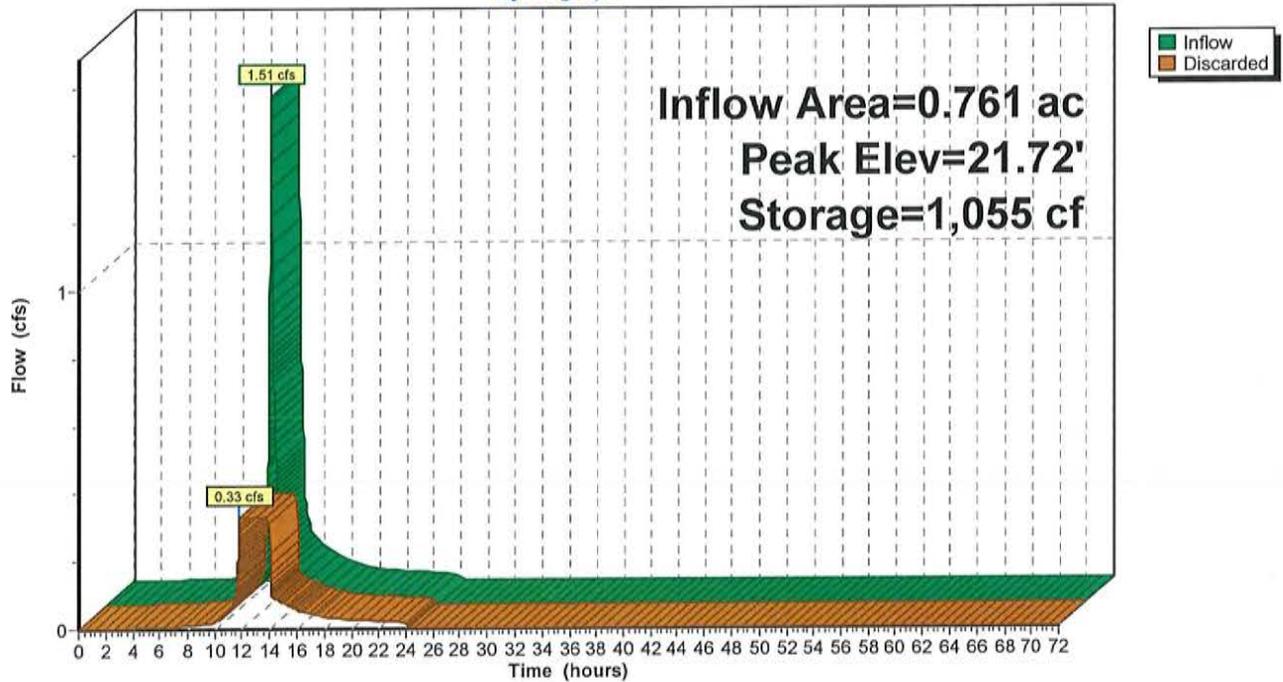
March 19, 2019

Type III 24-hr 2-Year Rainfall=3.60"

Page 40

**Pond 8P: SWMA 8**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 9P: Depression**

Inflow Area = 0.649 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event  
 Inflow = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.6 min  
 Discarded = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 28.00' @ 24.01 hrs Surf.Area= 1,420 sf Storage= 0 cf

Plug-Flow detention time= 1.5 min calculated for 0.000 af (100% of inflow)  
 Center-of-Mass det. time= 1.5 min ( 1,337.2 - 1,335.7 )

Volume	Invert	Avail.Storage	Storage Description		
#1	28.00'	845 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
28.00	1,420	175.7	0	0	1,420
28.50	1,976	194.6	845	845	1,985

Device	Routing	Invert	Outlet Devices
#1	Discarded	28.00'	<b>2.410 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.08 cfs @ 24.01 hrs HW=28.00' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

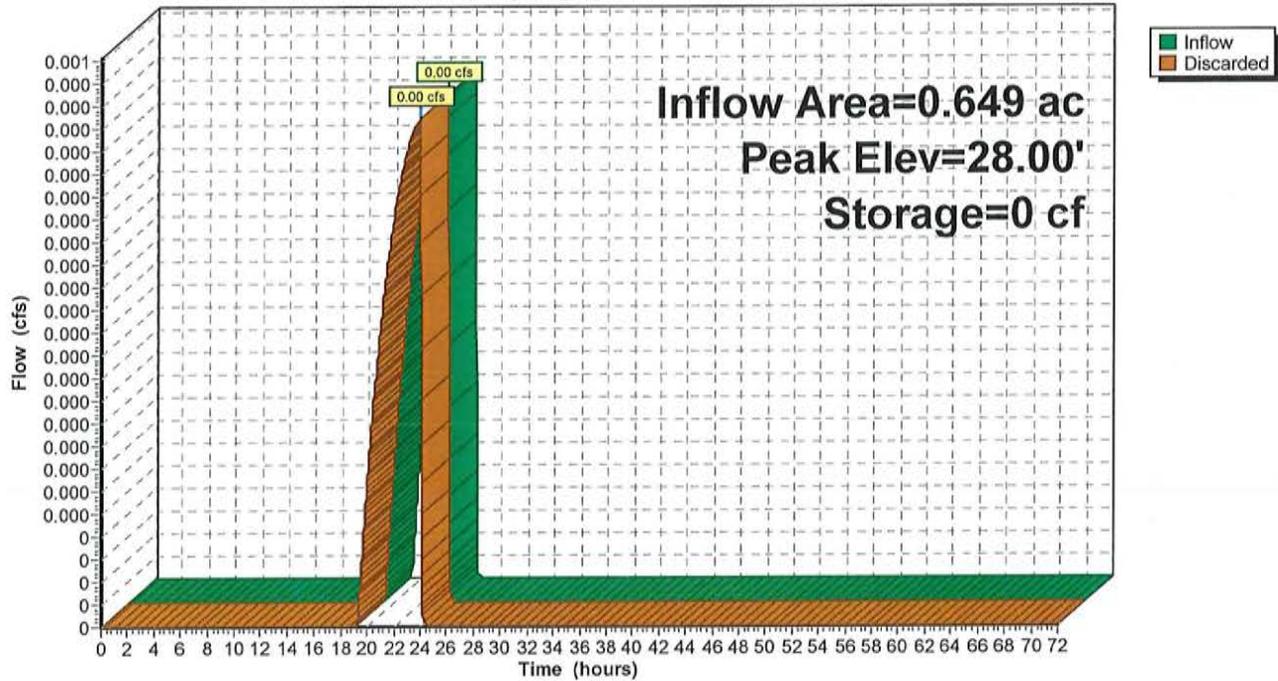
**Surfside Crossing (rev3)**

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**Pond 9P: Depression**

**Hydrograph**



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment 1S: CB 1, 2 & 3**

Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.055 af, Depth= 1.18"

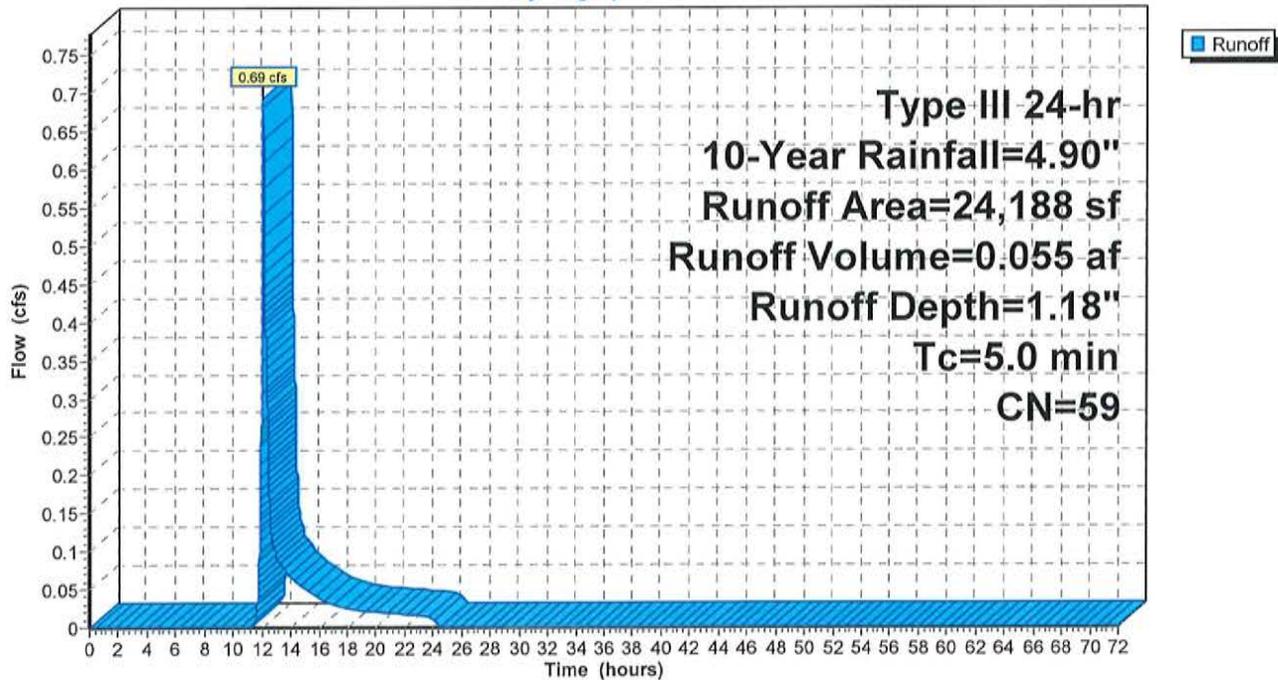
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
9,944	39	>75% Grass cover, Good, HSG A
7,879	98	Paved roads w/curbs & sewers, HSG A
* 1,463	76	Gravel driveways, HSG A
4,902	30	Woods, Good, HSG A
24,188	59	Weighted Average
16,309		67.43% Pervious Area
7,879		32.57% Impervious Area

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

**Subcatchment 1S: CB 1, 2 & 3**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment 2S: Rear Lots**

Runoff = 0.00 cfs @ 15.65 hrs, Volume= 0.002 af, Depth= 0.05"

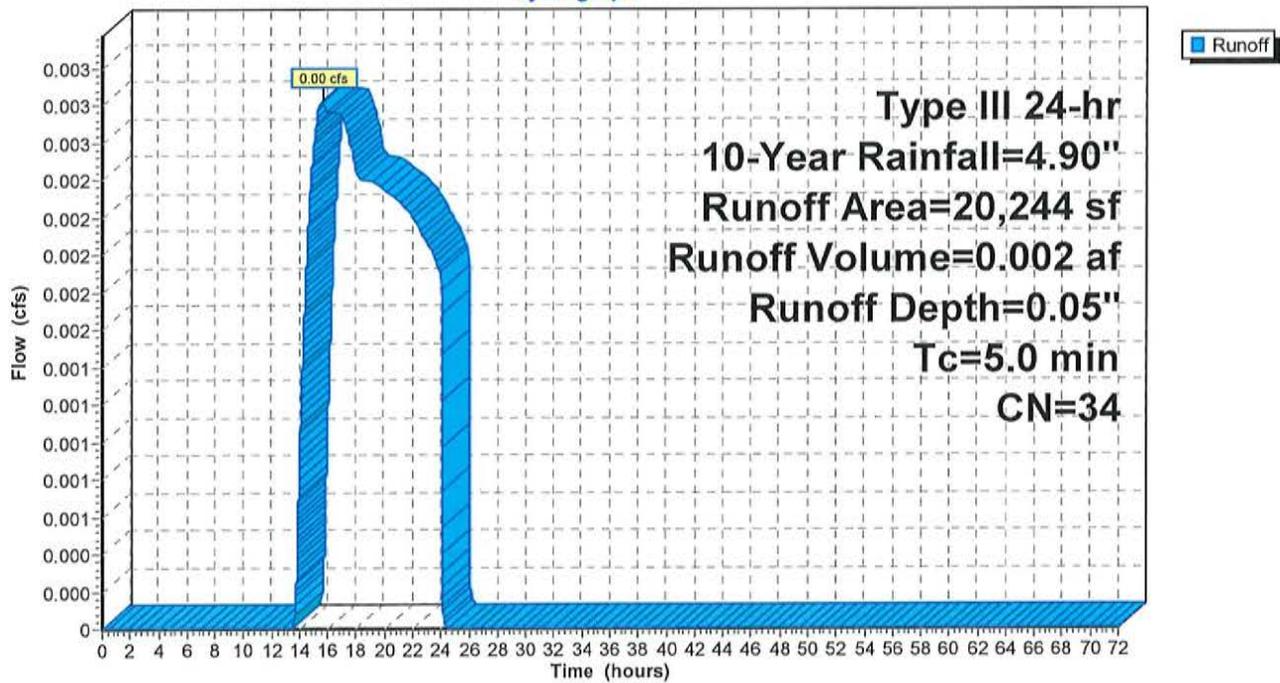
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
9,210	39	>75% Grass cover, Good, HSG A
11,034	30	Woods, Good, HSG A
20,244	34	Weighted Average
20,244		100.00% Pervious Area

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

**Subcatchment 2S: Rear Lots**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment 3S: CB 4, 5 & 6**

Runoff = 1.72 cfs @ 12.08 hrs, Volume= 0.122 af, Depth= 1.81"

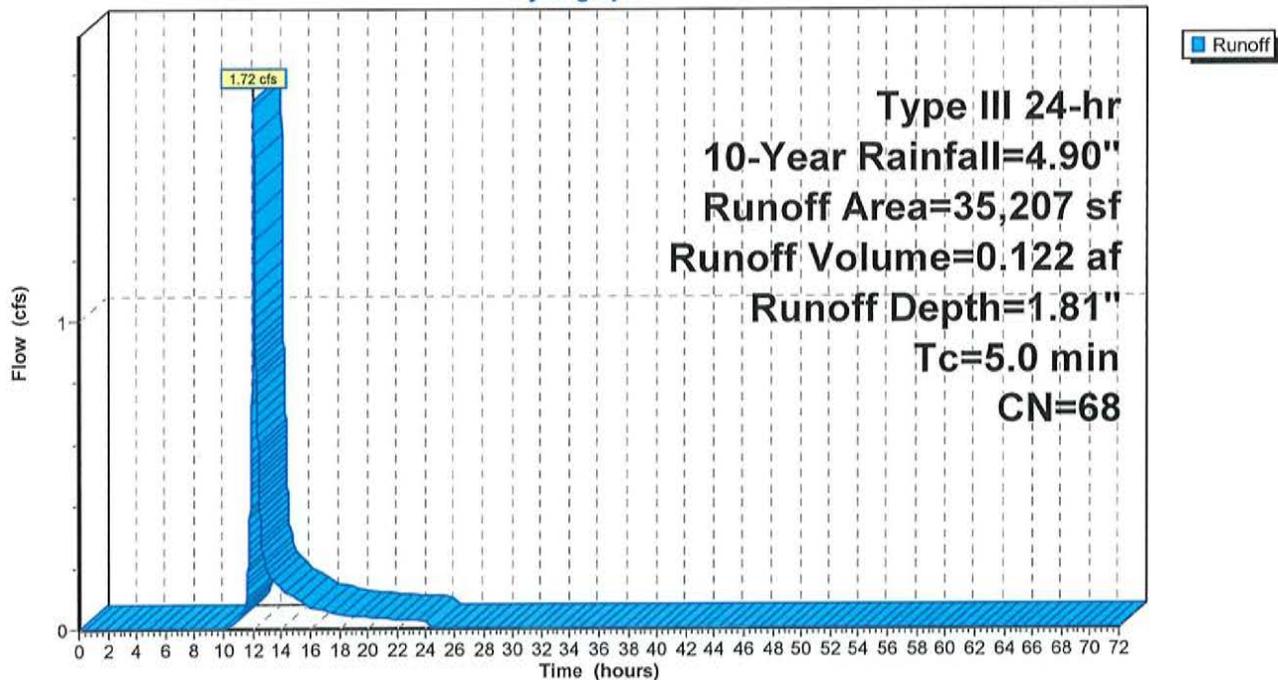
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
16,757	39	>75% Grass cover, Good, HSG A
15,914	98	Paved roads w/curbs & sewers, HSG A
* 2,536	76	Gravel driveways, HSG A
35,207	68	Weighted Average
19,293		54.80% Pervious Area
15,914		45.20% Impervious Area

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

**Subcatchment 3S: CB 4, 5 & 6**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 4S: Rear Lots**

Runoff = 0.00 cfs @ 15.65 hrs, Volume= 0.002 af, Depth= 0.05"

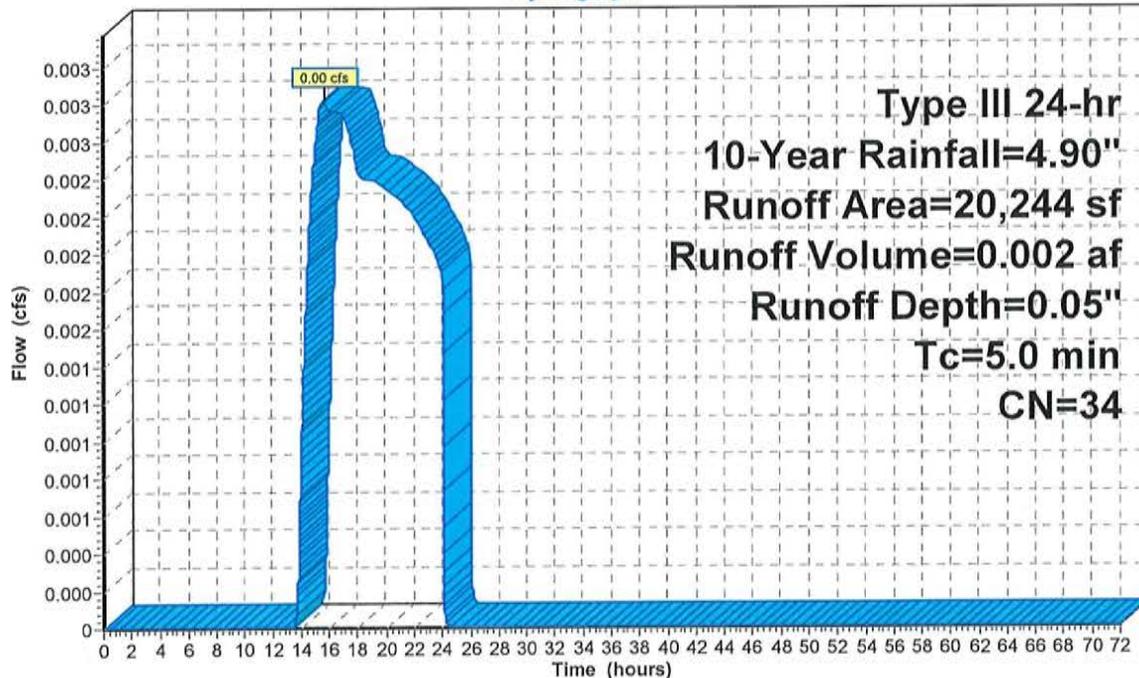
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
9,210	39	>75% Grass cover, Good, HSG A
11,034	30	Woods, Good, HSG A
20,244	34	Weighted Average
20,244		100.00% Pervious Area

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

**Subcatchment 4S: Rear Lots**

Hydrograph



Runoff

Type III 24-hr  
 10-Year Rainfall=4.90"  
 Runoff Area=20,244 sf  
 Runoff Volume=0.002 af  
 Runoff Depth=0.05"  
 Tc=5.0 min  
 CN=34

**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment 5S: CB 16, 17 & 18**

Runoff = 0.76 cfs @ 12.10 hrs, Volume= 0.075 af, Depth= 0.76"

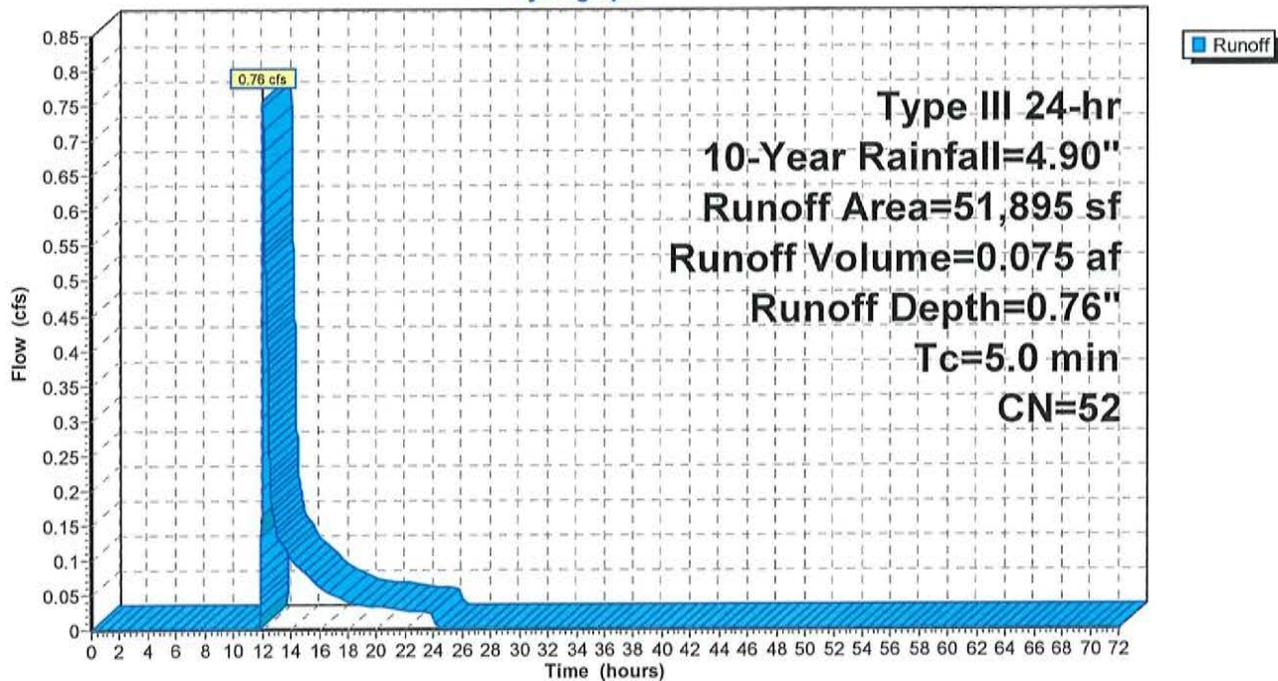
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

	Area (sf)	CN	Description
*	14,683	98	Paved
	15,690	39	>75% Grass cover, Good, HSG A
	21,328	30	Woods, Good, HSG A
*	194	72	Boardwalk w/ Gravel Base
	51,895	52	Weighted Average
	37,212		71.71% Pervious Area
	14,683		28.29% Impervious Area

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

**Subcatchment 5S: CB 16, 17 & 18**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment 6S: CB 19, 20, 21 & 22**

Runoff = 2.26 cfs @ 12.08 hrs, Volume= 0.162 af, Depth= 1.66"

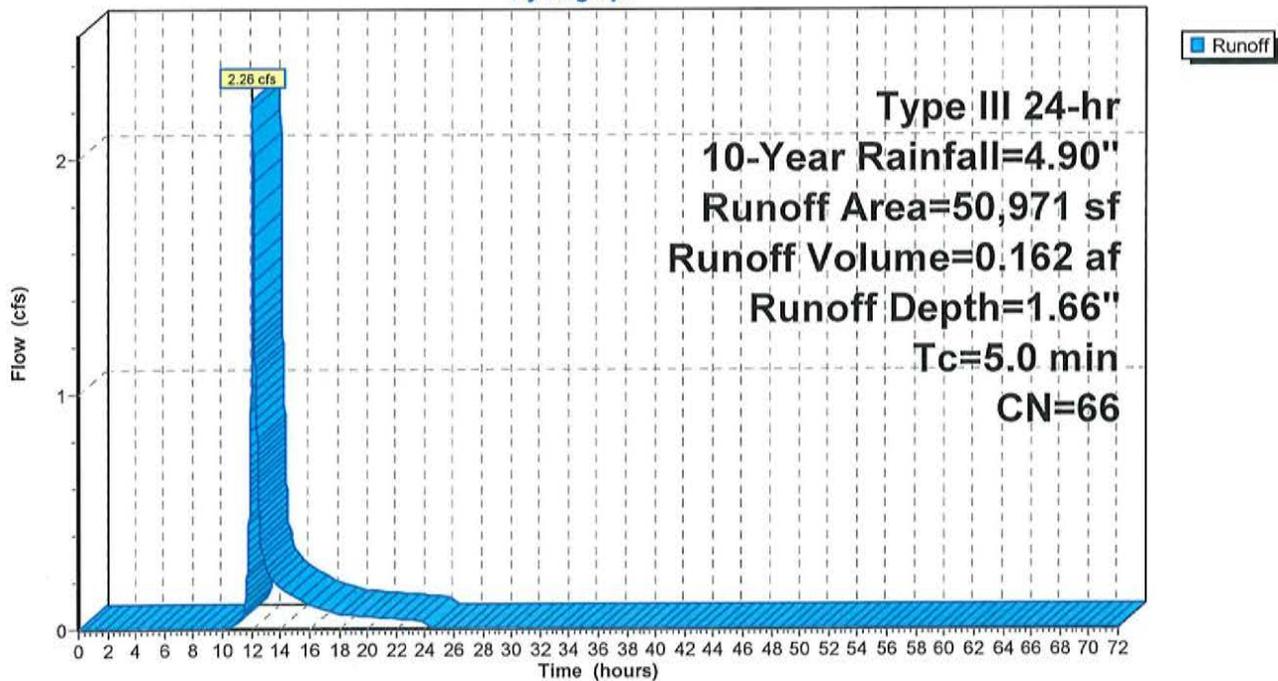
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

	Area (sf)	CN	Description
*	23,234	98	Paved
	17,968	39	>75% Grass cover, Good, HSG A
*	327	72	Boardwalk w/ Gravel Base
	9,442	36	Woods, Fair, HSG A
	50,971	66	Weighted Average
	27,737		54.42% Pervious Area
	23,234		45.58% Impervious Area

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

**Subcatchment 6S: CB 19, 20, 21 & 22**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 7S: CB 23, 24 & 25**

Runoff = 1.94 cfs @ 12.08 hrs, Volume= 0.133 af, Depth= 2.45"

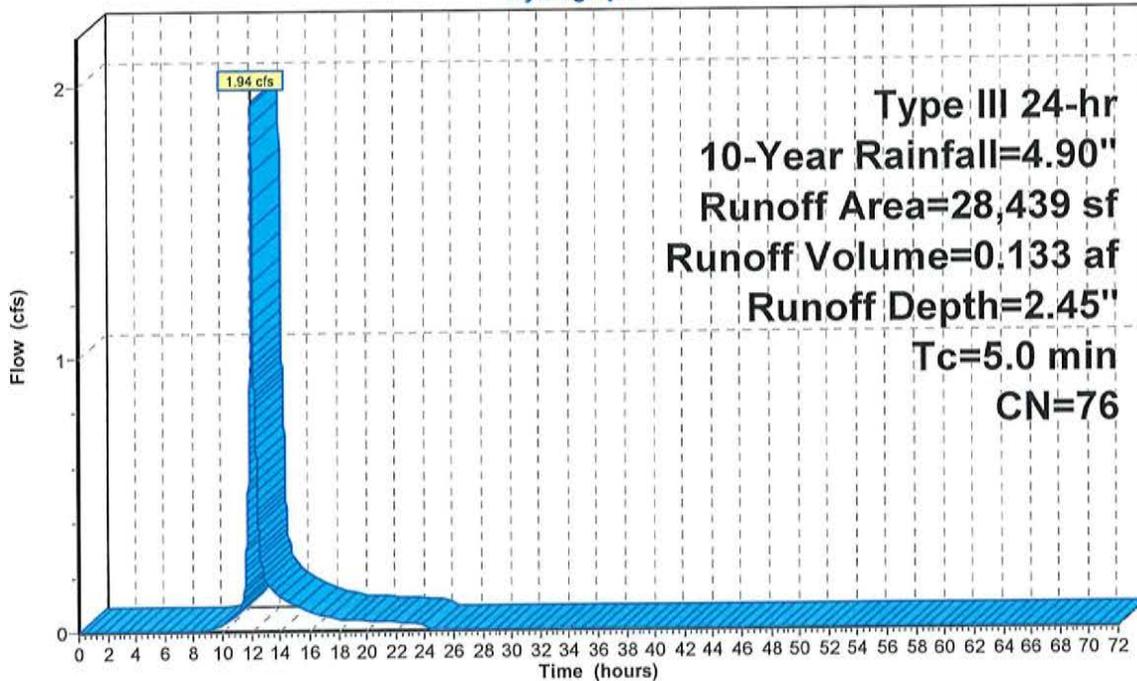
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

	Area (sf)	CN	Description
*	17,308	98	Paved
	10,058	39	>75% Grass cover, Good, HSG A
*	582	72	Boardwalk w/ Gravel Base
*	491	72	Gravel Driveways
	28,439	76	Weighted Average
	11,131		39.14% Pervious Area
	17,308		60.86% Impervious Area

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

**Subcatchment 7S: CB 23, 24 & 25**

Hydrograph



Runoff

Type III 24-hr  
10-Year Rainfall=4.90"  
Runoff Area=28,439 sf  
Runoff Volume=0.133 af  
Runoff Depth=2.45"  
Tc=5.0 min  
CN=76

**Surfside Crossing (rev3)**

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**Summary for Subcatchment 8S: Courtyard Area**

Runoff = 0.32 cfs @ 12.13 hrs, Volume= 0.050 af, Depth= 0.50"

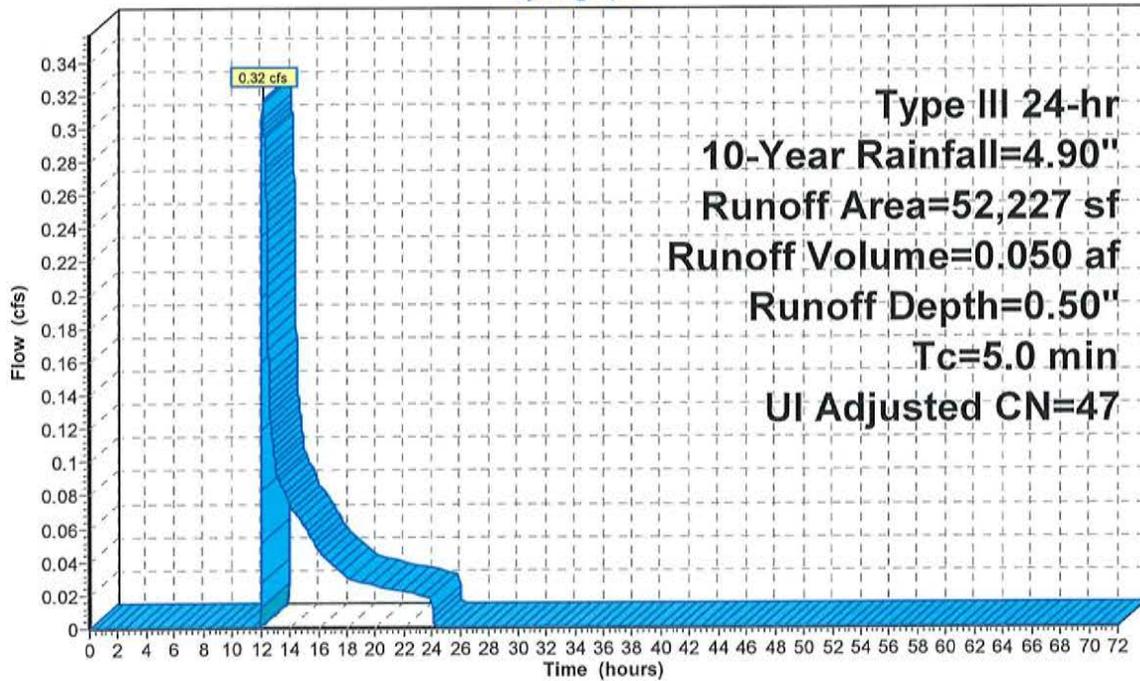
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Adj	Description
39,463	39		>75% Grass cover, Good, HSG A
* 9,231	72		Boardwalk w/ Gravel Base
3,533	98		Unconnected pavement, HSG A
52,227	49	47	Weighted Average, UI Adjusted
48,694			93.24% Pervious Area
3,533			6.76% Impervious Area
3,533			100.00% Unconnected

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

**Subcatchment 8S: Courtyard Area**

Hydrograph



**Type III 24-hr  
10-Year Rainfall=4.90"  
Runoff Area=52,227 sf  
Runoff Volume=0.050 af  
Runoff Depth=0.50"  
Tc=5.0 min  
UI Adjusted CN=47**

**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment 9S: CB 7**

Runoff = 0.86 cfs @ 12.08 hrs, Volume= 0.059 af, Depth= 2.45"

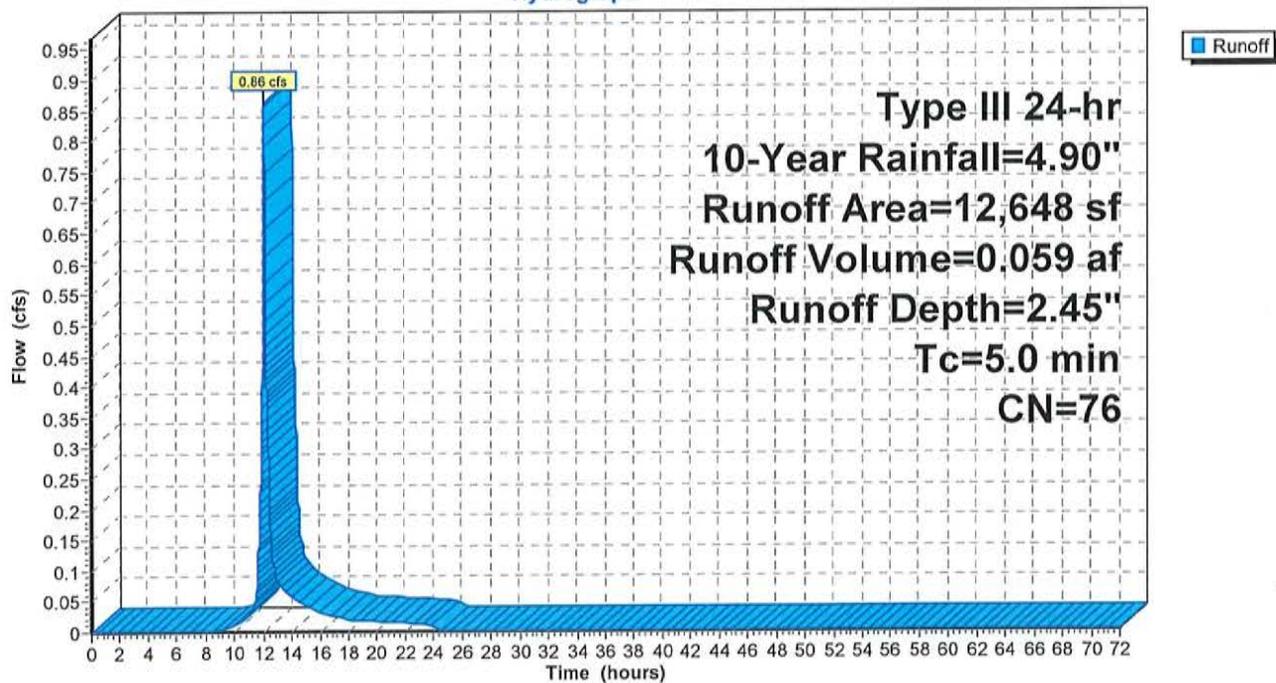
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
4,694	39	>75% Grass cover, Good, HSG A
7,954	98	Paved roads w/curbs & sewers, HSG A
12,648	76	Weighted Average
4,694		37.11% Pervious Area
7,954		62.89% Impervious Area

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

**Subcatchment 9S: CB 7**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 10S: CB 8, 9 & 10**

Runoff = 1.60 cfs @ 12.08 hrs, Volume= 0.118 af, Depth= 1.45"

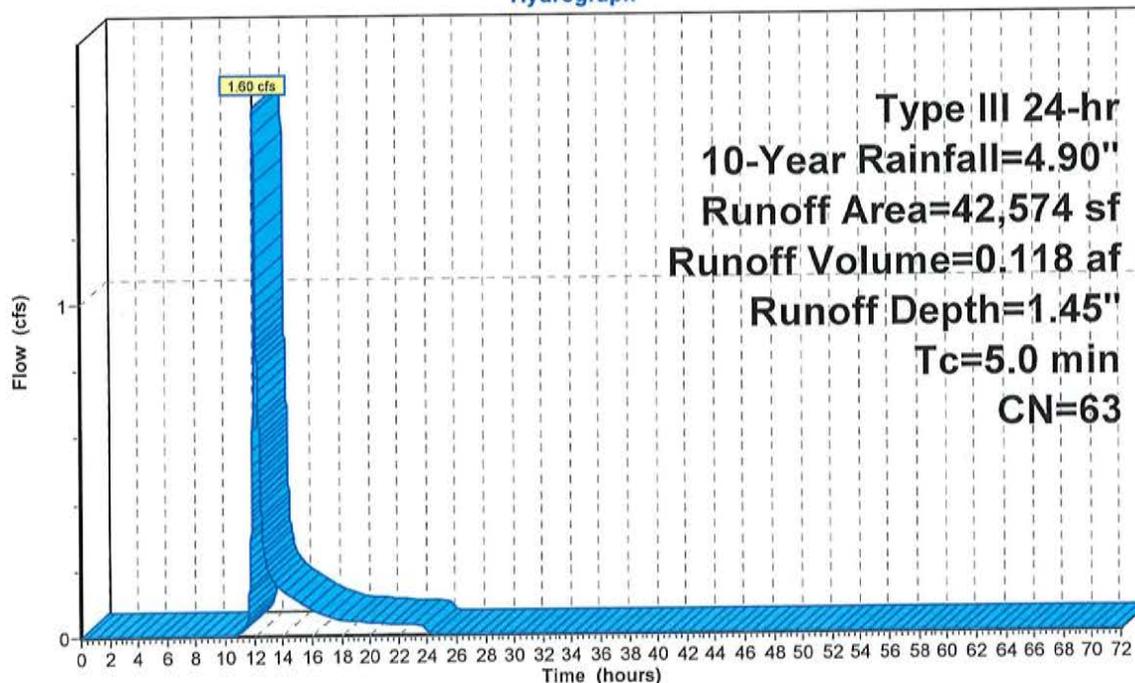
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
23,508	39	>75% Grass cover, Good, HSG A
15,208	98	Paved roads w/curbs & sewers, HSG A
* 3,585	76	Gravel driveways, HSG A
* 273	72	Boardwalk w/ Gravel Base
42,574	63	Weighted Average
27,366		64.28% Pervious Area
15,208		35.72% Impervious Area

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

**Subcatchment 10S: CB 8, 9 & 10**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment 11S: Middle Lots**

Runoff = 0.01 cfs @ 14.68 hrs, Volume= 0.007 af, Depth= 0.12"

