## STORMWATER DRAINAGE CALULATIONS

# Proposed Residential Development 365 Concord Street Rockland, MA 02370

APPLICANT: Conrock LLC P.O. Box 1414 Duxbury, MA 02331

SUBMITTED TO: Town of Rockland Planning Board 242 Union Street Rockland, MA 02370

PREPARED BY: Cavanaro Consulting, Inc. 687 Main Street Norwell, MA 02061

**REVISED 1/26/22** 



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# **SECTION I**

STORMWATER REPORT

## **Existing & Proposed conditions:**

The locus property is approximately 21.3 acres and contains one single family home. Approximately 16.9 acres is upland and 4.4 is wetlands. The property is bordered to the west by the French Stream and an intermittent stream bisects the property. The property is bordered to the north and south by private property and to the east by approximately 100' of frontage on Concord Street and the remainder by private property.

The proposed development consists of 19 new single-family homes and maintaining the existing single family home. The development will only utilize the front portion of the property and not involve a wetland crossing to get to the remainder upland located on the east side of the intermittent stream. The total length of roadway is approximately 980 L.F. and will be constructed with full utilities and a sidewalk on one side. The site is relatively flat with a maximum change in grade of 6± feet and only a 4± foot differential within the area of the development.

## 1.0 METHODOLOGY

The adequacy of drainage structures and their ability to function properly must be analyzed to minimize detrimental effects due to flooding conditions. The impacts of storm water are mitigated through several mechanisms such as infiltration, transportation and evaporation. The remaining runoff, can be quantified through developed and accepted methods. By determining the characteristics of site specific storm water conditions, mitigating efforts can be taken to avoid floodwater damage by constructing control devices. Designing and analyzing these facilities requires the acquisition of site data through observations, computer modeling the watershed, and the interpretation and application of the calculated values.

#### 2.0 OVERVIEW

Cavanaro Consulting (CC) has analyzed the existing structures on and adjacent to the site utilizing the HydroCad 10.0 Stormwater modeling program. Storm rainfall, run-off curve numbers, and other site characteristics are input into the program. The results of calculations are output into tables and graphs for each area and control structure. The complete calculations are presented in Section IV of this report.

## 3.0 DESIGN STORMS

CC has computed storm water run-off calculations for the proposed subdivision site, for a 2, 10, 25, and 100 year, Type III, 24-hour storm events. This results in 3.2", 4.6", 5.5", and a 7.0" of rainfall respectively for each storm event.

## 4.0 EXISTING DRAINAGE AREAS

The existing site is currently divided into four (4) drainage areas: One that flows to the west towards the wetlands associated with the intermittent stream; another flows easterly toward a wetland system which is primarily on adjacent property but also has a portion onsite; the third is a

small area of existing driveway and lawn that discharges easterly into Concord Street; and the fourth flows to the north into a wetland area that is mostly located offsite.

## 5.0 PROPOSED SUBCATCHMENT AREAS

The proposed site was divided into subcatchment areas as shown on the accompanying plan. Four design control points were established to compare the existing with the proposed conditions. The design control points were chosen at the down slope side of the four existing subcatchment areas as shown on the plan.

## 6.0 SOIL CONDITIONS

The soil type used to model the entire site was determined using U.S. Conservation Service online data and through soil evaluations. Site soil was modeled as C soils as mapped and confirmed by in situ soil tests. Localized soil data in the vicinity of the proposed subsurface infiltration systems was obtained by conducting in-situ soil tests. Sand (Hydrologic Soil Group A soil) with a corresponding Rawls Rate of 8.27 in/hr was found in the area of the infiltration systems and was used in their design.

## 7.0 COMPLIANCE WITH STORMWATER STANDARDS

The project is a mix of redevelopment and new development. The new development complies with all Stormwater Standards and the redevelopment complies with the Standards to the maximum extent practicable.

#### Standard 1: No New Stormwater Conveyances of Untreated Stormwater or Erosion Offsite

All proposed road and sidewalk runoff will receive 44% TSS removal for pretreatment and 80% total TSS removal. All new roof runoff will be disconnected from the street runoff and will receive 80% TSS removal. Driveways serving the existing dwelling and detached garage that are presently untreated will be reduced from 23,861 SF to 8,919 SF. Therefore, this Standard is met.

## Rip Rap sizing:

The size, slope, and invert elevations of the overflow pipe and a detail of the crushed stone pad have been added to the revised Site Plan. The Isbash formula [  $D = V^2 / 2gC^2$  (G -1) ] was used to size the stone for the splash pad:

D = Median stone size (ft)

V = velocity

C = constant - 0.86 for high turbulence

g = 32.2 Ft/ sec.

G = Specific gravity of stone - 2.86

The outlet with the highest velocity was chosen for design, which is the inlet to Pond No. 2, this results in a design stone of 4.5 inches, therefore a 4"-6" stone has been specified for all outlet structures

 $(5.83)^2 / 2(32.2) (0.86)^2 (2.86 - 1) = 0.38$  feet or 4.5 inches

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

All proposed runoff rates and volumes will be reduced from existing conditions during all design storm events as noted below. The proposed improvements are expected to improve offsite drainage conditions.

## Runoff to Stream – Design Control Point (DCP 1) – To Stream

| <u>Storm</u>           | Existing (Re<br>Peak Rate | each 1E)<br>Volume | Post-develor<br>Peak Rate | oment (Reach 1P) Volume |
|------------------------|---------------------------|--------------------|---------------------------|-------------------------|
| 2–Year-24Hour (3.2")   | 4.12 cfs                  | 0.622 af           | 3.72 cfs                  | 0.530 af                |
| 10-Year-24Hour (4.6")  | 7.72 cfs                  | 1.145 af           | 6.97 cfs                  | 0.965 af                |
| 25–Year-24Hour (5.5")  | 10.18 cfs                 | 1.506 af           | 9.63 cfs                  | 1.300 af                |
| 100–Year-24Hour (7.0") | 14.37 cfs                 | 2.133 af           | 13.76 cfs                 | 1.875 af                |

## Runoff to East Wetland - Design Control Point (DCP 2) - To East Wetland

| <u>Storm</u>           | Existing (Re<br>Peak Rate | ach 2E)<br>Volume | Post-develop<br>Peak Rate | ment (Reach 2P) Volume |
|------------------------|---------------------------|-------------------|---------------------------|------------------------|
| 2–Year-24Hour (3.2")   | 2.27 cfs                  | 0.327 af          | 2.20 cfs                  | 0.317 af               |
| 10-Year-24Hour (4.6")  | 4.50 cfs                  | 0.628 af          | 4.33 cfs                  | 0.609 af               |
| 25–Year-24Hour (5.5")  | 6.04 cfs                  | 0.839 af          | 5.86 cfs                  | 0.822 af               |
| 100–Year-24Hour (7.0") | 8.70 cfs                  | 1.210 af          | 8.57 cfs                  | 1.188 af               |

## Runoff to Concord Street - Design Control Point (DCP 3) - To Street

| <u>Storm</u>          | Existing (R | Existing (Reach 3E) |           | Post-development (Reach 3P) |  |
|-----------------------|-------------|---------------------|-----------|-----------------------------|--|
|                       | Peak Rate   | Volume              | Peak Rate | <u>Volume</u>               |  |
| 2–Year-24Hour (3.2")  | 0.06 cfs    | 0.004 af            | 0.04 cfs  | 0.003 af                    |  |
| 10–Year-24Hour (4.6") | 0.10 cfs    | 0.007 af            | 0.06 cfs  | 0.004 af                    |  |

| 25–Year-24Hour (5.5")  | 0.13 cfs | 0.009 af | 0.07 cfs | 0.005 af |
|------------------------|----------|----------|----------|----------|
| 100–Year-24Hour (7.0") | 0.17 cfs | 0.012 af | 0.09 cfs | 0.007 af |

## Runoff to North Wetland - Design Control Point (DCP 4) - To North Wetland

| <u>Storm</u>           | Existing (Re<br>Peak Rate | each 4E)<br>Volume | Post-develop<br>Peak Rate | ment (Reach 4P)<br>Volume |
|------------------------|---------------------------|--------------------|---------------------------|---------------------------|
| 2–Year-24Hour (3.2")   | 0.64 cfs                  | 0.098 af           | 0.53 cfs                  | 0.073 af                  |
| 10–Year-24Hour (4.6")  | 1.24 cfs                  | 0.186 af           | 1.06 cfs                  | 0.140 af                  |
| 25–Year-24Hour (5.5")  | 1.66 cfs                  | 0.247 af           | 1.42 cfs                  | 0.187 af                  |
| 100–Year-24Hour (7.0") | 2.37 cfs                  | 0.355 af           | 2.05 cfs                  | 0.270 af                  |

## **Standard 3: Recharge**

Recharge will be increased by minimizing the impervious areas discharging directly over ground. The minimum required recharge volume is calculated as follows:

Existing Impervious Area = 33,166 SF SF

Proposed Impervious Area = 97,256

Total Increase in Impervious Area = 64,090 SF

 $(0.25"/12 \times 64,090 \text{ SF}) = 1,335 \text{ CF}$ 

The storage capacity of each infiltration BMP is listed below:

Drywells for Houses 1-19:

Volume below outlet elevation=139 CF X 19=2,641 CF

Infiltration System.1:

Volume below outlet elevation = 958 CF

Infiltration System 2:

Volume below outlet elevation = 4,268 CF

Total recharge volume provided:

2,641 CF + 958 CF + 4,268 CF = 7,867 CF >>> 1,335 CF; therefore, this requirement is met.

In order to confirm that the infiltration systems will drain in 72 hours, the volume under the lowest outlet pipe must be divided by the bottom area of the infiltration system and the infiltration rate as follows:

## System 1:

$$\frac{\left[\frac{(958 ft^3)}{1,330 ft^2}\right]}{\left(8.27 \frac{in}{hr}\right) \left(\frac{1 ft}{12 in}\right)} = 1.0 hours$$

1.0 hours << 72 hours; therefore, this requirement is met for this infiltration system.

#### System 2:

$$\frac{\left[\frac{(4,268ft^3)}{4,300ft^2}\right]}{\left(8.27\frac{in}{hr}\right)\left(\frac{1ft}{12in}\right)} = 1.4 hours$$

1.4 hours << 72 hours; therefore, this requirement is met for this infiltration system.

Bottom of Basin Floor steady flow rate calculation.

System 1 bottom infiltration calculation:

8.27 In/Hr.(  $\frac{1}{1}$ Hr/  $\frac{3600 \text{ sec.}}{1}$ Ift /  $\frac{12 \text{ in}}{12}$  in (  $\frac{1}{3}$ 30 SF -bottom area of pond) = 0.25 CFS

System 2 bottom infiltration calculation:

8.27 In/Hr. ( 1 Hr / 3600 sec.) 1 ft / 12 in ( 4,300 SF -bottom area of pond) = 0.82 CFS

#### **Standard 4: Water Quality**

Water quality requirements are met for work in critical areas; namely, rapid infiltration soils under the proposed infiltration systems and discharging near a potential vernal pool for System 1 per BETA's request. Pretreatment consists of deep sump catch basins and Stormceptors prior to exfiltration at each infiltration basin. The proposed pretreatment will remove in excess of the required 44% of TSS while the subsurface infiltration systems will provide a total 80% TSS removal with pretreatment. Roof runoff does not require pretreatment. Drywells are proposed to provide 80% TSS removal for each new dwelling.

The WQV required and provided at each infiltration basin is as follows:

#### System 1:

Impervious area directed to System 1=10,533 SF

$$(1"/12"$$
per ft) $(10,533) = 878$  CF

System 1 has a capacity of 898 CF below the lowest outlet elevation. Therefore, this requirement is met.

## System 2:

Impervious area directed to System 2=38,056 SF

$$(1"/12"$$
per ft) $(38,056 \text{ ft}^2) = 3,171 \text{ ft}^3$ 

System 2 has a capacity of 4,141 CF below the lowest outlet elevation. Therefore, this requirement is met.

Drywells are proposed for House lots 1-19:

Proposed House Lots 1 thru 7 are tributary to a certified vernal pool therefore water Quality Volume is based on 1.0" of runoff.

C soils are expected for the entire site aside from the location of the proposed subsurface in infiltration system locations. Thus, the required WQV for the proposed dwellings is as follows:

Proposed roof areas directed to drywells lots 1 thru 7 = (6 houses x 1,550 SF/house) + (1 house x 1,200 SF/house) = 10,500 SF.

Required WQV= $(1.0^{\circ\prime}/12^{\circ\prime})$ per ft)(10,500 SF) = 875 CF

Volume capacity provided below outlet elevation=139 CF x 7=973 CF

973 CF > 875 CF. Therefore, this standard is met.

Proposed roof areas directed to drywells lots 8 thru 19 = (10 houses x 1,550 SF/house) + (2 houses x 1,200 SF/house) = 17,900 SF

Required WQV=(0.5"/12"per ft)(17,900 SF) = 746 CF

Volume capacity provided below outlet elevation=139 CF x 12=1,668 CF

1,668 CF > 746 CF. Therefore, this standard is met.

## Deep Sump Catch Basins:

To obtain 25% TSS removal pre-treatment credit, catch basins may treat up to ¼ acre of impervious areas. The total impervious area treated by each catch basin is as follows: Catch Basin 1: 5,266 SF (0.12 Acres)

Catch Basin 2: 5,267 SF (0.12 Acres)

Catch Basin 3: 6,841 SF (0.16 Acres)

Catch Basin 4: 9,564 SF (0.22 Acres)

Catch Basin 5: 10,856 SF (0.25 Acres)

Catch Basin 6: 10,795 SF (0.25 Acres)

#### Stormceptors:

WQU #1 - 0.24 acres 100% impervious -will generate a WQF of 0.30 CFS for the 1-inch WQ storm. STC model 450i which provides 80% TSS removal for up to 1.0 CFS is proposed.

WQU #2-0.87 acres 100% impervious – will generate a WQF of 1.09 CFS for the 1-inch WQ storm. CDS model 2015-4 which provides 80% TSS removal for up to 1.4 CFS is proposed.

## **Standard 5: Land Uses with Higher Pollutant Loads (LUHPPLs)**

The proposed use of the site for single family homes, does not constitute a higher potential pollutant load, therefore this standard does not apply.

#### **Standard 6: Critical Areas**

A portion of the locus does fall within a critical area and since the infiltration rate for the subsurface infiltration basins is greater than 2.4 inches per hour 44% of pretreatment is provided prior to infiltration in both proposed systems.

## **Standard 7: Redevelopment**

This project is a combination of redevelopment and new development. All new impervious areas have been treated and infiltrated as per the Stormwater Management Standards. The existing pavement areas without treatment have been reduced from 23,861 square feet to 8,919 square feet. The existing paved driveway serving the detached garage will be reduced and moved further away from the wetland from approximately 0' to over 25'. The existing dwelling is only partially within Commission's jurisdiction. The downspout closest to the nearest wetlands daylights approximately 75' from the wetland and travels over lawn before reaching the resource area which should provide ample treatment. Additionally, the total area of disturbed 25' buffer will be reduced from 7,880 SF to 3,780 SF; thus enhancing the buffer immediately upstream the resource areas.

This buffer enhancement will improve water quality by providing some treatment to existing untreated pavement runoff. Therefore, we believe this requirement has been met to the maximum extent practicable for the redevelopment portion of the project.

## <u>Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation</u> <u>Control</u>

The Operation and Maintenance Plan included with this submittal will ensure proper maintenance of the proposed pollution, erosion and sedimentation measures proposed during construction.

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

The Long Term Operation and Maintenance Plan is included within the Operation and Maintenance Plan enclosed in this submittal to ensure the proposed drainage improvements are maintained as intended.

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

Routine visual inspections are scheduled as part of the Operations and Maintenance Plan to prevent illicit discharges into the stormwater system. Furthermore, an Illicit Compliance Statement is included in this submittal.

## **Improvement Over Existing Conditions**

Existing conditions will be improved by reducing peak rate of runoff and volume during all design storm events, improving water quality from existing conditions for the redevelopment portion of the project and restoring disturbed portions of the 25' Buffer Zone.

## **Low Impact Measures Used:**

The design of the proposed development has incorporated the following low impact development measures:

- Utilizes the natural hydrology to manage Stormwater.
- Treats Stormwater through a combination of stormwater controls.
- Uses natural topography for drainage ways and storage areas.

