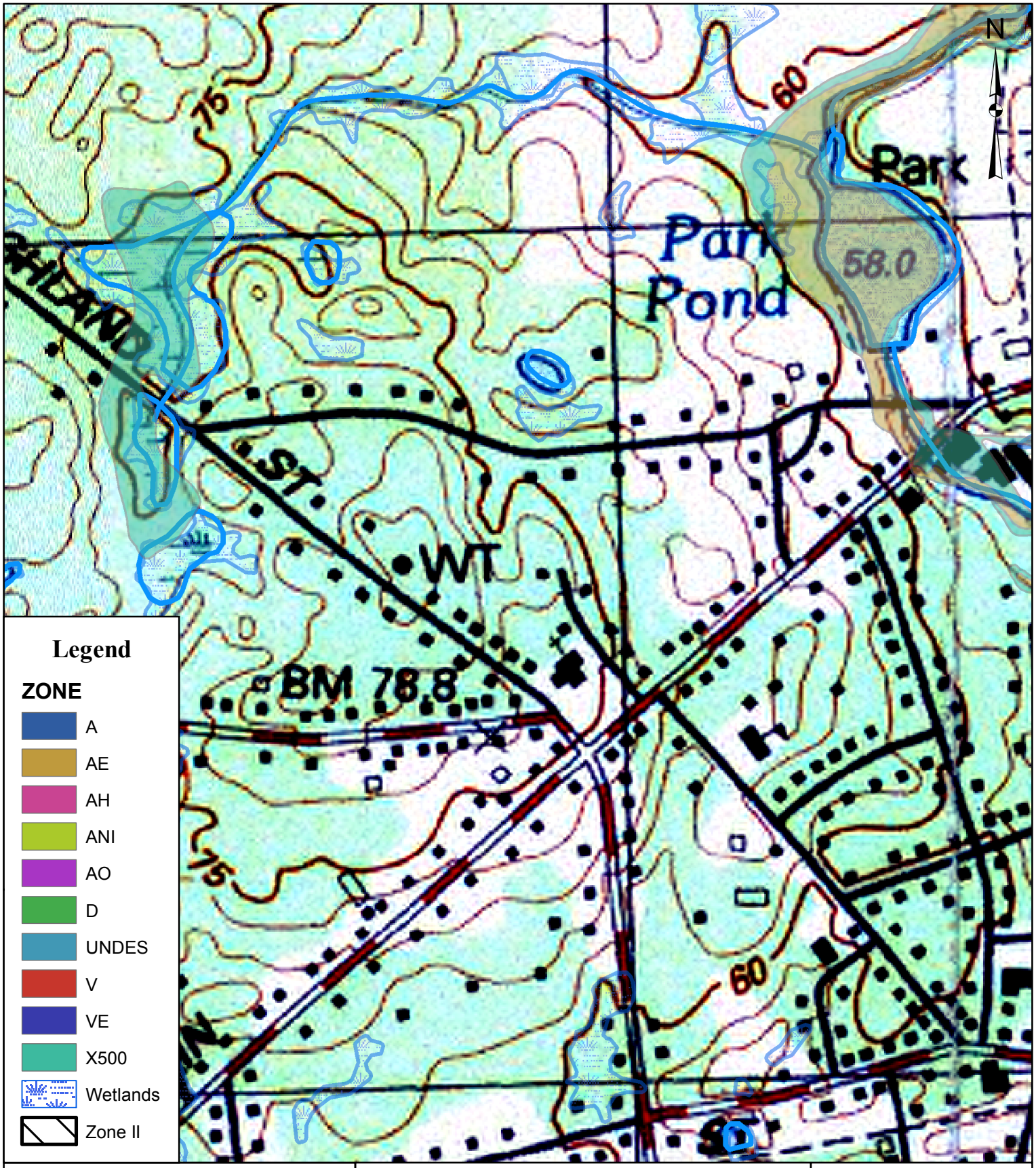
Appendix A

TATA & HOWARD



TATA & HOWARD

Date: November 2017
Approximate Scale: 1" = 500'

Slocumb Place

Medway Community Church

Medway, MA

Figure No.

1

Appendix B

TATA & HOWARD

Norfolk and Suffolk Counties, Massachusetts

422B—Canton fine sandy loam, 0 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w818
Elevation: 0 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton, extremely stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Extremely Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Scituate, extremely stony

Percent of map unit: 6 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Footslope, backslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Charlton, extremely stony

Percent of map unit: 6 percent
Landform: Ground moraines, ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Swansea

Percent of map unit: 4 percent
Landform: Depressions, swamps, bogs, marshes, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Montauk, extremely stony

Percent of map unit: 4 percent
Landform: Ground moraines, hills, drumlins, recessional moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 13, Oct 6, 2017

Map Scale: 1:884 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 40 80 160 240

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 13, Oct 6, 2017

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

Date(s) aerial images were photographed: May 14, 2010—Apr 1, 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
420B	Canton fine sandy loam, 3 to 8 percent slopes	0.7	18.3%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	3.1	81.7%
Totals for Area of Interest		**3.8**	**100.0%**

Appendix C

TATA & HOWARD

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

Medway Community Church
Owner Name

9/11 Slocumb Place — Street Address
2B-56A — Map/Lot #

Medway — City
MA — State
02053 — Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☐ Yes ☐ No If yes: Web Soil Survey (Source) 422B (Soil Map Unit)

Canton Fine Sandy Loam — Soil Name
Soil Limitations

Coarse-loamy over sandy melt-out till — Geologic/Parent Material
Ridges, hills, moraines — Landform

3. Surficial Geological Report Available? ☒ Yes ☐ No If yes: 2006/USGS (Year Published/Source) 1:24,000 (Publication Scale) Thin Till (Map Unit)

4. Flood Rate Insurance Map

Above the 500-year flood boundary? ☒ Yes ☐ No
If Yes, continue to #5.

Within the 100-year flood boundary? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No MassGIS Wetland Data Layer: N/A (Wetland Type)

7. Current Water Resource Conditions (USGS): Nov/2017 (Month/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: Site No. 420545071174001 Norfolk Well Depth 18.4' 7.5 mi SE 11/28/17 6.45' (11/14/17 6.55')

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 1 | 12/1/2017 (Date) | 8:15 AM (Time) | 43 degrees, Partly Cloudy (Weather)

1. Location

   Ground Elevation at Surface of Hole: 255 feet Latitude/Longitude: ~N42d08' / ~W71d26'

   Description of Location: Front of parcel at driveway

2. Land Use: Residential (e.g., woodland, agricultural field, vacant lot, etc.) | Some stones/boulders visible rear of prop (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

   Grassed lawn and trees (Vegetation) | (Landform) | (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from:

Open Water Body	~1,500 feet	Drainage Way	- feet	Wetlands	600+ feet
Property Line	10 feet	Drinking Water Well	- feet	Other	- feet

4. Parent Material: Coarse-loamy over sandy melt-out till Unsuitable Materials Present: ☐ Yes ☒ No

   If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - (Depth Weeping from Pit) - (Depth Standing Water in Hole)

   Estimated Depth to High Groundwater: 120"+ inches - elevation

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 1

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
2-0	Organic										
0-12	A	10YR 3/4	-	-	-	Loamy Sand	-	-	Weak Gr	Very Friable	
12-29	B	10YR 5/4	-	-	-	Sandy Loam	-	-	Weak abk	Friable	
29-120	C	2.5Y 6/1	-	-	-	Sand	-	-	Massive	Friable	

Additional Notes:

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 2 | 12/1/2017 (Date) | 9:15 AM (Time) | 43 degrees, Mostly Cloudy (Weather)

1. Location

   Ground Elevation at Surface of Hole: 257 feet Latitude/Longitude: ~N42d08' / ~W71d26'

2. Land Use: Residential (e.g., woodland, agricultural field, vacant lot, etc.) | Some stones/boulders visible rear of prop (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-5 (Slope (%))

   Vegetation: Grassed lawn and trees | Landform: | Position on Landscape (SU, SH, BS, FS,

3. Distances from:

Open Water Body	~1,500 feet	Drainage Way	- feet	Wetlands	600+ feet
Property Line	65 feet	Drinking Water Well	- feet	Other	- feet

4. Parent Material: Coarse-loamy over sandy melt-out till Unsuitable Materials Present: ☒ Yes ☐ No

   If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☒ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth Weeping from Pit | - Depth Standing Water in Hole

   Estimated Depth to High Groundwater: 120"+ inches | - elevation

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 2

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
1-0	Organic										
0-8	A	10YR 3/3	-	-	-	Loamy Sand	-	-	Weak Gr	Very Friable	
8-32	B	10YR 4/6	-	-	-	Sandy Loam	-	-	Weak abk	Very Friable	
32-36	C1	2.5Y 5/4	-	-	-	Sandy Loam	-	-	weak abk	Very Friable	
36-42	C2	Fractured Rock	-	-	-	-	-	-	-	-	
42-120	C3	2.5Y 5/3	-	-	-	Sand	-	-	Massive	Friable	

Additional Notes:

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

	Obs. Hole #1_____	Obs. Hole #2_____
☐ Depth observed standing water in observation hole	_____ inches	_____ inches
☐ Depth weeping from side of observation hole	_____ inches	_____ inches
☐ Depth to soil redoximorphic features (mottles)	_____ inches	_____ inches
☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)	_____ inches	_____ inches

_____ Index Well Number _____ Reading Date

$S_h = S_c – [S_r \times (OW_c – OW_{max})/OW_r]$

Obs. Hole # _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

Obs. Hole # _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material
   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

      ☐ Yes ☐ No

   b. If yes, at what depth was it observed? Upper boundary: _____ inches Lower boundary: _____ inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Board of Health Witness

Name of Board of Health Witness

Board of Health

G. Soil Evaluator Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator

12/1/2017
Date

Matthew S. Barry / SE13874
Typed or Printed Name of Soil Evaluator / License #

6/30/2021
Expiration Date of License

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

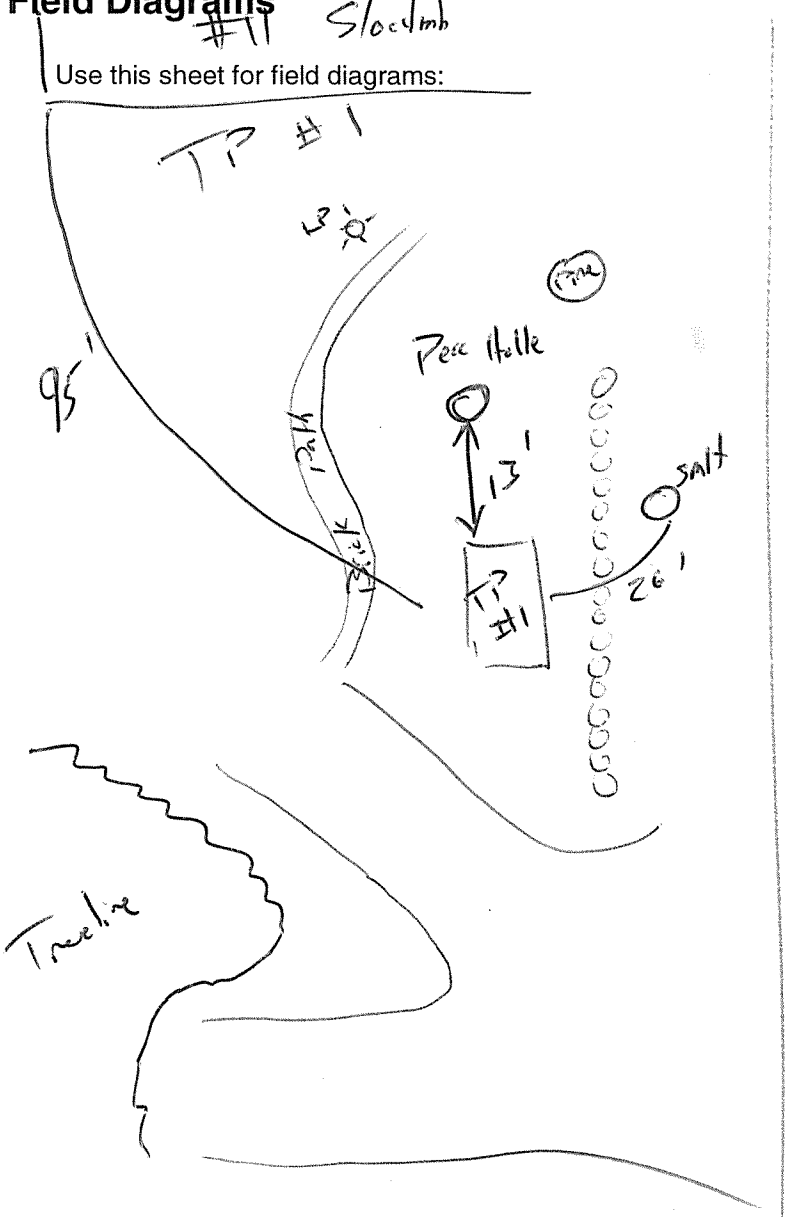
Commonwealth of Massachusetts
City/Town of -

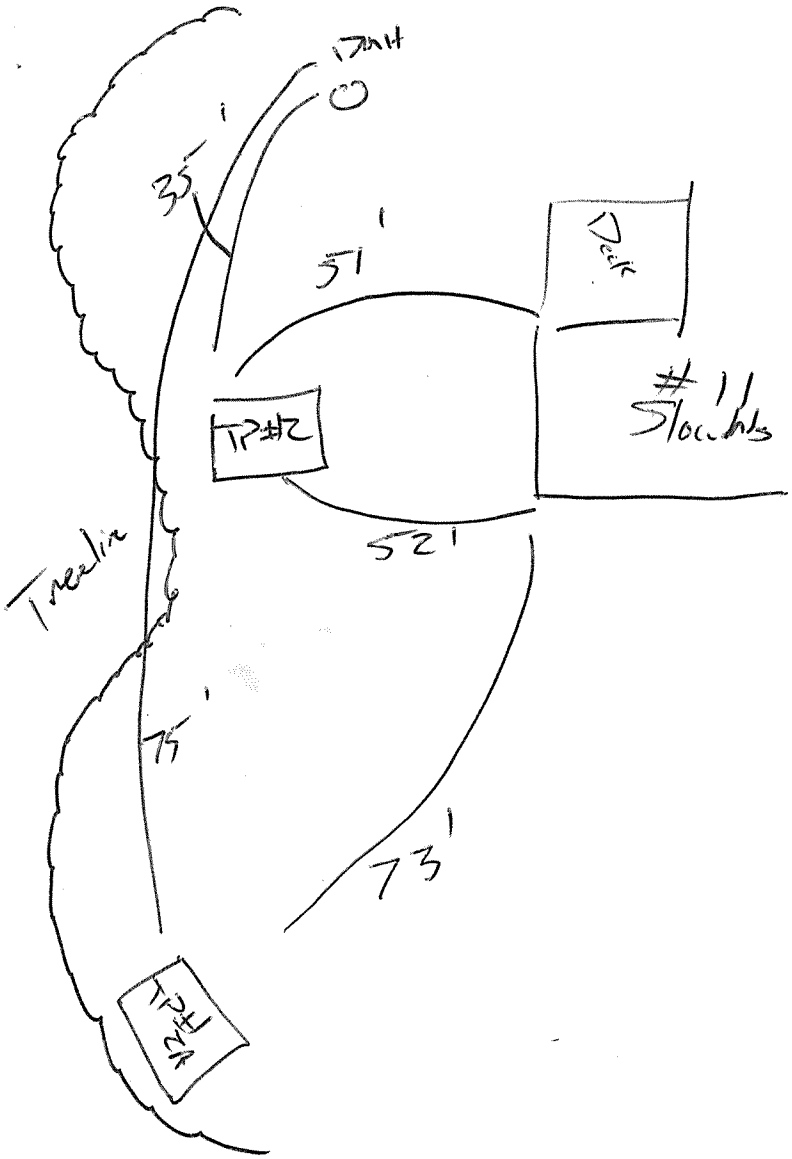
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

#11 Stockton

Use this sheet for field diagrams:





Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

Medway Community Church
Owner Name

9/11 Slocumb Place — Street Address
2B-56A — Map/Lot #

Medway — City
MA — State
02053 — Zip Code

B. Site Information

1. (Check one) ☒ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☒ Yes ☐ No If yes: Web Soil Survey (Source) 422B (Soil Map Unit)

Canton Fine Sandy Loam — Soil Name
Soil Limitations

Coarse-loamy over sandy melt-out till — Geologic/Parent Material
Ridges, hills, moraines — Landform

3. Surficial Geological Report Available? ☒ Yes ☐ No If yes: 2006/USGS (Year Published/Source) 1:24,000 (Publication Scale) Thin Till (Map Unit)

4. Flood Rate Insurance Map

Above the 500-year flood boundary? ☒ Yes ☐ No
If Yes, continue to #5.

Within the 100-year flood boundary? ☐ Yes ☒ No

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No
MassGIS Wetland Data Layer: N/A (Wetland Type)

7. Current Water Resource Conditions (USGS): Nov/2017 (Month/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: Site No. 420545071174001 Norfolk Well Depth 18.4' 7.5 mi SE 11/28/17 6.45' (11/14/17 6.55')

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 3 | 12/1/2017 (Date) | 11:45 AM (Time) | 43 degrees, Mostly Cloudy (Weather)

1. Location

Ground Elevation at Surface of Hole: 253 feet Latitude/Longitude: ~N42d08' / ~W71d26'

Description of Location: Grassed Lawn near driveway

2. Land Use: Residential (e.g., woodland, agricultural field, vacant lot, etc.) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5 (Slope (%))

Grass (Vegetation) | (Landform) | (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from:

Open Water Body	~1,500 feet	Drainage Way	- feet	Wetlands	600+ feet
Property Line	15 feet	Drinking Water Well	feet	Other	feet

4. Parent Material: Coarse-loamy over sandy melt-out till Unsuitable Materials Present: ☒ Yes ☐ No

If Yes: ☐ Disturbed Soil ☒ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - (Depth Weeping from Pit) - (Depth Standing Water in Hole)

Estimated Depth to High Groundwater: 120+ inches - elevation

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 3

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
1-0	Organic										
0-9	A1	10YR 3/3	-	-	-	Sandy Loam	-	-	Weak Gr	Very Friable	
9-20	Fill	2.5Y 5/3	-	-	-	Loamy Sand	-	-	-	-	
20-28	A2	10YR 4/3	-	-	-	Sandy Loam	-	-	Weak Gr	-	
28-41	B	10YR 5/6	-	-	-	Loamy Sand	-	-	Weak abk	friable	
41-120	C	2.5Y 6/2	-	-	-	Sand	-	-	Massive	Friable	

Additional Notes:

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 4 | 6/21/18 (Date) | 9:35 AM (Time) | Sunny, 76* (Weather)

1. Location

   Ground Elevation at Surface of Hole: 253.5 feet Latitude/Longitude: ~N42d08' / ~W71d26'

2. Land Use: Residential (e.g., woodland, agricultural field, vacant lot, etc.) | None (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 3-5 (Slope (%))

   Grass (Vegetation) | (Landform) | (Position on Landscape (SU, SH, BS, FS,

3. Distances from:

Open Water Body	~1,500 feet	Drainage Way	feet	Wetlands	600 feet
Property Line	50 feet	Drinking Water Well	feet	Other	feet

4. Parent Material: Coarse-loamy over sandy melt-out till Unsuitable Materials Present: ☐ Yes ☒ No

   If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - (Depth Weeping from Pit) - (Depth Standing Water in Hole)

   Estimated Depth to High Groundwater: 120+ inches 243.5- elevation

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 4

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-10	A	10YR 5/2	-	-	-	Loamy Sand	-	-	Weak Gr	V. Friable	
10-36	B	10YR 5/4	-	-	-	Sandy Loam	-	-	Weak Abk	Friable	
36-120	C	5Y 6/2	-	-	-	Sand	15	5	Massive	Friable	

Additional Notes:

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

	Obs. Hole #3	Obs. Hole #4
☐ Depth observed standing water in observation hole	_____ inches	_____ inches
☐ Depth weeping from side of observation hole	_____ inches	_____ inches
☐ Depth to soil redoximorphic features (mottles)	_____ inches	_____ inches
☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)	_____ inches	_____ inches

