DRAINAGE ANALYSIS REPORT

FOR

The Village at Barnstable (Phase 1)
Active Adult Apartments

Located at:
Communication Way
Hyannis, Massachusetts

Prepared for:
Greystar Group II, LLC, LLC
8405 Greensboro Drive
Suite 500
McLean, VA 22102

Prepared by:

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August 16, 2016
# The Village at Barnstable

## Drainage Analysis Report

August 16, 2016

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Supplemental Information & Calculations provided:

a. Groundwater Recharge Requirement Calculations

b. Water Quality Volume Requirement Calculations

c. Stormwater Operations and Maintenance Plan

d. Existing & Proposed Conditions Drainage Calculations (HydroCAD® Analysis - 24 hr.) for the following storm events:
   - 2-year Storm
   - 10-year Storm
   - 25-year Storm
   - 100-year Storm

e. Existing & Proposed Drainage Areas Plans
The Village at Barnstable

Drainage Analysis Report

1. Project Overview

The property comprises approximately 25.85 acres of land located off Communication Way and Independence Drive in the Independence Park area of Hyannis, Massachusetts. The project area comprises 10 existing vacant parcels located at 125-265 Communication Way, and is bordered by the Mid-Cape Highway (U.S. Rt. 6) to the north and Independence Drive to the south. Figure 1 shows the existing parcel locations on Communication Way, along with the Town Assessor’s Map and Parcel designations.

This project involves the proposed development of an age-restricted (55+) community containing 340 “Active Adult” apartments. This Drainage Report involves Phase 1 of this project, which includes 225 units (shown as Buildings #1 & #2). Also included is a multi-purpose “Amenities Building” which will house recreational and administrative functions, as well as other amenities such as a hair salon, spa, pool, fitness center, yoga studio and Club Room (bar/lounge). Parking will be provided via surface parking areas, surface garages, and an underground parking structure, located beneath Buildings #1 & #2. This project will be connected to municipal water & sewer services, which are located on the property.

The proposed design criteria for the management of stormwater runoff is in accordance with the “Low Impact Development” design techniques of the, good engineering practice, and Department of Environmental Protection (DEP) Stormwater Management Handbook.

2. Stormwater Management Analysis

Existing Conditions

As stated above, the project site consists of approximately 25.85 acres of land located off Communication Way. The existing project area is generally vacant land with an intermittent scrub oak and scrub pine forest. No wetland resources or mapped endangered species habitat exist in the project areas (see section 2.4 for additional information). The site topography is hummocky, rolling hills typical of this area, which ranges in surface elevation from approximately 44 – 136 ft. (generally south to north respectively).

The site is located along the edge of the boundary between the glacial terminal moraine and the glacial outwash plain. Based on test pits excavated on site, the
**Figure 1**
Barnstable Assessor’s Map Reference
Proposed Site for The Village at Barnstable
Hyannis, Massachusetts
(Not to scale)
subsurface soils are generally well-draining medium to course sands with intermittent gravel and occasional surface and subsurface boulders (Plymouth-Barnstable complex). Based on the USGS groundwater maps for the area* the estimated elevation of the groundwater table at this location is 22 ft. This provides a corresponding depth to groundwater from the surface ranging from 22 – 116 ft. across the site.

This project will be served by existing municipal water and sewer utilities that are presently located on the property. Some sections of these utilities will be either relocated or removed, since a section of Communication Way will be removed to accommodate the new site layout.

**General Soils Information**

The existing soil classifications and hydrologic soil groups for the site were obtained from the USDA Soil Conservation Service, Soil Survey of Barnstable County, Massachusetts, March 1993. The predominant soil types found within the limits of the drainage analysis are classified as the following:

1.) PvC (483C) – Plymouth – Barnstable complex, rolling, very bouldery  
2.) PvD (483D) – Plymouth – Barnstable complex, hilly, very bouldery

The Figure 2 Soils Map shows the locations of the soil map units for the project area.

Plymouth – Barnstable complex soils are typically found on hills and ridges on moraines, with stones and boulders covering 1 to 3 % of the surface. This soil is considered to be excessively drained, and or well drained, and exhibits a moderately rapid permeability rate. This permeability is rapid in the subsoil of the Plymouth soil and very rapid in the substratum. Available water capacity is low. Depth to the seasonal high water table is more than 6 feet. These soils exhibit a hydrological classification group “A”.

Test pit excavations were performed on the site to confirm the soil conditions. The locations of the 5 test pit excavations performed, along with test pits logs are shown on the project plans (locations on Sheet 2 of 18, and soil logs on Sheet 8 of 11 respectively).

**Methodology**

The methodology followed for the proposed design was to collect all runoff generated, treat it for total suspended solids (TSS) via rian garden areas or sediment forebays, or through biofiltration, and infiltrate it on-site in each of 2 infiltration basins. For the roof runoff, pre- treatment of TSS is not necessary, and runoff is piped directly into the subsurface infiltration systems (1,000 gal leaching pits surrounded by crushed stone).

The use of bio-filtration of stormwater prior to subsurface infiltration is designed with 3 methods: 1) Vegetated bio-filtration swales (located on the south/downslope side of the fire access roads on the south end of the site); 2) Rain gardens; and 3) Infiltration Basins (2 total). Use of these bio-filtration techniques is intended to comply with the Cape Cod Commission Regional Policy Plan (to the maximum extent possible).

The collection of all stormwater generated, and the infiltration/recharge on-site is intended to comply with the requirements of the Barnstable Zoning By-law, which allows up to 50% lot coverage (Lot Coverage definition) as follows:

“If all recharge is disposed of on site, no more than 50% of the total upland area of any lot shall be made impervious by the installation of buildings, structures, and paved surfaces.”

The total amount of lot coverage proposed is only 18.5%.

Stormwater runoff was evaluated for the 2-year, 10-year, 25-year, and 100-year, Type III, 24-hour storm events for the post-development conditions. These storms and their generated runoff was also evaluated using HydroCAD® stormwater modeling software. HydroCAD ® software combines USDA Soil Conservation Service hydrology and hydraulic techniques (commonly known as SCS TR-55 and TR-20) to generate hydrographs (calculations are provided in the supplemental section of this report). The rainfall amounts and runoff curve numbers used for calculating runoff for the 2-year, 10-year, 25-year and 100-year, 24-hr. storm events were obtained from the HydroCAD® Manual, and are summarized as follows:

<table>
<thead>
<tr>
<th>Rainfall</th>
<th>Curve Number (CN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impervious</td>
<td>98</td>
</tr>
<tr>
<td>2-yr 3.4 in</td>
<td>Grass (B) 39</td>
</tr>
<tr>
<td>10-yr 4.7 in</td>
<td>Woods (B) 55</td>
</tr>
<tr>
<td>25-yr 5.4 in</td>
<td>Dirt Road (A) 72</td>
</tr>
<tr>
<td>100-yr 7.0 in</td>
<td>Woods (C) 70</td>
</tr>
</tbody>
</table>

**Results of Stormwater Management Analysis**

The analysis and design of the stormwater management system was based on three main goals: 1) minimizing the effects of post-development stormwater peak rates of runoff; 2) providing TSS treatment (bio-filtration, etc.); and 3) recharging all stormwater generated through the use of rain gardens and infiltration basins.

Post-development drainage areas are shown on DRAINAGE AREAS PROPOSED CONDITIONS plan (attached). The proposed stormwater management system provides for the improvement of water quality through the design and
implementation of best management practices (BMPs) for the site. These BMPs include physical features such as deep sump catch basins, infiltration structures, bio-filtration swales, rain gardens, and infiltration basins, as well as routine maintenance procedures and other management techniques. The drainage system has been designed to treat the “first flush” of stormwater runoff (first half inch of runoff), to address water quality and recharge volume as required by the Zoning Bylaw for sites located within the Groundwater & Wellhead Protection Overlay Districts (GPOD/WPOD). All runoff from new impervious surfaces will be collected and infiltrated (after treatment) and act as recharge to the aquifer, as required in the GPOD/WPOD.

All systems have been sized to accommodate the 100-yr. storm event. This exceeds the 20-year design storm event required for Barnstable Site Plan Review (Section 240-103 I.). HydroCAD® stormwater modeling was used to design the sizing of all conveyance (catch basins & piping) and infiltration systems.

The Time of Concentration ($T_c$) in the HydroCAD® model was conservatively assumed as follows:

- For all roof runoff: $T_c = 1$ minute
- For all other drainage areas: $T_c = 5$ minutes

For ease in modeling the capacity of the BMPs to handle the accumulated runoff, the leaching pit systems were calculated to have a bottom assumed elevation of 100.00’, and the top elevation of 107.17 ft. (using the height of an H-20 1,000-gallon concrete leaching pit set on a 6-inch crushed stone base). These leaching pit systems have been designed to infiltrate the runoff from the 1) all roof areas, 2) the plaza deck patio areas in the back (south side) of each building, and 3) the pool and associated patio area. NOTE: The modeled peak and flood elevations of the rain gardens and infiltration basins are the actual design elevations as shown on Sheet 5, Grading & Drainage Plan.

The critical design element for this approach is the available volume to contain the storm event, to ensure that the stormwater elevation inside a rain garden or infiltration basin system does not overtop these BMPs and cause flooding. Therefore, modeling was performed to ensure that the 100-yr storm peak elevation did not exceed the available maximum elevation of the BMP (listed as “Flood Elevation” in the calculations). Pages 143-189 of the Proposed Conditions HydroCAD® calculation output contain the 100-yr. storm calculation results and details.

For an additional measure of conservative design, each of the 2 infiltration basins will also be outfitted with leaching pits (with crushed stone), with the inlets set 6-inches above the basin bottom. This is intended to provide an additional pathway for infiltration during extreme storm events. However, this additional infiltration capacity was not accounted for in the drainage modeling/calculations.
The table below summarizes the analysis of stormwater peak elevations and the available flood elevations for the drainage areas and BMPs, for the 100-yr. storm.

<table>
<thead>
<tr>
<th>Drainage Area (subcatchment area)</th>
<th>Description of BMP</th>
<th>Stormwater Peak Elevation (ft.)</th>
<th>Available Flood Elevation (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1S (Roof 1) To 1P</td>
<td>3-1,000 gal leaching pits</td>
<td>103.90</td>
<td>107.17</td>
</tr>
<tr>
<td>2S (Roof 2) To 2P</td>
<td>3-1,000 gal leaching pits</td>
<td>105.65</td>
<td>107.17</td>
</tr>
<tr>
<td>3S (Roof 3) To 3P</td>
<td>3-1,000 gal leaching pits</td>
<td>106.85</td>
<td>107.17</td>
</tr>
<tr>
<td>4S (Roof 4), 18S (Subarea 10) &amp; 19S (Subarea 11) To 4P</td>
<td>5-1,000 gal leaching pits</td>
<td>106.05</td>
<td>107.17</td>
</tr>
<tr>
<td>5S (Roof 5) To 5P</td>
<td>3-1,000 gal leaching pits</td>
<td>105.67</td>
<td>107.17</td>
</tr>
<tr>
<td>6S (Roof 6) To 6P</td>
<td>3-1,000 gal leaching pits</td>
<td>103.90</td>
<td>107.17</td>
</tr>
<tr>
<td>7S (Roof 7) To 7P</td>
<td>3-1,000 gal leaching pits</td>
<td>106.85</td>
<td>107.17</td>
</tr>
<tr>
<td>8S (Roof 8), 20S (Subarea 12) &amp; 21S (Subarea 13) To 8P</td>
<td>5-1,000 gal leaching pits</td>
<td>106.05</td>
<td>107.17</td>
</tr>
<tr>
<td>9S (Subarea 1), 10S (Subarea 2), 11S (Subarea 3) &amp; 12S (Subarea 4) to 12P</td>
<td>Catch basins &amp; piping to Infiltration Basin #1</td>
<td>61.40</td>
<td>61.50</td>
</tr>
<tr>
<td>13S (Subarea 5) &amp; 14S (Subarea 6) to 14P</td>
<td>Double CB-1 &amp; piping to Rain Garden #1</td>
<td>69.38</td>
<td>69.50</td>
</tr>
<tr>
<td>Flow from Rain Garden #1, 15S (Subarea 7) &amp; 16S (Subarea 8) to 16P</td>
<td>CB-1 &amp; piping to Rain Garden #2</td>
<td>58.68</td>
<td>59.50</td>
</tr>
<tr>
<td>Flow from Rain Garden #2 and 17S (subarea 9) to 17P</td>
<td>Piping from Rain Garden #2 &amp; Infiltration Basin #2</td>
<td>47.28</td>
<td>47.80</td>
</tr>
</tbody>
</table>

In summary, the results of the analysis indicate that controlling the peak rate of runoff for the 100-yr storm, and infiltration of the accumulated stormwater is attainable for post-development conditions. This design represents the full collection, treatment, and infiltration/recharge of all runoff generated on-site.


Various supplemental information, plans & calculations, referenced above, are attached. These include calculations for required recharge volume, water quality

4. References


SUPPLEMENTAL INFORMATION & CALCULATIONS
GROUNDWATER RECHARGE
&
WATER QUALITY VOLUME CALCULATIONS
GROUNDWATER RECHARGE VOLUME CALCULATIONS

THE VILLAGE AT BARNSTABLE
Hyannis, Massachusetts

Total Proposed Impervious Area for ALL Drainage Areas

- Total Impervious Area = 18.5% X 25.95 ac = 4.801 ac

\[
4.801 \text{ ac} \times 43,560 \text{sf/ac} = 209,153 \text{s.f.}
\]

Target Depth Factor (F)

\[
F \text{ (A-Soils)} = 0.60 \text{ inches of runoff}
\]

Groundwater Recharge Volume Required

\[
209,153 \text{ s.f.} \times (0.60 \text{ inches} \times 1/12) = 10,458 \text{ c.f. required}
\]

Groundwater Recharge Volume Provided

Volume Provided in ALL Proposed leaching pits up to the 100 Year Flood Elevation

- The total leaching pit 100 Year Storm storage volume is 17,350 c.f.

(refer to HydroCAD output of Ponds 1P, 2P, 3P, 4P, 5P, 6P, 7P & 8P starting on page 169 of the drainage report – Proposed Conditions)

Volume Provided in ALL Proposed Rain Gardens, and Infiltration Basins up to the 100 Year Flood Elevation

- The total Rain Garden & Infiltration Basin 100 Year Storm storage volume is 97,238 c.f.

(refer to HydroCAD output of Ponds 12P, 14P, 16P and 17PP starting on page 180 of the drainage report – Proposed Conditions)

Conclusion: Total PROPOSED recharge volume of 114,588 c.f. (i.e. 97,238 + 17,350) provided is greater than the REQUIRED recharge volume of 10,458 c.f. required; therefore OK.
WATER QUALITY VOLUME CALCULATIONS

THE VILLAGE AT BARNSTABLE
Hyannis, Massachusetts

Total Proposed Impervious Area for ALL Drainage Areas

- Total Impervious Area = 209,153 s.f.

Water Quality Volume (WQV) Required to be Treated

- Normal Discharge: Use 0.50" rule: WQV = 0.50" x I (s.f.)
- WQV = 0.50"/12" x 209,153 s.f. = 8,714 c.f. required

Water Quality Volume Provided

Total recharge volume provided includes (volume provided below the 100-yr flood volume):

- Rain Garden #1 volume = 8,165 c.f.
- Rain Garden #2 volume = 6,795 c.f.
- Sediment Forebay (Infiltration Basin #1) = 3,000 c.f.
- Total = 17,960 c.f.

Conclusion: Proposed water quality volume of 17,960 c.f. provided is greater than 8,714 c.f. required; therefore OK.
STORMWATER OPERATIONS & MAINTENANCE PLAN
The Village at Barnstable  
Hyannis, MA

Stormwater Operation and Maintenance Plan

The project site for the proposed The Village at Barnstable will be maintained by builder/developer until the facility operator (Active Adult apartments owner) accepts responsibility for the site after construction is completed. Overall, the site owner/operator will be responsible for the execution of this plan to provide the required inspections and maintenance of the drainage system, including during the construction period.

Owner and Responsible Party: Greystar GP II, LLC  
8405 Greensboro Drive, Suite 500  
McLean, VA  22102

Street Sweeping

Street sweeping of the parking lot areas shall occur after the spring thaw to avoid excessive accumulation of sediment into the drainage system. Street sweeping shall be accomplished twice per year at a minimum.

Deep Sump Catch Basins

Catch basins shall be inspected by the owner/operator on a quarterly basis or after a major storm event (10, 25, and 100-yr. storms). Catch basins sumps will be cleaned annually during the early spring or when the sediment rises to within half the available sump height (2 ft.) of the catch basin, whichever comes first. Sediment shall be removed off-site and disposed of in a proper manner by a licensed removal contractor.

Rain Gardens & Infiltration Basins

Once the system is operational, inspections of the basins should occur after every major storm event for the first few months. After the system is in operation, inspections should be every six months. Special attention should be directed towards the accumulation of sediment in the detention basins. Sediment removal from the detention basin will be accomplished as needed by means of a labor crew, using a skid
steer loader, or by hand to minimize site disturbance. Sediment shall be removed off-site and disposed of in a legal manner.

Inspections should also include checking for potential problems that include but are not limited to, settlement of the basin bottom or leaching pit structures, any forms of erosion, tree growth in the basin, and sediment accumulation. The side slopes, bottom, and area near the overflow spillway utilized for maintenance access should be mowed at least twice a year. Trash and debris accumulated within any portion of the basin should be removed at this time.

The maintenance of the Rain Gardens shall be performed with a labor crew and hand tools only to minimize site disturbance, and target select areas in need of sediment removal or pant replacement. Weeding of planting shall be performed monthly. Pruning of shrubs shall occur in the spring & late summer as needed. Accumulated trash and debris shall be removed on a daily or weekly basis as applicable.

Note: Any areas of dead vegetation found must be replaced, and any areas of erosion must be repaired and reseeding as needed.

**Construction Certification**

The engineer of record shall inspect stormwater system and shall certify in writing to the Cape Cod Commission staff that it has been constructed in accordance with the design shown on the plans entitled “Proposed Active Adult Apartment Community, Phase 1 Site Plans, 125-265 Communication Way, Hyannis, MA, dated August 11, 2016,” and consistent with the Stormwater Operation and Maintenance Plan.

**Owner’s O & M Responsibilities**

To assure that the requirements of this stormwater Operation and Maintenance Plan (O& M Plan) are met in all seasons and for the life of the project, the following provisions must be met:

1) the owner of record is responsible for the Stormwater System as outlined in the O& M Plan including inspection, maintenance and repairs.

2) the owner of record will authorize funds for inspection, maintenance and emergency repairs as needed. Funding will be released for any and all repairs of stormwater systems identified in the O&M Plan within 30 calendar days of an inspection by a certified engineer that reveals any defect.
3) the owner of record will keep records of stormwater inspections, maintenance and repairs on file at the project site, and such records will be made available to Cape Cod Commission staff or the Town of Barnstable within 14 business days upon written request.

4) The requirements of the O&M Plan, including those for on-going inspection, maintenance and repairs as outlined in this plan applies to all successors and assigns as long as the proposed project is in operation

Owner’s Endorsement

Signature: _________________________ Date: _________________
Daniel Lee, Senior Director, Development
Greystar GP II, LLC
HydroCAD® CALCULATIONS
For the
EXISTING CONDITIONS
## Area Listing (all nodes)

<table>
<thead>
<tr>
<th>Area</th>
<th>CN</th>
<th>Description</th>
<th>Description Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.135</td>
<td>30</td>
<td>Woods, Good, HSG A (DA-1, DA-2, DA-3)</td>
<td></td>
</tr>
<tr>
<td>8.831</td>
<td>49</td>
<td>50-75% Grass cover, Fair, HSG A (DA-1, DA-2, DA-3)</td>
<td></td>
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<tr>
<td>0.276</td>
<td>72</td>
<td>Dirt roads, HSG A (DA-1, DA-3)</td>
<td></td>
</tr>
<tr>
<td>0.471</td>
<td>98</td>
<td>Paved parking &amp; roofs (DA-1, DA-3)</td>
<td></td>
</tr>
<tr>
<td><strong>24.712</strong></td>
<td></td>
<td><strong>TOTAL AREA</strong></td>
<td></td>
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## Soil Listing (all nodes)

<table>
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<tr>
<th>Area (acres)</th>
<th>Soil Group</th>
<th>Subcatchment Numbers</th>
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<tr>
<td>24.241</td>
<td>HSG A</td>
<td>DA-1, DA-2, DA-3</td>
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<tr>
<td>0.000</td>
<td>HSG B</td>
<td></td>
</tr>
<tr>
<td>0.000</td>
<td>HSG C</td>
<td></td>
</tr>
<tr>
<td>0.000</td>
<td>HSG D</td>
<td></td>
</tr>
<tr>
<td>0.471</td>
<td>Other</td>
<td>DA-1, DA-3</td>
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<tr>
<td><strong>24.712</strong></td>
<td><strong>TOTAL AREA</strong></td>
<td></td>
</tr>
</tbody>
</table>
Existing Conditions

Type III 24-hr 2 YR Rainfall=3.40"


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HydroCAD® 9.10 s/n 06472 © 2010 HydroCAD Software Solutions LLC

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Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1
Runoff Area=448,608 sf  3.60% Impervious  Runoff Depth=0.07"
Flow Length=1,336’  Tc=22.8 min  CN=45  Runoff=0.09 cfs  0.059 af

Subcatchment DA-2: DA-2
Runoff Area=93,236 sf  0.00% Impervious  Runoff Depth=0.00"
Flow Length=444’  Tc=11.0 min  CN=36  Runoff=0.00 cfs  0.000 af

Subcatchment DA-3: DA-3
Runoff Area=534,626 sf  0.82% Impervious  Runoff Depth=0.00"
Flow Length=717’  Tc=14.2 min  CN=33  Runoff=0.00 cfs  0.000 af

Total Runoff Area = 24.712 ac  Runoff Volume = 0.059 af  Average Runoff Depth = 0.03"
98.09% Pervious = 24.241 ac  1.91% Impervious = 0.471 ac
Summary for Subcatchment DA-1: DA-1

Runoff  =  0.09 cfs @  15.18 hrs,  Volume=  0.059 af,  Depth=  0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<td>Paved parking &amp; roofs</td>
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<td>10,180</td>
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<td>Dirt roads, HSG A</td>
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<td>283,559</td>
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<td>50-75% Grass cover, Fair, HSG A</td>
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<td>138,704</td>
<td>30</td>
<td>Woods, Good, HSG A</td>
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<tr>
<td>448,608</td>
<td>45</td>
<td>Weighted Average</td>
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<td>432,443</td>
<td>96.40% Pervious Area</td>
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<tr>
<td>16,165</td>
<td>3.60% 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>
<th>Description</th>
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<td>12.0</td>
<td>50</td>
<td>0.0200</td>
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<td><strong>Sheet Flow, A-B</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Woods: Light underbrush</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>n= 0.400</td>
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<td>P2= 3.40&quot;</td>
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<td>1.3</td>
<td>117</td>
<td>0.0850</td>
<td>1.46</td>
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<td><strong>Shallow Concentrated Flow, B-C</strong></td>
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<td></td>
<td>Woodland</td>
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<td>Kv= 7.0 fps</td>
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Type III 24-hr 2 YR Rainfall=3.40"

Runoff Area=448,608 sf
Runoff Volume=0.059 af
Runoff Depth=0.07"
Flow Length=1,336'
Tc=22.8 min
CN=45

Subcatchment DA-1: DA-1

Hydrograph
Summary for Subcatchment DA-2: DA-2

[45] Hint: Runoff=Zero

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

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>27,132</td>
<td>49</td>
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<td>30</td>
<td>Woods, Good, HSG A</td>
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<tr>
<td>93,236</td>
<td>36</td>
<td>Weighted Average</td>
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<td>93,236</td>
<td>100.00%</td>
<td>Pervious Area</td>
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<th>Tc (min)</th>
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<th>Capacity (cfs)</th>
<th>Description</th>
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<tbody>
<tr>
<td>6.0</td>
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<td>0.14</td>
<td></td>
<td><strong>Sheet Flow, A-B</strong></td>
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<tr>
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<td>Grass: Dense n= 0.240 P2= 3.40&quot;</td>
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<td>Short Grass Pasture Kv= 7.0 fps</td>
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Subcatchment DA-2: DA-2

Hydrograph

Type III 24-hr 2 YR Rainfall=3.40"
Runoff Area=93,236 sf
Runoff Volume=0.000 af
Runoff Depth=0.00"
Flow Length=444'
Tc=11.0 min
CN=36
Summary for Subcatchment DA-3: DA-3

[45] Hint: Runoff=Zero

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

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
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<tr>
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<tbody>
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<tr>
<td>1,844</td>
<td>72</td>
<td>Dirt roads, HSG A</td>
</tr>
<tr>
<td>73,966</td>
<td>49</td>
<td>50-75% Grass cover, Fair, HSG A</td>
</tr>
<tr>
<td>454,451</td>
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<td>Woods, Good, HSG A</td>
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<tr>
<td>534,626</td>
<td>33</td>
<td>Weighted Average</td>
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<tr>
<td>530,261</td>
<td>99.18%</td>
<td>Pervious Area</td>
</tr>
<tr>
<td>4,365</td>
<td>0.82%</td>
<td>Impervious Area</td>
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<tr>
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<td>Woods: Light underbrush n= 0.400 P2= 3.40&quot;</td>
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<td>8.4</td>
<td>667</td>
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<td>Shallow Concentrated Flow, B-C</td>
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<td>Woodland Kv= 5.0 fps</td>
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14.2 717 Total

Subcatchment DA-3: DA-3

Hydrograph

Type III 24-hr 2 YR
Rainfall=3.40"
Runoff Area=534,626 sf
Runoff Volume=0.000 af
Runoff Depth=0.00"
Flow Length=717'
Tc=14.2 min
CN=33
Existing Conditions

Type III 24-hr 10 YR Rainfall=4.70"

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Page 9

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1
Runoff Area=448,608 sf  3.60% Impervious  Runoff Depth=0.35"
Flow Length=1,336’  Tc=22.8 min  CN=45  Runoff=1.16 cfs  0.302 af

Subcatchment DA-2: DA-2
Runoff Area=93,236 sf  0.00% Impervious  Runoff Depth=0.07"
Flow Length=444’  Tc=11.0 min  CN=36  Runoff=0.02 cfs  0.012 af

Subcatchment DA-3: DA-3
Runoff Area=534,626 sf  0.82% Impervious  Runoff Depth=0.02"
Flow Length=717’  Tc=14.2 min  CN=33  Runoff=0.03 cfs  0.020 af

Total Runoff Area = 24.712 ac  Runoff Volume = 0.334 af  Average Runoff Depth = 0.16"
98.09% Pervious = 24.241 ac  1.91% Impervious = 0.471 ac
Summary for Subcatchment DA-1: DA-1

Runoff = 1.16 cfs @ 12.59 hrs, Volume = 0.302 af, Depth = 0.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 10 YR Rainfall = 4.70"

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<tr>
<td>283,559</td>
<td>49</td>
<td>50-75% Grass cover, Fair, HSG A</td>
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<td>138,704</td>
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<td>Woods: Light underbrush n= 0.400 P2= 3.40&quot;</td>
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<tr>
<td>1.3</td>
<td>117</td>
<td>0.0850</td>
<td>1.46</td>
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<td>Shallow Concentrated Flow, B-C</td>
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<td>Woodland Kv= 5.0 fps</td>
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<tr>
<td>4.1</td>
<td>300</td>
<td>0.0300</td>
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<td>Shallow Concentrated Flow, C-D</td>
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<td></td>
<td></td>
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<td>Short Grass Pasture Kv= 7.0 fps</td>
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<tr>
<td>2.3</td>
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<td>Shallow Concentrated Flow, E-F</td>
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<td>Paved Kv= 20.3 fps</td>
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<td>Total</td>
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Subcatchment DA-1: DA-1