# **SECTION II**

STORMWATER OPERATION AND MAINTENANCE PLAN

# Construction Period Erosion, Sedimentation, and Pollution Prevention Plan

Proposed Residential Development
"Concord Meadows"

PUD Subdivision – Rockland, MA 02370

Stormwater Management System's Owner: Conrock LLC

System Owner's Address: 365 Concord Street

Party responsible for Operations and Maintenance: Owners of Concord Meadows

It is most important for a drainage system to be maintained in order for it to work properly. The following is an Operation and Maintenance plan to upkeep the existing non-structural and structural best performance practices as outlined in the Massachusetts Department of Environmental Protection's Stormwater Management Policy.

## **Construction Sequencing:**

The following section provides construction details and highlights the construction sequence and timing of earth moving activities.

#### 1 Installation of Erosion Controls

Erosion and sedimentation controls (silt fence and hay bales) will be installed where needed and inspected at the limits of the work area prior to the commencement of earth moving activities.

## 2 Clearing

The project area will be cleared of debris and boulders. Materials removed from the site will be transported to an appropriate facility or will be disposed of properly. No large boulders will be buried on the site. All cleared vegetation will be removed from the project site or mulched and stockpiled for future use on the site.

## 3 Rough Grading

During this phase of construction, rough grades will be established for the project site. If suitable topsoil is found, it will be removed and stockpiled in an upland area outside of the zone of identified wetlands. The stockpiled topsoil will be stored until ready for re-use on site.

## 4 Drainage System Construction

After rough grading is complete, the drainage collection, conveyance and discharge areas will be installed. The drainage system design and structures for the proposed development will follow the Department of Environmental Protection's Best Management Practice standards.

## 5 Utility Installation

In this phase of construction, underground utilities including water, sewer, gas, power, telecommunications, etc. will be installed.

## 6 Roadway Paving

During this phase of construction, the entrance and exit roadways for the development will be paved to binder course only. Final paving will be done after most of the home sites are developed at the discretion of the developer.

#### **7** Foundation and Structure Construction

This phase of construction consists of installation of the foundations and construction of the buildings. The home sites will be made available for construction and occupancy in phases. The phasing will be designed primarily to control construction impacts to the site and also consider current market demand for home sales.

#### **8** Installation of Amenities

Amenities such as signage and landscaping will be installed or completed as required for safety and as the homes become occupied.

#### 9 Site Stabilization

The final phase of the project is the restoration and stabilization of all exposed surfaces. Disturbed areas will be landscaped or seeded as necessary with an erosion control seed mix. Much of the disturbed area is to be rough graded with topsoil and allowed to revegetate with indigenous species and kept thereafter in a natural state as habitat. Permanent restoration and revegetation measures serve to provide additional habitat and to control erosion and sedimentation by establishing a vegetative cover. In the event that weather conditions prevent final restoration, temporary erosion and sedimentation measures will be employed until the weather is suitable for final cleanup. A final inspection will ensure that the project site is cleared of all project debris and that erosion and sedimentation controls are functioning properly. Haybales and silt fencing will not be removed until the site is stabilized and the final inspection is complete.

## **Operation and Maintenance Plan during Construction:**

#### Sediment and Erosion Control

- Siltation barriers shall be inspected at least once a week and after each rainfall event. Make any required repairs immediately. Repair scoured areas on the back side of fence at this time to prevent future problems.
- Should the fabric of the silt fence tear, decompose or otherwise become ineffective, replace it within 24 hours of discovery.
- Remove silt deposits once they reach 15-30 percent of the height of the silt fence to provide adequate storage volume for the next rain event and to reduce pressure on the fence. Care should be taken to avoid undermining the fence during cleanout process.
- Siltation barriers are to be removed upon stabilization of the contributing drainage area. Accumulated sediment may be spread to form a surface for turf or other vegetation establishment, or disposed of elsewhere. The area should be reshaped to permit natural drainage.
- Crushed stone construction entrances shall be inspected and maintained on a daily basis. Any buildup of material within the apron shall be removed offsite and replaced with clean crushed stone as needed.
- Also at the Construction entrances any sediment tracked onto the public road during the construction process shall be removed immediately and any adjustment of the entrance to prevent additional sediment tracking.

## Subsurface Infiltration Systems and Drywells

All infiltration areas shall be excavated and installed after the construction of the foundation. No heavy equipment shall traverse the proposed infiltration areas after installation.

Per MA DEP Stormwater Guidelines the following work shall be done to stabilize the site prior to installing the infiltration systems:

- Do not allow runoff from any disturbed areas on the site to flow to the proposed location of the infiltration systems.
- Rope off the area where the infiltration systems are to be placed.
- Accomplish any required excavation with equipment placed just outside the area. If the size of the area intended for exfiltration is too large to accommodate this approach, use trucks with low-pressure tires to minimize compaction. Do not allow any other vehicles within the area to be excavated.
- Keep the area above and immediately surrounding the infiltration systems roped off to all construction vehicles until the final top surface is installed.
- At no time shall the area for the infiltration systems be used as a temporary sediment basin. Stockpiles shall be placed away from the infiltration systems

- and sedimentation fences shall be placed around the perimeter of the infiltration area to prevent the accumulation of sediment within the native soils.

**Dust Control:** Sprinkle water as necessary to control dust during construction.

**Material Stockpiling:** Stockpiles of material must be placed outside all wetland resource areas and their buffer zones. If left overnight, material stockpiling must be protected from the weather.

#### **Good housekeeping:**

The following good housekeeping BMP's will be implemented in order to prevent pollution during construction:

- Petroleum products will be stored in tightly sealed containers which are clearly labeled.
- Any asphalt substances used onsite will be applied according to the manufacturer's specifications.
- If portable sanitary units are used, sanitary waste will be removed as necessary to avoid overfilling.
- All paint and other hazardous waste materials will be tightly sealed and stored when not in use. Excess material will not be discharged into the public stormwater system, but will be properly disposed of according to the manufacturer's specifications.
- If spray guns are used, they will be cleaned on a removable tarp.

## **Temporary Sediment Traps & Basins**

Sediment traps and/or basins shall be constructed as shown on the approved plans and as necessitated by field conditions. Sediment traps/basins should be readily accessible for maintenance and sediment removal, and should remain in operation and be properly maintained until the site area is permanently stabilized by vegetation and/or when permanent structures are in place. Remove basin after drainage area has been permanently stabilized, inspected, and approved. Before removing dam, drain water and remove sediment; place waste material in designated disposal areas. Smooth site to blend with surrounding area and stabilize.

## **Track out controls at Construction Entrance**

A stabilized stone apron construction entrance shall be at all construction entrances to help prevent vehicle tracking of sediments. All vehicles shall enter and exit the sit via the stabilized construction entrance. The contractor shall inspect the construction entrance daily and after heavy use. If mud and soil clogs the voids in the crushed stone reducing the effectiveness, the pad shall be top dressed with new, clean stone. If the pad becomes completely clogged, replacement of the entire pad may be necessary Dump trucks hauling material from the construction site will be covered with a tarpaulin.

# Long Term Stormwater Operation and Maintenance Plan and Illicit Discharge Statement

Proposed Residential Development
"Concord Meadows"

PUD Subdivision – Rockland, MA 02370

Stormwater Management System's Owner: Conrock LLC

System Owner's Address: 365 Concord Street

Party responsible for Operations and Maintenance: Owners of Concord Meadows

It is most important for a drainage system to be maintained in order for it to work properly. The following is an Operation and Maintenance plan to upkeep the existing non-structural and structural best performance practices as outlined in the Massachusetts Department of Environmental Protection's Stormwater Management Policy.

## **Operation and Maintenance Plan After Construction:**

#### **Good housekeeping:**

General trash and litter cleanup of the site, inspect all vehicles on a regular basis for detention of leaking oil, gas and other fluids, provide routine visual inspections of potential pollution sources, and maintain an inventory of potential pollution sources stored on site. Initiate and maintain record keeping of activity with regard to the contents of this plan.

#### Spill prevention and response:

In the event of a spill, immediately initiate containment and cleanup procedures appropriate for the material and notify the proper authorities. All attempts must be made to prevent spilled material from entering the drainage system or infiltrating into the ground.

#### Landscape Maintenance:

Maintenance of lawns and landscaped areas: Regularly mow lawn areas and weed landscaped areas.

#### Pipes:

Drainage pipes (inlets and outlets) shall be inspected to ensure that they are free of all obstructions and that they are structurally sound during every catch basin inspection.

## Street Sweeping:

Sweeping of the parking lots and driveways should be done at least 2 times annually, namely in the spring and fall. It is imperative that sweeping take place immediately following final winter snowmelt to remove winter sand. All sediments containing hydrocarbons shall be handled properly and disposed of in accordance with local, state and federal guidelines and regulations.

## Catch Basin Cleaning:

Catch basins shall be inspected and sediment removed at least two times per year and at the end of the foliage and snow removal seasons. Sediment must be removed at the required interval or whenever the depth of deposits is greater than or equal to one half the depth of the sump (2 feet). Care must be exercised to not damage the outlet hood when using a clamshell type cleaning bucket. A damaged or dislodged hood must be repaired or replaced immediately.

#### Culverts. pipes. and manholes:

All culverts, pipes, and manholes shall be inspected two times per year and cleaned when drainage impediments are discovered. Flushing of pipes may be required to remove accumulated sediment.

#### Riprap Drain Outfalls:

All riprap drain outfalls shall be inspected two times per year and repaired as necessary. Riprap shall be replaced/repaired as necessary, debris and accumulated sediment removed, and any woody growth removed.

## Subsurface Infiltration Systems and Drywells:

Inspect inspection port at least quarterly and after every major storm event during the first year. Inspections after every major storm event shall take notice of any water standing after 72 hours after the storm ended. After the first year, inspections must be done at least twice yearly. Remove any debris or sediment within reach that may be clogging the system.

The outlet structures should be inspected for evidence of clogging, structural integrity, outflow release velocities that are greater than design flow and sediment accumulation around the outlet. The surface over and around the infiltration systems shall be checked for potential subsidence, erosion, cracking and tree growth. Any necessary repairs should be made immediately. During inspections, changes vegetative cover or the contributing watershed should be noted.

The subsurface systems are designed to fully drain after a storm event therefore if standing water is observed above the outlet in the drainage manhole immediately upstream of the infiltration system beyond 24 hours since the cessation of inflow to the system from a rainstorm this may be indicatibe of clogging within the system and should be noted on the inspection log and further inspected for repairs. The Owner may need to contact a Registered Professional Engineer to evaluate the system in the event of major problems.

#### Pet Waste Management

All pet owners and keepers are required to immediately and properly dispose of their pet's solid waste deposited on any property, public or private, not owned or possessed by that person.

## Snow Management

Place snow in pervious areas where it can slowly infiltrate however it should not be placed over any component of the site's stormwater management system, particularly the catch basins. Any sand and debris mixed with snow would block the inlet or be quickly introduced into the drainage system upon snowmelt. At no time shall the stormwater infiltration basins or wetlands be used for the stockpiling of snow.

## **Estimated Operation and Maintenance Budget:**

Maintenance cost will be approximately \$10,000.00 per year.

## **Illicit Discharges:**

At no time will the owner or any other individual utilize the stormwater management system for any purpose other than its intended use. The stormwater management system as shown on the attached site plan at no time shall receive discharges other than stormwater, this includes "wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, raw materials, toxic pollutants, hazardous substances, oil or grease."

TO BE SIGNED PRIOR TO CONSTRUCTION

Property Owner (Signature)

CONROCK LLC
Property Owner (Print)

## **MAINTENANCE INSPECTION LOG FORM**

## Concord Meadows, Rockland, MA

| Contractor Date                             |           |                                 |
|---|-----------|---------------------------------|
| OPERATION                                   | Inspected | Cleaning / Maintenance required |
| 1. Inspect catch basins & inlets            |           |                                 |
| 2. Inspect drain outlets                    |           |                                 |
| 3. Inspect for signs of drain line blockage |           |                                 |
| 4. Inspect pavement surface                 |           |                                 |
| 5. Inspect vegetation on site               |           |                                 |
| 6. Inspect Drain Manholes with Stormceptors |           |                                 |
| 7. Subsurface Infiltration Inspection ports |           |                                 |
| 8. Subsurface Infiltration outlets pipes    |           |                                 |
| 9. Subsurface Infiltration                  |           |                                 |
|   |           |                                 |
| COMMENTS / MAINTENANCE REQUIRED:            |           |                                 |
|   |           |                                 |
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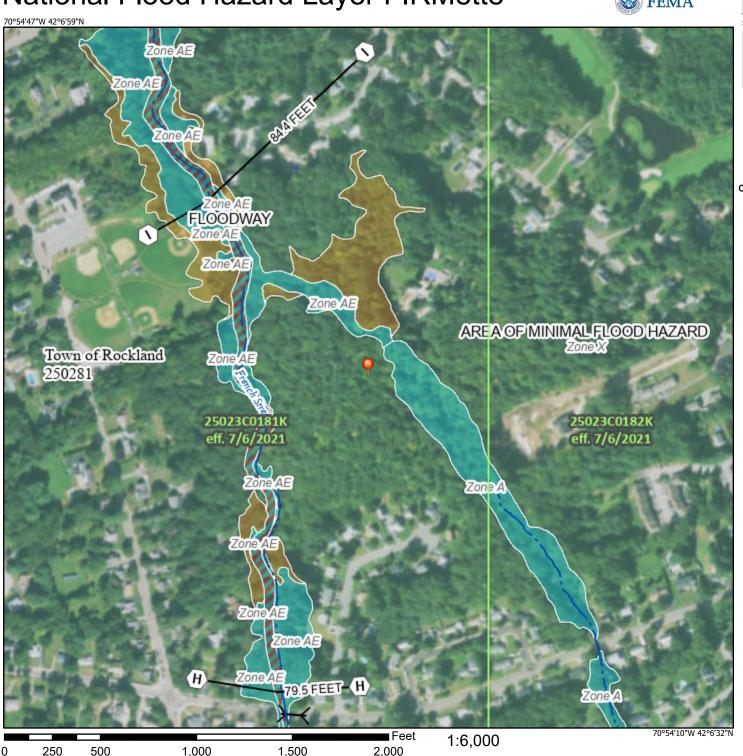
# **SECTION III**

**FIGURES** 

## National Flood Hazard Layer FIRMette

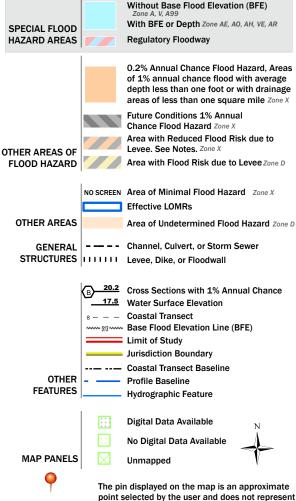


Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020



#### Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

an authoritative property location.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/26/2021 at 8:17 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

# **SECTION IV**

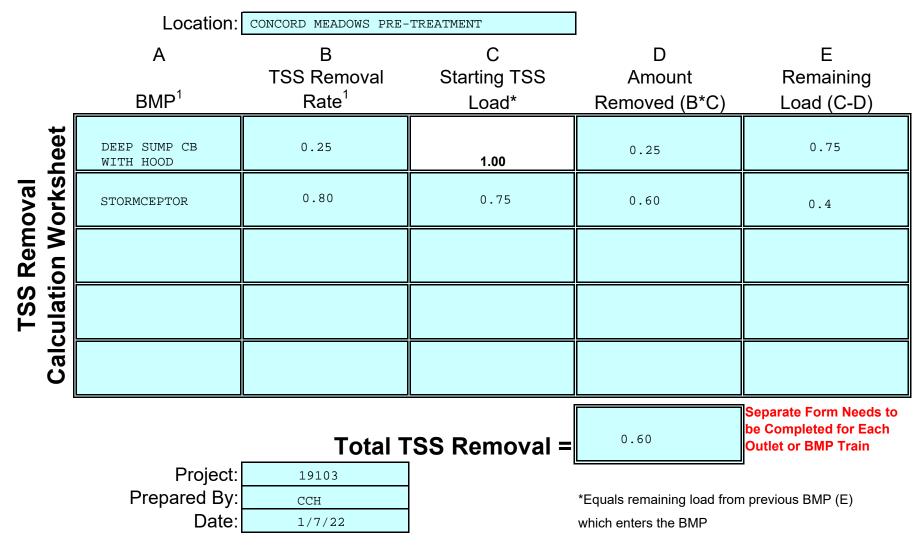
DRAINAGE CALCULATIONS & SUPPLEMENTAL DRAINAGE INFORMATION

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

- 2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
- 3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
- 4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
- 5. Total TSS Removal = Sum All Values in Column D



#### INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

- 1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
- 2. Select BMP from Drop Down Menu
- 3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: CONCORD MEADOWS-TREATMENT

|                         | B<br>BMP <sup>1</sup>                | C<br>TSS Removal<br>Rate <sup>1</sup> | D<br>Starting TSS<br>Load* | E<br>Amount<br>Removed (C*D)                        | F<br>Remaining<br>Load (D-E)   |
|-------------------------|--------------------------------------|---------------------------------------|----------------------------|---|--|
| heet                    | Subsurface Infiltration<br>Structure | 0.80                                  | 1.00                       | 0.80  | 0.20   |
| Removal<br>on Worksheet |                                      | 0.00                                  | 0.20                       | 0.00  | 0.20   |
|                         |                                      | 0.00                                  | 0.20                       | 0.00  | 0.20   |
| TSS Re<br>Calculation   |                                      | 0.00                                  | 0.20                       | 0.00  | 0.20   |
| Cal                     |                                      | 0.00                                  | 0.20                       | 0.00  | 0.20   |
|                         |                                      |                                       | SS Removal =               | 80%   | Separate Form Needs to<br>be Completed for Each<br>Outlet or BMP Train |
|                         | Project:<br>Prepared By:<br>Date:    |                                       |                            | *Equals remaining load fron<br>which enters the BMP | n previous BMP (E)   |

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## Stage-Area-Storage for Pond P1: POND 1 SC-310

| Elevation (feet) | Storage<br>(cubic-feet) | Elevation<br>(feet) | Storage<br>(cubic-feet) | Elevation<br>(feet) | Storage<br>(cubic-feet) |
|------------------|-------------------------|---------------------|-------------------------|---------------------|-------------------------|
| 86.50            | 0                       | 87.54               | 810                     |                     |                         |
| 86.52            | 11                      | 87.56               | 829                     | 88.58               | 1,549                   |
| 86.54            | 21                      |                     |                         | 88.60               | 1,559                   |
|                  | 32                      | 87.58               | 848                     | 88.62               | 1,570                   |
| 86.56            |                         | 87.60               | 867                     | 88.64               | 1,581                   |
| 86.58            | 43                      | 87.62               | 885                     | 88.66               | 1,591                   |
| 86.60            | 53                      | 87.64               | 904                     | 88.68               | 1,602                   |
| 86.62            | 64                      | 87.66               | 922                     | 88.70               | 1,613                   |
| 86.64            | 74                      | 87.68               | 940                     | 88.72               | 1,623                   |
| 86.66            | 85                      | 87.70               | 958                     | 88.74               | 1,634                   |
| 86.68            | 96                      | 87.72               | 976                     | 88.76               | 1,645                   |
| 86.70            | 106                     | 87.74               | 994                     | 88.78               | 1,655                   |
| 86.72            | 117                     | 87.76               | 1,012                   | 88.80               | 1,666                   |
| 86.74            | 128                     | 87.78               | 1,029                   |                     |                         |
| 86.76            | 138                     | 87.80               | 1,046                   |                     |                         |
| 86.78            | 149                     | 87.82               | 1,064                   |                     |                         |
| 86.80            | 160                     | 87.84               | 1,081                   |                     |                         |
| 86.82            | 170                     | 87.86               | 1,097                   |                     |                         |
| 86.84            | 181                     | 87.88               | 1,114                   |                     |                         |
| 86.86            | 192                     | 87.90               | 1,130                   |                     |                         |
| 86.88            | 202                     | 87.92               | 1,147                   |                     |                         |
| 86.90            | 213                     | 87.94               | 1,163                   |                     |                         |
| 86.92            | 223                     | 87.96               | 1,178                   |                     |                         |
| 86.94            | 234                     | 87.98               | 1,194                   |                     |                         |
| 86.96            | 245                     | 88.00               | 1,209                   |                     |                         |
| 86.98            | 255                     | 88.02               | 1,224                   |                     |                         |
| 87.00            | 266                     | 88.04               | 1,239                   |                     |                         |
| 87.02            | 287                     | 88.06               | 1,253                   |                     |                         |
| 87.04            | 308                     | 88.08               | 1,267                   |                     |                         |
| 87.06            | 329                     | 88.10               |                         |                     |                         |
| 87.08            | 350                     | 88.12               | 1,280<br>1,293          |                     |                         |
| 87.10            | 370                     | 88.14               |                         |                     |                         |
| 87.12            | 370                     |                     | 1,306                   |                     |                         |
|                  |                         | 88.16               | 1,318                   |                     |                         |
| 87.14<br>87.16   | 412                     | 88.18               | 1,331                   |                     |                         |
| 87.16            | 433                     | 88.20               | 1,342                   |                     |                         |
| 87.18            | 453                     | 88.22               | 1,354                   |                     |                         |
| 87.20            | 474                     | 88.24               | 1,366                   |                     |                         |
| 87.22            | 494                     | 88.26               | 1,377                   |                     |                         |
| 87.24            | 515                     | 88.28               | 1,388                   |                     |                         |
| 87.26            | 535                     | 88.30               | 1,400                   |                     |                         |
| 87.28            | 555                     | 88.32               | 1,410                   |                     |                         |
| 87.30            | 575                     | 88.34               | 1,421                   |                     |                         |
| 87.32            | 595                     | 88.36               | 1,432                   |                     |                         |
| 87.34            | 615                     | 88.38               | 1,442                   |                     |                         |
| 87.36            | 635                     | 88.40               | 1,453                   |                     |                         |
| 87.38            | 655                     | 88.42               | 1,464                   |                     |                         |
| 87.40            | 675                     | 88.44               | 1,474                   |                     |                         |
| 87.42            | 694                     | 88.46               | 1,485                   |                     |                         |
| 87.44            | 714                     | 88.48               | 1,496                   |                     |                         |
| 87.46            | 733                     | 88.50               | 1,506                   |                     |                         |
| 87.48            | 753                     | 88.52               | 1,517                   |                     |                         |
| 87.50            | 772                     | 88.54               | 1,528                   |                     |                         |
| 87.52            | 791                     | 88.56               | 1,538                   |                     |                         |
|                  |                         |                     | 1000000                 |                     |                         |
|                  |                         |                     |                         |                     |                         |

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Elevation

(feet) 87.60

87.65

87.70

87.75

87.80 87.85

87.90 87.95

88.00 88.05

88.10

88.15

88.20

88.25

88.30

88.35

88.40 88.45

88.50

## Stage-Area-Storage for Pond P2: POND 2 SC-740

Storage (cubic-feet)

7,468

7,586

7,700

7,807 7,908

8,004 8,097

8,187 8,275

8,361

8,447

8,533

8,619

8,705

8,791

8,877 8,963

9,049

9,135

| Elevation (feet)  | Storage   |
|---|---|
| (feet) 85.00 85.05 85.10 85.15 85.20 85.25 85.30 85.35 85.40 85.45 85.50 85.55 85.60 85.65 85.70 85.75  | (cubic-feet)  0 86 172 258 344 430 516 602 688 774 860 1,036 1,211 1,387 1,562 1,736  |
| 85.80<br>85.85<br>85.90<br>85.95<br>86.00<br>86.05<br>86.10<br>86.15<br>86.20<br>86.25<br>86.30<br>86.35<br>86.40<br>86.45  | 1,910<br>2,083<br>2,256<br>2,428<br>2,599<br>2,770<br>2,940<br>3,109<br>3,277<br>3,445<br>3,611<br>3,777<br>3,941<br>4,105<br>4,268   |
| 86.55<br>86.60<br>86.65<br>86.70<br>86.75<br>86.80<br>86.85<br>86.90<br>87.05<br>87.10<br>87.15<br>87.20<br>87.25<br>87.30<br>87.35<br>87.40<br>87.45<br>87.50<br>87.55 | 4,430<br>4,590<br>4,750<br>4,908<br>5,065<br>5,220<br>5,375<br>5,527<br>5,679<br>5,829<br>5,977<br>6,124<br>6,269<br>6,411<br>6,552<br>6,690<br>6,826<br>6,960<br>7,091<br>7,220<br>7,346 |

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## Stage-Area-Storage for Pond 1P: 12'X13' X 2' INFILTRATION FIELD

| Elevation<br>(feet) | Wetted<br>(sq-ft) | Storage<br>(cubic-feet) |
|---------------------|-------------------|-------------------------|
| 98.00<br>98.05      | 156<br>158        | 0<br>3<br>6             |
| 98.10<br>98.15      | 161<br>164        | 6<br>9                  |
| 98.20               | 166               | 12                      |
| 98.25               | 169               | 16                      |
| 98.30               | 171               | 19                      |
| 98.35               | 173               | 22                      |
| 98.40               | 176               | 25                      |
| 98.45               | 179               | 28                      |
| 98.50               | 181               | 31                      |
| 98.55               | 183               | 36                      |
| 98.60               | 186               | 41                      |
| 98.65               | 189               | 45                      |
| 98.70<br>98.75      | 191<br>194        | 50<br>54                |
| 98.80               | 196               | 59                      |
| 98.85               | 198               | 63                      |
| 98.90               | 201               | 68                      |
| 98.95               | 204               | 72                      |
| 99.00               | 206               | 77                      |
| 99.05               | 208               | 81                      |
| 99.10               | 211               | 86                      |
| 99.15               | 214               | 90                      |
| 99.20               | 216               | 94                      |
| 99.25<br>99.30      | 219<br>221        | 98<br>102               |
| 99.35               | 223               | 102                     |
| 99.40               | 226               | 110                     |
| 99.45               | 229               | 114                     |
| 99.50               | 231               | 118                     |
| 99.55               | 233               | 122                     |
| 99.60               | 236               | 126                     |
| 99.65               | 239               | 129                     |
| 99.70               | 241               | 132                     |
| 99.75<br>99.80      | 244<br>246        | 136<br>139              |
| 99.85               | 248               | 142                     |
| 99.90               | 251               | 145                     |
| 99.95               | 254               | 148                     |
| 100.00              | 256               | 151                     |
| 100.05              | 258               | 154                     |
| 100.10              | 261               | 158                     |
| 100.15              | 264               | 161                     |
| 100.20              | 266               | 164                     |
| 100.25<br>100.30    | 269<br><b>271</b> | 167<br><b>170</b>       |
| 100.30              | 2/1               | 170                     |

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## Stage-Area-Storage for Pond 1P: 12'X13' X 2' INFILTRATION FIELD

| Elevation<br>(feet)  | Wetted<br>(sq-ft)   | Storage<br>(cubic-feet)  |
|--|---|--|
| 98.00<br>98.05<br>98.10<br>98.15<br>98.20<br>98.25<br>98.30<br>98.35<br>98.40<br>98.55<br>98.60<br>98.55<br>98.60<br>98.65<br>98.70<br>98.75<br>98.80<br>98.95<br>99.00<br>99.15<br>99.10<br>99.15<br>99.20<br>99.25<br>99.30<br>99.35<br>99.40<br>99.45<br>99.50<br>99.55<br>99.60<br>99.55<br>99.60<br>99.70<br>99.75<br>99.80 | 156<br>158<br>161<br>164<br>166<br>169<br>171<br>173<br>176<br>179<br>181<br>183<br>186<br>189<br>191<br>194<br>196<br>198<br>201<br>204<br>206<br>208<br>211<br>214<br>216<br>219<br>221<br>223<br>226<br>229<br>231<br>233<br>236<br>239<br>241<br>244<br>244 | 0<br>3<br>6<br>9<br>12<br>16<br>19<br>22<br>25<br>28<br>31<br>36<br>41<br>45<br>50<br>54<br>59<br>63<br>68<br>72<br>77<br>81<br>86<br>90<br>94<br>98<br>102<br>106<br>110<br>114<br>118<br>122<br>126<br>129<br>132<br>136 |
| 99.85<br>99.90<br>99.95<br>100.00<br>100.05<br>100.10<br>100.15<br>100.20<br>100.25<br>100.30  | 248<br>251<br>254<br>256<br>258<br>261<br>264<br>266<br>269<br><b>271</b>   | 142<br>145<br>148<br>151<br>154<br>158<br>161<br>164<br>167  |

#### SUBSURFACE INFILTRATION SYSTEM 2

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.

Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days or inches & hours)

| Input Values |                  |   | inch/h | our feet/ | day  |
|--------------|------------------|---|--------|-----------|--|
| 16.4000      | $\boldsymbol{R}$ | Recharge (infiltration) rate (feet/day)             |        | 0.67      | 1.33   |
| 0.300        | Sy               | Specific yield, Sy (dimensionless, between 0 and 1) |        |           |  |
| 1500.00      | K                | Horizontal hydraulic conductivity, Kh (feet/day)*   |        | 2.00      | 4.00 In the report accompanying this spreadsheet |
| 38.000       | x                | 1/2 length of basin (x direction, in feet)          |        |           | (USGS SIR 2010-5102), vertical soil permeability |
| 8.750        | у                | 1/2 width of basin (y direction, in feet)           | hours  | days      |  |
| 0.830        | t                | duration of infiltration period (days)              |        | 36        | 1.50 hydraulic conductivity (ft/d).              |
| 0.800        | hi(0)            | initial thickness of saturated zone (feet)          |        |           |  |

maximum thickness of saturated zone (beneath center of basin at end of infiltration period)

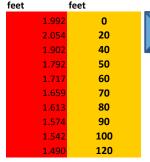
maximum groundwater mounding (beneath center of basin at end of infiltration period)

**Conversion Table** 

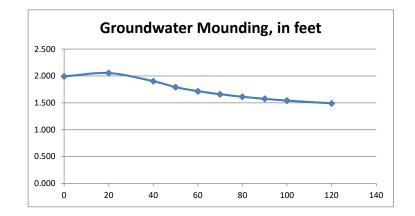
Distance from Groundcenter of basin

h(max) Δh(max)

water Mounding, in in x direction, in



**Re-Calculate Now** 



#### **Disclaimer**

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

#### SUBSURFACE INFILTRATION SYSTEM 2

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.

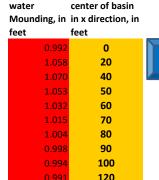
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

| Input Values |                  | , ,   | inch/h | our feet/ | day  |
|--------------|------------------|---|--------|-----------|--|
| 16.4000      | $\boldsymbol{R}$ | Recharge (infiltration) rate (feet/day)             |        | 0.67      | 1.33   |
| 0.260        | Sy               | Specific yield, Sy (dimensionless, between 0 and 1) |        |           |  |
| 800.00       | K                | Horizontal hydraulic conductivity, Kh (feet/day)*   |        | 2.00      | 4.00 In the report accompanying this spreadsheet |
| 50.850       | x                | 1/2 length of basin (x direction, in feet)          |        |           | (USGS SIR 2010-5102), vertical soil permeability |
| 17.400       | у                | 1/2 width of basin (y direction, in feet)           | hours  | days      |  |
| 0.830        | t                | duration of infiltration period (days)              |        | 36        | 1.50 hydraulic conductivity (ft/d).              |
| 23.400       | hi(0)            | initial thickness of saturated zone (feet)          |        |           |  |

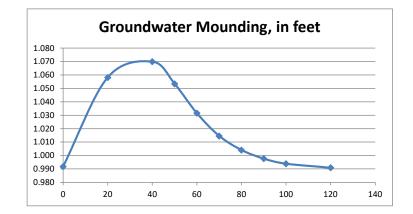
**Conversion Table** 

24.392 h(max) maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
 0.992 Δh(max) maximum groundwater mounding (beneath center of basin at end of infiltration period)
 Ground- Distance from

use consistent units (e.g. feet & days or inches & hours)

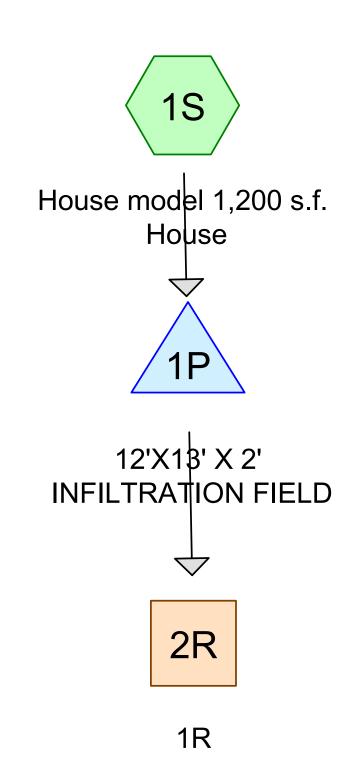






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This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.