_____ Index Well Number _____ Reading Date

$S_h = S_c – [S_r \times (OW_c – OW_{max})/OW_r]$

Obs. Hole # _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

Obs. Hole # _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

      ☒ Yes ☐ No

   b. If yes, at what depth was it observed? Upper boundary: 36 inches Lower boundary: _____ inches

   c. If no, at what depth was impervious material observed? Upper boundary: n/a inches Lower boundary: n/a inches

Commonwealth of Massachusetts
City/Town of Medway

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Board of Health Witness

Name of Board of Health Witness

Board of Health

G. Soil Evaluator Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator

6/21/2018
Date

Matthew S. Barry / SE13874
Typed or Printed Name of Soil Evaluator / License #

6/30/2021
Expiration Date of License

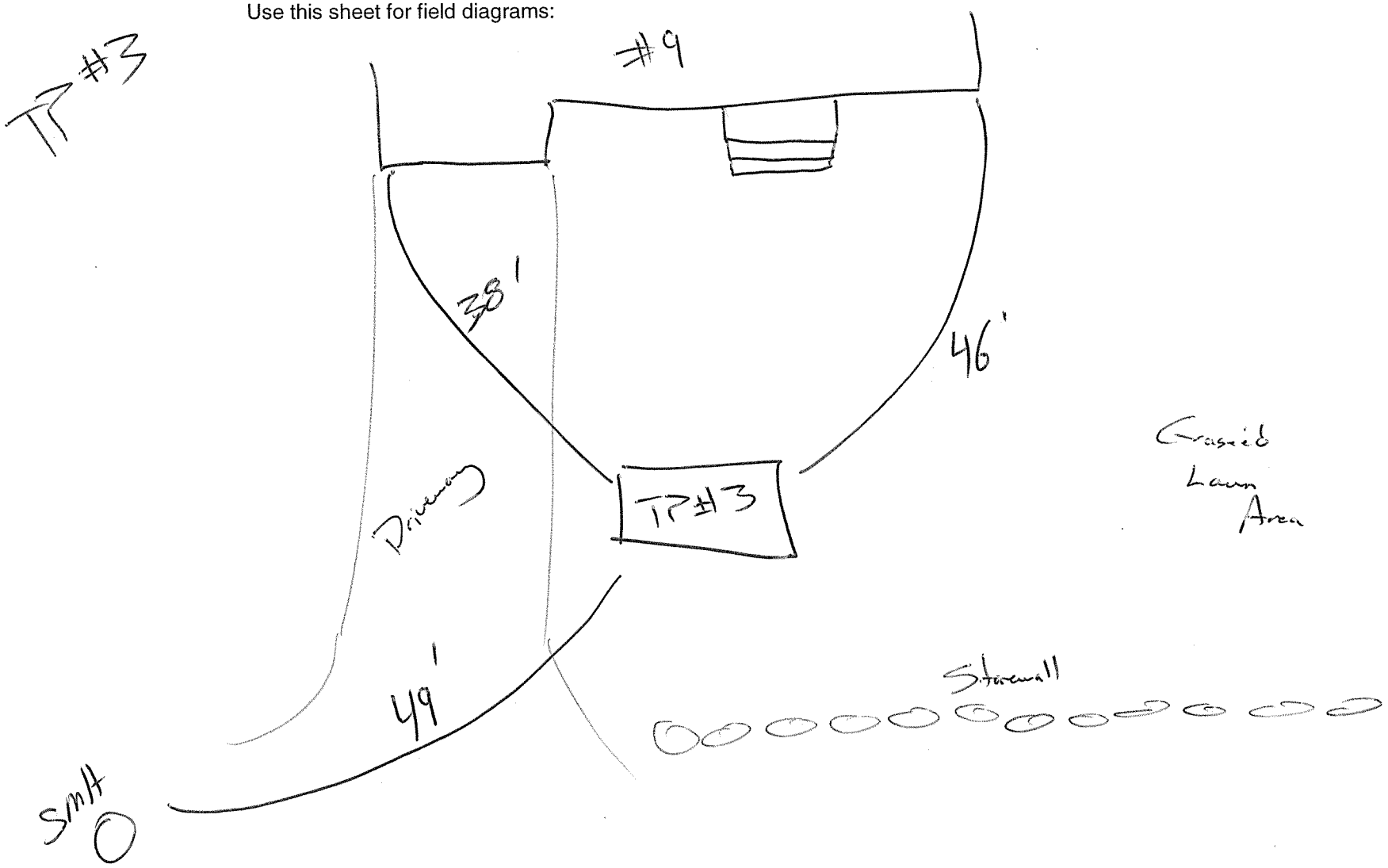
Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Commonwealth of Massachusetts
City/Town of -

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

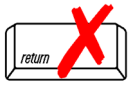
Use this sheet for field diagrams:



Commonwealth of Massachusetts
City/Town of Medway
Percolation Test
Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

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



A. Site Information

Medway Community Church
Owner Name

9/11 Slocumb Place
Street Address or Lot #

Medway	MA	02053
City/Town	State	Zip Code

Matthew Barry	(508) 232-6228
Contact Person (if different from Owner)	Telephone Number

B. Test Results

	12/1/2017 Date	10:45 AM Time	Date	Time
Observation Hole #	1			
Depth of Perc	35"-53"			
Start Pre-Soak	10:45 AM			
End Pre-Soak	11:00 AM			
Time at 12”	11:00 AM			
Time at 9”	11:16 AM			
Time at 6”	11:37 AM			
Time (9”-6”)	21 Minutes			
Rate (Min./Inch)	7 Min / Inch			
	Test Passed: ☒ Test Failed: ☐		Test Passed: ☐ Test Failed: ☐	

Matthew Barry
Test Performed By:

Board of Health Witness

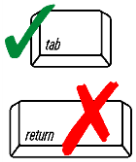
Comments:

For on-site stormwater disposal associated with site improvements/parking. No septic.

Commonwealth of Massachusetts
City/Town of Medway
Percolation Test
Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

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



A. Site Information

Medway Community Church
Owner Name

9/11 Slocumb Place
Street Address or Lot #

Medway	MA	02053
City/Town	State	Zip Code

Matthew Barry	(508) 232-6228
Contact Person (if different from Owner)	Telephone Number

B. Test Results

	6/21/18 Date	8:49 AM Time	6/21/18 Date	10:50 AM Time
Observation Hole #	2		4	
Depth of Perc	56"-74"		51"-69"	
Start Pre-Soak	8:49 AM		10:50 AM	
End Pre-Soak	9:04 AM		11:05 AM	
Time at 12”	9:04 AM		11:05 AM	
Time at 9”	9:10 AM		11:26 AM	
Time at 6”	9:18 AM		11:53 AM	
Time (9”-6”)	8 Mins.		17 Mins.	
Rate (Min./Inch)	2.67 Mins./Inch		5.67 Min./Inch	
	Test Passed: ☒ Test Failed: ☐		Test Passed: ☒ Test Failed: ☐	

Matthew Barry
Test Performed By:

Board of Health Witness

Comments:

For on-site stormwater disposal associated with site improvements/parking. No septic.

Appendix D

TATA & HOWARD

Summary for Subcatchment 1S: Sub_Watershed 1S

Sub_Watershed 1S

Runoff = 0.09 cfs @ 12.18 hrs, Volume= 500 cf, Depth= 0.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,786	69	50-75% Grass cover, Fair, HSG B
11,246	60	Woods, Fair, HSG B
13,032	61	Weighted Average
13,032		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	82	0.0730	4.35		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.3	121	Total			

Summary for Subcatchment 2S: Sub_Watershed 2S

Sub_Watershed 2S

Runoff = 0.27 cfs @ 12.21 hrs, Volume= 1,295 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,746	98	Roofs, HSG B
7,306	69	50-75% Grass cover, Fair, HSG B
14,370	60	Woods, Fair, HSG B
23,422	66	Weighted Average
21,676		92.55% Pervious Area
1,746		7.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	74	0.0540	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
1.4	190	0.0210	2.33		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
12.7	264	Total			

Summary for Subcatchment 3S: Sub_Watershed 3S

Sub_Watershed 3S

Runoff = 0.03 cfs @ 12.11 hrs, Volume= 108 cf, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,235	69	50-75% Grass cover, Fair, HSG B
856	60	Woods, Fair, HSG B
2,091	65	Weighted Average
2,091		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	51	0.0430	0.20		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
0.1	15	0.0660	4.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
4.3	66	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Sub_Watershed 4S

Sub_Watershed 4S

Runoff = 0.19 cfs @ 12.14 hrs, Volume= 805 cf, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,101	98	Roofs, HSG B
4,151	69	50-75% Grass cover, Fair, HSG B
10,333	60	Woods, Fair, HSG B
15,585	65	Weighted Average
14,484		92.94% Pervious Area
1,101		7.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	28	0.0250	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
4.3	24	0.0640	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.8	150	0.0370	3.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.3	202	Total			

Summary for Subcatchment 5S: Sub_Watershed 5S

Sub_Watershed 5S

Runoff = 0.01 cfs @ 12.13 hrs, Volume= 55 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
8	98	Roofs, HSG B
26	98	Paved parking, HSG B
107	69	50-75% Grass cover, Fair, HSG B
1,187	60	Woods, Fair, HSG B
1,328	62	Weighted Average
1,294		97.44% Pervious Area
34		2.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	41	0.0600	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 6S: Sub_Watershed 6S

Sub_Watershed 6S

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 381 cf, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
591	98	Roofs, HSG B
651	98	Paved parking, HSG B
1,791	69	50-75% Grass cover, Fair, HSG B
655	60	Woods, Fair, HSG B
3,688	77	Weighted Average
2,446		66.32% Pervious Area
1,242		33.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.2150	3.10		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
0.1	31	0.0800	5.74		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.0	10	0.1000	5.09		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.4	90	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Sub_Watershed 7S

Sub_Watershed 7S

Runoff = 0.14 cfs @ 12.16 hrs, Volume= 582 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
75	98	Roofs, HSG B
323	98	Paved parking, HSG B
7,507	69	50-75% Grass cover, Fair, HSG B
805	60	Woods, Fair, HSG B
8,710	69	Weighted Average
8,312		95.43% Pervious Area
398		4.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	18	0.0110	0.10		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
6.3	41	0.0700	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	92	0.0340	2.97		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.9	151	Total			

Summary for Subcatchment 8S: Sub_Watershed 8S

Sub_Watershed 8S

Runoff = 0.11 cfs @ 12.10 hrs, Volume= 370 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
177	98	Roofs, HSG B
706	98	Paved parking, HSG B
1,794	69	50-75% Grass cover, Fair, HSG B
2,859	60	Woods, Fair, HSG B
5,536	69	Weighted Average
4,653		84.05% Pervious Area
883		15.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.4880	3.56		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
5.5	31	0.0580	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	81	0.0580	3.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
5.9	131	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 9S: Sub_Watershed 9S

Sub_Watershed 9S

Runoff = 0.03 cfs @ 12.23 hrs, Volume= 166 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
451	98	Roofs, HSG B
17	98	Paved parking, HSG B
2,528	60	Woods, Fair, HSG B
2,996	66	Weighted Average
2,528		84.38% Pervious Area
468		15.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	50	0.0140	0.06		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0550	3.78		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
14.3	92	Total			

Summary for Link 1O: Analysis Point 1

Analysis Point 1

Inflow Area = 13,032 sf, 0.00% Impervious, Inflow Depth = 0.46" for 2Yr_24Hr_Storm event
Inflow = 0.09 cfs @ 12.18 hrs, Volume= 500 cf
Primary = 0.09 cfs @ 12.18 hrs, Volume= 500 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2O: Analysis Point 2

Analysis Point 2

Inflow Area = 23,422 sf, 7.45% Impervious, Inflow Depth = 0.66" for 2Yr_24Hr_Storm event
Inflow = 0.27 cfs @ 12.21 hrs, Volume= 1,295 cf
Primary = 0.27 cfs @ 12.21 hrs, Volume= 1,295 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 3O: Analysis Point 3

Analysis Point 3

Inflow Area = 2,091 sf, 0.00% Impervious, Inflow Depth = 0.62" for 2Yr_24Hr_Storm event
Inflow = 0.03 cfs @ 12.11 hrs, Volume= 108 cf
Primary = 0.03 cfs @ 12.11 hrs, Volume= 108 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 4O: Analysis Point 4

Analysis Point 4

Inflow Area = 15,585 sf, 7.06% Impervious, Inflow Depth = 0.62" for 2Yr_24Hr_Storm event
Inflow = 0.19 cfs @ 12.14 hrs, Volume= 805 cf
Primary = 0.19 cfs @ 12.14 hrs, Volume= 805 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 5O: Analysis Point 4

Analysis Point 4

Inflow Area = 1,328 sf, 2.56% Impervious, Inflow Depth = 0.50" for 2Yr_24Hr_Storm event
Inflow = 0.01 cfs @ 12.13 hrs, Volume= 55 cf
Primary = 0.01 cfs @ 12.13 hrs, Volume= 55 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 6O: Analysis Point 6

Analysis Point 6

Inflow Area = 3,688 sf, 33.68% Impervious, Inflow Depth = 1.24" for 2Yr_24Hr_Storm event
Inflow = 0.12 cfs @ 12.09 hrs, Volume= 381 cf
Primary = 0.12 cfs @ 12.09 hrs, Volume= 381 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 7O: Analysis Point 7

Analysis Point 7

Inflow Area = 8,710 sf, 4.57% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.14 cfs @ 12.16 hrs, Volume= 582 cf
Primary = 0.14 cfs @ 12.16 hrs, Volume= 582 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 8O: Analysis Point 8

Analysis Point 8

Inflow Area = 5,536 sf, 15.95% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.11 cfs @ 12.10 hrs, Volume= 370 cf
Primary = 0.11 cfs @ 12.10 hrs, Volume= 370 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 9O: Analysis Point 9

Analysis Point 9

Inflow Area = 2,996 sf, 15.62% Impervious, Inflow Depth = 0.66" for 2Yr_24Hr_Storm event
Inflow = 0.03 cfs @ 12.23 hrs, Volume= 166 cf
Primary = 0.03 cfs @ 12.23 hrs, Volume= 166 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S: Sub_Watershed 1S

Sub_Watershed 1S

Runoff = 0.22 cfs @ 12.15 hrs, Volume= 927 cf, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,786	69	50-75% Grass cover, Fair, HSG B
11,246	60	Woods, Fair, HSG B
13,032	61	Weighted Average
13,032		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	82	0.0730	4.35		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.3	121	Total			

Summary for Subcatchment 2S: Sub_Watershed 2S

Sub_Watershed 2S

Runoff = 0.52 cfs @ 12.19 hrs, Volume= 2,213 cf, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,746	98	Roofs, HSG B
7,306	69	50-75% Grass cover, Fair, HSG B
14,370	60	Woods, Fair, HSG B
23,422	66	Weighted Average
21,676		92.55% Pervious Area
1,746		7.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	74	0.0540	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
1.4	190	0.0210	2.33		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
12.7	264	Total			

Summary for Subcatchment 3S: Sub_Watershed 3S

Sub_Watershed 3S

Runoff = 0.05 cfs @ 12.10 hrs, Volume= 187 cf, Depth= 1.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,235	69	50-75% Grass cover, Fair, HSG B
856	60	Woods, Fair, HSG B
2,091	65	Weighted Average
2,091		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	51	0.0430	0.20		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
0.1	15	0.0660	4.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
4.3	66	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Sub_Watershed 4S

Sub_Watershed 4S

Runoff = 0.37 cfs @ 12.13 hrs, Volume= 1,396 cf, Depth= 1.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,101	98	Roofs, HSG B
4,151	69	50-75% Grass cover, Fair, HSG B
10,333	60	Woods, Fair, HSG B
15,585	65	Weighted Average
14,484		92.94% Pervious Area
1,101		7.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	28	0.0250	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
4.3	24	0.0640	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.8	150	0.0370	3.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.3	202	Total			

Summary for Subcatchment 5S: Sub_Watershed 5S

Sub_Watershed 5S

Runoff = 0.03 cfs @ 12.11 hrs, Volume= 100 cf, Depth= 0.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
8	98	Roofs, HSG B
26	98	Paved parking, HSG B
107	69	50-75% Grass cover, Fair, HSG B
1,187	60	Woods, Fair, HSG B
1,328	62	Weighted Average
1,294		97.44% Pervious Area
34		2.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	41	0.0600	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 6S: Sub_Watershed 6S

Sub_Watershed 6S

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 576 cf, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
591	98	Roofs, HSG B
651	98	Paved parking, HSG B
1,791	69	50-75% Grass cover, Fair, HSG B
655	60	Woods, Fair, HSG B
3,688	77	Weighted Average
2,446		66.32% Pervious Area
1,242		33.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.2150	3.10		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
0.1	31	0.0800	5.74		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.0	10	0.1000	5.09		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.4	90	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Sub_Watershed 7S

Sub_Watershed 7S

Runoff = 0.26 cfs @ 12.15 hrs, Volume= 957 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
75	98	Roofs, HSG B
323	98	Paved parking, HSG B
7,507	69	50-75% Grass cover, Fair, HSG B
805	60	Woods, Fair, HSG B
8,710	69	Weighted Average
8,312		95.43% Pervious Area
398		4.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	18	0.0110	0.10		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
6.3	41	0.0700	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	92	0.0340	2.97		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.9	151	Total			

Summary for Subcatchment 8S: Sub_Watershed 8S

Sub_Watershed 8S

Runoff = 0.19 cfs @ 12.10 hrs, Volume= 608 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
177	98	Roofs, HSG B
706	98	Paved parking, HSG B
1,794	69	50-75% Grass cover, Fair, HSG B
2,859	60	Woods, Fair, HSG B
5,536	69	Weighted Average
4,653		84.05% Pervious Area
883		15.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.4880	3.56		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
5.5	31	0.0580	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	81	0.0580	3.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
5.9	131	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 9S: Sub_Watershed 9S

Sub_Watershed 9S

Runoff = 0.06 cfs @ 12.22 hrs, Volume= 283 cf, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
451	98	Roofs, HSG B
17	98	Paved parking, HSG B
2,528	60	Woods, Fair, HSG B
2,996	66	Weighted Average
2,528		84.38% Pervious Area
468		15.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	50	0.0140	0.06		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0550	3.78		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
14.3	92	Total			

Summary for Link 1O: Analysis Point 1

Analysis Point 1

Inflow Area = 13,032 sf, 0.00% Impervious, Inflow Depth = 0.85" for 5Yr_24Hr_Storm event
Inflow = 0.22 cfs @ 12.15 hrs, Volume= 927 cf
Primary = 0.22 cfs @ 12.15 hrs, Volume= 927 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2O: Analysis Point 2

Analysis Point 2

Inflow Area = 23,422 sf, 7.45% Impervious, Inflow Depth = 1.13" for 5Yr_24Hr_Storm event
Inflow = 0.52 cfs @ 12.19 hrs, Volume= 2,213 cf
Primary = 0.52 cfs @ 12.19 hrs, Volume= 2,213 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 3O: Analysis Point 3

Analysis Point 3

Inflow Area = 2,091 sf, 0.00% Impervious, Inflow Depth = 1.08" for 5Yr_24Hr_Storm event
Inflow = 0.05 cfs @ 12.10 hrs, Volume= 187 cf
Primary = 0.05 cfs @ 12.10 hrs, Volume= 187 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 4O: Analysis Point 4

Analysis Point 4

Inflow Area = 15,585 sf, 7.06% Impervious, Inflow Depth = 1.08" for 5Yr_24Hr_Storm event
Inflow = 0.37 cfs @ 12.13 hrs, Volume= 1,396 cf
Primary = 0.37 cfs @ 12.13 hrs, Volume= 1,396 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 5O: Analysis Point 4

Analysis Point 4

Inflow Area = 1,328 sf, 2.56% Impervious, Inflow Depth = 0.91" for 5Yr_24Hr_Storm event
Inflow = 0.03 cfs @ 12.11 hrs, Volume= 100 cf
Primary = 0.03 cfs @ 12.11 hrs, Volume= 100 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 6O: Analysis Point 6