Type III 24-hr 10 YR
Rainfall=4.70"
Runoff Area=448,608 sf
Runoff Volume=0.302 af
Runoff Depth=0.35"
Flow Length=1,336'
Tc=22.8 min
CN=45
Summary for Subcatchment DA-2: DA-2

Runoff = 0.02 cfs @ 15.36 hrs, Volume= 0.012 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

---

Area (sf) CN Description
27,132 49 50-75% Grass cover, Fair, HSG A
66,104 30 Woods, Good, HSG A
93,236 36 Weighted Average
93,236 100.00% Pervious Area

Tc Length Slope Velocity Capacity Description
(min) (feet) (ft/ft) (ft/sec) (cfs)
6.0 50 0.0400 0.14 Sheet Flow, A-B
Grass: Dense n= 0.240 P2= 3.40"
2.2 170 0.0350 1.31 Shallow Concentrated Flow, B-C
Short Grass Pasture Kv= 7.0 fps
2.8 224 0.0700 1.32 Shallow Concentrated Flow, C-D
Woodland Kv= 5.0 fps

11.0 444 Total

Subcatchment DA-2: DA-2

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=93,236 sf
Runoff Volume=0.012 af
Runoff Depth=0.07"
Flow Length=444'
Tc=11.0 min
CN=36
Summary for Subcatchment DA-3: DA-3

Runoff = 0.03 cfs @ 21.66 hrs, Volume= 0.020 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

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<td>534,626</td>
<td>33</td>
<td>Weighted Average</td>
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<tr>
<td>530,261</td>
<td>99.18% Pervious Area</td>
<td></td>
</tr>
<tr>
<td>4,365</td>
<td>0.82% Impervious Area</td>
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<td>Woods: Light underbrush n= 0.400 P2= 3.40&quot;</td>
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<tr>
<td>8.4</td>
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<td>1.32</td>
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<td>Shallow Concentrated Flow, B-C</td>
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Subcatchment DA-3: DA-3

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=534,626 sf
Runoff Volume=0.020 af
Runoff Depth=0.02"
Flow Length=717'
Tc=14.2 min
CN=33
Existing Conditions
Type III 24-hr 25 YR Rainfall=5.40"

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1
Runoff Area=448,608 sf 3.60% Impervious Runoff Depth=0.58"
Flow Length=1,336’ Tc=22.8 min CN=45 Runoff=2.49 cfs 0.494 af

Subcatchment DA-2: DA-2
Runoff Area=93,236 sf 0.00% Impervious Runoff Depth=0.17"
Flow Length=444’ Tc=11.0 min CN=36 Runoff=0.05 cfs 0.031 af

Subcatchment DA-3: DA-3
Runoff Area=534,626 sf 0.82% Impervious Runoff Depth=0.08"
Flow Length=717’ Tc=14.2 min CN=33 Runoff=0.13 cfs 0.085 af

Total Runoff Area = 24.712 ac Runoff Volume = 0.610 af Average Runoff Depth = 0.30"
98.09% Pervious = 24.241 ac 1.91% Impervious = 0.471 ac
### Summary for Subcatchment DA-1: DA-1

Runoff = 2.49 cfs @ 12.52 hrs, Volume = 0.494 af, Depth = 0.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
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<th>Tc (min)</th>
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<th>Capacity (cfs)</th>
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<tr>
<td>12.0</td>
<td>50</td>
<td>0.0200</td>
<td>0.07</td>
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<td><strong>Sheet Flow, A-B</strong> Woods: Light underbrush n= 0.400 P2= 3.40&quot;</td>
</tr>
<tr>
<td>1.3</td>
<td>117</td>
<td>0.0850</td>
<td>1.46</td>
<td></td>
<td><strong>Shallow Concentrated Flow, B-C</strong> Woodland Kv= 5.0 fps</td>
</tr>
<tr>
<td>4.1</td>
<td>300</td>
<td>0.0300</td>
<td>1.21</td>
<td></td>
<td><strong>Shallow Concentrated Flow, C-D</strong> Short Grass Pasture Kv= 7.0 fps</td>
</tr>
<tr>
<td>2.3</td>
<td>207</td>
<td>0.0870</td>
<td>1.47</td>
<td></td>
<td><strong>Shallow Concentrated Flow, D-E</strong> Woodland Kv= 5.0 fps</td>
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<tr>
<td>3.1</td>
<td>662</td>
<td>0.0300</td>
<td>3.52</td>
<td></td>
<td><strong>Shallow Concentrated Flow, E-F</strong> Paved Kv= 20.3 fps</td>
</tr>
</tbody>
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22.8 1,336 Total
Existing Conditions

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Subcatchment DA-1: DA-1

Type III 24-hr 25 YR
Rainfall=5.40"

Runoff Area=448,608 sf
Runoff Volume=0.494 af
Runoff Depth=0.58"
Flow Length=1,336'
Tc=22.8 min
CN=45
Summary for Subcatchment DA-2: DA-2

Runoff = 0.05 cfs @ 13.79 hrs, Volume= 0.031 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<tr>
<td>6.0</td>
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<td>0.0400</td>
<td>0.14</td>
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<td><strong>Sheet Flow, A-B</strong></td>
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<tr>
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<td>Grass: Dense n= 0.240 P2= 3.40&quot;</td>
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<td>2.2</td>
<td>170</td>
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<td><strong>Shallow Concentrated Flow, B-C</strong></td>
</tr>
<tr>
<td></td>
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<td>Short Grass Pasture Kv= 7.0 fps</td>
<td></td>
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<tr>
<td>2.8</td>
<td>224</td>
<td>0.0700</td>
<td>1.32</td>
<td></td>
<td><strong>Shallow Concentrated Flow, C-D</strong></td>
</tr>
<tr>
<td></td>
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<td>Woodland Kv= 5.0 fps</td>
<td></td>
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</tr>
</tbody>
</table>

11.0 444 Total

Subcatchment DA-2: DA-2

**Type III 24-hr 25 YR Rainfall=5.40"**
Runoff Area=93,236 sf
Runoff Volume=0.031 af
Runoff Depth=0.17"
Flow Length=444'
Tc=11.0 min
CN=36
Summary for Subcatchment DA-3: DA-3

Runoff = 0.13 cfs @ 15.38 hrs, Volume= 0.085 af, Depth= 0.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
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<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>4,365</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>1,844</td>
<td>72</td>
<td>Dirt roads, HSG A</td>
</tr>
<tr>
<td>73,966</td>
<td>49</td>
<td>50-75% Grass cover, Fair, HSG A</td>
</tr>
<tr>
<td>454,451</td>
<td>30</td>
<td>Woods, Good, HSG A</td>
</tr>
<tr>
<td>534,626</td>
<td>33</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>530,261</td>
<td>99.18% Pervious Area</td>
<td></td>
</tr>
<tr>
<td>4,365</td>
<td>0.82% Impervious Area</td>
<td></td>
</tr>
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</table>

<table>
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<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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<td></td>
<td></td>
<td></td>
<td>Woods: Light underbrush n= 0.400 P2= 3.40&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.4</td>
<td>667</td>
<td>0.0700</td>
<td>1.32</td>
<td></td>
<td>Shallow Concentrated Flow, B-C</td>
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<tr>
<td></td>
<td></td>
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<td>Woodland Kv= 5.0 fps</td>
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<tr>
<td>14.2</td>
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<td>Total</td>
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Subcatchment DA-3: DA-3

Type III 24-hr 25 YR Rainfall=5.40"
Runoff Area=534,626 sf
Runoff Volume=0.085 af
Runoff Depth=0.08"
Flow Length=717'
Tc=14.2 min
CN=33
Existing Conditions

Type III 24-hr 100 YR Rainfall=7.00"

Existing Conditions
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Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1
Runoff Area=448,608 sf  3.60% Impervious  Runoff Depth=1.24"
Flow Length=1,336’  Tc=22.8 min  CN=45  Runoff=7.26 cfs  1.062 af

Subcatchment DA-2: DA-2
Runoff Area=93,236 sf  0.00% Impervious  Runoff Depth=0.56"
Flow Length=444’  Tc=11.0 min  CN=36  Runoff=0.48 cfs  0.100 af

Subcatchment DA-3: DA-3
Runoff Area=534,626 sf  0.82% Impervious  Runoff Depth=0.37"
Flow Length=717’  Tc=14.2 min  CN=33  Runoff=1.16 cfs  0.380 af

Total Runoff Area = 24.712 ac  Runoff Volume = 1.541 af  Average Runoff Depth = 0.75"
98.09% Pervious = 24.241 ac  1.91% Impervious = 0.471 ac
Summary for Subcatchment DA-1: DA-1

Runoff = 7.26 cfs @ 12.41 hrs, Volume= 1.062 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

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<th>Area (sf)</th>
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<td>Paved parking &amp; roofs</td>
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<tr>
<td>10,180</td>
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</tr>
<tr>
<td>283,559</td>
<td>49</td>
<td>50-75% Grass cover, Fair, HSG A</td>
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<tr>
<td>138,704</td>
<td>30</td>
<td>Woods, Good, HSG A</td>
</tr>
<tr>
<td>448,608</td>
<td>45</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>432,443</td>
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<td>96.40% Pervious Area</td>
</tr>
<tr>
<td>16,165</td>
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<td>3.60% Impervious Area</td>
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<table>
<thead>
<tr>
<th>Tc (min)</th>
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<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
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<td>Sheet Flow, A-B</td>
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<td></td>
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<td></td>
<td>Woods: Light underbrush n= 0.400 P2= 3.40&quot;</td>
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<td></td>
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<tr>
<td>1.3</td>
<td>117</td>
<td>0.0850</td>
<td>1.46</td>
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<td>Shallow Concentrated Flow, B-C</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Woodland Kv= 5.0 fps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>300</td>
<td>0.0300</td>
<td>1.21</td>
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<td>Shallow Concentrated Flow, C-D</td>
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<td>Short Grass Pasture Kv= 7.0 fps</td>
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<td>2.3</td>
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<td>Woodland Kv= 5.0 fps</td>
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<tr>
<td>3.1</td>
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<tr>
<td>22.8</td>
<td>1,336</td>
<td>Total</td>
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</tr>
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</table>
Subcatchment DA-1: DA-1

Type III 24-hr 100 YR Rainfall=7.00"
Runoff Area=448,608 sf
Runoff Volume=1.062 af
Runoff Depth=1.24"
Flow Length=1,336'
Tc=22.8 min
CN=45
Summary for Subcatchment DA-2: DA-2

Runoff = 0.48 cfs @ 12.41 hrs, Volume= 0.100 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>27,132</td>
<td>49</td>
<td>50-75% Grass cover, Fair, HSG A</td>
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<tr>
<td>66,104</td>
<td>30</td>
<td>Woods, Good, HSG A</td>
</tr>
<tr>
<td>93,236</td>
<td>36</td>
<td>Weighted Average</td>
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<tr>
<td>93,236</td>
<td>100.00% Pervious Area</td>
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<table>
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<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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<td>Sheet Flow, A-B</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Grass: Dense n= 0.240 P2= 3.40&quot;</td>
</tr>
<tr>
<td>2.2</td>
<td>170</td>
<td>0.0350</td>
<td>1.31</td>
<td></td>
<td>Shallow Concentrated Flow, B-C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Short Grass Pasture Kv= 7.0 fps</td>
</tr>
<tr>
<td>2.8</td>
<td>224</td>
<td>0.0700</td>
<td>1.32</td>
<td></td>
<td>Shallow Concentrated Flow, C-D</td>
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<tr>
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<td>Woodland Kv= 5.0 fps</td>
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<tr>
<td>11.0</td>
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<td>Total</td>
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Subcatchment DA-2: DA-2

Type III 24-hr 100 YR Rainfall=7.00"
Runoff Area=93,236 sf
Runoff Volume=0.100 af
Runoff Depth=0.56"
Flow Length=444'
Tc=11.0 min
CN=36
Summary for Subcatchment DA-3: DA-3

Runoff = 1.16 cfs @ 12.54 hrs, Volume= 0.380 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,365</td>
<td>98</td>
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</tr>
<tr>
<td>1,844</td>
<td>72</td>
<td>Dirt roads, HSG A</td>
</tr>
<tr>
<td>73,966</td>
<td>49</td>
<td>50-75% Grass cover, Fair, HSG A</td>
</tr>
<tr>
<td>454,451</td>
<td>30</td>
<td>Woods, Good, HSG A</td>
</tr>
<tr>
<td>534,626</td>
<td>33</td>
<td>Weighted Average</td>
</tr>
<tr>
<td>530,261</td>
<td></td>
<td>99.18% Pervious Area</td>
</tr>
<tr>
<td>4,365</td>
<td></td>
<td>0.82% 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>5.8</td>
<td>50</td>
<td>0.1200</td>
<td>0.14</td>
<td></td>
<td>Sheet Flow, A-B</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Woods: Light underbrush n= 0.400</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>P2= 3.40&quot;</td>
</tr>
<tr>
<td>8.4</td>
<td>667</td>
<td>0.0700</td>
<td>1.32</td>
<td></td>
<td>Shallow Concentrated Flow, B-C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Woodland    Kv= 5.0 fps</td>
</tr>
</tbody>
</table>

Subcatchment DA-3: DA-3

Type III 24-hr 100 YR Rainfall=7.00"
Runoff Area=534,626 sf
Runoff Volume=0.380 af
Runoff Depth=0.37"
Flow Length=717'
Tc=14.2 min
CN=33
HydroCAD® CALCULATIONS
For the
PROPOSED CONDITIONS
Proposed Conditions

Type III 24-hr 2 YR Rainfall=3.40"

Prepared by Pesce Engineering & Associates

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8/14/2016

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: roof 1
  Runoff Area=7,345 sf  Runoff Depth=3.17”
  Tc=1.0 min  CN=98  Runoff=0.62 cfs  0.044 af

Subcatchment 2S: roof 2
  Runoff Area=9,649 sf  Runoff Depth=3.17”
  Tc=1.0 min  CN=98  Runoff=0.82 cfs  0.058 af

Subcatchment 3S: roof 3
  Runoff Area=11,171 sf  Runoff Depth=3.17”
  Tc=1.0 min  CN=98  Runoff=0.94 cfs  0.068 af

Subcatchment 4S: roof 4
  Runoff Area=13,473 sf  Runoff Depth=3.17”
  Tc=1.0 min  CN=98  Runoff=1.14 cfs  0.082 af

Subcatchment 5S: roof 5
  Runoff Area=9,681 sf  Runoff Depth=3.17”
  Tc=1.0 min  CN=98  Runoff=0.82 cfs  0.059 af

Subcatchment 6S: roof 6
  Runoff Area=7,345 sf  Runoff Depth=3.17”
  Tc=1.0 min  CN=98  Runoff=0.62 cfs  0.044 af

Subcatchment 7S: roof 7
  Runoff Area=11,171 sf  Runoff Depth=3.17”
  Tc=1.0 min  CN=98  Runoff=0.94 cfs  0.068 af

Subcatchment 8S: roof 8
  Runoff Area=13,450 sf  Runoff Depth=3.17”
  Tc=1.0 min  CN=98  Runoff=1.14 cfs  0.081 af

Subcatchment 9S: subarea 1
  Runoff Area=61,212 sf  Runoff Depth=0.75”
  Tc=5.0 min  CN=66  Runoff=1.05 cfs  0.087 af

Subcatchment 10S: subarea 2
  Runoff Area=32,260 sf  Runoff Depth=0.28”
  Tc=5.0 min  CN=54  Runoff=0.09 cfs  0.017 af

Subcatchment 11S: subarea 3
  Runoff Area=21,579 sf  Runoff Depth=0.57”
  Tc=5.0 min  CN=62  Runoff=0.25 cfs  0.024 af

Subcatchment 12S: subarea 4
  Runoff Area=35,714 sf  Runoff Depth=0.07”
  Tc=5.0 min  CN=45  Runoff=0.01 cfs  0.005 af

Subcatchment 13S: subarea 5
  Runoff Area=150,706 sf  Runoff Depth=0.25”
  Tc=5.0 min  CN=53  Runoff=0.35 cfs  0.073 af

Subcatchment 14S: subarea 6
  Runoff Area=14,241 sf  Runoff Depth=0.03”
  Tc=5.0 min  CN=42  Runoff=0.00 cfs  0.001 af

Subcatchment 15S: subarea 7
  Runoff Area=16,875 sf  Runoff Depth=0.31”
  Tc=5.0 min  CN=55  Runoff=0.06 cfs  0.010 af
Proposed Conditions

Type III 24-hr 2 YR Rainfall=3.40"

Prepared by Pesce Engineering & Associates

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Subcatchment 16S: subarea 8
- Runoff Area=9,535 sf  
  Runoff Depth=0.00"  
  Tc=5.0 min  
  CN=39  
  Runoff=0.00 cfs 0.000 af

Subcatchment 17S: subarea 9
- Runoff Area=270,318 sf  
  Runoff Depth=0.35"  
  Tc=5.0 min  
  CN=56  
  Runoff=1.09 cfs 0.179 af

Subcatchment 18S: subarea 10
- Runoff Area=8,178 sf  
  Runoff Depth=0.95"  
  Tc=1.0 min  
  CN=70  
  Runoff=0.21 cfs 0.015 af

Subcatchment 19S: subarea 11
- Runoff Area=7,199 sf  
  Runoff Depth=0.31"  
  Tc=1.0 min  
  CN=55  
  Runoff=0.02 cfs 0.004 af

Subcatchment 20S: subarea 12
- Runoff Area=8,178 sf  
  Runoff Depth=0.95"  
  Tc=1.0 min  
  CN=70  
  Runoff=0.21 cfs 0.015 af

Subcatchment 21S: subarea 13
- Runoff Area=9,535 sf  
  Runoff Depth=0.00"  
  Tc=5.0 min  
  CN=39  
  Runoff=0.00 cfs 0.000 af

Reach 1R: dmh 2 to dmh 3
- Peak Depth=0.19'  
  Max Vel=7.1 fps  
  Inflow=1.10 cfs 0.105 af

  D=24.0"  
  n=0.013  
  L=136.0'  
  S=0.0625 '/'  
  Capacity=56.56 cfs  
  Outflow=1.10 cfs 0.105 af

Reach 2R: dmh 3 to fes 5
- Peak Depth=0.36'  
  Max Vel=3.6 fps  
  Inflow=1.35 cfs 0.128 af

  D=24.0"  
  n=0.013  
  L=107.0'  
  S=0.0075 '/'  
  Capacity=19.56 cfs  
  Outflow=1.35 cfs 0.128 af

Pond 1P: 3-1000 Gal. Leach. Pits
- Peak Elev=101.19'  
  Storage=261 cf  
  Inflow=0.62 cfs 0.044 af

  Outflow=0.20 cfs 0.045 af

Pond 2P: 3-1000 Gal. Leach. Pits
- Peak Elev=101.93'  
  Storage=440 cf  
  Inflow=0.82 cfs 0.058 af

  Outflow=0.23 cfs 0.059 af

Pond 3P: 3-1000 Gal. Leach. Pits
- Peak Elev=102.45'  
  Storage=565 cf  
  Inflow=0.94 cfs 0.068 af

  Outflow=0.25 cfs 0.068 af

Pond 4P: 5-1000 Gal. Leach. Pits (18'x58')
- Peak Elev=101.28'  
  Storage=599 cf  
  Inflow=1.36 cfs 0.101 af

  Outflow=0.43 cfs 0.101 af

Pond 5P: 3-1000 Gal. Leach. Pits
- Peak Elev=101.94'  
  Storage=442 cf  
  Inflow=0.82 cfs 0.059 af

  Outflow=0.23 cfs 0.059 af

Pond 6P: 3-1000 Gal. Leach. Pits
- Peak Elev=101.19'  
  Storage=261 cf  
  Inflow=0.62 cfs 0.044 af

  Outflow=0.20 cfs 0.045 af

Pond 7P: 3-1000 Gal. Leach. Pits
- Peak Elev=102.45'  
  Storage=565 cf  
  Inflow=0.94 cfs 0.068 af

  Outflow=0.25 cfs 0.068 af

Pond 8P: 5-1000 Gal. Leach. Pits (18'x58')
- Peak Elev=101.27'  
  Storage=598 cf  
  Inflow=1.35 cfs 0.101 af

  Outflow=0.43 cfs 0.101 af
Proposed Conditions

Type III 24-hr 2 YR Rainfall=3.40"

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Pond 9P: dcbn-2

Peak Elev=69.46’ Inflow=1.05 cfs 0.087 af
18.0” x 188.0’ Culvert Outflow=1.05 cfs 0.087 af

Pond 10P: cbn-2

Peak Elev=70.14’ Inflow=0.09 cfs 0.017 af
12.0” x 17.0’ Culvert Outflow=0.09 cfs 0.017 af

Pond 11P: cbn-3

Peak Elev=59.74’ Inflow=0.25 cfs 0.024 af
12.0” x 56.0’ Culvert Outflow=0.25 cfs 0.024 af

Pond 12P: infiltration basin 1

Peak Elev=58.31’ Storage=3,456 cf Inflow=1.35 cfs 0.133 af
Discarded=0.06 cfs 0.118 af Secondary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.118 af

Pond 13P: dcbn-1

Peak Elev=69.26’ Inflow=0.35 cfs 0.073 af
18.0” x 193.0’ Culvert Outflow=0.35 cfs 0.073 af

Pond 14P: rain garden 1

Peak Elev=66.68’ Storage=1,212 cf Inflow=0.35 cfs 0.073 af
Primary=0.10 cfs 0.053 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.053 af

Pond 15P: cbn-1

Peak Elev=59.61’ Inflow=0.06 cfs 0.010 af
12.0” x 80.0’ Culvert Outflow=0.06 cfs 0.010 af

Pond 16P: rain garden 2

Peak Elev=56.66’ Storage=1,028 cf Inflow=0.11 cfs 0.063 af
Primary=0.08 cfs 0.045 af Secondary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.045 af

Pond 17P: infiltration basin 2

Peak Elev=42.18’ Storage=1,228 cf Inflow=1.09 cfs 0.223 af
Discarded=0.32 cfs 0.223 af Secondary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.223 af

Total Runoff Area = 16.678 ac  Runoff Volume = 0.938 af  Average Runoff Depth = 0.67"
Subcatchment 1S: roof 1

Runoff = 0.62 cfs @ 12.01 hrs, Volume = 0.044 af, Depth = 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,345</td>
<td>98</td>
<td>Paved parking &amp; roofs</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>
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<tbody>
<tr>
<td>1.0</td>
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<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcatchment 1S: roof 1

Hydrograph

Type III 24-hr 2 YR Rainfall=3.40"
Runoff Area=7,345 sf
Runoff Volume=0.044 af
Runoff Depth=3.17"
Tc=1.0 min
CN=98
Subcatchment 2S: roof 2

Runoff = 0.82 cfs @ 12.01 hrs, Volume = 0.058 af, Depth = 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<th>Description</th>
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<td>Paved parking &amp; roofs</td>
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<td>1.0</td>
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<td>Direct Entry,</td>
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</table>

Subcatchment 2S: roof 2

Hydrograph

Type III 24-hr 2 YR Rainfall=3.40"

Runoff Area=9,649 sf
Runoff Volume=0.058 af
Runoff Depth=3.17"

Tc=1.0 min
CN=98
Subcatchment 3S: roof 3

Runoff = 0.94 cfs @ 12.01 hrs, Volume = 0.068 af, Depth = 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 2 YR Rainfall = 3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>11,171</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
</tbody>
</table>

Direct Entry,

Subcatchment 3S: roof 3

Hydrograph

Type III 24-hr 2 YR Rainfall = 3.40"
Runoff Area = 11,171 sf
Runoff Volume = 0.068 af
Runoff Depth = 3.17"
Tc = 1.0 min
CN = 98
Subcatchment 4S: roof 4

Runoff = 1.14 cfs @ 12.01 hrs, Volume= 0.082 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR  Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>13,473</td>
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Hydrograph

Type III 24-hr 2 YR
Rainfall=3.40"
Runoff Area=13,473 sf
Runoff Volume=0.082 af
Runoff Depth=3.17"
Tc=1.0 min
CN=98
Subcatchment 5S: roof 5

Runoff = 0.82 cfs @ 12.01 hrs, Volume= 0.059 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
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<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
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<th>Capacity (cfs)</th>
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<td>Direct Entry,</td>
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Subcatchment 5S: roof 5

Hydrograph

Type III 24-hr 2 YR Rainfall=3.40"
Runoff Area=9,681 sf
Runoff Volume=0.059 af
Runoff Depth=3.17"
Tc=1.0 min
CN=98
Subcatchment 6S: roof 6

Runoff = 0.62 cfs @ 12.01 hrs, Volume= 0.044 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>7,345</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
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<table>
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<th>Tc (min)</th>
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<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
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<tbody>
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<td>1.0</td>
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<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcatchment 6S: roof 6

Hydrograph

Type III 24-hr 2 YR Rainfall=3.40"
Runoff Area=7,345 sf
Runoff Volume=0.044 af
Runoff Depth=3.17"
Tc=1.0 min
CN=98
Subcatchment 7S: roof 7

Runoff = 0.94 cfs @ 12.01 hrs, Volume = 0.068 af, Depth = 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 2 YR Rainfall = 3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>11,171</td>
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<td>Paved parking &amp; roofs</td>
</tr>
</tbody>
</table>

Tc = 1.0 min

Subcatchment 7S: roof 7

Type III 24-hr 2 YR Rainfall = 3.40"
Runoff Area = 11,171 sf
Runoff Volume = 0.068 af
Runoff Depth = 3.17"
Tc = 1.0 min
CN = 98
Subcatchment 8S: roof 8

Runoff = 1.14 cfs @ 12.01 hrs, Volume= 0.081 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
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<th>Area (sf)</th>
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<th>Description</th>
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<tbody>
<tr>
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<td>Paved parking &amp; roofs</td>
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</tbody>
</table>

<table>
<thead>
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<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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</thead>
<tbody>
<tr>
<td>1.0</td>
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<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcatchment 8S: roof 8

Type III 24-hr 2 YR Rainfall=3.40"
Runoff Area=13,450 sf
Runoff Volume=0.081 af
Runoff Depth=3.17"
Tc=1.0 min
CN=98
Subcatchment 9S: subarea 1

Runoff = 1.05 cfs @ 12.10 hrs, Volume = 0.087 af, Depth = 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
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<th>Description</th>
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<tr>
<td>32,752</td>
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<tr>
<td>61,212</td>
<td>66</td>
<td>Weighted Average</td>
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</table>

Subcatchment 9S: subarea 1

Type III 24-hr 2 YR Rainfall=3.40"
Runoff Area=61,212 sf
Runoff Volume=0.087 af
Runoff Depth=0.75"
Tc=5.0 min
CN=66
Subcatchment 10S: subarea 2

Runoff = 0.09 cfs @ 12.30 hrs, Volume= 0.017 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

---

### Area (sf) CN Description

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,313</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
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<tr>
<td>23,947</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
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<tr>
<td>32,260</td>
<td>54</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

### Direct Entry, assumed

---

**Subcatchment 10S: subarea 2**

Hydrograph

- **Type III 24-hr 2 YR**
- **Rainfall=3.40"**
- **Runoff Area=32,260 sf**
- **Runoff Volume=0.017 af**
- **Runoff Depth=0.28"**
- **Tc=5.0 min**
- **CN=54**
Subcatchment 11S: subarea 3