#### 1 house w inf. 1200

Type III 24-hr 2 Year Event Rainfall=3.20"

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Page 2

Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: House model 1,200 s.f.** Runoff Area=1,200 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=0.09 cfs 297 cf

Reach 2R: 1R Inflow=0.03 cfs 71 cf
Outflow=0.03 cfs 71 cf

Pond 1P: 12'X13' X 2' INFILTRATION FIELD Peak Elev=99.91' Storage=146 cf Inflow=0.09 cfs 297 cf Discarded=0.00 cfs 151 cf Primary=0.03 cfs 71 cf Outflow=0.03 cfs 222 cf

Total Runoff Area = 1,200 sf Runoff Volume = 297 cf Average Runoff Depth = 2.97" 0.00% Pervious = 0 sf 100.00% Impervious = 1,200 sf

## 1 house w inf. 1200

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## Summary for Subcatchment 1S: House model 1,200 s.f. House

Runoff = 0.09 cfs @ 12.07 hrs, Volume= 297 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

|   | Α     | rea (sf) | CN I                    | Description |          |               |
|---|-------|----------|-------------------------|-------------|----------|---------------|
| * |       | 1,200    | 98                      |             |          |               |
|   |       | 1,200    | 100.00% Impervious Area |             |          |               |
|   | Тс    | Length   | Slope                   | Velocity    | Capacity | Description   |
| _ | (min) | (feet)   | (ft/ft)                 | (ft/sec)    | (cfs)    |               |
|   | 5.0   |          |                         |             |          | Direct Entry, |

## Summary for Reach 2R: 1R

Inflow Area = 1,200 sf,100.00% Impervious, Inflow Depth = 0.71" for 2 Year Event event Inflow = 0.03 cfs @ 12.34 hrs, Volume= 71 cf

Outflow = 0.03 cfs @ 12.34 hrs, Volume= 71 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Summary for Pond 1P: 12'X13' X 2' INFILTRATION FIELD

| Inflow Area = | 1,200 sf,100.00% Impervious,  | Inflow Depth = 2.97" for 2 Year Event event |
|---------------|-------------------------------|---|
| Inflow =      | 0.09 cfs @ 12.07 hrs, Volume= | 297 cf                                      |
| Outflow =     | 0.03 cfs @ 12.34 hrs, Volume= | 222 cf, Atten= 68%, Lag= 16.4 min           |
| Discarded =   | 0.00 cfs @ 12.34 hrs, Volume= | 151 cf                                      |
| Primary =     | 0.03 cfs @ 12.34 hrs, Volume= | 71 cf                                       |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 99.91' @ 12.34 hrs Surf.Area= 156 sf Storage= 146 cf

Plug-Flow detention time= 408.1 min calculated for 222 cf (75% of inflow) Center-of-Mass det. time= 322.0 min (1,077.5 - 755.5)

| Volume | Invert | Avail.Storage | Storage Description   |
|--------|--------|---------------|---|
| #1     | 98.00' | 126 cf        | Custom Stage Data (Irregular) Listed below                    |
|        |        |               | 359 cf Overall - 44 cf Embedded = 315 cf x 40.0% Voids        |
| #2     | 98.50' | 44 cf         | ADS_StormTech SC-310 +Cap x 3 Inside #1                       |
|        |        |               | Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf |
|        |        |               | Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap     |
|        |        | 170 cf        | Total Available Storage                                       |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
|---------------------|----------------------|------------------|---------------------------|---------------------------|---------------------|
| 98.00               | 156                  | 50.0             | 0                         | 0                         | 156                 |
| 100.30              | 156                  | 50.0             | 359                       | 359                       | 271                 |

## 1 house w inf. 1200

Type III 24-hr 2 Year Event Rainfall=3.20"

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| Device | Routing   | Invert | Outlet Devices                            |
|--------|-----------|--------|---|
| #1     | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2     | Primary   | 99.80' | 4.0" Vert. Orifice/Grate C= 0.600         |

**Discarded OutFlow** Max=0.00 cfs @ 12.34 hrs HW=99.91' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.03 cfs @ 12.34 hrs HW=99.91' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.12 fps)

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,200 s.f. Runoff Area=1,200 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=0.13 cfs 436 cf

Reach 2R: 1R Inflow=0.12 cfs 196 cf
Outflow=0.12 cfs 196 cf

Pond 1P: 12'X13' X 2' INFILTRATION FIELD Peak Elev=100.05' Storage=154 cf Inflow=0.13 cfs 436 cf Discarded=0.00 cfs 159 cf Primary=0.12 cfs 196 cf Outflow=0.12 cfs 355 cf

Total Runoff Area = 1,200 sf Runoff Volume = 436 cf Average Runoff Depth = 4.36" 0.00% Pervious = 0 sf 100.00% Impervious = 1,200 sf

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## Summary for Subcatchment 1S: House model 1,200 s.f. House

Runoff = 0.13 cfs @ 12.07 hrs, Volume= 436 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

|   | Α     | rea (sf) | CN [    | Description |             |               |
|---|-------|----------|---------|-------------|-------------|---------------|
| * |       | 1,200    | 98      |             |             |               |
|   |       | 1,200    | ,       | 100.00% Im  | npervious A | Area          |
|   | Тс    | Length   | Slope   | Velocity    | Capacity    | Description   |
| _ | (min) | (feet)   | (ft/ft) | (ft/sec)    | (cfs)       |               |
|   | 5.0   |          |         |             |             | Direct Entry, |

### Summary for Reach 2R: 1R

Inflow Area = 1,200 sf,100.00% Impervious, Inflow Depth = 1.96" for 10 Year Event event Inflow = 0.12 cfs @ 12.10 hrs, Volume= 196 cf

Outflow = 0.12 cfs @ 12.10 hrs, Volume= 196 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Summary for Pond 1P: 12'X13' X 2' INFILTRATION FIELD

| Inflow Area = | 1,200 sf,100.00% Impervious,  | Inflow Depth = 4.36" for 10 Year Event event |
|---------------|-------------------------------|--|
| Inflow =      | 0.13 cfs @ 12.07 hrs, Volume= | 436 cf                                       |
| Outflow =     | 0.12 cfs @ 12.10 hrs, Volume= | 355 cf, Atten= 6%, Lag= 1.7 min              |
| Discarded =   | 0.00 cfs @ 12.10 hrs, Volume= | 159 cf                                       |
| Primary =     | 0.12 cfs @ 12.10 hrs, Volume= | 196 cf                                       |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 100.05' @ 12.10 hrs Surf.Area= 156 sf Storage= 154 cf

Plug-Flow detention time= 285.0 min calculated for 355 cf (81% of inflow) Center-of-Mass det. time= 211.1 min (959.6 - 748.5)

| Volume | Invert | Avail.Storage | Storage Description   |
|--------|--------|---------------|---|
| #1     | 98.00' | 126 cf        | <b>5</b>  |
|        |        |               | 359 cf Overall - 44 cf Embedded = 315 cf x 40.0% Voids        |
| #2     | 98.50' | 44 cf         | ADS_StormTech SC-310 +Cap x 3 Inside #1                       |
|        |        |               | Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf |
|        |        |               | Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap     |
|        |        | 170 cf        | Total Available Storage                                       |
|        |        |               | -   |

| Elevation | Surf.Area | Perim. | Inc.Store    | Cum.Store    | Wet.Area |
|-----------|-----------|--------|--------------|--------------|----------|
| (feet)    | (sq-ft)   | (feet) | (cubic-feet) | (cubic-feet) | (sq-ft)  |
| 98.00     | 156       | 50.0   | 0            | 0            | 156      |
| 100.30    | 156       | 50.0   | 359          | 359          | 271      |

### 1 house w inf. 1200

Type III 24-hr 10 Year Event Rainfall=4.60"

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| Device | Routing   | Invert | Outlet Devices                            |
|--------|-----------|--------|---|
| #1     | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2     | Primary   | 99.80' | 4.0" Vert. Orifice/Grate C= 0.600         |

**Discarded OutFlow** Max=0.00 cfs @ 12.10 hrs HW=100.05' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.12 cfs @ 12.10 hrs HW=100.05' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 1.70 fps)

#### 1 house w inf. 1200

Type III 24-hr 25 Year Event Rainfall=5.60"

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: House model 1,200 s.f.** Runoff Area=1,200 sf 100.00% Impervious Runoff Depth=5.36" Tc=5.0 min CN=98 Runoff=0.16 cfs 536 cf

**Reach 2R: 1R**Inflow=0.15 cfs 291 cf
Outflow=0.15 cfs 291 cf

Pond 1P: 12'X13' X 2' INFILTRATION FIELD Peak Elev=100.09' Storage=157 cf Inflow=0.16 cfs 536 cf Discarded=0.00 cfs 162 cf Primary=0.15 cfs 291 cf Outflow=0.15 cfs 453 cf

Total Runoff Area = 1,200 sf Runoff Volume = 536 cf Average Runoff Depth = 5.36" 0.00% Pervious = 0 sf 100.00% Impervious = 1,200 sf

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## Summary for Subcatchment 1S: House model 1,200 s.f. House

Runoff = 0.16 cfs @ 12.07 hrs, Volume= 536 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.60"

|   | Α     | rea (sf) | CN E    | Description |            |               |
|---|-------|----------|---------|-------------|------------|---------------|
| * |       | 1,200    | 98      |             |            |               |
|   |       | 1,200    | 1       | 00.00% Im   | pervious A | Area          |
|   | Тс    | Length   | Slope   | Velocity    | Capacity   | Description   |
|   | (min) | (feet)   | (ft/ft) | (ft/sec)    | (cfs)      |               |
|   | 5.0   |          |         |             |            | Direct Entry, |

### Summary for Reach 2R: 1R

Inflow Area = 1,200 sf,100.00% Impervious, Inflow Depth = 2.91" for 25 Year Event event Inflow = 0.15 cfs @ 12.09 hrs, Volume= 291 cf

Outflow = 0.15 cfs @ 12.09 hrs, Volume= 291 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Summary for Pond 1P: 12'X13' X 2' INFILTRATION FIELD

| Inflow Area = | 1,200 sf,100.00% Impervious,  | Inflow Depth = 5.36" for 25 Year Event event |
|---------------|-------------------------------|--|
| Inflow =      | 0.16 cfs @ 12.07 hrs, Volume= | 536 cf                                       |
| Outflow =     | 0.15 cfs @ 12.09 hrs, Volume= | 453 cf, Atten= 4%, Lag= 1.4 min              |
| Discarded =   | 0.00 cfs @ 12.09 hrs, Volume= | 162 cf                                       |
| Primary =     | 0.15 cfs @ 12.09 hrs, Volume= | 291 cf                                       |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 100.09' @ 12.09 hrs Surf.Area= 156 sf Storage= 157 cf

Plug-Flow detention time= 240.6 min calculated for 453 cf (85% of inflow) Center-of-Mass det. time= 174.4 min (919.7 - 745.3)

| Volume | Invert | Avail.Storage | Storage Description   |
|--------|--------|---------------|---|
| #1     | 98.00' | 126 cf        | <b>5</b>  |
|        |        |               | 359 cf Overall - 44 cf Embedded = 315 cf x 40.0% Voids        |
| #2     | 98.50' | 44 cf         | ADS_StormTech SC-310 +Cap x 3 Inside #1                       |
|        |        |               | Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf |
|        |        |               | Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap     |
|        |        | 170 cf        | Total Available Storage                                       |
|        |        |               | -   |

| Elevation | Surf.Area | Perim. | Inc.Store    | Cum.Store    | Wet.Area |
|-----------|-----------|--------|--------------|--------------|----------|
| (feet)    | (sq-ft)   | (feet) | (cubic-feet) | (cubic-feet) | (sq-ft)  |
| 98.00     | 156       | 50.0   | 0            | 0            | 156      |
| 100.30    | 156       | 50.0   | 359          | 359          | 271      |

### 1 house w inf. 1200

Type III 24-hr 25 Year Event Rainfall=5.60"

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| Device | Routing   | Invert | Outlet Devices                            |
|--------|-----------|--------|---|
| #1     | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2     | Primary   | 99.80' | 4.0" Vert. Orifice/Grate C= 0.600         |

**Discarded OutFlow** Max=0.00 cfs @ 12.09 hrs HW=100.09' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.15 cfs @ 12.09 hrs HW=100.09' (Free Discharge) 2=Orifice/Grate (Orifice Controls 0.15 cfs @ 1.83 fps)

#### 1 house w inf. 1200

Type III 24-hr 100 Year Event Rainfall=7.00"

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,200 s.f. Runoff Area=1,200 sf 100.00% Impervious Runoff Depth=6.76" Tc=5.0 min CN=98 Runoff=0.20 cfs 676 cf

Inflow=0.18 cfs 427 cf Reach 2R: 1R Outflow=0.18 cfs 427 cf

Peak Elev=100.16' Storage=161 cf Inflow=0.20 cfs 676 cf Pond 1P: 12'X13' X 2' INFILTRATION FIELD Discarded=0.00 cfs 166 cf Primary=0.18 cfs 427 cf Outflow=0.18 cfs 593 cf

> Total Runoff Area = 1,200 sf Runoff Volume = 676 cf Average Runoff Depth = 6.76" 0.00% Pervious = 0 sf 100.00% Impervious = 1,200 sf

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## Summary for Subcatchment 1S: House model 1,200 s.f. House

Runoff = 0.20 cfs @ 12.07 hrs, Volume= 676 cf, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| _ | Α     | rea (sf) | CN [    | Description |             |               |
|---|-------|----------|---------|-------------|-------------|---------------|
| * |       | 1,200    | 98      |             |             |               |
|   |       | 1,200    | 1       | 00.00% Im   | npervious A | Area          |
|   |       | Length   | •       | •           |             | Description   |
| _ | (min) | (feet)   | (ft/ft) | (ft/sec)    | (cfs)       |               |
|   | 5.0   |          |         |             |             | Direct Entry, |

### Summary for Reach 2R: 1R

Inflow Area = 1,200 sf,100.00% Impervious, Inflow Depth = 4.27" for 100 Year Event event Inflow = 0.18 cfs @ 12.10 hrs, Volume= 427 cf

Outflow = 0.18 cfs @ 12.10 hrs, Volume= 427 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# Summary for Pond 1P: 12'X13' X 2' INFILTRATION FIELD

| Inflow Area = | 1,200 sf,100.00% Impervious,  | Inflow Depth = 6.76" for 100 Year Event event |
|---------------|-------------------------------|---|
| Inflow =      | 0.20 cfs @ 12.07 hrs, Volume= | 676 cf  |
| Outflow =     | 0.18 cfs @ 12.10 hrs, Volume= | 593 cf, Atten= 6%, Lag= 1.7 min               |
| Discarded =   | 0.00 cfs @ 12.10 hrs, Volume= | 166 cf  |
| Primary =     | 0.18 cfs @ 12.10 hrs, Volume= | 427 cf  |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 100.16' @ 12.10 hrs Surf.Area= 156 sf Storage= 161 cf

Plug-Flow detention time= 202.9 min calculated for 593 cf (88% of inflow) Center-of-Mass det. time= 144.9 min (887.0 - 742.0)

| Volume | Invert | Avail.Storage | Storage Description   |
|--------|--------|---------------|---|
| #1     | 98.00' | 126 cf        | Custom Stage Data (Irregular) Listed below                    |
|        |        |               | 359 cf Overall - 44 cf Embedded = 315 cf x 40.0% Voids        |
| #2     | 98.50' | 44 cf         | ADS_StormTech SC-310 +Cap x 3 Inside #1                       |
|        |        |               | Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf |
|        |        |               | Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap     |
|        |        | 170 cf        | Total Available Storage                                       |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
|---------------------|----------------------|------------------|---------------------------|---------------------------|---------------------|
| 98.00               | 156                  | 50.0             | 0                         | 0                         | 156                 |
| 100.30              | 156                  | 50.0             | 359                       | 359                       | 271                 |

### 1 house w inf. 1200

Type III 24-hr 100 Year Event Rainfall=7.00"

