STORMWATER MANAGEMENT REPORT

SITE PLAN

ASSESSORS MAP 130D LOTS 117, 247, 248, & 447
2904 & 2914 ACUSHNET AVENUE
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR:

T.M. CROWLEY & ASSOCIATES
14 BREAKNECK HILL ROAD, SUITE 101
LINCOLN, RI 02865
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1. Stormwater Management Report Narrative
2. Exhibit "A" - Pre-Development Watershed Plan
3. Exhibit "B" - Pre-Development Analysis
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5. Exhibit "D" - Post-Development Analysis
6. Exhibit "E" - TSS Removal Calculation Worksheet
7. Exhibit "F" - Custom Soil Resource Report
Project Summary
The project area associated with this project is bordered by Acushnet Avenue to the West of the site, commercial abutters to the North and South, and a new residential subdivision to the East of the site in New Bedford, Massachusetts. The parcel is situated in the Mixed Use Business (MUB) District. The total parcel area is approximately 98,041 S.F.

The applicant is seeking permission to construct a 5,275 S.F convenience store with a gas station and 2,640 S.F. car wash that includes a bituminous pavement parking lot containing a total of 49 spaces with associated grading. Stormwater associated with the development will be controlled via deep-­sump hooded catch basins, water quality units and a cultec subsurface recharge drainage system.

Methodology
Drainage computations were performed using the Natural Resources Conservation Services (NRCS) TR-20 method and HydroCAD® Drainage Calculation Software. Sketches of the existing and proposed watershed areas, HydroCAD® Report, and copies of the calculation sheets are included as appendices to this report.

Existing Conditions
The soils underlying the site are identified in the Soil Survey of Bristol County. The Site soils are classified as Paxton Fine Sandy Loam. Paxton soils are well suited to cultivate crops, hay and improved pasture. Paxton soils have a high water capacity and are well suited for intensive agriculture and woodland production.

Proposed Conditions/Stormwater Management Overview
Under proposed conditions, roof drains will collect and direct roof runoff and runoff from the canopy above the gas station area to a subsurface recharge system which, in large storm events, will overflow to a drain manhole and will ultimately tie into the city drainage system. Runoff from the parking areas and grassed area will be collected by two deep sump catch basins which flows to a Contech CDS Water Quality Unit before ultimately flowing to the city drainage system.
The design of the stormwater system was designed for the post-development conditions to handle all storms’ peak discharges and runoff volume to include the 2, 10, 25 and 100-year storm events. The site drainage system was designed in consideration of the structural standards and techniques of the Best Management Practices (BMP) and Low Impact Development (LID) outlined in the “Stormwater Management Handbook”.

The results of site drainage calculations are presented in the following Tables. The results are based upon evaluation of Pre-development conditions and the design of proposed surface and subsurface drainage systems for the Post-development condition. These results show the Post-Development offsite volume and runoff rates are reduced to less than the Pre-development conditions, thus meeting the BMP guidelines for this site development.

| Table 1 - Comparison of Pre- versus Post-Development Offsite Runoff Rate, cfs |
|-----------------------------|------------|--------|--------|--------|
| Frequency Storm             | 2-Year     | 10-Year| 25-Year| 100-Year|
| Pre-Development             | 2.18       | 4.27   | 5.56   | 7.91   |
| Post-Development            | 0.00       | 0.76   | 2.56   | 5.72   |

| Table 2 - Comparison of Pre- versus Post-Development Offsite Runoff Volume, af |
|-----------------------------|------------|--------|--------|--------|
| Frequency Storm             | 2-Year     | 10-Year| 25-Year| 100-Year|
| Pre-Development             | 0.219      | 0.413  | 0.534  | 0.758  |
| Post-Development            | 0.000      | 0.106  | 0.183  | 0.319  |

Groundwater recharge is a factor in the design of the subsurface drainage system. Table-3 below presents the minimum recharge required and the proposed recharge of stormwater based upon the BMP methods of the “Stormwater Management Handbook”. The proposed recharge quantities meet or exceed the required minimum recharges.

| Table 3 - Drainage Recharge Calculation (Required Recharge = 0.10” Total Site Runoff for Class-C Soils) |
|---------------------------------------------------------------|-----------------------------|
| Required Recharge                                            | Proposed Recharge           |
| 1.51 Acres x 0.10”/12 = 0.0125AF = 548 CF                     | 10,628 CF = 0.244 AF        |
Total Suspended Solids Removal

In accordance with the guidelines of the Stormwater Management Policy, the Total Suspended Solids (TSS) Removal exceeds the minimum 80% requirement.
PRE-DEVELOPMENT WATERSHED PLAN
PRE-DEVELOPMENT ANALYSIS
S-1

Tributary Offsite
Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-1: Tributary Offsite

Runoff Area=98,054 sf   6.26% Impervious   Runoff Depth=1.17"
Flow Length=475'   Tc=15.8 min   CN=74   Runoff=2.18 cfs  0.220 af

Total Runoff Area = 2.251 ac   Runoff Volume = 0.220 af   Average Runoff Depth = 1.17"
93.74% Pervious = 2.110 ac   6.26% Impervious = 0.141 ac
Summary for Subcatchment S-1: Tributary Offsite

Runoff = 2.18 cfs @ 12.23 hrs, Volume= 0.220 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.40"

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15.8 475 Total
Type III 24-hr 10 year Rainfall=4.80"

171134PRE
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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-1: Tributary Offsite
Runoff Area=98,054 sf   6.26% Impervious   Runoff Depth=2.21"
Flow Length=475’   Tc=15.8 min   CN=74   Runoff=4.27 cfs  0.414 af

Total Runoff Area = 2.251 ac   Runoff Volume = 0.414 af   Average Runoff Depth = 2.21"
93.74% Pervious = 2.110 ac   6.26% Impervious = 0.141 ac
Summary for Subcatchment S-1: Tributary Offsite

Runoff = 4.27 cfs @ 12.22 hrs, Volume = 0.414 af, Depth = 2.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 10 year Rainfall=4.80"

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15.8  475 Total
Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-1: Tributary Offsite

Runoff Area=98,054 sf  6.26% Impervious  Runoff Depth=2.85"
Flow Length=475’  Tc=15.8 min  CN=74  Runoff=5.56 cfs  0.535 af

Total Runoff Area = 2.251 ac  Runoff Volume = 0.535 af  Average Runoff Depth = 2.85"
93.74% Pervious = 2.110 ac  6.26% Impervious = 0.141 ac
Summary for Subcatchment S-1: Tributary Offsite

Runoff = 5.56 cfs @ 12.22 hrs, Volume = 0.535 af, Depth = 2.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 year Rainfall=5.60"

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Type III 24-hr 100 year Rainfall = 7.00"  

Time span = 0.00-72.00 hrs, dt = 0.01 hrs, 7201 points  
Runoff by SCS TR-20 method, UH = SCS  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method  

Subcatchment S-1: Tributary Offsite  
Runoff Area = 98,054 sf  6.26% Impervious  Runoff Depth = 4.04"  
Flow Length = 475'  Tc = 15.8 min  CN = 74  Runoff = 7.91 cfs  0.758 af  

Total Runoff Area = 2.251 ac  Runoff Volume = 0.758 af  Average Runoff Depth = 4.04"  
93.74% Pervious = 2.110 ac  6.26% Impervious = 0.141 ac
Summary for Subcatchment S-1: Tributary Offsite

Runoff = 7.91 cfs @ 12.22 hrs, Volume = 0.758 af, Depth = 4.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
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POST-DEVELOPMENT
WATERSHED PLAN
POST-DEVELOPMENT ANALYSIS
Drainage Diagram for 171134POST
Prepared by Farland Corp.
HydroCAD® 8.50 s/n 002159 © 2007 HydroCAD Software Solutions LLC
Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S-1: Roof Runoff
Runoff Area=5,177 sf  100.00% Impervious  Runoff Depth=3.17"
Tc=6.0 min  CN=98  Runoff=0.39 cfs  0.031 af

Subcatchment S-10: Offsite Runoff
Runoff Area=6,455 sf  20.98% Impervious  Runoff Depth=1.85"
Tc=6.0 min  CN=84  Runoff=0.32 cfs  0.023 af

Subcatchment S-2: Tributary to WQ-1
Runoff Area=18,613 sf  86.52% Impervious  Runoff Depth=2.84"
Tc=6.0 min  CN=95  Runoff=1.34 cfs  0.101 af

Subcatchment S-3: Roof Runoff
Runoff Area=2,642 sf  100.00% Impervious  Runoff Depth=3.17"
Tc=6.0 min  CN=98  Runoff=0.20 cfs  0.016 af

Subcatchment S-4: Tributary to CB-1
Runoff Area=7,915 sf  95.14% Impervious  Runoff Depth=3.06"
Tc=6.0 min  CN=97  Runoff=0.59 cfs  0.046 af

Subcatchment S-5: Tributary to CB-2
Runoff Area=5,979 sf  100.00% Impervious  Runoff Depth=3.17"
Tc=6.0 min  CN=98  Runoff=0.45 cfs  0.036 af

Subcatchment S-6: Tributary to CB-3
Runoff Area=8,152 sf  100.00% Impervious  Runoff Depth=3.17"
Tc=6.0 min  CN=98  Runoff=0.62 cfs  0.049 af

Subcatchment S-7: Tributary to CB-4
Runoff Area=4,356 sf  100.00% Impervious  Runoff Depth=3.17"
Tc=6.0 min  CN=98  Runoff=0.33 cfs  0.026 af

Subcatchment S-8: Canopy Runoff
Runoff Area=3,732 sf  100.00% Impervious  Runoff Depth=3.17"
Tc=6.0 min  CN=98  Runoff=0.28 cfs  0.023 af

Subcatchment S-9: Tributary to CB-5
Runoff Area=12,504 sf  96.99% Impervious  Runoff Depth=3.06"
Tc=6.0 min  CN=97  Runoff=0.94 cfs  0.073 af

Reach CB-1: Trench Drain
Avg. Depth=0.15’  Max Vel=8.29 fps  Inflow=0.59 cfs  0.046 af
D=12.0”  n=0.013  L=14.0’  S=0.1286 '/'  Capacity=12.78 cfs  Outflow=0.59 cfs  0.046 af

Reach CB-2: Catch Basin
Avg. Depth=0.21’  Max Vel=3.91 fps  Inflow=0.45 cfs  0.036 af
D=12.0”  n=0.013  L=21.0’  S=0.0190 '/'  Capacity=4.92 cfs  Outflow=0.45 cfs  0.036 af

Reach CB-3: Catch Basin
Avg. Depth=0.31’  Max Vel=2.97 fps  Inflow=0.62 cfs  0.049 af
D=12.0”  n=0.013  L=51.0’  S=0.0069 '/'  Capacity=2.95 cfs  Outflow=0.62 cfs  0.049 af

Reach CB-4: Catch Basin
Avg. Depth=0.24’  Max Vel=2.23 fps  Inflow=0.33 cfs  0.026 af
D=12.0”  n=0.013  L=77.0’  S=0.0051 '/'  Capacity=2.54 cfs  Outflow=0.33 cfs  0.026 af

Reach CB-5: Catch Basin
Avg. Depth=0.41’  Max Vel=3.04 fps  Inflow=0.94 cfs  0.073 af
D=12.0”  n=0.013  L=15.0’  S=0.0053 '/'  Capacity=2.60 cfs  Outflow=0.93 cfs  0.073 af

Reach P-1: 12” HDPE
Avg. Depth=0.31’  Max Vel=7.99 fps  Inflow=1.65 cfs  0.132 af
D=12.0”  n=0.013  L=5.0’  S=0.0500 '/'  Capacity=7.97 cfs  Outflow=1.65 cfs  0.132 af
### Reach P-2: 12” HDPE

- Avg. Depth: 0.55’
- Max Vel: 3.73 fps
- Inflow: 1.65 cfs
- Outflow: 1.65 cfs

### Reach P-3: 12” HDPE

- Avg. Depth: 0.45’
- Max Vel: 3.11 fps
- Inflow: 1.07 cfs
- Outflow: 1.07 cfs

### Reach P-4: 12” HDPE

- Avg. Depth: 0.14’
- Max Vel: 10.07 fps
- Inflow: 0.68 cfs
- Outflow: 0.68 cfs

### Reach P-5: 12” HDPE

- Avg. Depth: 0.50’
- Max Vel: 3.21 fps
- Inflow: 1.26 cfs
- Outflow: 1.26 cfs

### Reach P-7: 12” HDPE

- Avg. Depth: 0.51’
- Max Vel: 3.32 fps
- Inflow: 1.34 cfs
- Outflow: 1.34 cfs

### Reach WQI-1: Water Quality Inlet

- Avg. Depth: 0.51’
- Max Vel: 3.32 fps
- Inflow: 1.34 cfs
- Outflow: 1.34 cfs

### Pond DMH-1: Drain Manhole

- Inflow: 1.65 cfs
- Outflow: 1.65 cfs

### Pond DMH-2: Drain Manhole

- Inflow: 1.07 cfs
- Outflow: 1.07 cfs

### Pond DMH-3: Drain Manhole

- Inflow: 0.68 cfs
- Outflow: 0.68 cfs

### Pond DMH-4: Drain Manhole

- Inflow: 1.26 cfs
- Outflow: 1.26 cfs

### Pond DMH-5: Drain Manhole

- Inflow: 0.30 cfs
- Outflow: 0.30 cfs

### Pond LS: Level Spreader

- Peak Elev: 98.34’
- Storage: 1,220 cf
- Inflow: 0.30 cfs
- Outflow: 0.20 cfs

### Pond SRS-1: Subsurface Recharge System

- Peak Elev: 96.14’
- Storage: 8,231 cf
- Inflow: 3.85 cfs
- Outflow: 3.22 cfs

### Pond WQI-2: Water Quality Inlet

- Inflow: 1.65 cfs
- Outflow: 1.65 cfs

### Pond WQI-3: Water Quality Inlet

- Inflow: 1.26 cfs
- Outflow: 1.26 cfs

Total Runoff Area = 1.734 ac  
Runoff Volume = 0.425 af  
Average Runoff Depth = 2.94"  
11.08% Pervious = 0.192 ac  
88.92% Impervious = 1.542 ac
Summary for Subcatchment S-1: Roof Runoff

