

Stormwater Management Narrative
12 Highland Avenue
Block 10; Lots 1, 8 & 9
Borough of Keansburg, Monmouth County, New Jersey

Introduction

The proposed project consists of the construction of a 19,778 SF parking lot. The development historically contained two buildings and 11,417 SF of associated parking. The development is bound by Beachway Avenue to the North, West Highland Avenue to the West and Bay Ave to the South. The project is situated within the B-2 Zone.

Stormwater Management Summary

The NJDEP rules regarding stormwater management, N.J.A.C. 7:8-5.2(a), states that stormwater management measures for a major development shall be developed to meet the erosion control, groundwater recharge, stormwater runoff quantity, and stormwater runoff quality standards. N.J.A.C. 7:8-1.2 defines a major development as any development that results in the disturbance of once or more acres of land, or the creation of one-quarter acre or more of regulated impervious surface since February 2, 2004, or the creation of one-quarter acre or more of regulated motor vehicle surface since March 2, 2021, or the combination of the second and third items that results in a total area of one-quarter acre or more.

The project area contains 20,000 SF (0.46 acres), 18,406 SF (0.42 acres) of which are existing impervious area. The proposed improvements consist of a total of 20,000 SF (0.46 acres) of impervious, which is a net increase of impervious area by 1,594 SF (0.04 acres). The project area contains an existing 11,417 SF (0.26 acres) of vehicular surface, while the proposed improvements consist of a total of 19,778 SF (0.45 acres) of vehicular surface, which results in a net increase of vehicular surface by 8,361 SF (0.19 acres).

According to the Borough of Keansburg ordinance, §27-3, the Stormwater Management rules only apply to a Major Development which is defined as “any development that provides for ultimately disturbing one or more acres of land.” The subject project contains 0.46 acres, all of which are being disturbed but remain under one acre of land. Since the proposed improvements create less than one acre of new

disturbance, the Borough of Keansburg stormwater management rules for a Major Development regarding reduction of stormwater quantity and stormwater quality do not apply.

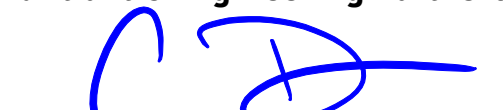
The runoff from the existing project area is conveyed to the existing stormwater collection system within the Keansburg right-of-way. The proposed improvements will maintain the same drainage patterns that currently exist on site, discharging ultimately to the stormwater collection system within the right-of-way. The pre and post development runoff was calculated for the 2, 10, 25 and 100-year storm events. The table below provides a summary of the pre and post-development peak runoff rates for the project area:

Storm Event (Years)	Pre-Dev Runoff (cfs)	Post-Dev Runoff (cfs)
2	1.18	1.31
10	1.93	2.03
25	2.45	2.54
100	3.42	3.49

Conclusion

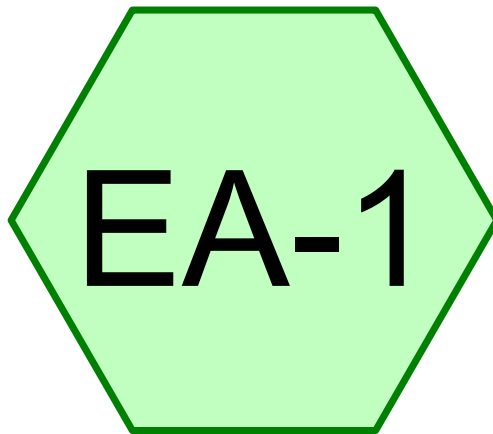
The proposed improvements will maintain the existing drainage patterns in the post-developed condition. Runoff rates are increased in the post-development, however, by a minimal amount that would not have any negative impact to downstream drainage systems. The erosion control methods used will ensure the proposed project will not have a negative impact to the surrounding area or downstream drainage system. By creating less than one acre of new disturbance, the project does not meet the definition of Major Development as defined in the Borough of Keansburg stormwater management rules and therefore the standards for stormwater quantity reduction and stormwater quality do not apply.