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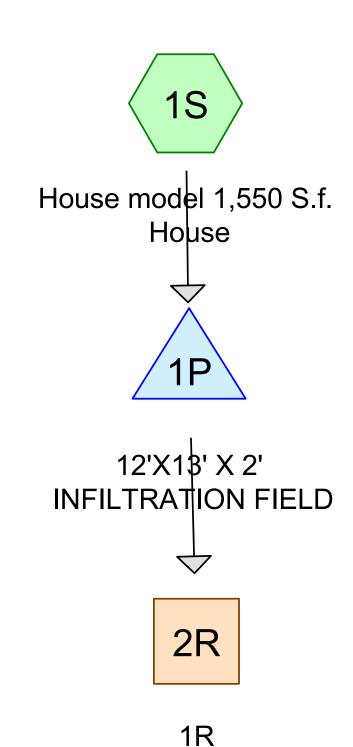
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| Device | Routing   | Invert | Outlet Devices                            |
|--------|-----------|--------|---|
| #1     | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2     | Primary   | 99.80' | 4.0" Vert. Orifice/Grate C= 0.600         |

**Discarded OutFlow** Max=0.00 cfs @ 12.10 hrs HW=100.15' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.18 cfs @ 12.10 hrs HW=100.15' (Free Discharge) 2=Orifice/Grate (Orifice Controls 0.18 cfs @ 2.09 fps)











Type III 24-hr 2 Year Event Rainfall=3.20"

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,550 S.f. Runoff Area=1,550 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=0.11 cfs 383 cf

**Reach 2R: 1R**Inflow=0.09 cfs 149 cf
Outflow=0.09 cfs 149 cf

Pond 1P: 12'X13' X 2' INFILTRATION FIELD Peak Elev=100.01' Storage=152 cf Inflow=0.11 cfs 383 cf Discarded=0.00 cfs 155 cf Primary=0.09 cfs 149 cf Outflow=0.09 cfs 304 cf

Total Runoff Area = 1,550 sf Runoff Volume = 383 cf Average Runoff Depth = 2.97" 0.00% Pervious = 0 sf 100.00% Impervious = 1,550 sf

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## Summary for Subcatchment 1S: House model 1,550 S.f. House

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 383 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

|   | Α     | rea (sf) | CN I    | Description |             |               |
|---|-------|----------|---------|-------------|-------------|---------------|
| * |       | 1,550    | 98      |             |             |               |
| _ |       | 1,550    |         | 100.00% Im  | npervious A | Area          |
|   | Тс    | Length   | Slope   | Velocity    | Capacity    | Description   |
| _ | (min) | (feet)   | (ft/ft) | (ft/sec)    | (cfs)       |               |
|   | 5.0   |          |         |             |             | Direct Entry, |

### Summary for Reach 2R: 1R

Inflow Area = 1,550 sf,100.00% Impervious, Inflow Depth = 1.15" for 2 Year Event event Inflow = 0.09 cfs @ 12.13 hrs, Volume= 149 cf

Outflow = 0.09 cfs @ 12.13 hrs, Volume= 149 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Summary for Pond 1P: 12'X13' X 2' INFILTRATION FIELD

| Inflow Area = | 1,550 sf,100.00% Impervious,  | Inflow Depth = 2.97" for 2 Year Event event |
|---------------|-------------------------------|---|
| Inflow =      | 0.11 cfs @ 12.07 hrs, Volume= | 383 cf                                      |
| Outflow =     | 0.09 cfs @ 12.13 hrs, Volume= | 304 cf, Atten= 23%, Lag= 3.7 min            |
| Discarded =   | 0.00 cfs @ 12.13 hrs, Volume= | 155 cf                                      |
| Primary =     | 0.09 cfs @ 12.13 hrs, Volume= | 149 cf                                      |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 100.01' @ 12.13 hrs Surf.Area= 156 sf Storage= 152 cf

Plug-Flow detention time= 318.4 min calculated for 304 cf (79% of inflow) Center-of-Mass det. time= 240.4 min (995.9 - 755.5)

| Volume | Invert | Avail.Storage | Storage Description   |
|--------|--------|---------------|---|
| #1     | 98.00' | 126 cf        | Custom Stage Data (Irregular) Listed below                    |
|        |        |               | 359 cf Overall - 44 cf Embedded = 315 cf x 40.0% Voids        |
| #2     | 98.50' | 44 cf         | ADS_StormTech SC-310 +Cap x 3 Inside #1                       |
|        |        |               | Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf |
|        |        |               | Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap     |
|        |        | 170 cf        | Total Available Storage                                       |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
|---------------------|----------------------|------------------|---------------------------|---------------------------|---------------------|
| 98.00               | 156                  | 50.0             | 0                         | 0                         | 156                 |
| 100.30              | 156                  | 50.0             | 359                       | 359                       | 271                 |

Type III 24-hr 2 Year Event Rainfall=3.20"

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DeviceRoutingInvertOutlet Devices#1Discarded98.00'0.270 in/hr Exfiltration over Wetted area#2Primary99.80'4.0" Vert. Orifice/GrateC= 0.600

**Discarded OutFlow** Max=0.00 cfs @ 12.13 hrs HW=100.01' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.09 cfs @ 12.13 hrs HW=100.01' (Free Discharge) 2=Orifice/Grate (Orifice Controls 0.09 cfs @ 1.54 fps)

Type III 24-hr 10 Year Event Rainfall=4.60"

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,550 S.f. Runoff Area=1,550 sf 100.00% Impervious Runoff Depth=4.36" Tc=5.0 min CN=98 Runoff=0.17 cfs 564 cf

Inflow=0.16 cfs 319 cf Reach 2R: 1R Outflow=0.16 cfs 319 cf

Peak Elev=100.10' Storage=158 cf Inflow=0.17 cfs 564 cf Pond 1P: 12'X13' X 2' INFILTRATION FIELD Discarded=0.00 cfs 162 cf Primary=0.16 cfs 319 cf Outflow=0.16 cfs 481 cf

> Total Runoff Area = 1,550 sf Runoff Volume = 564 cf Average Runoff Depth = 4.36" 0.00% Pervious = 0 sf 100.00% Impervious = 1,550 sf

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## Summary for Subcatchment 1S: House model 1,550 S.f. House

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 564 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

|   | Α     | rea (sf) | CN [    | Description |             |               |
|---|-------|----------|---------|-------------|-------------|---------------|
| * |       | 1,550    | 98      |             |             |               |
| _ |       | 1,550    | 1       | 00.00% Im   | npervious A | Area          |
|   |       | Length   | •       | •           |             | Description   |
| _ | (min) | (feet)   | (ft/ft) | (ft/sec)    | (cfs)       |               |
|   | 5.0   |          |         |             |             | Direct Entry, |

### Summary for Reach 2R: 1R

Inflow Area = 1,550 sf,100.00% Impervious, Inflow Depth = 2.47" for 10 Year Event event Inflow = 0.16 cfs @ 12.09 hrs, Volume= 319 cf

Outflow = 0.16 cfs @ 12.09 hrs, Volume= 319 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Summary for Pond 1P: 12'X13' X 2' INFILTRATION FIELD

| Inflow Area = | 1,550 sf,100.00% Impervious,  | Inflow Depth = 4.36" for 10 Year Event event |
|---------------|-------------------------------|--|
| Inflow =      | 0.17 cfs @ 12.07 hrs, Volume= | 564 cf                                       |
| Outflow =     | 0.16 cfs @ 12.09 hrs, Volume= | 481 cf, Atten= 5%, Lag= 1.4 min              |
| Discarded =   | 0.00 cfs @ 12.09 hrs, Volume= | 162 cf                                       |
| Primary =     | 0.16 cfs @ 12.09 hrs, Volume= | 319 cf                                       |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 100.10' @ 12.09 hrs Surf.Area= 156 sf Storage= 158 cf

Plug-Flow detention time= 229.9 min calculated for 480 cf (85% of inflow) Center-of-Mass det. time= 165.8 min (914.3 - 748.5)

| Volume | Invert | Avail.Storage | Storage Description   |
|--------|--------|---------------|---|
| #1     | 98.00' | 126 cf        | Custom Stage Data (Irregular) Listed below                    |
|        |        |               | 359 cf Overall - 44 cf Embedded = 315 cf x 40.0% Voids        |
| #2     | 98.50' | 44 cf         | ADS_StormTech SC-310 +Cap x 3 Inside #1                       |
|        |        |               | Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf |
|        |        |               | Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap     |
|        |        | 170 cf        | Total Available Storage                                       |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
|---------------------|----------------------|------------------|---------------------------|---------------------------|---------------------|
| 98.00               | 156                  | 50.0             | 0                         | 0                         | 156                 |
| 100.30              | 156                  | 50.0             | 359                       | 359                       | 271                 |

Type III 24-hr 10 Year Event Rainfall=4.60"

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| Device | Routing   | Invert | Outlet Devices                            |
|--------|-----------|--------|---|
| #1     | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2     | Primary   | 99.80' | 4.0" Vert. Orifice/Grate C= 0.600         |

**Discarded OutFlow** Max=0.00 cfs @ 12.09 hrs HW=100.10' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.16 cfs @ 12.09 hrs HW=100.10' (Free Discharge) 2=Orifice/Grate (Orifice Controls 0.16 cfs @ 1.88 fps)

Type III 24-hr 25 Year Event Rainfall=5.60"

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House model 1,550 S.f. Runoff Area=1,550 sf 100.00% Impervious Runoff Depth=5.36" Tc=5.0 min CN=98 Runoff=0.20 cfs 693 cf

Reach 2R: 1R Inflow=0.19 cfs 444 cf
Outflow=0.19 cfs 444 cf

Pond 1P: 12'X13' X 2' INFILTRATION FIELD Peak Elev=100.17' Storage=162 cf Inflow=0.20 cfs 693 cf Discarded=0.00 cfs 165 cf Primary=0.19 cfs 444 cf Outflow=0.19 cfs 609 cf

Total Runoff Area = 1,550 sf Runoff Volume = 693 cf Average Runoff Depth = 5.36" 0.00% Pervious = 0 sf 100.00% Impervious = 1,550 sf

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# Summary for Subcatchment 1S: House model 1,550 S.f. House

Runoff = 0.20 cfs @ 12.07 hrs, Volume= 693 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.60"

|   | Α     | rea (sf) | CN I    | Description |             |               |
|---|-------|----------|---------|-------------|-------------|---------------|
| * |       | 1,550    | 98      |             |             |               |
| _ |       | 1,550    |         | 100.00% Im  | npervious A | Area          |
|   | Тс    | Length   | Slope   | Velocity    | Capacity    | Description   |
| _ | (min) | (feet)   | (ft/ft) | (ft/sec)    | (cfs)       |               |
|   | 5.0   |          |         |             |             | Direct Entry, |

### Summary for Reach 2R: 1R

Inflow Area = 1,550 sf,100.00% Impervious, Inflow Depth = 3.44" for 25 Year Event event Inflow = 0.19 cfs @ 12.10 hrs, Volume= 444 cf

Outflow = 0.19 cfs @ 12.10 hrs, Volume= 444 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Summary for Pond 1P: 12'X13' X 2' INFILTRATION FIELD

| Inflow Area = | 1,550 sf,100.00% Impervious,  | Inflow Depth = 5.36" for 25 Year Event event |
|---------------|-------------------------------|--|
| Inflow =      | 0.20 cfs @ 12.07 hrs, Volume= | 693 cf                                       |
| Outflow =     | 0.19 cfs @ 12.10 hrs, Volume= | 609 cf, Atten= 6%, Lag= 1.7 min              |
| Discarded =   | 0.00 cfs @ 12.10 hrs, Volume= | 165 cf                                       |
| Primary =     | 0.19 cfs @ 12.10 hrs, Volume= | 444 cf                                       |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 100.17' @ 12.10 hrs Surf.Area= 156 sf Storage= 162 cf

Plug-Flow detention time= 197.4 min calculated for 609 cf (88% of inflow) Center-of-Mass det. time= 140.8 min (886.1 - 745.3)

| Volume | Invert | Avail.Storage | Storage Description   |
|--------|--------|---------------|---|
| #1     | 98.00' | 126 cf        | Custom Stage Data (Irregular) Listed below                    |
|        |        |               | 359 cf Overall - 44 cf Embedded = 315 cf x 40.0% Voids        |
| #2     | 98.50' | 44 cf         | ADS_StormTech SC-310 +Cap x 3 Inside #1                       |
|        |        |               | Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf |
|        |        |               | Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap     |
|        |        | 170 of        | Total Available Starage                                       |

#### 170 cf Total Available Storage

| Elevation | Surf.Area | Perim. | Inc.Store    | Cum.Store    | Wet.Area |
|-----------|-----------|--------|--------------|--------------|----------|
| (feet)    | (sq-ft)   | (feet) | (cubic-feet) | (cubic-feet) | (sq-ft)  |
| 98.00     | 156       | 50.0   | 0            | 0            | 156      |
| 100.30    | 156       | 50.0   | 359          | 359          | 271      |

Type III 24-hr 25 Year Event Rainfall=5.60"

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| Device | Routing   | Invert | Outlet Devices                            |
|--------|-----------|--------|---|
| #1     | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2     | Primary   | 99.80' | 4.0" Vert. Orifice/Grate C= 0.600         |

**Discarded OutFlow** Max=0.00 cfs @ 12.10 hrs HW=100.17' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.19 cfs @ 12.10 hrs HW=100.17' (Free Discharge) 2=Orifice/Grate (Orifice Controls 0.19 cfs @ 2.15 fps)

Type III 24-hr 100 Year Event Rainfall=7.00"

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: House model 1,550 S.f.** Runoff Area=1,550 sf 100.00% Impervious Runoff Depth=6.76" Tc=5.0 min CN=98 Runoff=0.25 cfs 873 cf

Reach 2R: 1R Inflow=0.23 cfs 621 cf Outflow=0.23 cfs 621 cf

Pond 1P: 12'X13' X 2' INFILTRATION FIELD Peak Elev=100.27' Storage=168 cf Inflow=0.25 cfs 873 cf Discarded=0.00 cfs 169 cf Primary=0.23 cfs 621 cf Outflow=0.23 cfs 789 cf

Total Runoff Area = 1,550 sf Runoff Volume = 873 cf Average Runoff Depth = 6.76" 0.00% Pervious = 0 sf 100.00% Impervious = 1,550 sf

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## Summary for Subcatchment 1S: House model 1,550 S.f. House

Runoff = 0.25 cfs @ 12.07 hrs, Volume= 873 cf, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| _ | Α     | rea (sf) | CN E    | Description |             |               |
|---|-------|----------|---------|-------------|-------------|---------------|
| * |       | 1,550    | 98      |             |             |               |
|   |       | 1,550    | 1       | 00.00% Im   | npervious A | Area          |
|   | Тс    | Length   | Slope   | Velocity    | Capacity    | Description   |
| _ | (min) | (feet)   | (ft/ft) | (ft/sec)    | (cfs)       |               |
|   | 5.0   |          |         |             |             | Direct Entry, |

### Summary for Reach 2R: 1R

Inflow Area = 1,550 sf,100.00% Impervious, Inflow Depth = 4.80" for 100 Year Event event Inflow = 0.23 cfs @ 12.10 hrs, Volume= 621 cf

Outflow = 0.23 cfs @ 12.10 hrs, Volume= 621 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Summary for Pond 1P: 12'X13' X 2' INFILTRATION FIELD

| Inflow Area = | 1,550 sf,100.00% Impervious,  | Inflow Depth = 6.76" for 100 Year Event event |
|---------------|-------------------------------|---|
| Inflow =      | 0.25 cfs @ 12.07 hrs, Volume= | 873 cf  |
| Outflow =     | 0.23 cfs @ 12.10 hrs, Volume= | 789 cf, Atten= 8%, Lag= 1.9 min               |
| Discarded =   | 0.00 cfs @ 12.10 hrs, Volume= | 169 cf  |
| Primary =     | 0.23 cfs @ 12.10 hrs, Volume= | 621 cf  |

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 100.27' @ 12.10 hrs Surf.Area= 156 sf Storage= 168 cf

Plug-Flow detention time= 167.6 min calculated for 789 cf (90% of inflow) Center-of-Mass det. time= 118.7 min (860.7 - 742.0)

| Volume | Invert | Avail.Storage | Storage Description   |
|--------|--------|---------------|---|
| #1     | 98.00' | 126 cf        | Custom Stage Data (Irregular) Listed below                    |
|        |        |               | 359 cf Overall - 44 cf Embedded = 315 cf x 40.0% Voids        |
| #2     | 98.50' | 44 cf         | ADS_StormTech SC-310 +Cap x 3 Inside #1                       |
|        |        |               | Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf |
|        |        |               | Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap     |
|        |        | 170 cf        | Total Available Storage                                       |

| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
|---------------------|----------------------|------------------|---------------------------|---------------------------|---------------------|
| 98.00               | 156                  | 50.0             | 0                         | 0                         | 156                 |
| 100.30              | 156                  | 50.0             | 359                       | 359                       | 271                 |