Runoff = 0.25 cfs @ 12.10 hrs, Volume = 0.024 af, Depth = 0.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<th>Description</th>
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<tbody>
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<td>Paved parking &amp; roofs</td>
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<tr>
<td>13,082</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>21,579</td>
<td>62</td>
<td>Weighted Average</td>
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</tbody>
</table>

Subcatchment 11S: subarea 3

Hydrograph

Type III 24-hr 2 YR Rainfall=3.40"
Runoff Area=21,579 sf
Runoff Volume=0.024 af
Runoff Depth=0.57"
Tc=5.0 min
CN=62
Proposed Conditions

Type III 24-hr 2 YR Rainfall=3.40"

Subcatchment 12S: subarea 4

Runoff = 0.01 cfs @ 14.91 hrs, Volume= 0.005 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>3,514</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>32,200</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
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<tr>
<td>35,714</td>
<td>45</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

Tc=5.0 min

CN=45

Subcatchment 12S: subarea 4

Hydrograph

Runoff Area=35,714 sf
Runoff Volume=0.005 af
Runoff Depth=0.07"

Tc=5.0 min

CN=45
Subcatchment 13S: subarea 5

Runoff = 0.35 cfs @ 12.33 hrs, Volume = 0.073 af, Depth = 0.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 2 YR Rainfall = 3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>36,316</td>
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<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>114,390</td>
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<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>150,706</td>
<td>53</td>
<td>Weighted Average</td>
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</tbody>
</table>

Subcatchment 13S: subarea 5

Hydrograph

Type III 24-hr 2 YR Rainfall = 3.40"
Runoff Area = 150,706 sf
Runoff Volume = 0.073 af
Runoff Depth = 0.25"
Tc = 5.0 min
CN = 53
Subcatchment 14S: subarea 6

Runoff = 0.00 cfs @ 16.88 hrs, Volume = 0.001 af, Depth = 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 2 YR Rainfall = 3.40"

<table>
<thead>
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<th>Area (sf)</th>
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<th>Description</th>
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<tbody>
<tr>
<td>692</td>
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<td>Paved parking &amp; roofs</td>
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<tr>
<td>13,549</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
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<td>14,241</td>
<td>42</td>
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<table>
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<th>Tc</th>
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<th>Velocity</th>
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<th>Description</th>
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<tr>
<td>5.0</td>
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<td></td>
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<td>Direct Entry, assumed</td>
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Subcatchment 14S: subarea 6

Hydrograph

Type III 24-hr 2 YR Rainfall = 3.40"
Runoff Area = 14,241 sf
Runoff Volume = 0.001 af
Runoff Depth = 0.03" 
Tc = 5.0 min
CN = 42
Subcatchment 15S: subarea 7

Runoff = 0.06 cfs @ 12.28 hrs, Volume = 0.010 af, Depth = 0.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 2 YR Rainfall = 3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<td>4,669</td>
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<td>12,206</td>
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<tr>
<td>16,875</td>
<td>55</td>
<td>Weighted Average</td>
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</tbody>
</table>

Tc = 5.0 min

Direct Entry, assumed

Subcatchment 15S: subarea 7

Hydrograph

Type III 24-hr 2 YR
Rainfall = 3.40"
Runoff Area = 16,875 sf
Runoff Volume = 0.010 af
Runoff Depth = 0.31"
Tc = 5.0 min
CN = 55
**Proposed Conditions**

*Type III 24-hr 2 YR Rainfall=3.40"*

Prepared by Pesce Engineering & Associates

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**Subcatchment 16S: subarea 8**

Runoff = 0.00 cfs @ 23.44 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
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<tbody>
<tr>
<td>9,535</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
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<table>
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<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
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<th>Capacity (cfs)</th>
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<tr>
<td>5.0</td>
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<td>Direct Entry, assumed</td>
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**Subcatchment 16S: subarea 8**

**Hydrograph**

Type III 24-hr 2 YR Rainfall=3.40"

Runoff Area=9,535 sf

Runoff Volume=0.000 af

Runoff Depth=0.00"

Tc=5.0 min

CN=39
Subcatchment 17S: subarea 9

Runoff = 1.09 cfs @ 12.16 hrs, Volume = 0.179 af, Depth = 0.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<tr>
<td>190,355</td>
<td>39</td>
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<tr>
<td>270,318</td>
<td>56</td>
<td>Weighted Average</td>
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$T_c = 5.0$ min
$CN = 56$

Subcatchment 17S: subarea 9

Hydrograph

Type III 24-hr 2 YR Rainfall=3.40"
Runoff Area=270,318 sf
Runoff Volume=0.179 af
Runoff Depth=0.35"
$T_c = 5.0$ min
$CN = 56$
Subcatchment 18S: subarea 10

Runoff = 0.21 cfs @ 12.03 hrs, Volume = 0.015 af, Depth = 0.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<table>
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<tr>
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<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
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</thead>
<tbody>
<tr>
<td>1.0</td>
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<td></td>
<td></td>
<td>Direct Entry,</td>
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</table>

Subcatchment 18S: subarea 10

Type III 24-hr 2 YR
Rainfall=3.40"
Runoff Area=8,178 sf
Runoff Volume=0.015 af
Runoff Depth=0.95"
Tc=1.0 min
CN=70
Subcatchment 19S: subarea 11

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 0.004 af, Depth= 0.31" 

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs 
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
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<td>pool decking</td>
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<table>
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<th>Slope (ft/ft)</th>
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<th>Capacity (cfs)</th>
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<td>Direct Entry,</td>
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Hydrograph

Type III 24-hr 2 YR Rainfall=3.40"
Runoff Area=7,199 sf
Runoff Volume=0.004 af
Runoff Depth=0.31"
Tc=1.0 min
CN=55
Subcatchment 20S: subarea 12

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 0.004 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
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<td>pool decking</td>
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<table>
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<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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<tr>
<td>1.0</td>
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<td>Direct Entry,</td>
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</table>

Subcatchment 20S: subarea 12

Hydrograph

Type III 24-hr 2 YR Rainfall=3.40"
Runoff Area=7,199 sf
Runoff Volume=0.004 af
Runoff Depth=0.31"
Tc=1.0 min
CN=55
**Subcatchment 21S: subarea 13**

Runoff = 0.21 cfs @ 12.03 hrs, Volume = 0.015 af, Depth = 0.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs

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<thead>
<tr>
<th>Area (sf)</th>
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<td>1.0</td>
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<td></td>
<td>Direct Entry,</td>
</tr>
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</table>

Subcatchment 21S: subarea 13

Type III 24-hr 2 YR Rainfall = 3.40"  
Runoff Area = 8,178 sf  
Runoff Volume = 0.015 af  
Runoff Depth = 0.95"  
Tc = 1.0 min  
CN = 70
Inflow Area = 2.146 ac, Inflow Depth = 0.59" for 2 YR event
Inflow = 1.10 cfs @ 12.10 hrs, Volume= 0.105 af
Outflow = 1.10 cfs @ 12.10 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.19' @ 12.11 hrs
Capacity at bank full= 56.56 cfs
Inlet Invert= 66.40', Outlet Invert= 57.90'
24.0" Diameter Pipe n= 0.013 Length= 136.0' Slope= 0.0625 '/'

Capacity=56.56 cfs

Reach 1R: dmh 2 to dmh 3
Reach 2R: dmh 3 to fes 5

Inflow Area = 2.641 ac, Inflow Depth = 0.58" for 2 YR event
Inflow = 1.35 cfs @ 12.10 hrs, Volume = 0.128 af
Outflow = 1.35 cfs @ 12.11 hrs, Volume = 0.128 af, Attenu = 0%, Lag = 0.4 min

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Max. Velocity = 3.6 fps, Min. Travel Time = 0.5 min
Avg. Velocity = 1.6 fps, Avg. Travel Time = 1.1 min

Peak Depth = 0.36' @ 12.11 hrs
Capacity at bank full = 19.56 cfs
Inlet Invert = 57.80', Outlet Invert = 57.00'
24.0" Diameter Pipe n = 0.013 Length = 107.0' Slope = 0.0075 '/'

Inflow Area = 2.641 ac
Peak Depth = 0.36'
Max Vel = 3.6 fps
D = 24.0"
n = 0.013
L = 107.0'
S = 0.0075 '/'
Capacity = 19.56 cfs
Pond 1P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.169 ac, Inflow Depth = 3.17" for 2 YR event
Inflow = 0.62 cfs @ 12.01 hrs, Volume= 0.044 af
Outflow = 0.20 cfs @ 12.25 hrs, Volume= 0.045 af, Atten= 67%, Lag= 14.0 min
Discarded = 0.20 cfs @ 12.25 hrs, Volume= 0.045 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 101.19' @ 12.25 hrs Surf.Area= 476 sf Storage= 261 cf
Flood Elev= 107.17' Surf.Area= 476 sf Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td>14.00'W x 34.00'L x 7.17'H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td>6.00'D x 6.67'H Vertical Cone/Cylinder x 3 Inside #1</td>
</tr>
</tbody>
</table>

1,705 cf Total Available Storage

# Routing Invert Outlet Devices
1 Discarded 0.00' 0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area

Discarded OutFlow Max=0.20 cfs @ 12.25 hrs HW=101.18' (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.20 cfs)
Pond 2P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.222 ac, Inflow Depth = 3.17" for 2 YR event
Inflow = 0.82 cfs @ 12.01 hrs, Volume= 0.058 af
Outflow = 0.23 cfs @ 12.31 hrs, Volume= 0.059 af, Atten= 72%, Lag= 17.6 min
Discarded = 0.23 cfs @ 12.31 hrs, Volume= 0.059 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 101.93' @ 12.31 hrs  Surf.Area= 476 sf  Storage= 440 cf
Flood Elev= 107.17'  Surf.Area= 476 sf  Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail STORAGE</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td><strong>14.00'W x 34.00'L x 7.17'H Prismatoid</strong></td>
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<tr>
<td></td>
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<td></td>
<td>3.413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td><strong>6.00'D x 6.67'H Vertical Cone/Cylinder x 3 Inside #1</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,705 cf Total Available Storage</td>
</tr>
</tbody>
</table>

# Routing Invert Outlet Devices
1 Discarded 0.00' **0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area**

**Discarded OutFlow** Max=0.23 cfs @ 12.31 hrs HW=101.93' (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.23 cfs)

Pond 2P: 3-1000 Gal. Leach. Pits

Inflow Area=0.222 ac
Peak Elev=101.93'
Storage=440 cf
Pond 3P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.256 ac, Inflow Depth = 3.17" for 2 YR event
Inflow = 0.94 cfs @ 12.01 hrs, Volume= 0.068 af
Outflow = 0.25 cfs @ 12.33 hrs, Volume= 0.068 af, Atten= 74%, Lag= 19.0 min
Discarded = 0.25 cfs @ 12.33 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 102.45' @ 12.33 hrs  Surf.Area= 476 sf  Storage= 565 cf
Flood Elev= 107.17'  Surf.Area= 476 sf  Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
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<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td>14.00'W x 34.00'L x 7.17'H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td>6.00'D x 6.67'H Vertical Cone/Cylinder x 3 Inside #1</td>
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1,705 cf  Total Available Storage

<table>
<thead>
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<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</td>
</tr>
</tbody>
</table>

**Discarded OutFlow** Max=0.25 cfs @ 12.33 hrs  HW=102.44'  (Free Discharge)
Exfiltration (15.0 in/hr) (Exfiltration Controls 0.25 cfs)

Pond 3P: 3-1000 Gal. Leach. Pits

**Hydrograph**

**Inflow Area=0.256 ac**
**Peak Elev=102.45'**
**Storage=565 cf**
Pond 4P: 5-1000 Gal. Leach. Pits (18’x58’)

Inflow Area = 0.662 ac, Inflow Depth = 1.83” for 2 YR event
Inflow = 1.36 cfs @ 12.02 hrs, Volume= 0.101 af
Outflow = 0.43 cfs @ 12.30 hrs, Volume= 0.101 af, Atten= 68%, Lag= 17.2 min
Discarded = 0.43 cfs @ 12.30 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 101.28’ @ 12.30 hrs  Surf.Area= 1,044 sf  Storage= 599 cf
Flood Elev= 107.17’  Surf.Area= 1,044 sf  Storage= 3,560 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
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<tbody>
<tr>
<td>1</td>
<td>100.00’</td>
<td>2,617 cf</td>
<td>18.00’W x 58.00’L x 7.17’H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7,485 cf Overall - 943 cf Embedded = 6,543 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50’</td>
<td>943 cf</td>
<td>6.00’D x 6.67’H Vertical Cone/Cylinder x 5 Inside #1</td>
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</table>

3,560 cf Total Available Storage

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</thead>
<tbody>
<tr>
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<td>Discarded</td>
<td>0.00’</td>
<td>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</td>
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</tbody>
</table>

Discarded OutFlow Max=0.43 cfs @ 12.30 hrs  HW=101.28’ (Free Discharge)
Exfiltration (15.0 in/hr) (Exfiltration Controls 0.43 cfs)
Inflow Area = 0.222 ac, Inflow Depth = 3.17" for 2 YR event
Inflow = 0.82 cfs @ 12.01 hrs, Volume= 0.059 af
Outflow = 0.23 cfs @ 12.31 hrs, Volume= 0.059 af, Atten= 72%, Lag= 17.6 min
Discarded = 0.23 cfs @ 12.31 hrs, Volume= 0.059 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 101.94’ @ 12.31 hrs Surf.Area= 476 sf Storage= 442 cf
Flood Elev= 107.17’ Surf.Area= 476 sf Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail Storage</th>
<th>Storage Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00’</td>
<td>1,139 cf</td>
<td>14.00’W x 34.00’L x 7.17’H Prismatoid 3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50’</td>
<td>566 cf</td>
<td>6.00’D x 6.67’H Vertical Cone/Cylinder x 3 Inside #1</td>
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</tbody>
</table>

1,705 cf Total Available Storage

<table>
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<tr>
<th>#</th>
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<th>Invert</th>
<th>Outlet Devices</th>
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<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00’</td>
<td>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</td>
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</table>

Discarded OutFlow Max=0.23 cfs @ 12.31 hrs HW=101.94’ (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.23 cfs)
**Pond 6P: 3-1000 Gal. Leach. Pits**

Inflow Area = 0.169 ac, Inflow Depth = 3.17" for 2 YR event
Inflow = 0.62 cfs @ 12.01 hrs, Volume= 0.044 af
Outflow = 0.20 cfs @ 12.25 hrs, Volume= 0.045 af, Atten= 67%, Lag= 14.0 min
Discarded = 0.20 cfs @ 12.25 hrs, Volume= 0.045 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 101.19' @ 12.25 hrs Surf.Area= 476 sf Storage= 261 cf
Flood Elev= 107.17' Surf.Area= 476 sf Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
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</tr>
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<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td><strong>14.00'W x 34.00'L x 7.17'H Prismatoid</strong> 3.413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td><strong>6.00'D x 6.67'H Vertical Cone/Cylinder</strong> x 3 Inside #1</td>
</tr>
</tbody>
</table>

Total Available Storage: 1,705 cf

**Discarded OutFlow** Max=0.20 cfs @ 12.25 hrs HW=101.18' (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.20 cfs)

**Pond 6P: 3-1000 Gal. Leach. Pits**

**Inflow Area=0.169 ac**
**Peak Elev=101.19'**
**Storage=261 cf**
Inflow Area = 0.256 ac, Inflow Depth = 3.17" for 2 YR event
Inflow = 0.94 cfs @ 12.01 hrs, Volume= 0.068 af
Outflow = 0.25 cfs @ 12.33 hrs, Volume= 0.068 af, Atten= 74%, Lag= 19.0 min
Discarded = 0.25 cfs @ 12.33 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 102.45' @ 12.33 hrs  Surf.Area= 476 sf  Storage= 565 cf
Flood Elev= 107.17'  Surf.Area= 476 sf  Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
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<tr>
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<th>Invert</th>
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<table>
<thead>
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<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.020833 fps Exfiltration (15.0 in/hr) over entire Wetted area</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.25 cfs @ 12.33 hrs  HW=102.44' (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.25 cfs)
Pond 8P: 5-1000 Gal. Leach. Pits (18'x58'"

Inflow Area = 0.662 ac, Inflow Depth = 1.82" for 2 YR event
Inflow = 1.35 cfs @ 12.02 hrs, Volume= 0.101 af
Outflow = 0.43 cfs @ 12.30 hrs, Volume= 0.101 af, Atten= 68%, Lag= 17.1 min
Discarded = 0.43 cfs @ 12.30 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 101.27' @ 12.30 hrs Surf.Area= 1,044 sf Storage= 598 cf
Flood Elev= 107.17' Surf.Area= 1,044 sf Storage= 3,560 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
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<tr>
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<th>Invert</th>
<th>Avail Storage</th>
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<td><strong>18.00'W x 58.00'L x 7.17'H Prismatoid</strong> 7,485 cf Overall - 943 cf Embedded = 6,543 cf x 40.0% Voids</td>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td><strong>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</strong></td>
</tr>
</tbody>
</table>

**Discarded OutFlow** Max=0.43 cfs @ 12.30 hrs HW=101.27' (Free Discharge) (Exfiltration Controls 0.43 cfs)

Pond 8P: 5-1000 Gal. Leach. Pits (18'x58'"

Inflow Area=0.662 ac Peak Elev=101.27' Storage=598 cf
Pond 9P: dcbn-2

Inflow Area = 1.405 ac, Inflow Depth = 0.75" for 2 YR event
Inflow = 1.05 cfs @ 12.10 hrs, Volume = 0.087 af
Outflow = 1.05 cfs @ 12.10 hrs, Volume = 0.087 af, Atten= 0%, Lag= 0.0 min
Primary = 1.05 cfs @ 12.10 hrs, Volume = 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 69.46' @ 12.10 hrs
Flood Elev= 72.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>69.00'</td>
<td>18.0'' x 188.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outlet Invert= 67.00' S= 0.0106 '/' n= 0.013  Cc= 0.900</td>
</tr>
</tbody>
</table>

Primary OutFlow Max=1.04 cfs @ 12.10 hrs  HW=69.45' TW=66.59' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.04 cfs @ 2.3 fps)

Inflow Area=1.405 ac
Peak Elev=69.46'
18.0'' x 188.0' Culvert

Hydrograph
Pond 10P: cbn-2

Inflow Area = 0.741 ac, Inflow Depth = 0.28" for 2 YR event
Inflow = 0.09 cfs @ 12.30 hrs, Volume = 0.017 af
Outflow = 0.09 cfs @ 12.30 hrs, Volume = 0.017 af, Atten = 0%, Lag = 0.0 min
Primary = 0.09 cfs @ 12.30 hrs, Volume = 0.017 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 70.14' @ 12.30 hrs
Flood Elev = 72.50'
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
</table>
| 1 | Primary | 70.00' | 12.0" x 17.0' long Culvert RCP, sq.cut end projecting, Ke = 0.500
     |         |        | Outlet Invert= 69.50' S= 0.0294 '/' n= 0.013 Cc= 0.900 |

Primary OutFlow Max = 0.09 cfs @ 12.30 hrs HW = 70.14' TW = 66.55' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.09 cfs @ 1.3 fps)

Inflow Area = 0.741 ac
Peak Elev = 70.14'
12.0" x 17.0' Culvert
Pond 11P: cbn-3

Inflow Area = 0.495 ac, Inflow Depth = 0.57" for 2 YR event
Inflow = 0.25 cfs @ 12.10 hrs, Volume= 0.024 af
Outflow = 0.25 cfs @ 12.10 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min
Primary = 0.25 cfs @ 12.10 hrs, Volume= 0.024 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 59.74' @ 12.11 hrs
Flood Elev= 62.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

# Routing Invert Outlet Devices
1 Primary 59.50' **12.0" x 56.0' long Culvert** RCP, sq.cut end projecting, Ke= 0.500
Outlet Invert= 58.90’ S= 0.0107 '/' n= 0.013 Cc= 0.900

**Primary OutFlow** Max=0.24 cfs @ 12.10 hrs HW=59.74’ TW=58.15’ (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.24 cfs @ 2.5 fps)

---

**Pond 11P: cbn-3**

![Hydrograph](image)

Inflow Area=0.495 ac
Peak Elev=59.74'
12.0" x 56.0' Culvert
Pond 12P: infiltration basin 1

Inflow Area = 3.461 ac, Inflow Depth = 0.46" for 2 YR event
Inflow = 1.35 cfs @ 12.11 hrs, Volume= 0.133 af
Outflow = 0.06 cfs @ 19.32 hrs, Volume= 0.118 af, Atten= 96%, Lag= 432.8 min
Discarded = 0.06 cfs @ 19.32 hrs, Volume= 0.118 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 58.31' @ 19.32 hrs  Surf.Area= 4,954 sf  Storage= 3,456 cf
Flood Elev= 61.50'  Surf.Area= 10,246 sf  Storage= 26,370 cf
Plug-Flow detention time= 627.3 min calculated for 0.118 af (89% of inflow)
Center-of-Mass det. time= 575.6 min (1,479.9 - 904.2)

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<th>Avail.Storage</th>
<th>Storage Description</th>
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<td>1</td>
<td>57.00'</td>
<td>31,698 cf</td>
<td>Basin (Irregular)</td>
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<td>10.0</td>
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<td>0</td>
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<td>11,072</td>
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<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.00722 fpm Exfiltration (0.52 in/hr) over entire Surface area 10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</td>
</tr>
<tr>
<td>2</td>
<td>Secondary</td>
<td>61.50'</td>
<td></td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.06 cfs @ 19.32 hrs HW=58.31' (Free Discharge)
1=Exfiltration (0.52 in/hr) (Exfiltration Controls 0.06 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=57.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Pond 12P: infiltration basin 1

Hydrograph

Inflow Area = 3.461 ac
Peak Elev = 58.31'
Storage = 3,456 cf
Pond 13P: dcbn-1

Inflow Area = 3.460 ac, Inflow Depth = 0.25" for 2 YR event
Inflow = 0.35 cfs @ 12.33 hrs, Volume= 0.073 af
Outflow = 0.35 cfs @ 12.33 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.33 hrs, Volume= 0.073 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 69.26' @ 12.33 hrs
Flood Elev= 72.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>69.00'</td>
<td>18.0&quot; x 193.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outlet Invert= 66.00' S= 0.0155 'r' n= 0.013 Cc= 0.900</td>
</tr>
</tbody>
</table>

Primary OutFlow Max=0.35 cfs @ 12.33 hrs HW=69.26' TW=66.13' (Dynamic Tailwater) 1=Culvert (Inlet Controls 0.35 cfs @ 1.7 fps)

Inflow Area=3.460 ac
Peak Elev=69.26'
18.0" x 193.0' Culvert
**Pond 14P: rain garden 1**

Inflow Area = 3.787 ac, Inflow Depth = 0.23" for 2 YR event
Inflow = 0.35 cfs @ 12.33 hrs, Volume= 0.073 af
Outflow = 0.10 cfs @ 15.06 hrs, Volume= 0.053 af, Atten= 72%, Lag= 163.8 min
Primary = 0.10 cfs @ 15.06 hrs, Volume= 0.053 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 66.68' @ 15.06 hrs  Surf.Area= 1,598 sf Storage= 1,212 cf
Flood Elev= 69.50' Surf.Area= 3,697 sf Storage= 8,165 cf
Plug-Flow detention time= 263.3 min calculated for 0.053 af (72% of inflow)
Center-of-Mass det. time= 153.8 min (1,114.6 - 960.8)

<table>
<thead>
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<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>66.00'</td>
<td>10,119 cf</td>
<td><strong>Rain Garden #1 (Irregular)</strong> Listed below</td>
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<tbody>
<tr>
<td>66.00</td>
<td>1,125</td>
<td>211.0</td>
<td>0</td>
<td>0</td>
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<td>250.0</td>
<td>3,541</td>
<td>3,541</td>
<td>2,628</td>
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<tr>
<td>69.50</td>
<td>3,697</td>
<td>279.0</td>
<td>4,624</td>
<td>8,165</td>
<td>3,912</td>
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<tr>
<td>70.00</td>
<td>4,123</td>
<td>289.0</td>
<td>1,954</td>
<td>10,119</td>
<td>4,386</td>
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<table>
<thead>
<tr>
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<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>65.00'</td>
<td><strong>12.0' x 114.0' long Culvert</strong> CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 62.00'  S= 0.0263 '/' n= 0.013  Cc= 0.900</td>
</tr>
<tr>
<td>2</td>
<td>Device 1</td>
<td>66.50'</td>
<td><strong>6.0' Vert. Orifice/Grate</strong> C= 0.600</td>
</tr>
<tr>
<td>3</td>
<td>Secondary</td>
<td>69.50'</td>
<td><strong>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</strong> 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 Coef. (English) 2.34 2.50 2.70 2.68 2.66 2.65 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88</td>
</tr>
</tbody>
</table>

**Primary OutFlow** Max=0.10 cfs @ 15.06 hrs HW=66.68' TW=56.40' (Dynamic Tailwater)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=66.00' TW=56.00’ (Dynamic Tailwater)
### Pond 14P: rain garden 1

**Inflow Area**: 3.787 ac  
**Peak Elev**: 66.68'  
**Storage**: 1,212 cf

#### Hydrograph

<table>
<thead>
<tr>
<th>Time (hours)</th>
<th>Flow (cfs)</th>
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<tr>
<td>0</td>
<td>0.00 cfs</td>
</tr>
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<td>2</td>
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<tr>
<td>4</td>
<td>0.00 cfs</td>
</tr>
<tr>
<td>6</td>
<td>0.00 cfs</td>
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<tr>
<td>8</td>
<td>0.00 cfs</td>
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<tr>
<td>10</td>
<td>0.00 cfs</td>
</tr>
<tr>
<td>12</td>
<td>0.00 cfs</td>
</tr>
<tr>
<td>14</td>
<td>0.00 cfs</td>
</tr>
<tr>
<td>16</td>
<td>0.00 cfs</td>
</tr>
<tr>
<td>18</td>
<td>0.00 cfs</td>
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<tr>
<td>20</td>
<td>0.00 cfs</td>
</tr>
<tr>
<td>22</td>
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<tr>
<td>24</td>
<td>0.00 cfs</td>
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<tr>
<td>26</td>
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<td>28</td>
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<td>30</td>
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<td>32</td>
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<td>34</td>
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<td>36</td>
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<tr>
<td>38</td>
<td>0.00 cfs</td>
</tr>
<tr>
<td>40</td>
<td>0.00 cfs</td>
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</table>

- **Inflow Area**: 0.35 cfs
- **Outflow Area**: 0.10 cfs
- **Primary Area**: 0.10 cfs
- **Secondary Area**: 0.00 cfs
Inflow Area = 0.387 ac, Inflow Depth = 0.31" for 2 YR event
Inflow = 0.06 cfs @ 12.28 hrs, Volume= 0.010 af
Outflow = 0.06 cfs @ 12.28 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 12.28 hrs, Volume= 0.010 af
Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 59.61' @ 12.28 hrs
Flood Elev= 62.00'
Plug-Flow detention time= 0.0 min calculated for 0.010 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (942.5 - 942.5)

# Routing Invert Outlet Devices
1 Primary 59.50' 12.0" x 80.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500
Outlet Invert= 58.00' S= 0.0187 '/' n= 0.013 Cc= 0.900

Primary OutFlow Max=0.06 cfs @ 12.28 hrs HW=59.61' TW=56.03' (Dynamic Tailwater)