Runoff = 0.39 cfs @ 12.08 hrs, Volume = 0.031 af, Depth = 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>* 5,177</td>
<td>98</td>
<td>Rooftop</td>
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<tr>
<td>5,177</td>
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<td>Impervious Area</td>
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</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
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<tbody>
<tr>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, Minimum Tc</td>
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</tbody>
</table>

Summary for Subcatchment S-10: Offsite Runoff

Runoff = 0.32 cfs @ 12.09 hrs, Volume = 0.023 af, Depth = 1.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<th>Description</th>
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<tbody>
<tr>
<td>5,101</td>
<td>80</td>
<td>&gt;75% Grass cover, Good, HSG D</td>
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<tr>
<td>1,354</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>6,455</td>
<td>84</td>
<td>Weighted Average</td>
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<tr>
<td>5,101</td>
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<td>Pervious Area</td>
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<tr>
<td>1,354</td>
<td></td>
<td>Impervious Area</td>
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<table>
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<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
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<tr>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Summary for Subcatchment S-2: Tributary to WQ-1

Runoff = 1.34 cfs @ 12.08 hrs, Volume = 0.101 af, Depth = 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2Yr Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,509</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>16,104</td>
<td>98</td>
<td>Paved parking</td>
</tr>
<tr>
<td>18,613</td>
<td>95</td>
<td>Weighted Average</td>
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<tr>
<td>2,509</td>
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<td>Pervious Area</td>
</tr>
<tr>
<td>16,104</td>
<td></td>
<td>Impervious Area</td>
</tr>
</tbody>
</table>
### Summary for Subcatchment S-3: Roof Runoff

Runoff = 0.20 cfs @ 12.08 hrs, Volume = 0.016 af, Depth = 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs

Type III 24-hr 2Yr Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>* 2,642</td>
<td>98</td>
<td>Rooftop</td>
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<tr>
<td>2,642</td>
<td></td>
<td>Impervious Area</td>
</tr>
</tbody>
</table>

### Summary for Subcatchment S-4: Tributary to CB-1

Runoff = 0.59 cfs @ 12.08 hrs, Volume = 0.046 af, Depth = 3.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs

Type III 24-hr 2Yr Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>385</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
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<tr>
<td>7,530</td>
<td>98</td>
<td>Paved parking</td>
</tr>
<tr>
<td>7,915</td>
<td>97</td>
<td>Weighted Average</td>
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<tr>
<td>385</td>
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<td>Pervious Area</td>
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<tr>
<td>7,530</td>
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<td>Impervious Area</td>
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</table>

### Summary for Subcatchment S-5: Tributary to CB-2

Runoff = 0.45 cfs @ 12.08 hrs, Volume = 0.036 af, Depth = 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs

Type III 24-hr 2Yr Rainfall=3.40"

<table>
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<th>Area (sf)</th>
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<tr>
<td>5,979</td>
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<td>Impervious Area</td>
</tr>
</tbody>
</table>
### Summary for Subcatchment S-6: Tributary to CB-3

Runoff = 0.62 cfs @ 12.08 hrs, Volume = 0.049 af, Depth = 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs

<table>
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<th>Area (sf)</th>
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<tr>
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<tr>
<td>8,152</td>
<td></td>
<td>Impervious Area</td>
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</tbody>
</table>

### Summary for Subcatchment S-7: Tributary to CB-4

Runoff = 0.33 cfs @ 12.08 hrs, Volume = 0.026 af, Depth = 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
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<tr>
<td>4,356</td>
<td>98</td>
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<td>4,356</td>
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<td>Impervious Area</td>
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</tbody>
</table>

### Summary for Subcatchment S-8: Canopy Runoff

Runoff = 0.28 cfs @ 12.08 hrs, Volume = 0.023 af, Depth = 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tr>
<td>* 3,732</td>
<td>98</td>
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<td>3,732</td>
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Summary for Subcatchment S-9: Tributary to CB-5

Runoff = 0.94 cfs @ 12.08 hrs, Volume = 0.073 af, Depth = 3.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 2Yr Rainfall = 3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tr>
<td>376</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
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<tr>
<td>12,504</td>
<td>97</td>
<td>Weighted Average</td>
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<td>376</td>
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<td>12,128</td>
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<td>Impervious Area</td>
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</table>

Summary for Reach CB-1: Trench Drain

Inflow Area = 0.182 ac, 95.14% Impervious, Inflow Depth = 3.06" for 2Yr event
Inflow = 0.59 cfs @ 12.08 hrs, Volume = 0.046 af
Outflow = 0.59 cfs @ 12.08 hrs, Volume = 0.046 af, Atten = 0%, Lag = 0.0 min

Routing by Stor-Ind+Trans method, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Max. Velocity = 8.29 fps, Min. Travel Time = 0.0 min
Avg. Velocity = 2.71 fps, Avg. Travel Time = 0.1 min

Peak Storage = 1 cf @ 12.08 hrs, Average Depth at Peak Storage = 0.15'
Bank-Full Depth = 1.00', Capacity at Bank-Full = 12.78 cfs

12.0" Diameter Pipe, n = 0.013
Length = 14.0', Slope = 0.1286 '/'
Inlet Invert = 96.20', Outlet Invert = 94.40'
Summary for Reach CB-2: Catch Basin

Inflow Area = 0.137 ac, 100.00% Impervious, Inflow Depth = 3.17" for 2Yr event
Inflow = 0.45 cfs @ 12.08 hrs, Volume= 0.036 af
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.91 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.92 cfs

12.0" Diameter Pipe, n= 0.013
Length= 21.0' Slope= 0.0190 '
Inlet Invert= 95.20', Outlet Invert= 94.80'

Summary for Reach CB-3: Catch Basin

Inflow Area = 0.187 ac, 100.00% Impervious, Inflow Depth = 3.17" for 2Yr event
Inflow = 0.62 cfs @ 12.08 hrs, Volume= 0.049 af
Outflow = 0.62 cfs @ 12.09 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.97 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.97 fps, Avg. Travel Time= 0.9 min

Peak Storage= 11 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.95 cfs

12.0" Diameter Pipe, n= 0.013
Length= 51.0' Slope= 0.0069 '
Inlet Invert= 95.20', Outlet Invert= 94.85'
Summary for Reach CB-4: Catch Basin

Inflow Area = 0.100 ac, 100.00% Impervious, Inflow Depth = 3.17” for 2Yr event
Inflow = 0.33 cfs @ 12.08 hrs, Volume= 0.026 af
Outflow = 0.33 cfs @ 12.10 hrs, Volume= 0.026 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.23 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 1.8 min

Peak Storage= 11 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.54 cfs

12.0” Diameter Pipe, n= 0.013
Length= 77.0’ Slope= 0.0051 '/'
Inlet Invert= 97.65’, Outlet Invert= 97.26'

Summary for Reach CB-5: Catch Basin

Inflow Area = 0.287 ac, 96.99% Impervious, Inflow Depth = 3.06” for 2Yr event
Inflow = 0.94 cfs @ 12.08 hrs, Volume= 0.073 af
Outflow = 0.93 cfs @ 12.09 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.04 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 0.2 min

Peak Storage= 5 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.60 cfs

12.0” Diameter Pipe, n= 0.013
Length= 15.0’ Slope= 0.0053 '/'
Inlet Invert= 97.34’, Outlet Invert= 97.26’
Summary for Reach P-1: 12" HDPE

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 3.13" for 2Yr event
Inflow = 1.65 cfs @ 12.10 hrs, Volume = 0.132 af
Outflow = 1.65 cfs @ 12.10 hrs, Volume = 0.132 af, Atten = 0%, Lag = 0.0 min

Routing by Stor-Ind+Trans method, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Max. Velocity = 7.99 fps, Min. Travel Time = 0.0 min
Avg. Velocity = 2.61 fps, Avg. Travel Time = 0.0 min

Peak Storage = 1 cf @ 12.10 hrs, Average Depth at Peak Storage = 0.31'
Bank-Full Depth = 1.00', Capacity at Bank-Full = 7.97 cfs

12.0" Diameter Pipe, n = 0.013
Length = 5.0' Slope = 0.0500 '
Inlet Invert = 94.25', Outlet Invert = 94.00'

Summary for Reach P-2: 12" HDPE

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 3.13" for 2Yr event
Inflow = 1.65 cfs @ 12.10 hrs, Volume = 0.132 af
Outflow = 1.65 cfs @ 12.10 hrs, Volume = 0.132 af, Atten = 0%, Lag = 0.2 min

Routing by Stor-Ind+Trans method, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Max. Velocity = 3.73 fps, Min. Travel Time = 0.1 min
Avg. Velocity = 1.25 fps, Avg. Travel Time = 0.3 min

Peak Storage = 11 cf @ 12.10 hrs, Average Depth at Peak Storage = 0.55'
Bank-Full Depth = 1.00', Capacity at Bank-Full = 2.82 cfs

12.0" Diameter Pipe, n = 0.013
Length = 24.0' Slope = 0.0063 '
Inlet Invert = 94.40', Outlet Invert = 94.25'
Summary for Reach P-3: 12" HDPE

Inflow Area = 0.324 ac, 100.00% Impervious, Inflow Depth = 3.17" for 2Yr event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.086 af
Outflow = 1.07 cfs @ 12.10 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.11 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.03 fps, Avg. Travel Time= 1.4 min

Peak Storage= 30 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.56 cfs

12.0" Diameter Pipe, n= 0.013
Length= 87.0' Slope= 0.0052 '/'
Inlet Invert= 94.85', Outlet Invert= 94.40'

Summary for Reach P-4: 12" HDPE

Inflow Area = 0.205 ac, 100.00% Impervious, Inflow Depth = 3.17" for 2Yr event
Inflow = 0.68 cfs @ 12.08 hrs, Volume= 0.054 af
Outflow = 0.68 cfs @ 12.08 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.07 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.31 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 15.93 cfs

12.0" Diameter Pipe, n= 0.013
Length= 10.0' Slope= 0.2000 '/'
Inlet Invert= 96.00', Outlet Invert= 94.40'
Summary for Reach P-5: 12" HDPE

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 3.08" for 2Yr event
Inflow = 1.26 cfs @ 12.09 hrs, Volume= 0.099 af
Outflow = 1.26 cfs @ 12.09 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.21 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.06 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.52 cfs

12.0" Diameter Pipe, n= 0.013
Length= 10.0’ Slope= 0.0050 '/'
Inlet Invert= 96.26', Outlet Invert= 96.21'

Summary for Reach P-7: 12" HDPE

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 3.08" for 2Yr event
Inflow = 1.26 cfs @ 12.09 hrs, Volume= 0.099 af
Outflow = 1.26 cfs @ 12.09 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.21 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.06 fps, Avg. Travel Time= 0.3 min

Peak Storage= 9 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.52 cfs

12.0" Diameter Pipe, n= 0.013
Length= 22.0’ Slope= 0.0050 '/'
Inlet Invert= 97.21', Outlet Invert= 97.10'
Summary for Reach WQI-1: Water Quality Inlet

Inflow Area = 0.427 ac, 86.52% Impervious, Inflow Depth = 2.84" for 2Yr event
Inflow = 1.34 cfs @ 12.08 hrs, Volume= 0.101 af
Outflow = 1.34 cfs @ 12.09 hrs, Volume= 0.101 af, Attenuation= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.32 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 0.6 min

Peak Storage= 15 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.58 cfs

12.0" Diameter Pipe, n= 0.013
Length= 38.0' Slope= 0.0053 '
Inlet Invert= 94.20', Outlet Invert= 94.00'

Summary for Pond DMH-1: Drain Manhole

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 3.13" for 2Yr event
Inflow = 1.65 cfs @ 12.10 hrs, Volume= 0.132 af
Primary = 1.65 cfs @ 12.10 hrs, Volume= 0.132 af, Attenuation= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-2: Drain Manhole

Inflow Area = 0.324 ac, 100.00% Impervious, Inflow Depth = 3.17" for 2Yr event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.086 af
Primary = 1.07 cfs @ 12.09 hrs, Volume= 0.086 af, Attenuation= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-3: Drain Manhole

Inflow Area = 0.205 ac, 100.00% Impervious, Inflow Depth = 3.17" for 2Yr event
Inflow = 0.68 cfs @ 12.08 hrs, Volume= 0.054 af
Primary = 0.68 cfs @ 12.08 hrs, Volume= 0.054 af, Attenuation= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Summary for Pond DMH-4: Drain Manhole

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 3.08" for 2Yr event
Inflow = 1.26 cfs @ 12.09 hrs, Volume= 0.099 af
Primary = 1.26 cfs @ 12.09 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-5: Drain Manhole

Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 0.78" for 2Yr event
Inflow = 0.30 cfs @ 13.03 hrs, Volume= 0.078 af
Primary = 0.30 cfs @ 13.03 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond LS: Level Spreader

Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 0.78" for 2Yr event
Inflow = 0.30 cfs @ 13.03 hrs, Volume= 0.078 af
Outflow = 0.20 cfs @ 14.03 hrs, Volume= 0.062 af, Atten= 31%, Lag= 60.1 min
Discarded = 0.00 cfs @ 12.63 hrs, Volume= 0.015 af
Primary = 0.20 cfs @ 14.03 hrs, Volume= 0.047 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 98.34’ @ 14.03 hrs Surf.Area= 492 sf Storage= 1,220 cf

Plug-Flow detention time= 513.6 min calculated for 0.062 af (79% of inflow)
Center-of-Mass det. time= 444.1 min (1,380.6 - 936.5)

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<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
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<tbody>
<tr>
<td>#1 92.33’</td>
<td>1,352 cf</td>
<td>600'W x 82.00'L x 7.00'H Prismatoid</td>
<td>3,444 cf Overall - 63 cf Embedded = 3,381 cf x 40.0% Voids</td>
</tr>
<tr>
<td>#2 94.33’</td>
<td>63 cf</td>
<td>120’D x 80.00’L Horizontal Cylinder Inside #1</td>
<td></td>
</tr>
<tr>
<td>1,415 cf</td>
<td>Total Available Storage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Device Routing Invert Outlet Devices

<table>
<thead>
<tr>
<th>Device</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 Discarded</td>
<td>92.33’</td>
<td>0.270 in/hr Exfiltration over Surface area</td>
<td></td>
</tr>
<tr>
<td>#2 Primary</td>
<td>98.33’</td>
<td>82’ long x 5.0’ breadth Broad-Crested Rectangular Weir</td>
<td></td>
</tr>
<tr>
<td>Head (feet)</td>
<td>0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.50 3.00 3.50 4.00 4.50 5.00 5.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coef. (English)</td>
<td>2.34 2.50 2.70 2.68 2.68 2.65 2.65 2.65 2.65 2.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.67 2.66 2.68 2.70 2.74 2.79 2.88</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.00 cfs @ 12.63 hrs HW=92.40’ (Free Discharge)

Primary OutFlow Max=0.12 cfs @ 14.03 hrs HW=98.34’ (Free Discharge)
Summary for Pond SRS-1: Subsurface Recharge System

Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 3.03" for 2Yr event
Inflow = 3.85 cfs @ 12.09 hrs, Volume= 0.303 af
Outflow = 0.32 cfs @ 13.03 hrs, Volume= 0.228 af, Atten= 92%, Lag= 56.2 min
Discarded = 0.03 cfs @ 5.47 hrs, Volume= 0.150 af
Primary = 0.30 cfs @ 13.03 hrs, Volume= 0.078 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 96.14' @ 13.03 hrs  Surf.Area= 4,267 sf   Storage= 8,231 cf
Plug-Flow detention time= 1,137.6 min calculated for 0.228 af (75% of inflow)
Center-of-Mass det. time= 1,052.5 min (1,818.0 - 765.5 )

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>93.50'</td>
<td>2,964 cf</td>
<td>27.00&quot;W x 114.50'L x 4.00'H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12,366 cf Overall - 4,957 cf Embedded = 7,409 cf x 40.0% Voids</td>
</tr>
<tr>
<td>#2</td>
<td>94.00'</td>
<td>4,957 cf</td>
<td>52.6&quot;W x 34.0&quot;H x 7.50'L Cultec R-V8 x 74 Inside #1</td>
</tr>
<tr>
<td>#3</td>
<td>93.50'</td>
<td>1,076 cf</td>
<td>25.00&quot;W x 47.00'L x 4.00'H Prismatoid</td>
</tr>
<tr>
<td>#4</td>
<td>94.00'</td>
<td>2,009 cf</td>
<td>52.6&quot;W x 34.0&quot;H x 7.50'L Cultec R-V8 x 30 Inside #3</td>
</tr>
</tbody>
</table>

11,006 cf Total Available Storage

Device Routing Invert Outlet Devices
#1 Discarded 93.50' 0.270 in/hr Exfiltration over Surface area
#2 Primary 96.00' 8.0" x 5.0' long Culvert X 3.00
   RCP, rounded edge headwall, Ke= 0.100
   Outlet Invert= 95.50'  S= 0.1000 '/'  Cc= 0.900  n= 0.013

Discarded OutFlow Max=0.03 cfs @ 5.47 hrs  HW=93.54' (Free Discharge)
Exfiltration controls 0.03 cfs

Primary OutFlow Max=0.30 cfs @ 13.03 hrs  HW=96.14' (Free Discharge)
Culvert controls 0.30 cfs @ 1.77 fps

Summary for Pond WQI-2: Water Quality Inlet

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 3.13" for 2Yr event
Inflow = 1.65 cfs @ 12.10 hrs, Volume= 0.132 af
Primary = 1.65 cfs @ 12.10 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond WQI-3: Water Quality Inlet

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 3.08" for 2Yr event
Inflow = 1.26 cfs @ 12.09 hrs, Volume= 0.099 af
Primary = 1.26 cfs @ 12.09 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
### Runoff Analysis

**Subcatchment S-1: Roof Runoff**
- Runoff Area: 5,177 sf
- 100.00% Impervious
- Runoff Depth: 4.56"
- Tc: 6.0 min
- CN: 98
- Runoff: 0.56 cfs
  0.045 af

**Subcatchment S-10: Offsite Runoff**
- Runoff Area: 6,455 sf
- 20.98% Impervious
- Runoff Depth: 3.09"
- Tc: 6.0 min
- CN: 84
- Runoff: 0.53 cfs
  0.038 af

**Subcatchment S-2: Tributary to WQ-1**
- Runoff Area: 18,613 sf
- 86.52% Impervious
- Runoff Depth: 4.22"
- Tc: 6.0 min
- CN: 95
- Runoff: 1.95 cfs
  0.150 af

**Subcatchment S-3: Roof Runoff**
- Runoff Area: 2,642 sf
- 100.00% Impervious
- Runoff Depth: 4.56"
- Tc: 6.0 min
- CN: 98
- Runoff: 0.28 cfs
  0.023 af

**Subcatchment S-4: Tributary to CB-1**
- Runoff Area: 7,915 sf
- 95.14% Impervious
- Runoff Depth: 4.45"
- Tc: 6.0 min
- CN: 97
- Runoff: 0.85 cfs
  0.067 af

**Subcatchment S-5: Tributary to CB-2**
- Runoff Area: 8,152 sf
- 100.00% Impervious
- Runoff Depth: 4.56"
- Tc: 6.0 min
- CN: 98
- Runoff: 0.64 cfs
  0.052 af

**Subcatchment S-6: Tributary to CB-3**
- Runoff Area: 4,356 sf
- 100.00% Impervious
- Runoff Depth: 4.56"
- Tc: 6.0 min
- CN: 98
- Runoff: 0.88 cfs
  0.071 af

**Subcatchment S-7: Tributary to CB-4**
- Runoff Area: 3,732 sf
- 100.00% Impervious
- Runoff Depth: 4.56"
- Tc: 6.0 min
- CN: 98
- Runoff: 0.47 cfs
  0.038 af

**Subcatchment S-8: Canopy Runoff**
- Runoff Area: 12,504 sf
- 96.99% Impervious
- Runoff Depth: 4.45"
- Tc: 6.0 min
- CN: 97
- Runoff: 0.40 cfs
  0.033 af

**Subcatchment S-9: Tributary to CB-5**
- Runoff Area: 12,504 sf
- 96.99% Impervious
- Runoff Depth: 4.45"
- Tc: 6.0 min
- CN: 97
- Runoff: 1.34 cfs
  0.106 af

### Reach Analysis

**Reach CB-1: Trench Drain**
- Avg. Depth: 0.17'
- Max Vel: 9.22 fps
- Inflow: 0.85 cfs
  0.067 af
- D: 12.0"
  n: 0.013
  L: 14.0'
  S: 0.1286 '/'
- Capacity: 12.78 cfs
- Outflow: 0.85 cfs
  0.067 af

**Reach CB-2: Catch Basin**
- Avg. Depth: 0.24'
- Max Vel: 4.33 fps
- Inflow: 0.64 cfs
  0.052 af
- D: 12.0"
  n: 0.013
  L: 21.0'
  S: 0.0190 '/'
- Capacity: 4.92 cfs
- Outflow: 0.64 cfs
  0.052 af

**Reach CB-3: Catch Basin**
- Avg. Depth: 0.37'
- Max Vel: 3.28 fps
- Inflow: 0.88 cfs
  0.071 af
- D: 12.0"
  n: 0.013
  L: 51.0'
  S: 0.0069 '/'
- Capacity: 2.95 cfs
- Outflow: 0.88 cfs
  0.071 af

**Reach CB-4: Catch Basin**
- Avg. Depth: 0.29'
- Max Vel: 2.46 fps
- Inflow: 0.47 cfs
  0.038 af
- D: 12.0"
  n: 0.013
  L: 77.0'
  S: 0.0051 '/'
- Capacity: 2.54 cfs
- Outflow: 0.47 cfs
  0.038 af

**Reach CB-5: Catch Basin**
- Avg. Depth: 0.51'
- Max Vel: 3.33 fps
- Inflow: 1.34 cfs
  0.106 af
- D: 12.0"
  n: 0.013
  L: 15.0'
  S: 0.0053 '/'
- Capacity: 2.60 cfs
- Outflow: 1.34 cfs
  0.106 af

**Reach P-1: 12" HDPE**
- Avg. Depth: 0.37'
- Max Vel: 8.82 fps
- Inflow: 2.34 cfs
  0.191 af
- D: 12.0"
  n: 0.013
  L: 5.0'
  S: 0.0500 '/'
- Capacity: 7.97 cfs
- Outflow: 2.34 cfs
  0.191 af
Type III 24-hr 10Yr Rainfall=4.80"

Reach P-2: 12" HDPE
- Avg. Depth=0.70'  Max Vel=4.01 fps  Inflow=2.35 cfs  0.191 af
- D=12.0"  n=0.013  L=24.0'  S=0.0063 '/'  Capacity=2.82 cfs  Outflow=2.34 cfs  0.191 af

Reach P-3: 12" HDPE
- Avg. Depth=0.55'  Max Vel=3.40 fps  Inflow=1.52 cfs  0.123 af
- D=12.0"  n=0.013  L=87.0'  S=0.0052 '/'  Capacity=2.56 cfs  Outflow=1.51 cfs  0.123 af

Reach P-4: 12" HDPE
- Avg. Depth=0.17'  Max Vel=11.18 fps  Inflow=0.96 cfs  0.078 af
- D=12.0"  n=0.013  L=10.0'  S=0.2000 '/'  Capacity=15.93 cfs  Outflow=0.96 cfs  0.078 af

Reach P-5: 12" HDPE
- Avg. Depth=0.62'  Max Vel=3.49 fps  Inflow=1.80 cfs  0.144 af
- D=12.0"  n=0.013  L=87.0'  S=0.0052 '/'  Capacity=2.52 cfs  Outflow=1.80 cfs  0.144 af

Reach P-7: 12" HDPE
- Avg. Depth=0.65'  Max Vel=3.61 fps  Inflow=1.95 cfs  0.150 af
- D=12.0"  n=0.013  L=22.0'  S=0.0053 '/'  Capacity=2.58 cfs  Outflow=1.94 cfs  0.150 af

Reach WQI-1: Water Quality Inlet
- Avg. Depth=0.65'  Max Vel=3.61 fps  Inflow=1.95 cfs  0.150 af
- D=12.0"  n=0.013  L=38.0'  S=0.0053 '/'  Capacity=2.58 cfs  Outflow=1.94 cfs  0.150 af

Pond DMH-1: Drain Manhole
- Inflow=2.35 cfs  0.191 af  Primary=2.35 cfs  0.191 af

Pond DMH-2: Drain Manhole
- Inflow=1.52 cfs  0.123 af  Primary=1.52 cfs  0.123 af

Pond DMH-3: Drain Manhole
- Inflow=0.96 cfs  0.078 af  Primary=0.96 cfs  0.078 af

Pond DMH-4: Drain Manhole
- Inflow=1.80 cfs  0.144 af  Primary=1.80 cfs  0.144 af

Pond DMH-5: Drain Manhole
- Inflow=2.62 cfs  0.214 af  Primary=2.62 cfs  0.214 af

Pond LS: Level Spreader
- Peak Elev=98.38'  Storage=1,228 cf  Inflow=2.62 cfs  0.214 af
- Discarded=0.00 cfs  0.015 af  Primary=2.44 cfs  0.181 af  Outflow=2.45 cfs  0.197 af

Pond SRS-1: Subsurface Recharge System
- Peak Elev=96.48'  Storage=9,158 cf  Inflow=5.52 cfs  0.442 af
- Discarded=0.03 cfs  0.153 af  Primary=2.62 cfs  0.214 af  Outflow=2.64 cfs  0.366 af

Pond WQI-2: Water Quality Inlet
- Inflow=2.34 cfs  0.191 af  Primary=2.34 cfs  0.191 af

Pond WQI-3: Water Quality Inlet
- Inflow=1.80 cfs  0.144 af  Primary=1.80 cfs  0.144 af