Analysis Point 6

Inflow Area = 3,688 sf, 33.68% Impervious, Inflow Depth = 1.87" for 5Yr_24Hr_Storm event
Inflow = 0.18 cfs @ 12.09 hrs, Volume= 576 cf
Primary = 0.18 cfs @ 12.09 hrs, Volume= 576 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 7O: Analysis Point 7

Analysis Point 7

Inflow Area =	8,710 sf,	4.57% Impervious,	Inflow Depth =	1.32"	for 5Yr_24Hr_Storm event
Inflow =	0.26 cfs @	12.15 hrs, Volume=	957 cf		
Primary =	0.26 cfs @	12.15 hrs, Volume=	957 cf,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 8O: Analysis Point 8

Analysis Point 8

Inflow Area =	5,536 sf,	15.95% Impervious,	Inflow Depth =	1.32"	for 5Yr_24Hr_Storm event
Inflow =	0.19 cfs @	12.10 hrs, Volume=	608 cf		
Primary =	0.19 cfs @	12.10 hrs, Volume=	608 cf,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 9O: Analysis Point 9

Analysis Point 9

Inflow Area = 2,996 sf, 15.62% Impervious, Inflow Depth = 1.13" for 5Yr_24Hr_Storm event
Inflow = 0.06 cfs @ 12.22 hrs, Volume= 283 cf
Primary = 0.06 cfs @ 12.22 hrs, Volume= 283 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S: Sub_Watershed 1S

Sub_Watershed 1S

Runoff = 0.36 cfs @ 12.14 hrs, Volume= 1,396 cf, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,786	69	50-75% Grass cover, Fair, HSG B
11,246	60	Woods, Fair, HSG B
13,032	61	Weighted Average
13,032		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	82	0.0730	4.35		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.3	121	Total			

Summary for Subcatchment 2S: Sub_Watershed 2S

Sub_Watershed 2S

Runoff = 0.79 cfs @ 12.18 hrs, Volume= 3,187 cf, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,746	98	Roofs, HSG B
7,306	69	50-75% Grass cover, Fair, HSG B
14,370	60	Woods, Fair, HSG B
23,422	66	Weighted Average
21,676		92.55% Pervious Area
1,746		7.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	74	0.0540	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
1.4	190	0.0210	2.33		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
12.7	264	Total			

Summary for Subcatchment 3S: Sub_Watershed 3S

Sub_Watershed 3S

Runoff = 0.08 cfs @ 12.10 hrs, Volume= 272 cf, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,235	69	50-75% Grass cover, Fair, HSG B
856	60	Woods, Fair, HSG B
2,091	65	Weighted Average
2,091		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	51	0.0430	0.20		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
0.1	15	0.0660	4.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
4.3	66	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Sub_Watershed 4S

Sub_Watershed 4S

Runoff = 0.57 cfs @ 12.13 hrs, Volume= 2,027 cf, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,101	98	Roofs, HSG B
4,151	69	50-75% Grass cover, Fair, HSG B
10,333	60	Woods, Fair, HSG B
15,585	65	Weighted Average
14,484		92.94% Pervious Area
1,101		7.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	28	0.0250	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
4.3	24	0.0640	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.8	150	0.0370	3.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.3	202	Total			

Summary for Subcatchment 5S: Sub_Watershed 5S

Sub_Watershed 5S

Runoff = 0.04 cfs @ 12.11 hrs, Volume= 150 cf, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
8	98	Roofs, HSG B
26	98	Paved parking, HSG B
107	69	50-75% Grass cover, Fair, HSG B
1,187	60	Woods, Fair, HSG B
1,328	62	Weighted Average
1,294		97.44% Pervious Area
34		2.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	41	0.0600	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 6S: Sub_Watershed 6S

Sub_Watershed 6S

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 770 cf, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
591	98	Roofs, HSG B
651	98	Paved parking, HSG B
1,791	69	50-75% Grass cover, Fair, HSG B
655	60	Woods, Fair, HSG B
3,688	77	Weighted Average
2,446		66.32% Pervious Area
1,242		33.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.2150	3.10		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
0.1	31	0.0800	5.74		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.0	10	0.1000	5.09		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.4	90	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Sub_Watershed 7S

Sub_Watershed 7S

Runoff = 0.37 cfs @ 12.15 hrs, Volume= 1,347 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
75	98	Roofs, HSG B
323	98	Paved parking, HSG B
7,507	69	50-75% Grass cover, Fair, HSG B
805	60	Woods, Fair, HSG B
8,710	69	Weighted Average
8,312		95.43% Pervious Area
398		4.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	18	0.0110	0.10		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
6.3	41	0.0700	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	92	0.0340	2.97		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.9	151	Total			

Summary for Subcatchment 8S: Sub_Watershed 8S

Sub_Watershed 8S

Runoff = 0.27 cfs @ 12.09 hrs, Volume= 856 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
177	98	Roofs, HSG B
706	98	Paved parking, HSG B
1,794	69	50-75% Grass cover, Fair, HSG B
2,859	60	Woods, Fair, HSG B
5,536	69	Weighted Average
4,653		84.05% Pervious Area
883		15.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.4880	3.56		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
5.5	31	0.0580	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	81	0.0580	3.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
5.9	131	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 9S: Sub_Watershed 9S

Sub_Watershed 9S

Runoff = 0.10 cfs @ 12.21 hrs, Volume= 408 cf, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
451	98	Roofs, HSG B
17	98	Paved parking, HSG B
2,528	60	Woods, Fair, HSG B
2,996	66	Weighted Average
2,528		84.38% Pervious Area
468		15.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	50	0.0140	0.06		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0550	3.78		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
14.3	92	Total			

Summary for Link 1O: Analysis Point 1

Analysis Point 1

Inflow Area = 13,032 sf, 0.00% Impervious, Inflow Depth = 1.29" for 10Yr_24Hr_Storm event
Inflow = 0.36 cfs @ 12.14 hrs, Volume= 1,396 cf
Primary = 0.36 cfs @ 12.14 hrs, Volume= 1,396 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2O: Analysis Point 2

Analysis Point 2

Inflow Area = 23,422 sf, 7.45% Impervious, Inflow Depth = 1.63" for 10Yr_24Hr_Storm event
Inflow = 0.79 cfs @ 12.18 hrs, Volume= 3,187 cf
Primary = 0.79 cfs @ 12.18 hrs, Volume= 3,187 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 3O: Analysis Point 3

Analysis Point 3

Inflow Area = 2,091 sf, 0.00% Impervious, Inflow Depth = 1.56" for 10Yr_24Hr_Storm event
Inflow = 0.08 cfs @ 12.10 hrs, Volume= 272 cf
Primary = 0.08 cfs @ 12.10 hrs, Volume= 272 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 4O: Analysis Point 4

Analysis Point 4

Inflow Area = 15,585 sf, 7.06% Impervious, Inflow Depth = 1.56" for 10Yr_24Hr_Storm event
Inflow = 0.57 cfs @ 12.13 hrs, Volume= 2,027 cf
Primary = 0.57 cfs @ 12.13 hrs, Volume= 2,027 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 5O: Analysis Point 4

Analysis Point 4

Inflow Area = 1,328 sf, 2.56% Impervious, Inflow Depth = 1.35" for 10Yr_24Hr_Storm event
Inflow = 0.04 cfs @ 12.11 hrs, Volume= 150 cf
Primary = 0.04 cfs @ 12.11 hrs, Volume= 150 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 6O: Analysis Point 6

Analysis Point 6

Inflow Area = 3,688 sf, 33.68% Impervious, Inflow Depth = 2.51" for 10Yr_24Hr_Storm event
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 770 cf
Primary = 0.25 cfs @ 12.09 hrs, Volume= 770 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 7O: Analysis Point 7

Analysis Point 7

Inflow Area = 8,710 sf, 4.57% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.37 cfs @ 12.15 hrs, Volume= 1,347 cf
Primary = 0.37 cfs @ 12.15 hrs, Volume= 1,347 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 8O: Analysis Point 8

Analysis Point 8

Inflow Area = 5,536 sf, 15.95% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.27 cfs @ 12.09 hrs, Volume= 856 cf
Primary = 0.27 cfs @ 12.09 hrs, Volume= 856 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 9O: Analysis Point 9

Analysis Point 9

Inflow Area = 2,996 sf, 15.62% Impervious, Inflow Depth = 1.63" for 10Yr_24Hr_Storm event
Inflow = 0.10 cfs @ 12.21 hrs, Volume= 408 cf
Primary = 0.10 cfs @ 12.21 hrs, Volume= 408 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S: Sub_Watershed 1S

Sub_Watershed 1S

Runoff = 0.63 cfs @ 12.14 hrs, Volume= 2,273 cf, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,786	69	50-75% Grass cover, Fair, HSG B
11,246	60	Woods, Fair, HSG B
13,032	61	Weighted Average
13,032		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	82	0.0730	4.35		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.3	121	Total			

Summary for Subcatchment 2S: Sub_Watershed 2S

Sub_Watershed 2S

Runoff = 1.26 cfs @ 12.18 hrs, Volume= 4,952 cf, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,746	98	Roofs, HSG B
7,306	69	50-75% Grass cover, Fair, HSG B
14,370	60	Woods, Fair, HSG B
23,422	66	Weighted Average
21,676		92.55% Pervious Area
1,746		7.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	74	0.0540	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
1.4	190	0.0210	2.33		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
12.7	264	Total			

Summary for Subcatchment 3S: Sub_Watershed 3S

Sub_Watershed 3S

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 426 cf, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,235	69	50-75% Grass cover, Fair, HSG B
856	60	Woods, Fair, HSG B
2,091	65	Weighted Average
2,091		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	51	0.0430	0.20		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
0.1	15	0.0660	4.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
4.3	66	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Sub_Watershed 4S

Sub_Watershed 4S

Runoff = 0.93 cfs @ 12.12 hrs, Volume= 3,177 cf, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,101	98	Roofs, HSG B
4,151	69	50-75% Grass cover, Fair, HSG B
10,333	60	Woods, Fair, HSG B
15,585	65	Weighted Average
14,484		92.94% Pervious Area
1,101		7.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	28	0.0250	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
4.3	24	0.0640	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.8	150	0.0370	3.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.3	202	Total			

Summary for Subcatchment 5S: Sub_Watershed 5S

Sub_Watershed 5S

Runoff = 0.07 cfs @ 12.10 hrs, Volume= 241 cf, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
8	98	Roofs, HSG B
26	98	Paved parking, HSG B
107	69	50-75% Grass cover, Fair, HSG B
1,187	60	Woods, Fair, HSG B
1,328	62	Weighted Average
1,294		97.44% Pervious Area
34		2.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	41	0.0600	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 6S: Sub_Watershed 6S

Sub_Watershed 6S

Runoff = 0.36 cfs @ 12.09 hrs, Volume= 1,104 cf, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
591	98	Roofs, HSG B
651	98	Paved parking, HSG B
1,791	69	50-75% Grass cover, Fair, HSG B
655	60	Woods, Fair, HSG B
3,688	77	Weighted Average
2,446		66.32% Pervious Area
1,242		33.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.2150	3.10		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
0.1	31	0.0800	5.74		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.0	10	0.1000	5.09		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.4	90	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Sub_Watershed 7S

Sub_Watershed 7S

Runoff = 0.57 cfs @ 12.14 hrs, Volume= 2,043 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
75	98	Roofs, HSG B
323	98	Paved parking, HSG B
7,507	69	50-75% Grass cover, Fair, HSG B
805	60	Woods, Fair, HSG B
8,710	69	Weighted Average
8,312		95.43% Pervious Area
398		4.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	18	0.0110	0.10		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
6.3	41	0.0700	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	92	0.0340	2.97		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.9	151	Total			

Summary for Subcatchment 8S: Sub_Watershed 8S

Sub_Watershed 8S

Runoff = 0.42 cfs @ 12.09 hrs, Volume= 1,298 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
177	98	Roofs, HSG B
706	98	Paved parking, HSG B
1,794	69	50-75% Grass cover, Fair, HSG B
2,859	60	Woods, Fair, HSG B
5,536	69	Weighted Average
4,653		84.05% Pervious Area
883		15.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.4880	3.56		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
5.5	31	0.0580	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	81	0.0580	3.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
5.9	131	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 9S: Sub_Watershed 9S

Sub_Watershed 9S

Runoff = 0.15 cfs @ 12.20 hrs, Volume= 633 cf, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
451	98	Roofs, HSG B
17	98	Paved parking, HSG B
2,528	60	Woods, Fair, HSG B
2,996	66	Weighted Average
2,528		84.38% Pervious Area
468		15.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	50	0.0140	0.06		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0550	3.78		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
14.3	92	Total			

Summary for Link 1O: Analysis Point 1

Analysis Point 1

Inflow Area = 13,032 sf, 0.00% Impervious, Inflow Depth = 2.09" for 25Yr_24Hr_Storm event
Inflow = 0.63 cfs @ 12.14 hrs, Volume= 2,273 cf
Primary = 0.63 cfs @ 12.14 hrs, Volume= 2,273 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2O: Analysis Point 2

Analysis Point 2

Inflow Area = 23,422 sf, 7.45% Impervious, Inflow Depth = 2.54" for 25Yr_24Hr_Storm event
Inflow = 1.26 cfs @ 12.18 hrs, Volume= 4,952 cf
Primary = 1.26 cfs @ 12.18 hrs, Volume= 4,952 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 3O: Analysis Point 3

Analysis Point 3

Inflow Area = 2,091 sf, 0.00% Impervious, Inflow Depth = 2.45" for 25Yr_24Hr_Storm event
Inflow = 0.13 cfs @ 12.09 hrs, Volume= 426 cf
Primary = 0.13 cfs @ 12.09 hrs, Volume= 426 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 4O: Analysis Point 4

Analysis Point 4

Inflow Area = 15,585 sf, 7.06% Impervious, Inflow Depth = 2.45" for 25Yr_24Hr_Storm event
Inflow = 0.93 cfs @ 12.12 hrs, Volume= 3,177 cf
Primary = 0.93 cfs @ 12.12 hrs, Volume= 3,177 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 5O: Analysis Point 4

Analysis Point 4

Inflow Area = 1,328 sf, 2.56% Impervious, Inflow Depth = 2.18" for 25Yr_24Hr_Storm event
Inflow = 0.07 cfs @ 12.10 hrs, Volume= 241 cf
Primary = 0.07 cfs @ 12.10 hrs, Volume= 241 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 6O: Analysis Point 6

Analysis Point 6

Inflow Area = 3,688 sf, 33.68% Impervious, Inflow Depth = 3.59" for 25Yr_24Hr_Storm event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 1,104 cf
Primary = 0.36 cfs @ 12.09 hrs, Volume= 1,104 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 7O: Analysis Point 7

Analysis Point 7

Inflow Area = 8,710 sf, 4.57% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.57 cfs @ 12.14 hrs, Volume= 2,043 cf
Primary = 0.57 cfs @ 12.14 hrs, Volume= 2,043 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 8O: Analysis Point 8

Analysis Point 8

Inflow Area = 5,536 sf, 15.95% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.42 cfs @ 12.09 hrs, Volume= 1,298 cf
Primary = 0.42 cfs @ 12.09 hrs, Volume= 1,298 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 9O: Analysis Point 9

Analysis Point 9

Inflow Area = 2,996 sf, 15.62% Impervious, Inflow Depth = 2.54" for 25Yr_24Hr_Storm event
Inflow = 0.15 cfs @ 12.20 hrs, Volume= 633 cf
Primary = 0.15 cfs @ 12.20 hrs, Volume= 633 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S: Sub_Watershed 1S

Sub_Watershed 1S

Runoff = 0.90 cfs @ 12.14 hrs, Volume= 3,180 cf, Depth= 2.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,786	69	50-75% Grass cover, Fair, HSG B
11,246	60	Woods, Fair, HSG B
13,032	61	Weighted Average
13,032		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	82	0.0730	4.35		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.3	121	Total			

Summary for Subcatchment 2S: Sub_Watershed 2S

Sub_Watershed 2S

Runoff = 1.74 cfs @ 12.18 hrs, Volume= 6,733 cf, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,746	98	Roofs, HSG B
7,306	69	50-75% Grass cover, Fair, HSG B
14,370	60	Woods, Fair, HSG B
23,422	66	Weighted Average
21,676		92.55% Pervious Area
1,746		7.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	74	0.0540	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
1.4	190	0.0210	2.33		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
12.7	264	Total			

Summary for Subcatchment 3S: Sub_Watershed 3S

Sub_Watershed 3S

Runoff = 0.19 cfs @ 12.09 hrs, Volume= 583 cf, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,235	69	50-75% Grass cover, Fair, HSG B
856	60	Woods, Fair, HSG B
2,091	65	Weighted Average
2,091		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	51	0.0430	0.20		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
0.1	15	0.0660	4.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
4.3	66	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Sub_Watershed 4S

Sub_Watershed 4S

Runoff = 1.28 cfs @ 12.12 hrs, Volume= 4,343 cf, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,101	98	Roofs, HSG B
4,151	69	50-75% Grass cover, Fair, HSG B
10,333	60	Woods, Fair, HSG B
15,585	65	Weighted Average
14,484		92.94% Pervious Area
1,101		7.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	28	0.0250	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
4.3	24	0.0640	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.8	150	0.0370	3.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.3	202	Total			

Summary for Subcatchment 5S: Sub_Watershed 5S

Sub_Watershed 5S

Runoff = 0.10 cfs @ 12.10 hrs, Volume= 335 cf, Depth= 3.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
8	98	Roofs, HSG B
26	98	Paved parking, HSG B
107	69	50-75% Grass cover, Fair, HSG B
1,187	60	Woods, Fair, HSG B
1,328	62	Weighted Average
1,294		97.44% Pervious Area
34		2.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	41	0.0600	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 6S: Sub_Watershed 6S

Sub_Watershed 6S

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 1,428 cf, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
591	98	Roofs, HSG B
651	98	Paved parking, HSG B
1,791	69	50-75% Grass cover, Fair, HSG B
655	60	Woods, Fair, HSG B
3,688	77	Weighted Average
2,446		66.32% Pervious Area
1,242		33.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.2150	3.10		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
0.1	31	0.0800	5.74		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.0	10	0.1000	5.09		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.4	90	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Sub_Watershed 7S

Sub_Watershed 7S

Runoff = 0.77 cfs @ 12.14 hrs, Volume= 2,736 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
75	98	Roofs, HSG B
323	98	Paved parking, HSG B
7,507	69	50-75% Grass cover, Fair, HSG B
805	60	Woods, Fair, HSG B
8,710	69	Weighted Average
8,312		95.43% Pervious Area
398		4.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	18	0.0110	0.10		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
6.3	41	0.0700	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	92	0.0340	2.97		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.9	151	Total			

Summary for Subcatchment 8S: Sub_Watershed 8S

Sub_Watershed 8S

Runoff = 0.56 cfs @ 12.09 hrs, Volume= 1,739 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
177	98	Roofs, HSG B
706	98	Paved parking, HSG B
1,794	69	50-75% Grass cover, Fair, HSG B
2,859	60	Woods, Fair, HSG B
5,536	69	Weighted Average
4,653		84.05% Pervious Area
883		15.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.4880	3.56		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
5.5	31	0.0580	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	81	0.0580	3.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
5.9	131	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 9S: Sub_Watershed 9S

Sub_Watershed 9S

Runoff = 0.21 cfs @ 12.20 hrs, Volume= 861 cf, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
451	98	Roofs, HSG B
17	98	Paved parking, HSG B
2,528	60	Woods, Fair, HSG B
2,996	66	Weighted Average
2,528		84.38% Pervious Area
468		15.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	50	0.0140	0.06		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0550	3.78		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
14.3	92	Total			

Summary for Link 1O: Analysis Point 1

Analysis Point 1

Inflow Area = 13,032 sf, 0.00% Impervious, Inflow Depth = 2.93" for 50Yr_24Hr_Storm event
Inflow = 0.90 cfs @ 12.14 hrs, Volume= 3,180 cf
Primary = 0.90 cfs @ 12.14 hrs, Volume= 3,180 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2O: Analysis Point 2

Analysis Point 2

Inflow Area = 23,422 sf, 7.45% Impervious, Inflow Depth = 3.45" for 50Yr_24Hr_Storm event
Inflow = 1.74 cfs @ 12.18 hrs, Volume= 6,733 cf
Primary = 1.74 cfs @ 12.18 hrs, Volume= 6,733 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 3O: Analysis Point 3