Inflow Area=0.387 ac
Peak Elev=59.61'
12.0" x 80.0' Culvert
Pond 16P: rain garden 2

Inflow Area = 4.393 ac, Inflow Depth = 0.17" for 2 YR event
Inflow = 0.11 cfs @ 14.99 hrs, Volume= 0.063 af
Outflow = 0.08 cfs @ 17.13 hrs, Volume= 0.045 af, Atten= 31%, Lag= 128.7 min
Primary = 0.08 cfs @ 17.13 hrs, Volume= 0.045 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 56.66' @ 17.13 hrs Surf.Area= 1,422 sf Storage= 1,028 cf
Flood Elev= 59.50' Surf.Area= 2,911 sf Storage= 6,795 cf
Plug-Flow detention time= 279.2 min calculated for 0.045 af (71% of inflow)
Center-of-Mass det. time= 160.8 min (1,248.0 - 1,087.2)

# Invert Avail.Storage Storage Description
1 56.00' 8,331 cf Rain Garden #2 (Irregular) Listed below

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<td>0</td>
<td>1,119</td>
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<td>58.00</td>
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<td>60.00</td>
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<td>221.0</td>
<td>1,536</td>
<td>8,331</td>
<td>3,716</td>
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# Routing Invert Outlet Devices
1 Primary 55.00' 12.0'' x 118.0' long Culvert RCP, square edge headwall, Ke= 0.500
Outlet Invert= 42.00’ S= 0.1102 '/' n= 0.013 Cc= 0.900
2 Device 1 56.50' 6.0'' Vert. Orifice/Grate C= 0.600
3 Secondary 59.50' 10.0' long x 5.0' breadth Broad-Crested Rectangular Weir
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
Coef. (English) 2.34 2.50 2.70 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

Primary OutFlow Max=0.08 cfs @ 17.13 hrs HW=56.66' TW=42.00' (Dynamic Tailwater)
1=Culvert (Passes 0.08 cfs of 4.08 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.08 cfs @ 1.4 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.60' TW=42.00’ (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Pond 16P: rain garden 2

Hydrograph

Flow (cfs)

Inflow Area=4.393 ac
Peak Elev=56.66'
Storage=1,028 cf

Type III 24-hr 2 YR Rainfall=3.40"

Prepared by Pesce Engineering & Associates

HydroCAD® 7.00 s/n 002717 © 1986-2003 Applied Microcomputer Systems
Pond 17P: infiltration basin 2

Inflow Area = 10.599 ac, Inflow Depth = 0.25" for 2 YR event
Inflow = 1.09 cfs @ 12.16 hrs, Volume = 0.223 af
Outflow = 0.32 cfs @ 13.15 hrs, Volume = 0.223 af, Atten = 71%, Lag = 59.2 min
Discarded = 0.32 cfs @ 13.15 hrs, Volume = 0.223 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume = 0.000 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 42.18' @ 13.15 hrs Surf.Area = 5,789 sf Storage = 1,228 cf
Flood Elev = 47.80' Surf.Area = 13,908 sf Storage = 55,908 cf
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

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<td>D-Basin (Irregular) Listed below</td>
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<td>(sq-ft)</td>
<td>(feet)</td>
<td>(cubic-feet)</td>
<td>(cubic-feet)</td>
<td>(sq-ft)</td>
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<th>Outlet Devices</th>
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<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.003347 fpm Exfiltration (2.41 in/hr) over entire Surface area</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15.0' 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 2.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.00 3.50 4.00 4.50 5.00 5.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Coef. (English) 2.34 2.50 2.70 2.86 2.68 2.66 2.65 2.65 2.65 2.65 2.65</td>
</tr>
<tr>
<td></td>
<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 = 0.32 cfs @ 13.15 hrs HW = 42.18' (Free Discharge) (Exfiltration Controls 0.32 cfs)

Secondary OutFlow Max = 0.00 cfs @ 0.00 hrs HW = 42.00' (Free Discharge) (Controls 0.00 cfs)
Pond 17P: infiltration basin 2

- Inflow Area: 10.599 ac
- Peak Elev: 42.18'
- Storage: 1,228 cf

Flow (cfs)

Inflow
Outflow
Discarded
Secondary

Time (hours)

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40

1.09 cfs
0.32 cfs
0.00 cfs

Hydrograph
Proposed Conditions

Type III 24-hr 10 YR Rainfall=4.70"

Prepared by Pesce Engineering & Associates

HydroCAD® 7.00 s/n 002717 © 1986-2003 Applied Microcomputer Systems

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Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: roof 1
Runoff Area=7,345 sf  Runoff Depth=4.46"
Tc=1.0 min  CN=98  Runoff=0.86 cfs  0.063 af

Subcatchment 2S: roof 2
Runoff Area=9,649 sf  Runoff Depth=4.46"
Tc=1.0 min  CN=98  Runoff=1.13 cfs  0.082 af

Subcatchment 3S: roof 3
Runoff Area=11,171 sf  Runoff Depth=4.46"
Tc=1.0 min  CN=98  Runoff=1.31 cfs  0.095 af

Subcatchment 4S: roof 4
Runoff Area=13,473 sf  Runoff Depth=4.46"
Tc=1.0 min  CN=98  Runoff=1.58 cfs  0.115 af

Subcatchment 5S: roof 5
Runoff Area=9,681 sf  Runoff Depth=4.46"
Tc=1.0 min  CN=98  Runoff=1.14 cfs  0.083 af

Subcatchment 6S: roof 6
Runoff Area=7,345 sf  Runoff Depth=4.46"
Tc=1.0 min  CN=98  Runoff=0.86 cfs  0.063 af

Subcatchment 7S: roof 7
Runoff Area=11,171 sf  Runoff Depth=4.46"
Tc=1.0 min  CN=98  Runoff=1.31 cfs  0.095 af

Subcatchment 8S: roof 8
Runoff Area=13,450 sf  Runoff Depth=4.46"
Tc=1.0 min  CN=98  Runoff=1.58 cfs  0.115 af

Subcatchment 9S: subarea 1
Runoff Area=61,212 sf  Runoff Depth=1.53"
Tc=5.0 min  CN=66  Runoff=2.40 cfs  0.179 af

Subcatchment 10S: subarea 2
Runoff Area=32,260 sf  Runoff Depth=0.78"
Tc=5.0 min  CN=54  Runoff=0.50 cfs  0.048 af

Subcatchment 11S: subarea 3
Runoff Area=21,579 sf  Runoff Depth=1.26"
Tc=5.0 min  CN=62  Runoff=0.67 cfs  0.052 af

Subcatchment 12S: subarea 4
Runoff Area=35,714 sf  Runoff Depth=0.35"
Tc=5.0 min  CN=45  Runoff=0.12 cfs  0.024 af

Subcatchment 13S: subarea 5
Runoff Area=150,706 sf  Runoff Depth=0.73"
Tc=5.0 min  CN=53  Runoff=2.08 cfs  0.209 af

Subcatchment 14S: subarea 6
Runoff Area=14,241 sf  Runoff Depth=0.24"
Tc=5.0 min  CN=42  Runoff=0.02 cfs  0.006 af

Subcatchment 15S: subarea 7
Runoff Area=16,875 sf  Runoff Depth=0.83"
Tc=5.0 min  CN=55  Runoff=0.29 cfs  0.027 af
### Proposed Conditions

**Type III 24-hr 10 YR Rainfall=4.70″**

**Prepared by Pesce Engineering & Associates**

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**Page 50**

**8/14/2016**

<table>
<thead>
<tr>
<th>Subcatchment</th>
<th>Subarea</th>
<th>Runoff Area</th>
<th>Runoff Depth</th>
<th>Runoff Depth (cm)</th>
<th>CN</th>
<th>Runoff</th>
<th>Outflow</th>
<th>Storage</th>
<th>Inflow</th>
<th>Outflow</th>
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<tbody>
<tr>
<td>16S: subarea 8</td>
<td>9,535 sf</td>
<td>0.14″</td>
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<td>39</td>
<td>0.00 cfs</td>
<td>0.003 af</td>
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<td>5.19 cfs</td>
<td>0.461 af</td>
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<td>18S: subarea 10</td>
<td>8,178 sf</td>
<td>1.82″</td>
<td>45.72</td>
<td>70</td>
<td>0.43 cfs</td>
<td>0.028 af</td>
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<tr>
<td>19S: subarea 11</td>
<td>8,178 sf</td>
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<td>45.72</td>
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<td>0.14 cfs</td>
<td>0.011 af</td>
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<tr>
<td>20S: subarea 12</td>
<td>7,199 sf</td>
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<td>21.09</td>
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<td>0.43 cfs</td>
<td>0.028 af</td>
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<tr>
<td>21S: subarea 13</td>
<td>8,178 sf</td>
<td>1.82″</td>
<td>45.72</td>
<td>70</td>
<td>0.43 cfs</td>
<td>0.028 af</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Reach 1R: dmh 2 to dmh 3**

- Peak Depth: 0.31′
- Max Vel: 9.5 fps
- D=24.0″
- n=0.013
- L=136.0′
- S=0.0625 /
- Capacity: 56.56 cfs
- Outflow: 2.91 cfs
- 0.227 af

**Reach 2R: dmh 3 to fes 5**

- Peak Depth: 0.58′
- Max Vel: 4.7 fps
- D=24.0″
- n=0.013
- L=107.0′
- S=0.0075 /
- Capacity: 19.56 cfs
- Outflow: 3.59 cfs
- 0.279 af

**Pond 1P: 3-1000 Gal. Leach. Pits**

- Peak Elev: 102.12′
- Storage: 486 cf
- Inflow: 0.86 cfs
- Outflow: 0.24 cfs
- 0.063 af

**Pond 2P: 3-1000 Gal. Leach. Pits**

- Peak Elev: 103.23′
- Storage: 755 cf
- Inflow: 1.13 cfs
- Outflow: 0.27 cfs
- 0.082 af

**Pond 3P: 3-1000 Gal. Leach. Pits**

- Peak Elev: 103.99′
- Storage: 938 cf
- Inflow: 1.31 cfs
- Outflow: 0.30 cfs
- 0.096 af

**Pond 4P: 5-1000 Gal. Leach. Pits (18′x58″)**

- Peak Elev: 102.79′
- Storage: 1,362 cf
- Inflow: 2.14 cfs
- Outflow: 0.51 cfs
- 0.155 af

**Pond 5P: 3-1000 Gal. Leach. Pits**

- Peak Elev: 103.25′
- Storage: 759 cf
- Inflow: 1.14 cfs
- Outflow: 0.27 cfs
- 0.083 af

**Pond 6P: 3-1000 Gal. Leach. Pits**

- Peak Elev: 102.12′
- Storage: 486 cf
- Inflow: 0.86 cfs
- Outflow: 0.24 cfs
- 0.063 af

**Pond 7P: 3-1000 Gal. Leach. Pits**

- Peak Elev: 103.99′
- Storage: 938 cf
- Inflow: 1.31 cfs
- Outflow: 0.30 cfs
- 0.095 af

**Pond 8P: 5-1000 Gal. Leach. Pits (18′x58″)**

- Peak Elev: 102.79′
- Storage: 1,359 cf
- Inflow: 2.14 cfs
- Outflow: 0.51 cfs
- 0.155 af
<table>
<thead>
<tr>
<th>Pond</th>
<th>Type</th>
<th>Diameter</th>
<th>Length</th>
<th>Inflow</th>
<th>Storage</th>
<th>Primary</th>
<th>Secondary</th>
<th>Outflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>9P: dcbn-2</td>
<td>dcbn-2</td>
<td>18.0&quot; x 188.0'</td>
<td>2.40 cfs 0.179 af</td>
<td>4.70&quot;</td>
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<tr>
<td>10P: cbn-2</td>
<td>cbn-2</td>
<td>12.0&quot; x 17.0'</td>
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<td>70.35'</td>
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<td>11P: cbn-3</td>
<td>cbn-3</td>
<td>12.0&quot; x 56.0'</td>
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<tr>
<td>12P: infiltration basin 1</td>
<td>infiltration basin 1</td>
<td></td>
<td>3.63 cfs 0.303 af</td>
<td>59.42'</td>
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<tr>
<td>13P: dcbn-1</td>
<td>dcbn-1</td>
<td>18.0&quot; x 193.0'</td>
<td>2.08 cfs 0.209 af</td>
<td>67.20'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14P: rain garden 1</td>
<td>rain garden 1</td>
<td></td>
<td>2.130 cf 3.093 af</td>
<td>67.20'</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15P: cbn-1</td>
<td>cbn-1</td>
<td>12.0&quot; x 80.0'</td>
<td>0.29 cfs 0.027 af</td>
<td>59.77'</td>
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<tr>
<td>16P: rain garden 2</td>
<td>rain garden 2</td>
<td></td>
<td>1.636 cf 2.025 af</td>
<td>57.05'</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17P: infiltration basin 2</td>
<td>infiltration basin 2</td>
<td></td>
<td>13,200 cf 13,200 af</td>
<td>43.93'</td>
<td></td>
<td></td>
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</tbody>
</table>

Total Runoff Area = 16.678 ac  Runoff Volume = 1.800 af  Average Runoff Depth = 1.30"
Proposed Conditions

Type III 24-hr 10 YR Rainfall=4.70"

Prepared by Pesce Engineering & Associates

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Subcatchment 1S: roof 1

Runoff = 0.86 cfs @ 12.01 hrs, Volume= 0.063 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,345</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
</tbody>
</table>

Tc=1.0 min

Subcatchment 1S: roof 1

Hydrograph

Type III 24-hr 10 YR Rainfall=4.70"

Runoff Area=7,345 sf
Runoff Volume=0.063 af
Runoff Depth=4.46"

Tc=1.0 min
CN=98
Subcatchment 2S: roof 2

Runoff = 1.13 cfs @ 12.01 hrs, Volume= 0.082 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>9,649</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
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</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>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

**Subcatchment 2S: roof 2**

**Hydrograph**

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=9,649 sf
Runoff Volume=0.082 af
Runoff Depth=4.46"
Tc=1.0 min
CN=98
Subcatchment 3S: roof 3

Runoff = 1.31 cfs @ 12.01 hrs, Volume= 0.095 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11,171</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
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</tbody>
</table>

Tc=1.0 min

Direct Entry,

Subcatchment 3S: roof 3

Hydrograph

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=11,171 sf
Runoff Volume=0.095 af
Runoff Depth=4.46"
Tc=1.0 min
CN=98
Subcatchment 4S: roof 4

Runoff  =  1.58 cfs @  12.01 hrs,  Volume=  0.115 af,  Depth=  4.46"  

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 YR  Rainfall=4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
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<td>Paved parking &amp; roofs</td>
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</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>
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<tbody>
<tr>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Type III 24-hr 10 YR  Rainfall=4.70"  
Runoff Area=13,473 sf  
Runoff Volume=0.115 af  
Runoff Depth=4.46"  
Tc=1.0 min  
CN=98
Subcatchment 5S: roof 5

Runoff = 1.14 cfs @ 12.01 hrs, Volume = 0.083 af, Depth = 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 10 YR Rainfall = 4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>9,681</td>
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<td>Paved parking &amp; roofs</td>
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</tbody>
</table>

Direct Entry,

Subcatchment 5S: roof 5

Type III 24-hr 10 YR Rainfall = 4.70"
Runoff Area = 9,681 sf
Runoff Volume = 0.083 af
Runoff Depth = 4.46"
Tc = 1.0 min
CN = 98
Subcatchment 6S: roof 6

Runoff = 0.86 cfs @ 12.01 hrs, Volume = 0.063 af, Depth = 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 10 YR Rainfall = 4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,345</td>
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<td>Paved parking &amp; roofs</td>
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</tbody>
</table>

<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>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Type III 24-hr 10 YR Rainfall = 4.70"
Runoff Area = 7,345 sf
Runoff Volume = 0.063 af
Runoff Depth = 4.46"
Tc = 1.0 min
CN = 98
Subcatchment 7S: roof 7

Runoff = 1.31 cfs @ 12.01 hrs, Volume= 0.095 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11,171</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
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<table>
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<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>
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<tbody>
<tr>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcathcment 7S: roof 7

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=11,171 sf
Runoff Volume=0.095 af
Runoff Depth=4.46"
Tc=1.0 min
CN=98
Subcatchment 8S: roof 8

Runoff = 1.58 cfs @ 12.01 hrs, Volume= 0.115 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
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<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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</thead>
<tbody>
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<td>13,450</td>
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<td>Paved parking &amp; roofs</td>
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Subcatchment 8S: roof 8

Hydrograph

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=13,450 sf
Runoff Volume=0.115 af
Runoff Depth=4.46"
Tc=1.0 min
CN=98
Subcatchment 9S: subarea 1

Runoff = 2.40 cfs @ 12.09 hrs, Volume= 0.179 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
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<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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</thead>
<tbody>
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<tr>
<td>61,212</td>
<td>66</td>
<td>Weighted Average</td>
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<table>
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<th>Tc</th>
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<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, assumed</td>
</tr>
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</table>

Subcatchment 9S: subarea 1

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=61,212 sf
Runoff Volume=0.179 af
Runoff Depth=1.53"
Tc=5.0 min
CN=66
Subcatchment 10S: subarea 2

Runoff = 0.50 cfs @ 12.11 hrs, Volume = 0.048 af, Depth = 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>23,947</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>32,260</td>
<td>54</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

Tc = 5.0 min

Subcatchment 10S: subarea 2

Hydrograph

Type III 24-hr 10 YR
Rainfall = 4.70"
Runoff Area = 32,260 sf
Runoff Volume = 0.048 af
Runoff Depth = 0.78"
Tc = 5.0 min
CN = 54
Subcatchment 11S: subarea 3

Runoff = 0.67 cfs @ 12.09 hrs, Volume = 0.052 af, Depth = 1.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs

Type III 24-hr 10 YR Rainfall = 4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
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<tbody>
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<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>13,082</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>21,579</td>
<td>62</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

Subcatchment Hydrograph

Type III 24-hr 10 YR Rainfall = 4.70"
Runoff Area = 21,579 sf
Runoff Volume = 0.052 af
Runoff Depth = 1.26"
Tc = 5.0 min
CN = 62
Subcatchment 12S: subarea 4

Runoff = 0.12 cfs @ 12.33 hrs, Volume= 0.024 af, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YR Rainfall=4.70"

### Area (sf) CN Description

<table>
<thead>
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<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,514</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>32,200</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>35,714</td>
<td>45</td>
<td>Weighted Average</td>
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</table>

### Tc Length Slope Velocity Capacity Description

<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>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, assumed</td>
</tr>
</tbody>
</table>

**Subcatchment 12S: subarea 4**

**Hydrograph**

Type III 24-hr 10 YR
Rainfall=4.70"
Runoff Area=35,714 sf
Runoff Volume=0.024 af
Runoff Depth=0.35"
Tc=5.0 min
CN=45
Subcatchment 13S: subarea 5

Runoff = 2.08 cfs @ 12.11 hrs, Volume= 0.209 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>36,316</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>114,390</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>150,706</td>
<td>53</td>
<td>Weighted Average</td>
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</table>

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<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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<tbody>
<tr>
<td>5.0</td>
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<td></td>
<td></td>
<td></td>
<td>Direct Entry, assumed</td>
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</table>

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=150,706 sf
Runoff Volume=0.209 af
Runoff Depth=0.73"
Tc=5.0 min
CN=53
Subcatchment 14S: subarea 6

Runoff = 0.02 cfs @ 12.41 hrs, Volume = 0.006 af, Depth = 0.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
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<th>Area (sf)</th>
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<tbody>
<tr>
<td>692</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
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<tr>
<td>13,549</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
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<tr>
<td>14,241</td>
<td>42</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

Tc = 5.0 min, CN = 42

Subcatchment 14S: subarea 6

Hydrograph

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=14,241 sf
Runoff Volume=0.006 af
Runoff Depth=0.24"
Tc=5.0 min
CN=42
Subcatchment 15S: subarea 7

Runoff = 0.29 cfs @ 12.10 hrs, Volume = 0.027 af, Depth = 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs

Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
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<th>Area (sf)</th>
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<tr>
<td>4,669</td>
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<tr>
<td>12,206</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
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<tr>
<td>16,875</td>
<td>55</td>
<td>Weighted Average</td>
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</tbody>
</table>

Subcatchment 15S: subarea 7

Hydrograph

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=16,875 sf
Runoff Volume=0.027 af
Runoff Depth=0.83"
Tc=5.0 min
CN=55
Subcatchment 16S: subarea 8

Runoff = 0.00 cfs @ 13.75 hrs, Volume= 0.003 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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</thead>
<tbody>
<tr>
<td>9,535</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
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</tbody>
</table>

Tc=5.0 min

Direct Entry, assumed

Subcatchment 16S: subarea 8

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=9,535 sf
Runoff Volume=0.003 af
Runoff Depth=0.14"
Tc=5.0 min
CN=39
Subcatchment 17S: subarea 9

Runoff = 5.19 cfs @ 12.10 hrs, Volume=0.461 af, Depth=0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span=0.00-40.00 hrs, dt=0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

<table>
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<tr>
<td>79,963</td>
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<td>Paved parking &amp; roofs</td>
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<tr>
<td>190,355</td>
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<tr>
<td>270,318</td>
<td>56</td>
<td>Weighted Average</td>
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</table>

Tc = 5.0 min

Direct Entry, assumed

Subcatchment 17S: subarea 9

Type III 24-hr 10 YR Rainfall=4.70"
Runoff Area=270,318 sf
Runoff Volume=0.461 af
Runoff Depth=0.89"
Tc=5.0 min
CN=56
Subcatchment 18S: subarea 10

Runoff = 0.43 cfs @ 12.02 hrs, Volume= 0.028 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>8,178</td>
<td>70</td>
<td>Plaza Deck #1</td>
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</table>

<table>
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<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>1.0</td>
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<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcatchment 18S: subarea 10

Type III 24-hr 10 YR
Rainfall=4.70"
Runoff Area=8,178 sf
Runoff Volume=0.028 af
Runoff Depth=1.82"
Tc=1.0 min
CN=70
Subcatchment 19S: subarea 11

Runoff = 0.14 cfs @ 12.04 hrs, Volume= 0.011 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YR Rainfall=4.70"

<table>
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<tr>
<th>Area (sf)</th>
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<th>Description</th>
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<tbody>
<tr>
<td>7,199</td>
<td>55</td>
<td>pool decking</td>
</tr>
</tbody>
</table>

Direct Entry,

Subcatchment 19S: subarea 11

Hydrograph

Type III 24-hr 10 YR
Rainfall=4.70"
Runoff Area=7,199 sf
Runoff Volume=0.011 af
Runoff Depth=0.83"
Tc=1.0 min
CN=55
Subcatchment 20S: subarea 12

Runoff = 0.14 cfs @ 12.04 hrs, Volume = 0.011 af, Depth = 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 10 YR Rainfall = 4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tbody>
<tr>
<td>7,199</td>
<td>55</td>
<td>pool decking</td>
</tr>
</tbody>
</table>

Direct Entry,

Subcatchment 20S: subarea 12

Type III 24-hr 10 YR Rainfall = 4.70"
Runoff Area = 7,199 sf
Runoff Volume = 0.011 af
Runoff Depth = 0.83"
Tc = 1.0 min
CN = 55
Subcatchment 21S: subarea 13

Runoff = 0.43 cfs @ 12.02 hrs, Volume= 0.028 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<th>Description</th>
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<tr>
<td>8,178</td>
<td>70</td>
<td>Plaza Deck #1</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>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcatchment 21S: subarea 13

Type III 24-hr 10 YR
Rainfall=4.70"
Runoff Area=8,178 sf
Runoff Volume=0.028 af
Runoff Depth=1.82"
Tc=1.0 min
CN=70
Reach 1R: dmh 2 to dmh 3

Inflow Area = 2.146 ac, Inflow Depth = 1.27" for 10 YR event
Inflow = 2.89 cfs @ 12.09 hrs, Volume = 0.227 af
Outflow = 2.91 cfs @ 12.09 hrs, Volume = 0.227 af, Atten = 0%, Lag = 0.2 min

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Max. Velocity = 9.5 fps, Min. Travel Time = 0.2 min
Avg. Velocity = 3.7 fps, Avg. Travel Time = 0.6 min

Peak Depth = 0.31' @ 12.09 hrs
Capacity at bank full = 56.56 cfs
Inlet Invert = 66.40', Outlet Invert = 57.90'
24.0" Diameter Pipe  n = 0.013  Length = 136.0'  Slope = 0.0625 '/'

Inflow Area=2.146 ac  
Peak Depth=0.31'  
Max Vel=9.5 fps  
D=24.0"  
n=0.013  
L=136.0'  
S=0.0625 '/'  
Capacity=56.56 cfs
Proposed Conditions

Inflow Area = 2.641 ac, Inflow Depth = 1.27" for 10 YR event
Inflow = 3.57 cfs @ 12.09 hrs, Volume = 0.279 af
Outflow = 3.59 cfs @ 12.10 hrs, Volume = 0.279 af, Atten = 0%, Lag = 0.3 min

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Max. Velocity = 4.7 fps, Min. Travel Time = 0.4 min
Avg. Velocity = 1.9 fps, Avg. Travel Time = 1.0 min

Peak Depth = 0.58' @ 12.10 hrs
Capacity at bank full = 19.56 cfs
Inlet Invert = 57.80', Outlet Invert = 57.00'
24.0" Diameter Pipe n = 0.013 Length = 107.0' Slope = 0.0075 '/'

Reach 2R: dmh 3 to fes 5

Inflow Area=2.641 ac
Peak Depth=0.58'
Max Vel=4.7 fps
D=24.0"
n=0.013
L=107.0'
S=0.0075 '/'
Capacity=19.56 cfs
Pond 1P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.169 ac, Inflow Depth = 4.46" for 10 YR event
Inflow = 0.86 cfs @ 12.01 hrs, Volume = 0.063 af
Outflow = 0.24 cfs @ 12.31 hrs, Volume = 0.063 af, Atten = 73%, Lag = 18.1 min
Discarded = 0.24 cfs @ 12.31 hrs, Volume = 0.063 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 102.12' @ 12.31 hrs Surf.Area = 476 sf Storage = 486 cf
Flood Elev = 107.17' Surf.Area = 476 sf Storage = 1,705 cf
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

<table>
<thead>
<tr>
<th></th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td><strong>14.00'W x 34.00'L x 7.17'H Prismatoid</strong> 3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td><strong>6.00'D x 6.67'H Vertical Cone/Cylinder</strong> x 3 Inside #1</td>
</tr>
</tbody>
</table>

1,705 cf Total Available Storage

# # Routing Invert Outlet Devices
1 Discarded 0.00' **0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area**

Discarded OutFlow Max = 0.24 cfs @ 12.31 hrs HW = 102.12' (Free Discharge)

1 = Exfiltration (15.0 in/hr) (Exfiltration Controls 0.24 cfs)

**Pond 1P: 3-1000 Gal. Leach. Pits**

Hydrograph

Inflow Area = 0.169 ac
Peak Elev = 102.12'
Storage = 486 cf
Pond 2P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.222 ac, Inflow Depth = 4.46" for 10 YR event
Inflow = 1.13 cfs @ 12.01 hrs, Volume= 0.082 af
Outflow = 0.27 cfs @ 12.35 hrs, Volume= 0.083 af, Atten= 76%, Lag= 20.5 min
Discarded = 0.27 cfs @ 12.35 hrs, Volume= 0.083 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 103.23' @ 12.35 hrs  Surf.Area= 476 sf  Storage= 755 cf
Flood Elev= 107.17'  Surf.Area= 476 sf  Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00’</td>
<td>1,139 cf</td>
<td>14.00’W x 34.00’L x 7.17’H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50’</td>
<td>566 cf</td>
<td>6.00’D x 6.67’H Vertical Cone/Cylinder x 3 Inside #1</td>
</tr>
</tbody>
</table>