Total Runoff Area = 1.734 ac  Runoff Volume = 0.624 af  Average Runoff Depth = 4.32"
11.08% Pervious = 0.192 ac  88.92% Impervious = 1.542 ac
**Summary for Subcatchment S-1: Roof Runoff**

Runoff = 0.56 cfs @ 12.08 hrs, Volume= 0.045 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr Rainfall=4.80"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>* 5,177</td>
<td>98</td>
<td>Rooftop</td>
</tr>
<tr>
<td>5,177</td>
<td></td>
<td>Impervious Area</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, Minimum Tc</td>
</tr>
</tbody>
</table>

**Summary for Subcatchment S-10: Offsite Runoff**

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr Rainfall=4.80"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,101</td>
<td>80</td>
<td>&gt;75% Grass cover, Good, HSG D</td>
</tr>
<tr>
<td>1,354</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>6,455</td>
<td>84</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>5,101</td>
<td></td>
<td>Pervious Area</td>
</tr>
<tr>
<td>1,354</td>
<td></td>
<td>Impervious Area</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

**Summary for Subcatchment S-2: Tributary to WQ-1**

Runoff = 1.95 cfs @ 12.08 hrs, Volume= 0.150 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr Rainfall=4.80"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,509</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>16,104</td>
<td>98</td>
<td>Paved parking</td>
</tr>
<tr>
<td>18,613</td>
<td>95</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>2,509</td>
<td></td>
<td>Pervious Area</td>
</tr>
<tr>
<td>16,104</td>
<td></td>
<td>Impervious Area</td>
</tr>
<tr>
<td>Tc (min)</td>
<td>Length (feet)</td>
<td>Slope (ft/ft)</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>6.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Summary for Subcatchment S-3: Roof Runoff**

Runoff = 0.28 cfs @ 12.08 hrs, Volume = 0.023 af, Depth = 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs

Type III 24-hr 10Yr Rainfall = 4.80"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>* 2,642</td>
<td>98</td>
<td>Rooftop</td>
</tr>
<tr>
<td>2,642</td>
<td></td>
<td>Impervious Area</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, Minimum Tc</td>
</tr>
</tbody>
</table>

**Summary for Subcatchment S-4: Tributary to CB-1**

Runoff = 0.85 cfs @ 12.08 hrs, Volume = 0.067 af, Depth = 4.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs

Type III 24-hr 10Yr Rainfall = 4.80"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>385</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>7,530</td>
<td>98</td>
<td>Paved parking</td>
</tr>
<tr>
<td>7,915</td>
<td>97</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>385</td>
<td></td>
<td>Pervious Area</td>
</tr>
<tr>
<td>7,530</td>
<td></td>
<td>Impervious Area</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, Minimum Tc</td>
</tr>
</tbody>
</table>

**Summary for Subcatchment S-5: Tributary to CB-2**

Runoff = 0.64 cfs @ 12.08 hrs, Volume = 0.052 af, Depth = 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs

Type III 24-hr 10Yr Rainfall = 4.80"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,979</td>
<td>98</td>
<td>Paved parking</td>
</tr>
<tr>
<td>5,979</td>
<td></td>
<td>Impervious Area</td>
</tr>
</tbody>
</table>
Summary for Subcatchment S-6: Tributary to CB-3

Runoff = 0.88 cfs @ 12.08 hrs, Volume = 0.071 af, Depth = 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 10Yr Rainfall=4.80"

<table>
<thead>
<tr>
<th>Tc</th>
<th>Length</th>
<th>Slope</th>
<th>Velocity</th>
<th>Capacity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Summary for Subcatchment S-7: Tributary to CB-4

Runoff = 0.47 cfs @ 12.08 hrs, Volume = 0.038 af, Depth = 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 10Yr Rainfall=4.80"

<table>
<thead>
<tr>
<th>Tc</th>
<th>Length</th>
<th>Slope</th>
<th>Velocity</th>
<th>Capacity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, Minimum Tc</td>
</tr>
</tbody>
</table>

Summary for Subcatchment S-8: Canopy Runoff

Runoff = 0.40 cfs @ 12.08 hrs, Volume = 0.033 af, Depth = 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 10Yr Rainfall=4.80"

<table>
<thead>
<tr>
<th>Tc</th>
<th>Length</th>
<th>Slope</th>
<th>Velocity</th>
<th>Capacity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,152</td>
<td>98</td>
<td>Paved parking</td>
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<tr>
<td>8,152</td>
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<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tr>
<td>4,356</td>
<td>98</td>
<td>Paved parking</td>
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<td>4,356</td>
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<th>Area (sf)</th>
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<tr>
<td>* 3,732</td>
<td>98</td>
<td>Canopy</td>
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<td>3,732</td>
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<td>Impervious Area</td>
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</tbody>
</table>
Summary for Subcatchment S-9: Tributary to CB-5

Runoff = 1.34 cfs @ 12.08 hrs, Volume= 0.106 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10Yr Rainfall=4.80"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>12,128</td>
<td>98</td>
<td>Paved parking</td>
</tr>
<tr>
<td>376</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
</tr>
<tr>
<td>12,504</td>
<td>97</td>
<td>Weighted Average</td>
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<tr>
<td>376</td>
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<td>Pervious Area</td>
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<tr>
<td>12,128</td>
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<td>Impervious Area</td>
</tr>
</tbody>
</table>

Summary for Reach CB-1: Trench Drain

Inflow Area = 0.182 ac, 95.14% Impervious, Inflow Depth = 4.45" for 10Yr event
Inflow = 0.85 cfs @ 12.08 hrs, Volume= 0.067 af
Outflow = 0.85 cfs @ 12.08 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.22 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.01 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 12.78 cfs

12.0" Diameter Pipe, n= 0.013
Length= 14.0’ Slope= 0.1286 ′/′
Inlet Invert= 96.20', Outlet Invert= 94.40'
Summary for Reach CB-2: Catch Basin

Inflow Area = 0.137 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10Yr event
Inflow = 0.64 cfs @ 12.08 hrs, Volume= 0.052 af
Outflow = 0.64 cfs @ 12.09 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.33 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.42 fps, Avg. Travel Time= 0.2 min

Peak Storage= 3 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.92 cfs

12.0" Diameter Pipe, n= 0.013
Length= 21.0' Slope= 0.0190 '
Inlet Invert= 95.20', Outlet Invert= 94.80'

Summary for Reach CB-3: Catch Basin

Inflow Area = 0.187 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10Yr event
Inflow = 0.88 cfs @ 12.08 hrs, Volume= 0.071 af
Outflow = 0.88 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.28 fps, Min. Travel Time= 0.3 min
Avg. Velocity= 1.09 fps, Avg. Travel Time= 0.8 min

Peak Storage= 14 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.95 cfs

12.0" Diameter Pipe, n= 0.013
Length= 51.0' Slope= 0.0069 '
Inlet Invert= 95.20', Outlet Invert= 94.85'
Summary for Reach CB-4: Catch Basin

Inflow Area = 0.100 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10Yr event
Inflow = 0.47 cfs @ 12.08 hrs, Volume = 0.038 af
Outflow = 0.47 cfs @ 12.10 hrs, Volume = 0.038 af, Atten = 0%, Lag = 0.9 min

Routing by Stor-Ind+Trans method, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Max. Velocity = 2.46 fps, Min. Travel Time = 0.5 min
Avg. Velocity = 0.81 fps, Avg. Travel Time = 1.6 min

Peak Storage = 15 cf @ 12.09 hrs, Average Depth at Peak Storage = 0.29'
Bank-Full Depth = 1.00', Capacity at Bank-Full = 2.54 cfs

12.0" Diameter Pipe, n = 0.013
Length = 77.0' Slope = 0.0051 '
Inlet Invert = 97.65', Outlet Invert = 97.26'

Summary for Reach CB-5: Catch Basin

Inflow Area = 0.287 ac, 96.99% Impervious, Inflow Depth = 4.45" for 10Yr event
Inflow = 1.34 cfs @ 12.08 hrs, Volume = 0.106 af
Outflow = 1.34 cfs @ 12.09 hrs, Volume = 0.106 af, Atten = 0%, Lag = 0.1 min

Routing by Stor-Ind+Trans method, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Max. Velocity = 3.33 fps, Min. Travel Time = 0.1 min
Avg. Velocity = 1.12 fps, Avg. Travel Time = 0.2 min

Peak Storage = 6 cf @ 12.08 hrs, Average Depth at Peak Storage = 0.51'
Bank-Full Depth = 1.00', Capacity at Bank-Full = 2.60 cfs

12.0" Diameter Pipe, n = 0.013
Length = 15.0' Slope = 0.0053 '
Inlet Invert = 97.34', Outlet Invert = 97.26'
Summary for Reach P-1: 12" HDPE

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 4.52" for 10Yr event
Inflow = 2.34 cfs @ 12.10 hrs, Volume= 0.191 af
Outflow = 2.34 cfs @ 12.10 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.82 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.91 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 94.25', Outlet Invert= 94.00'

Summary for Reach P-2: 12" HDPE

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 4.52" for 10Yr event
Inflow = 2.35 cfs @ 12.10 hrs, Volume= 0.191 af
Outflow = 2.34 cfs @ 12.10 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.01 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 0.3 min

Peak Storage= 14 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.82 cfs

12.0" Diameter Pipe, n= 0.013
Length= 24.0' Slope= 0.0063 '/'
Inlet Invert= 94.40', Outlet Invert= 94.25'
Summary for Reach P-3: 12" HDPE

Inflow Area = 0.324 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10Yr event
Inflow = 1.52 cfs @ 12.09 hrs, Volume = 0.123 af
Outflow = 1.51 cfs @ 12.10 hrs, Volume = 0.123 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.40 fps, Min. Travel Time= 0.4 min
Avg. Velocity= 1.15 fps, Avg. Travel Time= 1.3 min

Peak Storage= 39 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.56 cfs

12.0" Diameter Pipe, n= 0.013
Length= 87.0' Slope= 0.0052 '
Inlet Invert= 94.85', Outlet Invert= 94.40'

Summary for Reach P-4: 12" HDPE

Inflow Area = 0.205 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10Yr event
Inflow = 0.96 cfs @ 12.08 hrs, Volume = 0.078 af
Outflow = 0.96 cfs @ 12.08 hrs, Volume = 0.078 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 11.18 fps, Min. Travel Time= 0.0 min
Avg. Velocity= 3.67 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 15.93 cfs

12.0" Diameter Pipe, n= 0.013
Length= 10.0' Slope= 0.2000 '
Inlet Invert= 96.00', Outlet Invert= 94.00'
Summary for Reach P-5: 12" HDPE

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 4.48" for 10Yr event
Inflow = 1.80 cfs @ 12.09 hrs, Volume= 0.144 af
Outflow = 1.80 cfs @ 12.09 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.49 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 0.1 min

Peak Storage= 5 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.52 cfs

12.0" Diameter Pipe, n= 0.013
Length= 10.0' Slope= 0.0050 '/'
Inlet Invert= 96.26', Outlet Invert= 96.21'

Summary for Reach P-7: 12" HDPE

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 4.48" for 10Yr event
Inflow = 1.80 cfs @ 12.09 hrs, Volume= 0.144 af
Outflow = 1.80 cfs @ 12.09 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.48 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 0.3 min

Peak Storage= 11 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.52 cfs

12.0" Diameter Pipe, n= 0.013
Length= 22.0' Slope= 0.0050 '/'
Inlet Invert= 97.21', Outlet Invert= 97.10'
Summary for Reach WQI-1: Water Quality Inlet

Inflow Area = 0.427 ac, 86.52% Impervious, Inflow Depth = 4.22" for 10Yr event
Inflow = 1.95 cfs @ 12.08 hrs, Volume= 0.150 af
Outflow = 1.94 cfs @ 12.09 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.61 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.24 fps, Avg. Travel Time= 0.5 min

Peak Storage= 20 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.58 cfs

12.0" Diameter Pipe, n= 0.013
Length= 38.0' Slope= 0.0053 '
Inlet Invert= 94.20', Outlet Invert= 94.00'

Summary for Pond DMH-1: Drain Manhole

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 4.52" for 10Yr event
Inflow = 2.35 cfs @ 12.10 hrs, Volume= 0.191 af
Primary = 2.35 cfs @ 12.10 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-2: Drain Manhole

Inflow Area = 0.324 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10Yr event
Inflow = 1.52 cfs @ 12.09 hrs, Volume= 0.123 af
Primary = 1.52 cfs @ 12.09 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-3: Drain Manhole

Inflow Area = 0.205 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10Yr event
Inflow = 0.96 cfs @ 12.08 hrs, Volume= 0.078 af
Primary = 0.96 cfs @ 12.08 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Summary for Pond DMH-4: Drain Manhole

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 4.48" for 10Yr event
Inflow = 1.80 cfs @ 12.09 hrs, Volume= 0.144 af
Primary = 1.80 cfs @ 12.09 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-5: Drain Manhole

Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 2.14" for 10Yr event
Inflow = 2.62 cfs @ 12.25 hrs, Volume= 0.214 af
Primary = 2.62 cfs @ 12.25 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond LS: Level Spreader

Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 2.14" for 10Yr event
Inflow = 2.62 cfs @ 12.25 hrs, Volume= 0.214 af
Outflow = 2.45 cfs @ 12.31 hrs, Volume= 0.197 af, Atten= 6%, Lag= 3.9 min
Discarded = 0.00 cfs @ 12.12 hrs, Volume= 0.015 af
Primary = 2.44 cfs @ 12.31 hrs, Volume= 0.181 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 98.38' @ 12.31 hrs Surf.Area= 492 sf Storage= 1,228 cf
Plug-Flow detention time= 180.6 min calculated for 0.197 af (92% of inflow)
Center-of-Mass det. time= 143.4 min (1,003.4 - 860.0 )