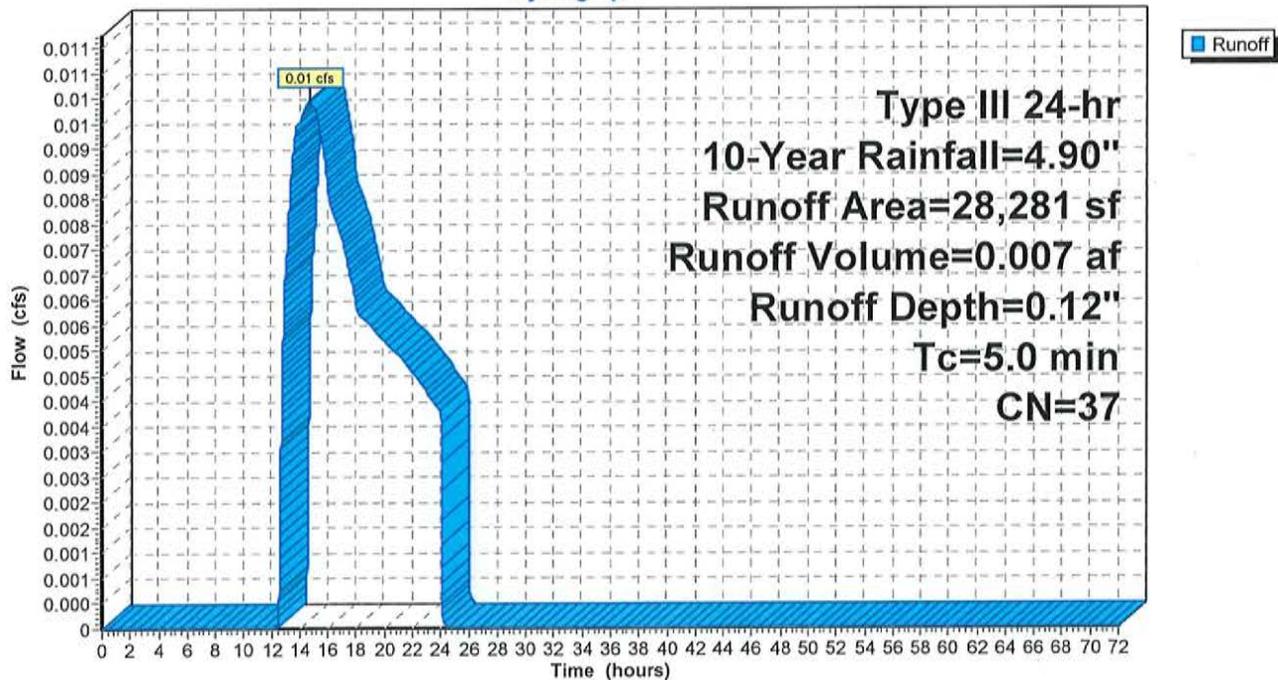
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
19,492	39	>75% Grass cover, Good, HSG A
8,789	32	Woods/grass comb., Good, HSG A
28,281	37	Weighted Average
28,281		100.00% Pervious Area

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

**Subcatchment 11S: Middle Lots**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment 12S: CB 11, 12 & 13**

Runoff = 0.81 cfs @ 12.08 hrs, Volume= 0.059 af, Depth= 1.52"

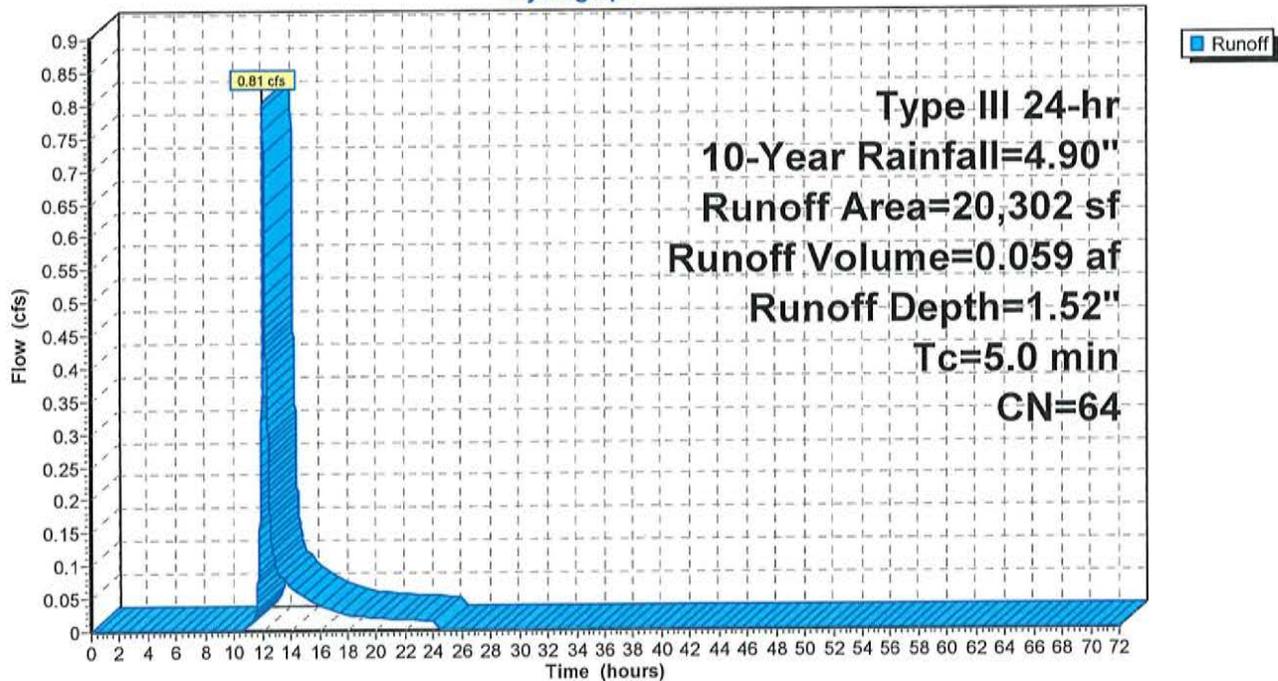
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
9,585	39	>75% Grass cover, Good, HSG A
7,807	98	Paved roads w/curbs & sewers, HSG A
* 1,449	76	Gravel driveways, HSG A
1,461	30	Woods, Good, HSG A
20,302	64	Weighted Average
12,495		61.55% Pervious Area
7,807		38.45% Impervious Area

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

**Subcatchment 12S: CB 11, 12 & 13**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment 13S: CB 14 & 15**

Runoff = 1.29 cfs @ 12.09 hrs, Volume= 0.112 af, Depth= 0.93"

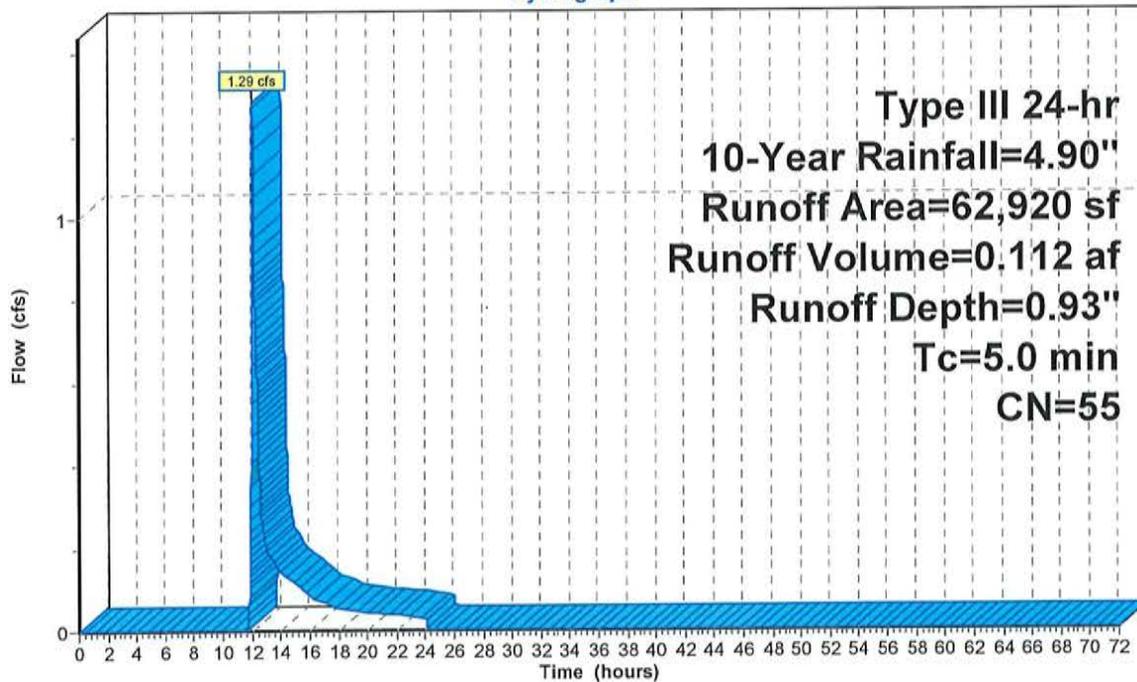
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
44,213	39	>75% Grass cover, Good, HSG A
14,414	98	Paved roads w/curbs & sewers, HSG A
* 4,293	76	Gravel driveways, HSG A
62,920	55	Weighted Average
48,506		77.09% Pervious Area
14,414		22.91% Impervious Area

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

**Subcatchment 13S: CB 14 & 15**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 14S: Front Lot**

Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

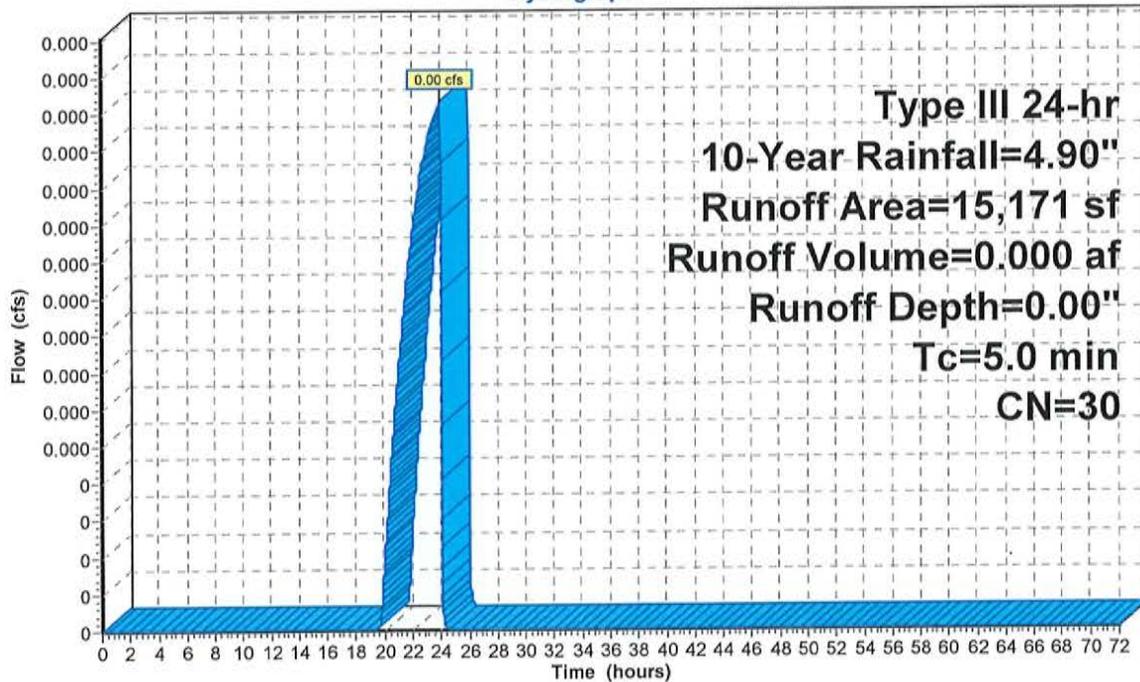
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
14,422	30	Woods, Good, HSG A
749	39	>75% Grass cover, Good, HSG A
15,171	30	Weighted Average
15,171		100.00% Pervious Area

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

**Subcatchment 14S: Front Lot**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment DA-5A: From Sachems**

Runoff = 0.01 cfs @ 15.32 hrs, Volume= 0.004 af, Depth= 0.09"

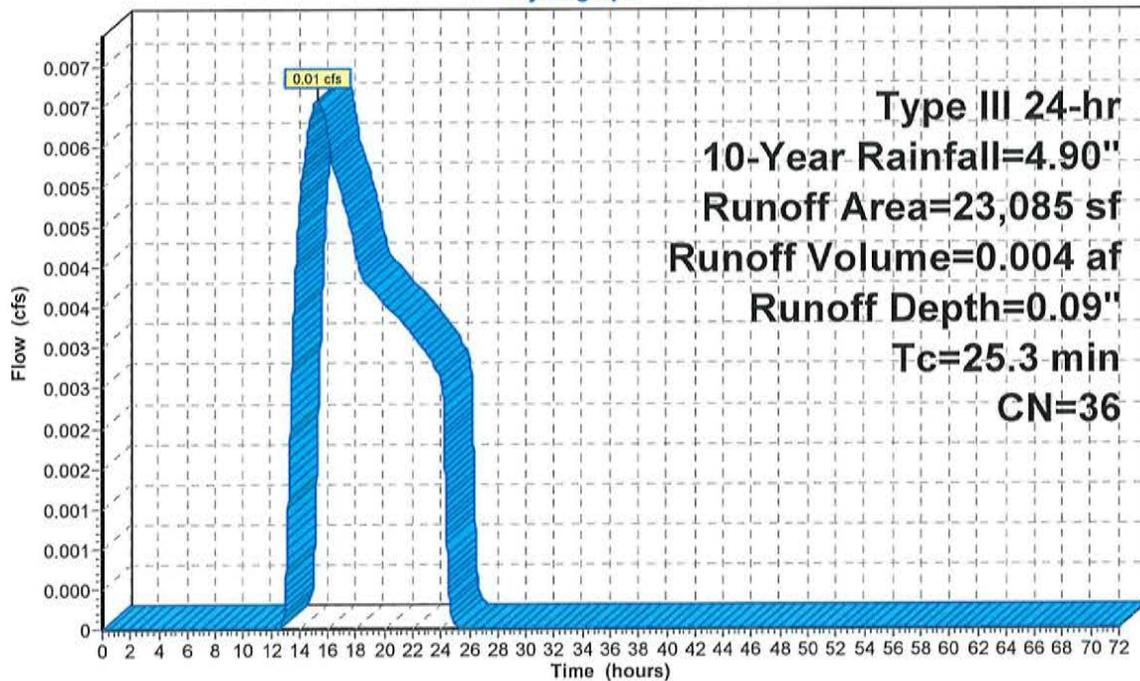
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
14,485	39	>75% Grass cover, Good, HSG A
8,600	30	Woods, Good, HSG A
23,085	36	Weighted Average
23,085		100.00% Pervious Area

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

**Subcatchment DA-5A: From Sachems**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment DA-5B: From Sachems**

Runoff = 0.00 cfs @ 16.05 hrs, Volume= 0.001 af, Depth= 0.05"

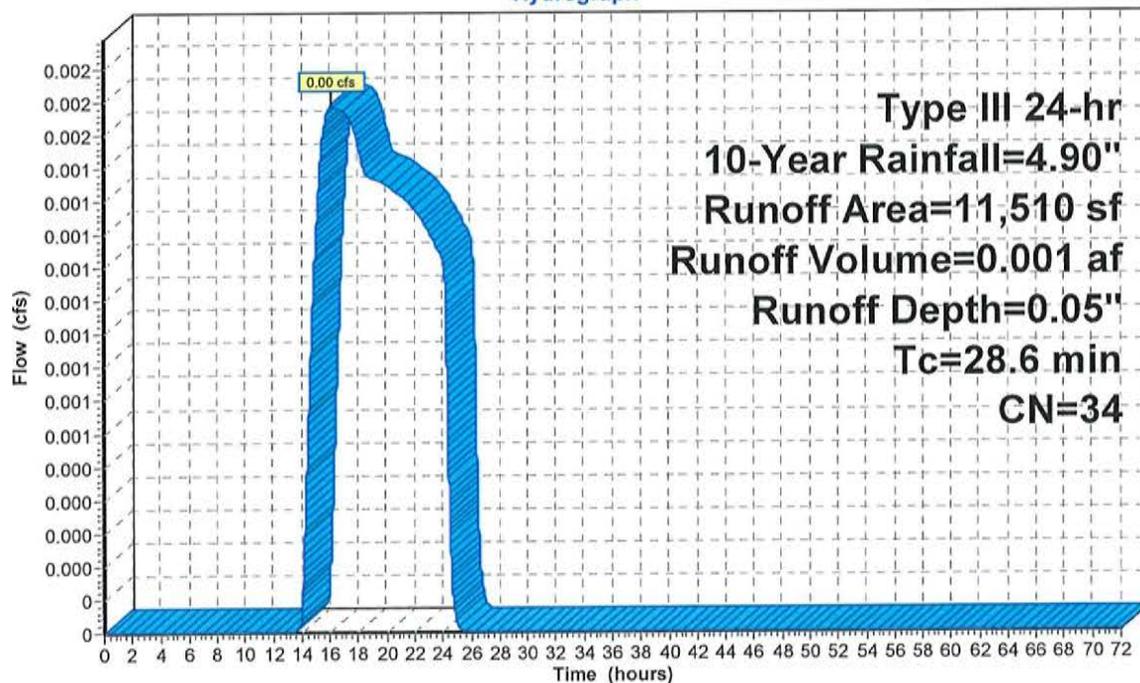
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
5,404	39	>75% Grass cover, Good, HSG A
6,106	30	Woods, Good, HSG A
11,510	34	Weighted Average
11,510		100.00% Pervious Area

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

**Subcatchment DA-5B: From Sachems**

Hydrograph



Runoff

**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment Roof 1: 1/2 Roof B + C**

Runoff = 0.54 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 4.66"

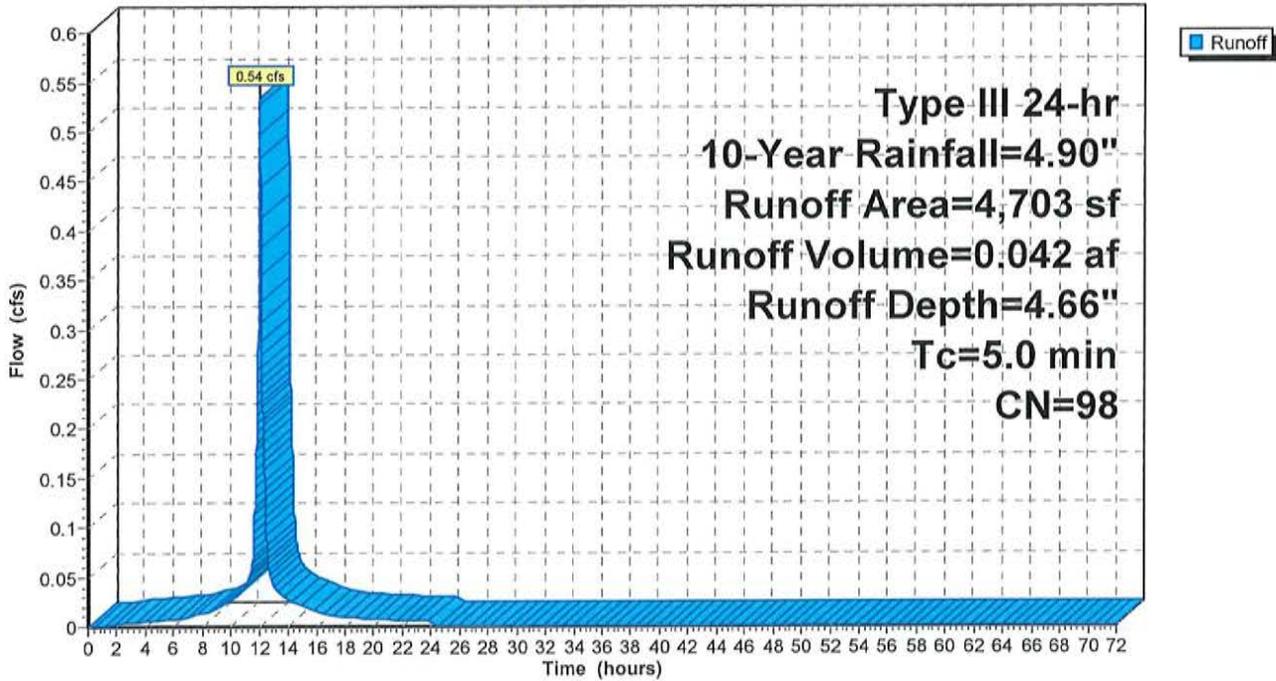
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
4,703	98	Roofs, HSG A
4,703		100.00% Impervious Area

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

**Subcatchment Roof 1: 1/2 Roof B + C**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment Roof 2: 1/2 Roof A**

Runoff = 0.20 cfs @ 12.07 hrs, Volume= 0.015 af, Depth= 4.66"

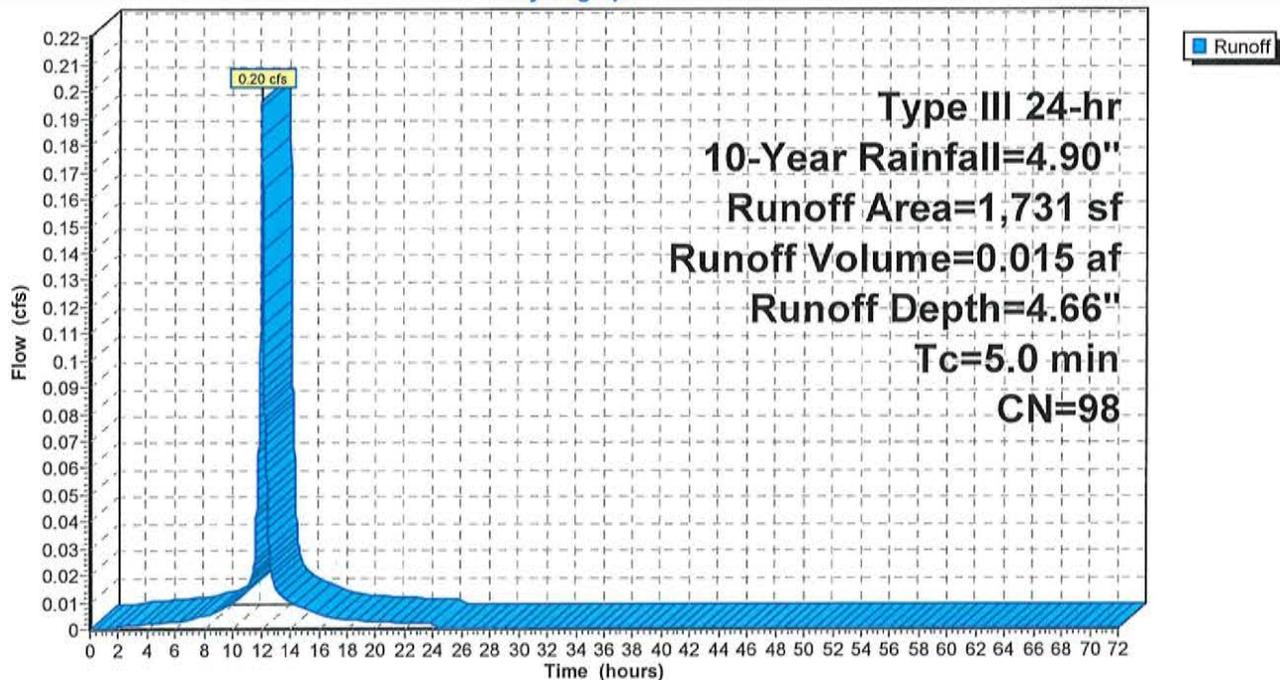
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
1,731	98	Roofs, HSG A
1,731		100.00% Impervious Area

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

**Subcatchment Roof 2: 1/2 Roof A**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment Roof 3: 1/2 Roof D + E**

Runoff = 0.54 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 4.66"

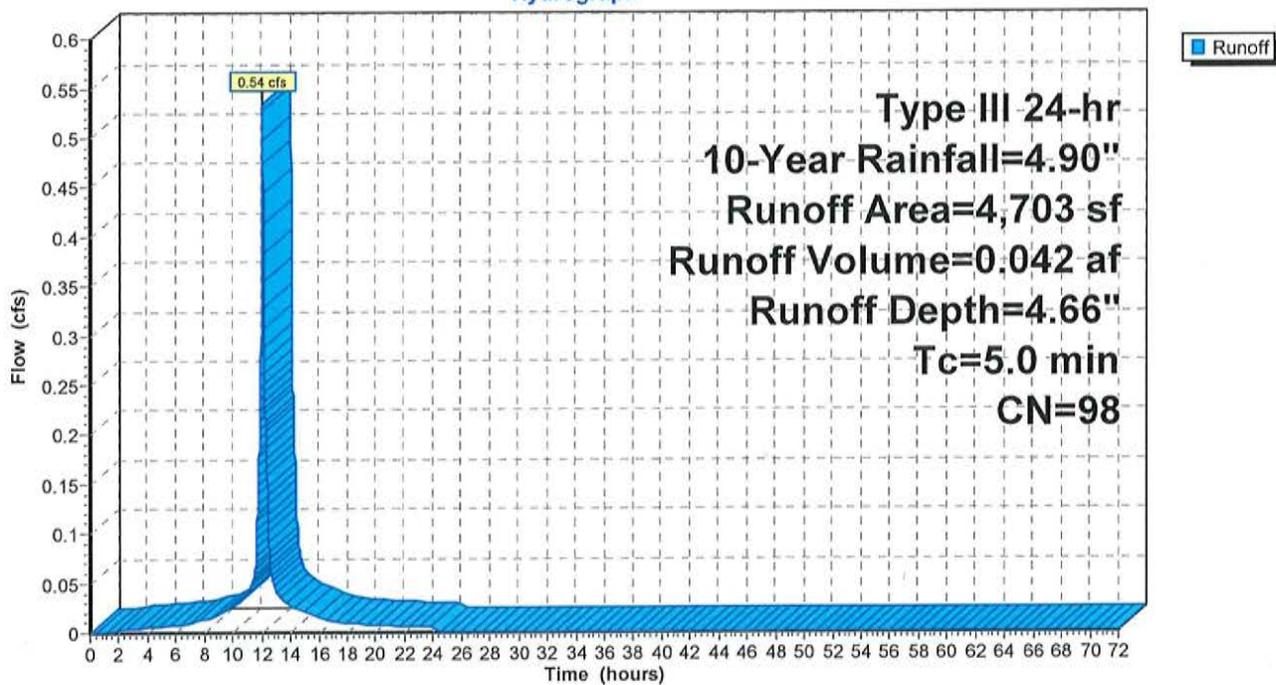
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
4,703	98	Roofs, HSG A
4,703		100.00% Impervious Area

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

**Subcatchment Roof 3: 1/2 Roof D + E**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment Roof 4: 1/2 Roof B + C**

Runoff = 0.76 cfs @ 12.07 hrs, Volume= 0.059 af, Depth= 4.66"

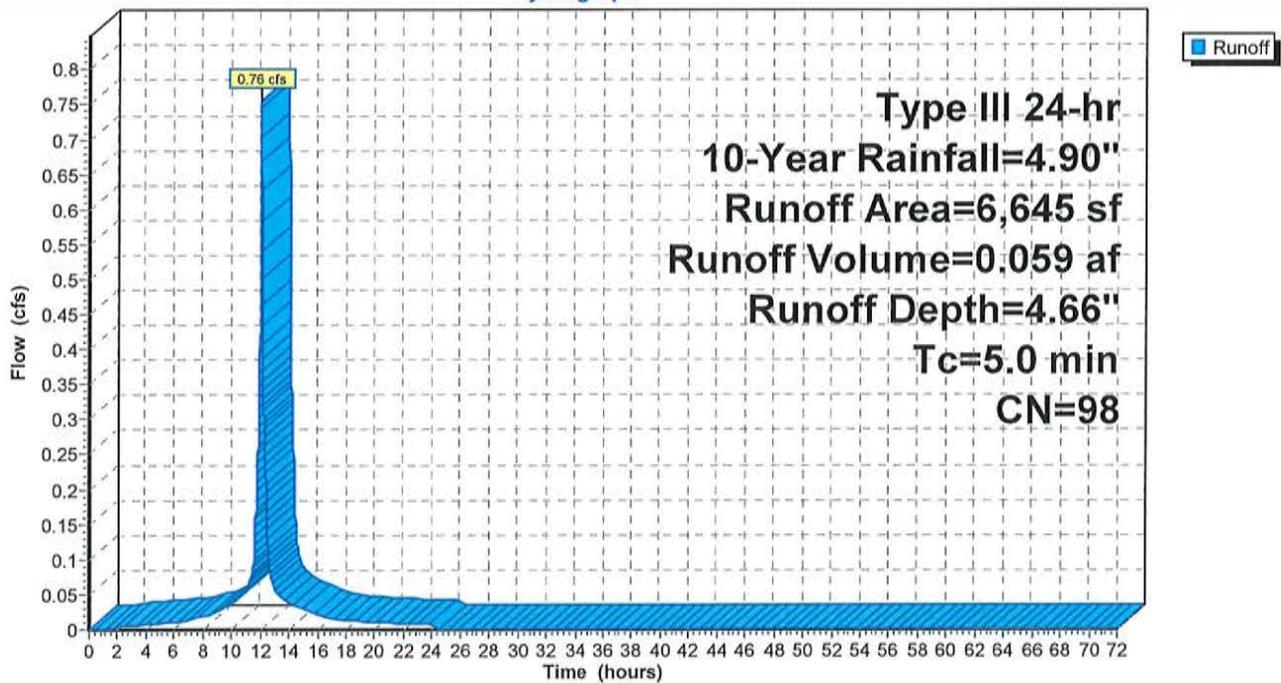
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
6,645	98	Roofs, HSG A
6,645		100.00% Impervious Area

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

**Subcatchment Roof 4: 1/2 Roof B + C**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment Roof 5: 1/2 Roof A**

Runoff = 0.55 cfs @ 12.07 hrs, Volume= 0.043 af, Depth= 4.66"

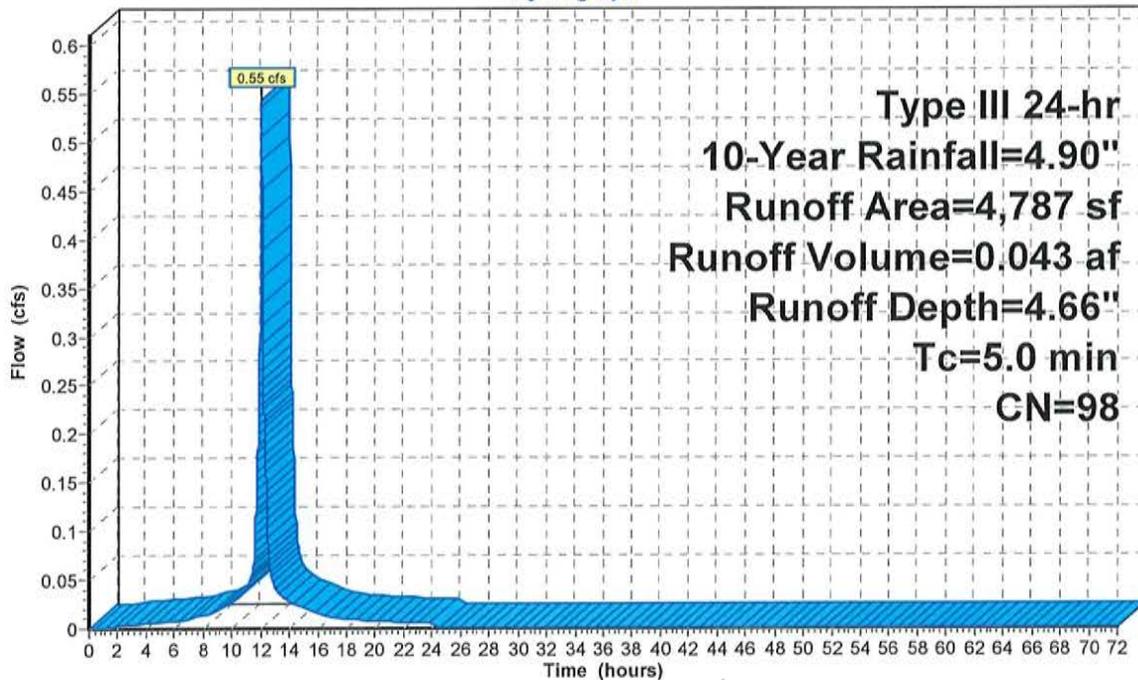
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
4,787	98	Roofs, HSG A
4,787		100.00% Impervious Area

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

**Subcatchment Roof 5: 1/2 Roof A**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment Roof 6: 1/2 Roof D + E**

Runoff = 0.76 cfs @ 12.07 hrs, Volume= 0.059 af, Depth= 4.66"

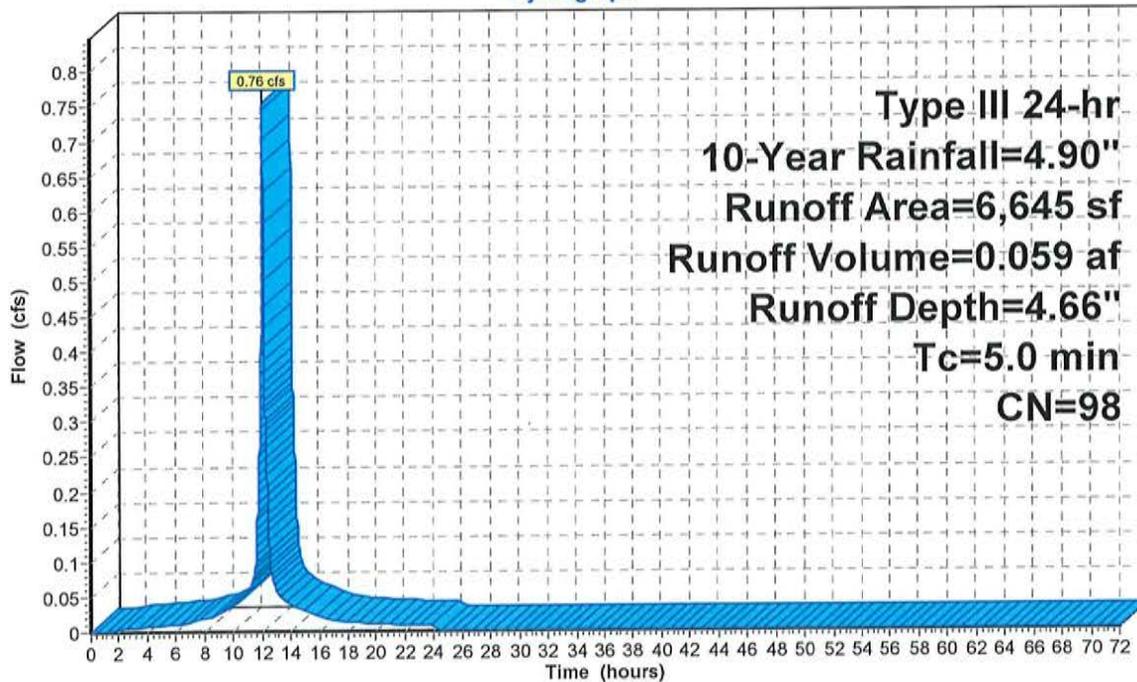
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
6,645	98	Roofs, HSG A
6,645		100.00% Impervious Area

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

**Subcatchment Roof 6: 1/2 Roof D + E**

Hydrograph



Runoff

Type III 24-hr  
10-Year Rainfall=4.90"  
Runoff Area=6,645 sf  
Runoff Volume=0.059 af  
Runoff Depth=4.66"  
Tc=5.0 min  
CN=98

**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Subcatchment Roof 7: Community Building Roof**

Runoff = 0.56 cfs @ 12.07 hrs, Volume= 0.043 af, Depth= 4.66"

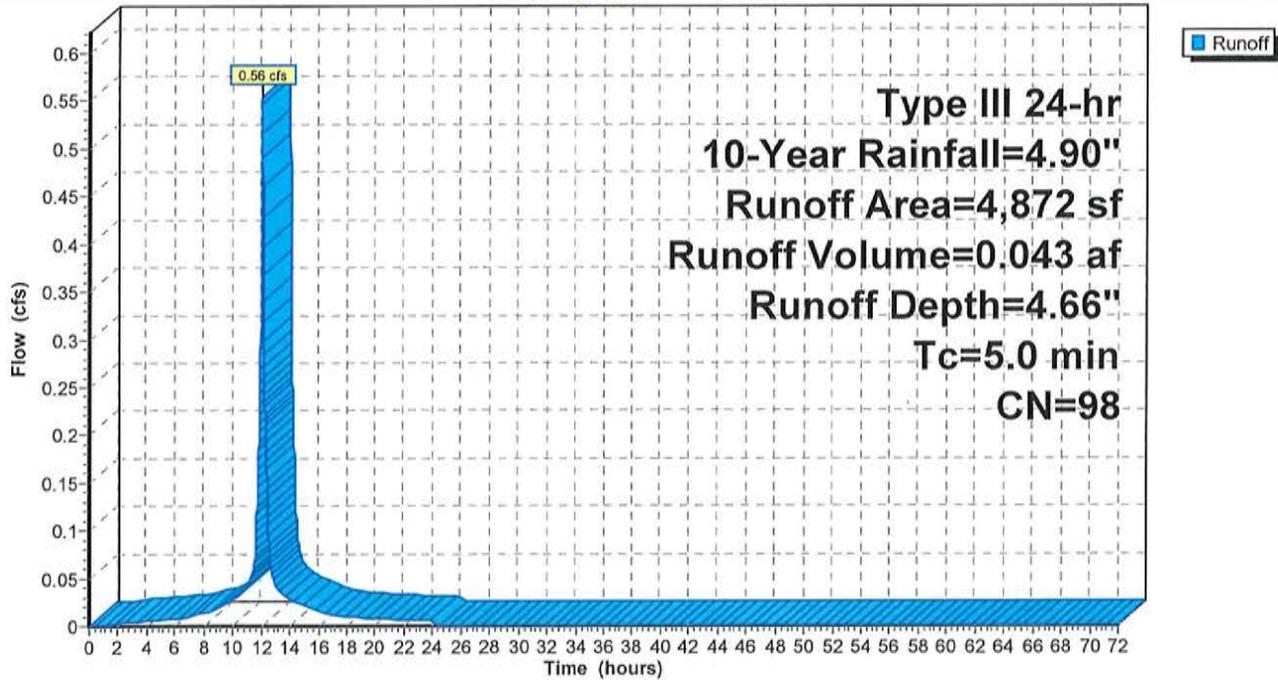
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
4,872	98	Roofs, HSG A
4,872		100.00% Impervious Area

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

**Subcatchment Roof 7: Community Building Roof**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 1P: SWMA 1**

Inflow Area = 2.000 ac, 25.59% Impervious, Inflow Depth = 1.00" for 10-Year event  
 Inflow = 1.98 cfs @ 12.09 hrs, Volume= 0.167 af  
 Outflow = 0.35 cfs @ 11.95 hrs, Volume= 0.167 af, Atten= 82%, Lag= 0.0 min  
 Discarded = 0.35 cfs @ 11.95 hrs, Volume= 0.167 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 20.30' @ 12.82 hrs Surf.Area= 1,826 sf Storage= 1,754 cf