Type III 24-hr 100 Year Event Rainfall=7.00" Printed 1/26/2022

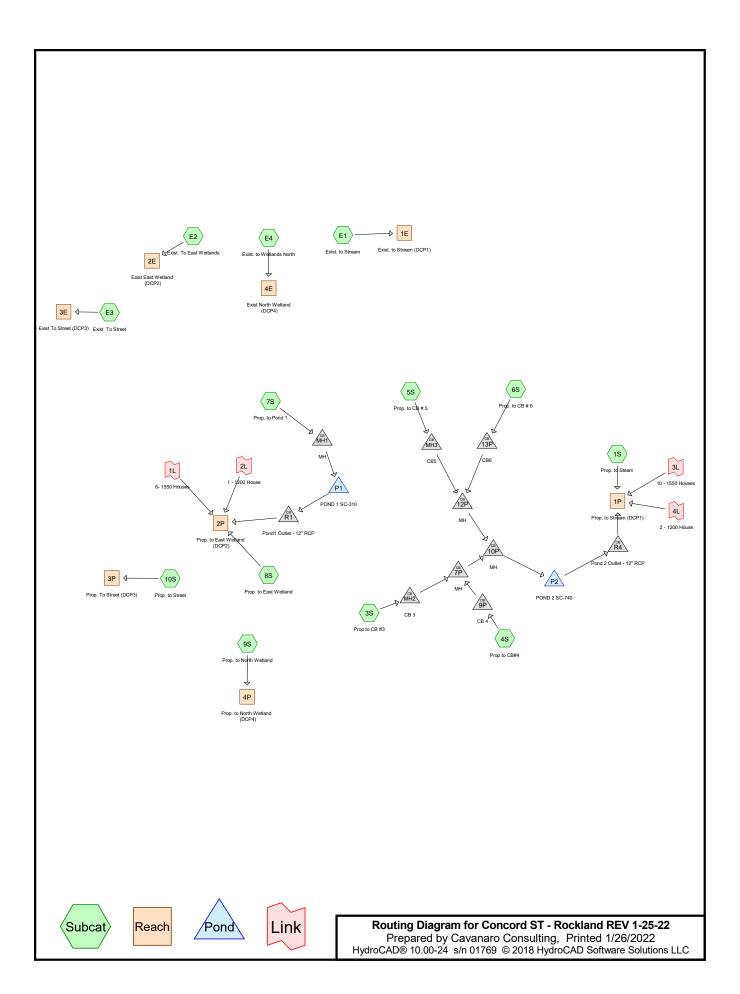
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| Device | Routing   | Invert | Outlet Devices                            |
|--------|-----------|--------|---|
| #1     | Discarded | 98.00' | 0.270 in/hr Exfiltration over Wetted area |
| #2     | Primary   | 99.80' | 4.0" Vert. Orifice/Grate C= 0.600         |

**Discarded OutFlow** Max=0.00 cfs @ 12.10 hrs HW=100.27' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.23 cfs @ 12.10 hrs HW=100.27' (Free Discharge) **2=Orifice/Grate** (Orifice Controls 0.23 cfs @ 2.64 fps)



Type III 24-hr 2 Year Event Rainfall=3.20"

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Outflow=2.27 cfs 0.327 af

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|   | - · · · · · · · · · · · · · · · · · · ·  |
|---|--|
| Subcatchment 1S: Prop. to Steam<br>Flow Length=1,030' | Runoff Area=159,889 sf 38.35% Impervious Runoff Depth=1.61" Slope=0.0100 '/' Tc=38.3 min CN=83 Runoff=3.48 cfs 0.492 af          |
| Subcatchment 3S: Prop to CB #3                        | Runoff Area=13,262 sf 51.58% Impervious Runoff Depth=1.84"<br>Tc=5.0 min CN=86 Runoff=0.68 cfs 0.047 af                          |
| Subcatchment 4S: Prop to CB#4                         | Runoff Area=16,270 sf 58.78% Impervious Runoff Depth=2.00"<br>Tc=5.0 min CN=88 Runoff=0.90 cfs 0.062 af                          |
| Subcatchment 5S: Prop. to CB # 5                      | Runoff Area=22,568 sf 48.10% Impervious Runoff Depth=1.84"<br>Tc=5.0 min CN=86 Runoff=1.16 cfs 0.079 af                          |
| Subcatchment 6S: Prop. to CB # 6                      | Runoff Area=19,917 sf 54.20% Impervious Runoff Depth=1.91"<br>Tc=5.0 min CN=87 Runoff=1.06 cfs 0.073 af                          |
| Subcatchment 7S: Prop. to Pond 1                      | Runoff Area=14,631 sf 71.99% Impervious Runoff Depth=2.26"<br>Tc=5.0 min CN=91 Runoff=0.91 cfs 0.063 af                          |
|   | Runoff Area=127,093 sf 20.50% Impervious Runoff Depth=1.21" Flow Length=370' Tc=37.0 min CN=77 Runoff=2.06 cfs 0.295 af          |
|   | d Runoff Area=33,123 sf 15.76% Impervious Runoff Depth=1.15"<br>Slope=0.0100 '/' Tc=33.1 min CN=76 Runoff=0.53 cfs 0.073 af      |
| Subcatchment 10S: Prop. to Street                     | Runoff Area=592 sf 83.11% Impervious Runoff Depth=2.54"<br>Tc=5.0 min CN=94 Runoff=0.04 cfs 0.003 af                             |
| Subcatchment E1: Exist. to Stream Flow Length=460'    | Runoff Area=243,161 sf 28.05% Impervious Runoff Depth=1.34" Slope=0.0100 '/' Tc=42.0 min CN=79 Runoff=4.12 cfs 0.622 af          |
| Subcatchment E2: Exist. To East                       | Runoff Area=148,590 sf 21.32% Impervious Runoff Depth=1.15" Flow Length=370' Tc=37.0 min CN=76 Runoff=2.27 cfs 0.327 af          |
| Subcatchment E3: Exist. To Street                     | Runoff Area=1,271 sf 37.21% Impervious Runoff Depth=1.61"<br>Tc=5.0 min CN=83 Runoff=0.06 cfs 0.004 af                           |
|   | <b>th</b> Runoff Area=42,453 sf 19.69% Impervious Runoff Depth=1.21" Slope=0.0100 '/' Tc=42.6 min CN=77 Runoff=0.64 cfs 0.098 af |
| Reach 1E: Exist. to Stream (DCP1)                     | Inflow=4.12 cfs 0.622 af<br>Outflow=4.12 cfs 0.622 af  |
| Reach 1P: Prop. to Stream (DCP1)                      | Inflow=3.72 cfs 0.530 af<br>Outflow=3.72 cfs 0.530 af  |
| Reach 2E: Exist East Wetland (DCP2)                   | Inflow=2.27 cfs 0.327 af   |

| Concord | QT Do   | ckland | DEV/ | 1_25_22         |
|---------|---------|--------|------|-----------------|
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Type III 24-hr 2 Year Event Rainfall=3.20"

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|------------------------------|---|---|
| HydroCAD® 10.00-24 S/N 017   | 69 © 2018 HydroCAD Software Solutions LLC           | Page 3  |
| Reach 2P: Prop. to East We   | etland (DCP2)                                       | Inflow=2.20 cfs 0.317 af                              |
|                              |   | Outflow=2.20 cfs 0.317 af                             |
| Reach 3E: Exist To Street (  | DCP3)   | Inflow=0.06 cfs 0.004 af                              |
|                              | ,   | Outflow=0.06 cfs 0.004 af                             |
| Decelo 2D. Duen. To Otroct / | DOD2)   | Inflam. 0.04 ata 0.002 at                             |
| Reach 3P: Prop. To Street (  | DCP3)   | Inflow=0.04 cfs 0.003 af<br>Outflow=0.04 cfs 0.003 af |
|                              |   | Outilow=0.04 cis 0.003 ai                             |
| Reach 4E: Exist North Wetl   | and (DCP4)  | Inflow=0.64 cfs 0.098 af                              |
| Neach 4L. Exist North Weti   | and (DCF 4)   | Outflow=0.64 cfs 0.098 af                             |
|                              |   | 34110W 0.01 010 0.000 41                              |
| Reach 4P: Prop. to North W   | /etland (DCP4)                                      | Inflow=0.53 cfs 0.073 af                              |
|                              | (201.)  | Outflow=0.53 cfs 0.073 af                             |
|                              |   |   |
| Pond 7P: MH                  | Peak Elev=88.                                       | 17' Inflow=1.58 cfs 0.109 af                          |
|                              | 15.0" Round Culvert n=0.011 L=60.0' S=0.0100 '      | /' Outflow=1.58 cfs 0.109 af                          |
|                              |   |   |
| Pond 9P: CB 4                |   | 33' Inflow=0.90 cfs 0.062 af                          |
|                              | 12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '      | /' Outflow=0.90 cfs 0.062 af                          |
| D 140D MII                   | D   E  07   | 701 1 (1 0 00 1 0 004 1                               |
| Pond 10P: MH                 |   | 78' Inflow=3.80 cfs 0.261 af                          |
|                              | 18.0" Round Culvert n=0.011 L=95.0' S=0.0142 '      | / Outflow=3.80 cfs 0.261 at                           |
| Pond 12P: MH                 | Peak Flav=80  | 39' Inflow=2.22 cfs 0.152 af                          |
| POHO 12P. WIT                | 15.0" Round Culvert n=0.011 L=240.0' S=0.0075 '     |   |
|                              | 10.0 Round Culvert II 0.011 E 240.0 C 0.0070        | Odinow 2.22 013 0.102 di                              |
| Pond 13P: CB6                | Peak Elev=89.                                       | 81' Inflow=1.06 cfs 0.073 af                          |
|                              | 12.0" Round Culvert n=0.011 L=62.0' S=0.0089 '      | /' Outflow=1.06 cfs 0.073 af                          |
|                              |   |   |
| Pond MH1: MH                 |   | 56' Inflow=0.91 cfs 0.063 af                          |
|                              | 12.0" Round Culvert n=0.011 L=40.0' S=0.0050 '      | /' Outflow=0.91 cfs 0.063 af                          |
|                              | 5 5   |   |
| Pond MH2: CB 3               |   | 29' Inflow=0.68 cfs 0.047 af                          |
|                              | 12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '      | / Outflow=0.68 cts 0.04/ at                           |
| Pond MH3: CB5                | Peak Flav=80  | 84' Inflow=1.16 cfs 0.079 af                          |
| Folia Wills. CB5             | 12.0" Round Culvert n=0.011 L=65.0' S=0.0085 '      |   |
|                              | 12.0 Rodina Galvoit II 0.011 E 00.0 0 0.0000        | - Camow 1.10 die 0.010 ai                             |
| Pond P1: POND 1 SC-310       | Peak Elev=87.21' Storage=488                        | s cf Inflow=0.91 cfs 0.063 af                         |
|                              | iscarded=0.25 cfs 0.063 af Primary=0.00 cfs 0.000 a |   |
|                              | ·   |   |
| Pond P2: POND 2 SC-740       | Peak Elev=86.00' Storage=2,601                      |   |
| D                            | iscarded=0.82 cfs 0.261 af Primary=0.00 cfs 0.000 a | of Outflow=0.82 cfs 0.261 af                          |
|                              |   | FOL 1 (1 0 00 1 0 00 1                                |
| Pond R1: Pond1 Outlet - 12   |   | 50' Inflow=0.00 cfs 0.000 af                          |
|                              | 12.0" Round Culvert n=0.011 L=25.0' S=0.0120 '      | / Outflow=0.00 cfs 0.000 af                           |

Pond R4: Pond 2 Outlet - 12" RCP Peak Elev=85.00' Inflow=0.00 cfs 0.000 af 12.0" Round Culvert n=0.011 L=35.0' S=0.0143 '/' Outflow=0.00 cfs 0.000 af

Type III 24-hr 2 Year Event Rainfall=3.20"

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Link2 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 6.00 Inflow=0.09 cfs 0.003 af Area= 0.036 ac 100.00% Imperv. Primary=0.52 cfs 0.021 af

Link 2L: 1 - 2 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce Inflow=0.03 cfs 0.002 af Area= 0.028 ac 100.00% Imperv. Primary=0.03 cfs 0.002 af

**Link** Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 10.00 Inflow=0.09 cfs 0.003 af Area= 0.036 ac 100.00% Imperv. Primary=0.87 cfs 0.034 af

Link 2 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce x 2.00 Inflow=0.03 cfs 0.002 af Area= 0.028 ac 100.00% Imperv. Primary=0.05 cfs 0.003 af

Total Runoff Area = 19.348 ac Runoff Volume = 2.238 af Average Runoff Depth = 1.39" 70.29% Pervious = 13.600 ac 29.71% Impervious = 5.748 ac

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## **Summary for Subcatchment 1S: Prop. to Steam**

Runoff = 3.48 cfs @ 12.55 hrs, Volume= 0.492 af, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| _ | A     | rea (sf) | CN [      | Description                      |             |  |  |  |
|---|-------|----------|-----------|----------------------------------|-------------|--|--|--|
| * |       | 48,878   | 98 \      | 98 Water Surface Wetlands, HSG C |             |  |  |  |
|   |       | 77,137   | 74 >      | >75% Gras                        | s cover, Go | ood, HSG C                                 |  |  |
| * |       | 4,305    | 98 v      | valls othe r                     | imp.        |  |  |  |
|   |       | 1,100    | 87 [      | Dirt roads, l                    | HSG C       |  |  |  |
|   |       | 18,844   |           | Woods, Go                        | od, HSG C   |  |  |  |
| * |       | 2,457    |           | Exisit,. Roo                     |             |  |  |  |
| * |       | 5,683    |           | Exisit. Pave                     |             |  |  |  |
| * |       | 1,485    | 74 F      | Prop. Patio                      | S           |  |  |  |
|   |       | 59,889   |           | Weighted A                       |             |  |  |  |
|   |       | 98,566   |           |                                  | vious Area  |  |  |  |
|   |       | 61,323   | 3         | 38.35% lmp                       | pervious Ar | ea   |  |  |
|   | _     |          |           |                                  |             |  |  |  |
|   | Tc    | Length   | Slope     | •                                | Capacity    | Description                                |  |  |
| _ | (min) | (feet)   | (ft/ft)   | (ft/sec)                         | (cfs)       |  |  |  |
|   | 28.3  | 50       | 0.0100    | 0.03                             |             | Sheet Flow,                                |  |  |
|   |       |          |           |                                  |             | Woods: Dense underbrush n= 0.800 P2= 3.20" |  |  |
|   | 1.7   | 50       | 0.0100    | 0.50                             |             | Shallow Concentrated Flow,                 |  |  |
|   |       |          |           |                                  |             | Woodland Kv= 5.0 fps                       |  |  |
|   | 0.7   | 30       | 0.0100    | 0.70                             |             | Shallow Concentrated Flow,                 |  |  |
|   | 0.7   | 440      | 0.0400    | 0.50                             |             | Short Grass Pasture Kv= 7.0 fps            |  |  |
|   | 3.7   | 110      | 0.0100    | 0.50                             |             | Shallow Concentrated Flow, shallow         |  |  |
|   | 2.0   | 700      | 0.0400    | 2.25                             | 20.44       | Woodland Kv= 5.0 fps                       |  |  |
|   | 3.9   | 790      | 0.0100    | 3.35                             | 20.11       | Channel Flow, Stream                       |  |  |
|   |       |          |           |                                  |             | Area= 6.0 sf Perim= 7.0' r= 0.86'          |  |  |
| _ | 00.0  | 4.000    | T . 4 . 1 |                                  |             | n= 0.040 Earth, cobble bottom, clean sides |  |  |
|   | 38.3  | 1,030    | Total     |                                  |             |  |  |  |