Analysis Point 3

Inflow Area = 2,091 sf, 0.00% Impervious, Inflow Depth = 3.34" for 50Yr_24Hr_Storm event
Inflow = 0.19 cfs @ 12.09 hrs, Volume= 583 cf
Primary = 0.19 cfs @ 12.09 hrs, Volume= 583 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 4O: Analysis Point 4

Analysis Point 4

Inflow Area = 15,585 sf, 7.06% Impervious, Inflow Depth = 3.34" for 50Yr_24Hr_Storm event
Inflow = 1.28 cfs @ 12.12 hrs, Volume= 4,343 cf
Primary = 1.28 cfs @ 12.12 hrs, Volume= 4,343 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 5O: Analysis Point 4

Analysis Point 4

Inflow Area = 1,328 sf, 2.56% Impervious, Inflow Depth = 3.03" for 50Yr_24Hr_Storm event
Inflow = 0.10 cfs @ 12.10 hrs, Volume= 335 cf
Primary = 0.10 cfs @ 12.10 hrs, Volume= 335 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 6O: Analysis Point 6

Analysis Point 6

Inflow Area = 3,688 sf, 33.68% Impervious, Inflow Depth = 4.65" for 50Yr_24Hr_Storm event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 1,428 cf
Primary = 0.46 cfs @ 12.09 hrs, Volume= 1,428 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 7O: Analysis Point 7

Analysis Point 7

Inflow Area = 8,710 sf, 4.57% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.77 cfs @ 12.14 hrs, Volume= 2,736 cf
Primary = 0.77 cfs @ 12.14 hrs, Volume= 2,736 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 8O: Analysis Point 8

Analysis Point 8

Inflow Area = 5,536 sf, 15.95% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.56 cfs @ 12.09 hrs, Volume= 1,739 cf
Primary = 0.56 cfs @ 12.09 hrs, Volume= 1,739 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 9O: Analysis Point 9

Analysis Point 9

Inflow Area = 2,996 sf, 15.62% Impervious, Inflow Depth = 3.45" for 50Yr_24Hr_Storm event
Inflow = 0.21 cfs @ 12.20 hrs, Volume= 861 cf
Primary = 0.21 cfs @ 12.20 hrs, Volume= 861 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S: Sub_Watershed 1S

Sub_Watershed 1S

Runoff = 1.25 cfs @ 12.14 hrs, Volume= 4,355 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,786	69	50-75% Grass cover, Fair, HSG B
11,246	60	Woods, Fair, HSG B
13,032	61	Weighted Average
13,032		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	82	0.0730	4.35		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.3	121	Total			

Summary for Subcatchment 2S: Sub_Watershed 2S

Sub_Watershed 2S

Runoff = 2.34 cfs @ 12.18 hrs, Volume= 9,004 cf, Depth= 4.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,746	98	Roofs, HSG B
7,306	69	50-75% Grass cover, Fair, HSG B
14,370	60	Woods, Fair, HSG B
23,422	66	Weighted Average
21,676		92.55% Pervious Area
1,746		7.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	74	0.0540	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
1.4	190	0.0210	2.33		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
12.7	264	Total			

Summary for Subcatchment 3S: Sub_Watershed 3S

Sub_Watershed 3S

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 783 cf, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,235	69	50-75% Grass cover, Fair, HSG B
856	60	Woods, Fair, HSG B
2,091	65	Weighted Average
2,091		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	51	0.0430	0.20		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
0.1	15	0.0660	4.14		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
4.3	66	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Sub_Watershed 4S

Sub_Watershed 4S

Runoff = 1.74 cfs @ 12.12 hrs, Volume= 5,834 cf, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,101	98	Roofs, HSG B
4,151	69	50-75% Grass cover, Fair, HSG B
10,333	60	Woods, Fair, HSG B
15,585	65	Weighted Average
14,484		92.94% Pervious Area
1,101		7.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	28	0.0250	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
4.3	24	0.0640	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.8	150	0.0370	3.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.3	202	Total			

Summary for Subcatchment 5S: Sub_Watershed 5S

Sub_Watershed 5S

Runoff = 0.14 cfs @ 12.10 hrs, Volume= 457 cf, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
8	98	Roofs, HSG B
26	98	Paved parking, HSG B
107	69	50-75% Grass cover, Fair, HSG B
1,187	60	Woods, Fair, HSG B
1,328	62	Weighted Average
1,294		97.44% Pervious Area
34		2.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	41	0.0600	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 6S: Sub_Watershed 6S

Sub_Watershed 6S

Runoff = 0.58 cfs @ 12.09 hrs, Volume= 1,828 cf, Depth= 5.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
591	98	Roofs, HSG B
651	98	Paved parking, HSG B
1,791	69	50-75% Grass cover, Fair, HSG B
655	60	Woods, Fair, HSG B
3,688	77	Weighted Average
2,446		66.32% Pervious Area
1,242		33.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.2150	3.10		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
0.1	31	0.0800	5.74		**Shallow Concentrated Flow, Shallow Concentrated Flow** Paved Kv= 20.3 fps
0.0	10	0.1000	5.09		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
0.4	90	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Sub_Watershed 7S

Sub_Watershed 7S

Runoff = 1.02 cfs @ 12.14 hrs, Volume= 3,612 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
75	98	Roofs, HSG B
323	98	Paved parking, HSG B
7,507	69	50-75% Grass cover, Fair, HSG B
805	60	Woods, Fair, HSG B
8,710	69	Weighted Average
8,312		95.43% Pervious Area
398		4.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	18	0.0110	0.10		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.24"
6.3	41	0.0700	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	92	0.0340	2.97		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
9.9	151	Total			

Summary for Subcatchment 8S: Sub_Watershed 8S

Sub_Watershed 8S

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 2,296 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
177	98	Roofs, HSG B
706	98	Paved parking, HSG B
1,794	69	50-75% Grass cover, Fair, HSG B
2,859	60	Woods, Fair, HSG B
5,536	69	Weighted Average
4,653		84.05% Pervious Area
883		15.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.4880	3.56		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
5.5	31	0.0580	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	81	0.0580	3.88		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
5.9	131	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 9S: Sub_Watershed 9S

Sub_Watershed 9S

Runoff = 0.29 cfs @ 12.19 hrs, Volume= 1,152 cf, Depth= 4.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
451	98	Roofs, HSG B
17	98	Paved parking, HSG B
2,528	60	Woods, Fair, HSG B
2,996	66	Weighted Average
2,528		84.38% Pervious Area
468		15.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	50	0.0140	0.06		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0550	3.78		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
14.3	92	Total			

Summary for Link 1O: Analysis Point 1

Analysis Point 1

Inflow Area = 13,032 sf, 0.00% Impervious, Inflow Depth = 4.01" for 100Yr_24Hr_Storm event
Inflow = 1.25 cfs @ 12.14 hrs, Volume= 4,355 cf
Primary = 1.25 cfs @ 12.14 hrs, Volume= 4,355 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2O: Analysis Point 2

Analysis Point 2

Inflow Area = 23,422 sf, 7.45% Impervious, Inflow Depth = 4.61" for 100Yr_24Hr_Storm event
Inflow = 2.34 cfs @ 12.18 hrs, Volume= 9,004 cf
Primary = 2.34 cfs @ 12.18 hrs, Volume= 9,004 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 3O: Analysis Point 3

Analysis Point 3

Inflow Area = 2,091 sf, 0.00% Impervious, Inflow Depth = 4.49" for 100Yr_24Hr_Storm event
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 783 cf
Primary = 0.25 cfs @ 12.09 hrs, Volume= 783 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 4O: Analysis Point 4

Analysis Point 4

Inflow Area = 15,585 sf, 7.06% Impervious, Inflow Depth = 4.49" for 100Yr_24Hr_Storm event
Inflow = 1.74 cfs @ 12.12 hrs, Volume= 5,834 cf
Primary = 1.74 cfs @ 12.12 hrs, Volume= 5,834 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 5O: Analysis Point 4

Analysis Point 4

Inflow Area = 1,328 sf, 2.56% Impervious, Inflow Depth = 4.13" for 100Yr_24Hr_Storm event
Inflow = 0.14 cfs @ 12.10 hrs, Volume= 457 cf
Primary = 0.14 cfs @ 12.10 hrs, Volume= 457 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 6O: Analysis Point 6

Analysis Point 6

Inflow Area = 3,688 sf, 33.68% Impervious, Inflow Depth = 5.95" for 100Yr_24Hr_Storm event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 1,828 cf
Primary = 0.58 cfs @ 12.09 hrs, Volume= 1,828 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 7O: Analysis Point 7

Analysis Point 7

Inflow Area = 8,710 sf, 4.57% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 1.02 cfs @ 12.14 hrs, Volume= 3,612 cf
Primary = 1.02 cfs @ 12.14 hrs, Volume= 3,612 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 8O: Analysis Point 8

Analysis Point 8

Inflow Area = 5,536 sf, 15.95% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 0.74 cfs @ 12.09 hrs, Volume= 2,296 cf
Primary = 0.74 cfs @ 12.09 hrs, Volume= 2,296 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 9O: Analysis Point 9

Analysis Point 9

Inflow Area = 2,996 sf, 15.62% Impervious, Inflow Depth = 4.61" for 100Yr_24Hr_Storm event
Inflow = 0.29 cfs @ 12.19 hrs, Volume= 1,152 cf
Primary = 0.29 cfs @ 12.19 hrs, Volume= 1,152 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Appendix E

TATA & HOWARD

Summary for Subcatchment 1S-1: Sub-Watershed 1S-1

Runoff = 1.85 cfs @ 12.13 hrs, Volume= 7,321 cf, Depth= 3.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
29,211	98	Paved parking, HSG B
29,211		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	34	0.0300	1.31		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
9.7	452	0.0030	0.78	0.07	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
10.1	486	Total			

Summary for Subcatchment 1S-2: Sub-Watershed 1S-2

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 476 cf, Depth= 3.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,900	98	Paved parking, HSG B
1,900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	44	0.0570	4.85		**Shallow Concentrated Flow, Shallow Conce. Flow** Paved Kv= 20.3 fps
0.2	44	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-3: Sub-Watershed 1S-3

Runoff = 0.17 cfs @ 12.14 hrs, Volume= 677 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,923	98	Roofs, HSG B
2,269	69	50-75% Grass cover, Fair, HSG B
5,938	60	Woods, Fair, HSG B
10,130	69	Weighted Average
8,207		81.02% Pervious Area
1,923		18.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0500	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	85	0.0650	4.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.8	135	Total			

Summary for Subcatchment 1S-4: Sub-Watershed 2S-4

Runoff = 0.12 cfs @ 12.15 hrs, Volume= 461 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
6,894	69	50-75% Grass cover, Fair, HSG B
6,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	87	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
9.3	126	Total			

Summary for Subcatchment 1S-5: Sub-Watershed 2S-5

Runoff = 0.02 cfs @ 12.18 hrs, Volume= 94 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,404	69	50-75% Grass cover, Fair, HSG B
1,404		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	70	0.0430	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-6: Sub-Watershed 1S-6

Runoff = 0.02 cfs @ 12.12 hrs, Volume= 70 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,054	69	50-75% Grass cover, Fair, HSG B
1,054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	38	0.0440	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-7: Sub-Watershed 1S-7

Runoff = 0.03 cfs @ 12.10 hrs, Volume= 108 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,616	69	50-75% Grass cover, Fair, HSG B
1,616		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	14	0.0740	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	57	0.0520	3.67		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
2.9	71	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-8: Sub-Watershed 1S-8

Runoff = 0.06 cfs @ 12.10 hrs, Volume= 202 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
3,015	69	50-75% Grass cover, Fair, HSG B
3,015		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	27	0.0740	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	65	0.0620	4.01		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
4.7	92	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-9: Sub-Watershed 1S-9

Runoff = 0.06 cfs @ 12.24 hrs, Volume= 251 cf, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
2,539	69	50-75% Grass cover, Fair, HSG B
451	98	Roofs, HSG B
2,990	73	Weighted Average
2,539		84.92% Pervious Area
451		15.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0100	0.05		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0600	3.94		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
16.4	92	Total			

Summary for Subcatchment 2S-1: Sub-Watershed 2S-1

Runoff = 0.91 cfs @ 12.08 hrs, Volume= 3,157 cf, Depth= 3.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
12,596	98	Paved parking, HSG B
12,596		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	134	0.0230	2.15	0.19	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
0.9	46	0.0100	0.90		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
1.9	180	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-2: Sub-Watershed 2S-2

Runoff = 0.05 cfs @ 12.11 hrs, Volume= 164 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
2,453	69	50-75% Grass cover, Fair, HSG B
2,453		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	26	0.0390	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.9	139	0.0250	2.55		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
6.5	165	Total			

Summary for Subcatchment 2S-3: Sub-Watershed 2S-3

Runoff = 0.01 cfs @ 12.10 hrs, Volume= 23 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
342	69	50-75% Grass cover, Fair, HSG B
342		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	24	0.0400	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
5.2	24	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-4: Sub-Watershed 2S-4

Runoff = 0.03 cfs @ 12.18 hrs, Volume= 119 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,778	69	50-75% Grass cover, Fair, HSG B
1,778		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	45	0.0220	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.4	64	0.0310	2.83		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
11.2	109	Total			

Summary for Subcatchment 5S: Sub-Watershed 2S-5

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 79 cf, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr_24Hr_Storm Rainfall=3.24"

Area (sf)	CN	Description
1,175	69	50-75% Grass cover, Fair, HSG B
1,175		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	21	0.0950	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	70	0.0210	2.33		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
3.8	91	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 1USC: Underground Storage Unit No. 1 - R-280HD, w/Exfiltration of 4.3 in/hr

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 2.44" for 2Yr_24Hr_Storm event
Inflow = 2.02 cfs @ 12.13 hrs, Volume= 7,998 cf
Outflow = 0.52 cfs @ 12.00 hrs, Volume= 7,998 cf, Atten= 74%, Lag= 0.0 min
Discarded = 0.52 cfs @ 12.00 hrs, Volume= 7,998 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 249.63' @ 12.55 hrs Surf.Area= 5,210 sf Storage= 1,632 cf
Flood Elev= 257.50' Surf.Area= 5,210 sf Storage= 10,767 cf

Plug-Flow detention time= 15.2 min calculated for 7,996 cf (100% of inflow)
Center-of-Mass det. time= 15.2 min (785.4 - 770.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	249.00'	3,966 cf	**89.83'W x 58.00'L x 3.21'H Field A** 16,716 cf Overall - 6,800 cf Embedded = 9,916 cf x 40.0% Voids
#2A	249.50'	6,800 cf	**Cultec R-280** x 160 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		10,767 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	249.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.52 cfs @ 12.00 hrs HW=249.09' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.52 cfs)

Summary for Pond 2USC: Underground Storage Unit No. 2 (R-280HD, w/Exfiltration of 4.3 in/hr)

Inflow Area = 12,596 sf,100.00% Impervious, Inflow Depth = 3.01" for 2Yr_24Hr_Storm event
Inflow = 0.91 cfs @ 12.08 hrs, Volume= 3,157 cf
Outflow = 0.22 cfs @ 11.92 hrs, Volume= 3,157 cf, Atten= 76%, Lag= 0.0 min
Discarded = 0.22 cfs @ 11.92 hrs, Volume= 3,157 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 246.60' @ 12.47 hrs Surf.Area= 2,180 sf Storage= 625 cf
Flood Elev= 253.25' Surf.Area= 2,180 sf Storage= 4,455 cf

Plug-Flow detention time= 13.4 min calculated for 3,156 cf (100% of inflow)
Center-of-Mass det. time= 13.4 min (769.6 - 756.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	246.00'	1,693 cf	**58.92'W x 37.00'L x 3.21'H Field A** 6,994 cf Overall - 2,763 cf Embedded = 4,231 cf x 40.0% Voids
#2A	246.50'	2,763 cf	**Cultec R-280** x 65 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		4,455 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	246.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.22 cfs @ 11.92 hrs HW=246.07' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Summary for Link 1JCT: Junction

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 2.44" for 2Yr_24Hr_Storm event
Inflow = 2.02 cfs @ 12.13 hrs, Volume= 7,998 cf
Primary = 2.02 cfs @ 12.13 hrs, Volume= 7,998 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S2-O: Analysis Point 1S-2

Inflow Area = 1,900 sf,100.00% Impervious, Inflow Depth = 3.01" for 2Yr_24Hr_Storm event
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 476 cf
Primary = 0.14 cfs @ 12.08 hrs, Volume= 476 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S4-O: Analysis Point 1S-4

Inflow Area = 6,894 sf, 0.00% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.12 cfs @ 12.15 hrs, Volume= 461 cf
Primary = 0.12 cfs @ 12.15 hrs, Volume= 461 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S5-O: Analysis Point 1S-5

Inflow Area = 1,404 sf, 0.00% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.02 cfs @ 12.18 hrs, Volume= 94 cf
Primary = 0.02 cfs @ 12.18 hrs, Volume= 94 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S6-O: Analysis Point 1S-6

Inflow Area = 1,054 sf, 0.00% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.02 cfs @ 12.12 hrs, Volume= 70 cf
Primary = 0.02 cfs @ 12.12 hrs, Volume= 70 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S7-O: Analysis Point 1S-7

Inflow Area = 1,616 sf, 0.00% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.03 cfs @ 12.10 hrs, Volume= 108 cf
Primary = 0.03 cfs @ 12.10 hrs, Volume= 108 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S8-O: Analysis Point 1S-8

Inflow Area = 3,015 sf, 0.00% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.06 cfs @ 12.10 hrs, Volume= 202 cf
Primary = 0.06 cfs @ 12.10 hrs, Volume= 202 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S9-O: Analysis Point 1S-9

Inflow Area = 2,990 sf, 15.08% Impervious, Inflow Depth = 1.01" for 2Yr_24Hr_Storm event
Inflow = 0.06 cfs @ 12.24 hrs, Volume= 251 cf
Primary = 0.06 cfs @ 12.24 hrs, Volume= 251 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S2-O: Analysis Point 2S-2

Inflow Area = 2,453 sf, 0.00% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.05 cfs @ 12.11 hrs, Volume= 164 cf
Primary = 0.05 cfs @ 12.11 hrs, Volume= 164 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S3-O: Analysis Point 2S-3

Inflow Area = 342 sf, 0.00% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.01 cfs @ 12.10 hrs, Volume= 23 cf
Primary = 0.01 cfs @ 12.10 hrs, Volume= 23 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S4-O: Analysis Point 2S-4

Inflow Area = 1,778 sf, 0.00% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.03 cfs @ 12.18 hrs, Volume= 119 cf
Primary = 0.03 cfs @ 12.18 hrs, Volume= 119 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S5-O: Analysis Point 2S-5

Inflow Area = 1,175 sf, 0.00% Impervious, Inflow Depth = 0.80" for 2Yr_24Hr_Storm event
Inflow = 0.02 cfs @ 12.10 hrs, Volume= 79 cf
Primary = 0.02 cfs @ 12.10 hrs, Volume= 79 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S-1: Sub-Watershed 1S-1

Runoff = 2.34 cfs @ 12.13 hrs, Volume= 9,359 cf, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
29,211	98	Paved parking, HSG B
29,211		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	34	0.0300	1.31		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
9.7	452	0.0030	0.78	0.07	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
10.1	486	Total			

Summary for Subcatchment 1S-2: Sub-Watershed 1S-2

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 609 cf, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,900	98	Paved parking, HSG B
1,900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	44	0.0570	4.85		**Shallow Concentrated Flow, Shallow Conce. Flow** Paved Kv= 20.3 fps
0.2	44	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-3: Sub-Watershed 1S-3

Runoff = 0.31 cfs @ 12.13 hrs, Volume= 1,113 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,923	98	Roofs, HSG B
2,269	69	50-75% Grass cover, Fair, HSG B
5,938	60	Woods, Fair, HSG B
10,130	69	Weighted Average
8,207		81.02% Pervious Area
1,923		18.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0500	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	85	0.0650	4.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.8	135	Total			