Plug-Flow detention time= 37.5 min calculated for 0.167 af (100% of inflow)  
 Center-of-Mass det. time= 37.5 min ( 926.5 - 889.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	18.10'	2,769 cf	<b>15.75'W x 115.92'L x 5.00'H Prismatic</b> 9,129 cf Overall - 2,205 cf Embedded = 6,924 cf x 40.0% Voids
#2	20.10'	2,205 cf	<b>ADS_StormTech SC-740 +Cap</b> x 48 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 48 Chambers in 3 Rows
		4,975 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	18.10'	<b>8.270 in/hr Exfiltration over Surface area</b>

Discarded OutFlow Max=0.35 cfs @ 11.95 hrs HW=18.15' (Free Discharge)  
 ↑ 1=Exfiltration (Exfiltration Controls 0.35 cfs)

**Surfside Crossing (rev3)**

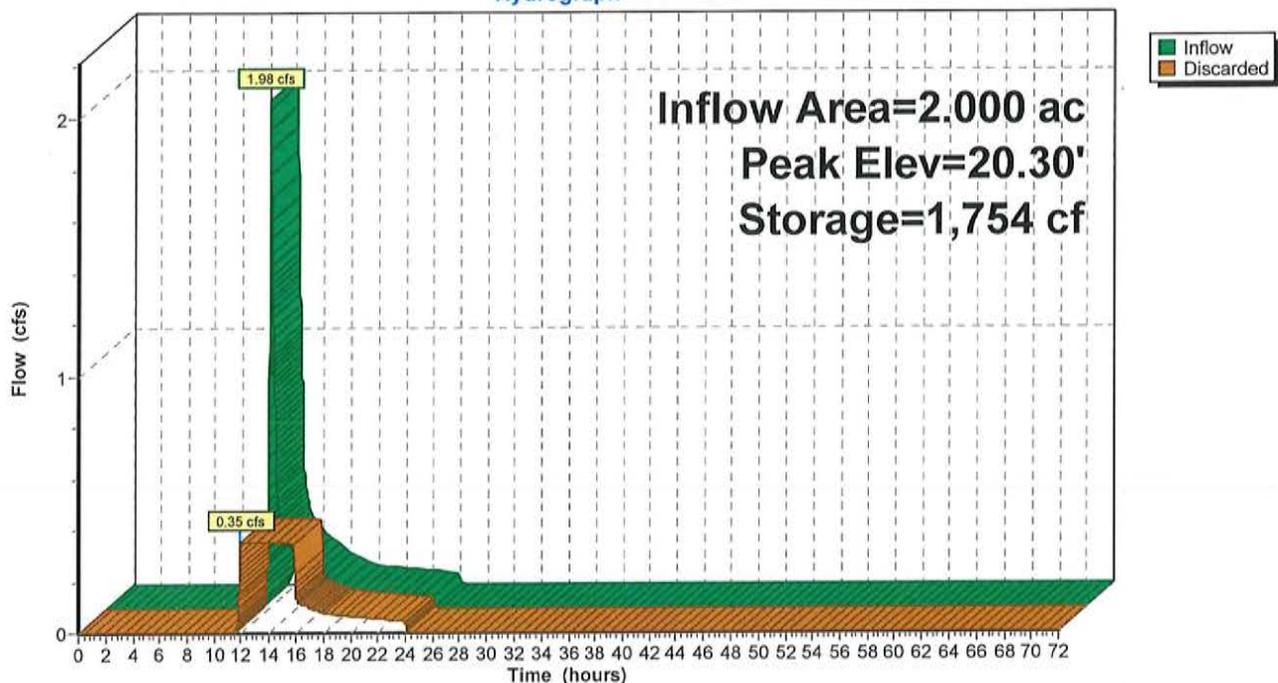
Type III 24-hr 10-Year Rainfall=4.90"

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**Pond 1P: SWMA 1**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Pond 2P: SWMA 2**

Inflow Area = 1.210 ac, 54.51% Impervious, Inflow Depth = 2.23" for 10-Year event  
 Inflow = 3.14 cfs @ 12.08 hrs, Volume= 0.225 af  
 Outflow = 0.42 cfs @ 11.72 hrs, Volume= 0.225 af, Atten= 87%, Lag= 0.0 min  
 Discarded = 0.42 cfs @ 11.72 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.07' @ 12.71 hrs Surf.Area= 2,196 sf Storage= 2,972 cf

Plug-Flow detention time= 51.1 min calculated for 0.225 af (100% of inflow)  
 Center-of-Mass det. time= 51.1 min ( 878.3 - 827.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	19.40'	3,289 cf	<b>30.00'W x 73.20'L x 5.00'H Prismatic</b> 10,980 cf Overall - 2,756 cf Embedded = 8,224 cf x 40.0% Voids
#2	21.40'	2,756 cf	<b>ADS_StormTech SC-740 +Cap</b> x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 60 Chambers in 6 Rows
		6,046 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.40'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.42 cfs @ 11.72 hrs HW=19.45' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.42 cfs)

**Surfside Crossing (rev3)**

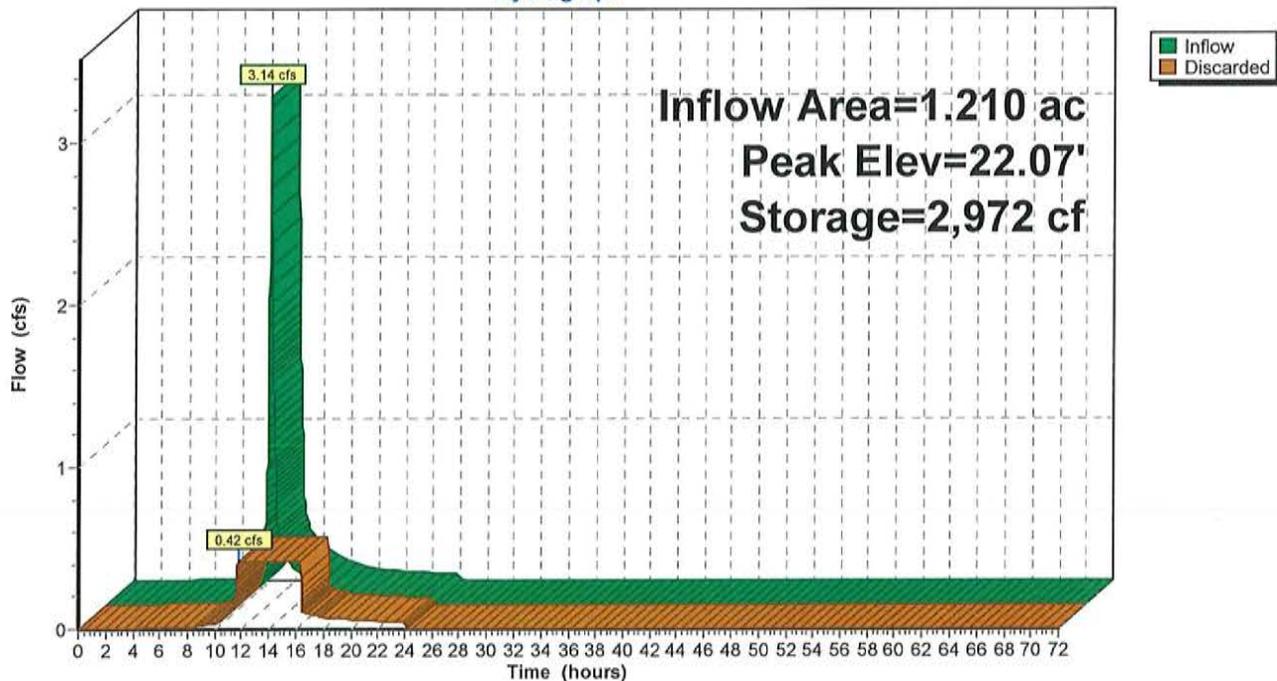
Type III 24-hr 10-Year Rainfall=4.90"

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**Pond 2P: SWMA 2**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 3P: SWMA 3**

Inflow Area = 0.977 ac, 35.72% Impervious, Inflow Depth = 1.45" for 10-Year event  
 Inflow = 1.60 cfs @ 12.08 hrs, Volume= 0.118 af  
 Outflow = 0.26 cfs @ 11.84 hrs, Volume= 0.118 af, Atten= 84%, Lag= 0.0 min  
 Discarded = 0.26 cfs @ 11.84 hrs, Volume= 0.118 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 21.83' @ 12.69 hrs Surf.Area= 1,342 sf Storage= 1,390 cf

Plug-Flow detention time= 39.4 min calculated for 0.118 af (100% of inflow)  
 Center-of-Mass det. time= 39.4 min ( 906.3 - 866.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	19.80'	1,753 cf	<b>30.00'W x 44.72'L x 4.50'H Prismatic</b> 6,037 cf Overall - 1,654 cf Embedded = 4,383 cf x 40.0% Voids
#2	21.30'	1,654 cf	<b>ADS_StormTech SC-740 +Cap</b> x 36 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 36 Chambers in 6 Rows
		3,407 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.80'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.26 cfs @ 11.84 hrs HW=19.85' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.26 cfs)

**Surfside Crossing (rev3)**

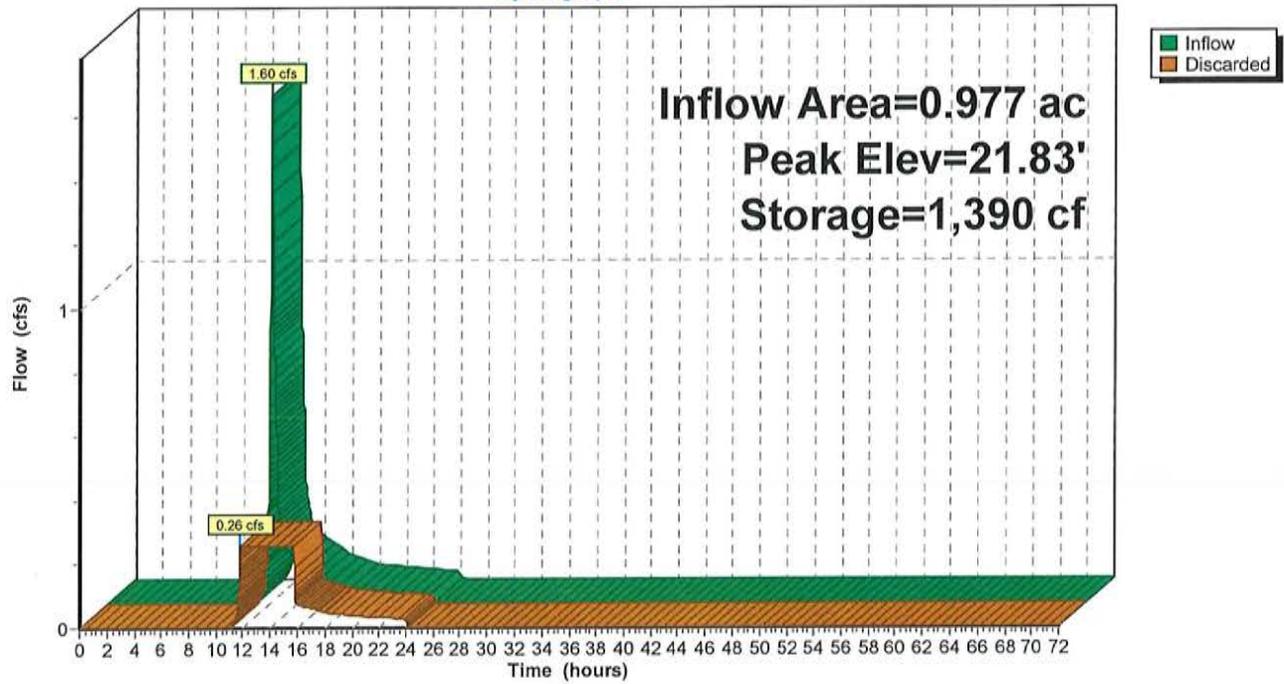
Type III 24-hr 10-Year Rainfall=4.90"

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**Pond 3P: SWMA 3**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 4P: SWMA 4**

Inflow Area = 0.466 ac, 38.45% Impervious, Inflow Depth = 1.52" for 10-Year event  
 Inflow = 0.81 cfs @ 12.08 hrs, Volume= 0.059 af  
 Outflow = 0.13 cfs @ 11.84 hrs, Volume= 0.059 af, Atten= 83%, Lag= 0.0 min  
 Discarded = 0.13 cfs @ 11.84 hrs, Volume= 0.059 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 21.87' @ 12.63 hrs Surf.Area= 704 sf Storage= 685 cf

Plug-Flow detention time= 35.8 min calculated for 0.059 af (100% of inflow)  
 Center-of-Mass det. time= 35.8 min ( 899.8 - 864.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	19.90'	937 cf	<b>15.75'W x 44.72'L x 4.50'H Prismatic</b> 3,170 cf Overall - 827 cf Embedded = 2,343 cf x 40.0% Voids
#2	21.40'	827 cf	<b>ADS_StormTech SC-740 +Cap</b> x 18 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 18 Chambers in 3 Rows
		1,764 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.90'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.13 cfs @ 11.84 hrs HW=19.95' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.13 cfs)

**Surfside Crossing (rev3)**

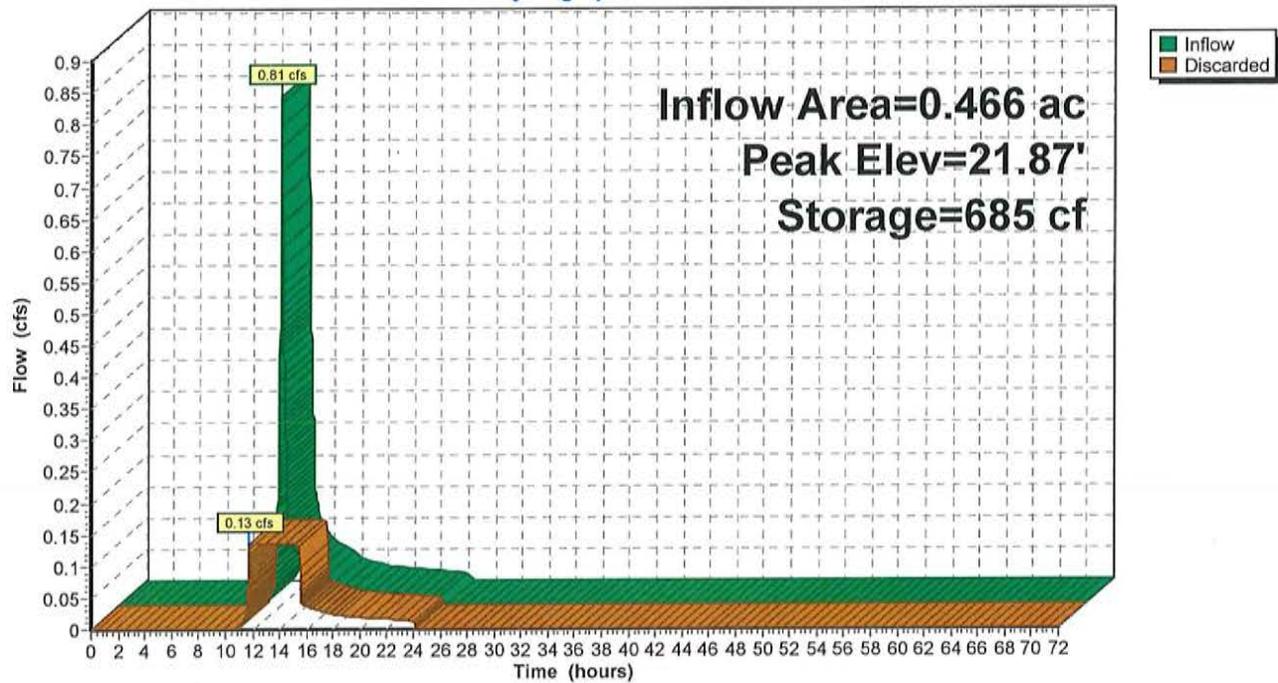
Type III 24-hr 10-Year Rainfall=4.90"

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**Pond 4P: SWMA 4**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 5P: SWMA 5**

Inflow Area = 1.614 ac, 30.74% Impervious, Inflow Depth = 1.57" for 10-Year event  
 Inflow = 2.28 cfs @ 12.08 hrs, Volume= 0.211 af  
 Outflow = 0.34 cfs @ 11.66 hrs, Volume= 0.211 af, Atten= 85%, Lag= 0.0 min  
 Discarded = 0.34 cfs @ 11.66 hrs, Volume= 0.211 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 25.20' @ 12.71 hrs Surf.Area= 1,769 sf Storage= 2,278 cf

Plug-Flow detention time= 42.0 min calculated for 0.211 af (100% of inflow)  
 Center-of-Mass det. time= 42.0 min ( 833.8 - 791.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	22.60'	2,656 cf	<b>30.00'W x 58.96'L x 5.00'H Prismatic</b> 8,844 cf Overall - 2,205 cf Embedded = 6,639 cf x 40.0% Voids
#2	24.60'	2,205 cf	<b>ADS_StormTech SC-740 +Cap</b> x 48 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 48 Chambers in 6 Rows
		4,861 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.60'	<b>8.270 in/hr Exfiltration over Surface area</b>

Discarded OutFlow Max=0.34 cfs @ 11.66 hrs HW=22.65' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.34 cfs)

**Surfside Crossing (rev3)**

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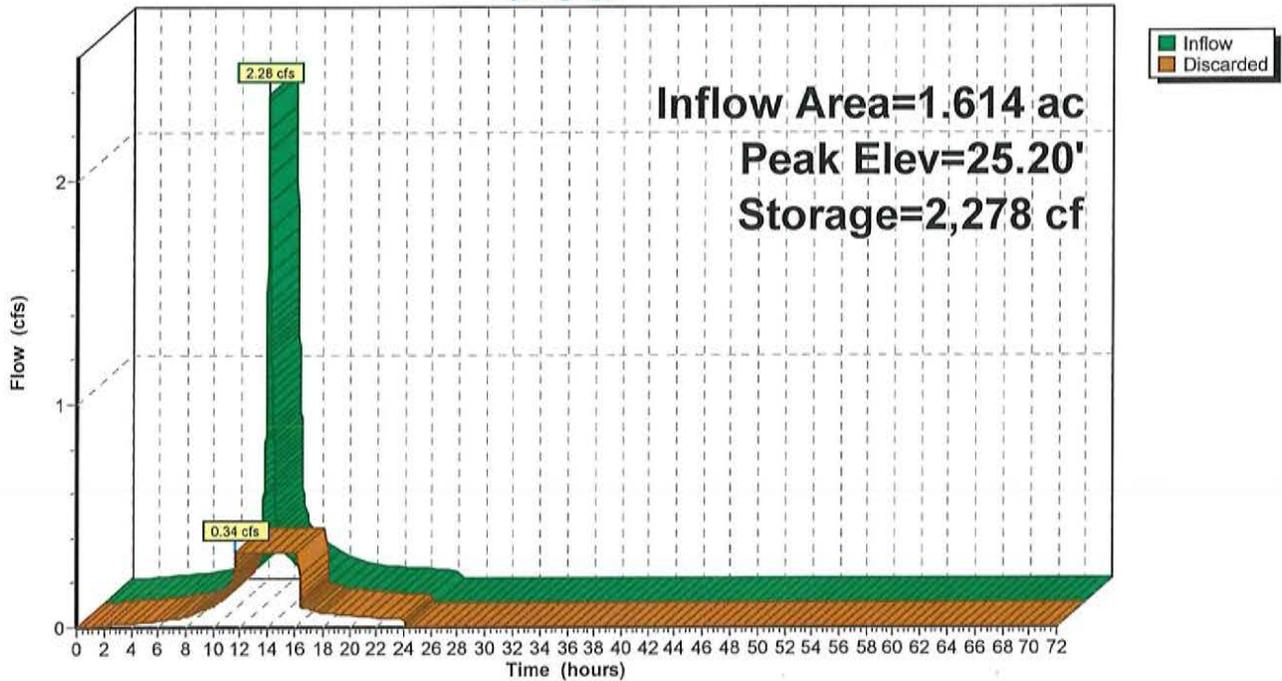
March 19, 2019

Type III 24-hr 10-Year Rainfall=4.90"

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**Pond 5P: SWMA 5**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 6P: SWMA 6**

Inflow Area = 1.299 ac, 34.25% Impervious, Inflow Depth = 1.08" for 10-Year event  
 Inflow = 1.27 cfs @ 12.09 hrs, Volume= 0.117 af  
 Outflow = 0.23 cfs @ 11.92 hrs, Volume= 0.117 af, Atten= 82%, Lag= 0.0 min  
 Discarded = 0.23 cfs @ 11.92 hrs, Volume= 0.117 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.52' @ 12.73 hrs Surf.Area= 1,209 sf Storage= 1,087 cf

Plug-Flow detention time= 30.3 min calculated for 0.117 af (100% of inflow)  
 Center-of-Mass det. time= 30.3 min ( 879.9 - 849.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	21.40'	1,829 cf	<b>20.50'W x 58.96'L x 5.00'H Prismatic</b> 6,043 cf Overall - 1,470 cf Embedded = 4,573 cf x 40.0% Voids
#2	23.40'	1,470 cf	<b>ADS_StormTech SC-740 +Cap x 32 Inside #1</b> Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 32 Chambers in 4 Rows
		3,299 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.40'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.23 cfs @ 11.92 hrs HW=21.45' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.23 cfs)

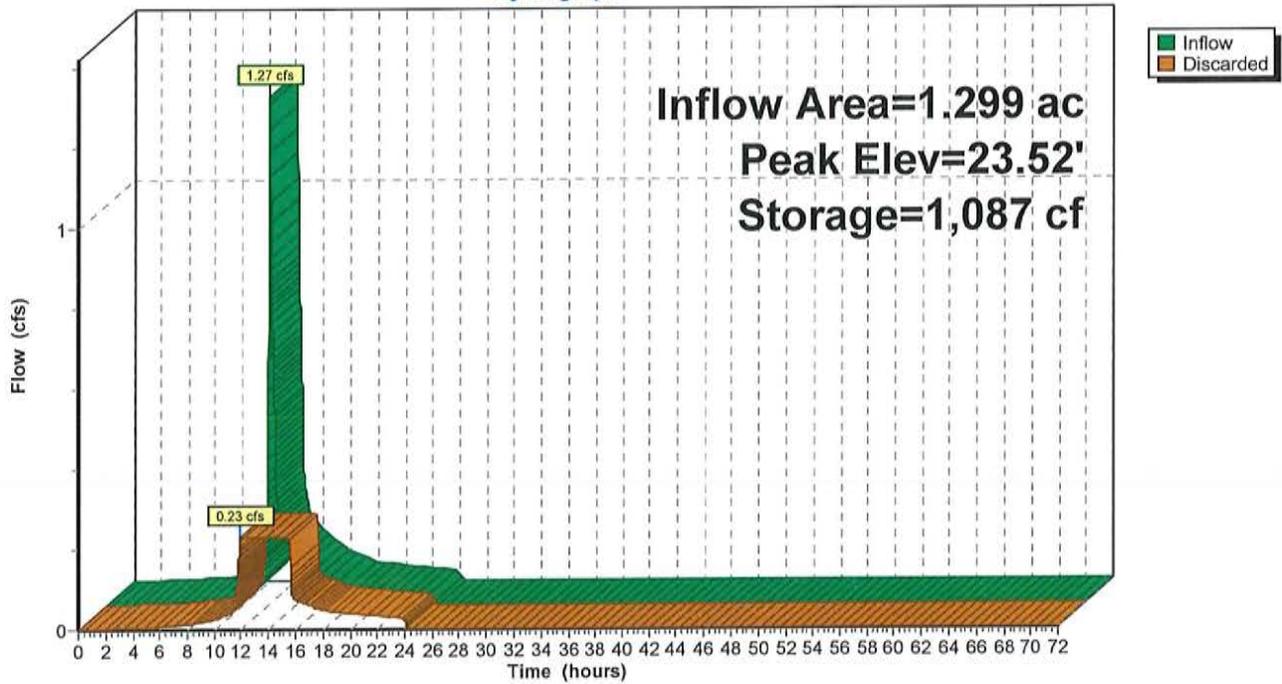
**Surfside Crossing (rev3)**

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**Pond 6P: SWMA 6**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Pond 7P: SWMA 7**

Inflow Area = 1.210 ac, 47.37% Impervious, Inflow Depth = 1.76" for 10-Year event  
 Inflow = 2.45 cfs @ 12.08 hrs, Volume= 0.177 af  
 Outflow = 0.39 cfs @ 11.79 hrs, Volume= 0.177 af, Atten= 84%, Lag= 0.0 min  
 Discarded = 0.39 cfs @ 11.79 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.05' @ 12.62 hrs Surf.Area= 2,028 sf Storage= 2,132 cf

Plug-Flow detention time= 38.4 min calculated for 0.177 af (100% of inflow)  
 Center-of-Mass det. time= 38.4 min ( 887.2 - 848.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	2,640 cf	<b>25.25'W x 80.32'L x 4.50'H Prismatic</b> 9,126 cf Overall - 2,527 cf Embedded = 6,600 cf x 40.0% Voids
#2	22.50'	2,527 cf	<b>ADS_StormTech SC-740 +Cap x 55 Inside #1</b> Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 55 Chambers in 5 Rows
		5,167 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.00'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.39 cfs @ 11.79 hrs HW=21.05' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.39 cfs)

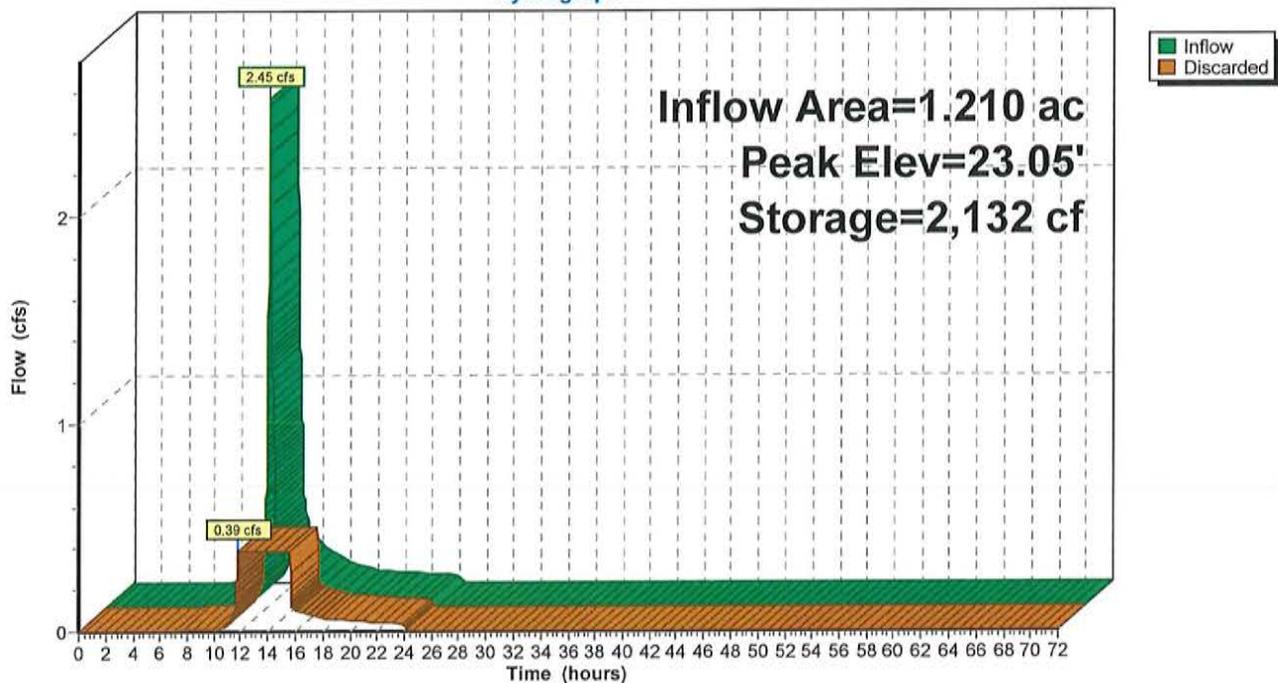
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**Pond 7P: SWMA 7**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 8P: SWMA 8**

Inflow Area = 0.761 ac, 66.41% Impervious, Inflow Depth = 2.77" for 10-Year event  
 Inflow = 2.48 cfs @ 12.07 hrs, Volume= 0.175 af  
 Outflow = 0.33 cfs @ 11.68 hrs, Volume= 0.175 af, Atten= 87%, Lag= 0.0 min  
 Discarded = 0.33 cfs @ 11.68 hrs, Volume= 0.175 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.89' @ 12.63 hrs Surf.Area= 1,735 sf Storage= 2,344 cf

Plug-Flow detention time= 48.9 min calculated for 0.175 af (100% of inflow)  
 Center-of-Mass det. time= 48.9 min ( 860.9 - 812.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	20.20'	2,642 cf	<b>26.25'W x 66.08'L x 5.00'H Prismatic</b> 8,673 cf Overall - 2,067 cf Embedded = 6,606 cf x 40.0% Voids
#2	22.20'	2,067 cf	<b>ADS StormTech SC-740 +Cap</b> x 45 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 45 Chambers in 5 Rows
		4,710 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.20'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.33 cfs @ 11.68 hrs HW=20.25' (Free Discharge)  
 ↑ **1=Exfiltration** (Exfiltration Controls 0.33 cfs)

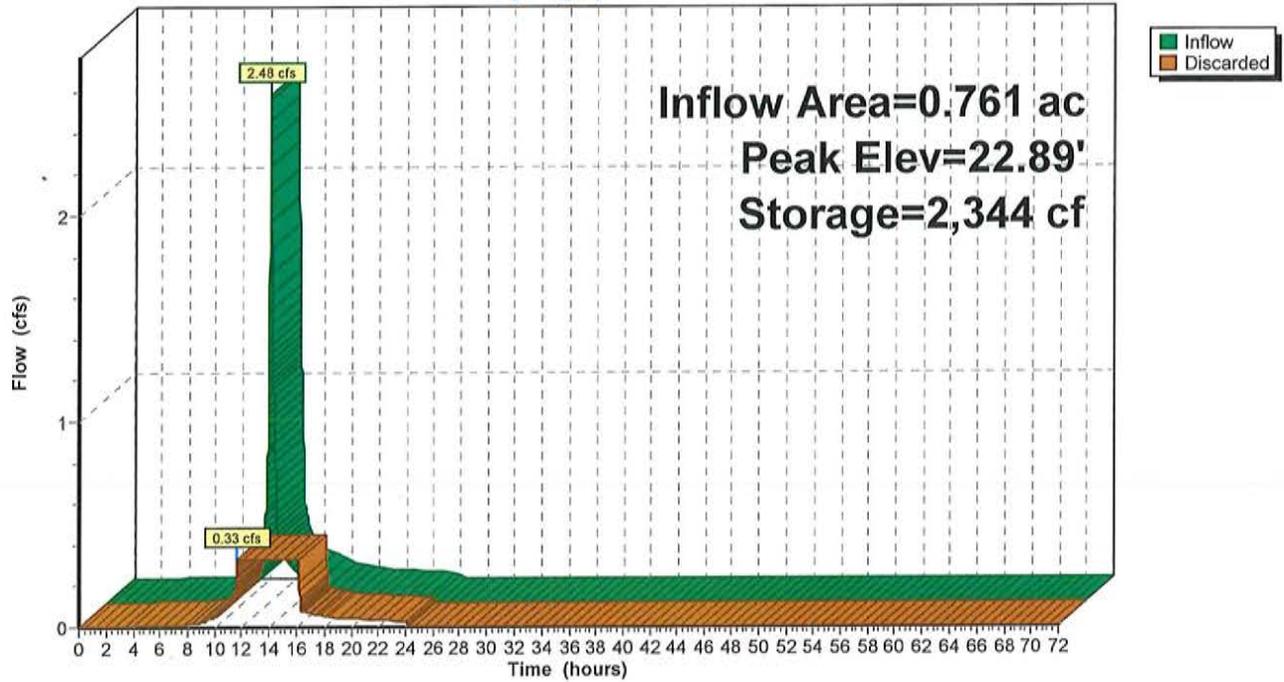
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**Pond 8P: SWMA 8**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 10-Year Rainfall=4.90"

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**Summary for Pond 9P: Depression**

Inflow Area = 0.649 ac, 0.00% Impervious, Inflow Depth = 0.12" for 10-Year event  
 Inflow = 0.01 cfs @ 14.68 hrs, Volume= 0.007 af  
 Outflow = 0.01 cfs @ 14.72 hrs, Volume= 0.007 af, Atten= 0%, Lag= 2.5 min  
 Discarded = 0.01 cfs @ 14.72 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 28.00' @ 14.72 hrs Surf.Area= 1,421 sf Storage= 1 cf

Plug-Flow detention time= 1.5 min calculated for 0.007 af (100% of inflow)  
 Center-of-Mass det. time= 1.5 min ( 1,054.2 - 1,052.8 )

Volume	Invert	Avail.Storage	Storage Description			
#1	28.00'	845 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
28.00	1,420	175.7	0	0	1,420	
28.50	1,976	194.6	845	845	1,985	

Device	Routing	Invert	Outlet Devices
#1	Discarded	28.00'	2.410 in/hr Exfiltration over Surface area

**Discarded OutFlow** Max=0.08 cfs @ 14.72 hrs HW=28.00' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.08 cfs)

Surfside Crossing (rev3)

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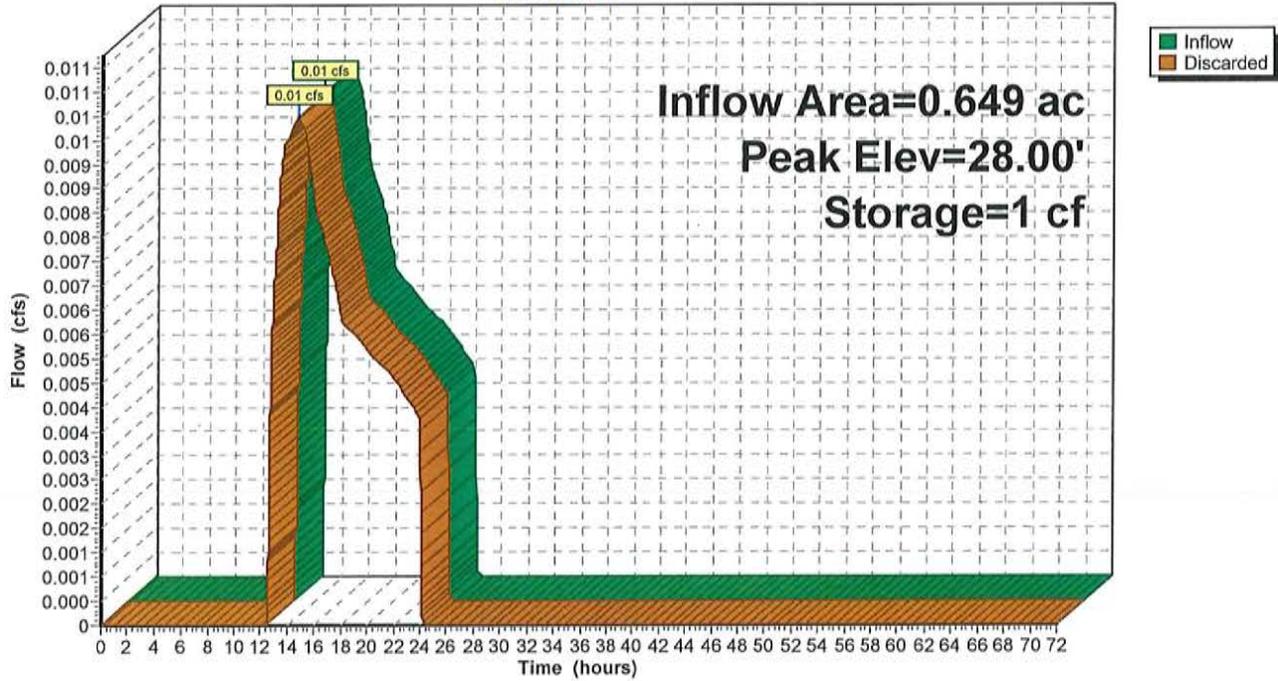
March 19, 2019

Type III 24-hr 10-Year Rainfall=4.90"

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Pond 9P: Depression

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 1S: CB 1, 2 & 3**

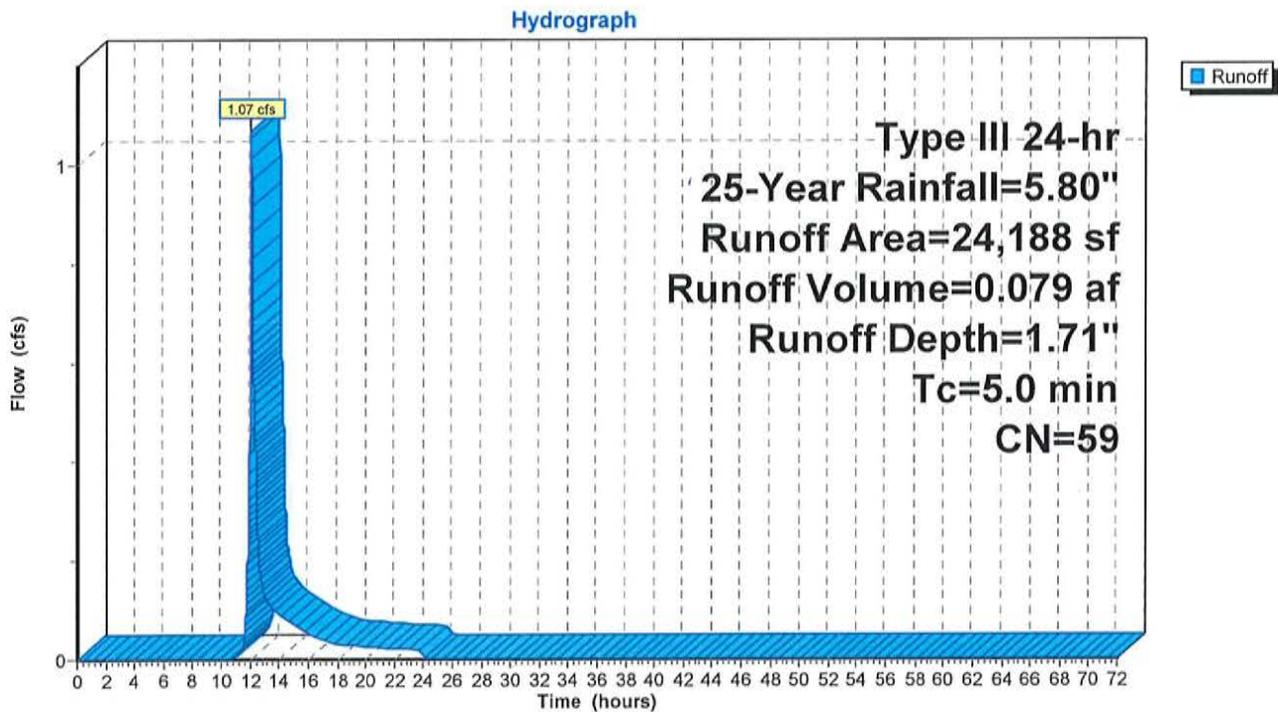
Runoff = 1.07 cfs @ 12.08 hrs, Volume= 0.079 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
9,944	39	>75% Grass cover, Good, HSG A
7,879	98	Paved roads w/curbs & sewers, HSG A
* 1,463	76	Gravel driveways, HSG A
4,902	30	Woods, Good, HSG A
24,188	59	Weighted Average
16,309		67.43% Pervious Area
7,879		32.57% Impervious Area