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>92.33'</td>
<td>1,352 cf</td>
<td><strong>6.00'W x 82.00'L x 7.00'H Prismatoid</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,444 cf Overall - 63 cf Embedded = 3,381 cf x 40.0% Voids</td>
</tr>
<tr>
<td>#2</td>
<td>94.33'</td>
<td>63 cf</td>
<td><strong>12.00'D x 80.00'L Horizontal Cylinder</strong> Inside #1</td>
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<tr>
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<td>1,415 cf Total Available Storage</td>
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<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
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<tbody>
<tr>
<td>#1</td>
<td>Discarded</td>
<td>92.33'</td>
<td><strong>0.270 in/hr Exfiltration over Surface area</strong></td>
</tr>
<tr>
<td>#2</td>
<td>Primary</td>
<td>98.33'</td>
<td><strong>82.0' long x 5.0' breadth Broad-Crested Rectangular Weir</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50</td>
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<tr>
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<td>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88</td>
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</table>

| Discarded OutFlow | Max=0.00 cfs @ 12.12 hrs HW=92.43' (Free Discharge) |
|                   | ↑=1=Exfiltration (Exfiltration Controls 0.00 cfs) |

| Primary OutFlow   | Max=2.06 cfs @ 12.31 hrs HW=98.38' (Free Discharge) |
|                   | ↑=2=Broad-Crested Rectangular Weir (Weir Controls 2.06 cfs @ 0.52 fps) |
Summary for Pond SRS-1: Subsurface Recharge System

Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 4.42” for 10Yr event
Inflow = 5.52 cfs @ 12.09 hrs, Volume= 0.442 af
Outflow = 2.64 cfs @ 12.25 hrs, Volume= 0.366 af, Atten= 52%, Lag= 9.3 min
Discarded = 0.03 cfs @ 3.85 hrs, Volume= 0.153 af
Primary = 2.62 cfs @ 12.25 hrs, Volume= 0.214 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 96.48’ @ 12.25 hrs Surf.Area= 4,267 sf Storage= 9,158 cf

Plug-Flow detention time= 747.5 min calculated for 0.366 af (83% of inflow)
Center-of-Mass det. time= 677.9 min (1,435.7 - 757.8)

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>93.50’</td>
<td>2,964 cf</td>
<td>27.00’W x 114.50’L x 4.00’H Prismatoid</td>
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<td>12,366 cf Overall = 4,957 cf Embedded = 7,409 cf x 40.0% Voids</td>
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<tr>
<td>#2</td>
<td>94.00’</td>
<td>4,957 cf</td>
<td>52.6”W x 34.0”H x 7.50”L Cultec R-V8 x 74 Inside #1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4,700 cf Overall - 2,009 cf Embedded = 2,691 cf x 40.0% Voids</td>
</tr>
<tr>
<td>#3</td>
<td>93.50’</td>
<td>1,076 cf</td>
<td>25.00’W x 47.00’L x 4.00’H Prismatoid</td>
</tr>
<tr>
<td>#4</td>
<td>94.00’</td>
<td>2,009 cf</td>
<td>52.6”W x 34.0”H x 7.50”L Cultec R-V8 x 30 Inside #3</td>
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<tr>
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<td>11,006 cf Total Available Storage</td>
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Device Routing Invert Outlet Devices

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<th>Device</th>
<th>Inflow Area</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Discarded</td>
<td>93.50'</td>
<td>0.270 in/hr Exfiltration over Surface area</td>
</tr>
<tr>
<td>#2</td>
<td>Primary</td>
<td>96.00'</td>
<td>8.0” x 5.0’ long Culvert X 3.00</td>
</tr>
<tr>
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<td>RCP, rounded edge headwall, Ke= 0.100</td>
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<td>Outlet Invert= 95.50' S= 0.1000 '/' Cc= 0.900 n= 0.013</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.03 cfs @ 3.85 hrs HW=93.54’ (Free Discharge)
Primary OutFlow Max=2.62 cfs @ 12.25 hrs HW=96.48’ (Free Discharge)

Summary for Pond WQI-2: Water Quality Inlet

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 4.52” for 10Yr event
Inflow = 2.34 cfs @ 12.10 hrs, Volume= 0.191 af
Primary = 2.34 cfs @ 12.10 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond WQI-3: Water Quality Inlet

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 4.48” for 10Yr event
Inflow = 1.80 cfs @ 12.09 hrs, Volume= 0.144 af
Primary = 1.80 cfs @ 12.09 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S-1: Roof Runoff
- Runoff Area=5,177 sf 100.00% Impervious Runoff Depth=5.36"
  - Tc=6.0 min CN=98 Runoff=0.65 cfs 0.053 af

Subcatchment S-10: Offsite Runoff
- Runoff Area=6,455 sf 20.98% Impervious Runoff Depth=3.82"
  - Tc=6.0 min CN=84 Runoff=0.66 cfs 0.047 af

Subcatchment S-2: Tributary to WQ-1
- Runoff Area=18,613 sf 86.52% Impervious Runoff Depth=5.01"
  - Tc=6.0 min CN=95 Runoff=2.29 cfs 0.179 af

Subcatchment S-3: Roof Runoff
- Runoff Area=2,642 sf 100.00% Impervious Runoff Depth=5.36"
  - Tc=6.0 min CN=98 Runoff=0.33 cfs 0.027 af

Subcatchment S-4: Tributary to CB-1
- Runoff Area=7,915 sf 95.14% Impervious Runoff Depth=5.25"
  - Tc=6.0 min CN=97 Runoff=0.99 cfs 0.079 af

Subcatchment S-5: Tributary to CB-2
- Runoff Area=5,979 sf 100.00% Impervious Runoff Depth=5.36"
  - Tc=6.0 min CN=98 Runoff=0.75 cfs 0.061 af

Subcatchment S-6: Tributary to CB-3
- Runoff Area=8,152 sf 100.00% Impervious Runoff Depth=5.36"
  - Tc=6.0 min CN=98 Runoff=1.03 cfs 0.084 af

Subcatchment S-7: Tributary to CB-4
- Runoff Area=4,356 sf 100.00% Impervious Runoff Depth=5.36"
  - Tc=6.0 min CN=98 Runoff=0.55 cfs 0.045 af

Subcatchment S-8: Canopy Runoff
- Runoff Area=3,732 sf 100.00% Impervious Runoff Depth=5.36"
  - Tc=6.0 min CN=98 Runoff=0.47 cfs 0.038 af

Subcatchment S-9: Tributary to CB-5
- Runoff Area=12,504 sf 96.99% Impervious Runoff Depth=5.25"
  - Tc=6.0 min CN=97 Runoff=1.57 cfs 0.125 af

Reach CB-1: Trench Drain
- Avg. Depth=0.19’ Max Vel=9.65 fps Inflow=0.99 cfs 0.079 af
  - D=12.0’ n=0.013 L=14.0’ S=0.1286 '/' Capacity=12.78 cfs Outflow=0.99 cfs 0.079 af

Reach CB-2: Catch Basin
- Avg. Depth=0.26’ Max Vel=4.53 fps Inflow=0.75 cfs 0.061 af
  - D=12.0’ n=0.013 L=21.0’ S=0.0190 '/' Capacity=4.92 cfs Outflow=0.75 cfs 0.061 af

Reach CB-3: Catch Basin
- Avg. Depth=0.41’ Max Vel=3.42 fps Inflow=1.03 cfs 0.084 af
  - D=12.0’ n=0.013 L=51.0’ S=0.0069 '/' Capacity=2.95 cfs Outflow=1.02 cfs 0.084 af

Reach CB-4: Catch Basin
- Avg. Depth=0.32’ Max Vel=2.58 fps Inflow=0.55 cfs 0.045 af
  - D=12.0’ n=0.013 L=77.0’ S=0.0051 '/' Capacity=2.54 cfs Outflow=0.55 cfs 0.045 af

Reach CB-5: Catch Basin
- Avg. Depth=0.56’ Max Vel=3.46 fps Inflow=1.57 cfs 0.125 af
  - D=12.0’ n=0.013 L=15.0’ S=0.0053 '/' Capacity=2.60 cfs Outflow=1.56 cfs 0.125 af

Reach P-1: 12” HDPE
- Avg. Depth=0.40’ Max Vel=9.20 fps Inflow=2.74 cfs 0.224 af
  - D=12.0’ n=0.013 L=5.0’ S=0.0500 '/' Capacity=7.97 cfs Outflow=2.74 cfs 0.224 af
Reach P-2: 12" HDPE

Avg. Depth=0.80'  Max Vel=4.09 fps  Inflow=2.75 cfs  0.224 af
D=12.0"  n=0.013  L=24.0'  S=0.0063 '/'  Capacity=2.82 cfs  Outflow=2.74 cfs  0.224 af

Reach P-3: 12" HDPE

Avg. Depth=0.61'  Max Vel=3.52 fps  Inflow=1.78 cfs  0.145 af
D=12.0"  n=0.013  L=87.0'  S=0.0052 '/'  Capacity=2.56 cfs  Outflow=1.77 cfs  0.145 af

Reach P-4: 12" HDPE

Avg. Depth=0.18'  Max Vel=11.70 fps  Inflow=1.12 cfs  0.091 af
D=12.0"  n=0.013  L=10.0'  S=0.2000 '/'  Capacity=15.93 cfs  Outflow=1.12 cfs  0.091 af

Reach P-5: 12" HDPE

Avg. Depth=0.70'  Max Vel=3.59 fps  Inflow=2.11 cfs  0.170 af
D=12.0"  n=0.013  L=24.0'  S=0.0050 '/'  Capacity=2.52 cfs  Outflow=2.10 cfs  0.170 af

Reach P-7: 12" HDPE

Avg. Depth=0.70'  Max Vel=3.59 fps  Inflow=2.10 cfs  0.170 af
D=12.0"  n=0.013  L=22.0'  S=0.0050 '/'  Capacity=2.52 cfs  Outflow=2.10 cfs  0.170 af

Reach WQI-1: Water Quality Inlet

Avg. Depth=0.73'  Max Vel=3.72 fps  Inflow=2.29 cfs  0.179 af
D=12.0"  n=0.013  L=38.0'  S=0.0053 '/'  Capacity=2.58 cfs  Outflow=2.29 cfs  0.179 af

Pond DMH-1: Drain Manhole

Inflow=2.75 cfs  0.224 af  Primary=2.75 cfs  0.224 af

Pond DMH-2: Drain Manhole

Inflow=1.78 cfs  0.145 af  Primary=1.78 cfs  0.145 af

Pond DMH-3: Drain Manhole

Inflow=1.12 cfs  0.091 af  Primary=1.12 cfs  0.091 af

Pond DMH-4: Drain Manhole

Inflow=2.11 cfs  0.170 af  Primary=2.11 cfs  0.170 af

Pond DMH-5: Drain Manhole

Inflow=4.40 cfs  0.292 af  Primary=4.40 cfs  0.292 af

Pond LS: Level Spreader

Peak Elev=98.41'  Storage=1,234 cf  Inflow=4.40 cfs  0.292 af
Discarded=0.00 cfs  0.015 af  Primary=4.31 cfs  0.259 af  Outflow=4.31 cfs  0.274 af

Pond SRS-1: Subsurface Recharge System

Peak Elev=96.74'  Storage=9,708 cf  Inflow=6.47 cfs  0.521 af
Discarded=0.03 cfs  0.154 af  Primary=4.40 cfs  0.292 af  Outflow=4.42 cfs  0.446 af

Pond WQI-2: Water Quality Inlet

Inflow=2.74 cfs  0.224 af  Primary=2.74 cfs  0.224 af

Pond WQI-3: Water Quality Inlet

Inflow=2.10 cfs  0.170 af  Primary=2.10 cfs  0.170 af

Total Runoff Area = 1.734 ac  Runoff Volume = 0.739 af  Average Runoff Depth = 5.11"
11.08% Pervious = 0.192 ac  88.92% Impervious = 1.542 ac
### Summary for Subcatchment S-1: Roof Runoff

Runoff = 0.65 cfs @ 12.08 hrs, Volume= 0.053 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

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<td>Direct Entry, Minimum Tc</td>
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</tbody>
</table>

### Summary for Subcatchment S-10: Offsite Runoff

Runoff = 0.66 cfs @ 12.09 hrs, Volume= 0.047 af, Depth= 3.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

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<th>Area (sf)</th>
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<tr>
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<td>Paved parking &amp; roofs</td>
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<td>6,455</td>
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<td></td>
<td>Direct Entry,</td>
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### Summary for Subcatchment S-2: Tributary to WQ-1

Runoff = 2.29 cfs @ 12.08 hrs, Volume= 0.179 af, Depth= 5.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

<table>
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<tr>
<th>Area (sf)</th>
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<tr>
<td>2,509</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
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<tr>
<td>16,104</td>
<td>98</td>
<td>Paved parking</td>
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<td>16,104</td>
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<td>Impervious Area</td>
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</table>
### Summary for Subcatchment S-3: Roof Runoff

Runoff $= 0.33 \text{ cfs} @ 12.08 \text{ hrs}$, Volume $= 0.027 \text{ af}$, Depth $= 5.36"$

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

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<td>Direct Entry, Minimum Tc</td>
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### Summary for Subcatchment S-4: Tributary to CB-1