1,705 cf Total Available Storage

# Routing  Invert  Outlet Devices
1 Discarded 0.00’ 0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area

Discarded OutFlow Max=0.27 cfs @ 12.35 hrs  HW=103.23’ (Free Discharge)
   -1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.27 cfs)

Pond 2P: 3-1000 Gal. Leach. Pits

Hydrograph

Inflow Area=0.222 ac
Peak Elev=103.23'
Storage=755 cf
Pond 3P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.256 ac, Inflow Depth = 4.46" for 10 YR event
Inflow = 1.31 cfs @ 12.01 hrs, Volume = 0.095 af
Outflow = 0.30 cfs @ 12.37 hrs, Volume = 0.096 af, Atten = 77%, Lag = 21.5 min
Discarded = 0.30 cfs @ 12.37 hrs, Volume = 0.096 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 103.99' @ 12.37 hrs Surf.Area = 476 sf Storage = 938 cf
Flood Elev = 107.17' Surf.Area = 476 sf Storage = 1,705 cf
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail Storage</th>
<th>Storage Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td>14.00'W x 34.00'L x 7.17'H Prismatoid 3.413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td>6.00'D x 6.67'H Vertical Cone/Cylinder x 3 Inside #1</td>
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1,705 cf Total Available Storage

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max = 0.30 cfs @ 12.37 hrs HW = 103.99' (Free Discharge)

1 Exfiltration (15.0 in/hr) (Exfiltration Controls 0.30 cfs)

Pond 3P: 3-1000 Gal. Leach. Pits

Hydrograph

Inflow Area = 0.256 ac
Peak Elev = 103.99'
Storage = 938 cf
Pond 4P: 5-1000 Gal. Leach. Pits (18'x58'"

Inflow Area = 0.662 ac, Inflow Depth = 2.81" for 10 YR event
Inflow = 2.14 cfs @ 12.02 hrs, Volume= 0.155 af
Outflow = 0.51 cfs @ 12.39 hrs, Volume= 0.155 af, Atten= 76%, Lag= 22.3 min
Discarded = 0.51 cfs @ 12.39 hrs, Volume= 0.155 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 102.79' @ 12.39 hrs Surf.Area= 1,044 sf Storage= 1,362 cf
Flood Elev= 107.17' Surf.Area= 1,044 sf Storage= 3,560 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
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<tr>
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<tr>
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<td>2,617 cf</td>
<td>18.00'W x 58.00'L x 7.17'H Prismatoid 7,485 cf Overall - 943 cf Embedded = 6,543 cf x 40.0% Voids</td>
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<tr>
<td>2</td>
<td>100.50'</td>
<td>943 cf</td>
<td>6.00'D x 6.67'H Vertical Cone/Cylinder x 5 Inside #1</td>
</tr>
</tbody>
</table>

<table>
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<th>#</th>
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<th>Invert</th>
<th>Outlet Devices</th>
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<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.51 cfs @ 12.39 hrs HW=102.79' (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.51 cfs)
**Pond 5P: 3-1000 Gal. Leach. Pits**

Inflow Area = 0.222 ac, Inflow Depth = 4.46" for 10 YR event
Inflow = 1.14 cfs @ 12.01 hrs, Volume = 0.083 af
Outflow = 0.27 cfs @ 12.35 hrs, Volume = 0.083 af, Atten = 76%, Lag = 20.5 min
Discarded = 0.27 cfs @ 12.35 hrs, Volume = 0.083 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 103.25' @ 12.35 hrs Surf.Area = 476 sf Storage = 759 cf
Flood Elev = 107.17' Surf.Area = 476 sf Storage = 1,705 cf
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

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<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td><strong>14.00’W x 34.00’L x 7.17’H Prismatoid</strong>&lt;br&gt;3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
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<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
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<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td><strong>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</strong></td>
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</tbody>
</table>

Discarded OutFlow Max = 0.27 cfs @ 12.35 hrs HW = 103.25' (Free Discharge)<br>1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.27 cfs)

**Pond 5P: 3-1000 Gal. Leach. Pits**

Hydrograph

Inflow Area = 0.222 ac
Peak Elev = 103.25'
Storage = 759 cf
Pond 6P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.169 ac, Inflow Depth = 4.46" for 10 YR event
Inflow = 0.86 cfs @ 12.01 hrs, Volume = 0.063 af
Outflow = 0.24 cfs @ 12.31 hrs, Volume = 0.063 af, Atten = 73%, Lag = 18.1 min
Discarded = 0.24 cfs @ 12.31 hrs, Volume = 0.063 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 102.12’ @ 12.31 hrs Surf.Area = 476 sf Storage = 486 cf
Flood Elev = 107.17’ Surf.Area = 476 sf Storage = 1,705 cf
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

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<tr>
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<td>1,139 cf</td>
<td><strong>14.00’W x 34.00’L x 7.17’H Prismatoid</strong></td>
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<td>2</td>
<td>100.50’</td>
<td>566 cf</td>
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1,705 cf Total Available Storage

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<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00’</td>
<td><strong>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</strong></td>
</tr>
</tbody>
</table>

Discarded OutFlow Max = 0.24 cfs @ 12.31 hrs HW = 102.12’ (Free Discharge)

0 = Exfiltration (15.0 in/hr) (Exfiltration Controls 0.24 cfs)

Pond 6P: 3-1000 Gal. Leach. Pits

Hydrograph

Inflow Area = 0.169 ac
Peak Elev = 102.12’
Storage = 486 cf
### Pond 7P: 3-1000 Gal. Leach. Pits

- **Inflow Area** = 0.256 ac, **Inflow Depth** = 4.46" for 10 YR event
- **Inflow** = 1.31 cfs @ 12.01 hrs, Volume= 0.095 af
- **Outflow** = 0.30 cfs @ 12.37 hrs, Volume= 0.096 af, **Atten** = 77%, **Lag** = 21.5 min
- **Discarded** = 0.30 cfs @ 12.37 hrs, Volume= 0.096 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
- **Peak Elev**= 103.99' @ 12.37 hrs  
  Surf.Area= 476 sf  
  Storage= 938 cf
- **Flood Elev**= 107.17'  
  Surf.Area= 476 sf  
  Storage= 1,705 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
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<th>#</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td><strong>14.00'W x 34.00'L x 7.17'H Prismatoid</strong></td>
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<tr>
<td></td>
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<td>3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
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<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td><strong>6.00'D x 6.67'H Vertical Cone/Cylinder x 3 Inside #1</strong></td>
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1,705 cf  
Total Available Storage

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td><strong>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</strong></td>
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**Discarded OutFlow**  
Max=0.30 cfs @ 12.37 hrs  
HW=103.99'  
(Free Discharge)

**1=Exfiltration (15.0 in/hr)**  
(Exfiltration Controls 0.30 cfs)

### Hydrograph

- **Inflow Area**=0.256 ac  
- **Peak Elev**=103.99'  
- **Storage**=938 cf
Pond 8P: 5-1000 Gal. Leach. Pits (18’x58’)

Inflow Area = 0.662 ac, Inflow Depth = 2.81” for 10 YR event
Inflow = 2.14 cfs @ 12.02 hrs, Volume= 0.155 af
Outflow = 0.51 cfs @ 12.39 hrs, Volume= 0.155 af, Atten= 76%, Lag= 22.3 min
Discarded = 0.51 cfs @ 12.39 hrs, Volume= 0.155 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 102.79’ @ 12.39 hrs  Surf.Area= 1,044 sf  Storage= 1,359 cf
Flood Elev= 107.17’  Surf.Area= 1,044 sf  Storage= 3,560 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

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<tr>
<td>1</td>
<td>100.00’</td>
<td>2,617 cf</td>
<td>18.00’W x 58.00’L x 7.17’H Prismatoid 7,485 cf Overall - 943 cf Embedded = 6,543 cf x 40.0% Voids</td>
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<tr>
<td>2</td>
<td>100.50’</td>
<td>943 cf</td>
<td>6.00’D x 6.67’H Vertical Cone/Cylinder x 5 Inside #1</td>
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<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00’</td>
<td>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</td>
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Discarded OutFlow Max=0.51 cfs @ 12.39 hrs  HW=102.79’ (Free Discharge) 1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.51 cfs)
Pond 9P: dcbn-2

Inflow Area = 1.405 ac, Inflow Depth = 1.53" for 10 YR event
Inflow = 2.40 cfs @ 12.09 hrs, Volume = 0.179 af
Outflow = 2.40 cfs @ 12.09 hrs, Volume = 0.179 af, Attenuation = 0%, Lag = 0.0 min
Primary = 2.40 cfs @ 12.09 hrs, Volume = 0.179 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 69.72' @ 12.09 hrs
Flood Elev = 72.00'
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

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<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>69.00'</td>
<td>18.0&quot; x 188.0' long Culvert RCP, sq. cut end projecting, Ke = 0.500</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Outlet Invert = 67.00' S = 0.0106 '/' n = 0.013 Cc = 0.900</td>
</tr>
</tbody>
</table>

Primary Outflow Max = 2.33 cfs @ 12.09 hrs HW = 69.71' TW = 66.70' (Dynamic Tailwater)

1=Culvert (Inlet Controls 2.33 cfs @ 2.9 fps)

Pond 9P: dcbn-2

Hydrograph

Inflow Area = 1.405 ac
Peak Elev = 69.72'
18.0" x 188.0' Culvert
Proposed Conditions

Type III 24-hr 10 YR Rainfall=4.70"

Prepared by Pesce Engineering & Associates

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8/14/2016

Pond 10P: cbn-2

Inflow Area = 0.741 ac, Inflow Depth = 0.78" for 10 YR event
Inflow = 0.50 cfs @ 12.11 hrs, Volume= 0.048 af
Outflow = 0.50 cfs @ 12.11 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 0.50 cfs @ 12.11 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 70.35' @ 12.11 hrs
Flood Elev= 72.50'
Plug-Flow detention time= 0.0 min calculated for 0.048 af (100% of inflow)
Center-of-Mass det. time= 0.0 min ( 902.2 - 902.2 )

# Routing Invert Outlet Devices
1 Primary 70.00' 12.0" x 17.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500
Outlet Invert= 69.50' S= 0.0294 '/' n= 0.013 Cc= 0.900

Primary OutFlow Max=0.49 cfs @ 12.11 hrs HW=70.35' TW=66.70' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.49 cfs @ 2.0 fps)

Inflow Area=0.741 ac
Peak Elev=70.35'
12.0" x 17.0' Culvert
Pond 11P: cbn-3

Inflow Area = 0.495 ac, Inflow Depth = 1.26" for 10 YR event
Inflow = 0.67 cfs @ 12.09 hrs, Volume = 0.052 af
Outflow = 0.67 cfs @ 12.09 hrs, Volume = 0.052 af, Atten = 0%, Lag = 0.0 min
Primary = 0.67 cfs @ 12.09 hrs, Volume = 0.052 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 59.91' @ 12.09 hrs
Flood Elev = 62.00'
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

# Routing Invert Outlet Devices
1 Primary 59.50' **12.0" x 56.0' long Culvert** RCP, sq.cut end projecting, Ke = 0.500
Outlet Invert = 58.90' S = 0.0107 '/' n = 0.013 Cc = 0.900

**Primary OutFlow** Max = 0.65 cfs @ 12.09 hrs  HW = 59.91'  TW = 58.37' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.65 cfs @ 2.2 fps)
Pond 12P: infiltration basin 1

Inflow Area = 3.461 ac, Inflow Depth = 1.05" for 10 YR event
Inflow = 3.63 cfs @ 12.10 hrs, Volume = 0.303 af
Outflow = 0.08 cfs @ 23.49 hrs, Volume = 0.169 af, Atten = 98%, Lag = 683.5 min
Discarded = 0.08 cfs @ 23.49 hrs, Volume = 0.169 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume = 0.000 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 59.42' @ 23.49 hrs Surf.Area = 6,445 sf Storage = 9,943 cf
Flood Elev = 61.50' Surf.Area = 10,246 sf Storage = 26,370 cf
Plug-Flow detention time = 803.3 min calculated for 0.169 af (56% of inflow)
Center-of-Mass det. time = 670.8 min (1,549.1 - 878.3 )

# Invert Avail.Storage Storage Description
1 57.00' 31,698 cf Basin (Irregular) Listed below

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<td>555.0</td>
<td>5,328</td>
<td>31,698</td>
<td>24,803</td>
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# Routing Invert Outlet Devices
1 Discarded 0.00' 0.000722 fpm Exfiltration (0.52 in/hr) over entire Surface area
2 Secondary 61.50' 10.0' long x 5.0' breadth Broad-Crested Rectangular Weir

Discarded OutFlow Max = 0.08 cfs @ 23.49 hrs HW = 59.42' (Free Discharge)
Secondary OutFlow Max = 0.00 cfs @ 0.00 hrs HW = 57.00' (Free Discharge)
Pond 12P: infiltration basin 1

Hydrograph

Inflow Area=3.461 ac
Peak Elev=59.42'
Storage=9,943 cf
Pond 13P: dcbn-1

Inflow Area = 3.460 ac, Inflow Depth = 0.73" for 10 YR event
Inflow = 2.08 cfs @ 12.11 hrs, Volume = 0.209 af
Outflow = 2.08 cfs @ 12.11 hrs, Volume = 0.209 af, Atten= 0%, Lag= 0.0 min
Primary = 2.08 cfs @ 12.11 hrs, Volume = 0.209 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 69.66' @ 12.11 hrs
Flood Elev= 72.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>69.00'</td>
<td>18.0&quot; x 193.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outlet Invert= 66.00' S= 0.0155 '/' n= 0.013 Cc= 0.900</td>
</tr>
</tbody>
</table>

Primary OutFlow Max=2.03 cfs @ 12.11 hrs HW=69.65' TW=66.40' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.03 cfs @ 2.7 fps)

Pond 13P: dcbn-1

Inflow Area=3.460 ac
Peak Elev=69.66'
18.0" x 193.0' Culvert
Pond 14P: rain garden 1

Inflow Area = 3.787 ac, Inflow Depth = 0.68" for 10 YR event
Inflow = 2.08 cfs @ 12.11 hrs, Volume= 0.216 af
Outflow = 0.64 cfs @ 12.57 hrs, Volume= 0.195 af, Atten= 69%, Lag= 27.5 min
Primary = 0.64 cfs @ 12.57 hrs, Volume= 0.195 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 67.20' @ 12.57 hrs Surf.Area= 1,956 sf Storage= 2,130 cf
Flood Elev= 69.50' Surf.Area= 3,697 sf Storage= 8,165 cf
Plug-Flow detention time= 107.7 min calculated for 0.195 af (90% of inflow)
Center-of-Mass det. time= 61.9 min (971.2 - 909.3)

# Invert Avail.Storage Storage Description
1  66.00'       10,119 cf Rain Garden #1 (Irregular) Listed below

(feet) (sq-ft) (feet) (cubic-feet) (cubic-feet) (sq-ft)
66.00 1,125 211.0 0 0 1,125
68.00 2,507 250.0 3,541 3,541 2,628
69.50 3,697 279.0 4,624 8,165 3,912
70.00 4,123 289.0 1,954 10,119 4,386

# Routing Invert Outlet Devices
1 Primary 65.00' 12.0'' x 114.0' long Culvert CPP, projecting, no headwall, Ke= 0.900
Outlet Invert= 62.00' S= 0.0263 '/' n= 0.013 Cc= 0.900
2 Device 1 66.50' 6.0'' Vert. Orifice/Grate C= 0.600
3 Secondary 69.50' 10.0' long x 5.0' breadth Broad-Crested Rectangular Weir
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
Coef. (English) 2.34 2.50 2.70 2.66 2.66 2.66 2.65 2.65 2.65 2.65
2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.64 cfs @ 12.57 hrs HW=67.20' TW=56.68' (Dynamic Tailwater)
1=Culvert (Passes 0.64 cfs of 3.89 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.64 cfs @ 3.2 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' TW=56.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Pond 14P: rain garden 1

Hydrograph

Inflow Area = 3.787 ac
Peak Elev = 67.20'
Storage = 2,130 cf

Flow (cfs)

Inflow
Outflow
Primary
Secondary

Flow (cfs)

0.00 cfs

Time (hours)
Pond 15P: cbn-1

Inflow Area = 0.387 ac, Inflow Depth = 0.83" for 10 YR event
Inflow = 0.29 cfs @ 12.10 hrs, Volume= 0.027 af
Outflow = 0.29 cfs @ 12.10 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 12.10 hrs, Volume= 0.027 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 59.77' @ 12.10 hrs
Flood Elev= 62.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

# Routing Invert Outlet Devices
1 Primary 59.50' 12.0" x 80.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500
Outlet Invert= 58.00' S= 0.0187 '/' n= 0.013  Cc= 0.900

Primary OutFlow Max=0.29 cfs @ 12.10 hrs  HW=59.76' TW=56.07' (Dynamic Tailwater)

Inflow Area=0.387 ac
Peak Elev=59.77'
12.0" x 80.0' Culvert
Pond 16P: rain garden 2

Inflow Area = 4.393 ac, Inflow Depth = 0.61” for 10 YR event
Inflow = 0.73 cfs @ 12.48 hrs, Volume= 0.225 af
Outflow = 0.52 cfs @ 13.35 hrs, Volume= 0.206 af, Attenuation= 29%, Lag= 52.0 min
Primary = 0.52 cfs @ 13.35 hrs, Volume= 0.206 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 57.05’ @ 13.35 hrs   Surf.Area= 1,600 sf   Storage= 1,636 cf
Flood Elev= 59.50’   Surf.Area= 2,911 sf   Storage= 6,795 cf
Plug-Flow detention time= 98.0 min calculated for 0.206 af (92% of inflow)
Center-of-Mass det. time= 56.1 min (1,019.2 - 963.1 )

<table>
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<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
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<tbody>
<tr>
<td>1</td>
<td>56.00’</td>
<td>8,331 cf</td>
<td>Rain Garden #2 (Irregular) Listed below</td>
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<td>3,716</td>
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# Routing Invert Outlet Devices
1 Primary 55.00’ **12.0’ x 118.0’ long Culvert** RCP, square edge headwall, Ke= 0.500
Outlet Invert= 42.00’ S= 0.1102 ’ n= 0.013   Cc= 0.900
2 Device 1 56.50’ **6.0’ Vert. Orifice/Grate** C= 0.600
3 Secondary 59.50’ **10.0’ long x 5.0’ breadth Broad-Crested Rectangular Weir**
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
Coeff. (English) 2.34 2.50 2.70 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.66 2.70 2.74 2.79 2.88

**Primary OutFlow** Max=0.52 cfs @ 13.35 hrs   HW=57.05’ TW=43.26’ (Dynamic Tailwater)
1=Culvert (Passes 0.52 cfs of 4.71 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.52 cfs @ 2.6 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs   HW=56.00’ TW=42.00’ (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Pond 16P: rain garden 2

Hydrograph

Inflow Area=4.393 ac
Peak Elev=57.05'
Storage=1,636 cf

Time (hours)

Flow (cfs)

Inflow Area=4.393 ac
Peak Elev=57.05'
Storage=1,636 cf
Pond 17P: infiltration basin 2

Inflow Area = 10.599 ac, Inflow Depth = 0.76" for 10 YR event
Inflow = 5.19 cfs @ 12.10 hrs, Volume= 0.667 af
Outflow = 0.45 cfs @ 17.17 hrs, Volume= 0.668 af, Atten= 91%, Lag= 303.9 min
Discarded = 0.45 cfs @ 17.17 hrs, Volume= 0.668 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 43.93' @ 17.17 hrs Surf.Area= 8,143 sf Storage= 13,200 cf
Flood Elev= 47.80' Surf.Area= 13,908 sf Storage= 55,908 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

# Invert Avail.Storage Storage Description
1 42.00' 60,415 cf D-Basin (Irregular) Listed below

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<td>48.00</td>
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<td>4,507</td>
<td>60,415</td>
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# Routing Invert Outlet Devices
1 Discarded 0.00' 0.003347 fpm Exfiltration (2.41 in/hr) over entire Surface area
2 Secondary 47.80' 15.0' long x 5.0' breadth Broad-Crested Rectangular Weir

Discarded OutFlow Max=0.45 cfs @ 17.17 hrs HW=43.93' (Free Discharge)
1=Exfiltration (2.41 in/hr) (Exfiltration Controls 0.45 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Proposed Conditions

Type III 24-hr 10 YR Rainfall=4.70"

Pond 17P: infiltration basin 2

Hydrograph

Inflow Area=10.599 ac
Peak Elev=43.93'
Storage=13,200 cf

Inflow
Outflow
Discarded
Secondary
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<th>Subcatchment</th>
<th>Type</th>
<th>Runoff Area</th>
<th>Runoff Depth</th>
<th>Tc (min)</th>
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<td>7,345 sf</td>
<td>5.16&quot;</td>
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<td>0.99 cfs</td>
<td>0.073 af</td>
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<td>1.0</td>
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<td>0.46 cfs</td>
<td>0.038 af</td>
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</tbody>
</table>
Proposed Conditions

Type III 24-hr 25 YR Rainfall=5.40"

Prepared by Pesce Engineering & Associates

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Subcatchment 16S: subarea 8

Runoff Area=9,535 sf  Runoff Depth=0.29"
Tc=5.0 min  CN=39  Runoff=0.02 cfs  0.005 af

Subcatchment 17S: subarea 9

Runoff Area=270,318 sf  Runoff Depth=1.25"
Tc=5.0 min  CN=56  Runoff=7.97 cfs  0.649 af

Subcatchment 18S: subarea 10

Runoff Area=8,178 sf  Runoff Depth=2.34"
Tc=1.0 min  CN=70  Runoff=0.57 cfs  0.037 af

Subcatchment 19S: subarea 11

Runoff Area=7,199 sf  Runoff Depth=1.19"
Tc=1.0 min  CN=55  Runoff=0.22 cfs  0.016 af

Subcatchment 20S: subarea 12

Runoff Area=7,199 sf  Runoff Depth=1.19"
Tc=1.0 min  CN=55  Runoff=0.22 cfs  0.016 af

Subcatchment 21S: subarea 13

Runoff Area=8,178 sf  Runoff Depth=2.34"
Tc=1.0 min  CN=70  Runoff=0.57 cfs  0.037 af

Reach 1R: dmh 2 to dmh 3

Peak Depth=0.36’  Max Vel=10.4 fps  Inflow=4.03 cfs  0.304 af
D=24.0”  n=0.013  L=136.0’  S=0.0625 '/'  Capacity=56.56 cfs  Outflow=4.04 cfs  0.304 af

Reach 2R: dmh 3 to fes 5

Peak Depth=0.69’  Max Vel=5.2 fps  Inflow=4.97 cfs  0.374 af
D=24.0”  n=0.013  L=107.0’  S=0.0075 '/'  Capacity=19.56 cfs  Outflow=5.00 cfs  0.374 af

Pond 1P: 3-1000 Gal. Leach. Pits

Peak Elev=102.65’  Storage=614 cf  Inflow=0.99 cfs  0.073 af
Outflow=0.25 cfs  0.073 af

Pond 2P: 3-1000 Gal. Leach. Pits

Peak Elev=103.96’  Storage=930 cf  Inflow=1.31 cfs  0.095 af
Outflow=0.30 cfs  0.095 af

Pond 3P: 3-1000 Gal. Leach. Pits

Peak Elev=104.84’  Storage=1,143 cf  Inflow=1.51 cfs  0.110 af
Outflow=0.33 cfs  0.110 af

Pond 4P: 5-1000 Gal. Leach. Pits (18’x58’)

Peak Elev=103.73’  Storage=1,834 cf  Inflow=2.59 cfs  0.186 af
Outflow=0.56 cfs  0.186 af

Pond 5P: 3-1000 Gal. Leach. Pits

Peak Elev=103.98’  Storage=934 cf  Inflow=1.31 cfs  0.096 af
Outflow=0.30 cfs  0.096 af

Pond 6P: 3-1000 Gal. Leach. Pits

Peak Elev=102.65’  Storage=614 cf  Inflow=0.99 cfs  0.073 af
Outflow=0.25 cfs  0.073 af

Pond 7P: 3-1000 Gal. Leach. Pits

Peak Elev=104.84’  Storage=1,143 cf  Inflow=1.51 cfs  0.110 af
Outflow=0.33 cfs  0.110 af

Pond 8P: 5-1000 Gal. Leach. Pits (18’x58’)

Peak Elev=103.73’  Storage=1,831 cf  Inflow=2.59 cfs  0.186 af
Outflow=0.56 cfs  0.186 af
Proposed Conditions

Type III 24-hr 25 YR Rainfall=5.40"

Prepared by Pesce Engineering & Associates

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Pond 9P: dcbn-2
- Peak Elev=69.85' Inflow=3.22 cfs 0.235 af
- 18.0" x 188.0' Culvert Outflow=3.22 cfs 0.235 af

Pond 10P: cbn-2
- Peak Elev=70.46' Inflow=0.81 cfs 0.069 af
- 12.0" x 17.0' Culvert Outflow=0.81 cfs 0.069 af

Pond 11P: cbn-3
- Peak Elev=60.00' Inflow=0.93 cfs 0.070 af
- 12.0" x 56.0' Culvert Outflow=0.93 cfs 0.070 af

Pond 12P: infiltration basin 1
- Peak Elev=60.11' Storage=14,256 cf Inflow=5.23 cfs 0.413 af
  - Discarded=0.09 cfs 0.195 af  Secondary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.195 af

Pond 13P: dcbn-1
- Peak Elev=69.88' Inflow=3.47 cfs 0.303 af
- 18.0" x 193.0' Culvert Outflow=3.47 cfs 0.303 af

Pond 14P: rain garden 1
- Peak Elev=67.88' Storage=3,325 cf Inflow=3.49 cfs 0.315 af
  - Primary=1.00 cfs 0.294 af  Secondary=0.00 cfs 0.000 af Outflow=1.00 cfs 0.294 af

Pond 15P: cbn-1
- Peak Elev=59.84' Inflow=0.46 cfs 0.038 af
- 12.0" x 80.0' Culvert Outflow=0.46 cfs 0.038 af

Pond 16P: rain garden 2
- Peak Elev=57.53' Storage=2,371 cf Inflow=1.18 cfs 0.338 af
  - Primary=0.83 cfs 0.319 af  Secondary=0.00 cfs 0.000 af Outflow=0.83 cfs 0.319 af

Pond 17P: infiltration basin 2
- Peak Elev=44.92' Storage=22,624 cf Inflow=7.97 cfs 0.968 af
  - Discarded=0.54 cfs 0.969 af  Secondary=0.00 cfs 0.000 af Outflow=0.54 cfs 0.969 af

Total Runoff Area = 16.678 ac  Runoff Volume = 2.349 af  Average Runoff Depth = 1.69"
Subcatchment 1S: roof 1

Runoff = 0.99 cfs @ 12.01 hrs, Volume = 0.073 af, Depth = 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 25 YR Rainfall = 5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,345</td>
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<td>Paved parking &amp; roofs</td>
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<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (feet)</th>
<th>Slope (ft/ft)</th>
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<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
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Subcatchment 1S: roof 1