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

**Subcatchment 1S: CB 1, 2 & 3**



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 2S: Rear Lots**

Runoff = 0.01 cfs @ 13.76 hrs, Volume= 0.007 af, Depth= 0.17"

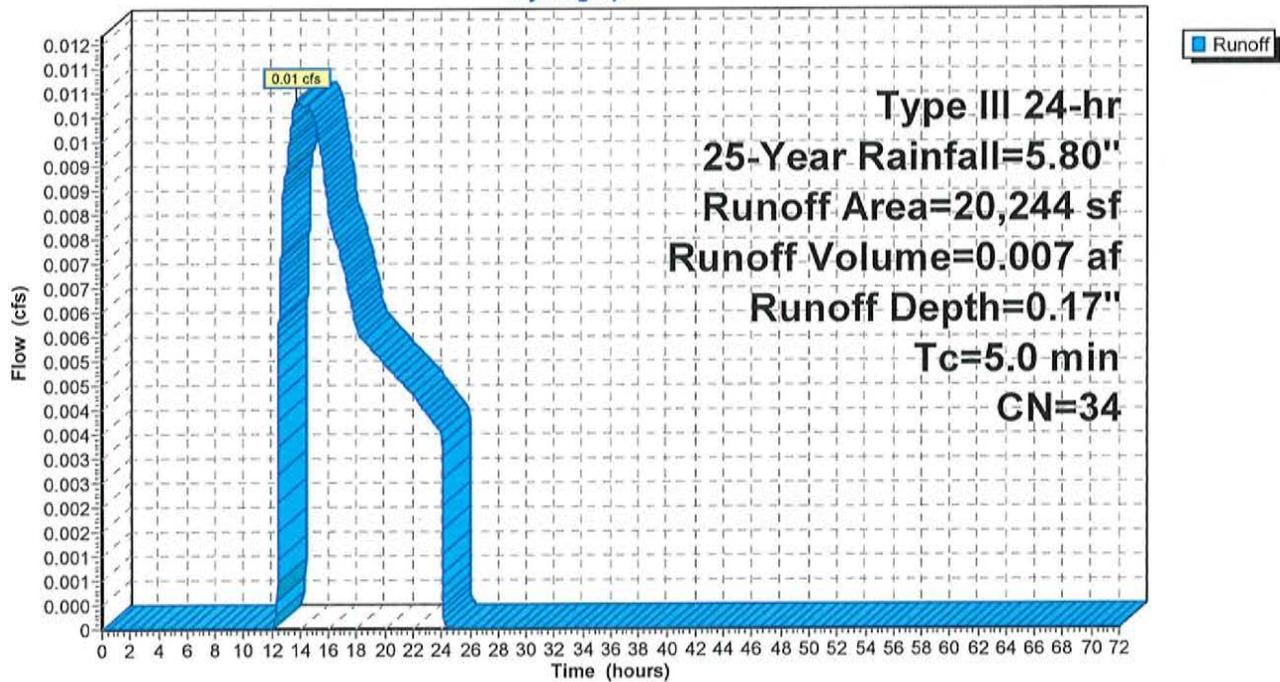
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
9,210	39	>75% Grass cover, Good, HSG A
11,034	30	Woods, Good, HSG A
20,244	34	Weighted Average
20,244		100.00% Pervious Area

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

**Subcatchment 2S: Rear Lots**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 3S: CB 4, 5 & 6**

Runoff = 2.39 cfs @ 12.08 hrs, Volume= 0.166 af, Depth= 2.47"

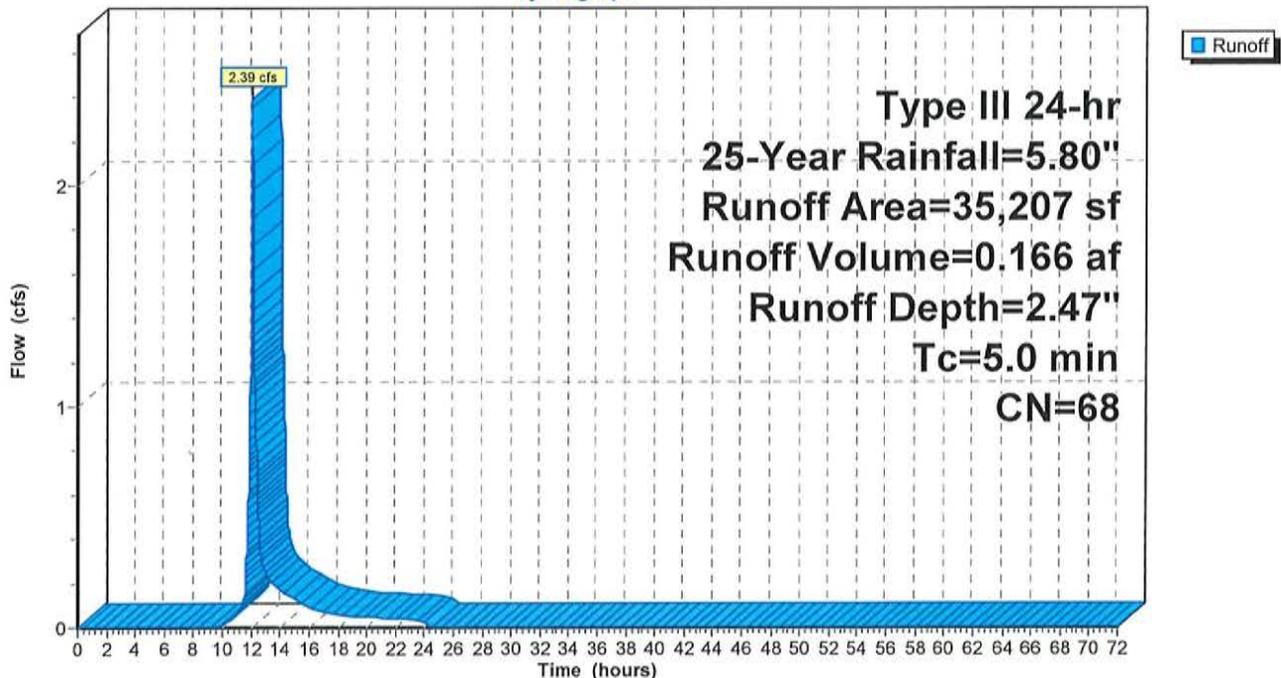
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
16,757	39	>75% Grass cover, Good, HSG A
15,914	98	Paved roads w/curbs & sewers, HSG A
* 2,536	76	Gravel driveways, HSG A
35,207	68	Weighted Average
19,293		54.80% Pervious Area
15,914		45.20% Impervious Area

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

**Subcatchment 3S: CB 4, 5 & 6**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 4S: Rear Lots**

Runoff = 0.01 cfs @ 13.76 hrs, Volume= 0.007 af, Depth= 0.17"

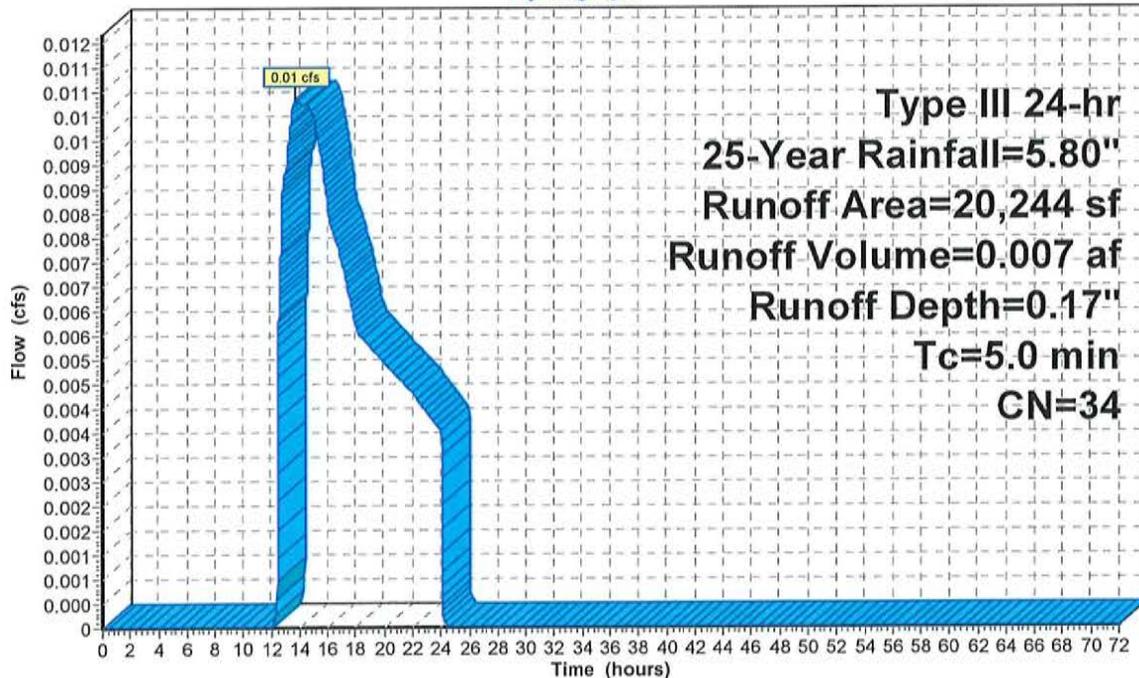
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
9,210	39	>75% Grass cover, Good, HSG A
11,034	30	Woods, Good, HSG A
20,244	34	Weighted Average
20,244		100.00% Pervious Area

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

**Subcatchment 4S: Rear Lots**

Hydrograph



Runoff

Type III 24-hr  
25-Year Rainfall=5.80"  
Runoff Area=20,244 sf  
Runoff Volume=0.007 af  
Runoff Depth=0.17"  
Tc=5.0 min  
CN=34

**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 5S: CB 16, 17 & 18**

Runoff = 1.40 cfs @ 12.09 hrs, Volume= 0.118 af, Depth= 1.19"

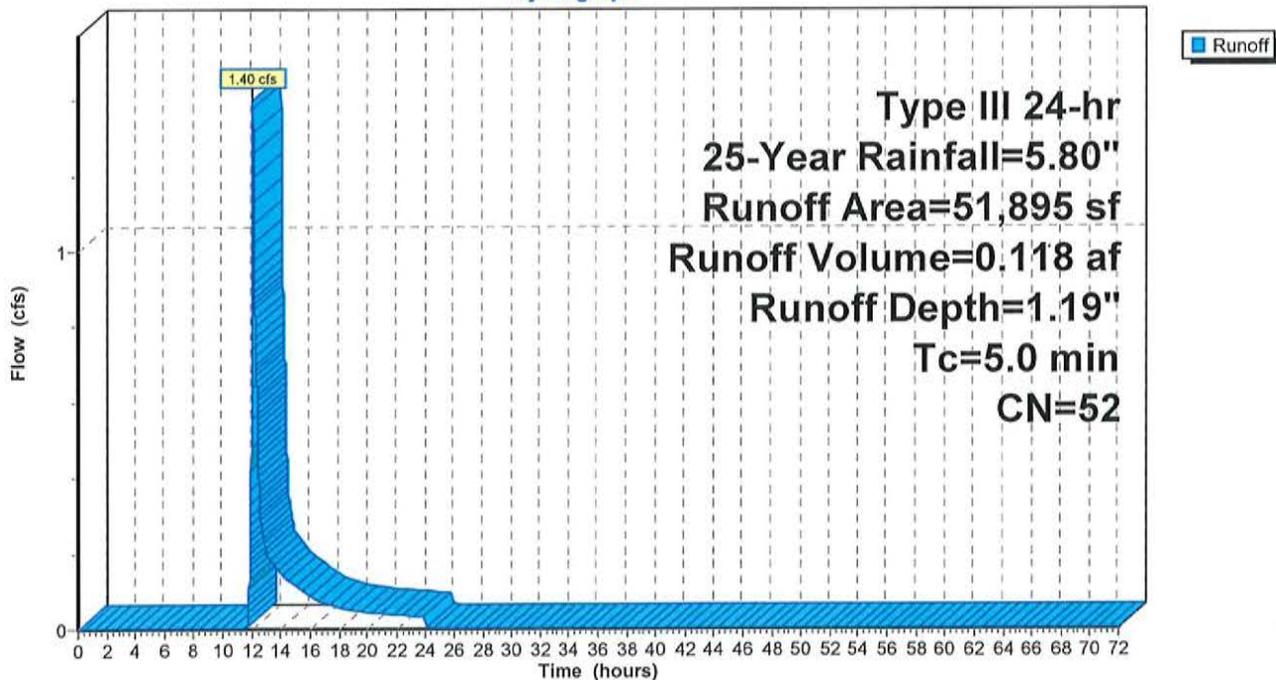
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	14,683	98	Paved
	15,690	39	>75% Grass cover, Good, HSG A
	21,328	30	Woods, Good, HSG A
*	194	72	Boardwalk w/ Gravel Base
	51,895	52	Weighted Average
	37,212		71.71% Pervious Area
	14,683		28.29% Impervious Area

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

**Subcatchment 5S: CB 16, 17 & 18**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 6S: CB 19, 20, 21 & 22**

Runoff = 3.19 cfs @ 12.08 hrs, Volume= 0.224 af, Depth= 2.29"

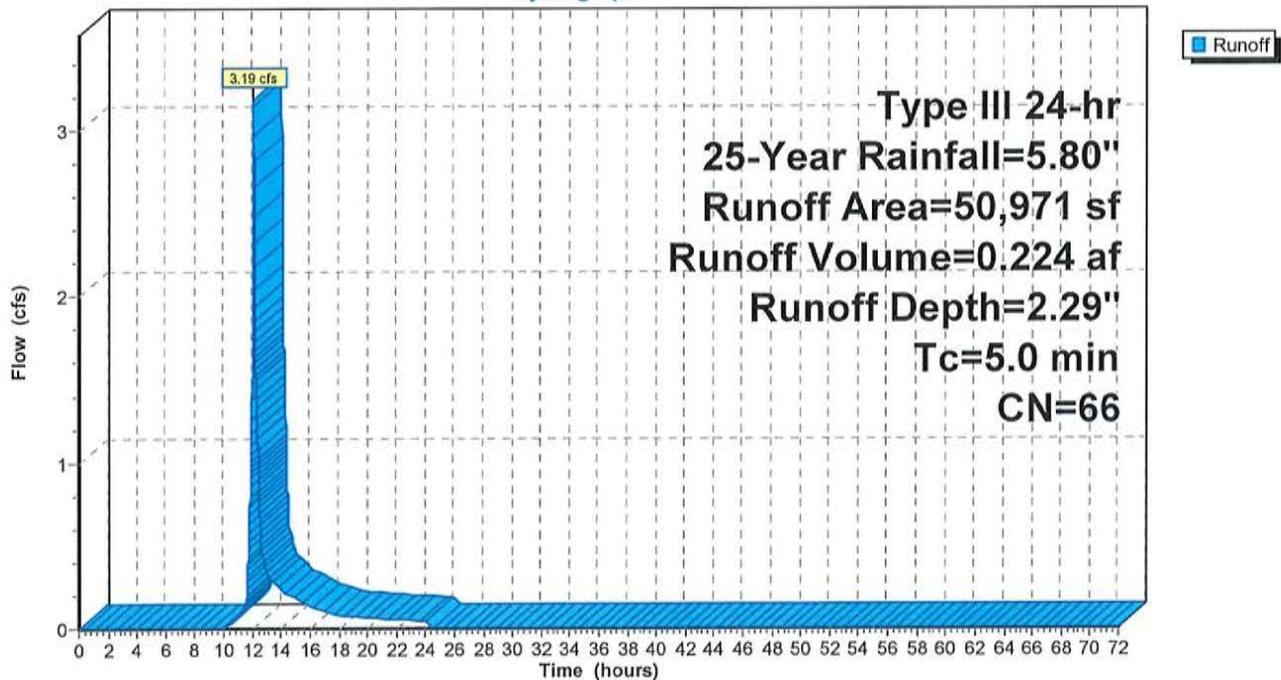
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	23,234	98	Paved
	17,968	39	>75% Grass cover, Good, HSG A
*	327	72	Boardwalk w/ Gravel Base
	9,442	36	Woods, Fair, HSG A
	50,971	66	Weighted Average
	27,737		54.42% Pervious Area
	23,234		45.58% Impervious Area

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

**Subcatchment 6S: CB 19, 20, 21 & 22**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 7S: CB 23, 24 & 25**

Runoff = 2.55 cfs @ 12.07 hrs, Volume= 0.175 af, Depth= 3.21"

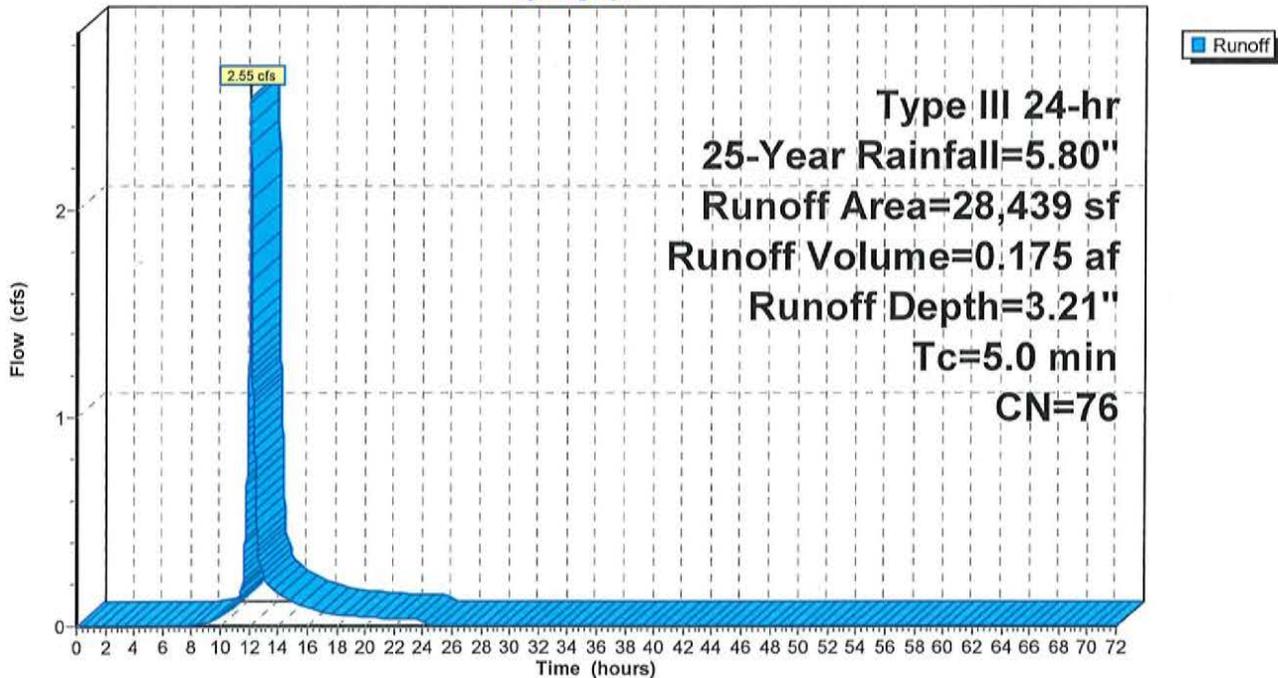
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	17,308	98	Paved
	10,058	39	>75% Grass cover, Good, HSG A
*	582	72	Boardwalk w/ Gravel Base
*	491	72	Gravel Driveways
	28,439	76	Weighted Average
	11,131		39.14% Pervious Area
	17,308		60.86% Impervious Area

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

**Subcatchment 7S: CB 23, 24 & 25**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment 8S: Courtyard Area**

Runoff = 0.81 cfs @ 12.10 hrs, Volume= 0.085 af, Depth= 0.85"

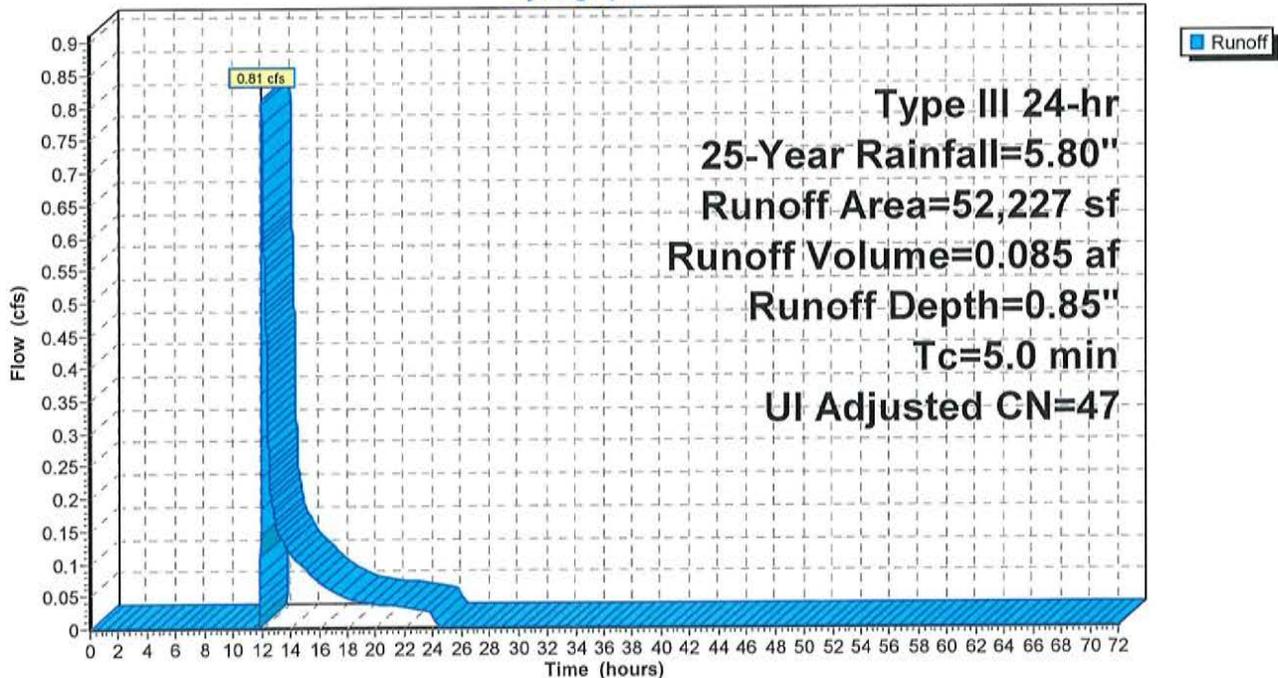
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Adj	Description
39,463	39		>75% Grass cover, Good, HSG A
* 9,231	72		Boardwalk w/ Gravel Base
3,533	98		Unconnected pavement, HSG A
52,227	49	47	Weighted Average, UI Adjusted
48,694			93.24% Pervious Area
3,533			6.76% Impervious Area
3,533			100.00% Unconnected

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

**Subcatchment 8S: Courtyard Area**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 9S: CB 7**

Runoff = 1.13 cfs @ 12.07 hrs, Volume= 0.078 af, Depth= 3.21"

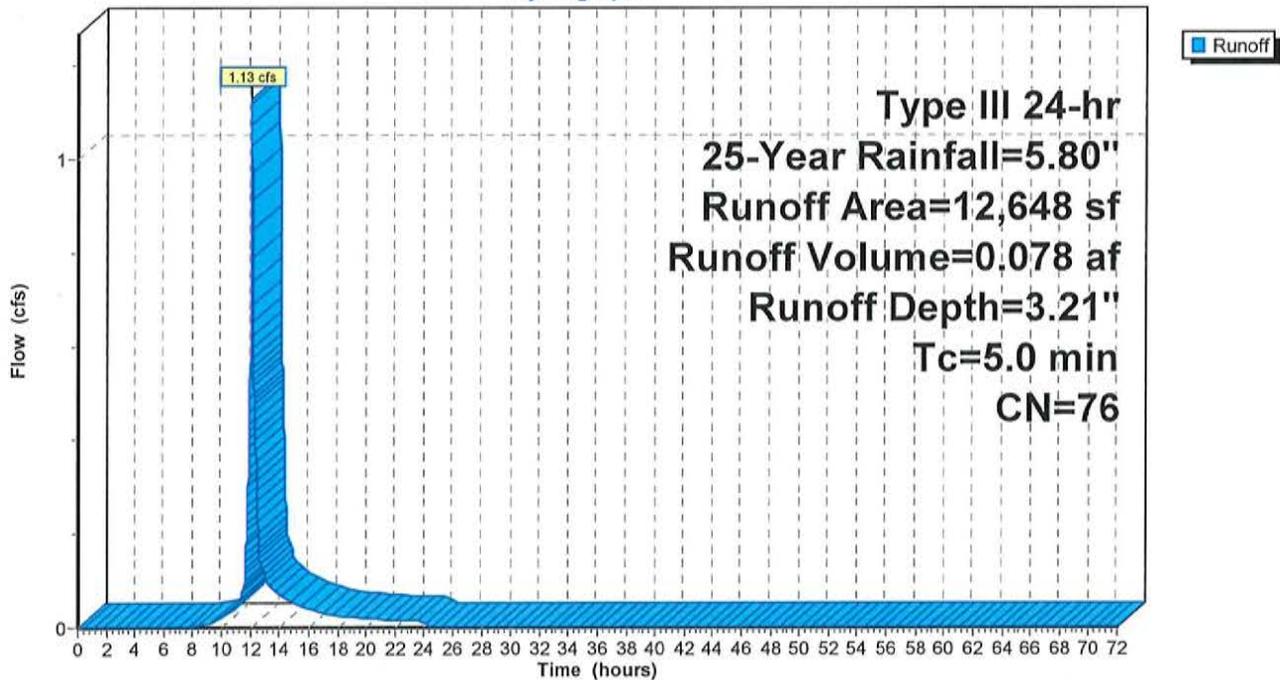
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,694	39	>75% Grass cover, Good, HSG A
7,954	98	Paved roads w/curbs & sewers, HSG A
12,648	76	Weighted Average
4,694		37.11% Pervious Area
7,954		62.89% Impervious Area

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

**Subcatchment 9S: CB 7**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 10S: CB 8, 9 & 10**

Runoff = 2.33 cfs @ 12.08 hrs, Volume= 0.166 af, Depth= 2.04"

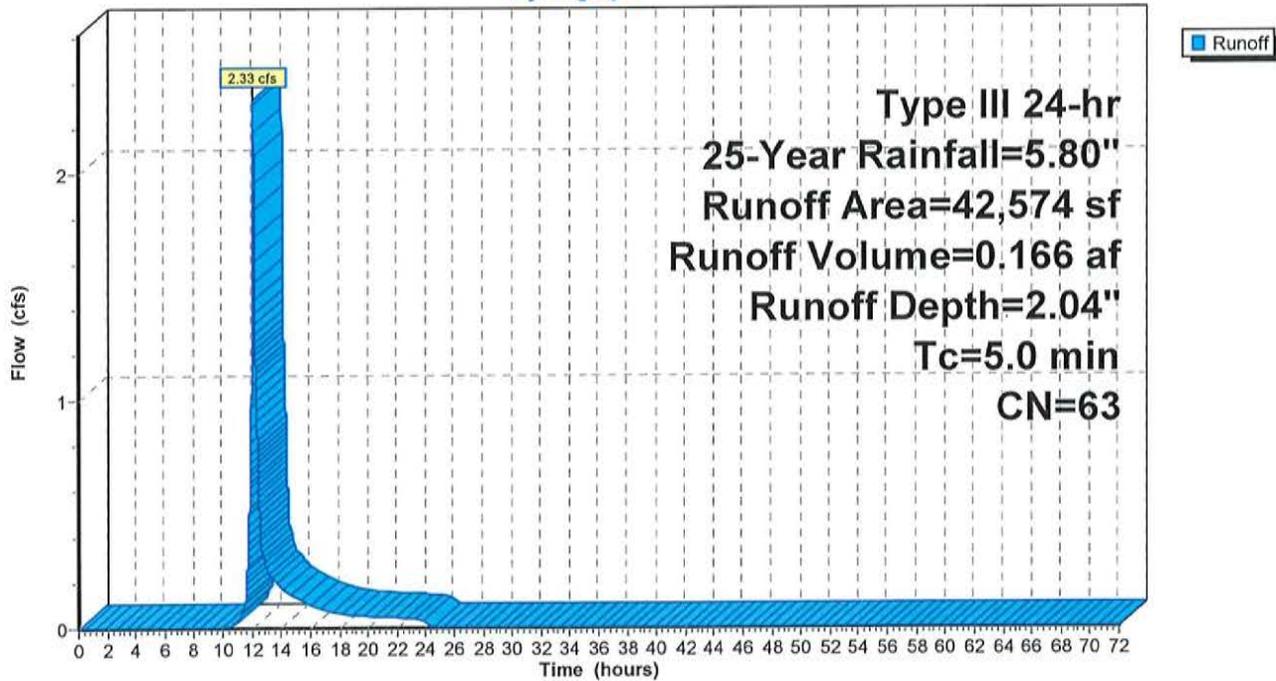
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
23,508	39	>75% Grass cover, Good, HSG A
15,208	98	Paved roads w/curbs & sewers, HSG A
* 3,585	76	Gravel driveways, HSG A
* 273	72	Boardwalk w/ Gravel Base
42,574	63	Weighted Average
27,366		64.28% Pervious Area
15,208		35.72% Impervious Area

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

**Subcatchment 10S: CB 8, 9 & 10**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 11S: Middle Lots**

Runoff = 0.05 cfs @ 12.41 hrs, Volume= 0.016 af, Depth= 0.30"

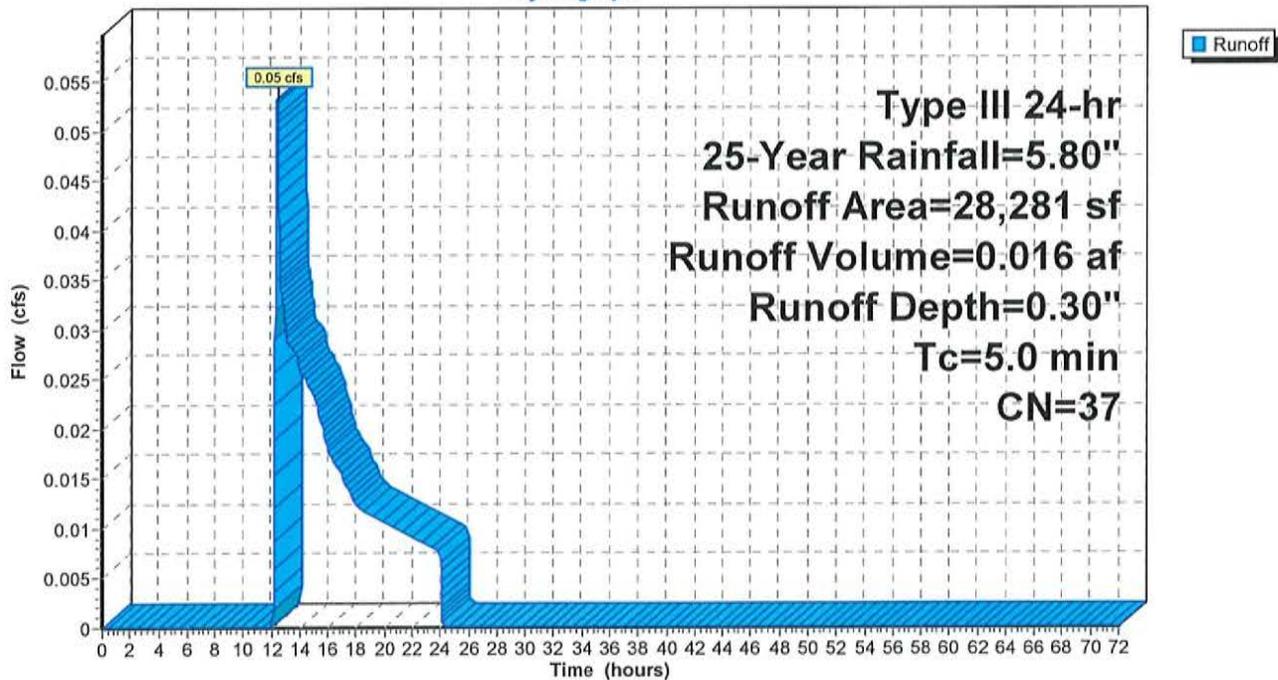
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
19,492	39	>75% Grass cover, Good, HSG A
8,789	32	Woods/grass comb., Good, HSG A
28,281	37	Weighted Average
28,281		100.00% Pervious Area

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

**Subcatchment 11S: Middle Lots**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 12S: CB 11, 12 & 13**

Runoff = 1.16 cfs @ 12.08 hrs, Volume= 0.082 af, Depth= 2.12"

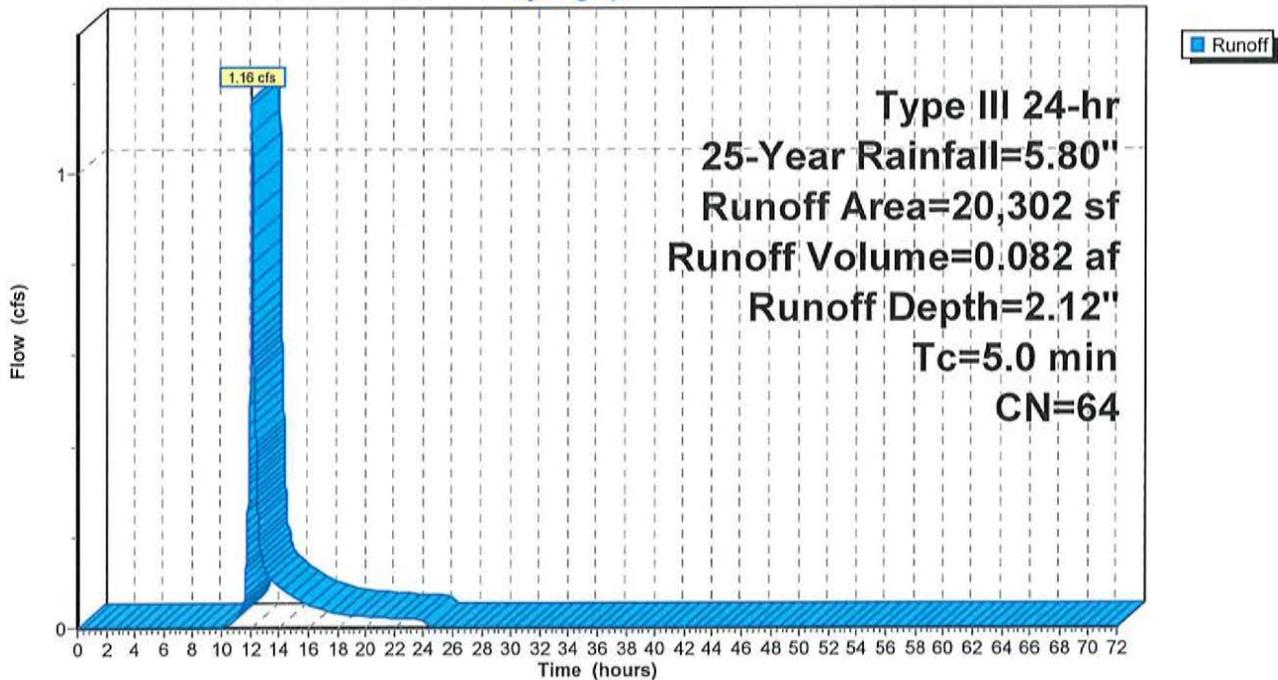
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
9,585	39	>75% Grass cover, Good, HSG A
7,807	98	Paved roads w/curbs & sewers, HSG A
* 1,449	76	Gravel driveways, HSG A
1,461	30	Woods, Good, HSG A
20,302	64	Weighted Average
12,495		61.55% Pervious Area
7,807		38.45% Impervious Area

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

**Subcatchment 12S: CB 11, 12 & 13**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 13S: CB 14 & 15**

Runoff = 2.16 cfs @ 12.09 hrs, Volume= 0.169 af, Depth= 1.40"

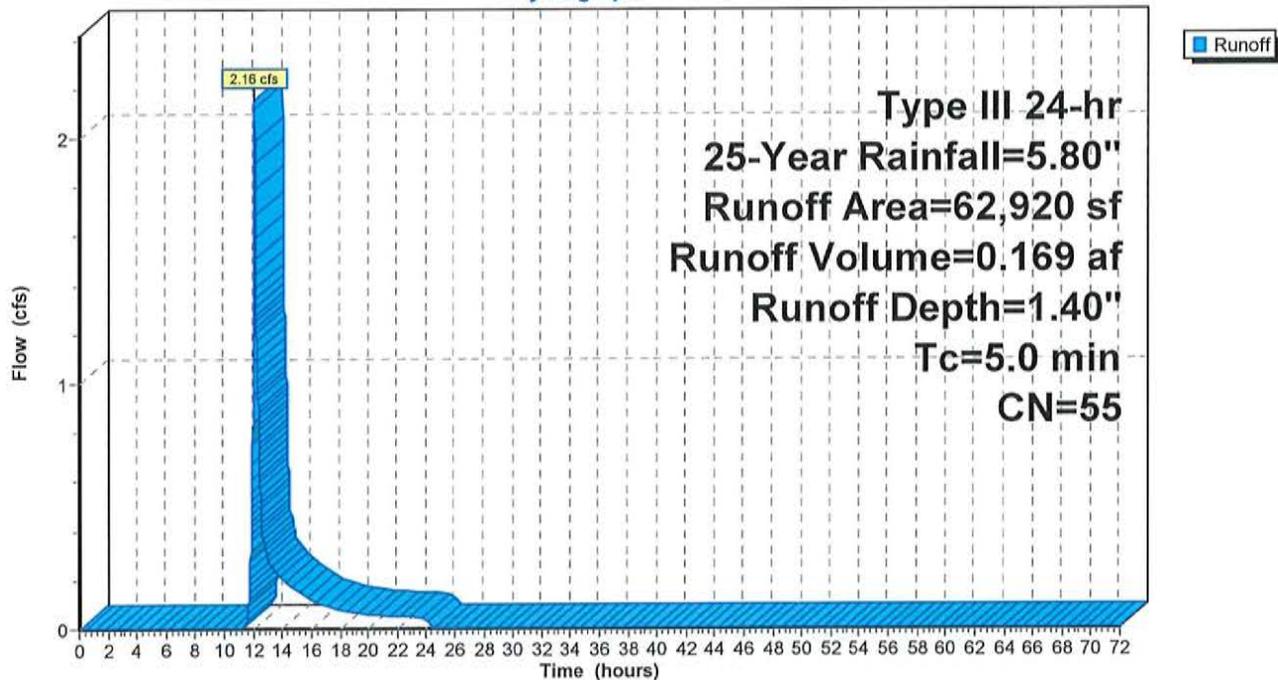
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
44,213	39	>75% Grass cover, Good, HSG A
14,414	98	Paved roads w/curbs & sewers, HSG A
* 4,293	76	Gravel driveways, HSG A
62,920	55	Weighted Average
48,506		77.09% Pervious Area
14,414		22.91% Impervious Area