MidAtlantic Engineering Partners

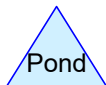
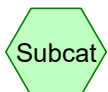


Gregory B. Domalewski, P.E.
Licensed Professional Engineer
New Jersey License No. 48099

Appendix A – Pre-Development Drainage Analysis



EA-1



Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.037	49	50-75% Grass cover, Fair, HSG A (EA-1)
0.262	96	Gravel surface, HSG A (EA-1)
0.160	98	Unconnected pavement, HSG A (EA-1)

Summary for Subcatchment EA-1: EA-1

Runoff = 1.18 cfs @ 12.14 hrs, Volume= 0.095 af, Depth> 2.47"

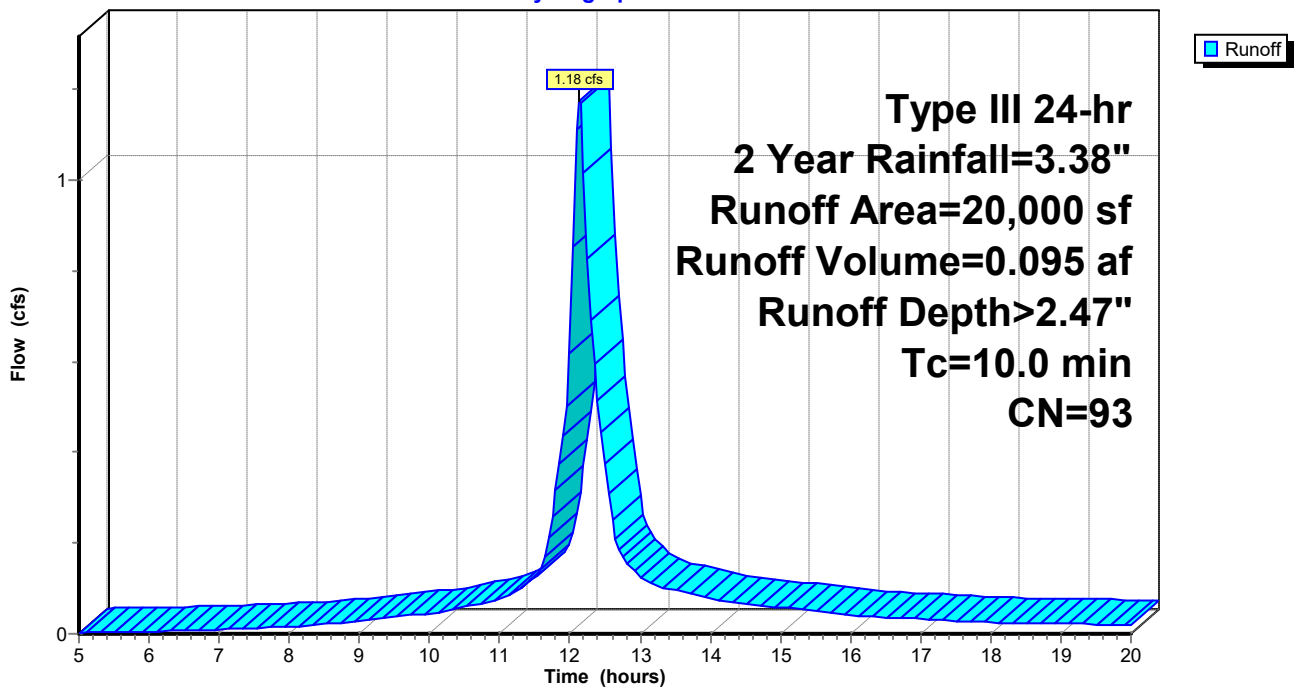
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2 Year Rainfall=3.38"

Area (sf)	CN	Description
6,989	98	Unconnected pavement, HSG A
11,417	96	Gravel surface, HSG A
1,594	49	50-75% Grass cover, Fair, HSG A
20,000	93	Weighted Average
13,011		65.05% Pervious Area
6,989		34.94% Impervious Area
6,989		100.00% Unconnected

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

Subcatchment EA-1: EA-1

Hydrograph



Summary for Subcatchment EA-1: EA-1

Runoff = 1.93 cfs @ 12.14 hrs, Volume= 0.160 af, Depth> 4.17"