Hydrograph

Type III 24-hr 25 YR Rainfall = 5.40"
Runoff Area = 7,345 sf
Runoff Volume = 0.073 af
Runoff Depth = 5.16"
Tc = 1.0 min
CN = 98
Subcatchment 2S: roof 2

Runoff = 1.31 cfs @ 12.01 hrs, Volume= 0.095 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<td>1.0</td>
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<td>Direct Entry,</td>
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Subcatchment 2S: roof 2

Hydrograph

Type III 24-hr 25 YR Rainfall=5.40"
Runoff Area=9,649 sf
Runoff Volume=0.095 af
Runoff Depth=5.16"

Tc=1.0 min
CN=98
Subcatchment 3S: roof 3

Runoff = 1.51 cfs @ 12.01 hrs, Volume= 0.110 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
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<table>
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<th>Tc (min)</th>
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<td>1.0</td>
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<td>Direct Entry,</td>
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Subcatchment 3S: roof 3

Hydrograph

Type III 24-hr 25 YR Rainfall=5.40"
Runoff Area=11,171 sf
Runoff Volume=0.110 af
Runoff Depth=5.16"
Tc=1.0 min
CN=98
### Subcatchment 4S: roof 4

Runoff = 1.82 cfs @ 12.01 hrs, Volume = 0.133 af, Depth = 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs

Type III 24-hr 25 YR Rainfall=5.40"

<table>
<thead>
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**Hydrograph**

Type III 24-hr 25 YR Rainfall=5.40"
Runoff Area=13,473 sf
Runoff Volume=0.133 af
Runoff Depth=5.16"
Tc=1.0 min
CN=98
Subcatchment 5S: roof 5

Runoff = 1.31 cfs @ 12.01 hrs, Volume= 0.096 af, Depth = 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 25 YR Rainfall=5.40"

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Hydrograph

Type III 24-hr 25 YR Rainfall=5.40"

Runoff Area=9,681 sf
Runoff Volume=0.096 af
Runoff Depth=5.16"
Tc=1.0 min
CN=98
Subcatchment 6S: roof 6

Runoff = 0.99 cfs @ 12.01 hrs, Volume = 0.073 af, Depth = 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 25 YR Rainfall = 5.40"

<table>
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Subcatchment 6S: roof 6

Type III 24-hr 25 YR Rainfall = 5.40"
Runoff Area = 7,345 sf
Runoff Volume = 0.073 af
Runoff Depth = 5.16"
Tc = 1.0 min
CN = 98
Subcatchment 7S: roof 7

Runoff = 1.51 cfs @ 12.01 hrs, Volume= 0.110 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
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Subcatchment 7S: roof 7

Hydrograph

Type III 24-hr 25 YR Rainfall=5.40"
Runoff Area=11,171 sf
Runoff Volume=0.110 af
Runoff Depth=5.16"
Tc=1.0 min
CN=98
Subcatchment 8S: roof 8

Runoff = 1.82 cfs @ 12.01 hrs, Volume = 0.133 af, Depth = 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
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Subcatchment 8S: roof 8 Hydrograph

Type III 24-hr 25 YR Rainfall=5.40"
Runoff Area=13,450 sf
Runoff Volume=0.133 af
Runoff Depth=5.16"
Tc=1.0 min
CN=98
Subcatchment 9S: subarea 1

Runoff = 3.22 cfs @ 12.08 hrs, Volume = 0.235 af, Depth = 2.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 25 YR Rainfall = 5.40"

<table>
<thead>
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<th>Description</th>
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<tr>
<td>32,752</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>61,212</td>
<td>66</td>
<td>Weighted Average</td>
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<table>
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<th>Tc (min)</th>
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<th>Slope (ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
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Subcatchment 9S: subarea 1

Hydrograph

Type III 24-hr 25 YR
Rainfall = 5.40"
Runoff Area = 61,212 sf
Runoff Volume = 0.235 af
Runoff Depth = 2.01"
Tc = 5.0 min
CN = 66
Subcatchment 10S: subarea 2

Runoff = 0.81 cfs @ 12.10 hrs, Volume = 0.069 af, Depth = 1.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
<thead>
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<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tr>
<td>23,947</td>
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<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>32,260</td>
<td>54</td>
<td>Weighted Average</td>
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</table>

Tc = 5.0 min

Subcatchment 10S: subarea 2

Hydrograph

Type III 24-hr 25 YR Rainfall=5.40"
Runoff Area=32,260 sf
Runoff Volume=0.069 af
Runoff Depth=1.12"
Tc=5.0 min
CN=54
Subcatchment 11S: subarea 3

Runoff = 0.93 cfs @ 12.09 hrs, Volume= 0.070 af, Depth= 1.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
<thead>
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<th>Description</th>
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<td>&gt;75% Grass cover, Good, HSG A</td>
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<td>21,579</td>
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<td>Weighted Average</td>
</tr>
</tbody>
</table>

Tc = 5.0 min

Direct Entry, assumed

Subcatchment 11S: subarea 3

Type III 24-hr 25 YR Rainfall=5.40"
Runoff Area=21,579 sf
Runoff Volume=0.070 af
Runoff Depth=1.69"
Tc=5.0 min
CN=62
Subcatchment 12S: subarea 4

Runoff = 0.26 cfs @ 12.15 hrs, Volume= 0.039 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,514</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>32,200</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>35,714</td>
<td>45</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

Tc = 5.0 min

Subcatchment 12S: subarea 4

Hydrograph

Type III 24-hr 25 YR
Rainfall=5.40"
Runoff Area=35,714 sf
Runoff Volume=0.039 af
Runoff Depth=0.58"

Tc=5.0 min
CN=45
Proposed Conditions

Subcatchment 13S: subarea 5

Runoff = 3.47 cfs @ 12.10 hrs, Volume = 0.303 af, Depth = 1.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 25 YR Rainfall=5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>36,316</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>114,390</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>150,706</td>
<td>53</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

Subcatchment 13S: subarea 5

Type III 24-hr 25 YR Rainfall=5.40"
Runoff Area=150,706 sf
Runoff Volume=0.303 af
Runoff Depth=1.05"
Tc=5.0 min
CN=53
Subcatchment 14S: subarea 6

Runoff = 0.06 cfs @ 12.32 hrs, Volume = 0.012 af, Depth = 0.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 25 YR Rainfall = 5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>692</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>13,549</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>14,241</td>
<td>42</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

Tc = 5.0 min

Direct Entry, assumed

Subcatchment 14S: subarea 6

Hydrograph

Type III 24-hr 25 YR Rainfall = 5.40"
Runoff Area = 14,241 sf
Runoff Volume = 0.012 af
Runoff Depth = 0.42"
Tc = 5.0 min
CN = 42
### Subcatchment 15S: subarea 7

Runoff = 0.46 cfs @ 12.10 hrs, Volume = 0.038 af, Depth = 1.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,669</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>12,206</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>16,875</td>
<td>55</td>
<td>Weighted Average</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>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, assumed</td>
</tr>
</tbody>
</table>

**Subcatchment 15S: subarea 7 Hydrograph**

**Type III 24-hr 25 YR Rainfall=5.40"**

- Runoff Area = 16,875 sf
- Runoff Volume = 0.038 af
- Runoff Depth = 1.19"
- Tc = 5.0 min
- CN = 55
Subcatchment 16S: subarea 8

Runoff = 0.02 cfs @ 12.40 hrs, Volume= 0.005 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9,535</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
</tbody>
</table>

Tc = 5.0 min

Subcatchment 16S: subarea 8

Hydrograph

Type III 24-hr 25 YR
Rainfall=5.40"
Runoff Area= 9,535 sf
Runoff Volume= 0.005 af
Runoff Depth= 0.29"
Tc=5.0 min
CN=39
Subcatchment 17S: subarea 9

Runoff = 7.97 cfs @ 12.09 hrs, Volume = 0.649 af, Depth = 1.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 25 YR Rainfall = 5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>79,963</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>190,355</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>270,318</td>
<td>56</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

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

Subcatchment 17S: subarea 9

Type III 24-hr 25 YR Rainfall = 5.40"
Runoff Area = 270,318 sf
Runoff Volume = 0.649 af
Runoff Depth = 1.25"
Tc = 5.0 min
CN = 56
Subcatchment 18S: subarea 10

Runoff = 0.57 cfs @ 12.02 hrs, Volume= 0.037 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR  Rainfall=5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,178</td>
<td>70</td>
<td>Plaza Deck #1</td>
</tr>
</tbody>
</table>

Tc=1.0 min

Subcatchment 18S: subarea 10

Type III 24-hr 25 YR
Rainfall=5.40"
Runoff Area=8,178 sf
Runoff Volume=0.037 af
Runoff Depth=2.34"
Tc=1.0 min
CN=70
Subcatchment 19S: subarea 11

Runoff = 0.22 cfs @ 12.04 hrs, Volume = 0.016 af, Depth = 1.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 25 YR Rainfall = 5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,199</td>
<td>55</td>
<td>pool decking</td>
</tr>
</tbody>
</table>

Tc | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
---|---------------|--------------|------------------|---------------|-------------|
1.0 |               |              |                  |               | Direct Entry, |

Subcatchment 19S: subarea 11

Type III 24-hr 25 YR Rainfall = 5.40"
Runoff Area = 7,199 sf
Runoff Volume = 0.016 af
Runoff Depth = 1.19"
Tc = 1.0 min
CN = 55
Subcatchment 20S: subarea 12

Runoff = 0.22 cfs @ 12.04 hrs, Volume = 0.016 af, Depth = 1.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 25 YR Rainfall=5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tr>
<td>7,199</td>
<td>55</td>
<td>pool decking</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>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcatchment 20S: subarea 12

Hydrograph

Type III 24-hr 25 YR Rainfall=5.40"
Runoff Area=7,199 sf
Runoff Volume=0.016 af
Runoff Depth=1.19"
Tc=1.0 min
CN=55
Subcatchment 21S: subarea 13

Runoff = 0.57 cfs @ 12.02 hrs, Volume = 0.037 af, Depth = 2.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 25 YR Rainfall = 5.40"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,178</td>
<td>70</td>
<td>Plaza Deck #1</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>1.0</td>
<td>Direct Entry,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subcatchment 21S: subarea 13

Hydrograph

Type III 24-hr 25 YR Rainfall = 5.40"
Runoff Area = 8,178 sf
Runoff Volume = 0.037 af
Runoff Depth = 2.34"
Tc = 1.0 min
CN = 70
Reach 1R: dmh 2 to dmh 3

Inflow Area = 2.146 ac, Inflow Depth = 1.70" for 25 YR event
Inflow = 4.03 cfs @ 12.09 hrs, Volume = 0.304 af
Outflow = 4.04 cfs @ 12.09 hrs, Volume = 0.304 af, Atten = 0%, Lag = 0.2 min

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Max. Velocity = 10.4 fps, Min. Travel Time = 0.2 min
Avg. Velocity = 4.0 fps, Avg. Travel Time = 0.6 min

Peak Depth = 0.36' @ 12.09 hrs
Capacity at bank full = 56.56 cfs
Inlet Invert = 66.40', Outlet Invert = 57.90'
24.0" Diameter Pipe n = 0.013 Length = 136.0' Slope = 0.0625 '/'

Reach 1R: dmh 2 to dmh 3

Inflow Area = 2.146 ac
Peak Depth = 0.36'
Max Vel = 10.4 fps
D = 24.0''
n = 0.013
L = 136.0'
S = 0.0625 '/'
Capacity = 56.56 cfs
Reach 2R: dmh 3 to fes 5

Inflow Area = 2.641 ac, Inflow Depth = 1.70" for 25 YR event
Inflow = 4.97 cfs @ 12.09 hrs, Volume= 0.374 af
Outflow = 5.00 cfs @ 12.10 hrs, Volume= 0.374 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 0.9 min

Peak Depth= 0.69' @ 12.10 hrs
Capacity at bank full= 19.56 cfs
Inlet Invert= 57.80', Outlet Invert= 57.00'
24.0" Diameter Pipe  n= 0.013  Length= 107.0'  Slope= 0.0075 '/'

Reach 2R: dmh 3 to fes 5

Inflow Area=2.641 ac
Peak Depth=0.69'
Max Vel=5.2 fps
D=24.0"
n=0.013
L=107.0'
S=0.0075 '/'
Capacity=19.56 cfs
Type III 24-hr 25 YR Rainfall=5.40"

Proposed Conditions

Prepared by Pesce Engineering & Associates

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8/14/2016

Pond 1P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.169 ac, Inflow Depth = 5.16" for 25 YR event
Inflow = 0.99 cfs @ 12.01 hrs, Volume= 0.073 af
Outflow = 0.25 cfs @ 12.34 hrs, Volume= 0.073 af, Atten= 74%, Lag= 19.4 min
Discarded = 0.25 cfs @ 12.34 hrs, Volume= 0.073 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 102.65' @ 12.34 hrs  Surf.Area= 476 sf  Storage= 614 cf
Flood Elev= 107.17'  Surf.Area= 476 sf  Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00’</td>
<td>1,139 cf</td>
<td>14.00’W x 34.00’L x 7.17’H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50’</td>
<td>566 cf</td>
<td>6.00’D x 6.67’H Vertical Cone/Cylinder x 3 Inside #1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00’</td>
<td>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.25 cfs @ 12.34 hrs HW=102.65’ (Free Discharge)

| –1 Exfiltration (15.0 in/hr) (Exfiltration Controls 0.25 cfs) |

Pond 1P: 3-1000 Gal. Leach. Pits

Hydrograph

Inflow Area=0.169 ac
Peak Elev=102.65'
Storage=614 cf
Proposed Conditions

Inflow Area = 0.222 ac, Inflow Depth = 5.16" for 25 YR event
Inflow = 1.31 cfs @ 12.01 hrs, Volume= 0.095 af
Outflow = 0.30 cfs @ 12.37 hrs, Volume= 0.095 af, Atten= 77%, Lag= 21.5 min
Discarded = 0.30 cfs @ 12.37 hrs, Volume= 0.095 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 103.96' @ 12.37 hrs  Surf.Area= 476 sf  Storage= 930 cf
Flood Elev= 107.17'  Surf.Area= 476 sf  Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td>14.00'W x 34.00'L x 7.17'H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td>6.00'D x 6.67'H Vertical Cone/Cylinder x 3 Inside #1</td>
</tr>
</tbody>
</table>

1,705 cf Total Available Storage

Discarded OutFlow Max=0.30 cfs @ 12.37 hrs  HW=103.95’ (Free Discharge)
\[\text{1=Exfiltration (15.0 in/hr)}\] (Exfiltration Controls 0.30 cfs)

Pond 2P: 3-1000 Gal. Leach. Pits

Inflow Area=0.222 ac
Peak Elev=103.96'
Storage=930 cf
Pond 3P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.256 ac, Inflow Depth = 5.16" for 25 YR event
Inflow = 1.51 cfs @ 12.01 hrs, Volume= 0.110 af
Outflow = 0.33 cfs @ 12.38 hrs, Volume= 0.110 af, Atten= 78%, Lag= 22.3 min
Discarded = 0.33 cfs @ 12.38 hrs, Volume= 0.110 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 104.84' @ 12.38 hrs Surf.Area= 476 sf Storage= 1,143 cf
Flood Elev= 107.17' Surf.Area= 476 sf Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td>14.00’W x 34.00’L x 7.17’H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td>6.00’D x 6.67’H Vertical Cone/Cylinder x 3 Inside #1</td>
</tr>
</tbody>
</table>

1,705 cf Total Available Storage

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.33 cfs @ 12.38 hrs HW=104.84' (Free Discharge)

1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.33 cfs)

Pond 3P: 3-1000 Gal. Leach. Pits

Inflow Area=0.256 ac
Peak Elev=104.84'
Storage=1,143 cf

![Hydrograph](image-url)
Pond 4P: 5-1000 Gal. Leach. Pits (18'x58'"

Inflow Area = 0.662 ac, Inflow Depth = 3.37" for 25 YR event
Inflow = 2.59 cfs @ 12.02 hrs, Volume= 0.186 af
Outflow = 0.56 cfs @ 12.41 hrs, Volume= 0.186 af, Atten= 78%, Lag= 23.8 min
Discarded = 0.56 cfs @ 12.41 hrs, Volume= 0.186 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 103.73' @ 12.41 hrs Surf.Area= 1,044 sf Storage= 1,834 cf
Flood Elev= 107.17' Surf.Area= 1,044 sf Storage= 3,560 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>2,617 cf</td>
<td>18.00'W x 58.00'L x 7.17'H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7,485 cf Overall - 943 cf Embedded = 6,543 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>943 cf</td>
<td>6.00'D x 6.67'H Vertical Cone/Cylinder x 5 Inside #1</td>
</tr>
<tr>
<td></td>
<td>3,560 cf</td>
<td>Total Available Storage</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.56 cfs @ 12.41 hrs HW=103.73' (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.56 cfs)

Pond 4P: 5-1000 Gal. Leach. Pits (18'x58'"

Hydrograph

Inflow Area=0.662 ac
Peak Elev=103.73'
Storage=1,834 cf
**Proposed Conditions**

**Type III 24-hr 25 YR Rainfall=5.40”**

**Prepared by Pesce Engineering & Associates**

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**8/14/2016**

---

**Pond 5P: 3-1000 Gal. Leach. Pits**

Inflow Area = 0.222 ac, Inflow Depth = 5.16" for 25 YR event

Inflow = 1.31 cfs @ 12.01 hrs, Volume= 0.096 af

Outflow = 0.30 cfs @ 12.37 hrs, Volume= 0.096 af, Atten= 77%, Lag= 21.5 min

Discarded = 0.30 cfs @ 12.37 hrs, Volume= 0.096 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Peak Elev= 103.98’ @ 12.37 hrs  Surf.Area= 476 sf  Storage= 934 cf

Flood Elev= 107.17’ Surf.Area= 476 sf  Storage= 1,705 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00’</td>
<td>1,139 cf</td>
<td><strong>14.00’W x 34.00’L x 7.17’H Prismatoid</strong> 3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50’</td>
<td>566 cf</td>
<td><strong>6.00’D x 6.67’H Vertical Cone/Cylinder x 3 Inside #1</strong></td>
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1,705 cf Total Available Storage

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00’</td>
<td><strong>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</strong></td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.30 cfs @ 12.37 hrs HW=103.97’ (Free Discharge)

1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.30 cfs)

---

**Pond 5P: 3-1000 Gal. Leach. Pits**

**Hydrograph**

Inflow Area=0.222 ac

Peak Elev=103.98’

Storage=934 cf

---

Flow (cfs)

0 0.30 cfs 1.31 cfs

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Time (hours)
Pond 6P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.169 ac, Inflow Depth = 5.16" for 25 YR event
Inflow = 0.99 cfs @ 12.01 hrs, Volume= 0.073 af
Outflow = 0.25 cfs @ 12.34 hrs, Volume= 0.073 af, Atten= 74%, Lag= 19.4 min
Discarded = 0.25 cfs @ 12.34 hrs, Volume= 0.073 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 102.65' @ 12.34 hrs  Surf.Area= 476 sf  Storage= 614 cf
Flood Elev= 107.17'  Surf.Area= 476 sf  Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
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<th>Avail.Storage</th>
<th>Storage Description</th>
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</thead>
<tbody>
<tr>
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<td>1,139 cf</td>
<td>14.00'W x 34.00'L x 7.17'H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td>6.00'D x 6.67'H Vertical Cone/Cylinder x 3 Inside #1</td>
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</table>

1,705 cf Total Available Storage

# Routing  Invert  Outlet Devices
1 Discarded 0.00' 0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area

Discarded OutFlow Max=0.25 cfs @ 12.34 hrs  HW=102.65'  (Free Discharge)
1=Exfiltration (15.0 in/hr)  (Exfiltration Controls 0.25 cfs)

Pond 6P: 3-1000 Gal. Leach. Pits

Inflow Area=0.169 ac
Peak Elev=102.65'
Storage=614 cf
Pond 7P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.256 ac, Inflow Depth = 5.16" for 25 YR event
Inflow = 1.51 cfs @ 12.01 hrs, Volume= 0.110 af
Outflow = 0.33 cfs @ 12.38 hrs, Volume= 0.110 af, Atten= 78%, Lag= 22.3 min
Discarded = 0.33 cfs @ 12.38 hrs, Volume= 0.110 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 104.84' @ 12.38 hrs Surf.Area= 476 sf Storage= 1,143 cf
Flood Elev= 107.17' Surf.Area= 476 sf Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
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<tr>
<th>#</th>
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<th>Avail.Storage</th>
<th>Storage Description</th>
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<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td><strong>14.00'W x 34.00'L x 7.17'H Prismatoid</strong> 3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td><strong>6.00'D x 6.67'H Vertical Cone/Cylinder</strong> x 3 Inside #1</td>
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</table>

1705 cf Total Available Storage

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<th>Routing</th>
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<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td><strong>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</strong></td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.33 cfs @ 12.38 hrs HW=104.84' (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.33 cfs)
Pond 8P: 5-1000 Gal. Leach. Pits (18'x58")

Inflow Area = 0.662 ac, Inflow Depth = 3.37" for 25 YR event
Inflow = 2.59 cfs @ 12.02 hrs, Volume= 0.186 af
Outflow = 0.56 cfs @ 12.41 hrs, Volume= 0.186 af, Atten= 78%, Lag= 23.7 min
Discarded = 0.56 cfs @ 12.41 hrs, Volume= 0.186 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 103.73' @ 12.41 hrs  Surf.Area= 1,044 sf  Storage= 1,831 cf
Flood Elev= 107.17' Surf.Area= 1,044 sf Storage= 3,560 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
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<th>Avail.Storage</th>
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<tr>
<td>1</td>
<td>100.00'</td>
<td>2,617 cf</td>
<td>18.00'W x 58.00'L x 7.17'H Prismatoid</td>
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<td>7,485 cf Overall - 943 cf Embedded = 6,543 cf x 40.0% Voids</td>
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<tr>
<td>2</td>
<td>100.50'</td>
<td>943 cf</td>
<td>6.00'D x 6.67'H Vertical Cone/Cylinder x 5 Inside #1</td>
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3,560 cf Total Available Storage

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<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</td>
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</table>

Discarded OutFlow Max=0.56 cfs @ 12.41 hrs HW=103.72' (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.56 cfs)

Pond 8P: 5-1000 Gal. Leach. Pits (18'x58")

Hydrograph

Inflow Area=0.662 ac
Peak Elev=103.73'
Storage=1,831 cf
**Proposed Conditions**

Type III 24-hr 25 YR Rainfall=5.40"

Prepared by Pesce Engineering & Associates

HydroCAD® 7.00  s/n 002717 © 1986-2003 Applied Microcomputer Systems

**Pond 9P: dcbn-2**

Inflow Area = 1.405 ac, Inflow Depth = 2.01" for 25 YR event

Inflow = 3.22 cfs @ 12.08 hrs, Volume= 0.235 af

Outflow = 3.22 cfs @ 12.08 hrs, Volume= 0.235 af, Atten= 0%, Lag= 0.0 min

Primary = 3.22 cfs @ 12.08 hrs, Volume= 0.235 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Peak Elev= 69.85' @ 12.08 hrs

Flood Elev= 72.00'

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= (not calculated)

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>69.00'</td>
<td><strong>18.0&quot; x 188.0' long Culvert</strong> RCP, sq.cut end projecting, Ke= 0.500</td>
</tr>
</tbody>
</table>

Outlet Invert= 67.00' S= 0.0106 '/' n= 0.013 Cc= 0.900

**Primary OutFlow** Max=3.13 cfs @ 12.08 hrs HW=69.83' TW=66.76' (Dynamic Tailwater)

1=Culvert (Inlet Controls 3.13 cfs @ 3.1 fps)

**Pond 9P: dcbn-2**

Inflow Area=1.405 ac

Peak Elev=69.85'

18.0" x 188.0' Culvert
Pond 10P: cbn-2

Inflow Area = 0.741 ac, Inflow Depth = 1.12" for 25 YR event
Inflow = 0.81 cfs @ 12.10 hrs, Volume= 0.069 af
Outflow = 0.81 cfs @ 12.10 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 12.10 hrs, Volume= 0.069 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 70.46' @ 12.10 hrs
Flood Elev= 72.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

# Routing Invert Outlet Devices
1 Primary 70.00' 12.0" x 17.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500
Outlet Invert= 69.50' S= 0.0294 '/' n= 0.013 Cc= 0.900

Primary OutFlow Max=0.80 cfs @ 12.10 hrs HW=70.46' TW=66.76' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.80 cfs @ 2.3 fps)

Pond 10P: cbn-2

Inflow Area=0.741 ac
Peak Elev=70.46'
12.0" x 17.0' Culvert
**Proposed Conditions**

**Type III 24-hr 25 YR Rainfall=5.40"**

Prepared by Pesce Engineering & Associates

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**Pond 11P: cbn-3**

| Inflow Area = | 0.495 ac, Inflow Depth = 1.69" for 25 YR event |
| Inflow = | 0.93 cfs @ 12.09 hrs, Volume= 0.070 af |
| Outflow = | 0.93 cfs @ 12.09 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min |
| Primary = | 0.93 cfs @ 12.09 hrs, Volume= 0.070 af |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Peak Elev= 60.00' @ 12.09 hrs

Flood Elev= 62.00'

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= (not calculated)

<table>
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<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>59.50'</td>
<td><strong>12.0&quot; x 56.0' long Culvert</strong> RCP, sq.cut end projecting, Ke= 0.500</td>
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Outlet Invert= 58.90'  S= 0.0107 '/'  n= 0.013  Cc= 0.900

**Primary OutFlow** Max=0.91 cfs @ 12.09 hrs  HW=59.99'  TW=58.48' (Dynamic Tailwater)

→1=Culvert (Barrel Controls 0.91 cfs @ 3.5 fps)

---

**Inflow Area=0.495 ac**

**Peak Elev=60.00'**

**12.0" x 56.0' Culvert**

---

**Hydrograph**

- Inflow
- Primary

---

**Inflow Area=0.495 ac**

**Peak Elev=60.00'**

**12.0" x 56.0' Culvert**
Pond 12P: infiltration basin 1

Inflow Area = 3.461 ac, Inflow Depth = 1.43" for 25 YR event
Inflow = 5.23 cfs @ 12.10 hrs, Volume = 0.413 af
Outflow = 0.09 cfs @ 24.00 hrs, Volume = 0.195 af, Atten = 98%, Lag = 714.1 min
Discarded = 0.09 cfs @ 24.00 hrs, Volume = 0.195 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume = 0.000 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 60.11' @ 24.00 hrs Surf.Area = 7,438 sf Storage = 14,256 cf
Flood Elev = 61.50' Surf.Area = 10,246 sf Storage = 26,370 cf
Plug-Flow detention time = 819.7 min calculated for 0.195 af (47% of inflow)
Center-of-Mass det. time = 681.0 min (1,549.9 - 868.9)

# Invert Avail.Storage Storage Description
1 57.00' 31,698 cf **Basin (Irregular)** Listed below

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<td>57.00</td>
<td>40</td>
<td>10.0</td>
<td>0</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>58.00</td>
<td>4,543</td>
<td>419.0</td>
<td>1,670</td>
<td>1,670</td>
<td>14,004</td>
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<td>60.00</td>
<td>7,224</td>
<td>522.0</td>
<td>11,664</td>
<td>13,334</td>
<td>21,774</td>
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<tr>
<td>61.50</td>
<td>10,246</td>
<td>545.0</td>
<td>13,037</td>
<td>26,370</td>
<td>23,885</td>
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<tr>
<td>62.00</td>
<td>11,072</td>
<td>555.0</td>
<td>5,328</td>
<td>31,698</td>
<td>24,803</td>
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</table>