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

**Subcatchment 13S: CB 14 & 15**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment 14S: Front Lot**

Runoff = 0.00 cfs @ 16.75 hrs, Volume= 0.002 af, Depth= 0.05"

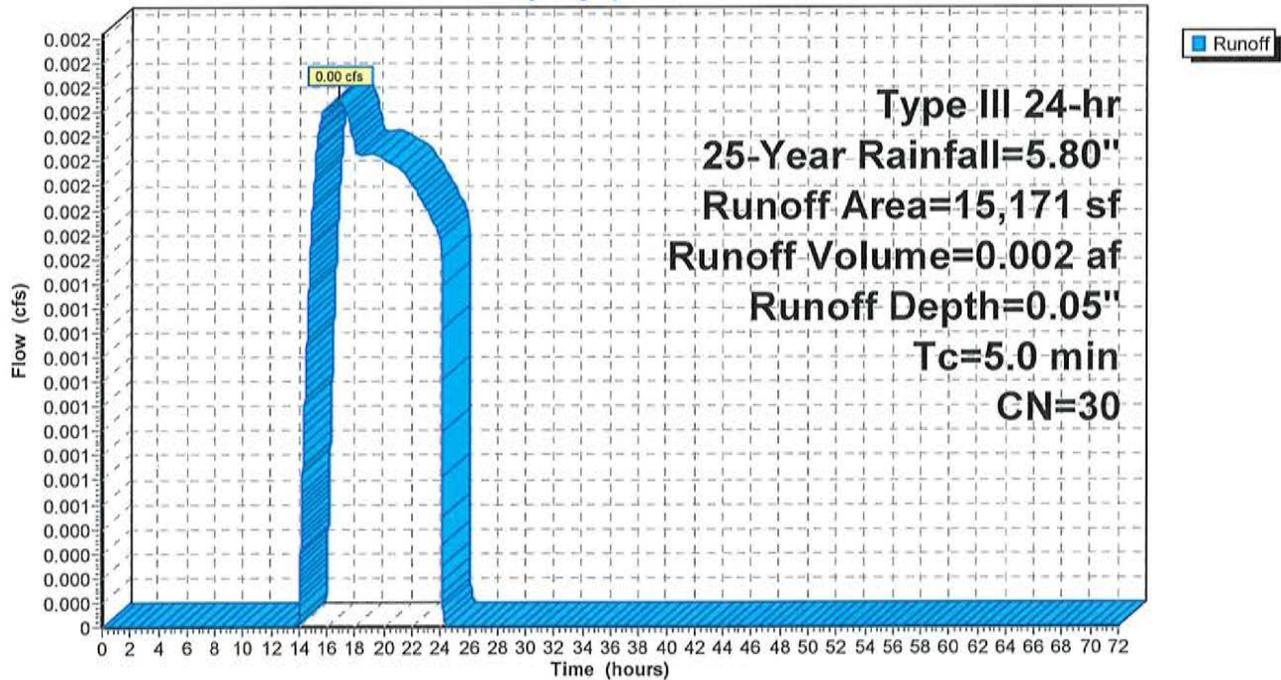
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
14,422	30	Woods, Good, HSG A
749	39	>75% Grass cover, Good, HSG A
15,171	30	Weighted Average
15,171		100.00% Pervious Area

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

**Subcatchment 14S: Front Lot**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment DA-5A: From Sachems**

Runoff = 0.02 cfs @ 12.85 hrs, Volume= 0.011 af, Depth= 0.25"

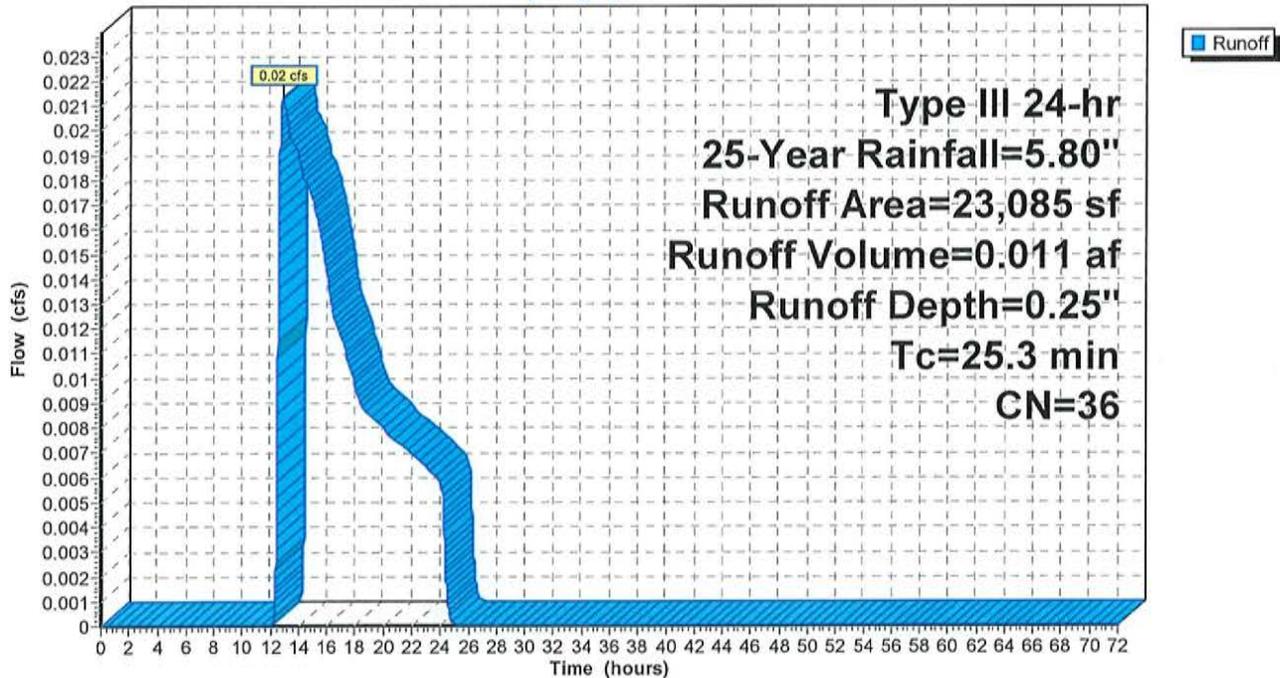
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
14,485	39	>75% Grass cover, Good, HSG A
8,600	30	Woods, Good, HSG A
23,085	36	Weighted Average
23,085		100.00% Pervious Area

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

**Subcatchment DA-5A: From Sachems**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment DA-5B: From Sachems**

Runoff = 0.01 cfs @ 14.78 hrs, Volume= 0.004 af, Depth= 0.17"

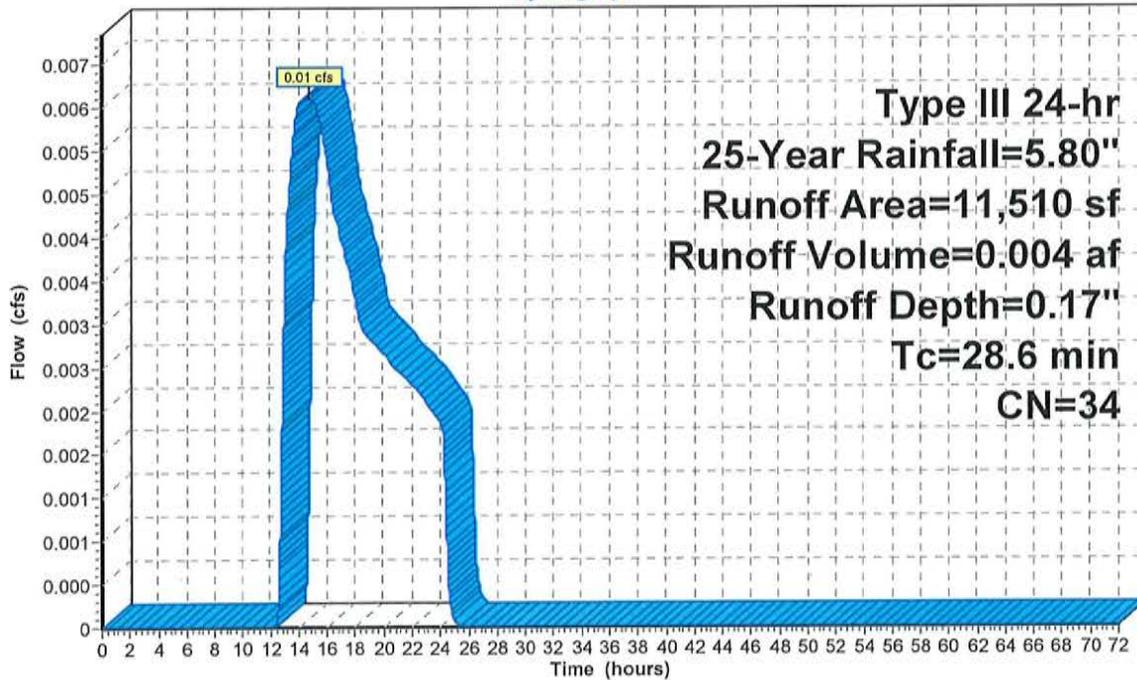
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
5,404	39	>75% Grass cover, Good, HSG A
6,106	30	Woods, Good, HSG A
11,510	34	Weighted Average
11,510		100.00% Pervious Area

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

**Subcatchment DA-5B: From Sachems**

Hydrograph



Runoff

**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment Roof 1: 1/2 Roof B + C**

Runoff = 0.64 cfs @ 12.07 hrs, Volume= 0.050 af, Depth= 5.56"

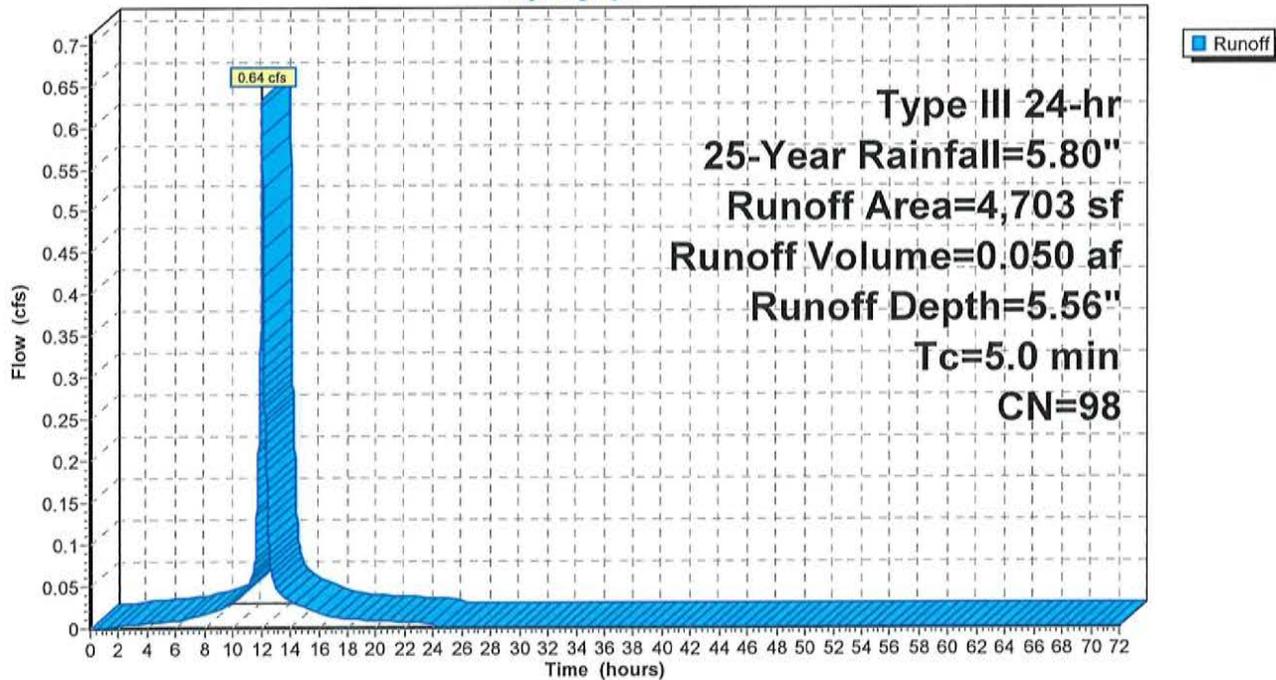
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,703	98	Roofs, HSG A
4,703		100.00% Impervious Area

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

**Subcatchment Roof 1: 1/2 Roof B + C**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment Roof 2: 1/2 Roof A**

Runoff = 0.23 cfs @ 12.07 hrs, Volume= 0.018 af, Depth= 5.56"

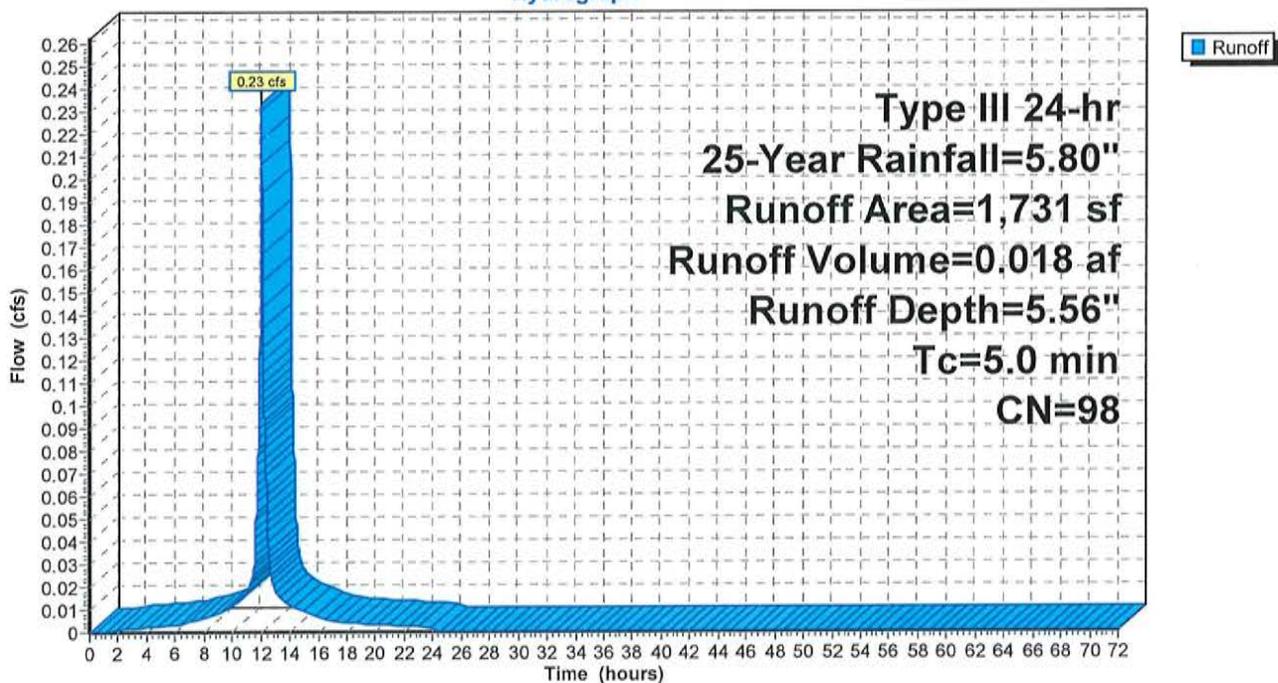
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,731	98	Roofs, HSG A
1,731		100.00% Impervious Area

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

**Subcatchment Roof 2: 1/2 Roof A**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment Roof 3: 1/2 Roof D + E**

Runoff = 0.64 cfs @ 12.07 hrs, Volume= 0.050 af, Depth= 5.56"

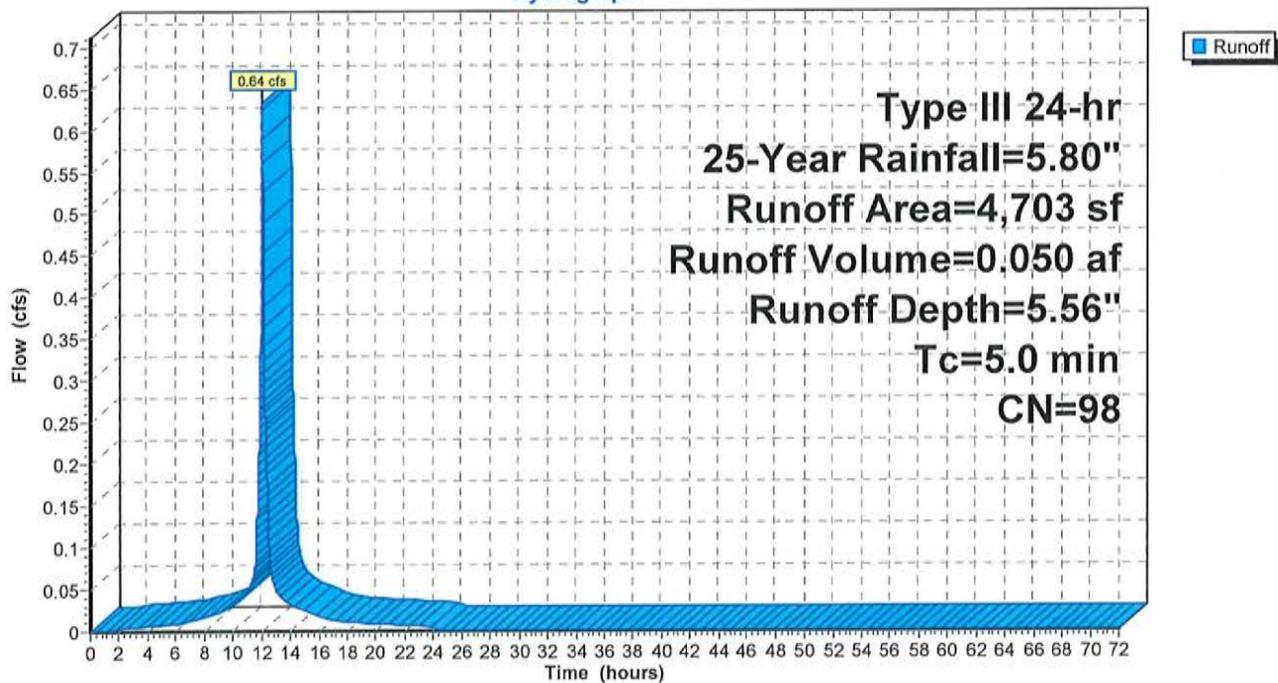
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,703	98	Roofs, HSG A
4,703		100.00% Impervious Area

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

**Subcatchment Roof 3: 1/2 Roof D + E**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment Roof 4: 1/2 Roof B + C**

Runoff = 0.90 cfs @ 12.07 hrs, Volume= 0.071 af, Depth= 5.56"

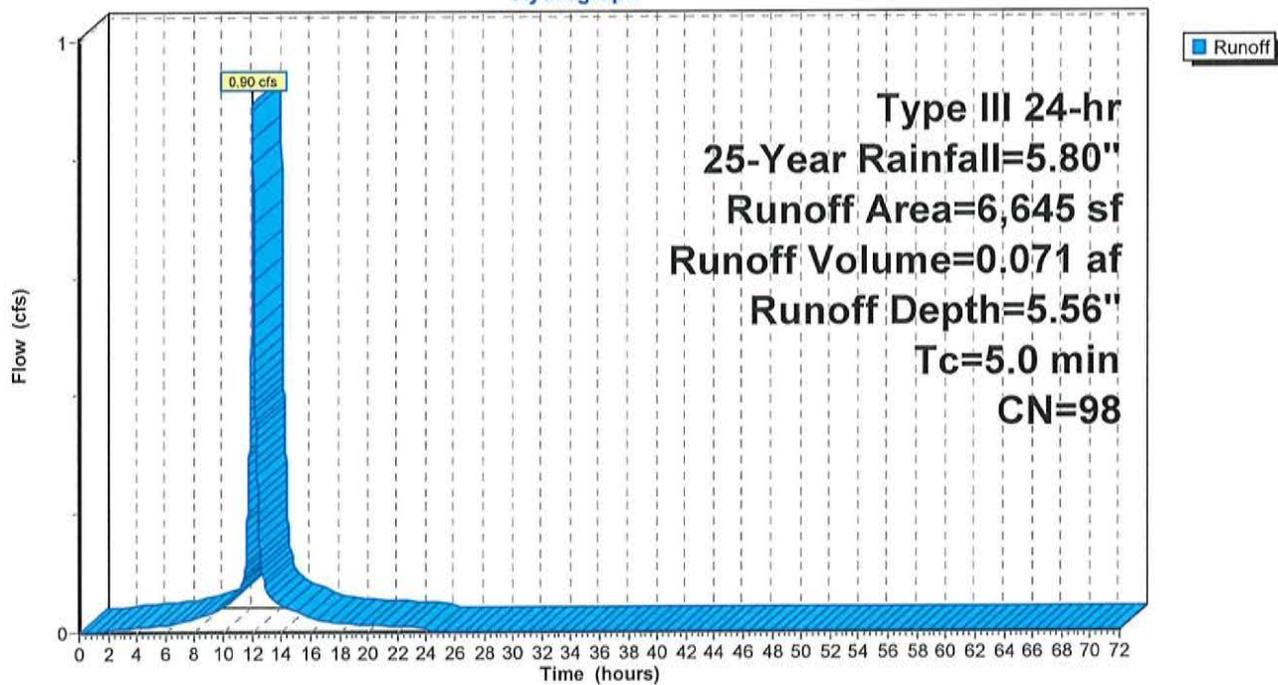
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
6,645	98	Roofs, HSG A
6,645		100.00% Impervious Area

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

**Subcatchment Roof 4: 1/2 Roof B + C**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment Roof 5: 1/2 Roof A**

Runoff = 0.65 cfs @ 12.07 hrs, Volume= 0.051 af, Depth= 5.56"

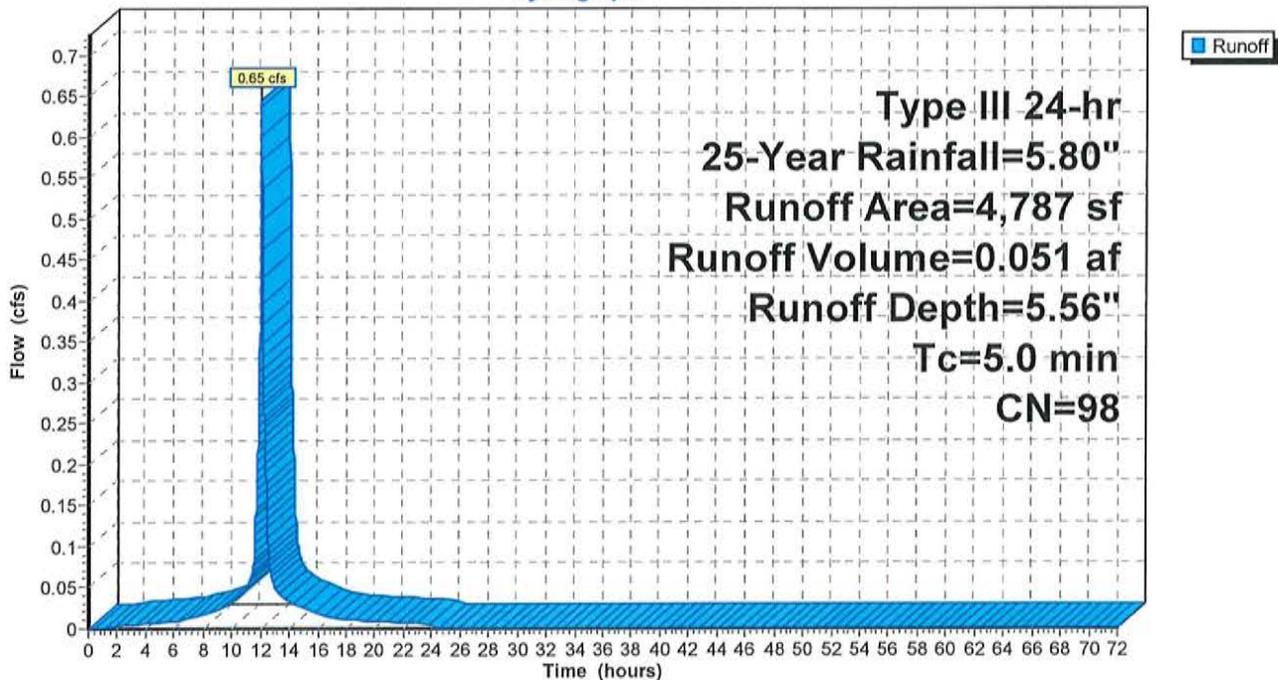
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,787	98	Roofs, HSG A
4,787		100.00% Impervious Area

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

**Subcatchment Roof 5: 1/2 Roof A**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Subcatchment Roof 6: 1/2 Roof D + E**

Runoff = 0.90 cfs @ 12.07 hrs, Volume= 0.071 af, Depth= 5.56"

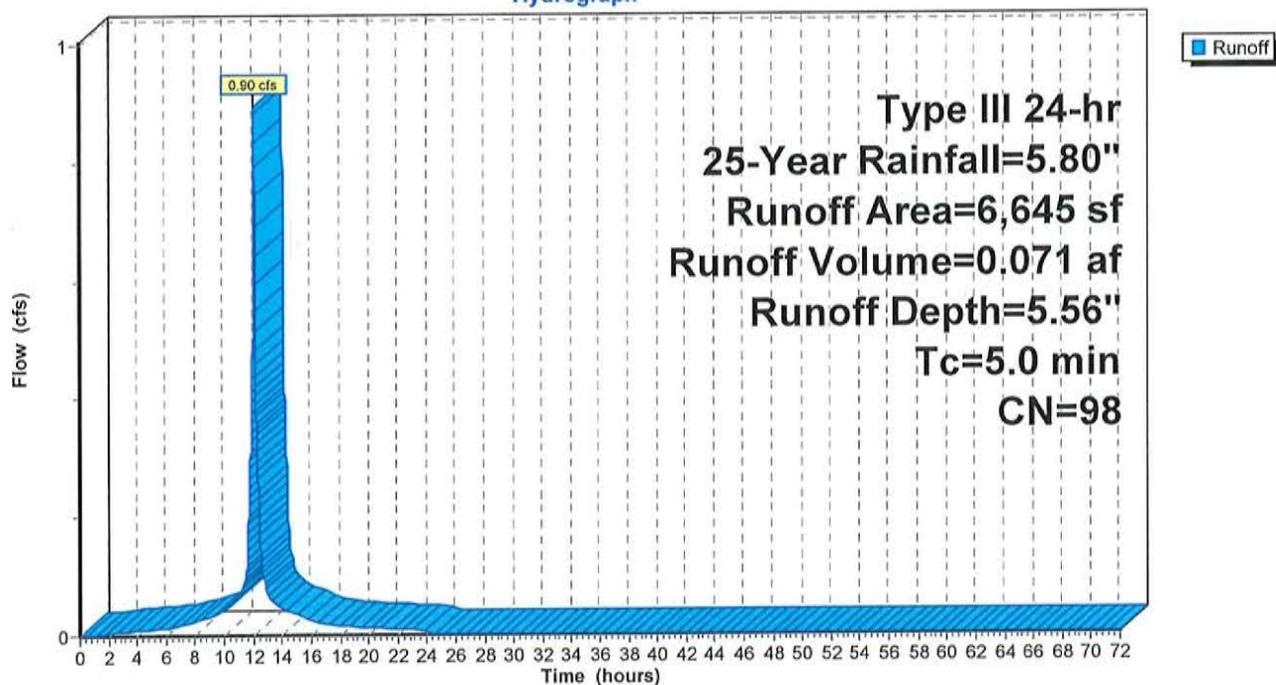
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
6,645	98	Roofs, HSG A
6,645		100.00% Impervious Area

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

**Subcatchment Roof 6: 1/2 Roof D + E**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Subcatchment Roof 7: Community Building Roof**

Runoff = 0.66 cfs @ 12.07 hrs, Volume= 0.052 af, Depth= 5.56"

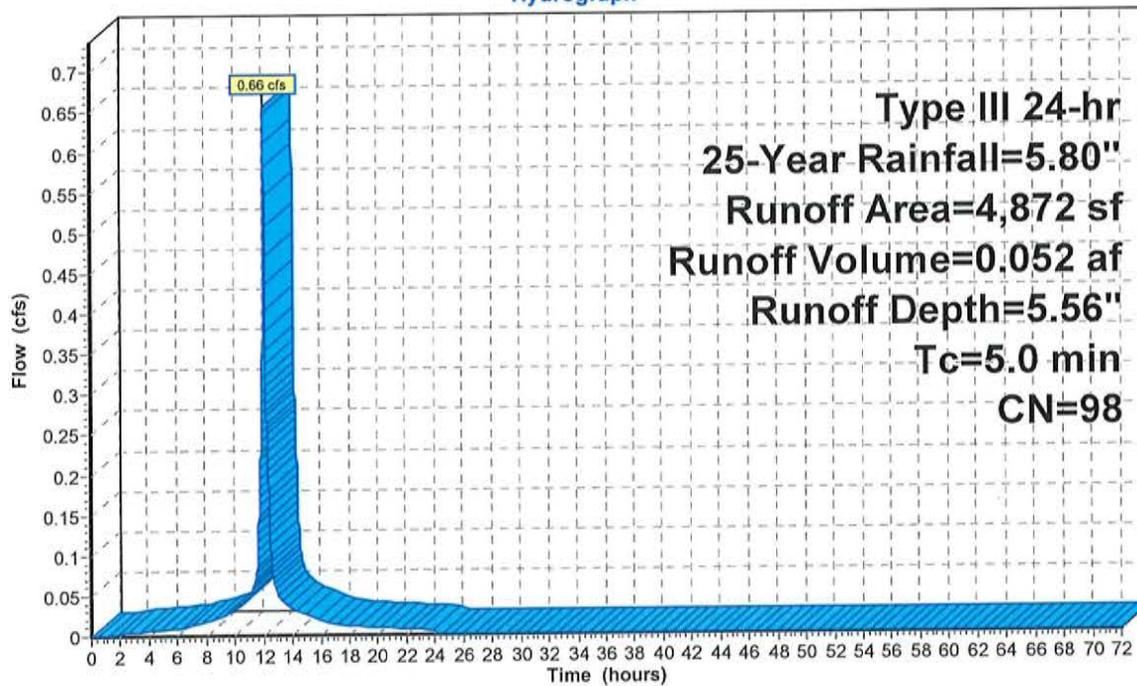
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,872	98	Roofs, HSG A
4,872		100.00% Impervious Area

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

**Subcatchment Roof 7: Community Building Roof**

Hydrograph



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**Summary for Pond 1P: SWMA 1**

Inflow Area = 2.000 ac, 25.59% Impervious, Inflow Depth = 1.49" for 25-Year event  
 Inflow = 3.23 cfs @ 12.09 hrs, Volume= 0.248 af  
 Outflow = 0.35 cfs @ 11.81 hrs, Volume= 0.248 af, Atten= 89%, Lag= 0.0 min  
 Discarded = 0.35 cfs @ 11.81 hrs, Volume= 0.248 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 21.62' @ 13.48 hrs Surf.Area= 1,826 sf Storage= 3,590 cf

Plug-Flow detention time= 95.9 min calculated for 0.248 af (100% of inflow)  
 Center-of-Mass det. time= 95.9 min ( 970.9 - 875.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	18.10'	2,769 cf	<b>15.75'W x 115.92'L x 5.00'H Prismatoid</b> 9,129 cf Overall - 2,205 cf Embedded = 6,924 cf x 40.0% Voids
#2	20.10'	2,205 cf	<b>ADS_StormTech SC-740 +Cap x 48 Inside #1</b> Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 48 Chambers in 3 Rows
		4,975 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	18.10'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.35 cfs @ 11.81 hrs HW=18.15' (Free Discharge)  
 ↑**1=Exfiltration** (Exfiltration Controls 0.35 cfs)

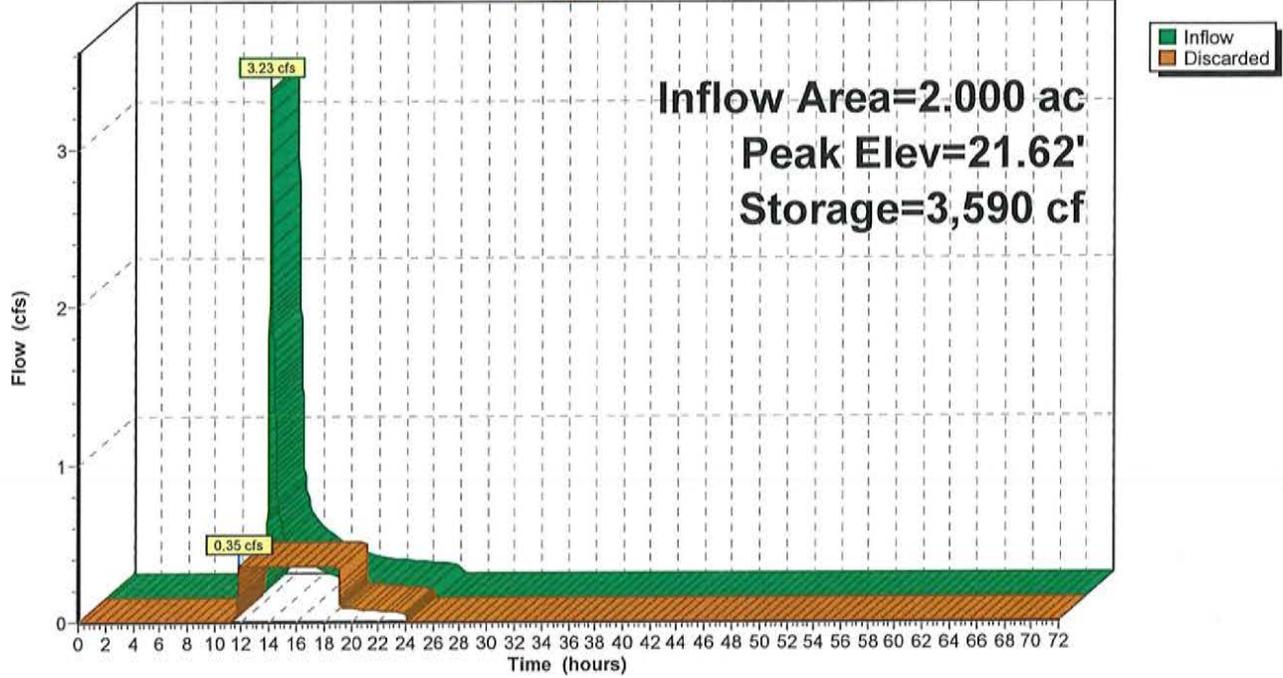
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**Pond 1P: SWMA 1**

Hydrograph



**Surfside Crossing (rev3)**

Type III 24-hr 25-Year Rainfall=5.80"

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**Summary for Pond 2P: SWMA 2**

Inflow Area = 1.210 ac, 54.51% Impervious, Inflow Depth = 2.93" for 25-Year event  
 Inflow = 4.18 cfs @ 12.08 hrs, Volume= 0.296 af  
 Outflow = 0.42 cfs @ 11.64 hrs, Volume= 0.296 af, Atten= 90%, Lag= 0.0 min  
 Discarded = 0.42 cfs @ 11.64 hrs, Volume= 0.296 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.02' @ 12.98 hrs Surf.Area= 2,196 sf Storage= 4,531 cf

Plug-Flow detention time= 87.1 min calculated for 0.296 af (100% of inflow)  
 Center-of-Mass det. time= 87.1 min ( 908.5 - 821.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	19.40'	3,289 cf	<b>30.00'W x 73.20'L x 5.00'H Prismatic</b> 10,980 cf Overall - 2,756 cf Embedded = 8,224 cf x 40.0% Voids
#2	21.40'	2,756 cf	<b>ADS_StormTech SC-740 +Cap</b> x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 60 Chambers in 6 Rows
		6,046 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.40'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.42 cfs @ 11.64 hrs HW=19.45' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.42 cfs)

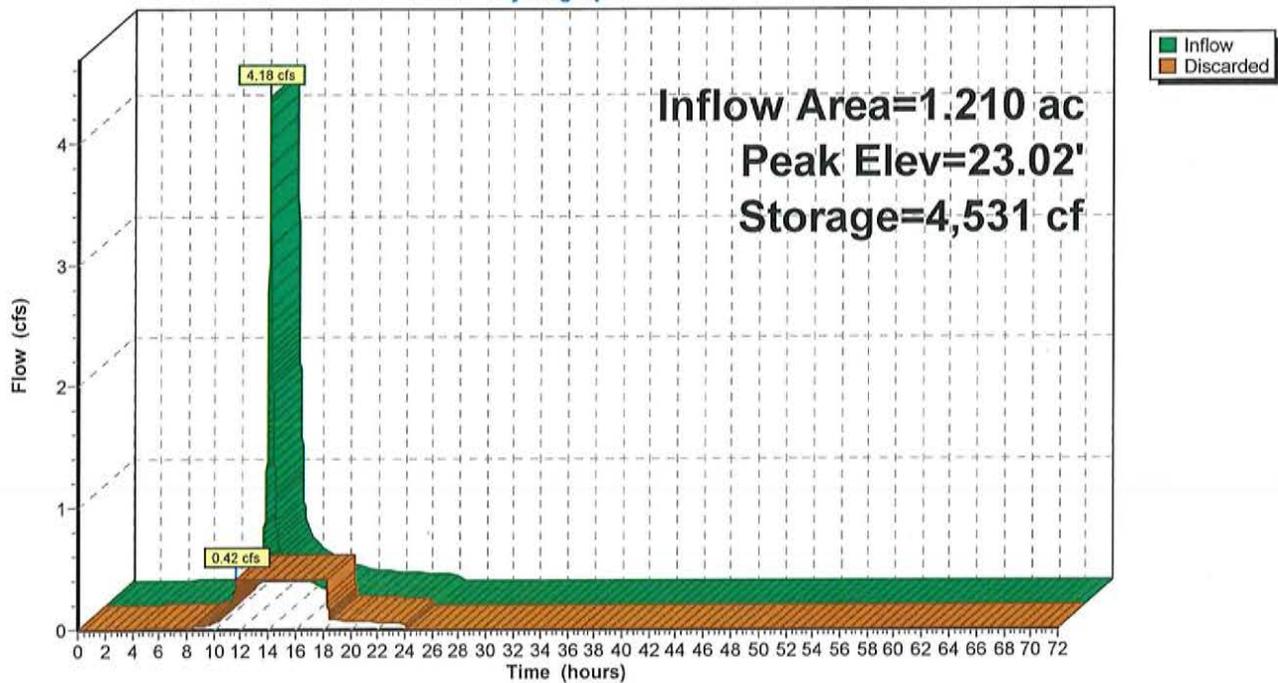
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**Pond 2P: SWMA 2**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 3P: SWMA 3**