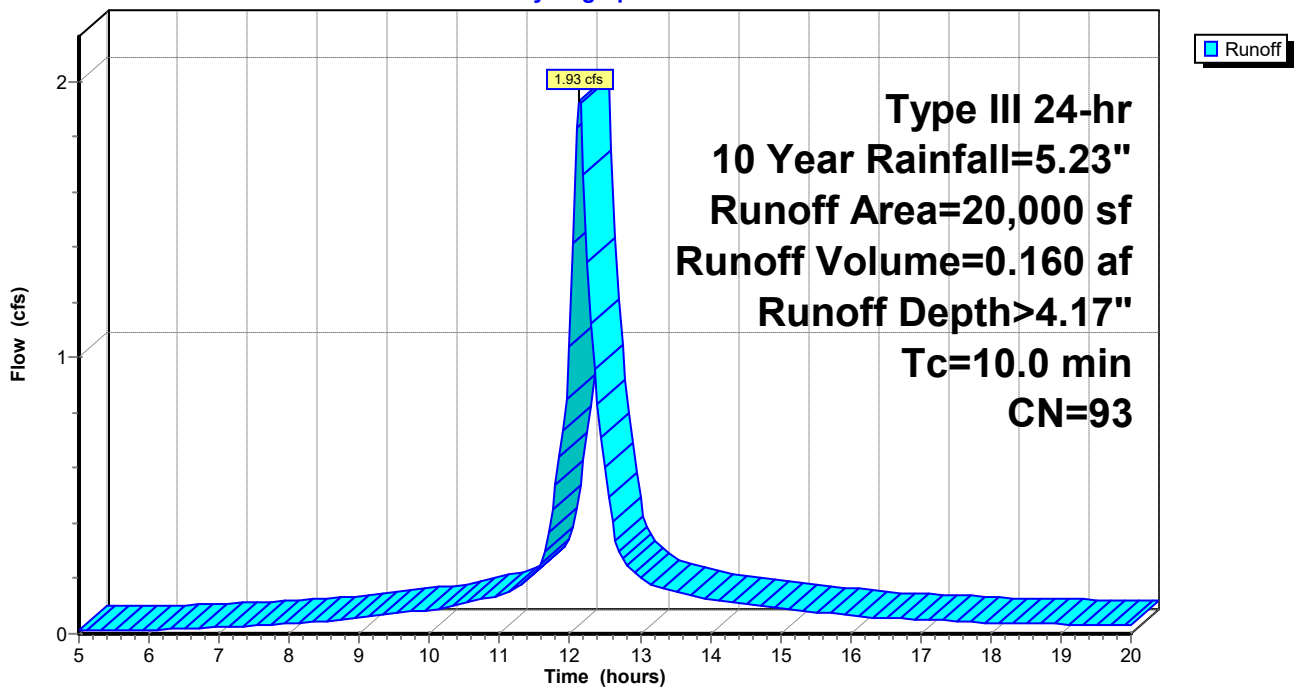
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10 Year Rainfall=5.23"

Area (sf)	CN	Description
6,989	98	Unconnected pavement, HSG A
11,417	96	Gravel surface, HSG A
1,594	49	50-75% Grass cover, Fair, HSG A
20,000	93	Weighted Average
13,011		65.05% Pervious Area
6,989		34.94% Impervious Area
6,989		100.00% Unconnected

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

Subcatchment EA-1: EA-1

Hydrograph



Summary for Subcatchment EA-1: EA-1

Runoff = 2.45 cfs @ 12.14 hrs, Volume= 0.206 af, Depth> 5.37"