Runoff $= 0.99 \text{ cfs} @ 12.08 \text{ hrs}$, Volume $= 0.079 \text{ af}$, Depth $= 5.25"$

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

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<td>Direct Entry, Minimum Tc</td>
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</table>

### Summary for Subcatchment S-5: Tributary to CB-2

Runoff $= 0.75 \text{ cfs} @ 12.08 \text{ hrs}$, Volume $= 0.061 \text{ af}$, Depth $= 5.36"$

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

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Type III 24-hr 25Yr Rainfall=5.60"

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**Summary for Subcatchment S-6: Tributary to CB-3**

Runoff = 1.03 cfs @ 12.08 hrs, Volume= 0.084 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

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<td></td>
<td>Direct Entry,</td>
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**Summary for Subcatchment S-7: Tributary to CB-4**

Runoff = 0.55 cfs @ 12.08 hrs, Volume= 0.045 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

<table>
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<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
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<tbody>
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<td></td>
<td></td>
<td>Direct Entry, Minimum Tc</td>
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</tbody>
</table>

**Summary for Subcatchment S-8: Canopy Runoff**

Runoff = 0.47 cfs @ 12.08 hrs, Volume= 0.038 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

<table>
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<tr>
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</table>
Summary for Subcatchment S-9: Tributary to CB-5

Runoff = 1.57 cfs @ 12.08 hrs, Volume= 0.125 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25Yr Rainfall=5.60"

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<tr>
<td>376</td>
<td>74</td>
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<tr>
<td>12,504</td>
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<td>Weighted Average</td>
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<tr>
<td>376</td>
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<td>Pervious Area</td>
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<tr>
<td>12,128</td>
<td></td>
<td>Impervious Area</td>
</tr>
</tbody>
</table>

Summary for Reach CB-1: Trench Drain

Inflow Area = 0.182 ac, 95.14% Impervious, Inflow Depth = 5.25" for 25Yr event

Inflow = 0.99 cfs @ 12.08 hrs, Volume= 0.079 af

Outflow = 0.99 cfs @ 12.08 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.65 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.16 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 12.78 cfs

12.0" Diameter Pipe, n= 0.013
Length= 14.0’ Slope= 0.1286 '/'
Inlet Invert= 96.20’, Outlet Invert= 94.40'
Summary for Reach CB-2: Catch Basin

Inflow Area = 0.137 ac, 100.00% Impervious, Inflow Depth = 5.36" for 25Yr event
Inflow = 0.75 cfs @ 12.08 hrs, Volume = 0.061 af
Outflow = 0.75 cfs @ 12.09 hrs, Volume = 0.061 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.53 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.49 fps, Avg. Travel Time= 0.2 min

Peak Storage= 3 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.92 cfs

12.0" Diameter Pipe, n= 0.013
Length= 21.0' Slope= 0.0190 '/'
Inlet Invert= 95.20', Outlet Invert= 94.80'

Summary for Reach CB-3: Catch Basin

Inflow Area = 0.187 ac, 100.00% Impervious, Inflow Depth = 5.36" for 25Yr event
Inflow = 1.03 cfs @ 12.08 hrs, Volume = 0.084 af
Outflow = 1.02 cfs @ 12.09 hrs, Volume = 0.084 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.42 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 0.7 min

Peak Storage= 15 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.95 cfs

12.0" Diameter Pipe, n= 0.013
Length= 51.0' Slope= 0.0069 '/'
Inlet Invert= 95.20', Outlet Invert= 94.85'
Summary for Reach CB-4: Catch Basin

Inflow Area = 0.100 ac, 100.00% Impervious, Inflow Depth = 5.36" for 25Yr event
Inflow = 0.55 cfs @ 12.08 hrs, Volume= 0.045 af
Outflow = 0.55 cfs @ 12.10 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.58 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 1.5 min

Peak Storage= 16 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.54 cfs

12.0" Diameter Pipe, n= 0.013
Length= 77.0' Slope= 0.0051 '/
Inlet Invert= 97.65', Outlet Invert= 97.26'

Summary for Reach CB-5: Catch Basin

Inflow Area = 0.287 ac, 96.99% Impervious, Inflow Depth = 5.25" for 25Yr event
Inflow = 1.57 cfs @ 12.08 hrs, Volume= 0.125 af
Outflow = 1.56 cfs @ 12.09 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.46 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.18 fps, Avg. Travel Time= 0.2 min

Peak Storage= 7 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.56'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.60 cfs

12.0" Diameter Pipe, n= 0.013
Length= 15.0' Slope= 0.0053 '/'
Inlet Invert= 97.34', Outlet Invert= 97.26'
Summary for Reach P-1: 12" HDPE

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 5.32" for 25Yr event
Inflow = 2.74 cfs @ 12.10 hrs, Volume= 0.224 af
Outflow = 2.74 cfs @ 12.10 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.20 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.06 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 94.25', Outlet Invert= 94.00'

Summary for Reach P-2: 12" HDPE

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 5.32" for 25Yr event
Inflow = 2.75 cfs @ 12.09 hrs, Volume= 0.224 af
Outflow = 2.74 cfs @ 12.10 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.09 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 0.3 min

Peak Storage= 16 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.80'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.82 cfs

12.0" Diameter Pipe, n= 0.013
Length= 24.0' Slope= 0.0063 '/'
Inlet Invert= 94.40', Outlet Invert= 94.25'
Summary for Reach P-3: 12" HDPE

Inflow Area = 0.324 ac, 100.00% Impervious, Inflow Depth = 5.36" for 25Yr event
Inflow = 1.78 cfs @ 12.09 hrs, Volume = 0.145 af
Outflow = 1.77 cfs @ 12.10 hrs, Volume = 0.145 af, Attenuation = 0%, Lag = 0.7 min

Routing by Stor-Ind+Trans method, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Max. Velocity = 3.52 fps, Min. Travel Time = 0.4 min
Avg. Velocity = 1.21 fps, Avg. Travel Time = 1.2 min

Peak Storage = 44 cf @ 12.09 hrs, Average Depth at Peak Storage = 0.61'
Bank-Full Depth = 1.00', Capacity at Bank-Full = 2.56 cfs

12.0" Diameter Pipe, n = 0.013
Length = 87.0' Slope = 0.0052 '
Inlet Invert = 94.85', Outlet Invert = 94.40'

Summary for Reach P-4: 12" HDPE

Inflow Area = 0.205 ac, 100.00% Impervious, Inflow Depth = 5.36" for 25Yr event
Inflow = 1.12 cfs @ 12.08 hrs, Volume = 0.091 af
Outflow = 1.12 cfs @ 12.08 hrs, Volume = 0.091 af, Attenuation = 0%, Lag = 0.0 min

Routing by Stor-Ind+Trans method, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Max. Velocity = 11.70 fps, Min. Travel Time = 0.0 min
Avg. Velocity = 3.85 fps, Avg. Travel Time = 0.0 min

Peak Storage = 1 cf @ 12.08 hrs, Average Depth at Peak Storage = 0.18'
Bank-Full Depth = 1.00', Capacity at Bank-Full = 15.93 cfs

12.0" Diameter Pipe, n = 0.013
Length = 10.0' Slope = 0.2000 '
Inlet Invert = 96.00', Outlet Invert = 94.00'
Summary for Reach P-5: 12" HDPE

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 5.28" for 25Yr event

Inflow = 2.11 cfs @ 12.09 hrs, Volume = 0.170 af
Outflow = 2.10 cfs @ 12.09 hrs, Volume = 0.170 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.59 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.25 fps, Avg. Travel Time= 0.1 min

Peak Storage= 6 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.52 cfs

12.0" Diameter Pipe, n= 0.013
Length= 10.0' Slope= 0.0050 '/'
Inlet Invert= 96.26', Outlet Invert= 96.21'

Summary for Reach P-7: 12" HDPE

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 5.28" for 25Yr event

Inflow = 2.10 cfs @ 12.09 hrs, Volume = 0.170 af
Outflow = 2.10 cfs @ 12.09 hrs, Volume = 0.170 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.59 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.25 fps, Avg. Travel Time= 0.3 min

Peak Storage= 13 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.52 cfs

12.0" Diameter Pipe, n= 0.013
Length= 22.0' Slope= 0.0050 '/'
Inlet Invert= 97.21', Outlet Invert= 97.10'
Summary for Reach WQI-1: Water Quality Inlet

Inflow Area = 0.427 ac, 86.52% Impervious, Inflow Depth = 5.01” for 25Yr event
Inflow = 2.29 cfs @ 12.08 hrs, Volume= 0.179 af
Outflow = 2.29 cfs @ 12.09 hrs, Volume= 0.179 af, Attenuation= 0%, Lag= 0.3 min

Routing by Stor-Ind + Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.72 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 0.5 min

Peak Storage= 23 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.58 cfs

12.0” Diameter Pipe, n= 0.013
Length= 38.0’ Slope= 0.0053 '/'
Inlet Invert= 94.20', Outlet Invert= 94.00'

Summary for Pond DMH-1: Drain Manhole

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 5.32” for 25Yr event
Inflow = 2.75 cfs @ 12.09 hrs, Volume= 0.224 af
Primary = 2.75 cfs @ 12.09 hrs, Volume= 0.224 af, Attenuation= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-2: Drain Manhole

Inflow Area = 0.324 ac, 100.00% Impervious, Inflow Depth = 5.36” for 25Yr event
Inflow = 1.78 cfs @ 12.09 hrs, Volume= 0.145 af
Primary = 1.78 cfs @ 12.09 hrs, Volume= 0.145 af, Attenuation= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-3: Drain Manhole

Inflow Area = 0.205 ac, 100.00% Impervious, Inflow Depth = 5.36” for 25Yr event
Inflow = 1.12 cfs @ 12.08 hrs, Volume= 0.091 af
Primary = 1.12 cfs @ 12.08 hrs, Volume= 0.091 af, Attenuation= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
**Summary for Pond DMH-4: Drain Manhole**

- Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 5.28" for 25Yr event
- Inflow = 2.11 cfs @ 12.09 hrs, Volume= 0.170 af
- Primary = 2.11 cfs @ 12.09 hrs, Volume= 0.170 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond DMH-5: Drain Manhole**

- Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 2.92" for 25Yr event
- Inflow = 4.40 cfs @ 12.18 hrs, Volume= 0.292 af
- Primary = 4.40 cfs @ 12.18 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond LS: Level Spreader**

- Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 2.92" for 25Yr event
- Inflow = 4.40 cfs @ 12.18 hrs, Volume= 0.292 af
- Outflow = 4.31 cfs @ 12.20 hrs, Volume= 0.274 af, Atten= 2%, Lag= 0.0 min
- Discarded = 0.00 cfs @ 12.04 hrs, Volume= 0.015 af
- Primary = 4.31 cfs @ 12.20 hrs, Volume= 0.259 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2

Peak Elev= 98.41' @ 12.20 hrs  Surf.Area= 492 sf  Storage= 1,234 cf

Plug-Flow detention time= 134.1 min calculated for 0.274 af (94% of inflow)
Center-of-Mass det. time= 103.1 min ( 948.8 - 845.7 )

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>92.33'</td>
<td>1,352 cf</td>
<td>6.00'W x 82.00'L x 7.00'H Prismatoid</td>
</tr>
<tr>
<td></td>
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<td>3,444 cf Overall - 63 cf Embedded = 3,381 cf x 40.0% Voids</td>
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<tr>
<td>#2</td>
<td>94.33'</td>
<td>63 cf</td>
<td>12.0'D x 80.00'L Horizontal Cylinder Inside #1</td>
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<tr>
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<td>1,415 cf Total Available Storage</td>
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<table>
<thead>
<tr>
<th>Device</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Discarded</td>
<td>92.33'</td>
<td>0.270 in/hr Exfiltration over Surface area</td>
</tr>
<tr>
<td>#2</td>
<td>Primary</td>
<td>98.33'</td>
<td>82.0' long x 5.0’ breadth Broad-Crested Rectangular Weir</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00</td>
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<td>2.50  3.00 3.50 4.00 4.50 5.00 5.50</td>
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<tr>
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<td>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.65 2.65 2.65 2.65</td>
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<tr>
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<td></td>
<td></td>
<td>2.67 2.66 2.68 2.70 2.74 2.79 2.88</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.00 cfs @ 12.04 hrs HW=92.43' (Free Discharge)

Primary OutFlow Max=4.08 cfs @ 12.20 hrs HW=98.41’ (Free Discharge)

1=Exfiltration (Exfiltration Controls 0.00 cfs)

2=Broad-Crested Rectangular Weir (Weir Controls 4.08 cfs @ 0.65 fps)
Summary for Pond SRS-1: Subsurface Recharge System

Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 5.22” for 25Yr event
Inflow = 6.47 cfs @ 12.09 hrs, Volume= 0.521 af
Outflow = 4.42 cfs @ 12.18 hrs, Volume= 0.446 af, Atten= 32%, Lag= 5.0 min
Discarded = 0.03 cfs @ 3.27 hrs, Volume= 0.154 af
Primary = 4.40 cfs @ 12.18 hrs, Volume= 0.292 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 96.74’ @ 12.18 hrs Surf.Area= 4,267 sf Storage= 9,708 cf

Plug-Flow detention time= 631.0 min calculated for 0.446 af (85% of inflow)
Center-of-Mass det. time= 567.8 min ( 1,322.4 - 754.7 )