Inflow Area = 0.977 ac, 35.72% Impervious, Inflow Depth = 2.04" for 25-Year event  
 Inflow = 2.33 cfs @ 12.08 hrs, Volume= 0.166 af  
 Outflow = 0.26 cfs @ 11.73 hrs, Volume= 0.166 af, Atten= 89%, Lag= 0.0 min  
 Discarded = 0.26 cfs @ 11.73 hrs, Volume= 0.166 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.89' @ 13.02 hrs Surf.Area= 1,342 sf Storage= 2,452 cf

Plug-Flow detention time= 82.4 min calculated for 0.166 af (100% of inflow)  
 Center-of-Mass det. time= 82.4 min ( 938.6 - 856.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	19.80'	1,753 cf	<b>30.00'W x 44.72'L x 4.50'H Prismatic</b> 6,037 cf Overall - 1,654 cf Embedded = 4,383 cf x 40.0% Voids
#2	21.30'	1,654 cf	<b>ADS StormTech SC-740 +Cap</b> x 36 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 36 Chambers in 6 Rows
		3,407 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.80'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.26 cfs @ 11.73 hrs HW=19.85' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.26 cfs)

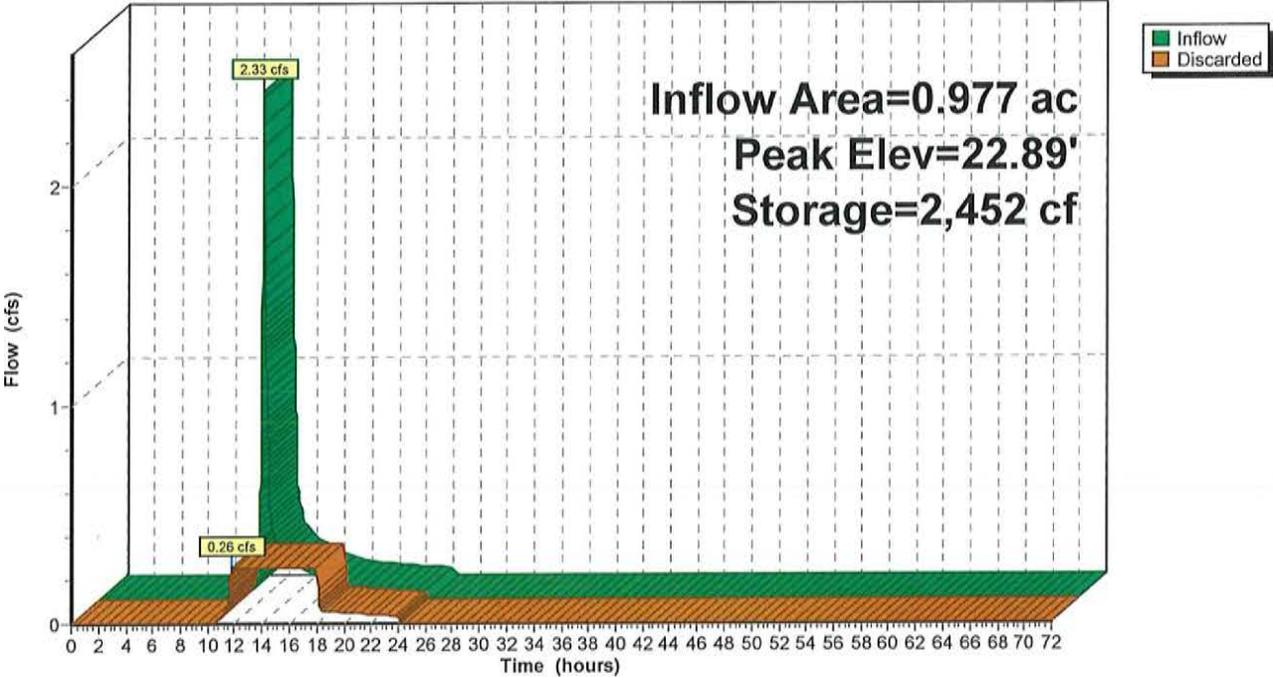
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**Pond 3P: SWMA 3**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 4P: SWMA 4**

Inflow Area = 0.466 ac, 38.45% Impervious, Inflow Depth = 2.12" for 25-Year event  
 Inflow = 1.16 cfs @ 12.08 hrs, Volume= 0.082 af  
 Outflow = 0.13 cfs @ 11.73 hrs, Volume= 0.082 af, Atten= 88%, Lag= 0.0 min  
 Discarded = 0.13 cfs @ 11.73 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 22.83' @ 12.96 hrs Surf.Area= 704 sf Storage= 1,192 cf

Plug-Flow detention time= 74.0 min calculated for 0.082 af (100% of inflow)  
 Center-of-Mass det. time= 73.9 min ( 927.6 - 853.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	19.90'	937 cf	<b>15.75'W x 44.72'L x 4.50'H Prismatic</b> 3,170 cf Overall - 827 cf Embedded = 2,343 cf x 40.0% Voids
#2	21.40'	827 cf	<b>ADS_StormTech SC-740 +Cap</b> x 18 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 18 Chambers in 3 Rows
		1,764 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	19.90'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.13 cfs @ 11.73 hrs HW=19.95' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.13 cfs)

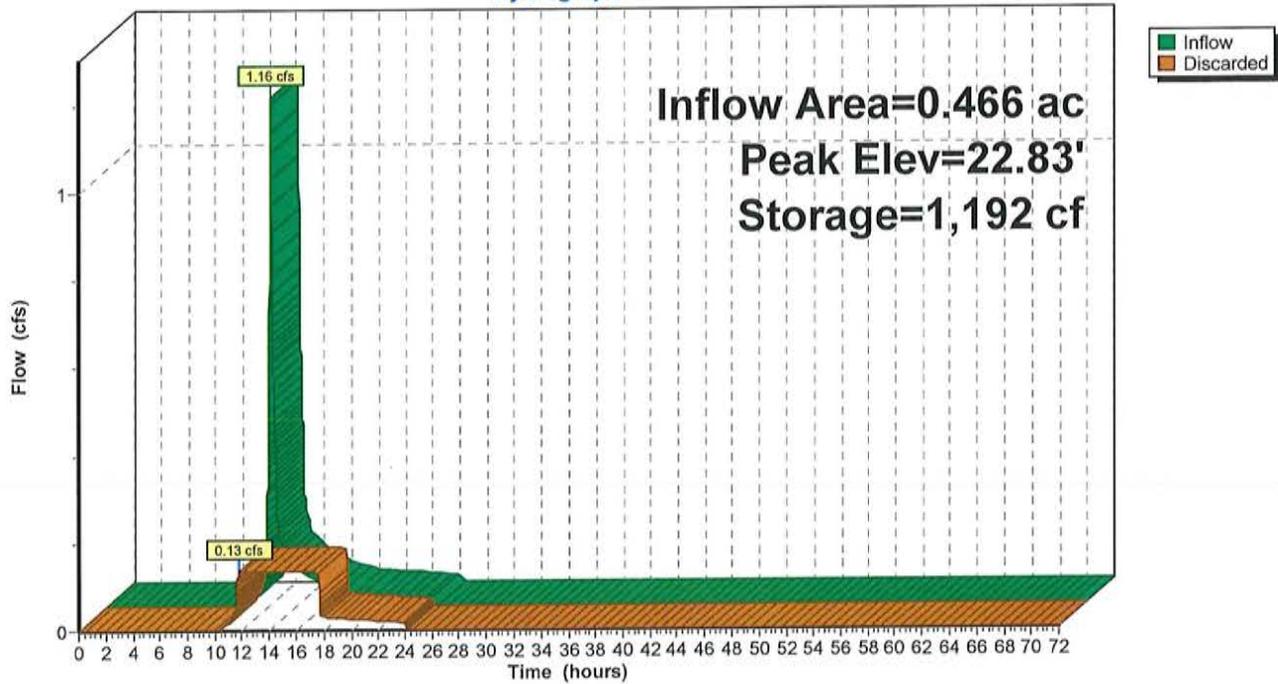
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**Pond 4P: SWMA 4**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 5P: SWMA 5**

Inflow Area = 1.614 ac, 30.74% Impervious, Inflow Depth = 2.06" for 25-Year event  
 Inflow = 3.19 cfs @ 12.08 hrs, Volume= 0.277 af  
 Outflow = 0.34 cfs @ 11.62 hrs, Volume= 0.277 af, Atten= 89%, Lag= 0.0 min  
 Discarded = 0.34 cfs @ 11.62 hrs, Volume= 0.277 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 26.16' @ 13.04 hrs Surf.Area= 1,769 sf Storage= 3,562 cf

Plug-Flow detention time= 77.3 min calculated for 0.277 af (100% of inflow)  
 Center-of-Mass det. time= 77.3 min ( 872.7 - 795.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	22.60'	2,656 cf	<b>30.00'W x 58.96'L x 5.00'H Prismatic</b> 8,844 cf Overall - 2,205 cf Embedded = 6,639 cf x 40.0% Voids
#2	24.60'	2,205 cf	<b>ADS_StormTech SC-740 +Cap</b> x 48 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 48 Chambers in 6 Rows
		4,861 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.60'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.34 cfs @ 11.62 hrs HW=22.65' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.34 cfs)

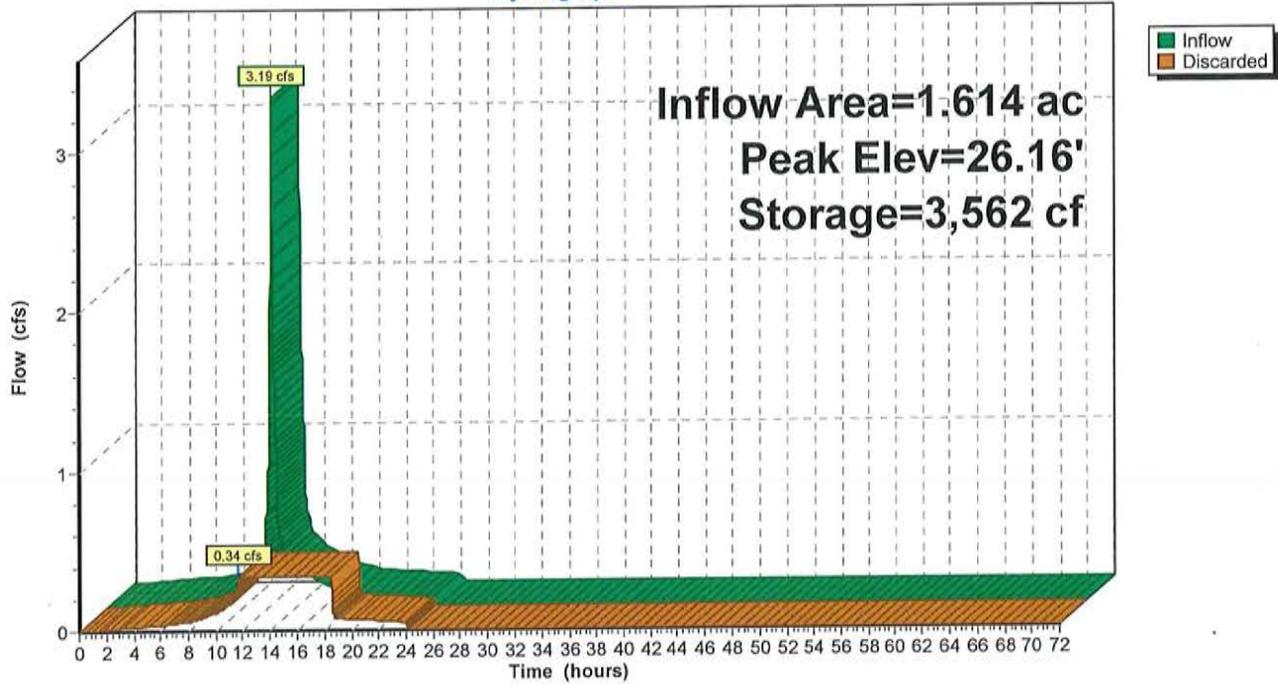
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**Pond 5P: SWMA 5**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 6P: SWMA 6**

Inflow Area = 1.299 ac, 34.25% Impervious, Inflow Depth = 1.55" for 25-Year event  
 Inflow = 2.02 cfs @ 12.08 hrs, Volume= 0.168 af  
 Outflow = 0.23 cfs @ 11.80 hrs, Volume= 0.168 af, Atten= 89%, Lag= 0.0 min  
 Discarded = 0.23 cfs @ 11.80 hrs, Volume= 0.168 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 24.67' @ 13.22 hrs Surf.Area= 1,209 sf Storage= 2,171 cf

Plug-Flow detention time= 78.4 min calculated for 0.168 af (100% of inflow)  
 Center-of-Mass det. time= 78.4 min ( 924.4 - 846.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	21.40'	1,829 cf	<b>20.50'W x 58.96'L x 5.00'H Prismatic</b> 6,043 cf Overall - 1,470 cf Embedded = 4,573 cf x 40.0% Voids
#2	23.40'	1,470 cf	<b>ADS_StormTech SC-740 +Cap</b> x 32 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 32 Chambers in 4 Rows
		3,299 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.40'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.23 cfs @ 11.80 hrs HW=21.45' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.23 cfs)

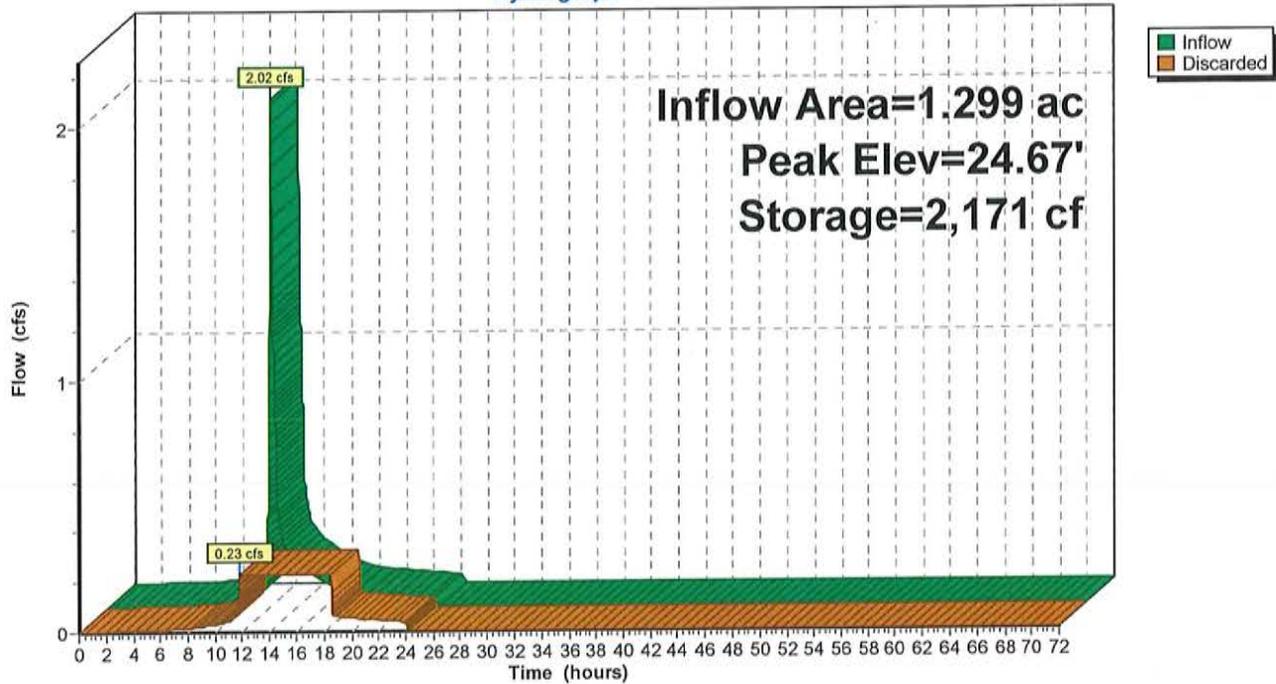
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**Pond 6P: SWMA 6**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 7P: SWMA 7**

Inflow Area = 1.210 ac, 47.37% Impervious, Inflow Depth = 2.40" for 25-Year event  
 Inflow = 3.43 cfs @ 12.08 hrs, Volume= 0.242 af  
 Outflow = 0.39 cfs @ 11.70 hrs, Volume= 0.242 af, Atten= 89%, Lag= 0.0 min  
 Discarded = 0.39 cfs @ 11.70 hrs, Volume= 0.242 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.95' @ 12.93 hrs Surf.Area= 2,028 sf Storage= 3,526 cf

Plug-Flow detention time= 73.9 min calculated for 0.242 af (100% of inflow)  
 Center-of-Mass det. time= 73.8 min ( 914.6 - 840.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	2,640 cf	<b>25.25'W x 80.32'L x 4.50'H Prismatic</b> 9,126 cf Overall - 2,527 cf Embedded = 6,600 cf x 40.0% Voids
#2	22.50'	2,527 cf	<b>ADS_StormTech SC-740 +Cap</b> x 55 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 55 Chambers in 5 Rows
		5,167 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.00'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.39 cfs @ 11.70 hrs HW=21.05' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.39 cfs)

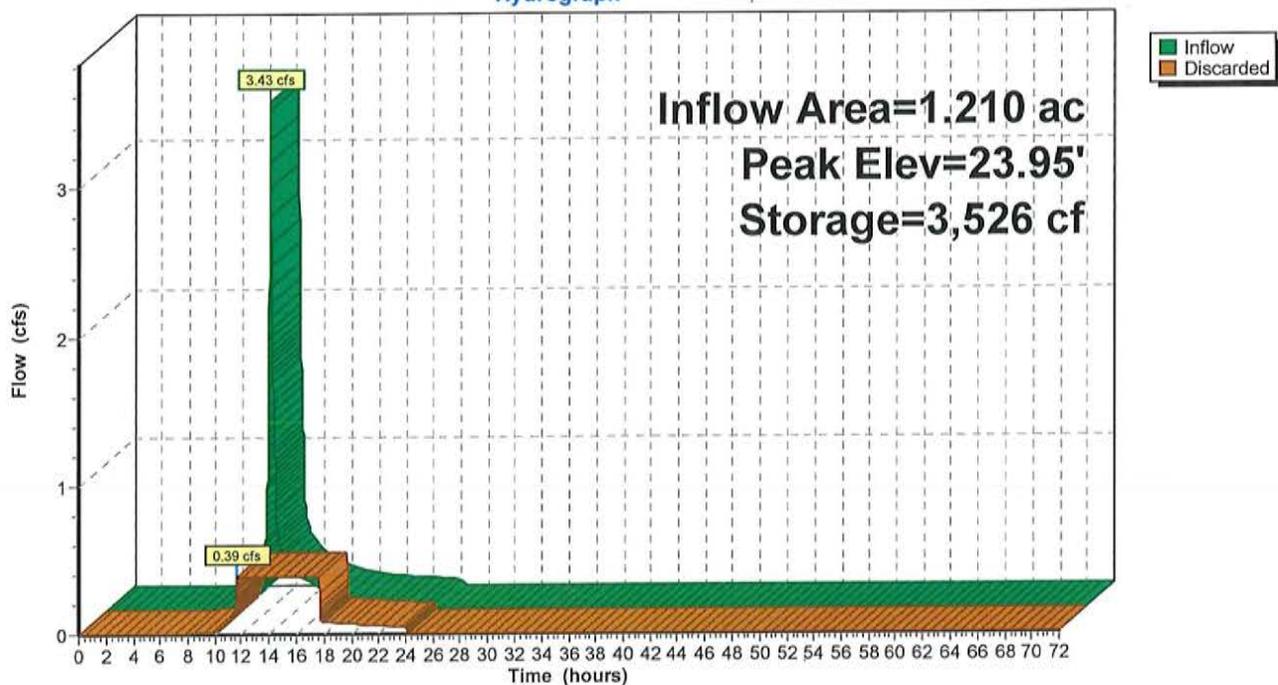
**Surfside Crossing (rev3)**

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**Pond 7P: SWMA 7**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 8P: SWMA 8**

Inflow Area = 0.761 ac, 66.41% Impervious, Inflow Depth = 3.54" for 25-Year event  
 Inflow = 3.18 cfs @ 12.07 hrs, Volume= 0.225 af  
 Outflow = 0.33 cfs @ 11.62 hrs, Volume= 0.225 af, Atten= 90%, Lag= 0.0 min  
 Discarded = 0.33 cfs @ 11.62 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 23.70' @ 12.87 hrs Surf.Area= 1,735 sf Storage= 3,379 cf

Plug-Flow detention time= 77.4 min calculated for 0.225 af (100% of inflow)  
 Center-of-Mass det. time= 77.4 min ( 884.2 - 806.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	20.20'	2,642 cf	<b>26.25'W x 66.08'L x 5.00'H Prismatic</b> 8,673 cf Overall - 2,067 cf Embedded = 6,606 cf x 40.0% Voids
#2	22.20'	2,067 cf	<b>ADS_StormTech SC-740 +Cap</b> x 45 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 45 Chambers in 5 Rows
		4,710 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	20.20'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.33 cfs @ 11.62 hrs HW=20.25' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.33 cfs)

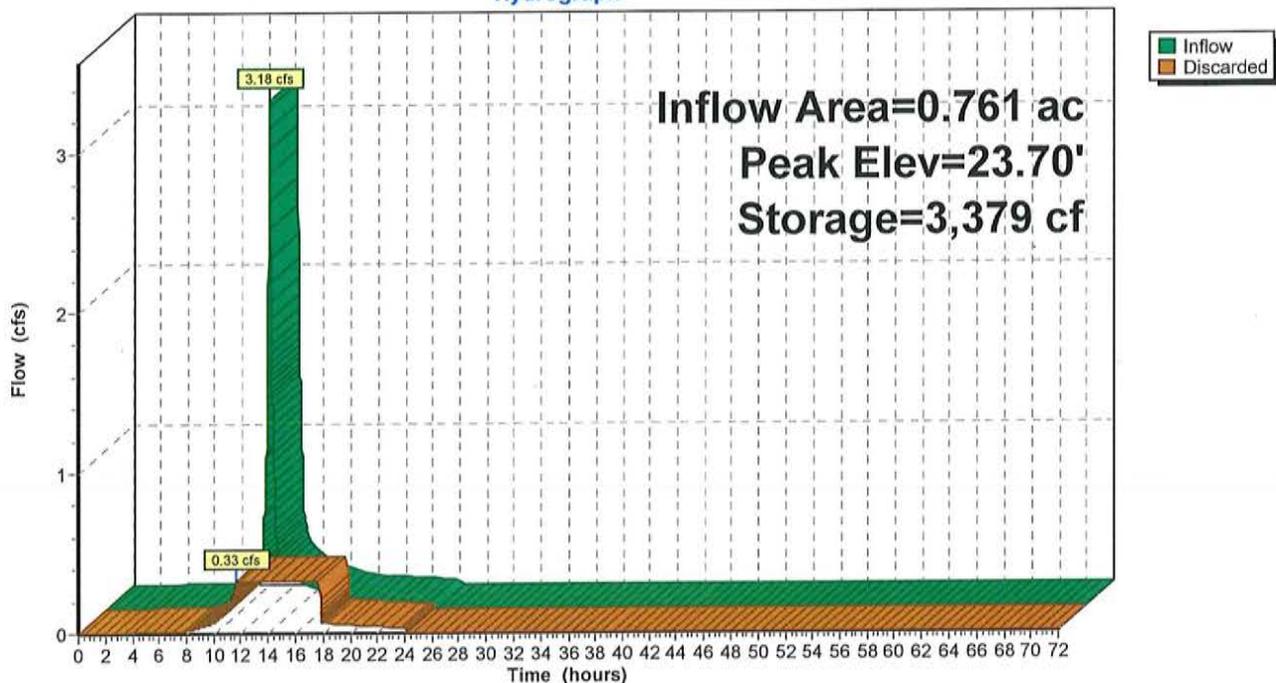
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**Pond 8P: SWMA 8**

Hydrograph



**Surfside Crossing (rev3)**

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**Summary for Pond 9P: Depression**

Inflow Area = 0.649 ac, 0.00% Impervious, Inflow Depth = 0.30" for 25-Year event  
 Inflow = 0.05 cfs @ 12.41 hrs, Volume= 0.016 af  
 Outflow = 0.05 cfs @ 12.43 hrs, Volume= 0.016 af, Atten= 1%, Lag= 1.6 min  
 Discarded = 0.05 cfs @ 12.43 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Peak Elev= 28.00' @ 12.43 hrs Surf.Area= 1,423 sf Storage= 5 cf

Plug-Flow detention time= 1.5 min calculated for 0.016 af (100% of inflow)  
 Center-of-Mass det. time= 1.5 min ( 990.4 - 988.9 )

Volume	Invert	Avail.Storage	Storage Description			
#1	28.00'	845 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
28.00	1,420	175.7	0	0	1,420	
28.50	1,976	194.6	845	845	1,985	

Device	Routing	Invert	Outlet Devices
#1	Discarded	28.00'	<b>2.410 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.08 cfs @ 12.43 hrs HW=28.00' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.08 cfs)

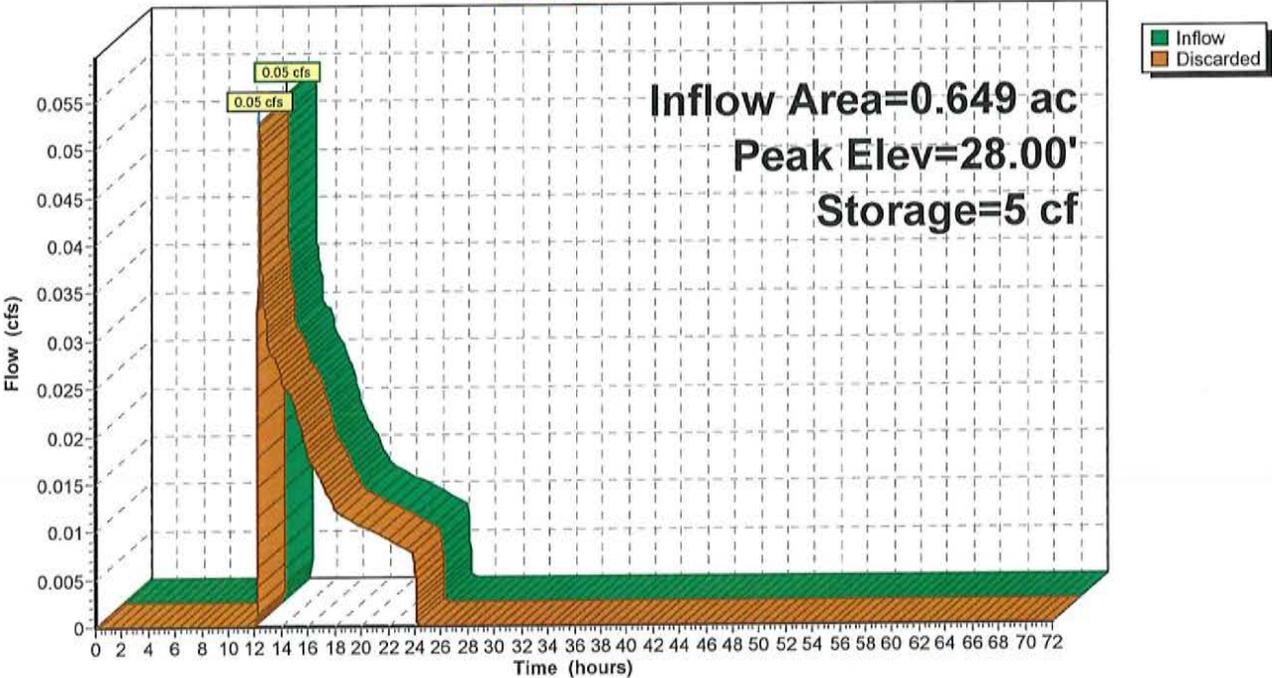
**Surfside Crossing (rev3)**

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**Pond 9P: Depression**

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Roof House Type CA StormTech (2 Row)



Roof House Type B StormTech (2 Row)



Roof House Type D & DA StormTech (2 Row)



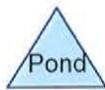
Roof House Type BA StormTech (2 Row)



Roof House Type A StormTech (3 Row)



Roof House Type C StormTech (3 Row)



**Routing Diagram for Residential Roof Sizing**

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# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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## Summary for Subcatchment 38S: Roof House Type A

Runoff = 0.23 cfs @ 12.07 hrs, Volume= 0.019 af, Depth= 5.56"

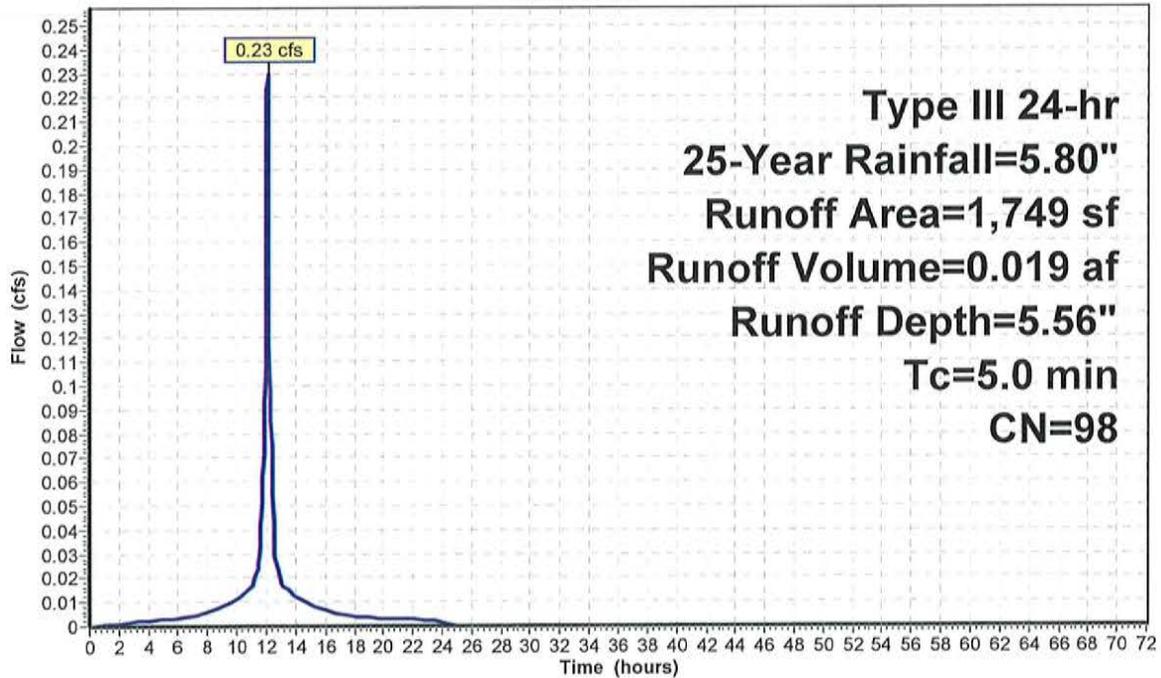
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,749	98	Roofs, HSG A
1,749		100.00% Impervious Area

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

## Subcatchment 38S: Roof House Type A

Hydrograph



# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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## Summary for Subcatchment 39S: Roof House Type BA

Runoff = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 5.56"

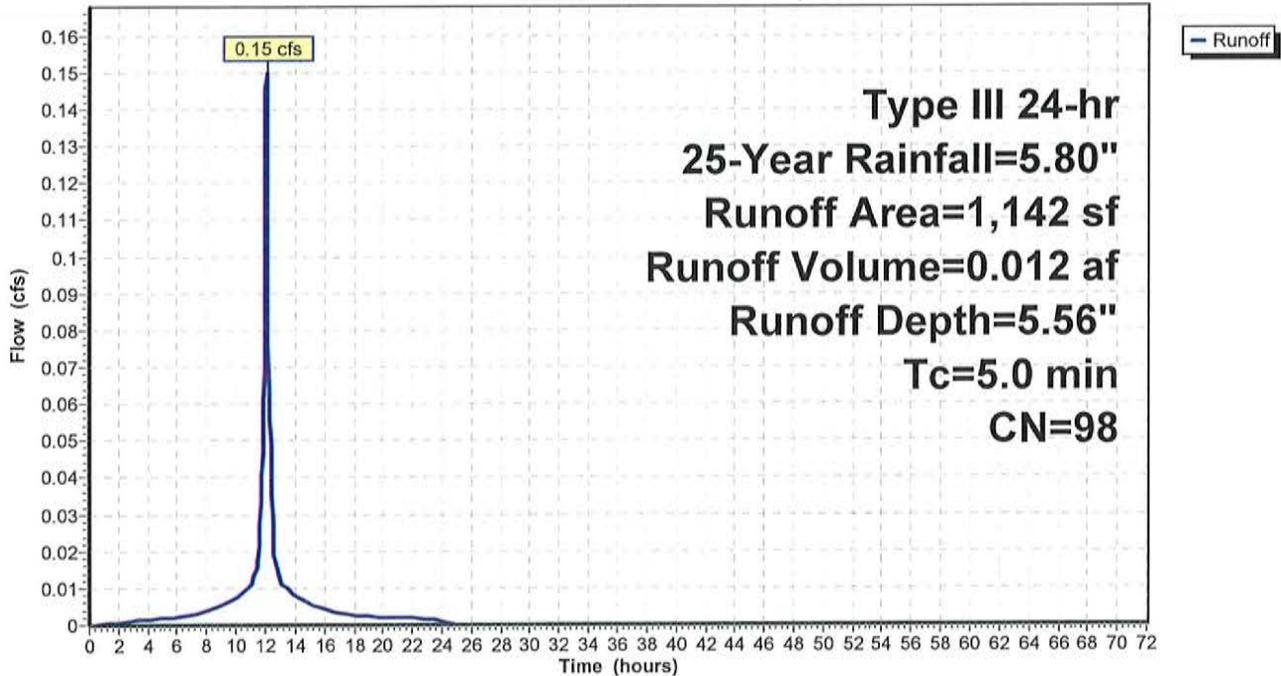
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,142	98	Roofs, HSG A
1,142		100.00% Impervious Area

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

## Subcatchment 39S: Roof House Type BA

Hydrograph



# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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## Summary for Subcatchment 41S: Roof House Type D & DA

Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af, Depth= 5.56"

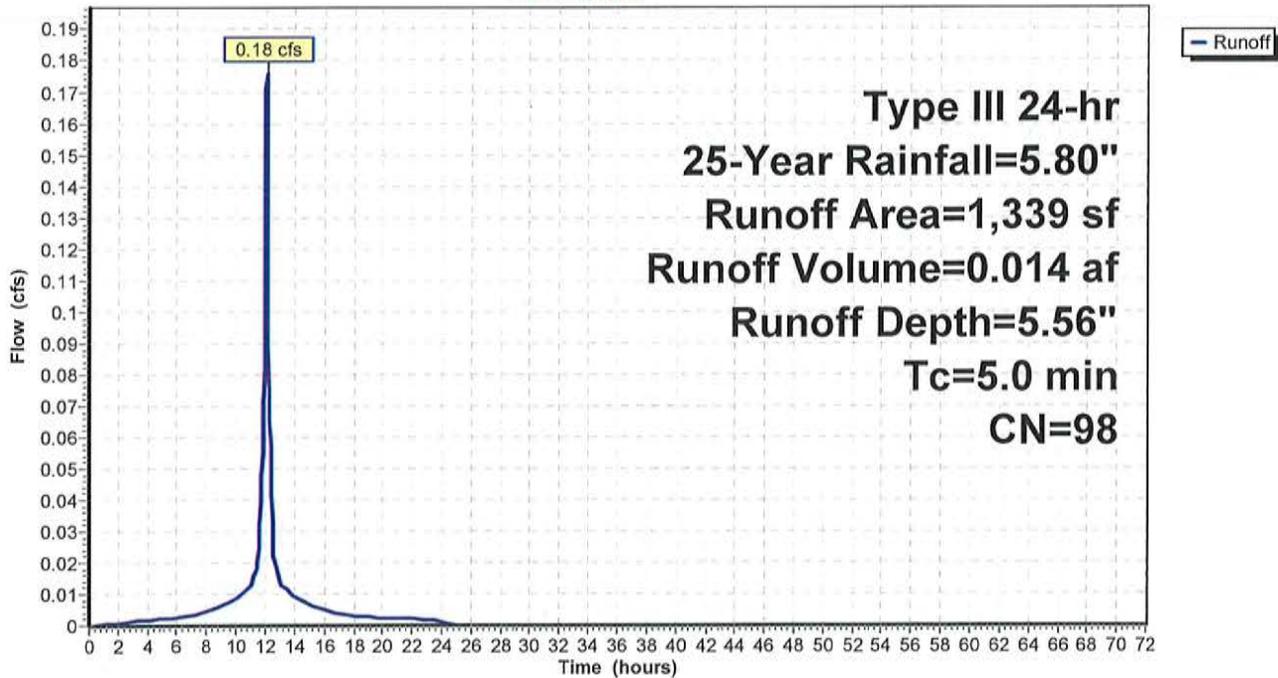
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,339	98	Roofs, HSG A
1,339		100.00% Impervious Area

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

## Subcatchment 41S: Roof House Type D & DA

Hydrograph



# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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## Summary for Subcatchment 42S: Roof House Type CA

Runoff = 0.14 cfs @ 12.07 hrs, Volume= 0.011 af, Depth= 5.56"

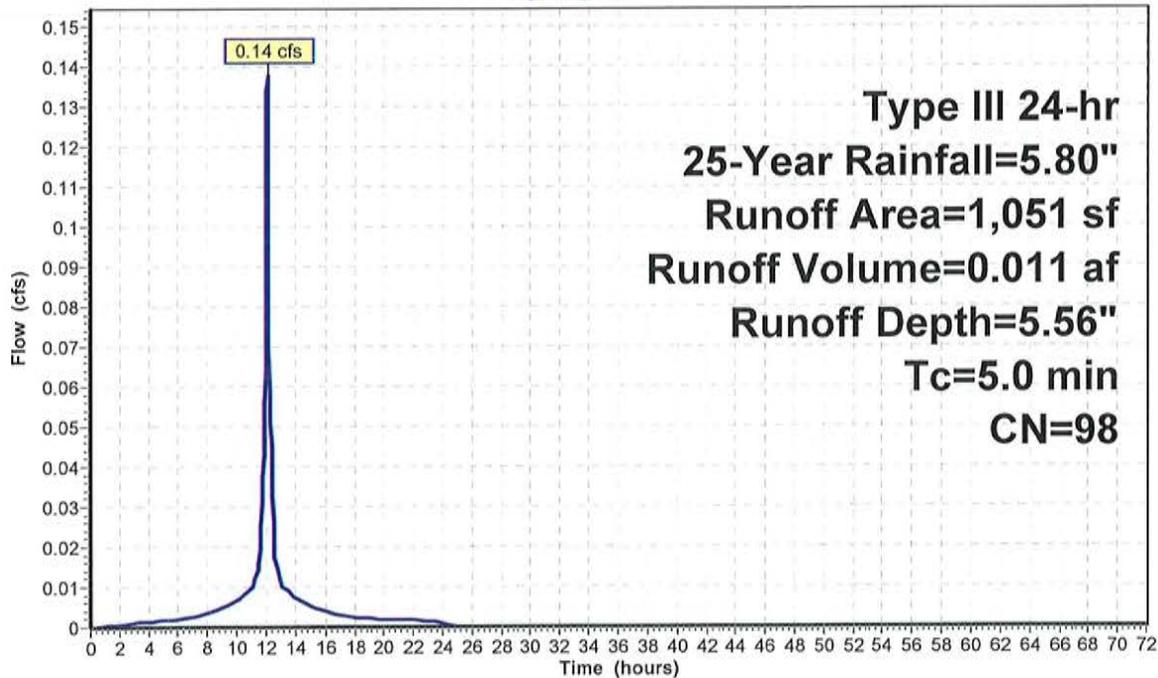
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,051	98	Roofs, HSG A
1,051		100.00% Impervious Area