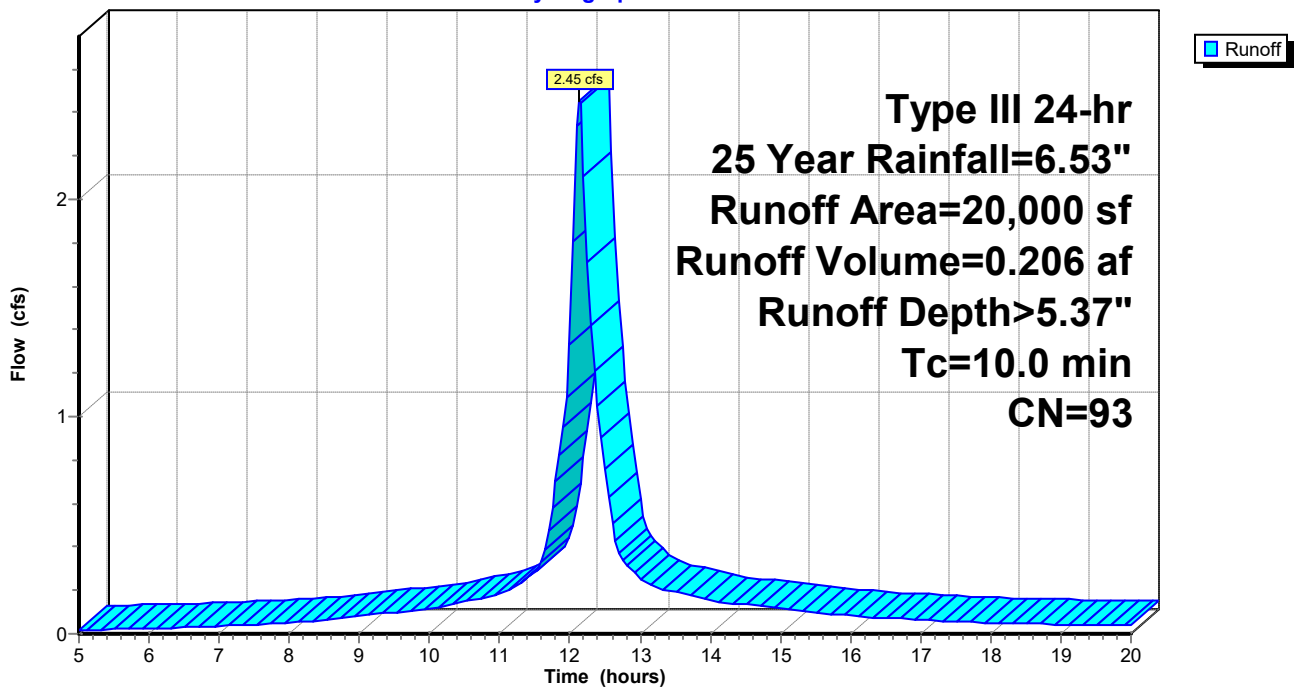
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25 Year Rainfall=6.53"

Area (sf)	CN	Description
6,989	98	Unconnected pavement, HSG A
11,417	96	Gravel surface, HSG A
1,594	49	50-75% Grass cover, Fair, HSG A
20,000	93	Weighted Average
13,011		65.05% Pervious Area
6,989		34.94% Impervious Area
6,989		100.00% Unconnected

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

Subcatchment EA-1: EA-1

Hydrograph



Summary for Subcatchment EA-1: EA-1

Runoff = 3.42 cfs @ 12.14 hrs, Volume= 0.291 af, Depth> 7.60"