<table>
<thead>
<tr>
<th>Volume</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>93.50’</td>
<td>2,964 cf</td>
<td>27.00”W x 114.50’L x 4.00’H Prismatoid</td>
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<tr>
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<td></td>
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<td>12,366 cf Overall - 4,957 cf Embedded = 7,409 cf x 40.0% Voids</td>
</tr>
<tr>
<td>#2</td>
<td>94.00’</td>
<td>4,957 cf</td>
<td>52.6”W x 34.0”H x 7.50’L Cultec R-V8 x 74 Inside #1</td>
</tr>
<tr>
<td>#3</td>
<td>93.50’</td>
<td>1,076 cf</td>
<td>25.00”W x 47.00’L x 4.00’H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4,700 cf Overall - 2,009 cf Embedded = 2,691 cf x 40.0% Voids</td>
</tr>
<tr>
<td>#4</td>
<td>94.00’</td>
<td>2,009 cf</td>
<td>52.6”W x 34.0”H x 7.50’L Cultec R-V8 x 30 Inside #3</td>
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<tr>
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<td></td>
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<td>11,006 cf Total Available Storage</td>
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</table>

Device Routing Invert Outlet Devices

| #1     | Discarded | 93.50’ | 0.270 in/hr Exfiltration over Surface area |
| #2     | Primary   | 96.00’ | 8.0” x 5.0’ long Culvert X 3.00 |
|        |           |       | RCP, rounded edge headwall, Ke= 0.100 |
|        |           |       | Outlet Invert= 95.50’ S= 0.1000 ‘/’ Cc= 0.900 n= 0.013 |

Discharged OutFlow Max=0.03 cfs @ 3.27 hrs HW=93.54’ (Free Discharge)
Primary OutFlow Max=4.39 cfs @ 12.18 hrs HW=96.74’ (Free Discharge)

Summary for Pond WQI-2: Water Quality Inlet

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 5.32” for 25Yr event
Inflow = 2.74 cfs @ 12.10 hrs, Volume= 0.224 af
Primary = 2.74 cfs @ 12.10 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond WQI-3: Water Quality Inlet

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 5.28” for 25Yr event
Inflow = 2.10 cfs @ 12.09 hrs, Volume= 0.170 af
Primary = 2.10 cfs @ 12.09 hrs, Volume= 0.170 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points  
Runoff by SCS TR-20 method, UH=SCS  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<table>
<thead>
<tr>
<th>Subcatchment</th>
<th>Runoff Area</th>
<th>Impervious (%)</th>
<th>Runoff Depth</th>
<th>Tc (min)</th>
<th>CN</th>
<th>Runoff (cfs)</th>
<th>Af (af)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-1: Roof Runoff</td>
<td>5,177 sf</td>
<td>100.00%</td>
<td>6.76&quot;</td>
<td>6.0</td>
<td>98</td>
<td>0.82</td>
<td>0.067 af</td>
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<tr>
<td>S-10: Offsite Runoff</td>
<td>6,455 sf</td>
<td>20.98%</td>
<td>5.14&quot;</td>
<td>6.0</td>
<td>84</td>
<td>0.87</td>
<td>0.063 af</td>
</tr>
<tr>
<td>S-2: Tributary to WQ-1</td>
<td>18,613 sf</td>
<td>86.52%</td>
<td>6.41&quot;</td>
<td>6.0</td>
<td>95</td>
<td>2.89</td>
<td>0.228 af</td>
</tr>
<tr>
<td>S-3: Roof Runoff</td>
<td>2,642 sf</td>
<td>100.00%</td>
<td>6.76&quot;</td>
<td>6.0</td>
<td>98</td>
<td>0.42</td>
<td>0.034 af</td>
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<tr>
<td>S-4: Tributary to CB-1</td>
<td>7,915 sf</td>
<td>95.14%</td>
<td>6.64&quot;</td>
<td>6.0</td>
<td>97</td>
<td>1.24</td>
<td>0.101 af</td>
</tr>
<tr>
<td>S-5: Tributary to CB-2</td>
<td>5,979 sf</td>
<td>100.00%</td>
<td>6.76&quot;</td>
<td>6.0</td>
<td>98</td>
<td>0.94</td>
<td>0.077 af</td>
</tr>
<tr>
<td>S-6: Tributary to CB-3</td>
<td>8,152 sf</td>
<td>100.00%</td>
<td>6.76&quot;</td>
<td>6.0</td>
<td>98</td>
<td>1.29</td>
<td>0.105 af</td>
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<tr>
<td>S-7: Tributary to CB-4</td>
<td>4,356 sf</td>
<td>100.00%</td>
<td>6.76&quot;</td>
<td>6.0</td>
<td>98</td>
<td>0.69</td>
<td>0.056 af</td>
</tr>
<tr>
<td>S-8: Canopy Runoff</td>
<td>3,732 sf</td>
<td>100.00%</td>
<td>6.76&quot;</td>
<td>6.0</td>
<td>98</td>
<td>0.59</td>
<td>0.048 af</td>
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<tr>
<td>S-9: Tributary to CB-5</td>
<td>12,504 sf</td>
<td>96.99%</td>
<td>6.64&quot;</td>
<td>6.0</td>
<td>97</td>
<td>1.96</td>
<td>0.159 af</td>
</tr>
</tbody>
</table>

Reach CB-1: Trench Drain
- Avg. Depth=0.21'  Max Vel=10.32 fps  Inflow=1.24 cfs  0.101 af
- D=12.0"  n=0.013  L=14.0'  S=0.1286 '/'  Capacity=12.78 cfs  Outflow=1.24 cfs  0.101 af

Reach CB-2: Catch Basin
- Avg. Depth=0.30'  Max Vel=4.83 fps  Inflow=0.94 cfs  0.077 af
- D=12.0"  n=0.013  L=21.0'  S=0.0190 '/'  Capacity=4.92 cfs  Outflow=0.94 cfs  0.077 af

Reach CB-3: Catch Basin
- Avg. Depth=0.46'  Max Vel=3.63 fps  Inflow=1.29 cfs  0.105 af
- D=12.0"  n=0.013  L=51.0'  S=0.0069 '/'  Capacity=2.95 cfs  Outflow=1.28 cfs  0.105 af

Reach CB-4: Catch Basin
- Avg. Depth=0.36'  Max Vel=2.74 fps  Inflow=0.69 cfs  0.056 af
- D=12.0"  n=0.013  L=77.0'  S=0.0051 '/'  Capacity=2.54 cfs  Outflow=0.68 cfs  0.056 af

Reach CB-5: Catch Basin
- Avg. Depth=0.65'  Max Vel=3.64 fps  Inflow=1.96 cfs  0.159 af
- D=12.0"  n=0.013  L=15.0'  S=0.0053 '/'  Capacity=2.60 cfs  Outflow=1.96 cfs  0.159 af

Reach P-1: 12" HDPE
- Avg. Depth=0.42'  Max Vel=9.34 fps  Inflow=2.91 cfs  0.283 af
- D=12.0"  n=0.013  L=5.0'  S=0.0500 '/'  Capacity=7.97 cfs  Outflow=2.90 cfs  0.283 af
Reach P-2: 12" HDPE
Avg. Depth=1.00'  Max Vel=4.09 fps  Inflow=3.44 cfs  0.283 af
D=12.0"  n=0.013  L=24.0'  S=0.0063 '/'  Capacity=2.82 cfs  Outflow=2.91 cfs  0.283 af

Reach P-3: 12" HDPE
Avg. Depth=0.72'  Max Vel=3.67 fps  Inflow=2.22 cfs  0.183 af
D=12.0"  n=0.013  L=87.0'  S=0.0052 '/'  Capacity=2.56 cfs  Outflow=2.21 cfs  0.183 af

Reach P-4: 12" HDPE
Avg. Depth=0.20'  Max Vel=12.50 fps  Inflow=1.40 cfs  0.115 af
D=12.0"  n=0.013  L=10.0'  S=0.2000 '/'  Capacity=15.93 cfs  Outflow=1.40 cfs  0.115 af

Reach P-5: 12" HDPE
Avg. Depth=0.87'  Max Vel=3.66 fps  Inflow=2.64 cfs  0.215 af
D=12.0"  n=0.013  L=10.0'  S=0.0050 '/'  Capacity=2.52 cfs  Outflow=2.64 cfs  0.215 af

Reach P-7: 12" HDPE
Avg. Depth=0.87'  Max Vel=3.66 fps  Inflow=2.64 cfs  0.215 af
D=12.0"  n=0.013  L=22.0'  S=0.0050 '/'  Capacity=2.52 cfs  Outflow=2.64 cfs  0.215 af

Reach WQI-1: Water Quality Inlet
Avg. Depth=1.00'  Max Vel=3.75 fps  Inflow=2.89 cfs  0.228 af
D=12.0"  n=0.013  L=38.0'  S=0.0053 '/'  Capacity=2.58 cfs  Outflow=2.72 cfs  0.228 af

Pond DMH-1: Drain Manhole
Inflow=3.44 cfs  0.283 af  
Primary=3.44 cfs  0.283 af

Pond DMH-2: Drain Manhole
Inflow=2.22 cfs  0.183 af  
Primary=2.22 cfs  0.183 af

Pond DMH-3: Drain Manhole
Inflow=1.40 cfs  0.115 af  
Primary=1.40 cfs  0.115 af

Pond DMH-4: Drain Manhole
Inflow=2.64 cfs  0.215 af  
Primary=2.64 cfs  0.215 af

Pond DMH-5: Drain Manhole
Inflow=6.09 cfs  0.430 af  
Primary=6.09 cfs  0.430 af

Pond LS: Level Spreader
Peak Elev=98.43'  Storage=1,238 cf  
Discarded=0.00 cfs  0.015 af  
Primary=6.09 cfs  0.400 af  
Outflow=6.09 cfs  0.416 af

Pond SRS-1: Subsurface Recharge System
Peak Elev=97.12'  Storage=10,354 cf  
Discarded=0.03 cfs  0.155 af  
Primary=6.09 cfs  0.430 af  
Outflow=6.12 cfs  0.585 af

Pond WQI-2: Water Quality Inlet
Inflow=2.91 cfs  0.283 af  
Primary=2.91 cfs  0.283 af

Pond WQI-3: Water Quality Inlet
Inflow=2.64 cfs  0.215 af  
Primary=2.64 cfs  0.215 af

Total Runoff Area = 1.734 ac  
Runoff Volume = 0.940 af  
Average Runoff Depth = 6.50"  
11.08% Pervious = 0.192 ac  
88.92% Impervious = 1.542 ac
Summary for Subcatchment S-1: Roof Runoff

Runoff = 0.82 cfs @ 12.08 hrs, Volume = 0.067 af, Depth = 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 100yr Rainfall = 7.00"

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<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
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<td>98</td>
<td>Rooftop</td>
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<tr>
<td>5,177</td>
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<td>Impervious Area</td>
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<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
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<tbody>
<tr>
<td>6.0</td>
<td>Direct Entry, Minimum Tc</td>
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Summary for Subcatchment S-10: Offsite Runoff

Runoff = 0.87 cfs @ 12.09 hrs, Volume = 0.063 af, Depth = 5.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 100yr Rainfall = 7.00"

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<tr>
<th>Area (sf)</th>
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<td>80</td>
<td>&gt;75% Grass cover, Good, HSG D</td>
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<tr>
<td>1,354</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
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<tr>
<td>6,455</td>
<td>84</td>
<td>Weighted Average</td>
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<tr>
<td>5,101</td>
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<td>Pervious Area</td>
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<td>1,354</td>
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<td>Impervious Area</td>
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</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
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<tr>
<td>6.0</td>
<td>Direct Entry,</td>
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Summary for Subcatchment S-2: Tributary to WQ-1

Runoff = 2.89 cfs @ 12.08 hrs, Volume = 0.228 af, Depth = 6.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 100yr Rainfall = 7.00"

<table>
<thead>
<tr>
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<th>CN</th>
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<tbody>
<tr>
<td>2,509</td>
<td>74</td>
<td>&gt;75% Grass cover, Good, HSG C</td>
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<tr>
<td>16,104</td>
<td>98</td>
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<td>18,613</td>
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<td>Weighted Average</td>
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<td>16,104</td>
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<td>Impervious Area</td>
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</tbody>
</table>
Summary for Subcatchment S-3: Roof Runoff

Runoff = 0.42 cfs @ 12.08 hrs, Volume = 0.034 af, Depth = 6.76"

Summary for Subcatchment S-4: Tributary to CB-1

Runoff = 1.24 cfs @ 12.08 hrs, Volume = 0.101 af, Depth = 6.64"

Summary for Subcatchment S-5: Tributary to CB-2

Runoff = 0.94 cfs @ 12.08 hrs, Volume = 0.077 af, Depth = 6.76"
Summary for Subcatchment S-6: Tributary to CB-3

Runoff = 1.29 cfs @ 12.08 hrs, Volume = 0.105 af, Depth = 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 100yr Rainfall = 7.00"

<table>
<thead>
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<td>8,152</td>
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</tbody>
</table>

Summary for Subcatchment S-7: Tributary to CB-4

Runoff = 0.69 cfs @ 12.08 hrs, Volume = 0.056 af, Depth = 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 100yr Rainfall = 7.00"

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<thead>
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<td>Paved parking</td>
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<td>4,356</td>
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</table>

Summary for Subcatchment S-8: Canopy Runoff

Runoff = 0.59 cfs @ 12.08 hrs, Volume = 0.048 af, Depth = 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Type III 24-hr 100yr Rainfall = 7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<th>Description</th>
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<td>* 3,732</td>
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<td>Canopy</td>
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<td>Impervious Area</td>
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</table>
Type III 24-hr 100yr Rainfall=7.00"