# Routing Invert Outlet Devices
1 Discarded 0.00' **0.000722 fpm Exfiltration (0.52 in/hr) over entire Surface area**
2 Secondary 61.50' **10.0' long x 5.0' breadth Broad-Crested Rectangular Weir**

Discarded OutFlow Max = 0.09 cfs @ 24.00 hrs HW = 60.11' (Free Discharge)
\[\text{1=}\text{Exfiltration (0.52 in/hr)}\]

Secondary OutFlow Max = 0.00 cfs @ 0.00 hrs HW = 57.00' (Free Discharge)
\[\text{2=}\text{Broad-Crested Rectangular Weir} (\text{Controls 0.00 cfs})\]
Pond 12P: infiltration basin 1

Hydrograph

Inflow Area=3.461 ac
Peak Elev=60.11'
Storage=14,256 cf
Pond 13P: dcbn-1

Inflow Area = 3.460 ac, Inflow Depth = 1.05" for 25 YR event
Inflow = 3.47 cfs @ 12.10 hrs, Volume = 0.303 af
Outflow = 3.47 cfs @ 12.10 hrs, Volume = 0.303 af, Atten = 0%, Lag = 0.0 min
Primary = 3.47 cfs @ 12.10 hrs, Volume = 0.303 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 69.88' @ 12.10 hrs
Flood Elev = 72.00'
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

Routing Invert Outlet Devices

<table>
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<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>69.00'</td>
<td>18.0&quot; x 193.0' long Culvert RCP, sq.cut end projecting, Ke = 0.500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outlet Invert = 66.00' S = 0.0155 '/' n = 0.013 Cc = 0.900</td>
</tr>
</tbody>
</table>

Primary OutFlow
Max = 3.46 cfs @ 12.10 hrs, HW = 69.88', TW = 66.80' (Dynamic Tailwater)
1 = Culvert (Inlet Controls 3.46 cfs @ 3.2 fps)
Pond 14P: rain garden 1

Inflow Area = 3.787 ac, Inflow Depth = 1.00" for 25 YR event
Inflow = 3.49 cfs @ 12.10 hrs, Volume= 0.315 af
Outflow = 1.00 cfs @ 12.54 hrs, Volume= 0.294 af, Atten= 71%, Lag= 26.6 min
Primary = 1.00 cfs @ 12.54 hrs, Volume= 0.294 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 67.88' @ 12.54 hrs  Surf.Area= 2,423 sf  Storage= 3,325 cf
Flood Elev= 69.50'  Surf.Area= 3,697 sf  Storage= 8,165 cf
Plug-Flow detention time= 85.4 min calculated for 0.294 af (93% of inflow)
Center-of-Mass det. time= 52.3 min (946.7 - 984.4)

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<tr>
<td>1</td>
<td>66.00'</td>
<td>10,119 cf</td>
<td>Rain Garden #1 (Irregular)</td>
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<td>8,165</td>
<td>3,912</td>
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<td>289.0</td>
<td>1,954</td>
<td>10,119</td>
<td>4,386</td>
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<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>65.00'</td>
<td>12.0&quot; x 114.0' long Culvert  CPP, projecting, no headwall, Ke= 0.900  Outlet Invert= 62.00’  S= 0.0263 '/'  n= 0.013  Cc= 0.900</td>
</tr>
<tr>
<td>2</td>
<td>Device 1</td>
<td>66.50'</td>
<td>6.0&quot; Vert. Orifice/Grate  C= 0.600</td>
</tr>
<tr>
<td>3</td>
<td>Secondary</td>
<td>69.50'</td>
<td>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir  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  Coef. (English)  2.34 2.50 2.70 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>
</tr>
</tbody>
</table>

Primary OutFlow Max=1.00 cfs @ 12.54 hrs  HW=67.88'  TW=57.08' (Dynamic Tailwater)
1=Culvert (Passes 1.00 cfs of 4.60 cfs potential flow)
2=Orifice/Grate (Orifice Controls 1.00 cfs @ 5.1 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs  HW=66.00'  TW=56.00’ (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Pond 14P: rain garden 1

Hydrograph

Inflow Area=3.787 ac
Peak Elev=67.88'
Storage=3,325 cf

Time (hours)

Flow (cfs)

0.00 cfs
0.00 cfs
1.00 cfs
1.00 cfs
3.49 cfs

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Pond 15P: cbn-1

Inflow Area = 0.387 ac, Inflow Depth = 1.19" for 25 YR event
Inflow = 0.46 cfs @ 12.10 hrs, Volume = 0.038 af
Outflow = 0.46 cfs @ 12.10 hrs, Volume = 0.038 af, Atten = 0%, Lag = 0.0 min
Primary = 0.46 cfs @ 12.10 hrs, Volume = 0.038 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 59.84' @ 12.10 hrs
Flood Elev = 62.00'
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>59.50'</td>
<td>12.0&quot; x 80.0' long Culvert RCP, sq.cut end projecting, Ke = 0.500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outlet Invert= 58.00' S= 0.0187 '/' n= 0.013 Cc= 0.900</td>
</tr>
</tbody>
</table>

**Primary OutFlow** Max = 0.46 cfs @ 12.10 hrs  HW = 59.84' TW = 56.15' (Dynamic Tailwater)

1=Culvert (Inlet Controls 0.46 cfs @ 2.0 fps)
Pond 16P: rain garden 2

Inflow Area = 4.393 ac,  Inflow Depth = 0.92" for 25 YR event
Inflow = 1.18 cfs @ 12.42 hrs,  Volume= 0.338 af
Outflow = 0.83 cfs @ 13.38 hrs,  Volume= 0.319 af,  Atten= 29%,  Lag= 57.5 min
Primary = 0.83 cfs @ 13.38 hrs,  Volume= 0.319 af
Secondary = 0.00 cfs @ 0.00 hrs,  Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 57.53’ @ 13.38 hrs  Surf.Area= 1,816 sf  Storage= 2,371 cf
Flood Elev= 59.50’  Surf.Area= 2,911 sf  Storage= 6,795 cf
Plug-Flow detention time= 75.7 min calculated for 0.319 af (95% of inflow)
Center-of-Mass det. time= 45.7 min (985.9 - 940.2)

# Invert Avail.Storage Storage Description
1 56.00’ 8,331 cf Rain Garden #2 (Irregular) Listed below

       (feet)     (sq-ft)  (feet) (cubic-feet)     (cubic-feet) (sq-ft)
56.00  1,119  132.0  0  0  1,119
58.00  2,033  172.0  3,107  3,107  2,133
59.50  2,911  211.0  3,688  6,795  3,356
60.00  3,234  221.0  1,536  8,331  3,716

# Routing Invert Outlet Devices
1 Primary 55.00’ 12.0” x 118.0’ long Culvert RCP, square edge headwall, Ke= 0.500
2 Device 1 56.50’ 6.0” Vert. Orifice/Grate C= 0.600
3 Secondary 59.50’ 10.0’ long x 5.0’ breadth Broad-Crested Rectangular Weir

Primary OutFlow Max=0.83 cfs @ 13.38 hrs  HW=57.53’  TW=44.09’ (Dynamic Tailwater)
↑1=Culvert (Passes 0.83 cfs of 5.38 cfs potential flow)
↑2=Orifice/Grate (Orifice Controls 0.83 cfs @ 4.2 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs  HW=56.00’  TW=42.00’ (Dynamic Tailwater)
↑3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Inflow Area = 4.393 ac
Peak Elev = 57.53'
Storage = 2,371 cf

Pond 16P: rain garden 2

Hydrograph
Pond 17P: infiltration basin 2

Inflow Area = 10.599 ac, Inflow Depth = 1.10" for 25 YR event
Inflow = 7.97 cfs @ 12.09 hrs, Volume = 0.968 af
Outflow = 0.54 cfs @ 17.64 hrs, Volume = 0.969 af, Atten = 93%, Lag = 332.6 min
Discarded = 0.54 cfs @ 17.64 hrs, Volume = 0.969 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume = 0.000 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 44.92' @ 17.64 hrs Surf.Area = 9,630 sf Storage = 22,624 cf
Flood Elev = 47.80' Surf.Area = 13,908 sf Storage = 55,908 cf
Plug-Flow detention time = 507.0 min calculated for 0.967 af (100% of inflow)
Center-of-Mass det. time = 507.1 min (1,422.9 - 915.8)

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<td>60,415 cf</td>
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<tr>
<td>42.00</td>
<td>5,548</td>
<td>416.0</td>
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<td>44.00</td>
<td>8,241</td>
<td>465.0</td>
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<td>48.00</td>
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<th>Invert</th>
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<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.003347 fpm Exfiltration (2.41 in/hr) over entire Surface area</td>
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<tr>
<td>2</td>
<td>Secondary</td>
<td>47.80'</td>
<td>15.0' long x 5.0' breadth Broad-Crested Rectangular Weir</td>
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<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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<td></td>
<td>Coef. (English) 2.34 2.50 2.70 2.68 2.66 2.65 2.65 2.65 2.65 2.65 2.65 2.65 2.66 2.66 2.66 2.66 2.68</td>
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</table>

| Discarded OutFlow | Max=0.54 cfs @ 17.64 hrs HW=44.92' (Free Discharge) |
|   | 1=Exfiltration (2.41 in/hr) (Exfiltration Controls 0.54 cfs) |

| Secondary OutFlow | Max=0.00 cfs @ 0.00 hrs HW=42.00' (Free Discharge) |
|   | 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs) |
Pond 17P: infiltration basin 2

Hydrograph

Inflow Area=10.599 ac
Peek Elev=44.92'
Storage=22,624 cf
Proposed Conditions

Type III 24-hr 100 YR Rainfall=7.00"

Prepared by Pesce Engineering & Associates

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Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points

Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: roof 1
Runoff Area=7,345 sf  Runoff Depth=6.76"
Tc=1.0 min  CN=98  Runoff=1.29 cfs  0.095 af

Subcatchment 2S: roof 2
Runoff Area=9,649 sf  Runoff Depth=6.76"
Tc=1.0 min  CN=98  Runoff=1.70 cfs  0.125 af

Subcatchment 3S: roof 3
Runoff Area=11,171 sf  Runoff Depth=6.76"
Tc=1.0 min  CN=98  Runoff=1.96 cfs  0.144 af

Subcatchment 4S: roof 4
Runoff Area=13,473 sf  Runoff Depth=6.76"
Tc=1.0 min  CN=98  Runoff=2.37 cfs  0.174 af

Subcatchment 5S: roof 5
Runoff Area=9,681 sf  Runoff Depth=6.76"
Tc=1.0 min  CN=98  Runoff=1.70 cfs  0.125 af

Subcatchment 6S: roof 6
Runoff Area=7,345 sf  Runoff Depth=6.76"
Tc=1.0 min  CN=98  Runoff=1.29 cfs  0.095 af

Subcatchment 7S: roof 7
Runoff Area=11,171 sf  Runoff Depth=6.76"
Tc=1.0 min  CN=98  Runoff=1.96 cfs  0.144 af

Subcatchment 8S: roof 8
Runoff Area=13,450 sf  Runoff Depth=6.76"
Tc=1.0 min  CN=98  Runoff=2.36 cfs  0.174 af

Subcatchment 9S: subarea 1
Runoff Area=61,212 sf  Runoff Depth=3.20"
Tc=5.0 min  CN=66  Runoff=5.26 cfs  0.375 af

Subcatchment 10S: subarea 2
Runoff Area=32,260 sf  Runoff Depth=2.03"
Tc=5.0 min  CN=54  Runoff=1.64 cfs  0.125 af

Subcatchment 11S: subarea 3
Runoff Area=21,579 sf  Runoff Depth=2.80"
Tc=5.0 min  CN=62  Runoff=1.60 cfs  0.116 af

Subcatchment 12S: subarea 4
Runoff Area=35,714 sf  Runoff Depth=1.24"
Tc=5.0 min  CN=45  Runoff=0.92 cfs  0.085 af

Subcatchment 13S: subarea 5
Runoff Area=150,706 sf  Runoff Depth=1.94"
Tc=5.0 min  CN=53  Runoff=7.24 cfs  0.559 af

Subcatchment 14S: subarea 6
Runoff Area=14,241 sf  Runoff Depth=1.00"
Tc=5.0 min  CN=42  Runoff=0.25 cfs  0.027 af

Subcatchment 15S: subarea 7
Runoff Area=16,875 sf  Runoff Depth=2.12"
Tc=5.0 min  CN=55  Runoff=0.91 cfs  0.069 af
Subcatchment 16S: subarea 8
Runoff Area=9,535 sf  Runoff Depth=0.77"
Tc=5.0 min  CN=39  Runoff=0.09 cfs  0.014 af

Subcatchment 17S: subarea 9
Runoff Area=270,318 sf  Runoff Depth=2.22"
Tc=5.0 min  CN=56  Runoff=15.33 cfs  1.147 af

Subcatchment 18S: subarea 10
Runoff Area=8,178 sf  Runoff Depth=3.62"
Tc=1.0 min  CN=70  Runoff=0.89 cfs  0.057 af

Subcatchment 19S: subarea 11
Runoff Area=7,199 sf  Runoff Depth=2.12"
Tc=1.0 min  CN=55  Runoff=0.42 cfs  0.029 af

Subcatchment 20S: subarea 12
Runoff Area=7,199 sf  Runoff Depth=2.12"
Tc=1.0 min  CN=55  Runoff=0.42 cfs  0.029 af

Subcatchment 21S: subarea 13
Runoff Area=8,178 sf  Runoff Depth=3.62"
Tc=1.0 min  CN=70  Runoff=0.89 cfs  0.057 af

Reach 1R: dmh 2 to dmh 3
Peak Depth=0.47'  Max Vel=12.2 fps  Inflow=6.89 cfs  0.501 af
D=24.0"  n=0.013  L=136.0'  S=0.0625 '/'  Capacity=56.56 cfs  Outflow=6.92 cfs  0.501 af

Reach 2R: dmh 3 to fes 5
Peak Depth=0.93'  Max Vel=6.0 fps  Inflow=8.52 cfs  0.616 af
D=24.0"  n=0.013  L=107.0'  S=0.0075 '/'  Capacity=19.56 cfs  Outflow=8.55 cfs  0.616 af

Pond 1P: 3-1000 Gal. Leach. Pits
Peak Elev=103.90'  Storage=915 cf  Inflow=1.29 cfs  0.095 af
Outflow=0.30 cfs  0.095 af

Pond 2P: 3-1000 Gal. Leach. Pits
Peak Elev=105.65'  Storage=1,338 cf  Inflow=1.70 cfs  0.125 af
Outflow=0.35 cfs  0.125 af

Pond 3P: 3-1000 Gal. Leach. Pits
Peak Elev=106.85'  Storage=1,628 cf  Inflow=1.96 cfs  0.144 af
Outflow=0.39 cfs  0.145 af

Pond 4P: 5-1000 Gal. Leach. Pits (18'x58')
Peak Elev=106.05'  Storage=2,999 cf  Inflow=3.67 cfs  0.260 af
Outflow=0.68 cfs  0.260 af

Pond 5P: 3-1000 Gal. Leach. Pits
Peak Elev=105.67'  Storage=1,344 cf  Inflow=1.70 cfs  0.125 af
Outflow=0.35 cfs  0.125 af

Pond 6P: 3-1000 Gal. Leach. Pits
Peak Elev=103.90'  Storage=915 cf  Inflow=1.29 cfs  0.095 af
Outflow=0.30 cfs  0.095 af

Pond 7P: 3-1000 Gal. Leach. Pits
Peak Elev=106.85'  Storage=1,628 cf  Inflow=1.96 cfs  0.144 af
Outflow=0.39 cfs  0.145 af

Pond 8P: 5-1000 Gal. Leach. Pits (18'x58')
Peak Elev=106.05'  Storage=2,995 cf  Inflow=3.67 cfs  0.260 af
Outflow=0.68 cfs  0.260 af
Proposed Conditions

Type III 24-hr 100 YR Rainfall=7.00"

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Peak Elev=70.14' Inflow=5.26 cfs 0.375 af
18.0" x 188.0' Culvert Outflow=5.26 cfs 0.375 af

Pond 9P: dcbn-2

Peak Elev=70.69' Inflow=1.64 cfs 0.125 af
12.0" x 17.0' Culvert Outflow=1.64 cfs 0.125 af

Pond 10P: cbn-2

Peak Elev=60.19' Inflow=1.60 cfs 0.116 af
12.0" x 56.0' Culvert Outflow=1.60 cfs 0.116 af

Pond 11P: cbn-3

Peak Elev=61.40' Storage=25,488 cf Inflow=9.46 cfs 0.701 af
Discarded=0.12 cfs 0.262 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.262 af

Pond 12P: infiltration basin 1

Peak Elev=61.40' Storage=25,488 cf Inflow=9.46 cfs 0.701 af
Discarded=0.12 cfs 0.262 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.262 af

Pond 13P: dcbn-1

Peak Elev=70.46' Inflow=7.24 cfs 0.559 af
18.0" x 193.0' Culvert Outflow=7.24 cfs 0.559 af

Pond 14P: rain garden 1

Peak Elev=69.38' Storage=7,810 cf Inflow=7.49 cfs 0.586 af
Primary=1.53 cfs 0.565 af Secondary=0.00 cfs 0.000 af Outflow=1.53 cfs 0.565 af

Pond 15P: cbn-1

Peak Elev=59.99' Inflow=0.91 cfs 0.069 af
12.0" x 80.0' Culvert Outflow=0.91 cfs 0.069 af

Pond 16P: rain garden 2

Peak Elev=58.68' Storage=4,777 cf Inflow=2.12 cfs 0.648 af
Primary=1.31 cfs 0.629 af Secondary=0.00 cfs 0.000 af Outflow=1.31 cfs 0.629 af

Pond 17P: infiltration basin 2

Peak Elev=47.28' Storage=49,096 cf Inflow=15.35 cfs 1.776 af
Discarded=0.74 cfs 1.483 af Secondary=0.00 cfs 0.000 af Outflow=0.74 cfs 1.483 af

Total Runoff Area = 16.678 ac Runoff Volume = 3.765 af Average Runoff Depth = 2.71"
Subcatchment 1S: roof 1

Runoff = 1.29 cfs @ 12.01 hrs, Volume= 0.095 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 100 YR Rainfall=7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
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<tr>
<td>7,345</td>
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<td>Paved parking &amp; roofs</td>
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<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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<td>1.0</td>
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<td>Direct Entry,</td>
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Subcatchment 1S: roof 1

Hydrograph

Type III 24-hr 100 YR Rainfall=7.00"

Runoff Area=7,345 sf
Runoff Volume=0.095 af
Runoff Depth=6.76"

Tc=1.0 min
CN=98
Subcatchment 2S: roof 2

Runoff = 1.70 cfs @ 12.01 hrs, Volume= 0.125 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 100 YR Rainfall=7.00"

<table>
<thead>
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<th>Area (sf)</th>
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Subcatchment 2S: roof 2

Hydrograph

Type III 24-hr 100 YR Rainfall=7.00"
Runoff Area=9,649 sf
Runoff Volume=0.125 af
Runoff Depth=6.76"
Tc=1.0 min
CN=98
Subcatchment 3S: roof 3

Runoff = 1.96 cfs @ 12.01 hrs, Volume = 0.144 af, Depth = 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 100 YR Rainfall = 7.00"

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<thead>
<tr>
<th>Area (sf)</th>
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<th>Tc (min)</th>
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<td></td>
<td></td>
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</table>

Subcatchment 3S: roof 3

Type III 24-hr 100 YR Rainfall = 7.00"
Runoff Area = 11,171 sf
Runoff Volume = 0.144 af
Runoff Depth = 6.76"
Tc = 1.0 min
CN = 98
Subcatchment 4S: roof 4

Runoff = 2.37 cfs @ 12.01 hrs, Volume= 0.174 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

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<thead>
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<th>Area (sf)</th>
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Subcatchment 4S: roof 4

Type III 24-hr 100 YR Rainfall=7.00"
Runoff Area=13,473 sf
Runoff Volume=0.174 af
Runoff Depth=6.76"
Tc=1.0 min
CN=98
**Subcatchment 5S: roof 5**

Runoff = 1.70 cfs @ 12.01 hrs, Volume= 0.125 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

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<th>Area (sf)</th>
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**Subcatchment 5S: roof 5**

Type III 24-hr 100 YR Rainfall=7.00"

Runoff Area=9,681 sf
Runoff Volume=0.125 af
Runoff Depth=6.76"

Tc=1.0 min
CN=98
Subcatchment 6S: roof 6

Runoff = 1.29 cfs @ 12.01 hrs, Volume= 0.095 af, Depth= 6.76"  

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100 YR Rainfall=7.00"  

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Direct Entry,

Subcatchment 6S: roof 6

Hydrograph

Type III 24-hr 100 YR Rainfall=7.00"  
Runoff Area=7,345 sf  
Runoff Volume=0.095 af  
Runoff Depth=6.76"  
Tc=1.0 min  
CN=98
Subcatchment 7S: roof 7

Runoff = 1.96 cfs @ 12.01 hrs, Volume = 0.144 af, Depth = 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs

Type III 24-hr 100 YR Rainfall = 7.00"

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<th>Area (sf)</th>
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<td>Direct Entry,</td>
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Subcatchment 7S: roof 7

Hydrograph

Type III 24-hr 100 YR Rainfall = 7.00"
Runoff Area = 11,171 sf
Runoff Volume = 0.144 af
Runoff Depth = 6.76"
Tc = 1.0 min
CN = 98
Subcatchment 8S: roof 8

Runoff = 2.36 cfs @ 12.01 hrs, Volume = 0.174 af, Depth = 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs

Type III 24-hr 100 YR Rainfall = 7.00"

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<td></td>
<td>Direct Entry,</td>
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Subcatchment 8S: roof 8

Hydrograph

Type III 24-hr 100 YR Rainfall = 7.00"

Runoff Area = 13,450 sf
Runoff Volume = 0.174 af
Runoff Depth = 6.76"

Tc = 1.0 min
CN = 98
Subcatchment 9S: subarea 1

Runoff = 5.26 cfs @ 12.08 hrs, Volume = 0.375 af, Depth = 3.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 100 YR Rainfall = 7.00"

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<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>32,752</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>61,212</td>
<td>66</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

Tc = 5.0 min, Length = any, Slope = any, Velocity = any, Capacity = any

Subcatchment 9S: subarea 1

Hydrograph

Type III 24-hr 100 YR Rainfall = 7.00"
Runoff Area = 61,212 sf
Runoff Volume = 0.375 af
Runoff Depth = 3.20"
Tc = 5.0 min
CN = 66
Subcatchment 10S: subarea 2

Runoff = 1.64 cfs @ 12.09 hrs, Volume= 0.125 af, Depth= 2.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 100 YR Rainfall=7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,313</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>23,947</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>32,260</td>
<td>54</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

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

Direct Entry, assumed

Subcatchment 10S: subarea 2

Type III 24-hr 100 YR Rainfall=7.00"
Runoff Area=32,260 sf
Runoff Volume=0.125 af
Runoff Depth=2.03"
Tc=5.0 min
CN=54
Subcatchment 11S: subarea 3

Runoff = 1.60 cfs @ 12.08 hrs, Volume = 0.116 af, Depth = 2.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,497</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>13,082</td>
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<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>21,579</td>
<td>62</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

Direct Entry, assumed

Subcatchment 11S: subarea 3

Hydrograph

Type III 24-hr 100 YR
Rainfall=7.00"
Runoff Area=21,579 sf
Runoff Volume=0.116 af
Runoff Depth=2.80"
Tc=5.0 min
CN=62
Subcatchment 12S: subarea 4

Runoff = 0.92 cfs @ 12.10 hrs, Volume= 0.085 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,514</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
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<tr>
<td>32,200</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>35,714</td>
<td>45</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

Tc = 5.0 min

Subcatchment 12S: subarea 4

Hydrograph

Type III 24-hr 100 YR Rainfall=7.00"
Runoff Area=35,714 sf
Runoff Volume=0.085 af
Runoff Depth=1.24"
Tc=5.0 min
CN=45
Subcatchment 13S: subarea 5

Runoff = 7.24 cfs @ 12.09 hrs, Volume = 0.559 af, Depth = 1.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 100 YR Rainfall = 7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>36,316</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>114,390</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>150,706</td>
<td>53</td>
<td>Weighted Average</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>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, assumed</td>
</tr>
</tbody>
</table>

Subcatchment 13S: subarea 5

Type III 24-hr 100 YR Rainfall = 7.00"
Runoff Area = 150,706 sf
Runoff Volume = 0.559 af
Runoff Depth = 1.94"
Tc = 5.0 min
CN = 53
Subcatchment 14S: subarea 6

Runoff = 0.25 cfs @ 12.11 hrs, Volume = 0.027 af, Depth = 1.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 100 YR Rainfall = 7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>692</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>13,549</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>14,241</td>
<td>42</td>
<td>Weighted Average</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tc (min)</th>
<th>Length (ft/ft)</th>
<th>Slope (ft/ft/ft)</th>
<th>Velocity (ft/sec)</th>
<th>Capacity (cfs)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, assumed</td>
</tr>
</tbody>
</table>

Type III 24-hr 100 YR Rainfall = 7.00"
Runoff Area = 14,241 sf
Runoff Volume = 0.027 af
Runoff Depth = 1.00"
Tc = 5.0 min
CN = 42
Subcatchment 15S: subarea 7

Runoff = 0.91 cfs @ 12.09 hrs, Volume = 0.069 af, Depth = 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 100 YR Rainfall = 7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,669</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>12,206</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>16,875</td>
<td>55</td>
<td>Weighted Average</td>
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</tbody>
</table>

<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>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, assumed</td>
</tr>
</tbody>
</table>

**Hydrograph**

Type III 24-hr 100 YR Rainfall = 7.00"
Runoff Area = 16,875 sf
Runoff Volume = 0.069 af
Runoff Depth = 2.12"
Tc = 5.0 min
CN = 55
Subcatchment 16S: subarea 8

Runoff = 0.09 cfs @ 12.14 hrs, Volume = 0.014 af, Depth = 0.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 100 YR Rainfall = 7.00"

<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>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, assumed</td>
</tr>
</tbody>
</table>

Subcatchment 16S: subarea 8

Hydrograph

Type III 24-hr 100 YR Rainfall = 7.00"
Runoff Area = 9,535 sf
Runoff Volume = 0.014 af
Runoff Depth = 0.77"
Tc = 5.0 min
CN = 39
**Subcatchment 17S: subarea 9**

Runoff = 15.33 cfs @ 12.09 hrs, Volume = 1.147 af, Depth = 2.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs

Type III 24-hr 100 YR Rainfall = 7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>79,963</td>
<td>98</td>
<td>Paved parking &amp; roofs</td>
</tr>
<tr>
<td>190,355</td>
<td>39</td>
<td>&gt;75% Grass cover, Good, HSG A</td>
</tr>
<tr>
<td>270,318</td>
<td>56</td>
<td>Weighted Average</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>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry, assumed</td>
</tr>
</tbody>
</table>

**Subcatchment 17S: subarea 9**

*Hydrograph*

Type III 24-hr 100 YR Rainfall = 7.00"
Runoff Area = 270,318 sf
Runoff Volume = 1.147 af
Runoff Depth = 2.22"
Tc = 5.0 min
CN = 56
**Proposed Conditions**

*Type III 24-hr 100 YR Rainfall=7.00*

**Prepared by Pesce Engineering & Associates**

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**Subcatchment 18S: subarea 10**