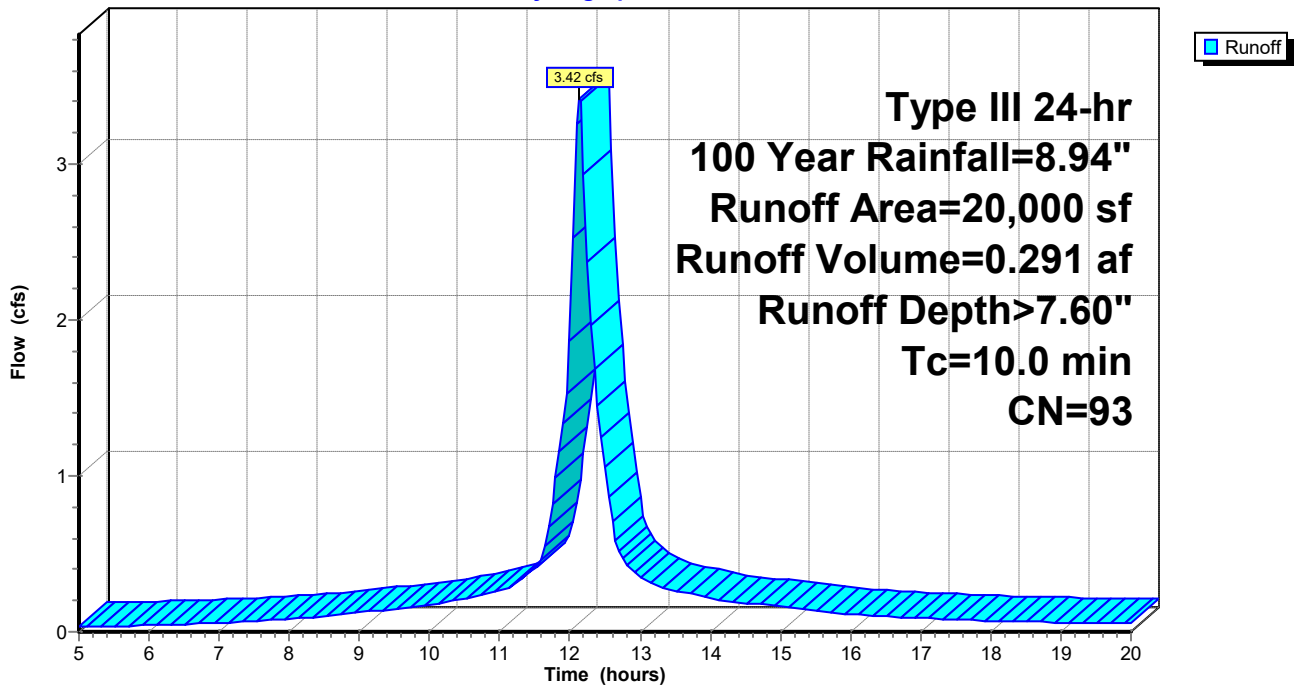
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100 Year Rainfall=8.94"

Area (sf)	CN	Description
6,989	98	Unconnected pavement, HSG A
11,417	96	Gravel surface, HSG A
1,594	49	50-75% Grass cover, Fair, HSG A
20,000	93	Weighted Average
13,011		65.05% Pervious Area
6,989		34.94% Impervious Area
6,989		100.00% Unconnected

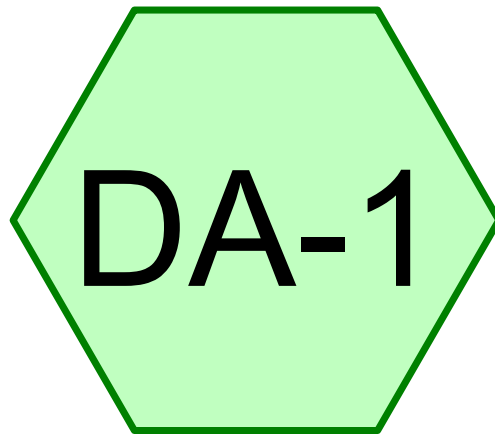
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment EA-1: EA-1

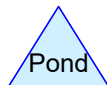
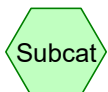
Hydrograph



Appendix B – Post-Development Drainage Analysis



DA-1



2021-07-02 Post-Dev

Prepared by {enter your company name here}

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.459	98	Unconnected pavement, HSG D (DA-1)

Summary for Subcatchment DA-1: DA-1

Runoff = 1.31 cfs @ 12.14 hrs, Volume= 0.112 af, Depth> 2.94"