Summary for Subcatchment 1S-4: Sub-Watershed 2S-4

Runoff = 0.21 cfs @ 12.14 hrs, Volume= 758 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
6,894	69	50-75% Grass cover, Fair, HSG B
6,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	87	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
9.3	126	Total			

Summary for Subcatchment 1S-5: Sub-Watershed 2S-5

Runoff = 0.04 cfs @ 12.18 hrs, Volume= 154 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,404	69	50-75% Grass cover, Fair, HSG B
1,404		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	70	0.0430	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-6: Sub-Watershed 1S-6

Runoff = 0.03 cfs @ 12.11 hrs, Volume= 116 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,054	69	50-75% Grass cover, Fair, HSG B
1,054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	38	0.0440	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-7: Sub-Watershed 1S-7

Runoff = 0.05 cfs @ 12.10 hrs, Volume= 178 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,616	69	50-75% Grass cover, Fair, HSG B
1,616		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	14	0.0740	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	57	0.0520	3.67		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
2.9	71	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-8: Sub-Watershed 1S-8

Runoff = 0.10 cfs @ 12.10 hrs, Volume= 331 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
3,015	69	50-75% Grass cover, Fair, HSG B
3,015		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	27	0.0740	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	65	0.0620	4.01		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
4.7	92	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-9: Sub-Watershed 1S-9

Runoff = 0.09 cfs @ 12.23 hrs, Volume= 395 cf, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
2,539	69	50-75% Grass cover, Fair, HSG B
451	98	Roofs, HSG B
2,990	73	Weighted Average
2,539		84.92% Pervious Area
451		15.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0100	0.05		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0600	3.94		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
16.4	92	Total			

Summary for Subcatchment 2S-1: Sub-Watershed 2S-1

Runoff = 1.15 cfs @ 12.08 hrs, Volume= 4,036 cf, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
12,596	98	Paved parking, HSG B
12,596		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	134	0.0230	2.15	0.19	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
0.9	46	0.0100	0.90		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
1.9	180	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-2: Sub-Watershed 2S-2

Runoff = 0.08 cfs @ 12.10 hrs, Volume= 270 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
2,453	69	50-75% Grass cover, Fair, HSG B
2,453		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	26	0.0390	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.9	139	0.0250	2.55		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
6.5	165	Total			

Summary for Subcatchment 2S-3: Sub-Watershed 2S-3

Runoff = 0.01 cfs @ 12.10 hrs, Volume= 38 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
342	69	50-75% Grass cover, Fair, HSG B
342		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	24	0.0400	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
5.2	24	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-4: Sub-Watershed 2S-4

Runoff = 0.05 cfs @ 12.16 hrs, Volume= 195 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,778	69	50-75% Grass cover, Fair, HSG B
1,778		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	45	0.0220	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.4	64	0.0310	2.83		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
11.2	109	Total			

Summary for Subcatchment 5S: Sub-Watershed 2S-5

Runoff = 0.04 cfs @ 12.10 hrs, Volume= 129 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 5Yr_24Hr_Storm Rainfall=4.08"

Area (sf)	CN	Description
1,175	69	50-75% Grass cover, Fair, HSG B
1,175		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	21	0.0950	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	70	0.0210	2.33		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
3.8	91	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 1USC: Underground Storage Unit No. 1 - R-280HD, w/Exfiltration of 4.3 in/hr

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 3.19" for 5Yr_24Hr_Storm event
Inflow = 2.65 cfs @ 12.13 hrs, Volume= 10,473 cf
Outflow = 0.52 cfs @ 11.91 hrs, Volume= 10,473 cf, Atten= 80%, Lag= 0.0 min
Discarded = 0.52 cfs @ 11.91 hrs, Volume= 10,473 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 249.84' @ 12.62 hrs Surf.Area= 5,210 sf Storage= 2,606 cf
Flood Elev= 257.50' Surf.Area= 5,210 sf Storage= 10,767 cf

Plug-Flow detention time= 27.0 min calculated for 10,471 cf (100% of inflow)
Center-of-Mass det. time= 27.0 min (794.1 - 767.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	249.00'	3,966 cf	**89.83'W x 58.00'L x 3.21'H Field A** 16,716 cf Overall - 6,800 cf Embedded = 9,916 cf x 40.0% Voids
#2A	249.50'	6,800 cf	**Cultec R-280** x 160 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		10,767 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	249.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.52 cfs @ 11.91 hrs HW=249.09' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.52 cfs)

Summary for Pond 2USC: Underground Storage Unit No. 2 (R-280HD, w/Exfiltration of 4.3 in/hr)

Inflow Area = 12,596 sf,100.00% Impervious, Inflow Depth = 3.84" for 5Yr_24Hr_Storm event
Inflow = 1.15 cfs @ 12.08 hrs, Volume= 4,036 cf
Outflow = 0.22 cfs @ 11.85 hrs, Volume= 4,036 cf, Atten= 81%, Lag= 0.0 min
Discarded = 0.22 cfs @ 11.85 hrs, Volume= 4,036 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 246.77' @ 12.52 hrs Surf.Area= 2,180 sf Storage= 954 cf
Flood Elev= 253.25' Surf.Area= 2,180 sf Storage= 4,455 cf

Plug-Flow detention time= 22.2 min calculated for 4,035 cf (100% of inflow)
Center-of-Mass det. time= 22.2 min (773.8 - 751.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	246.00'	1,693 cf	**58.92'W x 37.00'L x 3.21'H Field A** 6,994 cf Overall - 2,763 cf Embedded = 4,231 cf x 40.0% Voids
#2A	246.50'	2,763 cf	**Cultec R-280** x 65 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		4,455 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	246.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.22 cfs @ 11.85 hrs HW=246.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Summary for Link 1JCT: Junction

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 3.19" for 5Yr_24Hr_Storm event
Inflow = 2.65 cfs @ 12.13 hrs, Volume= 10,473 cf
Primary = 2.65 cfs @ 12.13 hrs, Volume= 10,473 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S2-O: Analysis Point 1S-2

Inflow Area = 1,900 sf,100.00% Impervious, Inflow Depth = 3.84" for 5Yr_24Hr_Storm event
Inflow = 0.17 cfs @ 12.08 hrs, Volume= 609 cf
Primary = 0.17 cfs @ 12.08 hrs, Volume= 609 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S4-O: Analysis Point 1S-4

Inflow Area = 6,894 sf, 0.00% Impervious, Inflow Depth = 1.32" for 5Yr_24Hr_Storm event
Inflow = 0.21 cfs @ 12.14 hrs, Volume= 758 cf
Primary = 0.21 cfs @ 12.14 hrs, Volume= 758 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S5-O: Analysis Point 1S-5

Inflow Area = 1,404 sf, 0.00% Impervious, Inflow Depth = 1.32" for 5Yr_24Hr_Storm event
Inflow = 0.04 cfs @ 12.18 hrs, Volume= 154 cf
Primary = 0.04 cfs @ 12.18 hrs, Volume= 154 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S6-O: Analysis Point 1S-6

Inflow Area = 1,054 sf, 0.00% Impervious, Inflow Depth = 1.32" for 5Yr_24Hr_Storm event
Inflow = 0.03 cfs @ 12.11 hrs, Volume= 116 cf
Primary = 0.03 cfs @ 12.11 hrs, Volume= 116 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S7-O: Analysis Point 1S-7

Inflow Area = 1,616 sf, 0.00% Impervious, Inflow Depth = 1.32" for 5Yr_24Hr_Storm event
Inflow = 0.05 cfs @ 12.10 hrs, Volume= 178 cf
Primary = 0.05 cfs @ 12.10 hrs, Volume= 178 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S8-O: Analysis Point 1S-8

Inflow Area = 3,015 sf, 0.00% Impervious, Inflow Depth = 1.32" for 5Yr_24Hr_Storm event
Inflow = 0.10 cfs @ 12.10 hrs, Volume= 331 cf
Primary = 0.10 cfs @ 12.10 hrs, Volume= 331 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S9-O: Analysis Point 1S-9

Inflow Area = 2,990 sf, 15.08% Impervious, Inflow Depth = 1.59" for 5Yr_24Hr_Storm event
Inflow = 0.09 cfs @ 12.23 hrs, Volume= 395 cf
Primary = 0.09 cfs @ 12.23 hrs, Volume= 395 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S2-O: Analysis Point 2S-2

Inflow Area = 2,453 sf, 0.00% Impervious, Inflow Depth = 1.32" for 5Yr_24Hr_Storm event
Inflow = 0.08 cfs @ 12.10 hrs, Volume= 270 cf
Primary = 0.08 cfs @ 12.10 hrs, Volume= 270 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S3-O: Analysis Point 2S-3

Inflow Area = 342 sf, 0.00% Impervious, Inflow Depth = 1.32" for 5Yr_24Hr_Storm event
Inflow = 0.01 cfs @ 12.10 hrs, Volume= 38 cf
Primary = 0.01 cfs @ 12.10 hrs, Volume= 38 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S4-O: Analysis Point 2S-4

Inflow Area = 1,778 sf, 0.00% Impervious, Inflow Depth = 1.32" for 5Yr_24Hr_Storm event
Inflow = 0.05 cfs @ 12.16 hrs, Volume= 195 cf
Primary = 0.05 cfs @ 12.16 hrs, Volume= 195 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S5-O: Analysis Point 2S-5

Inflow Area = 1,175 sf, 0.00% Impervious, Inflow Depth = 1.32" for 5Yr_24Hr_Storm event
Inflow = 0.04 cfs @ 12.10 hrs, Volume= 129 cf
Primary = 0.04 cfs @ 12.10 hrs, Volume= 129 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S-1: Sub-Watershed 1S-1

Runoff = 2.79 cfs @ 12.13 hrs, Volume= 11,254 cf, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
29,211	98	Paved parking, HSG B
29,211		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	34	0.0300	1.31		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
9.7	452	0.0030	0.78	0.07	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
10.1	486	Total			

Summary for Subcatchment 1S-2: Sub-Watershed 1S-2

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 732 cf, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,900	98	Paved parking, HSG B
1,900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	44	0.0570	4.85		**Shallow Concentrated Flow, Shallow Conce. Flow** Paved Kv= 20.3 fps
0.2	44	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-3: Sub-Watershed 1S-3

Runoff = 0.45 cfs @ 12.13 hrs, Volume= 1,567 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,923	98	Roofs, HSG B
2,269	69	50-75% Grass cover, Fair, HSG B
5,938	60	Woods, Fair, HSG B
10,130	69	Weighted Average
8,207		81.02% Pervious Area
1,923		18.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0500	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	85	0.0650	4.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.8	135	Total			

Summary for Subcatchment 1S-4: Sub-Watershed 2S-4

Runoff = 0.30 cfs @ 12.14 hrs, Volume= 1,066 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
6,894	69	50-75% Grass cover, Fair, HSG B
6,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	87	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
9.3	126	Total			

Summary for Subcatchment 1S-5: Sub-Watershed 2S-5

Runoff = 0.06 cfs @ 12.17 hrs, Volume= 217 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,404	69	50-75% Grass cover, Fair, HSG B
1,404		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	70	0.0430	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-6: Sub-Watershed 1S-6

Runoff = 0.05 cfs @ 12.11 hrs, Volume= 163 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,054	69	50-75% Grass cover, Fair, HSG B
1,054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	38	0.0440	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-7: Sub-Watershed 1S-7

Runoff = 0.08 cfs @ 12.09 hrs, Volume= 250 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,616	69	50-75% Grass cover, Fair, HSG B
1,616		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	14	0.0740	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	57	0.0520	3.67		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
2.9	71	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-8: Sub-Watershed 1S-8

Runoff = 0.15 cfs @ 12.09 hrs, Volume= 466 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
3,015	69	50-75% Grass cover, Fair, HSG B
3,015		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	27	0.0740	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	65	0.0620	4.01		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
4.7	92	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-9: Sub-Watershed 1S-9

Runoff = 0.13 cfs @ 12.23 hrs, Volume= 541 cf, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
2,539	69	50-75% Grass cover, Fair, HSG B
451	98	Roofs, HSG B
2,990	73	Weighted Average
2,539		84.92% Pervious Area
451		15.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0100	0.05		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0600	3.94		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
16.4	92	Total			

Summary for Subcatchment 2S-1: Sub-Watershed 2S-1

Runoff = 1.37 cfs @ 12.08 hrs, Volume= 4,853 cf, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
12,596	98	Paved parking, HSG B
12,596		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	134	0.0230	2.15	0.19	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
0.9	46	0.0100	0.90		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
1.9	180	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-2: Sub-Watershed 2S-2

Runoff = 0.12 cfs @ 12.10 hrs, Volume= 379 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
2,453	69	50-75% Grass cover, Fair, HSG B
2,453		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	26	0.0390	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.9	139	0.0250	2.55		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
6.5	165	Total			

Summary for Subcatchment 2S-3: Sub-Watershed 2S-3

Runoff = 0.02 cfs @ 12.09 hrs, Volume= 53 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
342	69	50-75% Grass cover, Fair, HSG B
342		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	24	0.0400	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
5.2	24	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-4: Sub-Watershed 2S-4

Runoff = 0.07 cfs @ 12.16 hrs, Volume= 275 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,778	69	50-75% Grass cover, Fair, HSG B
1,778		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	45	0.0220	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.4	64	0.0310	2.83		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
11.2	109	Total			

Summary for Subcatchment 5S: Sub-Watershed 2S-5

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 182 cf, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr_24Hr_Storm Rainfall=4.86"

Area (sf)	CN	Description
1,175	69	50-75% Grass cover, Fair, HSG B
1,175		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	21	0.0950	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	70	0.0210	2.33		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
3.8	91	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 1USC: Underground Storage Unit No. 1 - R-280HD, w/Exfiltration of 4.3 in/hr

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 3.91" for 10Yr_24Hr_Storm event
Inflow = 3.24 cfs @ 12.13 hrs, Volume= 12,821 cf
Outflow = 0.52 cfs @ 11.85 hrs, Volume= 12,821 cf, Atten= 84%, Lag= 0.0 min
Discarded = 0.52 cfs @ 11.85 hrs, Volume= 12,821 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 250.05' @ 12.68 hrs Surf.Area= 5,210 sf Storage= 3,579 cf
Flood Elev= 257.50' Surf.Area= 5,210 sf Storage= 10,767 cf

Plug-Flow detention time= 40.5 min calculated for 12,819 cf (100% of inflow)
Center-of-Mass det. time= 40.5 min (805.3 - 764.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	249.00'	3,966 cf	**89.83'W x 58.00'L x 3.21'H Field A** 16,716 cf Overall - 6,800 cf Embedded = 9,916 cf x 40.0% Voids
#2A	249.50'	6,800 cf	**Cultec R-280** x 160 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		10,767 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	249.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.52 cfs @ 11.85 hrs HW=249.09' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.52 cfs)

Summary for Pond 2USC: Underground Storage Unit No. 2 (R-280HD, w/Exfiltration of 4.3 in/hr)

Inflow Area = 12,596 sf,100.00% Impervious, Inflow Depth = 4.62" for 10Yr_24Hr_Storm event
Inflow = 1.37 cfs @ 12.08 hrs, Volume= 4,853 cf
Outflow = 0.22 cfs @ 11.79 hrs, Volume= 4,853 cf, Atten= 84%, Lag= 0.0 min
Discarded = 0.22 cfs @ 11.79 hrs, Volume= 4,853 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 246.94' @ 12.56 hrs Surf.Area= 2,180 sf Storage= 1,273 cf
Flood Elev= 253.25' Surf.Area= 2,180 sf Storage= 4,455 cf

Plug-Flow detention time= 31.6 min calculated for 4,853 cf (100% of inflow)
Center-of-Mass det. time= 31.6 min (780.1 - 748.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	246.00'	1,693 cf	**58.92'W x 37.00'L x 3.21'H Field A** 6,994 cf Overall - 2,763 cf Embedded = 4,231 cf x 40.0% Voids
#2A	246.50'	2,763 cf	**Cultec R-280** x 65 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		4,455 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	246.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.22 cfs @ 11.79 hrs HW=246.07' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Summary for Link 1JCT: Junction

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 3.91" for 10Yr_24Hr_Storm event
Inflow = 3.24 cfs @ 12.13 hrs, Volume= 12,821 cf
Primary = 3.24 cfs @ 12.13 hrs, Volume= 12,821 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S2-O: Analysis Point 1S-2

Inflow Area = 1,900 sf,100.00% Impervious, Inflow Depth = 4.62" for 10Yr_24Hr_Storm event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 732 cf
Primary = 0.21 cfs @ 12.08 hrs, Volume= 732 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S4-O: Analysis Point 1S-4

Inflow Area = 6,894 sf, 0.00% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.30 cfs @ 12.14 hrs, Volume= 1,066 cf
Primary = 0.30 cfs @ 12.14 hrs, Volume= 1,066 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S5-O: Analysis Point 1S-5

Inflow Area = 1,404 sf, 0.00% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.06 cfs @ 12.17 hrs, Volume= 217 cf
Primary = 0.06 cfs @ 12.17 hrs, Volume= 217 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S6-O: Analysis Point 1S-6

Inflow Area = 1,054 sf, 0.00% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.05 cfs @ 12.11 hrs, Volume= 163 cf
Primary = 0.05 cfs @ 12.11 hrs, Volume= 163 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S7-O: Analysis Point 1S-7

Inflow Area = 1,616 sf, 0.00% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.08 cfs @ 12.09 hrs, Volume= 250 cf
Primary = 0.08 cfs @ 12.09 hrs, Volume= 250 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S8-O: Analysis Point 1S-8

Inflow Area = 3,015 sf, 0.00% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 466 cf
Primary = 0.15 cfs @ 12.09 hrs, Volume= 466 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S9-O: Analysis Point 1S-9

Inflow Area = 2,990 sf, 15.08% Impervious, Inflow Depth = 2.17" for 10Yr_24Hr_Storm event
Inflow = 0.13 cfs @ 12.23 hrs, Volume= 541 cf
Primary = 0.13 cfs @ 12.23 hrs, Volume= 541 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S2-O: Analysis Point 2S-2

Inflow Area = 2,453 sf, 0.00% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.12 cfs @ 12.10 hrs, Volume= 379 cf
Primary = 0.12 cfs @ 12.10 hrs, Volume= 379 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S3-O: Analysis Point 2S-3

Inflow Area = 342 sf, 0.00% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.02 cfs @ 12.09 hrs, Volume= 53 cf
Primary = 0.02 cfs @ 12.09 hrs, Volume= 53 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S4-O: Analysis Point 2S-4

Inflow Area = 1,778 sf, 0.00% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.07 cfs @ 12.16 hrs, Volume= 275 cf
Primary = 0.07 cfs @ 12.16 hrs, Volume= 275 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S5-O: Analysis Point 2S-5

Inflow Area = 1,175 sf, 0.00% Impervious, Inflow Depth = 1.86" for 10Yr_24Hr_Storm event
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 182 cf
Primary = 0.06 cfs @ 12.09 hrs, Volume= 182 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S-1: Sub-Watershed 1S-1

Runoff = 3.53 cfs @ 12.13 hrs, Volume= 14,342 cf, Depth= 5.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
29,211	98	Paved parking, HSG B
29,211		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	34	0.0300	1.31		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
9.7	452	0.0030	0.78	0.07	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
10.1	486	Total			

Summary for Subcatchment 1S-2: Sub-Watershed 1S-2

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 933 cf, Depth= 5.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,900	98	Paved parking, HSG B
1,900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	44	0.0570	4.85		**Shallow Concentrated Flow, Shallow Conce. Flow** Paved Kv= 20.3 fps
0.2	44	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-3: Sub-Watershed 1S-3

Runoff = 0.69 cfs @ 12.13 hrs, Volume= 2,376 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,923	98	Roofs, HSG B
2,269	69	50-75% Grass cover, Fair, HSG B
5,938	60	Woods, Fair, HSG B
10,130	69	Weighted Average
8,207		81.02% Pervious Area
1,923		18.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0500	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	85	0.0650	4.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.8	135	Total			

Summary for Subcatchment 1S-4: Sub-Watershed 2S-4

Runoff = 0.46 cfs @ 12.14 hrs, Volume= 1,617 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
6,894	69	50-75% Grass cover, Fair, HSG B
6,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	87	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
9.3	126	Total			