Summary for Subcatchment S-9: Tributary to CB-5

Runoff = 1.96 cfs @ 12.08 hrs, Volume = 0.159 af, Depth = 6.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs

Type III 24-hr 100yr Rainfall=7.00"

Summary for Reach CB-1: Trench Drain

Inflow Area = 0.182 ac, 95.14% Impervious, Inflow Depth = 6.64" for 100yr event
Inflow = 1.24 cfs @ 12.08 hrs, Volume = 0.101 af
Outflow = 1.24 cfs @ 12.08 hrs, Volume = 0.101 af, Atten = 0%, Lag = 0.0 min

Routing by Stor-Ind+Trans method, Time Span = 0.00-72.00 hrs, dt = 0.01 hrs
Max. Velocity = 10.32 fps, Min. Travel Time = 0.0 min
Avg. Velocity = 3.38 fps, Avg. Travel Time = 0.1 min

Peak Storage = 2 cf @ 12.08 hrs, Average Depth at Peak Storage = 0.21'
Bank-Full Depth = 1.00', Capacity at Bank-Full = 12.78 cfs

12.0" Diameter Pipe, n = 0.013
Length = 14.0' Slope = 0.1286 '/'
Inlet Invert = 96.20', Outlet Invert = 94.40'
Summary for Reach CB-2: Catch Basin

Inflow Area = 0.137 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100yr event
Inflow = 0.94 cfs @ 12.08 hrs, Volume= 0.077 af
Outflow = 0.94 cfs @ 12.09 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.83 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.60 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 4.92 cfs

12.0" Diameter Pipe, n= 0.013
Length= 21.0’ Slope= 0.0190 '/'
Inlet Invert= 95.20', Outlet Invert= 94.80'

Summary for Reach CB-3: Catch Basin

Inflow Area = 0.187 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100yr event
Inflow = 1.29 cfs @ 12.08 hrs, Volume= 0.105 af
Outflow = 1.28 cfs @ 12.09 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.63 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 0.7 min

Peak Storage= 18 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.95 cfs

12.0" Diameter Pipe, n= 0.013
Length= 51.0’ Slope= 0.0069 '/'
Inlet Invert= 95.20', Outlet Invert= 94.85'
Summary for Reach CB-4: Catch Basin

Inflow Area = 0.100 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100yr event
Inflow = 0.69 cfs @ 12.08 hrs, Volume= 0.056 af
Outflow = 0.68 cfs @ 12.10 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.74 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 1.4 min

Peak Storage= 19 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.54 cfs

12.0" Diameter Pipe, n= 0.013
Length= 77.0' Slope= 0.0051 '
Inlet Invert= 97.65', Outlet Invert= 97.26'

Summary for Reach CB-5: Catch Basin

Inflow Area = 0.287 ac, 96.99% Impervious, Inflow Depth = 6.64" for 100yr event
Inflow = 1.96 cfs @ 12.08 hrs, Volume= 0.159 af
Outflow = 1.96 cfs @ 12.09 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.64 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 0.2 min

Peak Storage= 8 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.60 cfs

12.0" Diameter Pipe, n= 0.013
Length= 15.0' Slope= 0.0053 '
Inlet Invert= 97.34', Outlet Invert= 97.26'
Summary for Reach P-1: 12" HDPE

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 6.72" for 100yr event
Inflow = 2.91 cfs @ 12.05 hrs, Volume= 0.283 af
Outflow = 2.90 cfs @ 12.05 hrs, Volume= 0.283 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.34 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.28 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.05 hrs, Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 94.25', Outlet Invert= 94.00'

Summary for Reach P-2: 12" HDPE

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 6.72" for 100yr event
Inflow = 3.44 cfs @ 12.09 hrs, Volume= 0.283 af
Outflow = 2.91 cfs @ 12.05 hrs, Volume= 0.283 af, Atten= 16%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.09 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 0.3 min

Peak Storage= 19 cf @ 12.06 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.82 cfs

12.0" Diameter Pipe, n= 0.013
Length= 24.0' Slope= 0.0063 '/'
Inlet Invert= 94.40', Outlet Invert= 94.25'
Summary for Reach P-3: 12" HDPE

Inflow Area = 0.324 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100yr event
Inflow = 2.22 cfs @ 12.09 hrs, Volume= 0.183 af
Outflow = 2.21 cfs @ 12.10 hrs, Volume= 0.183 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.67 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.1 min

Peak Storage= 53 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.72'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.56 cfs

12.0" Diameter Pipe, n= 0.013
Length= 87.0' Slope= 0.0052 '/'
Inlet Invert= 94.85', Outlet Invert= 94.40'

Summary for Reach P-4: 12" HDPE

Inflow Area = 0.205 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100yr event
Inflow = 1.40 cfs @ 12.08 hrs, Volume= 0.115 af
Outflow = 1.40 cfs @ 12.08 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 12.50 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.13 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 15.93 cfs

12.0" Diameter Pipe, n= 0.013
Length= 10.0' Slope= 0.2000 '/'
Inlet Invert= 96.00', Outlet Invert= 94.40'
Summary for Reach P-5: 12" HDPE

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 6.67" for 100yr event
Inflow = 2.64 cfs @ 12.09 hrs, Volume= 0.215 af
Outflow = 2.64 cfs @ 12.09 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.66 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 0.1 min

Peak Storage= 7 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.52 cfs

12.0" Diameter Pipe, n= 0.013
Length= 10.0' Slope= 0.0050 '/'
Inlet Invert= 96.26', Outlet Invert= 96.21'

Summary for Reach P-7: 12" HDPE

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 6.67" for 100yr event
Inflow = 2.64 cfs @ 12.09 hrs, Volume= 0.215 af
Outflow = 2.64 cfs @ 12.09 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.66 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 0.3 min

Peak Storage= 16 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.52 cfs

12.0" Diameter Pipe, n= 0.013
Length= 22.0' Slope= 0.0050 '/'
Inlet Invert= 97.21', Outlet Invert= 97.10'
Summary for Reach WQI-1: Water Quality Inlet

Inflow Area = 0.427 ac, 86.52% Impervious, Inflow Depth = 6.41" for 100yr event
Inflow  = 2.89 cfs @ 12.08 hrs, Volume= 0.228 af
Outflow = 2.72 cfs @ 12.16 hrs, Volume= 0.228 af, Atten= 6%, Lag= 4.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.75 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.39 fps, Avg. Travel Time= 0.5 min

Peak Storage= 30 cf @ 12.07 hrs, Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.58 cfs

12.0" Diameter Pipe, n= 0.013
Length= 38.0' Slope= 0.0053 '/'
Inlet Invert= 94.20', Outlet Invert= 94.00'

Summary for Pond DMH-1: Drain Manhole

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 6.72" for 100yr event
Inflow  = 3.44 cfs @ 12.09 hrs, Volume= 0.283 af
Primary = 3.44 cfs @ 12.09 hrs, Volume= 0.283 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-2: Drain Manhole

Inflow Area = 0.324 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100yr event
Inflow  = 2.22 cfs @ 12.09 hrs, Volume= 0.183 af
Primary = 2.22 cfs @ 12.09 hrs, Volume= 0.183 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-3: Drain Manhole

Inflow Area = 0.205 ac, 100.00% Impervious, Inflow Depth = 6.76" for 100yr event
Inflow  = 1.40 cfs @ 12.08 hrs, Volume= 0.115 af
Primary = 1.40 cfs @ 12.08 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Summary for Pond DMH-4: Drain Manhole

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 6.67" for 100yr event
Inflow = 2.64 cfs @ 12.09 hrs, Volume= 0.215 af
Primary = 2.64 cfs @ 12.09 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond DMH-5: Drain Manhole

Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 4.31" for 100yr event
Inflow = 6.09 cfs @ 12.17 hrs, Volume= 0.430 af
Primary = 6.09 cfs @ 12.17 hrs, Volume= 0.430 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond LS: Level Spreader

Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 4.31" for 100yr event
Inflow = 6.09 cfs @ 12.17 hrs, Volume= 0.430 af
Outflow = 6.09 cfs @ 12.17 hrs, Volume= 0.416 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 11.84 hrs, Volume= 0.015 af
Primary = 6.09 cfs @ 12.17 hrs, Volume= 0.400 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 98.43’ @ 12.17 hrs Surf.Area= 492 sf Storage= 1,238 cf

Plug-Flow detention time= 85.6 min calculated for 0.415 af (97% of inflow)
Center-of-Mass det. time= 67.1 min ( 899.1 - 832.0 )

Device Routing Invert Outlet Devices
#1 Discarded 92.33' 0.270 in/hr Exfiltration over Surface area
#2 Primary 98.33' 82.0' long x 5.0' breadth Broad-Crested Rectangular Weir

Volume Invert Avail.Storage Storage Description
#1 92.33’ 1,352 cf 6.00'W x 82.00'L x 7.00'H Prismatoid
3,444 cf Overall - 63 cf Embedded = 3,381 cf x 40.0% Voids
#2 94.33’ 63 cf 12.0’D x 80.00’L Horizontal Cylinder Inside #1

1,415 cf Total Available Storage

Discarded OutFlow Max=0.00 cfs @ 11.84 hrs HW=92.40’ (Free Discharge)
↑−1=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=5.97 cfs @ 12.17 hrs HW=98.43’ (Free Discharge)
↑−2=Broad-Crested Rectangular Weir (Weir Controls 5.97 cfs @ 0.74 fps)
Summary for Pond SRS-1: Subsurface Recharge System

Inflow Area = 1.199 ac, 94.46% Impervious, Inflow Depth = 6.62" for 100yr event
Inflow = 7.28 cfs @ 12.06 hrs, Volume= 0.661 af
Outflow = 6.12 cfs @ 12.17 hrs, Volume= 0.585 af, Atten= 16%, Lag= 6.7 min
Discarded = 0.03 cfs @ 2.56 hrs, Volume= 0.155 af
Primary = 6.09 cfs @ 12.17 hrs, Volume= 0.430 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 97.12' @ 12.17 hrs  Surf.Area= 4,267 sf   Storage= 10,354 cf

Plug-Flow detention time= 502.1 min calculated for 0.585 af (88% of inflow)
Center-of-Mass det. time= 447.0 min ( 1,197.7 - 750.6 )

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<tr>
<td>#2</td>
<td>94.00'</td>
<td>4,957 cf</td>
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<tr>
<td>#3</td>
<td>93.50'</td>
<td>1,076 cf</td>
<td>4,700 cf Overall - 2,009 cf Embedded = 2,691 cf x 40.0% Voids</td>
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<tr>
<td>#4</td>
<td>94.00'</td>
<td>2,009 cf</td>
<td>52.6&quot;W x 34.0&quot;H x 7.50'L Cultec R-V8 x 30 Inside #3</td>
</tr>
</tbody>
</table>

11,006 cf Total Available Storage

Device Routing Invert Outlet Devices
#1 Discarded 93.50' 0.270 in/hr Exfiltration over Surface area
#2 Primary 96.00' 8.0" x 5.0' long Culvert X 3.00 RCP, rounded edge headwall, Ke= 0.100 Outlet Invert= 95.50' S= 0.1000 '/' Cc= 0.900 n= 0.013

Discarded OutFlow Max=0.03 cfs @ 2.56 hrs HW=93.54' (Free Discharge)
Primary OutFlow Max=6.09 cfs @ 12.17 hrs HW=97.12' (Free Discharge)

Summary for Pond WQI-2: Water Quality Inlet

Inflow Area = 0.506 ac, 98.25% Impervious, Inflow Depth = 6.72" for 100yr event
Inflow = 2.91 cfs @ 12.05 hrs, Volume= 0.283 af
Primary = 2.91 cfs @ 12.05 hrs, Volume= 0.283 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond WQI-3: Water Quality Inlet

Inflow Area = 0.387 ac, 97.77% Impervious, Inflow Depth = 6.67" for 100yr event
Inflow = 2.64 cfs @ 12.09 hrs, Volume= 0.215 af
Primary = 2.64 cfs @ 12.09 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
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<th>TSS Removal Rate</th>
<th>Starting TSS Load</th>
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<td>0.00</td>
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**Total TSS Removal = 80%**
CUSTOM SOIL
RESOURCE REPORT
Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

*Hydrologic soil group* is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007 (http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

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

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

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

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

*Depth* to the upper and lower boundaries of each layer is indicated.
Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:
Absence of an entry indicates that the data were not estimated. The asterisk (*) denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007 (http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

<table>
<thead>
<tr>
<th>Map unit symbol and soil name</th>
<th>Pct of map unit</th>
<th>Hydrologic group</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Pct Fragments</th>
<th>Percentage passing sieve number—</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
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<tr>
<td>305B—Paxton fine sandy loam, 3 to 8 percent slopes</td>
<td>80 C 0-8</td>
<td>Fine sandy loam, loam, gravelly sandy loam, gravelly fine sandy loam</td>
<td>SM, SC- SM</td>
<td>A-1, A-7, A-4</td>
<td>0- 0- 22</td>
<td>0- 0- 22</td>
<td>47-89- 89 44-89- 89 34-75- 85</td>
<td>18-43- 55</td>
<td>0-29 -41 NP-3 -11</td>
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Data Source Information

Soil Survey Area:  Bristol County, Massachusetts, Southern Part
Survey Area Data:  Version 12, Sep 7, 2018