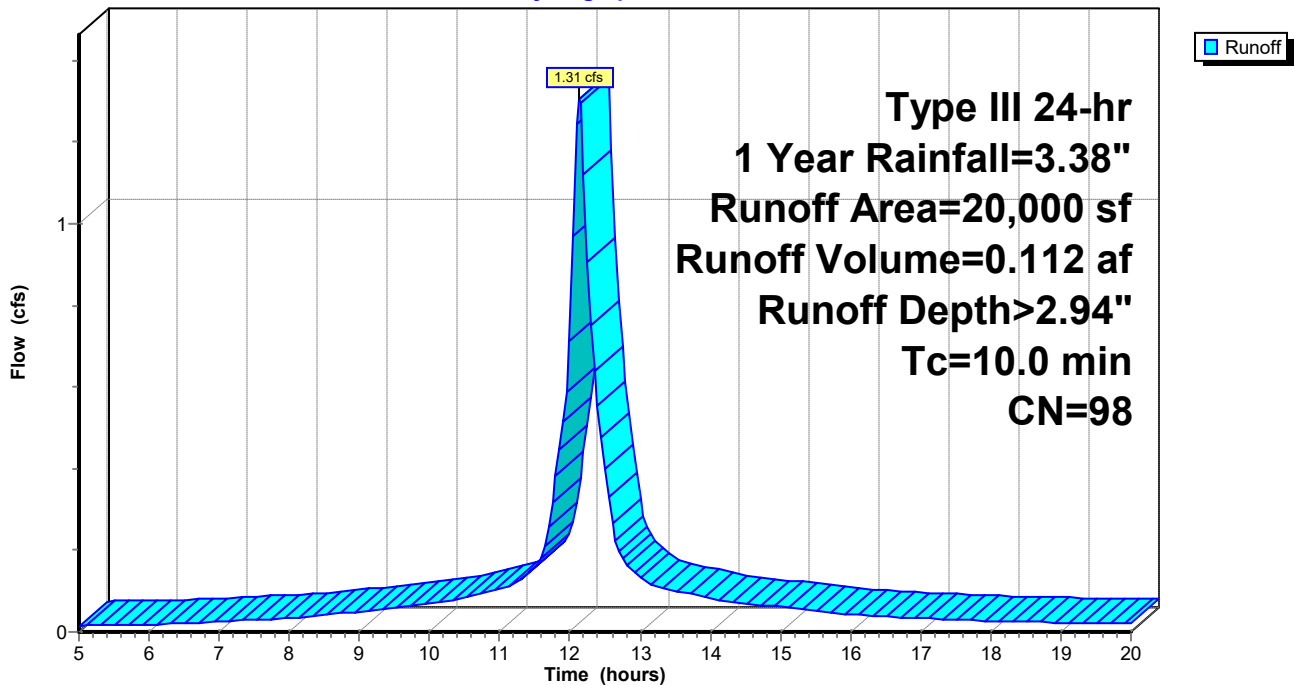
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 1 Year Rainfall=3.38"

Area (sf)	CN	Description
20,000	98	Unconnected pavement, HSG D
20,000		100.00% Impervious Area
20,000		100.00% Unconnected

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

Subcatchment DA-1: DA-1

Hydrograph



Summary for Subcatchment DA-1: DA-1

Runoff = 2.03 cfs @ 12.14 hrs, Volume= 0.177 af, Depth> 4.63"

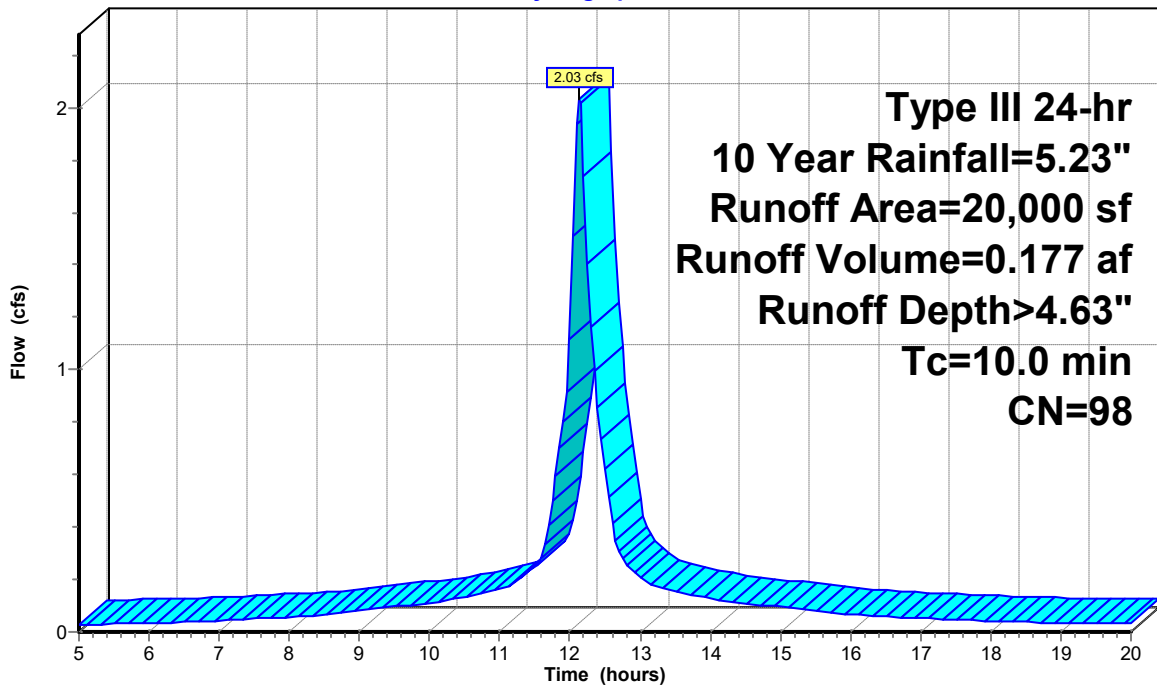
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10 Year Rainfall=5.23"