Summary for Subcatchment 1S-5: Sub-Watershed 2S-5

Runoff = 0.09 cfs @ 12.17 hrs, Volume= 329 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,404	69	50-75% Grass cover, Fair, HSG B
1,404		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	70	0.0430	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-6: Sub-Watershed 1S-6

Runoff = 0.08 cfs @ 12.11 hrs, Volume= 247 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,054	69	50-75% Grass cover, Fair, HSG B
1,054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	38	0.0440	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-7: Sub-Watershed 1S-7

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 379 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,616	69	50-75% Grass cover, Fair, HSG B
1,616		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	14	0.0740	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	57	0.0520	3.67		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
2.9	71	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-8: Sub-Watershed 1S-8

Runoff = 0.23 cfs @ 12.09 hrs, Volume= 707 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
3,015	69	50-75% Grass cover, Fair, HSG B
3,015		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	27	0.0740	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	65	0.0620	4.01		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
4.7	92	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-9: Sub-Watershed 1S-9

Runoff = 0.19 cfs @ 12.23 hrs, Volume= 797 cf, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
2,539	69	50-75% Grass cover, Fair, HSG B
451	98	Roofs, HSG B
2,990	73	Weighted Average
2,539		84.92% Pervious Area
451		15.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0100	0.05		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0600	3.94		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
16.4	92	Total			

Summary for Subcatchment 2S-1: Sub-Watershed 2S-1

Runoff = 1.74 cfs @ 12.08 hrs, Volume= 6,184 cf, Depth= 5.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
12,596	98	Paved parking, HSG B
12,596		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	134	0.0230	2.15	0.19	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
0.9	46	0.0100	0.90		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
1.9	180	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-2: Sub-Watershed 2S-2

Runoff = 0.18 cfs @ 12.10 hrs, Volume= 575 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
2,453	69	50-75% Grass cover, Fair, HSG B
2,453		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	26	0.0390	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.9	139	0.0250	2.55		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
6.5	165	Total			

Summary for Subcatchment 2S-3: Sub-Watershed 2S-3

Runoff = 0.03 cfs @ 12.09 hrs, Volume= 80 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
342	69	50-75% Grass cover, Fair, HSG B
342		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	24	0.0400	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
5.2	24	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-4: Sub-Watershed 2S-4

Runoff = 0.11 cfs @ 12.16 hrs, Volume= 417 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,778	69	50-75% Grass cover, Fair, HSG B
1,778		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	45	0.0220	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.4	64	0.0310	2.83		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
11.2	109	Total			

Summary for Subcatchment 5S: Sub-Watershed 2S-5

Runoff = 0.09 cfs @ 12.09 hrs, Volume= 276 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr_24Hr_Storm Rainfall=6.13"

Area (sf)	CN	Description
1,175	69	50-75% Grass cover, Fair, HSG B
1,175		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	21	0.0950	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	70	0.0210	2.33		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
3.8	91	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 1USC: Underground Storage Unit No. 1 - R-280HD, w/Exfiltration of 4.3 in/hr

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 5.10" for 25Yr_24Hr_Storm event
Inflow = 4.22 cfs @ 12.13 hrs, Volume= 16,718 cf
Outflow = 0.52 cfs @ 11.78 hrs, Volume= 16,718 cf, Atten= 88%, Lag= 0.0 min
Discarded = 0.52 cfs @ 11.78 hrs, Volume= 16,718 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 250.44' @ 12.86 hrs Surf.Area= 5,210 sf Storage= 5,285 cf
Flood Elev= 257.50' Surf.Area= 5,210 sf Storage= 10,767 cf

Plug-Flow detention time= 66.6 min calculated for 16,714 cf (100% of inflow)
Center-of-Mass det. time= 66.6 min (828.5 - 761.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	249.00'	3,966 cf	**89.83'W x 58.00'L x 3.21'H Field A** 16,716 cf Overall - 6,800 cf Embedded = 9,916 cf x 40.0% Voids
#2A	249.50'	6,800 cf	**Cultec R-280** x 160 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		10,767 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	249.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.52 cfs @ 11.78 hrs HW=249.09' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.52 cfs)

Summary for Pond 2USC: Underground Storage Unit No. 2 (R-280HD, w/Exfiltration of 4.3 in/hr)

Inflow Area = 12,596 sf,100.00% Impervious, Inflow Depth = 5.89" for 25Yr_24Hr_Storm event
Inflow = 1.74 cfs @ 12.08 hrs, Volume= 6,184 cf
Outflow = 0.22 cfs @ 11.74 hrs, Volume= 6,184 cf, Atten= 88%, Lag= 0.0 min
Discarded = 0.22 cfs @ 11.74 hrs, Volume= 6,184 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 247.23' @ 12.63 hrs Surf.Area= 2,180 sf Storage= 1,810 cf
Flood Elev= 253.25' Surf.Area= 2,180 sf Storage= 4,455 cf

Plug-Flow detention time= 49.3 min calculated for 6,183 cf (100% of inflow)
Center-of-Mass det. time= 49.3 min (794.1 - 744.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	246.00'	1,693 cf	**58.92'W x 37.00'L x 3.21'H Field A** 6,994 cf Overall - 2,763 cf Embedded = 4,231 cf x 40.0% Voids
#2A	246.50'	2,763 cf	**Cultec R-280** x 65 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		4,455 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	246.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.22 cfs @ 11.74 hrs HW=246.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Summary for Link 1JCT: Junction

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 5.10" for 25Yr_24Hr_Storm event
Inflow = 4.22 cfs @ 12.13 hrs, Volume= 16,718 cf
Primary = 4.22 cfs @ 12.13 hrs, Volume= 16,718 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S2-O: Analysis Point 1S-2

Inflow Area = 1,900 sf,100.00% Impervious, Inflow Depth = 5.89" for 25Yr_24Hr_Storm event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 933 cf
Primary = 0.26 cfs @ 12.08 hrs, Volume= 933 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S4-O: Analysis Point 1S-4

Inflow Area = 6,894 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.46 cfs @ 12.14 hrs, Volume= 1,617 cf
Primary = 0.46 cfs @ 12.14 hrs, Volume= 1,617 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S5-O: Analysis Point 1S-5

Inflow Area = 1,404 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.09 cfs @ 12.17 hrs, Volume= 329 cf
Primary = 0.09 cfs @ 12.17 hrs, Volume= 329 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S6-O: Analysis Point 1S-6

Inflow Area = 1,054 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.08 cfs @ 12.11 hrs, Volume= 247 cf
Primary = 0.08 cfs @ 12.11 hrs, Volume= 247 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S7-O: Analysis Point 1S-7

Inflow Area = 1,616 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.12 cfs @ 12.09 hrs, Volume= 379 cf
Primary = 0.12 cfs @ 12.09 hrs, Volume= 379 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S8-O: Analysis Point 1S-8

Inflow Area = 3,015 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.23 cfs @ 12.09 hrs, Volume= 707 cf
Primary = 0.23 cfs @ 12.09 hrs, Volume= 707 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S9-O: Analysis Point 1S-9

Inflow Area = 2,990 sf, 15.08% Impervious, Inflow Depth = 3.20" for 25Yr_24Hr_Storm event
Inflow = 0.19 cfs @ 12.23 hrs, Volume= 797 cf
Primary = 0.19 cfs @ 12.23 hrs, Volume= 797 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S2-O: Analysis Point 2S-2

Inflow Area = 2,453 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.18 cfs @ 12.10 hrs, Volume= 575 cf
Primary = 0.18 cfs @ 12.10 hrs, Volume= 575 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S3-O: Analysis Point 2S-3

Inflow Area = 342 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.03 cfs @ 12.09 hrs, Volume= 80 cf
Primary = 0.03 cfs @ 12.09 hrs, Volume= 80 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S4-O: Analysis Point 2S-4

Inflow Area = 1,778 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.11 cfs @ 12.16 hrs, Volume= 417 cf
Primary = 0.11 cfs @ 12.16 hrs, Volume= 417 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S5-O: Analysis Point 2S-5

Inflow Area = 1,175 sf, 0.00% Impervious, Inflow Depth = 2.81" for 25Yr_24Hr_Storm event
Inflow = 0.09 cfs @ 12.09 hrs, Volume= 276 cf
Primary = 0.09 cfs @ 12.09 hrs, Volume= 276 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S-1: Sub-Watershed 1S-1

Runoff = 4.21 cfs @ 12.13 hrs, Volume= 17,212 cf, Depth= 7.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
29,211	98	Paved parking, HSG B
29,211		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	34	0.0300	1.31		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
9.7	452	0.0030	0.78	0.07	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
10.1	486	Total			

Summary for Subcatchment 1S-2: Sub-Watershed 1S-2

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 1,120 cf, Depth= 7.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,900	98	Paved parking, HSG B
1,900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	44	0.0570	4.85		**Shallow Concentrated Flow, Shallow Conce. Flow** Paved Kv= 20.3 fps
0.2	44	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-3: Sub-Watershed 1S-3

Runoff = 0.93 cfs @ 12.13 hrs, Volume= 3,182 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,923	98	Roofs, HSG B
2,269	69	50-75% Grass cover, Fair, HSG B
5,938	60	Woods, Fair, HSG B
10,130	69	Weighted Average
8,207		81.02% Pervious Area
1,923		18.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0500	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	85	0.0650	4.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.8	135	Total			

Summary for Subcatchment 1S-4: Sub-Watershed 2S-4

Runoff = 0.62 cfs @ 12.13 hrs, Volume= 2,166 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
6,894	69	50-75% Grass cover, Fair, HSG B
6,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	87	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
9.3	126	Total			

Summary for Subcatchment 1S-5: Sub-Watershed 2S-5

Runoff = 0.12 cfs @ 12.16 hrs, Volume= 441 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,404	69	50-75% Grass cover, Fair, HSG B
1,404		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	70	0.0430	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-6: Sub-Watershed 1S-6

Runoff = 0.10 cfs @ 12.11 hrs, Volume= 331 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,054	69	50-75% Grass cover, Fair, HSG B
1,054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	38	0.0440	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-7: Sub-Watershed 1S-7

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 508 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,616	69	50-75% Grass cover, Fair, HSG B
1,616		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	14	0.0740	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	57	0.0520	3.67		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
2.9	71	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-8: Sub-Watershed 1S-8

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 947 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
3,015	69	50-75% Grass cover, Fair, HSG B
3,015		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	27	0.0740	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	65	0.0620	4.01		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
4.7	92	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-9: Sub-Watershed 1S-9

Runoff = 0.25 cfs @ 12.23 hrs, Volume= 1,047 cf, Depth= 4.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
2,539	69	50-75% Grass cover, Fair, HSG B
451	98	Roofs, HSG B
2,990	73	Weighted Average
2,539		84.92% Pervious Area
451		15.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0100	0.05		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0600	3.94		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
16.4	92	Total			

Summary for Subcatchment 2S-1: Sub-Watershed 2S-1

Runoff = 2.07 cfs @ 12.08 hrs, Volume= 7,422 cf, Depth= 7.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
12,596	98	Paved parking, HSG B
12,596		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	134	0.0230	2.15	0.19	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
0.9	46	0.0100	0.90		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
1.9	180	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-2: Sub-Watershed 2S-2

Runoff = 0.24 cfs @ 12.10 hrs, Volume= 771 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
2,453	69	50-75% Grass cover, Fair, HSG B
2,453		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	26	0.0390	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.9	139	0.0250	2.55		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
6.5	165	Total			

Summary for Subcatchment 2S-3: Sub-Watershed 2S-3

Runoff = 0.03 cfs @ 12.09 hrs, Volume= 107 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
342	69	50-75% Grass cover, Fair, HSG B
342		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	24	0.0400	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
5.2	24	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-4: Sub-Watershed 2S-4

Runoff = 0.15 cfs @ 12.16 hrs, Volume= 559 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,778	69	50-75% Grass cover, Fair, HSG B
1,778		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	45	0.0220	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.4	64	0.0310	2.83		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
11.2	109	Total			

Summary for Subcatchment 5S: Sub-Watershed 2S-5

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 369 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50Yr_24Hr_Storm Rainfall=7.31"

Area (sf)	CN	Description
1,175	69	50-75% Grass cover, Fair, HSG B
1,175		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	21	0.0950	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	70	0.0210	2.33		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
3.8	91	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 1USC: Underground Storage Unit No. 1 - R-280HD, w/Exfiltration of 4.3 in/hr

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 6.22" for 50Yr_24Hr_Storm event
Inflow = 5.14 cfs @ 12.13 hrs, Volume= 20,394 cf
Outflow = 0.52 cfs @ 11.71 hrs, Volume= 20,394 cf, Atten= 90%, Lag= 0.0 min
Discarded = 0.52 cfs @ 11.71 hrs, Volume= 20,394 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 250.87' @ 13.04 hrs Surf.Area= 5,210 sf Storage= 7,028 cf
Flood Elev= 257.50' Surf.Area= 5,210 sf Storage= 10,767 cf

Plug-Flow detention time= 94.9 min calculated for 20,390 cf (100% of inflow)
Center-of-Mass det. time= 94.9 min (854.7 - 759.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	249.00'	3,966 cf	**89.83'W x 58.00'L x 3.21'H Field A** 16,716 cf Overall - 6,800 cf Embedded = 9,916 cf x 40.0% Voids
#2A	249.50'	6,800 cf	**Cultec R-280** x 160 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		10,767 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	249.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.52 cfs @ 11.71 hrs HW=249.09' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.52 cfs)

Summary for Pond 2USC: Underground Storage Unit No. 2 (R-280HD, w/Exfiltration of 4.3 in/hr)

Inflow Area = 12,596 sf,100.00% Impervious, Inflow Depth = 7.07" for 50Yr_24Hr_Storm event
Inflow = 2.07 cfs @ 12.08 hrs, Volume= 7,422 cf
Outflow = 0.22 cfs @ 11.69 hrs, Volume= 7,422 cf, Atten= 90%, Lag= 0.0 min
Discarded = 0.22 cfs @ 11.69 hrs, Volume= 7,422 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 247.53' @ 12.78 hrs Surf.Area= 2,180 sf Storage= 2,339 cf
Flood Elev= 253.25' Surf.Area= 2,180 sf Storage= 4,455 cf

Plug-Flow detention time= 68.1 min calculated for 7,420 cf (100% of inflow)
Center-of-Mass det. time= 68.1 min (810.4 - 742.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	246.00'	1,693 cf	**58.92'W x 37.00'L x 3.21'H Field A** 6,994 cf Overall - 2,763 cf Embedded = 4,231 cf x 40.0% Voids
#2A	246.50'	2,763 cf	**Cultec R-280** x 65 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		4,455 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	246.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.22 cfs @ 11.69 hrs HW=246.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Summary for Link 1JCT: Junction

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 6.22" for 50Yr_24Hr_Storm event
Inflow = 5.14 cfs @ 12.13 hrs, Volume= 20,394 cf
Primary = 5.14 cfs @ 12.13 hrs, Volume= 20,394 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S2-O: Analysis Point 1S-2

Inflow Area = 1,900 sf,100.00% Impervious, Inflow Depth = 7.07" for 50Yr_24Hr_Storm event
Inflow = 0.31 cfs @ 12.08 hrs, Volume= 1,120 cf
Primary = 0.31 cfs @ 12.08 hrs, Volume= 1,120 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S4-O: Analysis Point 1S-4

Inflow Area = 6,894 sf, 0.00% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.62 cfs @ 12.13 hrs, Volume= 2,166 cf
Primary = 0.62 cfs @ 12.13 hrs, Volume= 2,166 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S5-O: Analysis Point 1S-5

Inflow Area = 1,404 sf, 0.00% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.12 cfs @ 12.16 hrs, Volume= 441 cf
Primary = 0.12 cfs @ 12.16 hrs, Volume= 441 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S6-O: Analysis Point 1S-6

Inflow Area = 1,054 sf, 0.00% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.10 cfs @ 12.11 hrs, Volume= 331 cf
Primary = 0.10 cfs @ 12.11 hrs, Volume= 331 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S7-O: Analysis Point 1S-7

Inflow Area = 1,616 sf, 0.00% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 508 cf
Primary = 0.16 cfs @ 12.09 hrs, Volume= 508 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S8-O: Analysis Point 1S-8

Inflow Area = 3,015 sf, 0.00% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.31 cfs @ 12.09 hrs, Volume= 947 cf
Primary = 0.31 cfs @ 12.09 hrs, Volume= 947 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S9-O: Analysis Point 1S-9

Inflow Area = 2,990 sf, 15.08% Impervious, Inflow Depth = 4.20" for 50Yr_24Hr_Storm event
Inflow = 0.25 cfs @ 12.23 hrs, Volume= 1,047 cf
Primary = 0.25 cfs @ 12.23 hrs, Volume= 1,047 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S2-O: Analysis Point 2S-2

Inflow Area = 2,453 sf, 0.00% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.24 cfs @ 12.10 hrs, Volume= 771 cf
Primary = 0.24 cfs @ 12.10 hrs, Volume= 771 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S3-O: Analysis Point 2S-3

Inflow Area = 342 sf, 0.00% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.03 cfs @ 12.09 hrs, Volume= 107 cf
Primary = 0.03 cfs @ 12.09 hrs, Volume= 107 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S4-O: Analysis Point 2S-4

Inflow Area = 1,778 sf, 0.00% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.15 cfs @ 12.16 hrs, Volume= 559 cf
Primary = 0.15 cfs @ 12.16 hrs, Volume= 559 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S5-O: Analysis Point 2S-5

Inflow Area = 1,175 sf, 0.00% Impervious, Inflow Depth = 3.77" for 50Yr_24Hr_Storm event
Inflow = 0.12 cfs @ 12.09 hrs, Volume= 369 cf
Primary = 0.12 cfs @ 12.09 hrs, Volume= 369 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S-1: Sub-Watershed 1S-1

Runoff = 5.04 cfs @ 12.13 hrs, Volume= 20,666 cf, Depth= 8.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
29,211	98	Paved parking, HSG B
29,211		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	34	0.0300	1.31		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
9.7	452	0.0030	0.78	0.07	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
10.1	486	Total			

Summary for Subcatchment 1S-2: Sub-Watershed 1S-2

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 1,344 cf, Depth= 8.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,900	98	Paved parking, HSG B
1,900		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	44	0.0570	4.85		**Shallow Concentrated Flow, Shallow Conce. Flow** Paved Kv= 20.3 fps
0.2	44	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-3: Sub-Watershed 1S-3

Runoff = 1.23 cfs @ 12.12 hrs, Volume= 4,201 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,923	98	Roofs, HSG B
2,269	69	50-75% Grass cover, Fair, HSG B
5,938	60	Woods, Fair, HSG B
10,130	69	Weighted Average
8,207		81.02% Pervious Area
1,923		18.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0500	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	85	0.0650	4.10		**Shallow Concentrated Flow, Shallow Concentrated Flow** Unpaved Kv= 16.1 fps
8.8	135	Total			

Summary for Subcatchment 1S-4: Sub-Watershed 2S-4

Runoff = 0.82 cfs @ 12.13 hrs, Volume= 2,859 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
6,894	69	50-75% Grass cover, Fair, HSG B
6,894		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	39	0.0260	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	87	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
9.3	126	Total			

Summary for Subcatchment 1S-5: Sub-Watershed 2S-5

Runoff = 0.16 cfs @ 12.16 hrs, Volume= 582 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,404	69	50-75% Grass cover, Fair, HSG B
1,404		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	70	0.0430	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-6: Sub-Watershed 1S-6

Runoff = 0.14 cfs @ 12.10 hrs, Volume= 437 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,054	69	50-75% Grass cover, Fair, HSG B
1,054		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	38	0.0440	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"

Summary for Subcatchment 1S-7: Sub-Watershed 1S-7

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 670 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,616	69	50-75% Grass cover, Fair, HSG B
1,616		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	14	0.0740	0.09		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	57	0.0520	3.67		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
2.9	71	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-8: Sub-Watershed 1S-8

Runoff = 0.40 cfs @ 12.09 hrs, Volume= 1,250 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
3,015	69	50-75% Grass cover, Fair, HSG B
3,015		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	27	0.0740	0.10		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.3	65	0.0620	4.01		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
4.7	92	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 1S-9: Sub-Watershed 1S-9