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

## Subcatchment 42S: Roof House Type CA

Hydrograph



# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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## Summary for Subcatchment 43S: Roof House Type C

Runoff = 0.19 cfs @ 12.07 hrs, Volume= 0.015 af, Depth= 5.56"

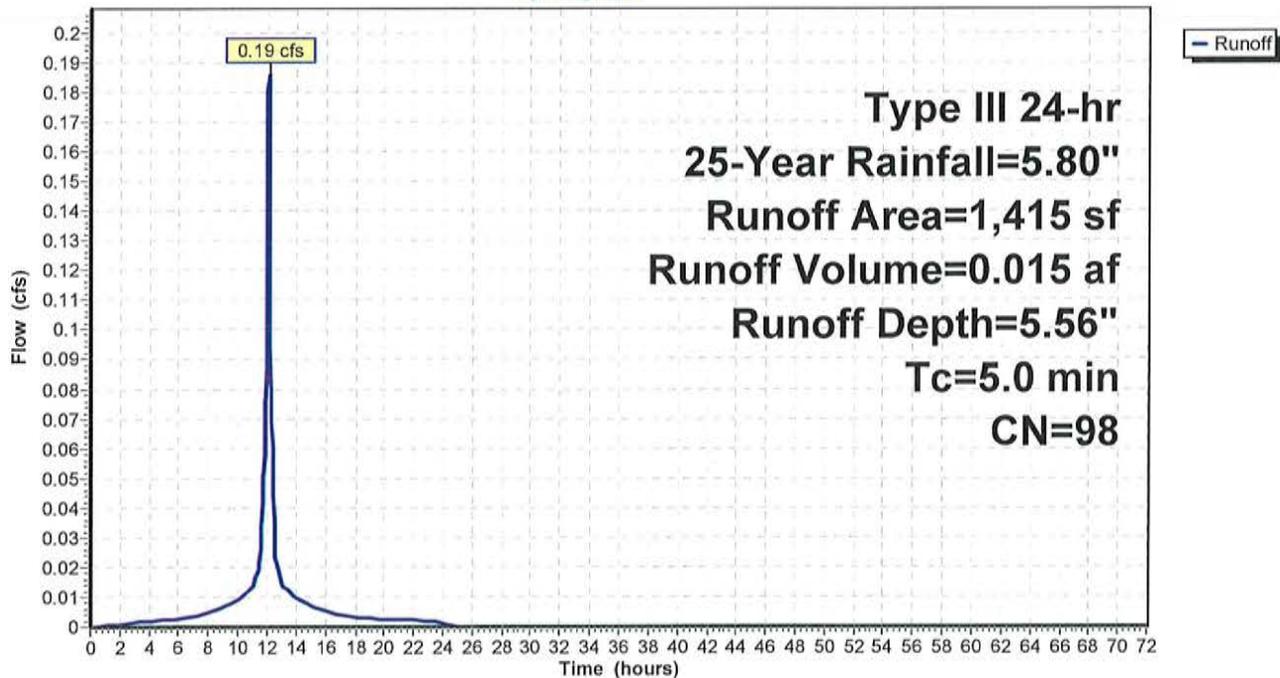
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,415	98	Roofs, HSG A
1,415		100.00% Impervious Area

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

## Subcatchment 43S: Roof House Type C

Hydrograph



# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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## Summary for Pond 44P: StormTech (2 Row)

Inflow Area = 0.031 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event  
 Inflow = 0.18 cfs @ 12.07 hrs, Volume= 0.014 af  
 Outflow = 0.02 cfs @ 11.50 hrs, Volume= 0.014 af, Atten= 89%, Lag= 0.0 min  
 Discarded = 0.02 cfs @ 11.50 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 27.74' @ 12.71 hrs Surf.Area= 100 sf Storage= 193 cf

Plug-Flow detention time= 63.1 min calculated for 0.014 af (100% of inflow)  
 Center-of-Mass det. time= 63.1 min ( 807.8 - 744.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.30'	104 cf	<b>11.00'W x 9.12'L x 3.50'H Prismatic</b> 351 cf Overall - 92 cf Embedded = 259 cf x 40.0% Voids
#2	24.80'	92 cf	<b>ADS_StormTech SC-740 +Cap x 2 Inside #1</b> Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 1 Chambers
		196 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.30'	<b>8.270 in/hr Exfiltration over Surface area</b>

Discarded OutFlow Max=0.02 cfs @ 11.50 hrs HW=24.34' (Free Discharge)  
 ↑ 1=Exfiltration (Exfiltration Controls 0.02 cfs)

**Residential Roof Sizing**

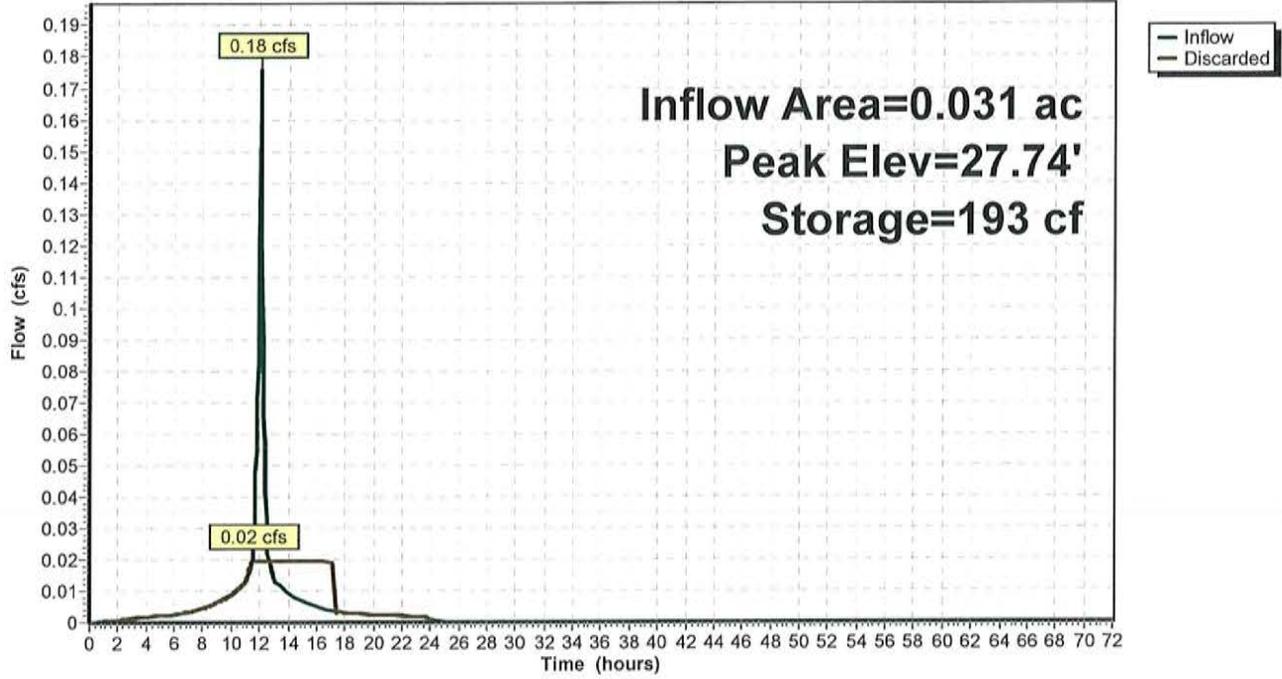
Type III 24-hr 25-Year Rainfall=5.80"

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**Pond 44P: StormTech (2 Row)**

Hydrograph



## Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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### Summary for Pond 45P: StormTech (3 Row)

Inflow Area = 0.032 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event  
 Inflow = 0.19 cfs @ 12.07 hrs, Volume= 0.015 af  
 Outflow = 0.03 cfs @ 11.65 hrs, Volume= 0.015 af, Atten= 85%, Lag= 0.0 min  
 Discarded = 0.03 cfs @ 11.65 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 26.29' @ 12.56 hrs Surf.Area= 144 sf Storage= 177 cf

Plug-Flow detention time= 35.8 min calculated for 0.015 af (100% of inflow)  
 Center-of-Mass det. time= 35.8 min ( 780.5 - 744.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.30'	146 cf	<b>15.75'W x 9.12'L x 3.50'H Prismatic</b> 503 cf Overall - 138 cf Embedded = 365 cf x 40.0% Voids
#2	24.80'	138 cf	<b>ADS_StormTech SC-740 +Cap x 3 Inside #1</b> Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 3 Rows of 1 Chambers
		284 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.30'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.03 cfs @ 11.65 hrs HW=24.35' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.03 cfs)

**Residential Roof Sizing**

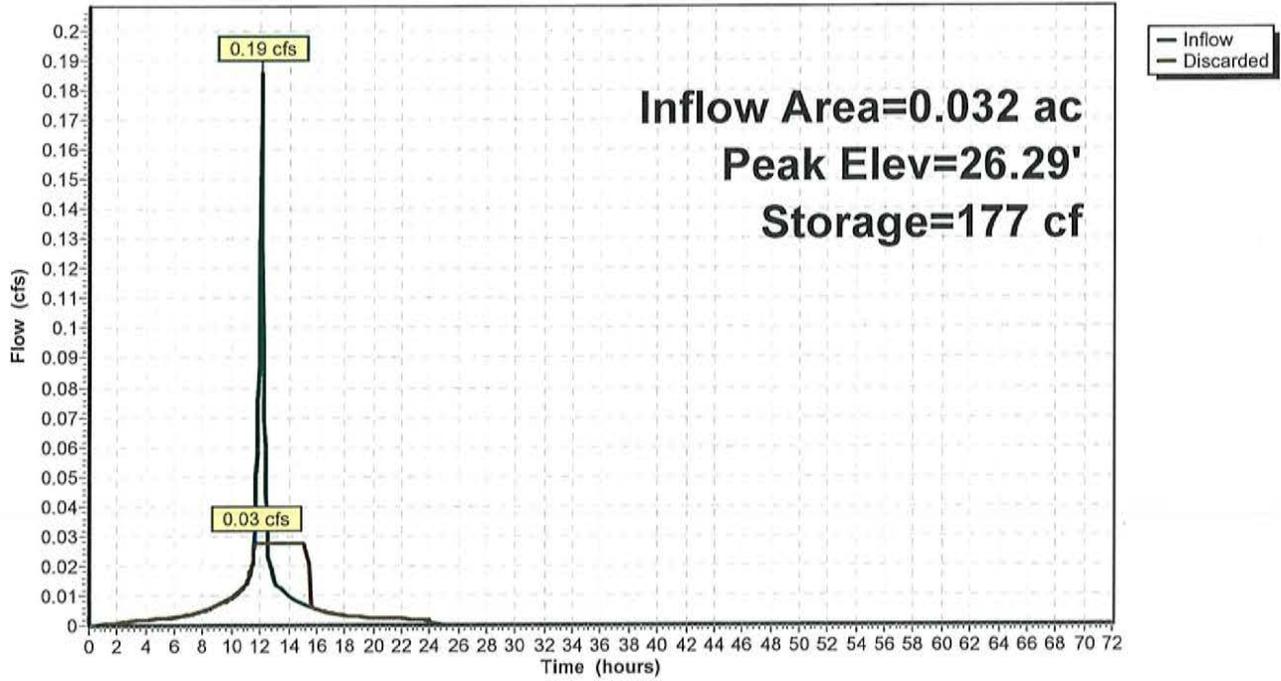
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Type III 24-hr 25-Year Rainfall=5.80"

**Pond 45P: StormTech (3 Row)**

Hydrograph



# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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## Summary for Pond 46P: StormTech (2 Row)

Inflow Area = 0.026 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event  
 Inflow = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af  
 Outflow = 0.02 cfs @ 11.60 hrs, Volume= 0.012 af, Atten= 87%, Lag= 0.0 min  
 Discarded = 0.02 cfs @ 11.60 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 26.83' @ 12.60 hrs Surf.Area= 100 sf Storage= 154 cf

Plug-Flow detention time= 47.1 min calculated for 0.012 af (100% of inflow)  
 Center-of-Mass det. time= 47.1 min ( 791.8 - 744.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.30'	104 cf	<b>11.00'W x 9.12'L x 3.50'H Prismatic</b> 351 cf Overall - 92 cf Embedded = 259 cf x 40.0% Voids
#2	24.80'	92 cf	<b>ADS_StormTech SC-740 +Cap x 2 Inside #1</b> Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 1 Chambers
		196 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.30'	<b>8.270 in/hr Exfiltration over Surface area</b>

Discarded OutFlow Max=0.02 cfs @ 11.60 hrs HW=24.34' (Free Discharge)

↳1=Exfiltration (Exfiltration Controls 0.02 cfs)

**Residential Roof Sizing**

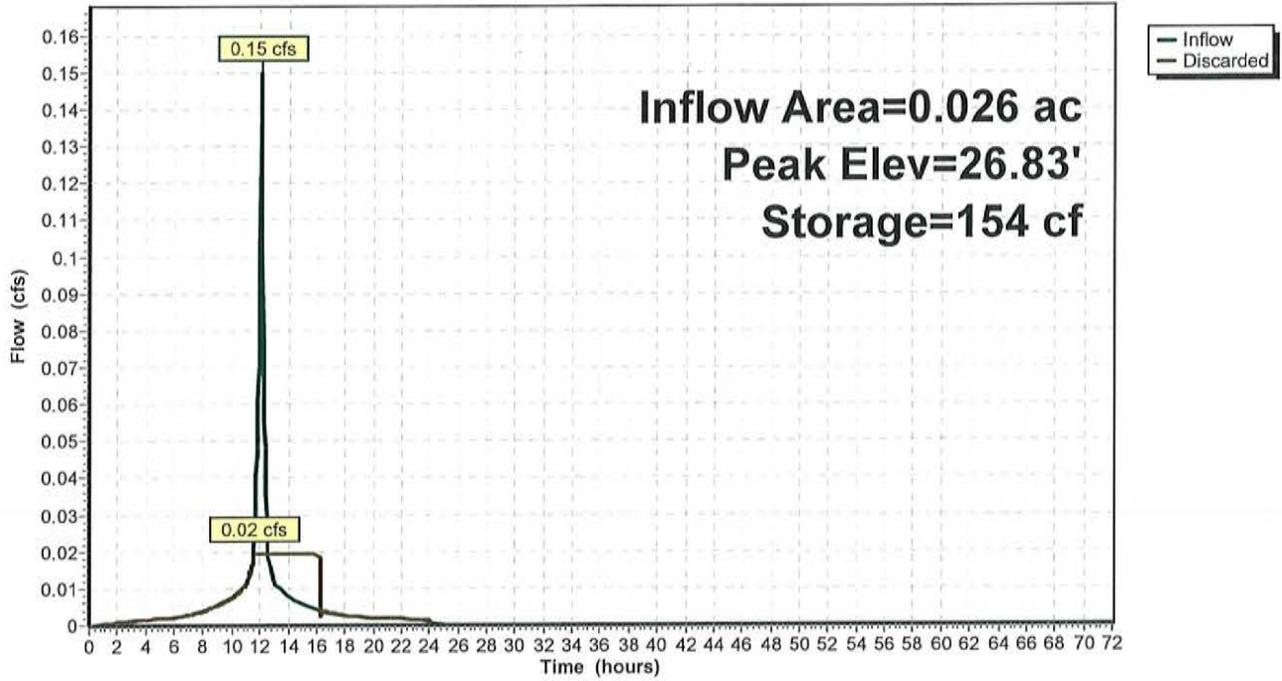
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Type III 24-hr 25-Year Rainfall=5.80"

**Pond 46P: StormTech (2 Row)**

Hydrograph



## Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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### Summary for Pond 47P: StormTech (2 Row)

Inflow Area = 0.024 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event  
Inflow = 0.14 cfs @ 12.07 hrs, Volume= 0.011 af  
Outflow = 0.02 cfs @ 11.65 hrs, Volume= 0.011 af, Atten= 86%, Lag= 0.0 min  
Discarded = 0.02 cfs @ 11.65 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Peak Elev= 26.52' @ 12.57 hrs Surf.Area= 100 sf Storage= 136 cf

Plug-Flow detention time= 40.3 min calculated for 0.011 af (100% of inflow)  
Center-of-Mass det. time= 40.3 min ( 785.0 - 744.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.30'	104 cf	<b>11.00'W x 9.12'L x 3.50'H Prismatoid</b> 351 cf Overall - 92 cf Embedded = 259 cf x 40.0% Voids
#2	24.80'	92 cf	<b>ADS_StormTech SC-740 +Cap x 2 Inside #1</b> Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 1 Chambers
		196 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.30'	<b>8.270 in/hr Exfiltration over Surface area</b>

Discarded OutFlow Max=0.02 cfs @ 11.65 hrs HW=24.35' (Free Discharge)  
↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

# Residential Roof Sizing

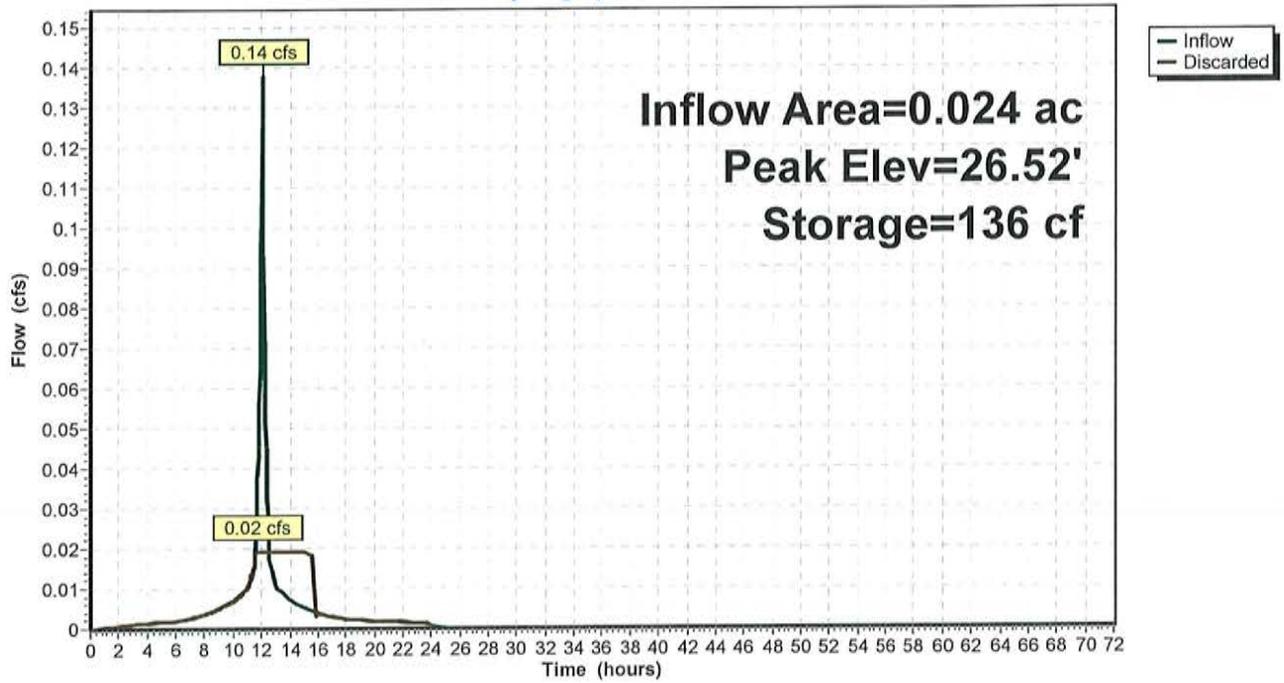
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Type III 24-hr 25-Year Rainfall=5.80"

## Pond 47P: StormTech (2 Row)

Hydrograph



# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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## Summary for Pond 48P: StormTech (3 Row)

Inflow Area = 0.040 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event  
Inflow = 0.23 cfs @ 12.07 hrs, Volume= 0.019 af  
Outflow = 0.03 cfs @ 11.60 hrs, Volume= 0.019 af, Atten= 88%, Lag= 0.0 min  
Discarded = 0.03 cfs @ 11.60 hrs, Volume= 0.019 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Peak Elev= 27.09' @ 12.63 hrs Surf.Area= 144 sf Storage= 242 cf

Plug-Flow detention time= 53.4 min calculated for 0.019 af (100% of inflow)  
Center-of-Mass det. time= 53.3 min ( 798.0 - 744.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.30'	146 cf	<b>15.75'W x 9.12'L x 3.50'H Prismatic</b> 503 cf Overall - 138 cf Embedded = 365 cf x 40.0% Voids
#2	24.80'	138 cf	<b>ADS_StormTech SC-740 +Cap x 3</b> Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 3 Rows of 1 Chambers
		284 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.30'	<b>8.270 in/hr Exfiltration over Surface area</b>

Discarded OutFlow Max=0.03 cfs @ 11.60 hrs HW=24.35' (Free Discharge)  
↑1=Exfiltration (Exfiltration Controls 0.03 cfs)

**Residential Roof Sizing**

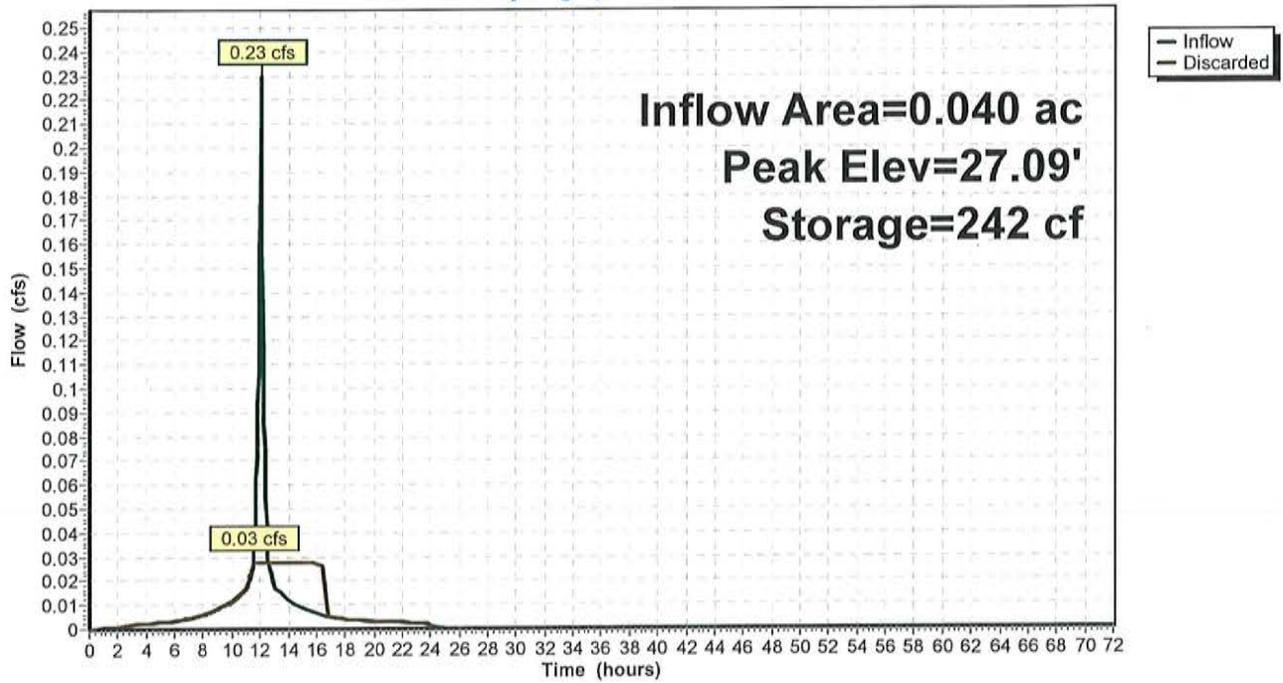
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Type III 24-hr 25-Year Rainfall=5.80"

**Pond 48P: StormTech (3 Row)**

Hydrograph



# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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## Summary for Subcatchment 49S: Roof House Type B

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.014 af, Depth= 5.56"

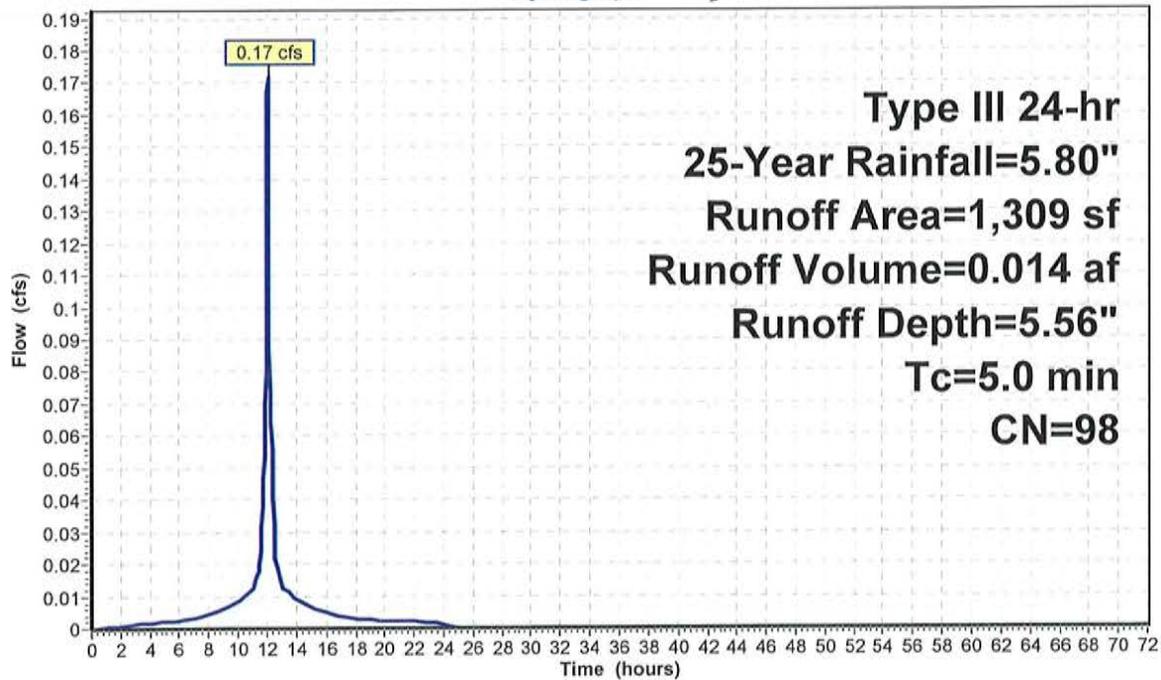
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,309	98	Roofs, HSG A
1,309		100.00% Impervious Area

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

## Subcatchment 49S: Roof House Type B

Hydrograph



# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

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## Summary for Pond 51P: StormTech (2 Row)

Inflow Area = 0.030 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event  
 Inflow = 0.17 cfs @ 12.07 hrs, Volume= 0.014 af  
 Outflow = 0.02 cfs @ 11.55 hrs, Volume= 0.014 af, Atten= 89%, Lag= 0.0 min  
 Discarded = 0.02 cfs @ 11.55 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Peak Elev= 27.59' @ 12.69 hrs Surf.Area= 100 sf Storage= 187 cf

Plug-Flow detention time= 60.5 min calculated for 0.014 af (100% of inflow)  
 Center-of-Mass det. time= 60.5 min ( 805.2 - 744.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	24.30'	104 cf	<b>11.00'W x 9.12'L x 3.50'H Prismatic</b> 351 cf Overall - 92 cf Embedded = 259 cf x 40.0% Voids
#2	24.80'	92 cf	<b>ADS_StormTech SC-740 +Cap x 2 Inside #1</b> Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 1 Chambers
		196 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	24.30'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.02 cfs @ 11.55 hrs HW=24.34' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

# Residential Roof Sizing

Type III 24-hr 25-Year Rainfall=5.80"

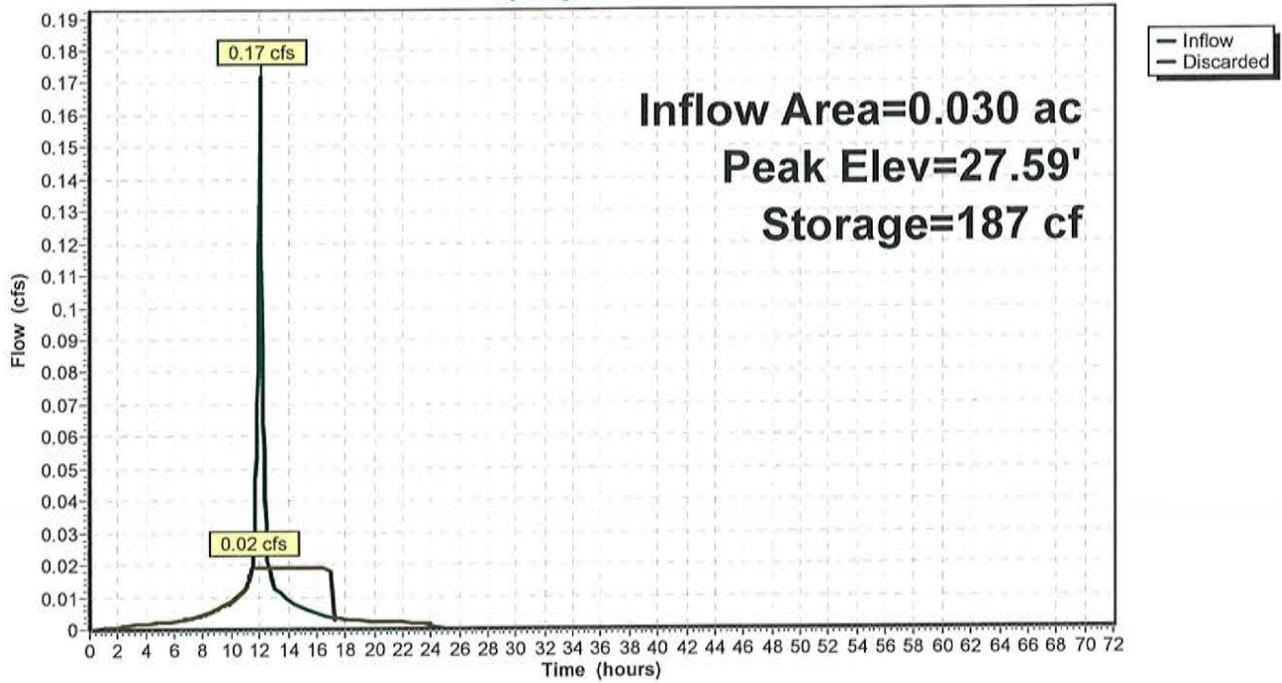
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Page 18

## Pond 51P: StormTech (2 Row)

Hydrograph





# Subcatchment Area 5S (RUNS OFFSITE)



**Summary for Subcatchment 5S: Subcatchment Area 5S (RUNS OFFSITE)**

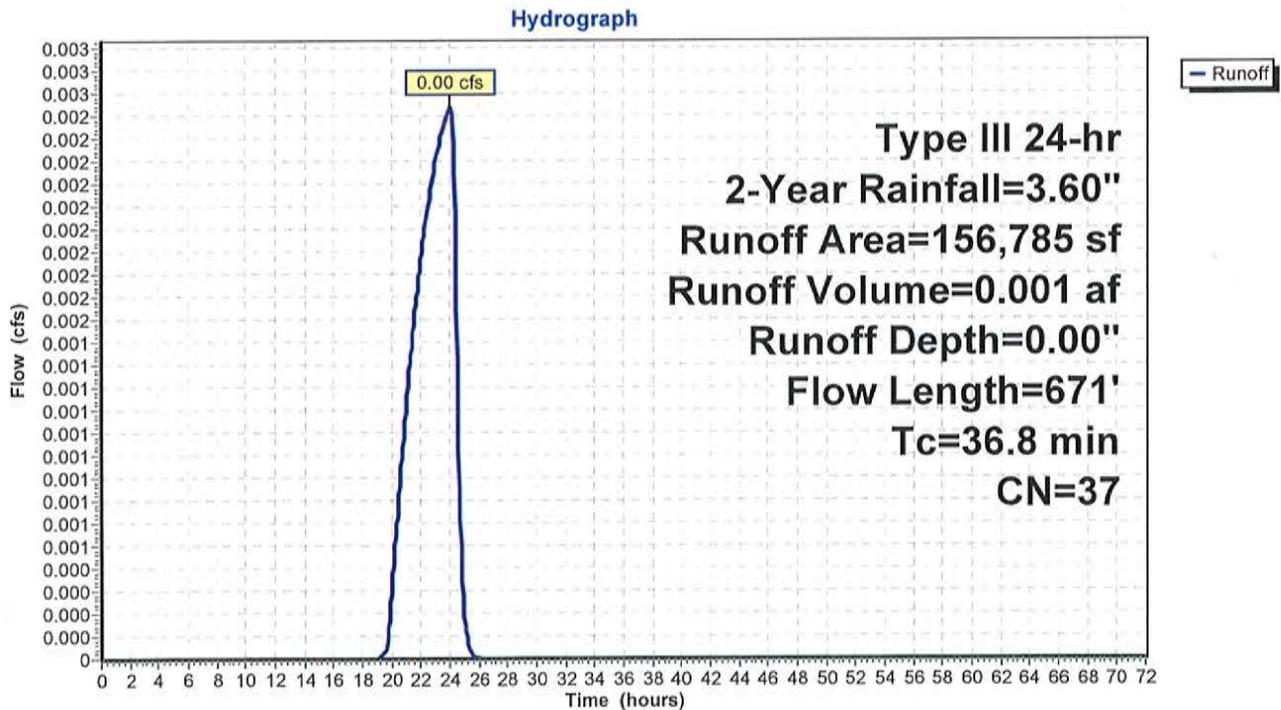
Runoff = 0.00 cfs @ 24.06 hrs, Volume= 0.001 af, Depth= 0.00"

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 2-Year Rainfall=3.60"

Area (sf)	CN	Description
148,571	36	Woods, Fair, HSG A
4,872	39	>75% Grass cover, Good, HSG A
3,342	72	Dirt roads, HSG A
156,785	37	Weighted Average
156,785		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	50	0.0140	0.06		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 3.60"
21.3	538	0.0071	0.42		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
2.1	83	0.0085	0.65		<b>Shallow Concentrated Flow, CD</b> Short Grass Pasture Kv= 7.0 fps
36.8	671	Total			

**Subcatchment 5S: Subcatchment Area 5S (RUNS OFFSITE)**



**Summary for Subcatchment 5S: Subcatchment Area 5S (RUNS OFFSITE)**

Runoff = 0.06 cfs @ 15.15 hrs, Volume= 0.036 af, Depth= 0.12"

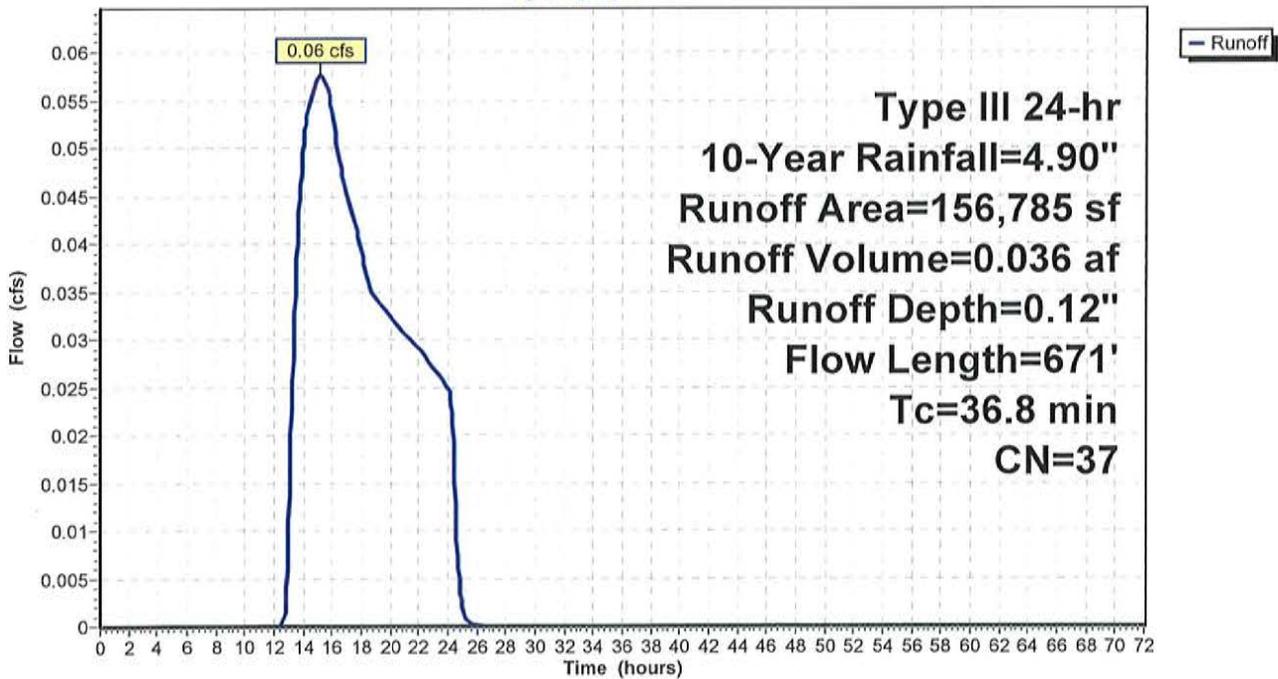
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
148,571	36	Woods, Fair, HSG A
4,872	39	>75% Grass cover, Good, HSG A
3,342	72	Dirt roads, HSG A
156,785	37	Weighted Average
156,785		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	50	0.0140	0.06		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 3.60"
21.3	538	0.0071	0.42		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
2.1	83	0.0085	0.65		<b>Shallow Concentrated Flow, CD</b> Short Grass Pasture Kv= 7.0 fps
36.8	671	Total			

**Subcatchment 5S: Subcatchment Area 5S (RUNS OFFSITE)**

Hydrograph



**Summary for Subcatchment 5S: Subcatchment Area 5S (RUNS OFFSITE)**

Runoff = 0.19 cfs @ 12.98 hrs, Volume= 0.089 af, Depth= 0.30"