Area (sf)	CN	Description
20,000	98	Unconnected pavement, HSG D
20,000		100.00% Impervious Area
20,000		100.00% Unconnected

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

Subcatchment DA-1: DA-1

Hydrograph



Summary for Subcatchment DA-1: DA-1

Runoff = 2.54 cfs @ 12.14 hrs, Volume= 0.222 af, Depth> 5.81"

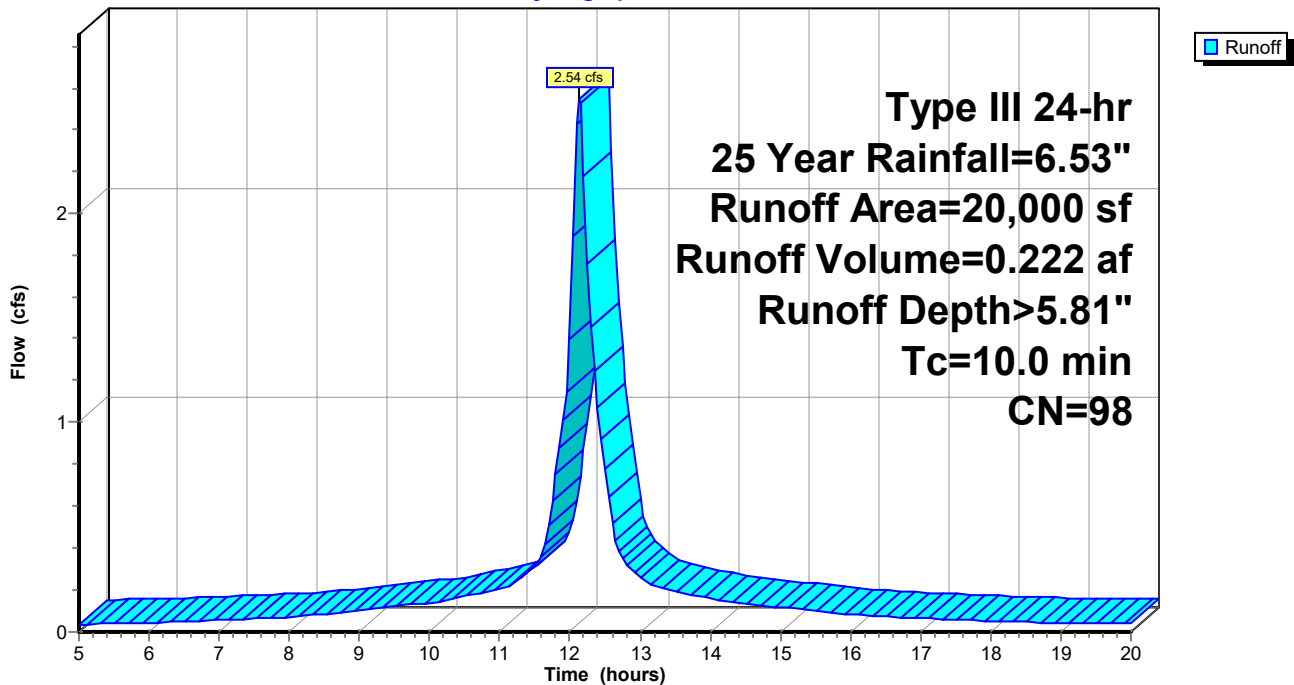
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25 Year Rainfall=6.53"