Runoff = 0.32 cfs @ 12.23 hrs, Volume= 1,361 cf, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
2,539	69	50-75% Grass cover, Fair, HSG B
451	98	Roofs, HSG B
2,990	73	Weighted Average
2,539		84.92% Pervious Area
451		15.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0100	0.05		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.2	42	0.0600	3.94		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
16.4	92	Total			

Summary for Subcatchment 2S-1: Sub-Watershed 2S-1

Runoff = 2.48 cfs @ 12.08 hrs, Volume= 8,911 cf, Depth= 8.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
12,596	98	Paved parking, HSG B
12,596		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	134	0.0230	2.15	0.19	**Pipe Channel, Pipe Channel Flow** 12.0" Round w/ 10.0" fill Area= 0.1 sf Perim= 1.6' r= 0.05' n= 0.015 Concrete sewer w/manholes & inlets
0.9	46	0.0100	0.90		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.24"
1.9	180	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-2: Sub-Watershed 2S-2

Runoff = 0.32 cfs @ 12.10 hrs, Volume= 1,017 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
2,453	69	50-75% Grass cover, Fair, HSG B
2,453		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	26	0.0390	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.9	139	0.0250	2.55		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
6.5	165	Total			

Summary for Subcatchment 2S-3: Sub-Watershed 2S-3

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 142 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
342	69	50-75% Grass cover, Fair, HSG B
342		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	24	0.0400	0.08		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
5.2	24	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S-4: Sub-Watershed 2S-4

Runoff = 0.20 cfs @ 12.16 hrs, Volume= 737 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,778	69	50-75% Grass cover, Fair, HSG B
1,778		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	45	0.0220	0.07		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.4	64	0.0310	2.83		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
11.2	109	Total			

Summary for Subcatchment 5S: Sub-Watershed 2S-5

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 487 cf, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100Yr_24Hr_Storm Rainfall=8.73"

Area (sf)	CN	Description
1,175	69	50-75% Grass cover, Fair, HSG B
1,175		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	21	0.0950	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.24"
0.5	70	0.0210	2.33		**Shallow Concentrated Flow, Shallow Conce. Flow** Unpaved Kv= 16.1 fps
3.8	91	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 1USC: Underground Storage Unit No. 1 - R-280HD, w/Exfiltration of 4.3 in/hr

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 7.59" for 100Yr_24Hr_Storm event
Inflow = 6.26 cfs @ 12.13 hrs, Volume= 24,867 cf
Outflow = 0.52 cfs @ 11.57 hrs, Volume= 24,867 cf, Atten= 92%, Lag= 0.0 min
Discarded = 0.52 cfs @ 11.57 hrs, Volume= 24,867 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 251.53' @ 13.34 hrs Surf.Area= 5,210 sf Storage= 9,309 cf
Flood Elev= 257.50' Surf.Area= 5,210 sf Storage= 10,767 cf

Plug-Flow detention time= 133.8 min calculated for 24,867 cf (100% of inflow)
Center-of-Mass det. time= 133.8 min (891.6 - 757.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	249.00'	3,966 cf	**89.83'W x 58.00'L x 3.21'H Field A** 16,716 cf Overall - 6,800 cf Embedded = 9,916 cf x 40.0% Voids
#2A	249.50'	6,800 cf	**Cultec R-280** x 160 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		10,767 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	249.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.52 cfs @ 11.57 hrs HW=249.09' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.52 cfs)

Summary for Pond 2USC: Underground Storage Unit No. 2 (R-280HD, w/Exfiltration of 4.3 in/hr)

Inflow Area = 12,596 sf,100.00% Impervious, Inflow Depth = 8.49" for 100Yr_24Hr_Storm event
Inflow = 2.48 cfs @ 12.08 hrs, Volume= 8,911 cf
Outflow = 0.22 cfs @ 11.59 hrs, Volume= 8,911 cf, Atten= 91%, Lag= 0.0 min
Discarded = 0.22 cfs @ 11.59 hrs, Volume= 8,911 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 247.94' @ 12.96 hrs Surf.Area= 2,180 sf Storage= 3,030 cf
Flood Elev= 253.25' Surf.Area= 2,180 sf Storage= 4,455 cf

Plug-Flow detention time= 93.8 min calculated for 8,911 cf (100% of inflow)
Center-of-Mass det. time= 93.8 min (834.0 - 740.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	246.00'	1,693 cf	**58.92'W x 37.00'L x 3.21'H Field A** 6,994 cf Overall - 2,763 cf Embedded = 4,231 cf x 40.0% Voids
#2A	246.50'	2,763 cf	**Cultec R-280** x 65 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap
		4,455 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	246.00'	**4.300 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.22 cfs @ 11.59 hrs HW=246.07' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Summary for Link 1JCT: Junction

Inflow Area = 39,341 sf, 79.14% Impervious, Inflow Depth = 7.59" for 100Yr_24Hr_Storm event
Inflow = 6.26 cfs @ 12.13 hrs, Volume= 24,867 cf
Primary = 6.26 cfs @ 12.13 hrs, Volume= 24,867 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S2-O: Analysis Point 1S-2

Inflow Area = 1,900 sf,100.00% Impervious, Inflow Depth = 8.49" for 100Yr_24Hr_Storm event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 1,344 cf
Primary = 0.37 cfs @ 12.08 hrs, Volume= 1,344 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S4-O: Analysis Point 1S-4

Inflow Area = 6,894 sf, 0.00% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 0.82 cfs @ 12.13 hrs, Volume= 2,859 cf
Primary = 0.82 cfs @ 12.13 hrs, Volume= 2,859 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S5-O: Analysis Point 1S-5

Inflow Area = 1,404 sf, 0.00% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 0.16 cfs @ 12.16 hrs, Volume= 582 cf
Primary = 0.16 cfs @ 12.16 hrs, Volume= 582 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S6-O: Analysis Point 1S-6

Inflow Area = 1,054 sf, 0.00% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 0.14 cfs @ 12.10 hrs, Volume= 437 cf
Primary = 0.14 cfs @ 12.10 hrs, Volume= 437 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S7-O: Analysis Point 1S-7

Inflow Area = 1,616 sf, 0.00% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 670 cf
Primary = 0.22 cfs @ 12.09 hrs, Volume= 670 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S8-O: Analysis Point 1S-8

Inflow Area = 3,015 sf, 0.00% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 0.40 cfs @ 12.09 hrs, Volume= 1,250 cf
Primary = 0.40 cfs @ 12.09 hrs, Volume= 1,250 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 1S9-O: Analysis Point 1S-9

Inflow Area = 2,990 sf, 15.08% Impervious, Inflow Depth = 5.46" for 100Yr_24Hr_Storm event
Inflow = 0.32 cfs @ 12.23 hrs, Volume= 1,361 cf
Primary = 0.32 cfs @ 12.23 hrs, Volume= 1,361 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S2-O: Analysis Point 2S-2

Inflow Area = 2,453 sf, 0.00% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 0.32 cfs @ 12.10 hrs, Volume= 1,017 cf
Primary = 0.32 cfs @ 12.10 hrs, Volume= 1,017 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S3-O: Analysis Point 2S-3

Inflow Area = 342 sf, 0.00% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 0.05 cfs @ 12.09 hrs, Volume= 142 cf
Primary = 0.05 cfs @ 12.09 hrs, Volume= 142 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S4-O: Analysis Point 2S-4

Inflow Area = 1,778 sf, 0.00% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 0.20 cfs @ 12.16 hrs, Volume= 737 cf
Primary = 0.20 cfs @ 12.16 hrs, Volume= 737 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link 2S5-O: Analysis Point 2S-5

Inflow Area = 1,175 sf, 0.00% Impervious, Inflow Depth = 4.98" for 100Yr_24Hr_Storm event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 487 cf
Primary = 0.16 cfs @ 12.09 hrs, Volume= 487 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Appendix F

TATA & HOWARD

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BY: KN DATE: 6/1/2018 JOB NO.: 5328

CHKD BY: SL DATE: 6/1/2018 SHEET 1 OF 3

SUBJECT: Parking Improvements Stormwater Management Analysis - Required Recharge Volume Computation

LOCATION: Medway Community Church, Medway, MA

RECHARGE VOLUME EQUATION:

The Required Recharge Volume equals a depth of runoff corresponding to the soil type times the impervious areas covering that soil type at the post-development site.

Rv = F x impervious area ***Equation (1)***

Rv = *Required Recharge Volume*, expressed in Ft3, cubic yards, or acre-feet
F = Target Depth Factor associated with each Hydrologic Soil Group
Impervious Area = pavement and rooftop area on site

Attention must be given to ensure consistency in units. In particular, the Target Depth Factors must be converted to feet.

NRCS HYDROLOGIC SOIL TYPE	APPROX. SOIL TEXTURE	TARGET DEPTH FACTOR (F)
A	sand	**0.6-inch**
B	loam	**0.35-inch**
C	silty loam	**0.25-inch**
D	clay	**0.1-inch**

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

When a site contains multiple Hydrologic Soil Groups, determine the *Required Recharge Volume* for each impervious area by Hydrologic Soil Group and then add the volumes together.

Source: *Massachusetts Stormwater Handbook/ Volume 3 – Pages 15 & 16.*

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BY: KN DATE: 6/1/2018 JOB NO.: 5328

CHKD BY: SL DATE: 6/1/2018 SHEET 2 OF 3

SUBJECT: Parking Improvements Stormwater Management Analysis - Required Recharge Volume Computation

LOCATION: Medway Community Church, Medway, MA

SUB-WATERSHED 1S

Recharge Volumes (Standard # 3)

Total Area (Ac.) =	*0.90*	Per cent
Total Impervious Area A Soil (Ac.) =		0.0%
Total Impervious Area B Soil (Ac.) =	0.67	74.4%
Total Impervious Area C Soil (Ac.) =		0.0%
Total Impervious Area D Soil (Ac.) =		0.0%

	Volume To Recharge (inches per Impervious Acre)	Volume (Impervious Area x inches per Acre)	
Recharge Volume (A soil) =		0.00	
Recharge Volume (B soil) =	0.35	0.23	
Recharge Volume (C soil) =		0.00	
Recharge Volume (D soil) =		0.00	
Total Required Recharge Volume =		**0.23**	Acre-Inch
		0.02	Acre-Feet
		851	Cubic Feet

Recharge Volume Provided by Infiltration System:

Volume Provided (Underground Stormwater Chamber No. 1):	10,844	Cubic Feet
Total Volume:	**10,844**	Cubic Feet

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BY: KN DATE: 6/1/2018 JOB NO.: 5328

CHKD BY: SL DATE: 6/1/2018 SHEET 3 OF 3

SUBJECT: Parking Improvements Stormwater Management Analysis - Required Recharge Volume Computation

LOCATION: Medway Community Church, Medway, MA

SUB-WATERSHED 2S

Recharge Volumes (Standard # 3)

Total Area (Ac.) =	*0.29*	Per cent
Total Impervious Area A Soil (Ac.) =		0.0%
Total Impervious Area B Soil (Ac.) =	0.29	100.0%
Total Impervious Area C Soil (Ac.) =		0.0%
Total Impervious Area D Soil (Ac.) =		0.0%

	Volume To Recharge (inches per Impervious Acre)	Volume (Impervious Area x inches per Acre)	
Recharge Volume (A soil) =		0.00	
Recharge Volume (B soil) =	0.35	0.10	
Recharge Volume (C soil) =		0.00	
Recharge Volume (D soil) =		0.00	
Total Required Recharge Volume =		**0.10**	Acre-Inch
		0.01	Acre-Feet
		368	Cubic Feet

Recharge Volume Provided by Infiltration System:

Volume Provided (Underground Stormwater Chamber No. 2):	4,534	Cubic Feet
Total Volume:	**4,534**	Cubic Feet

Appendix G

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BY: KN DATE: 6/1/2018 JOB NO.: 5328

CHKD BY: SL DATE: 6/7/2018 SHEET 1 OF 2

SUBJECT: Parking Improvements Stormwater Management Analysis - Drawdown Within 72 hours

LOCATION: Medway Community Church, Medway, MA

DRAWDOWN TIME EQUATION:

To determine whether an infiltration BMP will drain within 72 hours, the following formula must be used:

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)}$$

Where:
Rv *= Storage Volume*
K *= Saturated Hydraulic Conductivity For "Static" and "Simple Dynamic" Methods, use Rawls Rate (see Table 2.3.3). For "Dynamic Field" Method, use 50% of the in-situ saturated hydraulic conductivity.*
Bottom Area *= Bottom Area of Recharge Structure*

Source: Massachusetts Stormwater Handbook Volume 3 - Page 25.

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BY: KN DATE: 6/1/2018 JOB NO.: 5328

CHKD BY: SL DATE: 6/7/2018 SHEET 2 OF 2

SUBJECT: Parking Improvements Stormwater Management Analysis - Drawdown Within 72 hours

LOCATION: Medway Community Church, Medway, MA

SUB-WATERSHED 1S

Drawdown Time

Recharge Volume Provided (Cubic feet) = 10,844
Percolation Rate (Inches/Hour) = 4.3 (The Exfiltration rate used for purposes of design is 50% of the in-situ rate).
BMP Infiltration Bottom Area (Square Feet) = 5,207

$$\text{Time Drawdown} = \frac{\text{Rv}}{(\text{K}) \times (\text{Bottom Area})}$$

$$\text{Time Drawdown} = \frac{\text{10844 Cubic Feet}}{\text{\#NAME?}}$$

Time Drawdown = 5.8 Hour

5.8 Hours < 72 Hours. Result is satisfactory for design purposes.

SUB-WATERSHED 2S

Drawdown Time

Recharge Volume Provided (Cubic feet) = 4,534
Percolation Rate (Inches/Hour) = 4.3 (The Exfiltration rate used for purposes of design is 50% of the in-situ rate).
BMP Infiltration Bottom Area (Square Feet) = 2,201

$$\text{Time Drawdown} = \frac{\text{Rv}}{(\text{K}) \times (\text{Bottom Area})}$$

$$\text{Time Drawdown} = \frac{\text{\#NAME?}}{\text{\#NAME?}}$$

Time Drawdown = 5.7 Hour

5.7 Hours < 72 Hours. Result is satisfactory for design purposes.

Appendix H

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BY: KN DATE: 6/1/2018 JOB NO.: 5328

CHKD BY: SL DATE: 6/1/2018 SHEET 1 OF 3

SUBJECT: Parking Improvements Stormwater Management Analysis - Hantush (1967) Groundwater Mounding Calculator Data

LOCATION: Medway Community Church, Medway, MA

Groundwater Mound Beneath Rectangular Recharge Area

by Glenn M. Duffield, President, HydroSOLVE, Inc.

Share

Hantush (1967) presented the following equations for predicting the maximum height of the water table beneath a rectangular recharge area:

$$h_m^2 - h_i^2 = Z_m(t) = (2w/K)\nu t S^*(0.5A/(4\nu t)^{1/2}, 0.5B/(4\nu t)^{1/2}) \ldots\ldots (1)$$

$$\nu = K\bar{b}/\varepsilon \ldots\ldots (2)$$

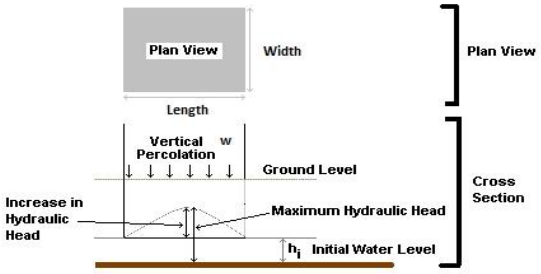
$$\bar{b} = 0.5[h_i(0) + h(t)] \ldots\ldots (3)$$

where h_m is maximum height of mound above aquifer base (i.e., maximum saturated thickness of aquifer beneath recharge area); h_i is initial height of water table above aquifer base (i.e., initial saturated thickness of aquifer); K and ε are hydraulic conductivity and storativity (specific yield) of aquifer, respectively; w is constant rate of percolation from rectangular recharge area of length A and width B; $\bar{b}$ is a constant of linearization; and the function S^* is an integral expression (see Hantush 1967). The aquifer is unconfined and assumed to have infinite extent.

If infiltration ends at time $t=t_0$, Hantush (1967) applied the principle of superposition to compute the decay of the mound as follows:

$$h_m^2 - h_i^2 = Z_m(t) - Z_m(t-t_0) \ldots\ldots (4)$$

Equation (1) is nonlinear owing to the definition of $\bar{b}$ in Equation (3); however, the solution is readily obtained by successive approximation.



Source: Hantush, M.S.(1967). Growth and Decay of Groundwater-Mounds in Response to Uniform Percolation, Water Resources Research vol. 3, no.1, pp 227-234.

Description and source of Input parameters used in the mounding calculations:

Recharge Rate, RR:
Volume of water infiltrated by each BMP for the 100-Yr Storm (denoted as "Discarded Volume" in the HydroCAD Analysis Output) divided by the surface area of the underground storage unit.

Duration of Application: T
The duration is 1 day to match the 100-yr , 24-hour rainfall event.

Specific Yield, Sy
The soil type identify during on-site investigation is Sand. A value for 30% for Sand, Coarse is selected from representative values of various geological materials shown on Appendix D.

Hydraulic Conductivity
The hydraulic conductivity are computed based on infiltration rate obtained from on-site percolation tests.

Initial Saturated Thickness
This value represents the depth to the highest natural restrictive layer (clay or bedrock). A value of 8 feet was estimated from a Well Completion Reports. from the MassDEP Search Well database, where the well is located at Lot 4 Wild Turkey Run (Refer to attached Well Report)

Length of application area
The length of the proposed underground storage unit

Width of application area
The width of the proposed underground storage unit

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BY: KN DATE: 6/1/2018 JOB NO.: 5328

CHKD BY: SL DATE: 6/1/2018

SUBJECT: Parking Improvements Stormwater Management Analysis - Hantush (1967) Groundwater Mounding Calculator Data

LOCATION: Medway Community Church, Medway, MA

Hantush (1967) Groundwater Mounding Calculator Data

Underground Storage Unit No. 1

1	Percolation Rate (PR) =	**2.67**	**MPI**
2	Hydraulic Conductivity (K)		
	Rate (ft/day), R = ((60 mph/PR)x(24hr/1day))/(12in/ft))	**44.9**	**ft/day**
	K = (R/6.03)^1.18 =	**10.7**	**ft/day**
3	Specific Yield: Sand =	**0.3**	
4	T =	**1**	**days**
5	Initial Sat'd Thickness (h_i): (Assumed from nearby well)	**8**	**ft**
6	Length of basin, A	**114**	**ft**
7	Width of basin, B	**45.67**	**ft**
8	Area of Basin = Length x Width =	**5206.38**	**sf**
9	Recharge Rate		
	Flow	**24867**	**cf /day (HydroCAD)**
	Recharge Rate, RR:	**4.8**	**ft/day**

Groundwater Mounding Calculator for Rectangular Recharge Area

Hydraulic Conductivity (K) =	10.7	[L/T]
Specific Yield (ε) =	0.3	[dimensionless]
Initial Saturated Thickness (h_i) =	8	[L]
Length of Recharge Area (A) =	114	[L]
Width of Recharge Area (B) =	46	[L]
Recharge Rate (w) =	4.8	[L/T]
Time (t) =	1	[T] (t > t_0)

☑ Compute Decay

Time When Infiltration Stops (t_0) = 1 [T] (0 < t_0 < t)

Use consistent units for the above input parameters.
For example, enter K in m/day and t in days to compute h_m in m.
Compute the recharge rate using w = q/(A*B) where q is the volumetric recharge rate [L^3/T].