Runoff = 0.89 cfs @ 12.02 hrs, Volume= 0.057 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Type III 24-hr 100 YR Rainfall=7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,178</td>
<td>70</td>
<td>Plaza Deck #1</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>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

**Subcatchment 18S: subarea 10**

**Hydrograph**

Type III 24-hr 100 YR Rainfall=7.00"

Runoff Area=8,178 sf

Runoff Volume=0.057 af

Runoff Depth=3.62"

Tc=1.0 min

CN=70
Subcatchment 19S: subarea 11

Runoff = 0.42 cfs @ 12.03 hrs, Volume = 0.029 af, Depth = 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,199</td>
<td>55</td>
<td>pool decking</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>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcatchment 19S: subarea 11

Type III 24-hr 100 YR Rainfall=7.00"
Runoff Area=7,199 sf
Runoff Volume=0.029 af
Runoff Depth=2.12"
Tc=1.0 min
CN=55
Subcatchment 20S: subarea 12

Runoff = 0.42 cfs @ 12.03 hrs, Volume= 0.029 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,199</td>
<td>55</td>
<td>pool decking</td>
</tr>
</tbody>
</table>

Direct Entry,

Subcatchment 20S: subarea 12

Type III 24-hr 100 YR Rainfall=7.00"
Runoff Area=7,199 sf
Runoff Volume=0.029 af
Runoff Depth=2.12"
Tc=1.0 min
CN=55
Subcatchment 21S: subarea 13

Runoff = 0.89 cfs @ 12.02 hrs, Volume= 0.057 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

<table>
<thead>
<tr>
<th>Area (sf)</th>
<th>CN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,178</td>
<td>70</td>
<td>Plaza Deck #1</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>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Direct Entry,</td>
</tr>
</tbody>
</table>

Subcatchment 21S: subarea 13

Type III 24-hr 100 YR Rainfall=7.00"

Runoff Area=8,178 sf
Runoff Volume=0.057 af
Runoff Depth=3.62"

Tc=1.0 min
CN=70
Reach 1R: dmh 2 to dmh 3

Inflow Area = 2.146 ac, Inflow Depth = 2.80" for 100 YR event
Inflow = 6.89 cfs @ 12.08 hrs, Volume = 0.501 af
Outflow = 6.92 cfs @ 12.09 hrs, Volume = 0.501 af, Atten = 0%, Lag = 0.2 min

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Max. Velocity = 12.2 fps, Min. Travel Time = 0.2 min
Avg. Velocity = 4.4 fps, Avg. Travel Time = 0.5 min

Peak Depth = 0.47' @ 12.09 hrs
Capacity at bank full = 56.56 cfs
Inlet Invert = 66.40', Outlet Invert = 57.90'
24.0" Diameter Pipe  n = 0.013  Length = 136.0'  Slope = 0.0625 '/'

Capacity = 56.56 cfs
Reach 2R: dmh 3 to fes 5

Inflow Area = 2.641 ac, Inflow Depth = 2.80" for 100 YR event
Inflow = 8.52 cfs @ 12.09 hrs, Volume= 0.616 af
Outflow = 8.55 cfs @ 12.09 hrs, Volume= 0.616 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.0 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 0.8 min

Peak Depth= 0.93' @ 12.09 hrs
Capacity at bank full= 19.56 cfs
Inlet Invert= 57.80', Outlet Invert= 57.00'
24.0" Diameter Pipe  n= 0.013  Length= 107.0'  Slope= 0.0075 '/

Capacity=19.56 cfs

Inflow Area=2.641 ac
Peak Depth=0.93'
Max Vel=6.0 fps
D=24.0"
n=0.013
L=107.0'
S=0.0075 '/
Pond 1P: 3-1000 Gal. Leach. Pits

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td>14.00'W x 34.00'L x 7.17'H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td>6.00'D x 6.67'H Vertical Cone/Cylinder x 3 Inside #1</td>
</tr>
</tbody>
</table>

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs

Peak Elev = 103.90' @ 12.37 hrs    Surf.Area = 476 sf    Storage = 915 cf

Flood Elev = 107.17'    Surf.Area = 476 sf    Storage = 1,705 cf

Plug-Flow detention time = (not calculated: outflow precedes inflow)

Center-of-Mass det. time = (not calculated)

Discarded Outflow Max = 0.30 cfs @ 12.37 hrs    HW = 103.89' (Free Discharge)

Discarded Outflow = Exfiltration (15.0 in/hr) (Exfiltration Controls 0.30 cfs)
Inflow Area = 0.222 ac, Inflow Depth = 6.76" for 100 YR event
Inflow = 1.70 cfs @ 12.01 hrs, Volume= 0.125 af
Outflow = 0.35 cfs @ 12.39 hrs, Volume= 0.125 af, Atten= 79%, Lag= 22.9 min
Discarded = 0.35 cfs @ 12.39 hrs, Volume= 0.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 105.65' @ 12.39 hrs Surf.Area= 476 sf Storage= 1,338 cf
Flood Elev= 107.17' Surf.Area= 476 sf Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

# Invert Avail.Storage Storage Description
1 100.00' 1,139 cf 14.00'W x 34.00'L x 7.17'H Prismatoid
3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids
2 100.50' 566 cf 6.00'D x 6.67'H Vertical Cone/Cylinder x 3 Inside #1

1,705 cf Total Available Storage

# Routing Invert Outlet Devices
1 Discarded 0.00' 0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area

Discarded OutFlow Max=0.35 cfs @ 12.39 hrs HW=105.65' (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.35 cfs)

Inflow Area=0.222 ac
Peak Elev=105.65'
Storage=1,338 cf
Pond 3P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.256 ac, Inflow Depth = 6.76" for 100 YR event
Inflow = 1.96 cfs @ 12.01 hrs, Volume = 0.144 af
Outflow = 0.39 cfs @ 12.40 hrs, Volume = 0.145 af, Atten = 80%, Lag = 23.5 min
Discarded = 0.39 cfs @ 12.40 hrs, Volume = 0.145 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 106.85' @ 12.40 hrs Surf.Area = 476 sf Storage = 1,628 cf
Flood Elev = 107.17' Surf.Area = 476 sf Storage = 1,705 cf
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail. Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td>14.00'W x 34.00'L x 7.17'H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td>6.00'D x 6.67'H Vertical Cone/Cylinder x 3 Inside #1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>0.020833 fps Exfiltration (15.0 in/hr) over entire Wetted area</td>
</tr>
</tbody>
</table>

Discarded OutFlow Max = 0.39 cfs @ 12.40 hrs HW = 106.85' (Free Discharge)
1 = Exfiltration (15.0 in/hr) (Exfiltration Controls 0.39 cfs)

Pond 3P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.256 ac
Peak Elev = 106.85'
Storage = 1,628 cf
Proposed Conditions

Type III 24-hr 100 YR Rainfall=7.00"

Prepared by Pesce Engineering & Associates

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8/14/2016

Pond 4P: 5-1000 Gal. Leach. Pits (18'x58')

Inflow Area = 0.662 ac, Inflow Depth = 4.71" for 100 YR event

Inflow = 3.67 cfs @ 12.02 hrs, Volume= 0.260 af

Outflow = 0.68 cfs @ 12.44 hrs, Volume= 0.260 af, Atten= 81%, Lag= 25.6 min

Discarded = 0.68 cfs @ 12.44 hrs, Volume= 0.260 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Peak Elev= 106.05' @ 12.44 hrs Surf.Area= 1,044 sf Storage= 2,999 cf

Flood Elev= 107.17' Surf.Area= 1,044 sf Storage= 3,560 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>2,617 cf</td>
<td><strong>18.00'W x 58.00'L x 7.17'H Prismatoid</strong>&lt;br&gt;7,485 cf Overall - 943 cf Embedded = 6,543 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>943 cf</td>
<td><strong>6.00'D x 6.67'H Vertical Cone/Cylinder</strong> x 5 Inside #1</td>
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3,560 cf Total Available Storage

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<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td><strong>0.020833 fps Exfiltration (15.0 in/hr) over entire Wetted area</strong></td>
</tr>
</tbody>
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Discarded Outflow Max=0.68 cfs @ 12.44 hrs HW=106.05' (Free Discharge)

Exfiltration (15.0 in/hr) (Exfiltration Controls 0.68 cfs)

Pond 4P: 5-1000 Gal. Leach. Pits (18'x58')

Hydrograph

Inflow Area=0.662 ac Peak Elev=106.05' Storage=2,999 cf
Pond 5P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.222 ac, Inflow Depth = 6.76" for 100 YR event
Inflow = 1.70 cfs @ 12.01 hrs, Volume= 0.125 af
Outflow = 0.35 cfs @ 12.39 hrs, Volume= 0.125 af, Atten= 79%, Lag= 22.9 min
Discarded = 0.35 cfs @ 12.39 hrs, Volume= 0.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 105.67' @ 12.39 hrs  Surf.Area= 476 sf  Storage= 1,344 cf
Flood Elev= 107.17' Surf.Area= 476 sf Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100.00'</td>
<td>1,139 cf</td>
<td><strong>14.00'W x 34.00'L x 7.17'H Prismatoid</strong> 3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td><strong>6.00'D x 6.67'H Vertical Cone/Cylinder</strong> x 3 Inside #1</td>
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1,705 cf Total Available Storage

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<tbody>
<tr>
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<td>Discarded</td>
<td>0.00'</td>
<td><strong>0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area</strong></td>
</tr>
</tbody>
</table>

Discarded OutFlow Max=0.35 cfs @ 12.39 hrs HW=105.67' (Free Discharge) ↓1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.35 cfs)

Pond 5P: 3-1000 Gal. Leach. Pits

Hydrograph

Inflow Area=0.222 ac
Peak Elev=105.67'
Storage=1,344 cf
Proposed Conditions

Type III 24-hr 100 YR Rainfall=7.00"

Pond 6P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.169 ac, Inflow Depth = 6.76" for 100 YR event
Inflow = 1.29 cfs @ 12.01 hrs, Volume= 0.095 af
Outflow = 0.30 cfs @ 12.37 hrs, Volume= 0.095 af, Atten= 77%, Lag= 21.4 min
Discarded = 0.30 cfs @ 12.37 hrs, Volume= 0.095 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 103.90' @ 12.37 hrs Surf.Area= 476 sf Storage= 915 cf
Flood Elev= 107.17' Surf.Area= 476 sf Storage= 1,705 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
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<tr>
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<tbody>
<tr>
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<td>1,139 cf</td>
<td><strong>14.00'W x 34.00'L x 7.17'H Prismatoid</strong> 3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>566 cf</td>
<td><strong>6.00'D x 6.67'H Vertical Cone/Cylinder</strong> x 3 Inside #1</td>
</tr>
</tbody>
</table>

1,705 cf Total Available Storage

# Routing Invert Outlet Devices
1 Discarded 0.00' 0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area

Discarded OutFlow Max=0.30 cfs @ 12.37 hrs HW=103.89’ (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.30 cfs)

Pond 6P: 3-1000 Gal. Leach. Pits

Hydrograph

Inflow Area=0.169 ac
Peak Elev=103.90'
Storage=915 cf
Pond 7P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.256 ac, Inflow Depth = 6.76" for 100 YR event
Inflow = 1.96 cfs @ 12.01 hrs, Volume = 0.144 af
Outflow = 0.39 cfs @ 12.40 hrs, Volume = 0.145 af, Atten = 80%, Lag = 23.5 min
Discarded = 0.39 cfs @ 12.40 hrs, Volume = 0.145 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 106.85' @ 12.40 hrs  Surf.Area = 476 sf  Storage = 1,628 cf
Flood Elev = 107.17'  Surf.Area = 476 sf  Storage = 1,705 cf
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

<table>
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<tbody>
<tr>
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<td>1,139 cf</td>
<td>14.00’W x 34.00’L x 7.17’H Prismatoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,413 cf Overall - 566 cf Embedded = 2,847 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50’</td>
<td>566 cf</td>
<td>6.00’D x 6.67’H Vertical Cone/Cylinder x 3 Inside #1</td>
</tr>
</tbody>
</table>

1,705 cf Total Available Storage

# Routing Invert Outlet Devices Discarded

|       | 0.00’   | 0.00’         | 0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area |

Discarded OutFlow Max = 0.39 cfs @ 12.40 hrs  HW = 106.85' (Free Discharge)
1 = Exfiltration (15.0 in/hr) (Exfiltration Controls 0.39 cfs)

Pond 7P: 3-1000 Gal. Leach. Pits

Inflow Area = 0.256 ac
Peak Elev = 106.85'
Storage = 1,628 cf
Pond 8P: 5-1000 Gal. Leach. Pits (18'x58')

Inflow Area = 0.662 ac, Inflow Depth = 4.71" for 100 YR event
Inflow = 3.67 cfs @ 12.02 hrs, Volume= 0.260 af
Outflow = 0.68 cfs @ 12.44 hrs, Volume= 0.260 af, Atten= 81%, Lag= 25.6 min
Discarded = 0.68 cfs @ 12.44 hrs, Volume= 0.260 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 106.05' @ 12.44 hrs Surf.Area= 1,044 sf Storage= 2,995 cf
Flood Elev= 107.17' Surf.Area= 1,044 sf Storage= 3,560 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

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<tbody>
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<td>1</td>
<td>100.00'</td>
<td>2,617 cf</td>
<td><strong>18.00'W x 58.00'L x 7.17'H Prismatoid</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7,485 cf Overall - 943 cf Embedded = 6,543 cf x 40.0% Voids</td>
</tr>
<tr>
<td>2</td>
<td>100.50'</td>
<td>943 cf</td>
<td><strong>6.00'D x 6.67'H Vertical Cone/Cylinder x 5 Inside #1</strong></td>
</tr>
</tbody>
</table>

3,560 cf Total Available Storage

#   Routing  Invert  Outlet Devices
1   Discarded 0.00' 0.020833 fpm Exfiltration (15.0 in/hr) over entire Wetted area

Discarded OutFlow Max=0.68 cfs @ 12.44 hrs HW=106.04' (Free Discharge)
1=Exfiltration (15.0 in/hr) (Exfiltration Controls 0.68 cfs)

Pond 8P: 5-1000 Gal. Leach. Pits (18'x58')

Inflow Area=0.662 ac
Peak Elev=106.05'
Storage=2,995 cf
Pond 9P: dcbn-2

Inflow Area = 1.405 ac, Inflow Depth = 3.20" for 100 YR event
Inflow = 5.26 cfs @ 12.08 hrs, Volume = 0.375 af
Outflow = 5.26 cfs @ 12.08 hrs, Volume = 0.375 af, Atten = 0%, Lag = 0.0 min
Primary = 5.26 cfs @ 12.08 hrs, Volume = 0.375 af

Routing by Dyn-Stor-Ind method, Time Span = 0.00-40.00 hrs, dt = 0.05 hrs
Peak Elev = 70.14' @ 12.08 hrs
Flood Elev = 72.00'
Plug-Flow detention time = (not calculated: outflow precedes inflow)
Center-of-Mass det. time = (not calculated)

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>69.00’</td>
<td><strong>18.0” x 188.0’ long Culvert</strong> RCP, sq.cut end projecting, Ke = 0.500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outlet Invert = 67.00’ S = 0.0106 '/' n = 0.013 Cc = 0.900</td>
</tr>
</tbody>
</table>

**Primary OutFlow** Max = 5.09 cfs @ 12.08 hrs HW = 70.12’ TW = 66.86’ (Dynamic Tailwater)

1=Culvert (Inlet Controls 5.09 cfs @ 3.6 fps)

Inflow Area = 1.405 ac
Peak Elev = 70.14’
18.0” x 188.0’ Culvert
Pond 10P: cbn-2

Inflow Area = 0.741 ac, Inflow Depth = 2.03" for 100 YR event
Inflow = 1.64 cfs @ 12.09 hrs, Volume= 0.125 af
Outflow = 1.64 cfs @ 12.09 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min
Primary = 1.64 cfs @ 12.09 hrs, Volume= 0.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 70.69' @ 12.09 hrs
Flood Elev= 72.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
<thead>
<tr>
<th>#</th>
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<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>70.00'</td>
<td>12.0&quot; x 17.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outlet Invert= 69.50' S= 0.0294 '/' n= 0.013 Cc= 0.900</td>
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</tbody>
</table>

Primary OutFlow Max=1.60 cfs @ 12.09 hrs HW=70.68' TW=66.87' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.60 cfs @ 2.8 fps)

Inflow Area=0.741 ac
Peak Elev=70.69'
12.0" x 17.0' Culvert

Hydrograph
Pond 11P: cbn-3

Inflow Area = 0.495 ac, Inflow Depth = 2.80" for 100 YR event
Inflow = 1.60 cfs @ 12.08 hrs, Volume= 0.116 af
Outflow = 1.60 cfs @ 12.08 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.0 min
Primary = 1.60 cfs @ 12.08 hrs, Volume= 0.116 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 60.19' @ 12.08 hrs
Flood Elev= 62.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

Routing Invert Outlet Devices

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>59.50'</td>
<td>12.0&quot; x 56.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500 Outlet Invert= 58.90' S= 0.0107 '/' n= 0.013 Cc= 0.900</td>
</tr>
</tbody>
</table>

Primary OutFlow Max=1.55 cfs @ 12.08 hrs HW=60.17' TW=58.70' (Dynamic Tailwater) 1=Culvert (Barrel Controls 1.55 cfs @ 3.9 fps)
Pond 12P: infiltration basin 1

Inflow Area = 3.461 ac, Inflow Depth = 2.43" for 100 YR event
Inflow = 9.46 cfs @ 12.09 hrs, Volume= 0.701 af
Outflow = 0.12 cfs @ 24.04 hrs, Volume= 0.262 af, Atten= 99%, Lag= 716.6 min
Discarded = 0.12 cfs @ 24.04 hrs, Volume= 0.262 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 61.40' @ 24.04 hrs Surf.Area= 10,041 sf Storage= 25,488 cf
Flood Elev= 61.50' Surf.Area= 10,246 sf Storage= 26,370 cf
Plug-Flow detention time= 831.5 min calculated for 0.262 af (37% of inflow)
Center-of-Mass det. time= 695.2 min (1,548.7 - 853.4 )

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<tbody>
<tr>
<td>1</td>
<td>57.00'</td>
<td>31,698 cf</td>
<td>Basin (Irregular)</td>
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<td>62.00</td>
<td>11,072</td>
<td>555.0</td>
<td>5,328</td>
<td>31,698</td>
<td>24,803</td>
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<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discarded</td>
<td>0.00'</td>
<td>Exfiltration (0.52 in/hr) over entire Surface area</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10.0' 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 2.50</td>
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<tr>
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<td></td>
<td>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 2.66 2.65 2.65 2.65 2.65 2.65 2.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.67 2.66 2.68 2.70 2.74 2.79 2.88</td>
</tr>
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Discarded OutFlow Max=0.12 cfs @ 24.04 hrs HW=61.40' (Free Discharge)
1=Exfiltration (0.52 in/hr) (Exfiltration Controls 0.12 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=57.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Pond 12P: infiltration basin 1

**Hydrograph**

Inflow Area = 3.461 ac
Peak Elev = 61.40'
Storage = 25,488 cf
Pond 13P: dcbn-1

Inflow Area = 3.460 ac, Inflow Depth = 1.94" for 100 YR event
Inflow = 7.24 cfs @ 12.09 hrs, Volume= 0.559 af
Outflow = 7.24 cfs @ 12.09 hrs, Volume= 0.559 af, Atten= 0%, Lag= 0.0 min
Primary = 7.24 cfs @ 12.09 hrs, Volume= 0.559 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 70.46' @ 12.09 hrs
Flood Elev= 72.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

# Routing Invert Outlet Devices
1 Primary 69.00' 18.0" x 193.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500
Outlet Invert= 66.00' S= 0.0155 '/' n= 0.013 Cc= 0.900

Primary OutFlow Max=7.09 cfs @ 12.09 hrs HW=70.43' TW=68.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.09 cfs @ 4.1 fps)
Pond 14P: rain garden 1

Inflow Area = 3.787 ac, Inflow Depth = 1.86" for 100 YR event
Inflow = 7.49 cfs @ 12.09 hrs, Volume= 0.586 af
Outflow = 1.53 cfs @ 12.58 hrs, Volume= 0.565 af, Atten= 80%, Lag= 29.6 min
Primary = 1.53 cfs @ 12.58 hrs, Volume= 0.565 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 69.38' @ 12.58 hrs Surf.Area= 3,605 sf Storage= 7,810 cf
Flood Elev= 69.50' Surf.Area= 3,697 sf Storage= 8,165 cf
Plug-Flow detention time= 76.5 min calculated for 0.564 af (96% of inflow)
Center-of-Mass det. time= 58.1 min (930.8 - 872.7)

# Invert Avail.Storage Storage Description
1 66.00' 10,119 cf Rain Garden #1 (Irregular) Listed below

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<tr>
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<tbody>
<tr>
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<td>70.00</td>
<td>4,123</td>
<td>289.0</td>
<td>1,954</td>
<td>10,119</td>
<td>4,386</td>
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</tbody>
</table>

# Routing Invert Outlet Devices
1 Primary 65.00' 12.0" x 114.0' long Culvert CPP, projecting, no headwall, Ke= 0.900
   Outlet Invert= 62.00' S= 0.0263 '/' n= 0.013 Cc= 0.900
2 Device 1 66.50' 6.0" Vert. Orifice/Grate C= 0.600
3 Secondary 69.50' 10.0' long x 5.0' breadth Broad-Crested Rectangular Weir
   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
   Coef. (English) 2.34 2.50 2.70 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

Primary OutFlow Max=1.53 cfs @ 12.58 hrs HW=69.38' TW=57.97' (Dynamic Tailwater)
1=Culvert (Passes 1.53 cfs of 5.88 cfs potential flow)
2=Orifice/Grate (Orifice Controls 1.53 cfs @ 7.8 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' TW=56.00' (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Pond 14P: rain garden 1

Hydrograph

Inflow Area=3.787 ac
Peak Elev=69.38'
Storage=7,810 cf
Pond 15P: cbn-1

Inflow Area = 0.387 ac, Inflow Depth = 2.12" for 100 YR event
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 0.069 af
Outflow = 0.91 cfs @ 12.09 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 12.09 hrs, Volume= 0.069 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 59.99' @ 12.09 hrs
Flood Elev= 62.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated)

<table>
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<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary</td>
<td>59.50'</td>
<td>12.0&quot; x 80.0' long Culvert RCP, sq.cut end projecting, Ke= 0.500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outlet Invert= 58.00' S= 0.0187 '/' n= 0.013 Cc= 0.900</td>
</tr>
</tbody>
</table>

Primary OutFlow Max=0.88 cfs @ 12.09 hrs HW=59.98' TW=56.58' (Dynamic Tailwater)
Inflow Area=0.387 ac
Peak Elev=59.99'
12.0" x 80.0' Culvert
Pond 16P: rain garden 2

Inflow Area = 4.393 ac, Inflow Depth = 1.77" for 100 YR event
Inflow = 2.12 cfs @ 12.12 hrs, Volume= 0.648 af
Outflow = 1.31 cfs @ 14.21 hrs, Volume= 0.629 af, Atten= 38%, Lag= 125.4 min
Primary = 1.31 cfs @ 14.21 hrs, Volume= 0.629 af
Secondary = 0.00 cfs @ 00.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 58.68' @ 14.21 hrs Surf.Area= 2,431 sf Storage= 4,777 cf
Flood Elev= 59.50' Surf.Area= 2,911 sf Storage= 6,795 cf
Plug-Flow detention time= 63.3 min calculated for 0.629 af (97% of inflow)
Center-of-Mass det. time= 47.0 min (970.8 - 923.8 )

<table>
<thead>
<tr>
<th>#</th>
<th>Invert</th>
<th>Avail.Storage</th>
<th>Storage Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>56.00'</td>
<td>8,331 cf</td>
<td><strong>Rain Garden #2 (Irregular)</strong> Listed below</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>56.00</td>
<td>1,119</td>
<td>132.0</td>
<td>0</td>
<td>0</td>
<td>1,119</td>
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<tr>
<td>58.00</td>
<td>2,033</td>
<td>172.0</td>
<td>3,107</td>
<td>3,107</td>
<td>2,133</td>
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<tr>
<td>59.50</td>
<td>2,911</td>
<td>211.0</td>
<td>6,795</td>
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<td>3,356</td>
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<td>60.00</td>
<td>3,234</td>
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<td>8,331</td>
<td>3,716</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>#</th>
<th>Routing</th>
<th>Invert</th>
<th>Outlet Devices</th>
</tr>
</thead>
</table>
| 1 | Primary | 55.00' | **12.0" x 118.0' long Culvert** RCP, square edge headwall, Ke= 0.500  
Outlet Invert= 42.00’ S= 0.1102 '/' n= 0.013  
C= 0.900 |
| 2 | Device 1| 56.50' | **6.0" Vert. Orifice/Grate** C= 0.600 |
| 3 | Secondary| 59.50' | **10.0' long x 5.0' breadth Broad-Crested Rectangular Weir**  
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  
Coef. (English) 2.34 2.50 2.70 2.68 2.66 2.65 2.65 2.65 2.65 2.65 2.65  
2.67 2.66 2.68 2.70 2.74 2.79 2.88 |

**Primary OutFlow** Max=1.31 cfs @ 14.21 hrs HW=58.68' TW=46.17’ (Dynamic Tailwater)
1=Culvert (Passes 1.31 cfs of 6.74 cfs potential flow)
2=Orifice/Grate (Orifice Controls 1.31 cfs @ 6.7 fps)

**Secondary OutFlow** Max=0.00 cfs @ 00.00 hrs HW=56.00’ TW=42.00’ (Dynamic Tailwater)
3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)
Pond 16P: rain garden 2

Hydrograph

Inflow Area=4.393 ac
Peak Elev=58.68'
Storage=4,777 cf
Pond 17P: infiltration basin 2

Inflow Area = 10.599 ac, Inflow Depth = 2.01" for 100 YR event
Inflow = 15.35 cfs @ 12.09 hrs, Volume= 1.776 af
Outflow = 0.74 cfs @ 18.39 hrs, Volume= 1.483 af, Atten= 95%, Lag= 377.9 min
Discarded = 0.74 cfs @ 18.39 hrs, Volume= 1.483 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 47.28' @ 18.39 hrs  Surf.Area= 13,296 sf  Storage= 49,096 cf
Flood Elev= 47.80'  Surf.Area= 13,908 sf  Storage= 55,908 cf
Plug-Flow detention time= 670.1 min calculated for 1.483 af (83% of inflow)
Center-of-Mass det. time= 597.6 min ( 1,498.5 - 900.9 )

# Invert Avail.Storage Storage Description
1 42.00' 60,415 cf D-Basin (Irregular) Listed below

<table>
<thead>
<tr>
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<tr>
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<td>544.0</td>
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<td>4,507</td>
<td>60,415</td>
<td>50,772</td>
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</tbody>
</table>

# Routing Invert Outlet Devices
1 Discarded 0.00' 0.003347 fpm Exfiltration (2.41 in/hr) over entire Surface area
2 Secondary 47.80' 15.0' long x 5.0' breadth Broad-Crested Rectangular Weir
   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
   Coef. (English) 2.34 2.50 2.70 2.68 2.66 2.65 2.65 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.74 cfs @ 18.39 hrs  HW=47.28' (Free Discharge)
2=Exfiltration (2.41 in/hr) (Exfiltration Controls 0.74 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs  HW=42.00' (Free Discharge)
1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)
Pond 17P: infiltration basin 2

Inflow Area=10.599 ac
Peak Elev=47.28'
Storage=49,096 cf

Flow (cfs)

Time (hours)