#### Summary for Subcatchment 3S: Prop to CB #3

Runoff = 0.68 cfs @ 12.07 hrs, Volume= 0.047 af, Depth= 1.84"

| <br>Area (sf) | CN | Description                   |  |  |  |
|---------------|----|-------------------------------|--|--|--|
| 6,841         | 98 | Paved parking, HSG C          |  |  |  |
| <br>6,421     | 74 | >75% Grass cover, Good, HSG C |  |  |  |
| 13,262        | 86 | Weighted Average              |  |  |  |
| 6,421         |    | 48.42% Pervious Area          |  |  |  |
| 6,841         |    | 51.58% Impervious Area        |  |  |  |

Type III 24-hr 2 Year Event Rainfall=3.20"

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| Тс    | -      | •       | ,        |       | Description          |
|-------|--------|---------|----------|-------|----------------------|
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) |                      |
| 5.0   |        |         |          |       | Direct Entry, DIRECT |

### **Summary for Subcatchment 4S: Prop to CB#4**

Runoff = 0.90 cfs @ 12.07 hrs, Volume= 0.062 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

|    | Area (sf)  | CN      | Description  | Description                   |                      |  |  |  |
|----|------------|---------|--------------|-------------------------------|----------------------|--|--|--|
| *  | 1,652      | 98      | Paved park   | ing, HSG C                    | C-Sidewalk           |  |  |  |
|    | 7,912      | 98      | Paved park   | ing, HSG (                    |                      |  |  |  |
|    | 6,706      | 74      | >75% Gras    | >75% Grass cover, Good, HSG C |                      |  |  |  |
|    | 16,270     | 88      | Weighted A   | Weighted Average              |                      |  |  |  |
|    | 6,706      |         | 41.22% Per   | rvious Area                   | a                    |  |  |  |
|    | 9,564      |         | 58.78% lm    | pervious Ar                   | rea                  |  |  |  |
|    |            |         |              |                               |                      |  |  |  |
|    | Tc Length  |         | ,            | Capacity                      | Description          |  |  |  |
| (n | nin) (feet | t) (ft/ | ft) (ft/sec) | (cfs)                         |                      |  |  |  |
|    | 5.0        |         |              |                               | Direct Entry, DIRECT |  |  |  |

## Summary for Subcatchment 5S: Prop. to CB # 5

Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.079 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

|   | A     | rea (sf) | CN                        | Description |             |                  |  |  |  |  |
|---|-------|----------|---------------------------|-------------|-------------|------------------|--|--|--|--|
| * |       | 466      | 98                        | Paved park  | ing, HSG C  | C - Sidewalk     |  |  |  |  |
| * |       | 10,390   | 98                        | Paved park  | ing, HSG C  | C - rroad-drives |  |  |  |  |
|   |       | 11,712   | 74                        | >75% Gras   | s cover, Go | ood, HSG C       |  |  |  |  |
|   |       | 22,568   | 2,568 86 Weighted Average |             |             |                  |  |  |  |  |
|   |       | 11,712   | ;                         | 51.90% Per  | vious Area  | a                |  |  |  |  |
|   |       | 10,856   |                           | 48.10% lmp  | pervious Ar | rea              |  |  |  |  |
|   |       |          |                           |             |             |                  |  |  |  |  |
|   | Тс    | Length   | Slope                     | ,           | Capacity    | ·                |  |  |  |  |
| ( | (min) | (feet)   | (ft/ft)                   | (ft/sec)    | (cfs)       |                  |  |  |  |  |
|   | 5.0   |          |                           |             |             | Direct Entry,    |  |  |  |  |

## Summary for Subcatchment 6S: Prop. to CB # 6

Runoff = 1.06 cfs @ 12.07 hrs, Volume= 0.073 af, Depth= 1.91"

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|       | Area (sf) | CN     | Description |             |   |
|-------|-----------|--------|-------------|-------------|---|
| *     | 959       | 98     | Paved park  | ing, HSG C  | C - Sidewalk  |
| *     | 9,836     | 98     | Paved park  | ing, HSG C  | C - rroad-drives  |
|       | 9,122     | 74     | >75% Gras   | s cover, Go | ood, HSG C  |
|       | 19,917    | 87     | Weighted A  | verage      |   |
|       | 9,122     |        | 45.80% Per  | rvious Area | a de la companya de |
|       | 10,795    |        | 54.20% Imp  | pervious Ar | rea   |
| -     |           | 01     |             | 0 "         | B 10  |
| To    | 9         | Slope  | •           | Capacity    | Description   |
| (min) | (feet)    | (ft/ft | ) (ft/sec)  | (cfs)       |   |
| 5.0   | )         |        |             |             | Direct Entry,   |

### Summary for Subcatchment 7S: Prop. to Pond 1

Runoff = 0.91 cfs @ 12.07 hrs, Volume=

0.063 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| Area | (sf) CN                 | Description                  | Description          |   |  |  |  |  |
|------|-------------------------|------------------------------|----------------------|---|--|--|--|--|
| 10,  | 533 98                  | Paved park                   | Paved parking, HSG C |   |  |  |  |  |
| 4,   | 098 74                  | >75% Gras                    | s cover, Go          | ood, HSG C                              |  |  |  |  |
| 14,  | 631 91                  | 91 Weighted Average          |                      |   |  |  |  |  |
| 4,   | 098                     | 28.01% Per                   | vious Area           | a e e e e e e e e e e e e e e e e e e e |  |  |  |  |
| 10,  | 533                     | 71.99% lmp                   | pervious Ar          | rea                                     |  |  |  |  |
|      | ength Slo<br>(feet) (ft | pe Velocity<br>/ft) (ft/sec) | Capacity<br>(cfs)    | Description                             |  |  |  |  |
| 5.0  |                         |                              |                      | Direct Entry, DIRECT                    |  |  |  |  |

# Summary for Subcatchment 8S: Prop. to East Wetland

Runoff = 2.06 cfs @ 12.54 hrs, Volume=

0.295 af, Depth= 1.21"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 25,672    | 98 | Water Surface Wetlands, HSG C |
|   | 40,951    | 74 | >75% Grass cover, Good, HSG C |
|   | 58,938    | 70 | Woods, Good, HSG C            |
| * | 1,155     | 74 | Patio                         |
| * | 377       | 98 | ret wall                      |
|   | 127,093   | 77 | Weighted Average              |
|   | 101,044   |    | 79.50% Pervious Area          |
|   | 26,049    |    | 20.50% Impervious Area        |

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|   | Tc<br>(min) | Length (feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity (cfs) | Description                                |
|---|-------------|---------------|------------------|----------------------|----------------|--|
| - | 28.3        |               | 0.0100           | 0.03                 | (0.0)          | Sheet Flow,                                |
|   | 20.0        | 00            | 0.0100           | 0.00                 |                | Woods: Dense underbrush n= 0.800 P2= 3.20" |
|   | 8.7         | 320           | 0.0150           | 0.61                 |                | Shallow Concentrated Flow, shallow         |
| _ |             |               |                  |                      |                | Woodland Kv= 5.0 fps                       |
|   | 37.0        | 370           | Total            |                      |                |  |

## Summary for Subcatchment 9S: Prop. to North Wetland

Runoff = 0.53 cfs @ 12.48 hrs, Volume= 0.073 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

|    | Α    | rea (sf) | CN      | Description                      |                |  |  |  |
|----|------|----------|---------|----------------------------------|----------------|--|--|--|
| *  |      | 906      | 98      | 98 Water Surface Wetlands, HSG C |                |  |  |  |
|    |      | 2,744    | 98      | Paved park                       | ing, HSG C     |  |  |  |
|    |      | 16,242   | 74      | >75% Ġras                        | s cover, Go    | ood, HSG C                                 |  |  |
|    |      | 1,286    | 98      | Roofs, HSC                       | G C - infiltra | ted  |  |  |
| *  |      | 283      | 98      | walls othe r                     | imp.           |  |  |  |
|    |      | 11,662   | 70      | Woods, Go                        | od, HSG C      |  |  |  |
|    |      | 33,123   | 76      | Weighted A                       | verage         |  |  |  |
|    |      | 27,904   |         | 84.24% Pe                        | rvious Area    |  |  |  |
|    |      | 5,219    |         | 15.76% Imp                       | pervious Are   | ea   |  |  |
|    |      |          |         |                                  |                |  |  |  |
|    | Тс   | Length   | Slope   | <ul><li>Velocity</li></ul>       | Capacity       | Description                                |  |  |
| (n | nin) | (feet)   | (ft/ft) | (ft/sec)                         | (cfs)          |  |  |  |
| 2  | 28.3 | 50       | 0.0100  | 0.03                             |                | Sheet Flow, Sheet                          |  |  |
|    |      |          |         |                                  |                | Woods: Dense underbrush n= 0.800 P2= 3.20" |  |  |
|    | 4.8  | 430      | 0.0100  | 1.50                             |                | Shallow Concentrated Flow, shallow         |  |  |
|    |      |          |         |                                  |                | Grassed Waterway Kv= 15.0 fps              |  |  |
| 3  | 33.1 | 480      | Total   |                                  |                |  |  |  |

#### Summary for Subcatchment 10S: Prop. to Street

Runoff = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af, Depth= 2.54"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 492       | 98 | Paved parking, HSG C          |
| 100       | 74 | >75% Grass cover, Good, HSG C |
| 592       | 94 | Weighted Average              |
| 100       |    | 16.89% Pervious Area          |
| 492       |    | 83.11% Impervious Area        |

Type III 24-hr 2 Year Event Rainfall=3.20"

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| Tc    |        |         | ,        |       | Description          |  |
|-------|--------|---------|----------|-------|----------------------|--|
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs) |                      |  |
| 5.0   |        |         |          |       | Direct Entry, DIRECT |  |

### **Summary for Subcatchment E1: Exist. to Stream**

Runoff = 4.12 cfs @ 12.60 hrs, Volume= 0.622 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

|           | Α    | rea (sf) | CN      | Description   |              |  |
|-----------|------|----------|---------|---------------|--------------|--|
| *         |      | 48,977   | 98      | Water Surfa   | ace Wetlan   | ds, HSG C                                  |
|           |      | 11,952   | 98      | Paved park    | ing, HSG C   |  |
|           |      | 34,335   | 74      | >75% Gras     | s cover, Go  | ood, HSG C                                 |
|           |      | 2,457    | 98      | Roofs, HSC    | G C          |  |
| *         |      | 4,820    | 98      | walls othe r  | imp.         |  |
|           |      | 8,801    | 87      | Dirt roads, l | HSG C        |  |
|           | 1    | 31,819   | 70      | Woods, Go     | od, HSG C    |  |
|           | 2    | 43,161   | 79      | Weighted A    | verage       |  |
|           | 1    | 74,955   |         | 71.95% Pei    | rvious Area  |  |
|           |      | 68,206   |         | 28.05% Imp    | pervious Are | ea   |
|           |      |          |         |               |              |  |
|           | Tc   | Length   | Slope   | Velocity      | Capacity     | Description                                |
| <u>(r</u> | min) | (feet)   | (ft/ft) | (ft/sec)      | (cfs)        |  |
| 2         | 28.3 | 50       | 0.0100  | 0.03          |              | Sheet Flow, Sheet                          |
|           |      |          |         |               |              | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| •         | 13.7 | 410      | 0.0100  | 0.50          |              | Shallow Concentrated Flow, shallow - woods |
|           |      |          |         |               |              | Woodland Kv= 5.0 fps                       |
|           | 42 0 | 460      | Total   |               |              |  |

## **Summary for Subcatchment E2: Exist. To East Weltands**

Runoff = 2.27 cfs @ 12.54 hrs, Volume= 0.327 af, Depth= 1.15"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 25,672    | 98 | Water Surface Wetlands, HSG C |
|   | 5,792     | 98 | Paved parking, HSG C          |
|   | 9,907     | 74 | >75% Grass cover, Good, HSG C |
| * | 217       | 98 | walls othe rimp.              |
|   | 107,002   | 70 | Woods, Good, HSG C            |
|   | 148,590   | 76 | Weighted Average              |
|   | 116,909   |    | 78.68% Pervious Area          |
|   | 31,681    |    | 21.32% Impervious Area        |

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|   | Тс    | Length | Slope   | Velocity | Capacity | Description                                |
|---|-------|--------|---------|----------|----------|--|
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    |  |
|   | 28.3  | 50     | 0.0100  | 0.03     |          | Sheet Flow, Sheet                          |
|   |       |        |         |          |          | Woods: Dense underbrush n= 0.800 P2= 3.20" |
|   | 8.7   | 320    | 0.0150  | 0.61     |          | Shallow Concentrated Flow, shallow - woods |
|   |       |        |         |          |          | Woodland Kv= 5.0 fps                       |
|   | 37.0  | 370    | Total   |          |          | <u> </u>                                   |

## **Summary for Subcatchment E3: Exist. To Street**

Runoff = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 2 Year Event Rainfall=3.20"

| A           | rea (sf)         | CN              | Description                   |                   |               |  |  |
|-------------|------------------|-----------------|-------------------------------|-------------------|---------------|--|--|
|             | 473              | 98              | Paved parking, HSG C          |                   |               |  |  |
|             | 798              | 74              | >75% Grass cover, Good, HSG C |                   |               |  |  |
|             | 1,271            | 83              | Weighted A                    | verage            |               |  |  |
|             | 798              |                 | 62.79% Pervious Area          |                   |               |  |  |
|             | 473              |                 | 37.21% lmp                    | ervious Ar        | ea            |  |  |
| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft | ,                             | Capacity<br>(cfs) | Description   |  |  |
| 5.0         |                  |                 |                               |                   | Direct Entry, |  |  |

#### Summary for Subcatchment E4: Exist. to Wetlands North

Runoff = 0.64 cfs @ 12.63 hrs, Volume= 0.098 af, Depth= 1.21"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 907       | 98 | Water Surface Wetlands, HSG C |
|   | 5,644     | 98 | Paved parking, HSG C          |
|   | 12,783    | 74 | >75% Grass cover, Good, HSG C |
| * | 520       | 98 | walls othe rimp.              |
|   | 21,313    | 70 | Woods, Good, HSG C            |
|   | 1,286     | 98 | Roofs, HSG C                  |
| , | 42,453    | 77 | Weighted Average              |
|   | 34,096    |    | 80.31% Pervious Area          |
|   | 8,357     |    | 19.69% Impervious Area        |

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|   | Тс    | Length | Slope   | Velocity | Capacity | Description                                |
|---|-------|--------|---------|----------|----------|--|
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    |  |
|   | 28.3  | 50     | 0.0100  | 0.03     |          | Sheet Flow, Sheet                          |
|   |       |        |         |          |          | Woods: Dense underbrush n= 0.800 P2= 3.20" |
|   | 14.3  | 430    | 0.0100  | 0.50     |          | Shallow Concentrated Flow, shallow - woods |
| _ |       |        |         |          |          | Woodland Kv= 5.0 fps                       |
|   | 42.6  | 480    | Total   |          |          |  |

### **Summary for Reach 1E: Exist. to Stream (DCP1)**

Inflow Area = 5.582 ac, 28.05% Impervious, Inflow Depth = 1.34" for 2 Year Event event

Inflow = 4.12 cfs @ 12.60 hrs, Volume= 0.622 af

Outflow = 4.12 cfs @ 12.60 hrs, Volume= 0.622 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### **Summary for Reach 1P: Prop. to Stream (DCP1)**

Inflow Area = 5.387 ac, 43.52% Impervious, Inflow Depth = 1.18" for 2 Year Event event

Inflow = 3.72 cfs @ 12.51 hrs, Volume= 0.530 af

Outflow = 3.72 cfs @ 12.51 hrs, Volume= 0.530 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## **Summary for Reach 2E: Exist East Wetland (DCP2)**

Inflow Area = 3.411 ac, 21.32% Impervious, Inflow Depth = 1.15" for 2 Year Event event

Inflow = 2.27 cfs @ 12.54 hrs, Volume= 0.327 af

Outflow = 2.27 cfs @ 12.54 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# Summary for Reach 2P: Prop. to East Wetland (DCP2)

Inflow Area = 3.317 ac, 27.22% Impervious, Inflow Depth = 1.15" for 2 Year Event event

Inflow = 2.20 cfs @ 12.53 hrs, Volume= 0.317 af

Outflow = 2.20 cfs @ 12.53 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# **Summary for Reach 3E: Exist To Street (DCP3)**

Inflow Area = 0.029 ac, 37.21% Impervious, Inflow Depth = 1.61" for 2 Year Event event

Inflow = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af

Outflow = 0.06 cfs @ 12.08 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

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## Summary for Reach 3P: Prop. To Street (DCP3)