Calculate Clear

Results of Groundwater Mounding Calculation

Solution by Successive Approximation

Iteration	b	h_m*	% Change
1	8	16.6584749863974	108.230937329967
2	12.3292374931987	18.9469430348143	13.7375603126074
3	13.4734715174072	19.441502942765	2.61023589421236
4	13.7207514713825	19.5437038506207	0.525684193020481
5	13.7718519253104	19.5646279318512	0.107063028535559
6	13.7823139659256	19.5689036480584	2.18543190398268E-02
7	13.7844518240292	19.5697770252803	4.46308713850652E-03
8	13.7848885126401	19.5699554110589	9.11537103154281E-04
9	13.7849777055294	19.5699918454506	1.86175139393896E-04
10	13.7849959227253	19.5699992869659	3.80251320208913E-05

K [L/T]	ε	h_i [L]	A [L]	B [L]	w [L/T]	t [T]	h_m [L]
10.7	0.3	8	114	46	4.8	1	19.5699992869659

maximum water-table rise (h_m - h_i) at time t = 1 is 11.5699992869659
no decay simulated (t_0 > t)

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BY: KN DATE: 6/1/2018 JOB NO.: 5328

CHKD BY: SL DATE: 6/1/2018 SHEET 3 OF 3

SUBJECT: Parking Improvements Stormwater Management Analysis - Hantush (1967) Groundwater Mounding Calculator Data

LOCATION: Medway Community Church, Medway, MA

Underground Storage Unit No. 2

1	Percolation Rate (PR) =	**5.67**	**MPI**
2	Hydraulic Conductivity (K)		
	Rate (ft/day): ((60 mph/PR)x(24hr/1day))/(12in/ft))	**21.2**	**ft/day**
	K = (R/6.03)^1.18 =	**4.4**	**ft/day**
3	Specific Yield: Gravelly Sand =	**0.3**	
4	T = (per Brett Rowe & Kermit Studley, MA DEP) =	**1**	**days**
5	Initial Sat'd Thickness (h_i): (Assumed from nearby irrigation well)	**8**	**ft**
6	Length of basin, A	**58**	**ft**
7	Width of basin, B	**28**	**ft**
8	Area of Basin = Length x Width =	**1624**	**sf**
9	Recharge Rate		
	Flow	**8911**	**cf /day (HydroCAD)**
	Recharge Rate:	**5.5**	**ft/day**

Groundwater Mounding Calculator for Rectangular Recharge Area

Hydraulic Conductivity (K) =	4.4	[L/T]
Specific Yield (ε) =	0.3	[dimensionless]
Initial Saturated Thickness (h_i) =	8	[L]
Length of Recharge Area (A) =	58	[L]
Width of Recharge Area (B) =	28	[L]
Recharge Rate (w) =	5.5	[L/T]
Time (t) =	1	[T] ($t > t_0$)

☑ Compute Decay

Time When Infiltration Stops (t_0) = 1 [T] ($0 < t_0 < t$)

Use consistent units for the above input parameters.
For example, enter K in m/day and t in days to compute h_m in m.
Compute the recharge rate using w = q/(A*B) where q is the volumetric recharge rate [L^3/T].

Calculate Clear

Results of Groundwater Mounding Calculation

Solution by Successive Approximation

Iteration	$\bar{b}$	h_m*	% Change
1	8	17.3431642965923	116.789553707404
2	12.6715821482962	19.7710342809005	13.9990023895764
3	13.8855171404502	20.2691309348639	2.51932522541107
4	14.1345654674319	20.3662912468155	0.479351148620477
5	14.1831456234078	20.3850564407631	9.21384935534952E-02
6	14.1925282203815	20.3886737295145	0.01774480616199
7	14.1943368647572	20.3893707611223	3.4187197121005E-03
8	14.1946853805612	20.3895050656872	6.58698919631107E-04
9	14.1947525328436	20.3895309432342	1.26916013098999E-04
10	14.1947654716171	20.3895359292572	2.44538390647975E-05

K [L/T]	ε	h_i [L]	A [L]	B [L]	w [L/T]	t [T]	h_m [L]
4.4	0.3	8	58	28	5.5	1	20.3895359292572

maximum water-table rise (h_m - h_i) at time t = 1 is 12.3895359292572
no decay simulated ($t_0 > t$)

Appendix I

TATA & HOWARD

Hydraulic Conductivity (K) - Representative Values

The following tables show representative values of hydraulic conductivity for various unconsolidated sedimentary materials, sedimentary rocks and crystalline rocks (from Domenico and Schwartz 1990):

Unconsolidated Sedimentary Materials	
Material	**Hydraulic Conductivity (m/sec)**
Gravel	3×10^{-4} to 3×10^{-2}
Coarse sand	9×10^{-7} to 6×10^{-3}
Medium sand	9×10^{-7} to 5×10^{-4}
Fine sand	2×10^{-7} to 2×10^{-4}
Silt, loess	1×10^{-9} to 2×10^{-5}
Till	1×10^{-12} to 2×10^{-6}
Clay	1×10^{-11} to 4.7×10^{-9}
Unweathered marine clay	8×10^{-13} to 2×10^{-9}

Sedimentary Rocks	
Rock Type	**Hydraulic Conductivity (m/sec)**
Karst and reef limestone	1×10^{-6} to 2×10^{-2}
Limestone, dolomite	1×10^{-9} to 6×10^{-6}
Sandstone	3×10^{-10} to 6×10^{-6}
Siltstone	1×10^{-11} to 1.4×10^{-8}
Salt	1×10^{-12} to 1×10^{-10}
Anhydrite	4×10^{-13} to 2×10^{-8}
Shale	1×10^{-13} to 2×10^{-9}

Crystalline Rocks	
Material	**Hydraulic Conductivity (m/sec)**
Permeable basalt	4×10^{-7} to 2×10^{-2}
Fractured igneous and metamorphic rock	8×10^{-9} to 3×10^{-4}
Weathered granite	3.3×10^{-6} to 5.2×10^{-5}
Weathered gabbro	5.5×10^{-7} to 3.8×10^{-6}
Basalt	2×10^{-11} to 4.2×10^{-7}
Unfractured igneous and metamorphic rock	3×10^{-14} to 2×10^{-10}

Specific Yield (Sy) - Representative Values

Heath (1983) reports the following values (in percent by volume) for porosity, specific yield and specific retention:

Material	Porosity (%)	Specific Yield (%)	Specific Retention (%)
Soil	55	40	15
Clay	50	2	48
Sand	25	22	3
Gravel	20	19	1
Limestone	20	18	2
Sandstone (unconsolidated)	11	6	5
Granite	0.1	0.09	0.01
Basalt (young)	11	8	3

The following table shows representative values of specific yield for various geologic materials (from Morris and Johnson 1967):

Material	Specific Yield (%)
Gravel, coarse	21
Gravel, medium	24
Gravel, fine	28
Sand, coarse	30
Sand, medium	32
Sand, fine	33
Silt	20
Clay	6
Sandstone, fine grained	21
Sandstone, medium grained	27
Limestone	14
Dune sand	38
Loess	18
Peat	44
Schist	26
Siltstone	12
Till, predominantly silt	6
Till, predominantly sand	16
Till, predominantly gravel	16
Tuff	21

Appendix J

TATA & HOWARD

MassDEP

Well Completion Report

WELL LOCATION

GPS North: 42.153483 **GPS West:** -71.431517 **Assessors Map:**

Address: Lot 4 Wild Turkey Run **Assessors Lot:**

Sub Division: Wild Turkey Run **Permit Number:**

City/Town: MEDWAY **Date Issued:**

Board Of Health Permit Obtained: Y

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock
New Well	Domestic	Mud Rotary	Air Hammer

ADDITIONAL WELL INFORMATION

Developed:

Disinfected: Yes

Total Well Depth: 265.00

Fracture Enhancement:

Well Seal Type:

Depth to Bedrock: 8.00

PERMANENT PUMP (IF AVAILABLE)

Pump Description:

Type:

Nominal Pump Capacity:

Intake Depth:

Horsepower:

Comments:

CASING

From(ft)	To(ft)	Type	Thickness	Diameter
0.00				
0.00	32.00	Steel		6

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose
0.00	32.00	Native Material	Fill

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface
04/19/2007	15.00

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery
04/19/2007	Air Blow with Drill Stem	25.00	2:00	265	0:30	15

OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate
0.00	8.00	Silty Sand and Gravel	Brown		Yes			

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft
8	17	Granite	broken	Yes	No	Yes			Addition	6
17	32	Granite	solid				Slow			1
32	132	Granite					Slow			1
132	145	Granite		Yes		Yes	Fast		Addition	3
145	230	Granite					Slow			1
230	235	Granite		Yes	Yes	Yes	Fast		Addition	5
235	265	Granite					Slow			1

MassDEP

Well Completion Report

WELL LOCATION

GPS North: 42.143383 **GPS West:** -71.442033 **Assessors Map:**

Address: 34 Old Summer Street **Assessors Lot:**

Sub Division: **Permit Number:**

City/Town: MEDWAY **Date Issued:** 01/27/2009

Board Of Health Permit Obtained: Y

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock
New Well	Irrigation	Mud Rotary	Air Hammer

ADDITIONAL WELL INFORMATION

Developed: No

Disinfected: Yes

Total Well Depth: 520.00

Fracture Enhancement: No

Well Seal Type: None

Depth to Bedrock: 10.00

PERMANENT PUMP (IF AVAILABLE)

Pump Description:

Type:

Nominal Pump Capacity:

Intake Depth:

Horsepower:

Comments:

CASING

From(ft)	To(ft)	Type	Thickness	Diameter
2.00 (Above Ground)	18.00	Steel	17#	6

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface
02/02/2009	10.00

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery
02/02/2009	Air Blow with Drill Stem	15.00	00:30	520	00:45	10

OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate
0.00	10.00	Silty Sand and Gravel	Brown		No		No	Fast

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft
10	110	Granite		No	No	No				
110	195	Granite		No	No	No				
195	197	Granite	4 GPM	Yes	Yes	Yes	Fast	No	Loss	
197	297	Granite		No	No	No			Loss	
297	397	Granite		No	No	No			Loss	
397	497	Granite		No	No	No			Loss	
497	501	Granite		No	No	No			Loss	
501	505	Granite	11 GPM	Yes	Yes	No	Fast	No	Loss	
505	520	Granite		No	No	No				

MassDEP

Well Completion Report

WELL LOCATION

GPS North: 42.140420 **GPS West:** -71.421760 **Assessors Map:**

Address: 298 VILLAGE ST **Assessors Lot:**

Sub Division: **Permit Number:**

City/Town: MEDWAY **Date Issued:**

Board Of Health Permit Obtained: NR

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock
New Well	Monitoring	Direct Push	

ADDITIONAL WELL INFORMATION

Developed: No

Disinfected:

Total Well Depth: 15.00

Fracture Enhancement:

Well Seal Type: Concrete

Depth to Bedrock:

PERMANENT PUMP (IF AVAILABLE)

Pump Description:

Type:

Nominal Pump Capacity:

Intake Depth:

Horsepower:

Comments: 3 WELLS INSTALLED. BRONSON DRILLING 617-610-1801

CASING

From(ft)	To(ft)	Type	Thickness	Diameter
0.00	5.00	PVC	Schedule 40	1

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter
5.00	15.00	Slotted PVC	0.01	1

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose
0.00	3.00	Native Material	
3.00	4.00	Bentonite Chips/Pellets	
4.00	15.00	Sand	

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface
10/22/2014	8.00

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery

OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate
0.00	15.00	Silty Sand	Brown					

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft
						No		No		

Appendix K

TATA & HOWARD

TATA & HOWARD, INC.
Consulting Engineers
37 Brookside Road, Waterbury, Connecticut 06708
Telephone: (203) 753-9800 FAX: (203) 575-9249

BY: KN DATE: 6/1/2018 JOB NO.: 5328

CHKD BY: SL DATE: 6/1/2018 SHEET 1 OF 1

SUBJECT: Parking Improvements Stormwater Management Analysis - Required Water Quality Volume

LOCATION: Medway Community Church, Medway, MA

STANDARD 4. WATER QUALITY

WATER QUALITY TREATMENT VOLUME

V_{WQ} = (D_{WQ}/12 inches/foot) * (A_{IMP} * 43,560 square feet/acre) ***Equation (3)***

V_{WQ} = *Required Water Quality Volume* (in cubic feet)

D_{WQ} = Water Quality Depth: one-inch for discharges within a Zone II or Interim Wellhead Protection Area, to or near another critical area, runoff from a LUHPPL, or exfiltration to soils with infiltration rate greater than 2.4 inches/hour or greater; ½-inch for discharges near or to other areas.

A_{IMP} = Impervious Area (in acres)

Source: *Volume 3: Documenting Compliance with the Massachusetts Stormwater Management Standards, Chapter 1, Page 32.*

Sub-Watershed No. 1S-1 to be discharged into Underground Storage Unit No. 1

The Required Water Quality Volume is determined for the impervious surfaces using Equation (3).

D_{WQ} = *1 inch*
A_{IMP} = *0.67 ac*

V_{WQ} = *(D_{WQ}/12 inches/foot) * (A_{IMP} * 43,560 square feet/acre)*
V_{WQ} = *(1-inch/12 inches/foot) * (0.67 acre * 43,560 square feet/acre)*
V_{WQ} = *2,432.1 cubic feet Used 2,440 cubic feet*

Sub-Watershed No. 2S-1 to be discharged into Underground Storage Unit No. 2

The Required Water Quality Volume is determined for the impervious surfaces using Equation (3).

D_{WQ} = *1 inch*
A_{IMP} = *0.29 ac*

V_{WQ} = *(D_{WQ}/12 inches/foot) * (A_{IMP} * 43,560 square feet/acre)*
V_{WQ} = *(1-inch/12 inches/foot) * (0.29 acre * 43,560 square feet/acre)*
V_{WQ} = *1,052.7 cubic feet Used 1.060 cubic feet*

Appendix L

TATA & HOWARD

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Medway, MA/ Underground Storage Unit No. 1

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Porous Pavement	**0.80**	**1.00**	**0.80**	**0.20**
Deep Sump and Hooded Catch Basin	**0.25**	**0.20**	**0.05**	**0.15**
Subsurface Infiltration Structure	**0.80**	**0.15**	**0.12**	**0.03**
	0.00	**0.03**	**0.00**	**0.03**
	0.00	**0.03**	**0.00**	**0.03**

Total TSS Removal = **97%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 5328

Prepared By:

Date: 5/12/2018

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Medway, MA/ Underground Storage Unit No. 2

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Porous Pavement	**0.80**	**1.00**	**0.80**	**0.20**
Deep Sump and Hooded Catch Basin	**0.25**	**0.20**	**0.05**	**0.15**
Subsurface Infiltration Structure	**0.80**	**0.15**	**0.12**	**0.03**
	0.00	**0.03**	**0.00**	**0.03**
	0.00	**0.03**	**0.00**	**0.03**

Total TSS Removal = **97%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 5328

Prepared By:

Date: 5/12/2018

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

Appendix M

TATA & HOWARD

LONG TERM OPERATION AND MAINTENANCE PLAN
9 & 11 Slocumb Place
Site Improvements
Medway, Massachusetts

This long-term Drainage Operations and Maintenance (O&M) Plan shall be implemented at 9 & 11 Slocumb Place, Medway to ensure that the Stormwater management system functions as designed and in accordance with DEP Stormwater Management Standard No. 9. This Operations and Maintenance Plan is intended to cover all on-site drainage structures, conveyances and outfalls. The Property Owner, Medway Community Church possesses the primary responsibility for overseeing and implementing the O&M Plan and designating a person who will be responsible for the proper operation and maintenance of the Stormwater structures. In case of transfer of property ownership, future property owners shall be notified of the presence of the Stormwater management system and the requirements for proper implementation of the O&M Plan.

O&M Plan Implementation Manager Contact Information:

Medway Community Church
11 Slocumb Place
Medway, Massachusetts 02053
(508) 533-7032

Components of the Operations and Maintenance Plan include:

- Removal of all trash and litter debris from entire site, particularly parking lots, road access leaching basins, catch basins, drain manholes, oil/grit separator units, underground storage units, and wooded areas.
- Pavement sweeping of paved parking lots and road access.
- Removal of sediment and pollutants trapped in oil/grit separator units (water quality treatment units).
- Snow Management Plan-Winter Roadway Maintenance and snow storage.

Stormwater Runoff Quality

The Stormwater management system protects and enhances the Stormwater runoff water quality through the removal of sediment and pollutants, and source control significantly reduces the amount of pollutants entering the system. Preventive maintenance of the system will include a comprehensive source reduction program of regular sweeping and litter removal, and maintenance of the roadway area. These measures are described below.

Drainage System

Stormwater runoff collected from off-site sub-watershed and parking lots is discharged into proposed deep sump (hooded) catch basins and then discharged into underground storage units. Maintenance and cleaning of stormwater drainage system will assure adequate performance.

Maintenance Program

The Property Owner will conduct the operation and maintenance program set forth in this document. The Owner will ensure that inspections and record keeping are timely and accurate and that cleaning and maintenance are performed at least on a biannual basis. Inspection & Maintenance Log Forms (attached) shall include the date and the amount of the last significant storm event in excess of 1" of rain in a 24-hour period, physical conditions of the structures, depth of sediment in structures, evidence of overtopping or debris blockage and maintenance required of each structure. *Records of maintenance will be kept on file at the Property Manager's office and copies of Inspection & Maintenance Log sheets indicating all work and inspections will be available to the Town upon request.*

All Stormwater management structures will be inspected two times per year, with cleaning typically occurring in Spring and Fall and possibly more often, as site conditions warrant. Concurrent with inspection and cleaning, all litter shall be picked up and removed from the parking areas, grass, landscaped and wooded areas.

Pavement Sweeping Program

Pavement sweeping is a highly effective source control measure for reducing pollutant loading in stormwater. Hand sweeping, and/or Mechanical air blowers may be utilized to facilitate collecting and removing sediment. All sweepings will be disposed of in a legal manner.

Long-term management practices include monthly sweeping of the parking areas during Spring and Fall months. The sweeping program will remove sand and contaminants directly from paved surfaces before they become mobilized during rain events and transported to the drainage system.

Snow Management Plan

1. Snow shall be managed in accordance with MA DEP *Snow Disposal Guidance* No. BWR G2015-01.
2. No deicing materials shall be stored within the Parking Areas.
3. Every effort should be made to plow and store snow on vegetated pervious surfaces to allow the snowmelt to filter through the soil, leaving behind sand and debris that can be collected and removed in the springtime.
4. Snow shall not be stored in swale/infiltration areas.
5. Plowed snow should not block drainage collection areas, and conveyance channels, as this may cause flooding.
6. The Property Owner is responsible for all snow clearing on parking areas at 9 & 11 Slocumb Place. It is the responsibility of the Owner to notify contractors as to permissible areas for the storage of snow, according to the restrictions described.

Maintenance Schedule

The following is a general maintenance schedule that can be used as a reference by the Property Owner. This schedule includes the maintenance action to be taken and when the action is to occur.

Site Component	Action to be Taken	Timeline for Completion
Parking Areas	Inspection/Sweeping	Monthly
Open-Bottom Catch Basins	Inspection/Cleaning	Bi-Annually
Deep Sump (hooded) Catch Basins	Inspection/Cleaning	Bi-Annually
Underground Storage Units No. 1 & 2	Inspection	Annually

Illicit Discharge Compliance Statement

Per Standard No. 10 of the MassDEP Stormwater Management Standards, there shall be no illicit discharges to the Stormwater management system. The Property Owner is responsible for implementing the Operation and Maintenance Plan and overseeing activities at the facility to prevent illicit discharges to the drainage system from occurring.

It is strictly prohibited to discharge any products or substances onto the ground surface or into any drainage structures, such as catch basin inlets, manholes, water quality units, swales or drainage outlets.

Should a spill occur, immediate action steps must be implemented to contain the spill, cordon off the area, clean it up immediately and dispose of it properly to prevent an illicit discharge to the Stormwater management system.

Drainage Operation and Maintenance Log

Maintenance Supervisor: _____ Date: _____
_____Routine _____Response to Rainfall Event _____ Other

BMP	Frequency	Date Performed	Comments
Parking Area Sweeping			
Open-Bottom Catch Basins			
Deep Sump (hooded) Catch Basins			
Underground Storage Units No. 1 & 2			

Site Component	Rate	Annual Total
Parking lots and roadway Sweeping		
Leaching basins		
Deep Sump (hooded) Catch Basins		
Underground Storage Units No. 1 & 2		
Estimated Annual Total		

TATA & HOWARD

OFFICE LOCATIONS:
MA | NH | CT | ME | VT | AZ | TX

800-366-5760
www.tataandhoward.com