Area (sf)	CN	Description
20,000	98	Unconnected pavement, HSG D
20,000		100.00% Impervious Area
20,000		100.00% Unconnected

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

Subcatchment DA-1: DA-1

Hydrograph



Summary for Subcatchment DA-1: DA-1

Runoff = 3.49 cfs @ 12.14 hrs, Volume= 0.306 af, Depth> 8.00"

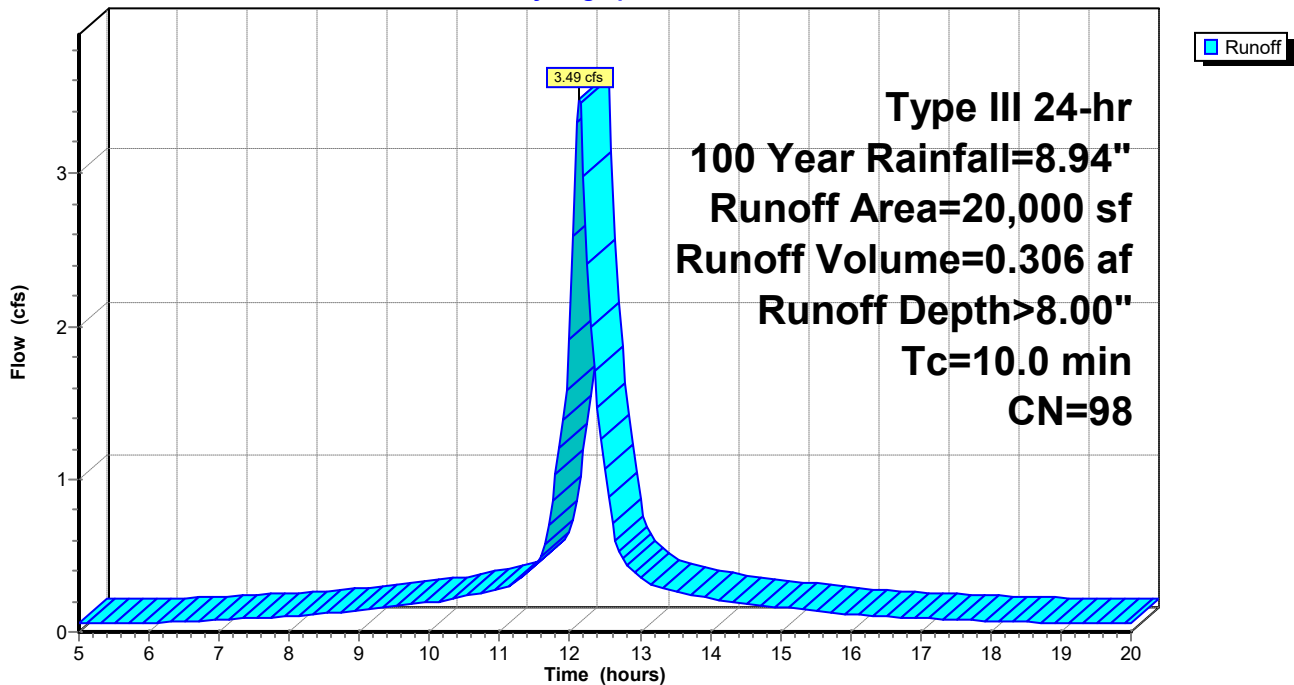
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100 Year Rainfall=8.94"

Area (sf)	CN	Description
20,000	98	Unconnected pavement, HSG D
20,000		100.00% Impervious Area
20,000		100.00% Unconnected

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

Subcatchment DA-1: DA-1

Hydrograph



Appendix C – Drainage Area Maps