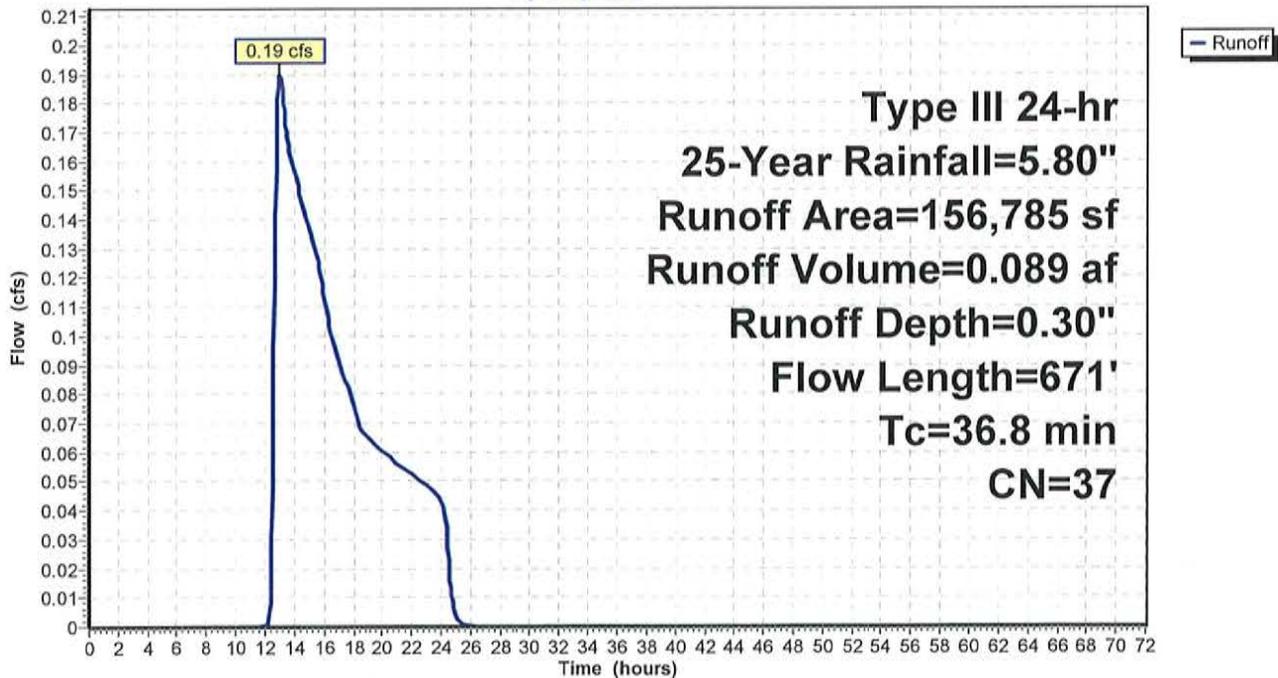
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
148,571	36	Woods, Fair, HSG A
4,872	39	>75% Grass cover, Good, HSG A
3,342	72	Dirt roads, HSG A
156,785	37	Weighted Average
156,785		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	50	0.0140	0.06		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 3.60"
21.3	538	0.0071	0.42		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
2.1	83	0.0085	0.65		<b>Shallow Concentrated Flow, CD</b> Short Grass Pasture Kv= 7.0 fps
36.8	671	Total			

**Subcatchment 5S: Subcatchment Area 5S (RUNS OFFSITE)**

Hydrograph



**Summary for Subcatchment 5S: Subcatchment Area 5S (RUNS OFFSITE)**

Runoff = 0.80 cfs @ 12.74 hrs, Volume= 0.207 af, Depth= 0.69"

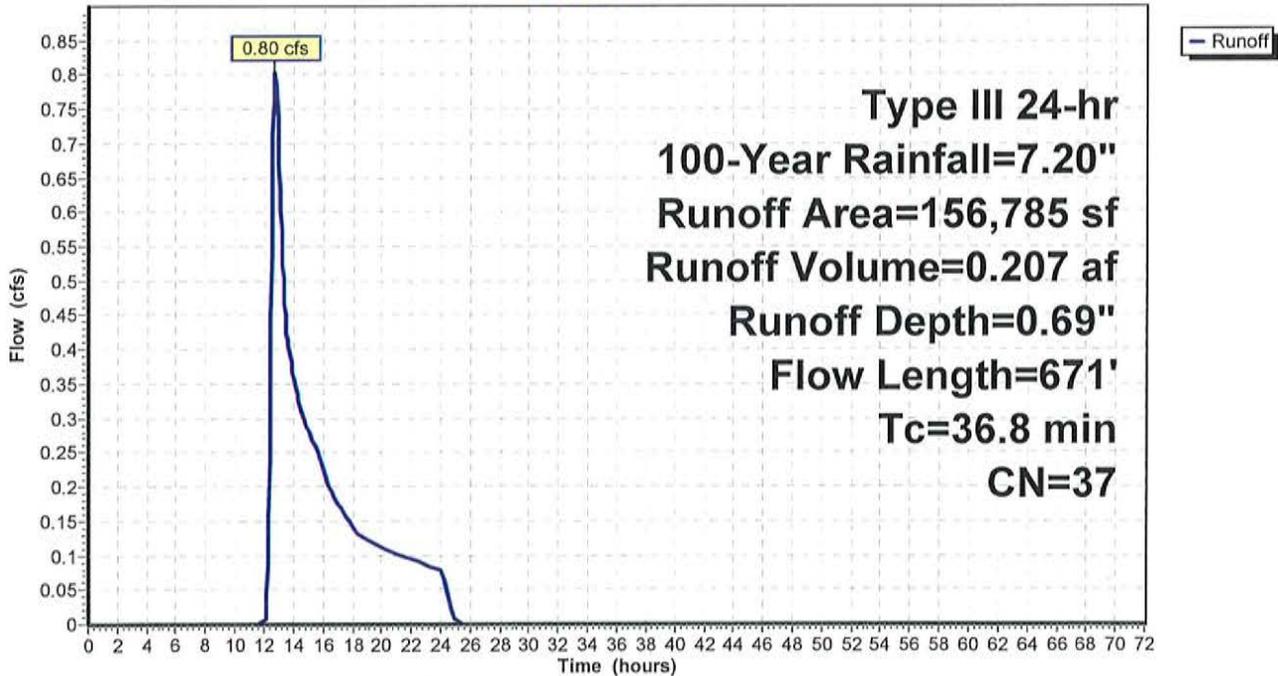
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-Year Rainfall=7.20"

Area (sf)	CN	Description
148,571	36	Woods, Fair, HSG A
4,872	39	>75% Grass cover, Good, HSG A
3,342	72	Dirt roads, HSG A
156,785	37	Weighted Average
156,785		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	50	0.0140	0.06		<b>Sheet Flow, AB</b> Woods: Light underbrush n= 0.400 P2= 3.60"
21.3	538	0.0071	0.42		<b>Shallow Concentrated Flow, BC</b> Woodland Kv= 5.0 fps
2.1	83	0.0085	0.65		<b>Shallow Concentrated Flow, CD</b> Short Grass Pasture Kv= 7.0 fps
36.8	671	Total			

**Subcatchment 5S: Subcatchment Area 5S (RUNS OFFSITE)**

Hydrograph





(Offsite Flow)



**Summary for Subcatchment 15S: (Offsite Flow)**

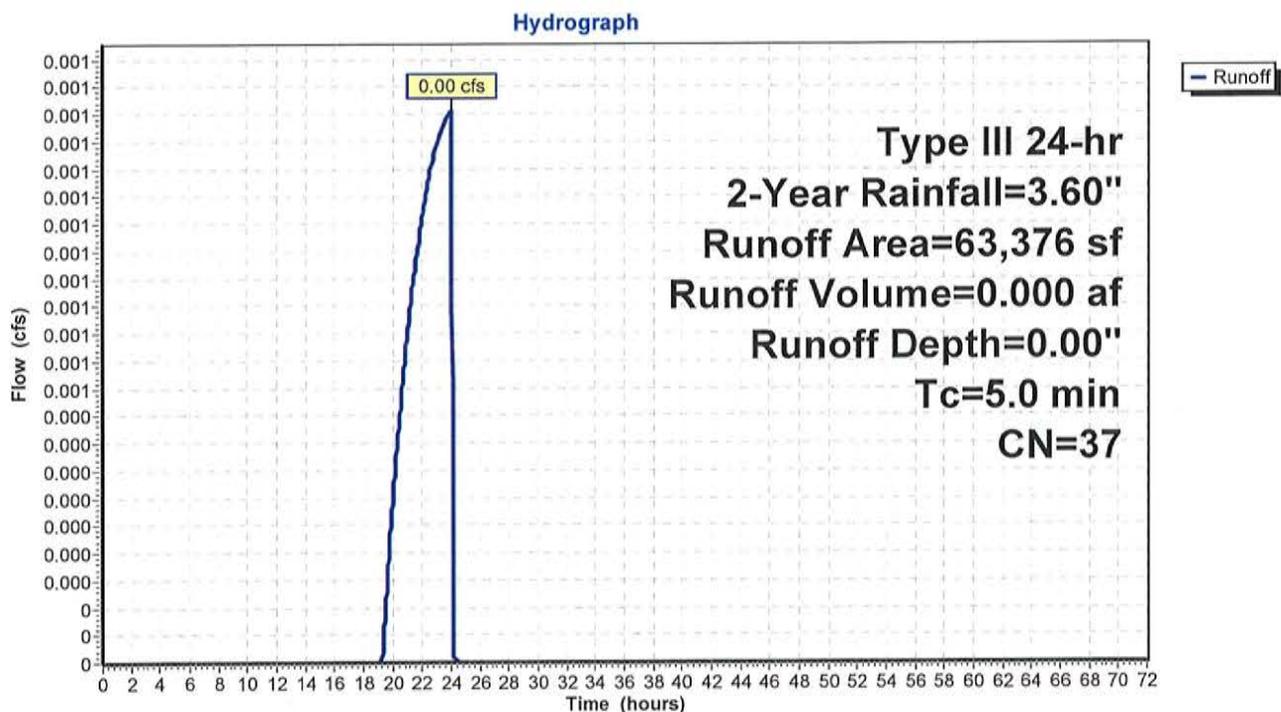
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.60"

Area (sf)	CN	Description
35,548	36	Woods, Fair, HSG A
27,828	39	>75% Grass cover, Good, HSG A
63,376	37	Weighted Average
63,376		100.00% Pervious Area

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

**Subcatchment 15S: (Offsite Flow)**



**Summary for Subcatchment 15S: (Offsite Flow)**

Runoff = 0.02 cfs @ 14.68 hrs, Volume= 0.015 af, Depth= 0.12"

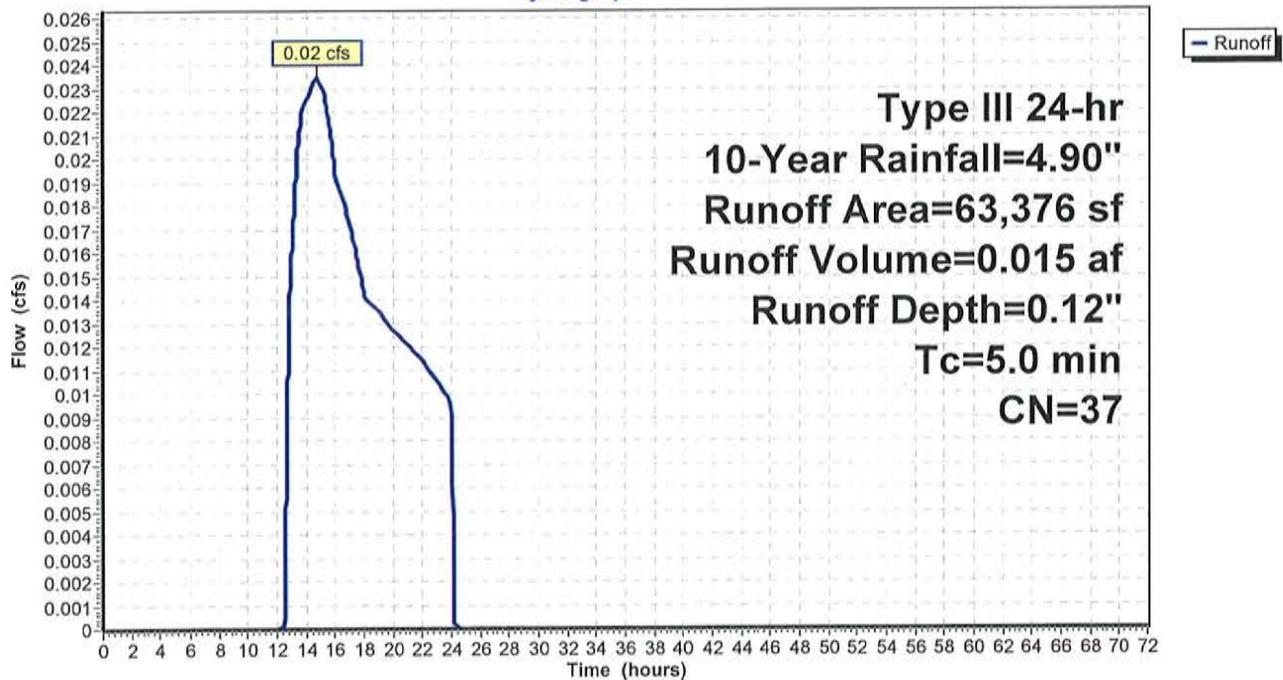
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
35,548	36	Woods, Fair, HSG A
27,828	39	>75% Grass cover, Good, HSG A
63,376	37	Weighted Average
63,376		100.00% Pervious Area

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

**Subcatchment 15S: (Offsite Flow)**

Hydrograph



**Surfside Crossing (rev3) - Post Development Off Site** Type III 24-hr 25-Year Rainfall=5.80"

Prepared by Microsoft

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**Summary for Subcatchment 15S: (Offsite Flow)**

Runoff = 0.12 cfs @ 12.41 hrs, Volume= 0.036 af, Depth= 0.30"

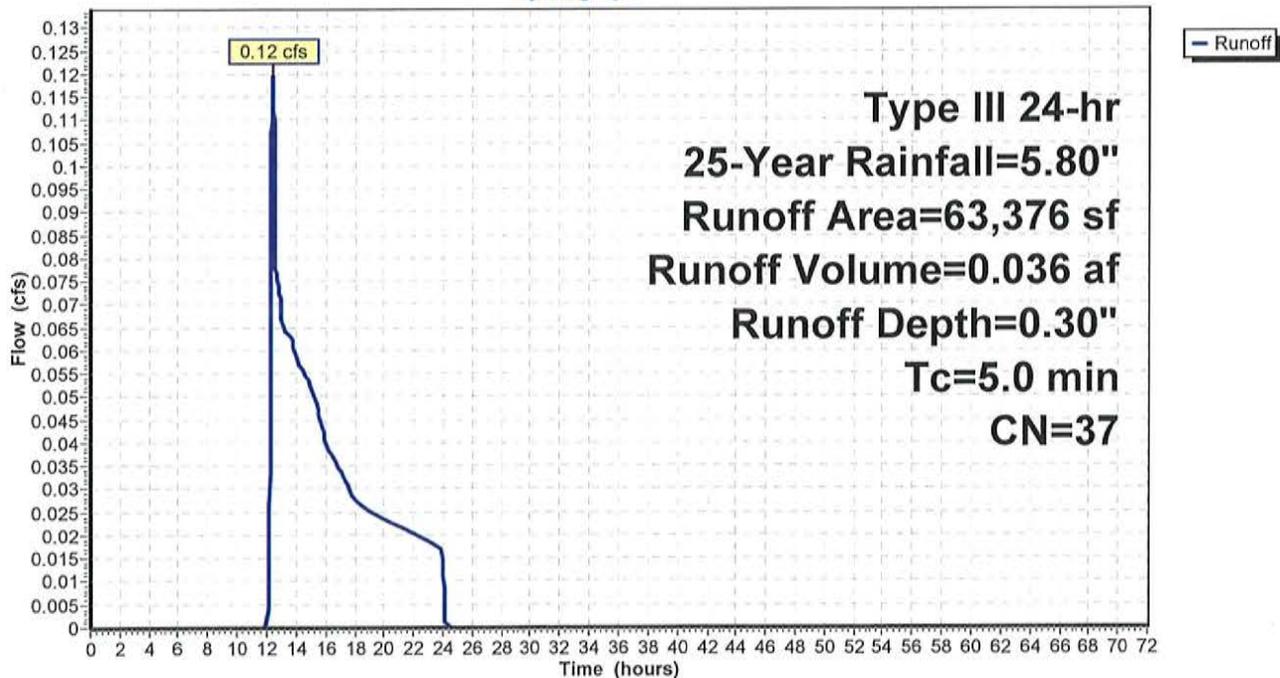
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
35,548	36	Woods, Fair, HSG A
27,828	39	>75% Grass cover, Good, HSG A
63,376	37	Weighted Average
63,376		100.00% Pervious Area

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

**Subcatchment 15S: (Offsite Flow)**

Hydrograph



**Summary for Subcatchment 15S: (Offsite Flow)**

Runoff = 0.48 cfs @ 12.14 hrs, Volume= 0.084 af, Depth= 0.69"

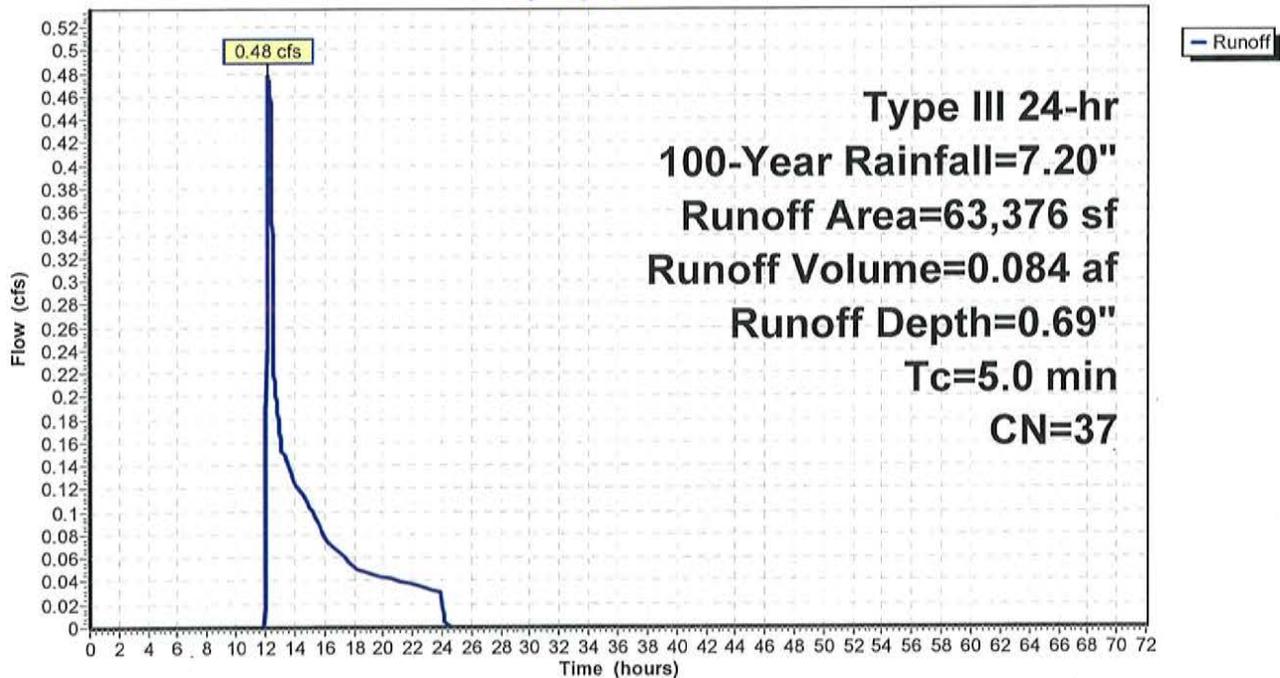
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=7.20"

Area (sf)	CN	Description
35,548	36	Woods, Fair, HSG A
27,828	39	>75% Grass cover, Good, HSG A
63,376	37	Weighted Average
63,376		100.00% Pervious Area

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

**Subcatchment 15S: (Offsite Flow)**

Hydrograph



**CONSTRUCTION POLLUTION  
PREVENTION PLAN**

**&**

**OPERATION AND MAINTENANCE PLAN**

PREPARED FOR

**“Surfside Crossing”  
#3, 5, 7, & 9 South Shore Road  
Nantucket, MA 02554**

OWNER AND OPERATOR:

**SURFSIDE CROSSING, LLC  
37 OLD SOUTH ROAD, UNIT 6  
NANTUCKET, MA 02554**

PREPARED BY

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

**MARCH 19, 2019**

# **CONSTRUCTION POLLUTION PREVENTION PLAN**

## **SITE EVALUATION AND DESIGN DEVELOPMENT**

### **EXISTING CONDITIONS**

The locus is a vacant parcel of land consisting of about 13.6 acres of woodland. The woodland is made up of mainly pitch pine and scrub oak. The existing topography ranges in elevation from el. 29 to el. 33 with a gentle slope on site. The majority of the site is located within a designated Zone II Wellhead Protection Area and site runoff infiltrates directly onsite.

### **SOILS INFORMATION**

Soils on the site are Evesboro series soils as shown on the soil survey maps prepared by the Soil Conservation Service.

Evesboro soils have a hydrologic soil classification of "A".

Test pits performed on site indicate a Loamy Sand to Med Sand substrate.

### **RUNOFF WATER QUALITY**

Currently there is no available information regarding the quality of runoff from the site.

### **NAME OF RECEIVING WATER**

There is no direct receiving water. Drainage is contained onsite and infiltrated.

### **RAINFALL DATA**

The subsurface infiltration systems were analyzed utilizing standard engineering practices based on the National Engineering Handbook, Section 4, Hydrology (NEH-4), and the Soil Conservation Services (SCS) Technical Release 20 (TR20). The systems were analyzed using the rainfall data for the two (2), ten (10), twenty-five (25), and one hundred (100) year, 24-hour duration storm frequencies. Rainfall amounts are 3.30", 4.90", 5.80", and 7.20", respectively. The precipitation was based on the USDA Soil Conservation Services Technical Paper (TP-40) – Rainfall Frequency Atlas.

The remaining site was analyzed based on the town standard of 5.8 inches per hour for a twenty-five (25) year storm event.

### **SITE PLAN DEVELOPMENT**

The site improvements will include tree clearing, site grubbing, grading, foundation installation, utility installation and site stabilization to support the construction of three separate phases of the development: single family residential subdivision, multi-family condominium complex and a

community center to serve the single family and condominium components. Various landscaping and the installation of numerous drainage collection and infiltration systems are proposed to stabilize all areas and allow for onsite recharge of runoff to replicate pre-construction conditions.

### **SITE MAP**

Refer to the grading, drainage and utilities sheet as part of the development plan set. These plans indicate areas of disturbance, grading, stormwater controls, erosion control measures, etc.

Existing and proposed drainage patterns are indicated on the Pre- and Post- development Watershed Maps as well as the Grading and Drainage plan. These plans show the location of proposed subsurface infiltration systems to control runoff.

## **ASSESSMENT**

### **MEASURE SITE AREA**

The total project area is 13.6 acres.

### **DRAINAGE AREAS AND HYDROLOGICAL ANALYSIS**

Refer to the Pre- and Post-Development Watershed Maps for drainage areas. Runoff quantities and drainage system designs were completed. Refer to the hydrology report additional information.

### **EROSION AND SEDIMENT CONTROLS**

Staked hay bales, wattles, construction fencing and/or silt fence shall be located at all downgradient areas of construction activity and/or along the limit of work. Erosion control shall be inspected weekly and after significant rainfalls and replaced where necessary. Double rows of haybales or wattles may be required in isolated areas where deemed necessary.

Additional siltation fencing may also be required, as directed by the engineer. All finished slopes and graded areas are to be stabilized with landscaping. Temporary measures such as mulching of slopes during non-planting seasons will be required.

### **CONSTRUCTION ENTRANCE**

Stabilized construction entrances shall be maintained throughout the project. Temporary paved driveway entrances are to be utilized with silt fence during site development in conjunction with stone tracking pads are to be installed. Contractor is maintain a clean entrance at all times and prevent any tracking of material out onto South Shore Road. .

## **STORMWATER MANAGEMENT CONTROLS**

All runoff shall be infiltrated into the ground. The collection systems are comprised of a combination of StormTree Units, deep sump catch basins, manholes, water quality inlets, and subsurface infiltration systems. Refer to hydrology report for detailed analysis along with Total Suspended Solids (TSS) removal rates. See site plans for design and details.

## **CONSTRUCTION OPERATION AND MAINTENANCE PLAN**

The following is an Operations and Maintenance Plan during construction activities:

### **FACILITY DESCRIPTION:**

The drainage system components consist of the following:

- ☑ Twenty-Five (25) Catch basin Units
- ☑ Twenty-Five (25) StormTree Units
- ☑ Eight (8) Water Quality Inlets
- ☑ Eight (8) subsurface leaching systems

### **MAINTENANCE DURING SITE CONSTRUCTION:**

Tree clearing and removal of topsoil shall be kept at a minimum in conformance with the Design Plan.

Stockpile areas for top and subsoil shall be located in an area away from the driveway/parking areas to avoid entering proposed stormwater management systems and/or the abutting properties. The perimeter of any stockpile area is to be staked with silt fence and/or haybales, if required. Any stockpile to be left in place for greater than 30 days is to be stabilized with an approved means.

Onsite installed catch basins and StormTree units shall be protected during construction with haybales, filter fabric and "silt sacks" to prevent silt from entering the system. The paved driveway/parking areas shall be constructed prior to opening the catch basin and/or StormTree Units. Catch basins and/or StormTree Units shall not receive runoff until shoulders and tributary areas can be adequately stabilized.

Subsurface infiltration units shall be protected during construction with haybales and/or silt fence. Avoid excessive soil compaction around the infiltration areas. These areas shall not be used as a temporary catchment areas until the site is stabilized. Runoff is to be directed to the planned infiltration areas only after the contributing drainage areas are fully stabilized.

Proposed temporary paved driveway entrances are to be used during construction and shall be equipped with silt fence to prevent accumulation of sediment from erosion. Stone construction pads shall also be installed at each entrance and maintained until the surrounding areas are stabilized and the entrance permanently paved.

All erosion control measures shall be inspected and repaired or replaced following every rainfall event of 0.5" or greater.

Shoulders and side slopes shall be protected with mulch, hay, or sod until all slopes are permanently stabilized.

**MAINTENANCE DURING BUILDING CONSTRUCTION:**

Areas that drain to the driveway/parking areas, such as lawn areas, shall be permanently stabilized prior to final driveway/parking surfacing.

The site contractor shall be responsible for maintaining all erosion control measures.

The site contractor shall inspect all of the erosion control measures on a weekly basis and repair/replace as required. The site contractor shall also inspect all erosion control measures after each significant rainstorm. Additional erosion control measures are to be maintained onsite for emergency use.

StormTree units, catch basins and water quality inlets shall be cleaned at least once every six (6) months during construction. Additional cleaning may be required following significant rainstorms.

**FINAL CONSTRUCTION MAINTENANCE:**

The permanent operation and maintenance plan shall begin only after the following:

Driveway/parking area construction and slope stabilization is complete;

Building and driveway construction for each phase is complete;

All disturbed areas are adequately vegetated and stabilized;

All StormTree units, catch basins, water quality inlets, and subsurface systems have been pumped and completely cleaned, and;

The systems have been completely inspected by the design engineer and the town's representative and found to be functioning as designed in that no clogging of the leaching system has occurred during construction.

## **PERMANENT OPERATION AND MAINTENANCE PLAN**

**RESPONSIBLE PARTY:** Surfside Crossing, LLC

### **Non-Structural BMP's**

Implementing source controls can aid in reducing the types and concentrations of contaminants in stormwater runoff, which in turn can result in improved water quality. This principle for pollution prevention and non-structural controls, or Best Management Practices (BMP's), is to minimize the volume of runoff and to minimize contact of storm water with potential pollutants. Measures such as managing snow removal and educating the owner/operator of good maintenance practices are examples of non-structural BMP's.

### **PUBLIC AWARENESS**

Periodically, the facility owner or property management shall issue reminder to its guests to prevent dumping or releasing pollutants to the storm drain, the ground, and the parking areas.

### **SNOW AND SNOWMELT MANAGEMENT**

It is suggested that during minor snowfall events the snow be stockpiled along the edge of parking areas/paths up gradient of a proposed catch basin and StormTree units. It is the responsibility of the owner to make sure the snow removal contractor does not pile the snow on top of the proposed catch basins or StormTree Units. The owner is to remove sediment from snow storage areas every spring.

It is suggested that no de-icing compounds, such as CaCL<sub>2</sub>, calcium magnesium acetate (CMA) be used on the site. The snow removal contractor shall store all sand off-site. No quantities of sand compounds shall be stored or disposed of on-site.

### **STRUCTURAL BMP'S**

Structural BMP's are those physical facilities that are designed to manage both stormwater quantity and quality. Proper maintenance of the proposed structural BMP's will ensure design performance and promote longevity of the structure and may decrease operator maintenance costs. The structural BMP's selected for the proposed site development include: deep sump catch basins, StormTree units, water quality inlets and subsurface infiltration systems.

### **DEEP SUMP CATCH BASINS**

All proposed catch basins are to be a minimum of four feet by four feet and equipped with four foot deep sumps to trap sediments and any debris/trash. The outlet shall be designed to minimize floating debris and oils from entering the StormTree unit, subsurface drainage conveyance systems and/or water quality units. The actual removal of sediments, trash, and associated pollutants only occurs when the deep sumps are cleaned out; therefore, frequent maintenance is required. The more frequent the cleaning, the less likely sediments will be re-

suspended and subsequently discharged. In addition, frequent cleaning also results in more volume available for future storms and enhances overall performance.

In areas of high sediment loading, deep sumps should be inspected and cleaned as necessary, particularly after every major storm event. The recommended inspection frequency is every three months, and cleaning two to four times per year. Disposal of accumulated sediment and trash is to be in accordance with applicable local, state, and federal guidelines and regulations.

### **STORMTREE UNITS AND WATER QUALITY UNITS**

StormTree and water quality inlet units shall be utilized on this project as a water quality structures to provide removal of total suspended solids (TSS) from stormwater runoff. As runoff passes through these units, TSS is settled out and trapped within the unit.

To ensure proper operation, the units should be inspected at least four times a year to ensure that they are operating as intended. Inspections conducted at intervals during and after a storm will help to determine if the units are meeting the expected retention times. Potential problems that should be checked include: subsidence or erosion within StormTree media, cracking or tree growth outside of StormTree units; dying or dead trees, excessive sediment accumulation; water levels in WQI's; and installation of pipe inlet and outlet hoods. Any necessary repairs should be made immediately. During inspections, changes to the units or the contributing watershed should be noted, as these may affect the StormTree and WQI unit performances.

StormTree and WQI units are to be inspected at a minimum four (4) times per year and trash and debris should be removed at this time. The StormTree health is to be monitored and noted at each inspection. Sediment should be removed from the StormTree and WQI units, when the depth is 1" or greater or 1' or greater, respectively, or at least once every 3 years. Disposal of accumulated sediment and trash is to be in accordance with applicable local, state and federal guidelines and regulations.

### **SUBSURFACE INFILTRATION SYSTEMS**

The subsurface infiltration systems shall be used to retain, mitigate and recharge proposed runoff back into the aquifer. Infiltration systems shall be inspected four times a year to ensure that the systems are clean of debris and sediment. Access is available via the manhole covers to grade. Remove accumulated sediment and debris from the chambers and dispose at an approved off-site location. Excessive scour around the inlet splash pads shall be inspected. Maintenance of the upstream drainage systems BMPs—including the catch basins, StormTree units and WQI units—will reduce the possibility of debris and sediment accumulating in the infiltration systems.

If a system is found to be clogged, it first shall be cleaned with a vacuum truck. If it is still found not to be operational then the system shall be dug out. A certified soil inspector shall confirm the remove and replace limits of the subsoil prior to rebuilding the system.

**STANDARD 10**

**Illicit Discharge Pollution Prevention Statement  
For  
Surfside Crossing - #3, 5,7, & 9 South Shore Road**

**MARCH 19, 2019**

There is to be no dumping of toxins, pollutants, or illicit materials into the storm drainage systems on-site as it is strictly prohibited by law.

Toxins, pollutants, or illicit materials consist of, but are not limited to: paint, bleach, antifreeze, motor oil, raw sewage, hydrocarbons, kitchen grease, lubricating grease, etc.

The on-site storm drainage systems are to be inspected periodically in accordance with the Operations and Maintenance plan. At the time of inspection, an inspection for illicit discharges shall be conducted. If illicit discharges are found during inspection, then immediate action should be taken to remediate and clean up the illicit discharge.

The remediation and/or clean-up is to be performed by a qualified company, such as Clean Harbors, 42 Longwater Dr., Norwell, MA 02061, Phone 1-800-645-8265 or equivalent.

Acknowledgement:

---

Surfside Crossing, LLC  
#37 Old South Road, Unit #6  
Nantucket, MA 02554



**Design Engineer**  
 Bracken Engineering,  
 Inc.  
 (508) 325-0044

**Year** \_\_\_\_\_

-If at any time the facility manager requires that this checklist/formwork requires modifications for usability they shall contact the design engineer.  
 -Completed Inspection form is to be filed with the Nantucket Planning Department annually.

"x" indicates appropriate time to conduct activity

<b>Catch Basin,          StormTree &amp;          Water Quality Inlet          (WQI's)          cleaning</b> Inspect 4 times Clean 2-4 times Jan, Feb, Mar, Oct	Inspect and confirm that all CB's, ST's and WQI's have been cleaned with vacuum apparatus. Refresh hardwood mulch bark in ST's annually and replace it every 5 years.	x	x	x								x		
	If CB or ST has more than 1 foot or 1 inch, respectively, of sediment, it shall be cleaned immediately.	x	x	x								x		
	All CB's, ST's and WQI's at time of inspection shall be recorded for depth of sediment and presence of oil sheen if applicable. Use copy of site plan for recording.	x	x	x								x		
	After CB's, ST's and WQI's are cleaned, inspect each <b>CB, ST and WQI</b> : <ul style="list-style-type: none"> <li>• Bottom of each CB, ST and WQI is clear of debris and water.</li> <li>• WQI hoods are secure and in place after cleaning</li> <li>• Rim is intact and seated properly.</li> </ul>	x	x	x								x		

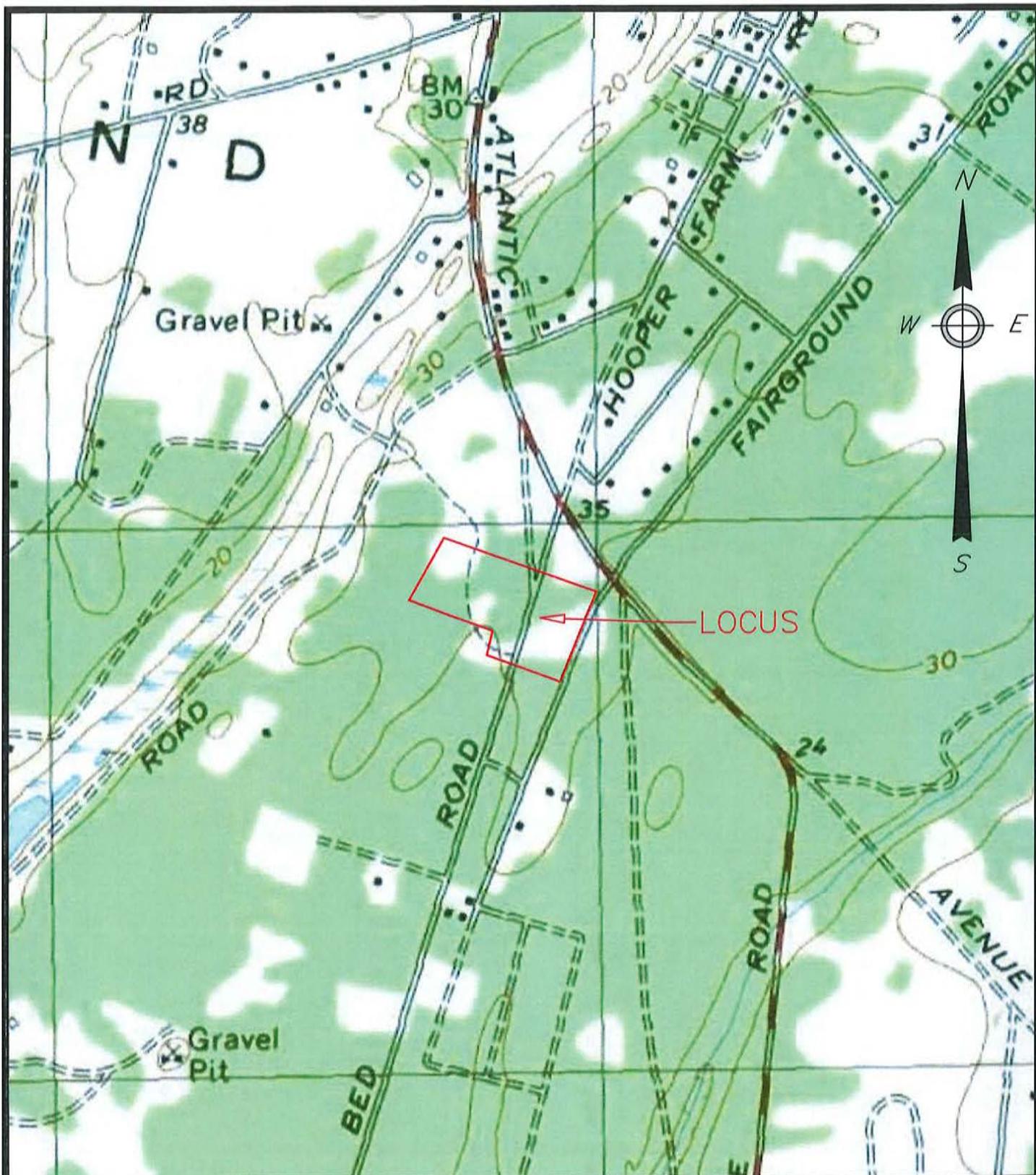
**Design Engineer**  
 Bracken Engineering,  
 Inc.  
 (508) 325-0044

**Year** \_\_\_\_\_

- If at any time the facility manager requires that this checklist/formwork requires modifications for usability they shall contact the design engineer.
- Completed Inspection form is to be filed with the Nantucket Planning Department annually.

"x" indicates appropriate time to conduct activity

<b>Comments:</b>													
<b>Infiltration Systems</b> Inspection schedule: 4 (Four) times a year minimum:	Inspect infiltration systems for sediment accumulation. Remove and dispose excess sediment.	x	x	x				x			x	x	x
	Inspect for excess erosion or scouring around splash pads.	x	x	x				x			x	x	x
<b>Comments</b>													



**BRACKEN**  
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(tel) 508-325-0044  
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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



## MAP LEGEND

-  Area of Interest (AOI)
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- 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 15, Sep 7, 2018

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—Apr 6, 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	14.7	100.0%
<b>Totals for Area of Interest</b>		<b>14.7</b>	<b>100.0%</b>