Inflow Area = 0.014 ac, 83.11% Impervious, Inflow Depth = 2.54" for 2 Year Event event

Inflow = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af

Outflow = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### **Summary for Reach 4E: Exist North Wetland (DCP4)**

Inflow Area = 0.975 ac, 19.69% Impervious, Inflow Depth = 1.21" for 2 Year Event event

Inflow = 0.64 cfs @ 12.63 hrs, Volume= 0.098 af

Outflow = 0.64 cfs @ 12.63 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### Summary for Reach 4P: Prop. to North Wetland (DCP4)

Inflow Area = 0.760 ac, 15.76% Impervious, Inflow Depth = 1.15" for 2 Year Event event

Inflow = 0.53 cfs @ 12.48 hrs, Volume= 0.073 af

Outflow = 0.53 cfs @ 12.48 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### **Summary for Pond 7P: MH**

Inflow Area = 0.678 ac, 55.55% Impervious, Inflow Depth = 1.92" for 2 Year Event event

Inflow = 1.58 cfs @ 12.07 hrs, Volume= 0.109 af

Outflow = 1.58 cfs @ 12.07 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.0 min

Primary = 1.58 cfs @ 12.07 hrs, Volume= 0.109 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.17' @ 12.08 hrs

 Device
 Routing
 Invert
 Outlet Devices

 #1
 Primary
 87.45'
 15.0" Round Culvert L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 87.45' / 86.85' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=1.57 cfs @ 12.07 hrs HW=88.17' TW=87.78' (Dynamic Tailwater)
—1=Culvert (Outlet Controls 1.57 cfs @ 3.08 fps)

# Summary for Pond 9P: CB 4

Inflow Area = 0.374 ac, 58.78% Impervious, Inflow Depth = 2.00" for 2 Year Event event

Inflow = 0.90 cfs @ 12.07 hrs, Volume= 0.062 af

Outflow = 0.90 cfs @ 12.07 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Primary = 0.90 cfs @ 12.07 hrs, Volume= 0.062 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Type III 24-hr 2 Year Event Rainfall=3.20"

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Peak Elev= 88.33' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.67' | <b>12.0" Round Culvert</b> L= 22.0' Ke= 0.500                  |
|        | -       |        | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=0.88 cfs @ 12.07 hrs HW=88.33' TW=88.17' (Dynamic Tailwater) 1=Culvert (Outlet Controls 0.88 cfs @ 2.26 fps)

#### **Summary for Pond 10P: MH**

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 1.89" for 2 Year Event event Inflow = 3.80 cfs @ 12.07 hrs, Volume= 0.261 af

Outflow = 3.80 cfs @ 12.07 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.0 min

Primary = 3.80 cfs @ 12.07 hrs, Volume= 0.261 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 87.78' @ 12.07 hrs

 Device
 Routing
 Invert
 Outlet Devices

 #1
 Primary
 86.85'
 18.0" Round Culvert L= 95.0' Ke= 0.500 Inlet / Outlet Invert= 86.85' / 85.50' S= 0.0142 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=3.79 cfs @ 12.07 hrs HW=87.78' TW=85.56' (Dynamic Tailwater) 1=Culvert (Inlet Controls 3.79 cfs @ 3.29 fps)

### **Summary for Pond 12P: MH**

Inflow Area = 0.975 ac, 50.96% Impervious, Inflow Depth = 1.87" for 2 Year Event event Inflow = 2.22 cfs @ 12.07 hrs, Volume= 0.152 af

Outflow = 2.22 cfs @ 12.07 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min

Primary = 2.22 cfs @ 12.07 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 89.39' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices  |
|--------|---------|--------|---|
| #1     | Primary | 88.65' | <b>15.0" Round Culvert</b> L= 240.0' Ke= 0.500 Inlet / Outlet Invert= 88.65' / 86.85' S= 0.0075 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf  |

Primary OutFlow Max=2.21 cfs @ 12.07 hrs HW=89.39' TW=87.78' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.21 cfs @ 4.18 fps)

Type III 24-hr 2 Year Event Rainfall=3.20"

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### **Summary for Pond 13P: CB6**

Inflow Area = 0.457 ac, 54.20% Impervious, Inflow Depth = 1.91" for 2 Year Event event

Inflow = 1.06 cfs @ 12.07 hrs, Volume= 0.073 af

Outflow = 1.06 cfs @ 12.07 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Primary = 1.06 cfs @ 12.07 hrs, Volume= 0.073 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 89.81' @ 12.08 hrs

 Device
 Routing
 Invert
 Outlet Devices

 #1
 Primary
 89.20'
 12.0" Round Culvert L= 62.0' Ke= 0.500 Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0089 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=1.05 cfs @ 12.07 hrs HW=89.81' TW=89.39' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.05 cfs @ 3.00 fps)

### **Summary for Pond MH1: MH**

Inflow Area = 0.336 ac, 71.99% Impervious, Inflow Depth = 2.26" for 2 Year Event event

Inflow = 0.91 cfs @ 12.07 hrs, Volume= 0.063 af

Outflow = 0.91 cfs @ 12.07 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min

Primary = 0.91 cfs @ 12.07 hrs, Volume= 0.063 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 87.56' @ 12.07 hrs

Flood Elev= 89.00'

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.00' | <b>12.0" Round Culvert</b> L= 40.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 87.00' / 86.80' S= 0.0050 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=0.91 cfs @ 12.07 hrs HW=87.56' TW=86.90' (Dynamic Tailwater) 1=Culvert (Barrel Controls 0.91 cfs @ 2.92 fps)

# **Summary for Pond MH2: CB 3**

Inflow Area = 0.304 ac, 51.58% Impervious, Inflow Depth = 1.84" for 2 Year Event event

Inflow = 0.68 cfs @ 12.07 hrs, Volume= 0.047 af

Outflow = 0.68 cfs @ 12.07 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Primary = 0.68 cfs @ 12.07 hrs, Volume= 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.29' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.67' | <b>12.0" Round Culvert</b> L= 22.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

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Primary OutFlow Max=0.65 cfs @ 12.07 hrs HW=88.28' TW=88.17' (Dynamic Tailwater) 1=Culvert (Outlet Controls 0.65 cfs @ 1.86 fps)

### **Summary for Pond MH3: CB5**

Inflow Area = 0.518 ac, 48.10% Impervious, Inflow Depth = 1.84" for 2 Year Event event

Inflow = 1.16 cfs @ 12.07 hrs, Volume= 0.079 af

Outflow = 1.16 cfs @ 12.07 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min

Primary = 1.16 cfs @ 12.07 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 89.84' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 89.20' | <b>12.0" Round Culvert</b> L= 65.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0085 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=1.15 cfs @ 12.07 hrs HW=89.84' TW=89.39' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.15 cfs @ 3.08 fps)

### **Summary for Pond P1: POND 1 SC-310**

| Inflow Area = | 0.336 ac, 71.99% Impervious, Inflow D | Depth = 2.26" for 2 Year Event event |
|---------------|---------------------------------------|--------------------------------------|
| Inflow =      | 0.91 cfs @ 12.07 hrs, Volume=         | 0.063 af                             |
| Outflow =     | 0.25 cfs @ 11.90 hrs, Volume=         | 0.063 af, Atten= 72%, Lag= 0.0 min   |
| Discarded =   | 0.25 cfs @ 11.90 hrs, Volume=         | 0.063 af                             |
| Primary =     | 0.00 cfs @ 0.00 hrs, Volume=          | 0.000 af                             |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 87.21' @ 12.42 hrs Surf.Area= 1,330 sf Storage= 488 cf

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

Center-of-Mass det. time= 9.1 min ( 810.7 - 801.5 )

| Volume    | Invert | Avail. | Storage  | Storage Description   |                       |                           |    |  |
|-----------|--------|--------|----------|---|-----------------------|---------------------------|----|--|
| #1        | 86.50' |        | 929 cf   | <b>Custom Stage Da</b>                                      | ita (Irregular) Liste | d below (Recalc)          |    |  |
|           |        |        |          | 3,059 cf Overall - 737 cf Embedded = 2,322 cf x 40.0% Voids |                       |                           |    |  |
| #2        | 87.00' |        | 737 cf   | ADS_StormTech   |                       |                           |    |  |
|           |        |        |          | Effective Size= 28  | 3.9"W x 16.0"H => 3   | 2.07  sf x  7.12'L = 14.7 | cf |  |
|           |        |        |          | Overall Size= 34.0  | )"W x 16.0"H x 7.5    | 6'L with 0.44' Overlap    |    |  |
|           |        |        |          | 50 Chambers in 5  | Rows                  |                           |    |  |
|           |        |        | 1,666 cf | Total Available Sto   | orage                 |                           |    |  |
| <b>-</b>  | 0 (    | •      | Б.       | . 01  | 0 01                  | <b>1</b> 07 1 0           |    |  |
| Elevation | Surf.  | Area   | Perim.   | Inc.Store   | Cum.Store             | Wet.Area                  |    |  |
| (feet)    | (9     | sq-ft) | (feet)   | (cubic-feet)  | (cubic-feet)          | <u>(sq-ft)</u>            |    |  |
| 86.50     | 1      | 1,330  | 187.0    | 0   | 0                     | 1,330                     |    |  |
| 88.80     | 1      | 1,330  | 187.0    | 3,059   | 3,059                 | 1,760                     |    |  |

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| Device | Routing   | Invert | Outlet Devices             |           |                                   |
|--------|-----------|--------|----------------------------|-----------|-----------------------------------|
| #1     | Primary   | 87.70' | 6.0" Horiz. Orifice/Grate  | C= 0.600  | Limited to weir flow at low heads |
| #2     | Discarded | 86.50' | 0.25 cfs Exfiltration when | above 86. | 50'                               |

**Discarded OutFlow** Max=0.25 cfs @ 11.90 hrs HW=86.53' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.50' TW=86.50' (Dynamic Tailwater) 1=Orifice/Grate (Controls 0.00 cfs)

#### **Summary for Pond P2: POND 2 SC-740**

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 1.89" for 2 Year Event event 1.89 ac, 52.84% Impervious, Inflow Depth = 1.89" for 2 Year Event event 2.80 cfs @ 12.07 hrs, Volume= 0.261 af 0.82 cfs @ 11.86 hrs, Volume= 0.261 af 0.82 cfs @ 11.86 hrs, Volume= 0.261 af 0.00 cfs @ 0.00 hrs, Volume= 0.000 af 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 86.00' @ 12.49 hrs Surf.Area= 4,300 sf Storage= 2,601 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 17.1 min ( 835.9 - 818.8 )

| Volume            | Invert    | Avai     | I.Storage         | Storage Description  |                   |                            |  |  |  |
|-------------------|-----------|----------|-------------------|--|-------------------|----------------------------|--|--|--|
| #1                | 85.00'    |          | 3,944 cf          | Custom Stage Data (Irregular) Listed below (Recalc)            |                   |                            |  |  |  |
|                   |           |          |                   | 15,050 cf Overall - 5,191 cf Embedded = 9,859 cf x 40.0% Voids |                   |                            |  |  |  |
| #2                | 85.50'    |          | 5,191 cf          | ADS_StormTech S  | •                 |                            |  |  |  |
|                   |           |          |                   | Effective Size= 44.0   | 6"W x 30.0"H => ( | 6.45 sf x 7.12'L = 45.9 cf |  |  |  |
|                   |           |          |                   | Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap      |                   |                            |  |  |  |
|                   |           |          |                   | 113 Chambers in 12 Rows  |                   |                            |  |  |  |
|                   |           |          | 9,135 cf          | Total Available Stor   | rage              |                            |  |  |  |
| Elevation         | on Su     | ırf.Area | Perim.            | Inc.Store  | Cum.Store         | Wet.Area                   |  |  |  |
| (fee              | et)       | (sq-ft)  | (feet)            | (cubic-feet)   | (cubic-feet)      | (sq-ft)                    |  |  |  |
| 85.0              | 00        | 4,300    | 328.0             | 0  | 0                 | 4,300                      |  |  |  |
| 88.50 4,300 328.0 |           | 15,050   | 15,050            | 5,448  |                   |                            |  |  |  |
| D                 | Destina   |          |                   | A.D. day   |                   |                            |  |  |  |
| Device            | Routing   | ın       | vert Outl         | et Devices   |                   |                            |  |  |  |
| #1                | Primary   | 86       | 5.50' <b>9.0"</b> | Vert. Orifice/Grate  | C= 0.600          |                            |  |  |  |
| #2                | Discarded | 85       | 5.00' <b>0.82</b> | 2 cfs Exfiltration when above 85.00'                           |                   |                            |  |  |  |

**Discarded OutFlow** Max=0.82 cfs @ 11.86 hrs HW=85.04' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=85.00' TW=85.00' (Dynamic Tailwater) 1=Orifice/Grate (Controls 0.00 cfs)

Type III 24-hr 2 Year Event Rainfall=3.20"

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## Summary for Pond R1: Pond1 Outlet - 12" RCP

Inflow Area = 0.336 ac, 71.99% Impervious, Inflow Depth = 0.00" for 2 Year Event event

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 86.50' @ 0.00 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 86.50' | <b>12.0"</b> Round Culvert L= 25.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 86.50' / 86.20' S= 0.0120 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.50' TW=0.00' (Dynamic Tailwater) 1=Culvert (Controls 0.00 cfs)

### Summary for Pond R4: Pond 2 Outlet - 12" RCP

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 0.00" for 2 Year Event event

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 85.00' @ 0.00 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 85.00' | <b>12.0" Round Culvert</b> L= 35.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 85.00' / 84.50' S= 0.0143 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=85.00' TW=0.00' (Dynamic Tailwater) 1=Culvert (Controls 0.00 cfs)

## Summary for Link 1L: 6- 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 1.15" for 2 Year Event event

Inflow = 0.09 cfs @ 12.13 hrs, Volume= 0.003 af

Primary = 0.52 cfs @ 12.13 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 6.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

2 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Type III 24-hr 2 Year Event Rainfall=3.20"

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### Summary for Link 2L: 1 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 0.71" for 2 Year Event event

Inflow = 0.03 cfs @ 12.34 hrs, Volume= 0.002 af

Primary = 0.03 cfs @ 12.34 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

2 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

### Summary for Link 3L: 10 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 1.15" for 2 Year Event event

Inflow = 0.09 cfs @ 12.13 hrs, Volume= 0.003 af

Primary = 0.87 cfs @ 12.13 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 10.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

2 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

### Summary for Link 4L: 2 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 0.71" for 2 Year Event event

Inflow = 0.03 cfs @ 12.34 hrs, Volume= 0.002 af

Primary = 0.05 cfs @ 12.34 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

2 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

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Outflow=4.50 cfs 0.628 af

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

| readiffeduing by byff-ctor-in-                        | a method - 1 ond rodding by byn-otor-ma method   |
|---|--|
| Subcatchment 1S: Prop. to Steam<br>Flow Length=1,030' | Runoff Area=159,889 sf 38.35% Impervious Runoff Depth=2.81" Slope=0.0100 '/' Tc=38.3 min CN=83 Runoff=6.09 cfs 0.861 af          |
| Subcatchment 3S: Prop to CB #3                        | Runoff Area=13,262 sf 51.58% Impervious Runoff Depth=3.10"<br>Tc=5.0 min CN=86 Runoff=1.13 cfs 0.079 af                          |
| Subcatchment 4S: Prop to CB#4                         | Runoff Area=16,270 sf 58.78% Impervious Runoff Depth=3.29"<br>Tc=5.0 min CN=88 Runoff=1.47 cfs 0.102 af                          |
| Subcatchment 5S: Prop. to CB # 5                      | Runoff Area=22,568 sf 48.10% Impervious Runoff Depth=3.10"<br>Tc=5.0 min CN=86 Runoff=1.93 cfs 0.134 af                          |
| Subcatchment 6S: Prop. to CB # 6                      | Runoff Area=19,917 sf 54.20% Impervious Runoff Depth=3.19"<br>Tc=5.0 min CN=87 Runoff=1.75 cfs 0.122 af                          |
| Subcatchment 7S: Prop. to Pond 1                      | Runoff Area=14,631 sf 71.99% Impervious Runoff Depth=3.59"<br>Tc=5.0 min CN=91 Runoff=1.41 cfs 0.101 af                          |
|   | Runoff Area=127,093 sf 20.50% Impervious Runoff Depth=2.29" Flow Length=370' Tc=37.0 min CN=77 Runoff=4.00 cfs 0.557 af          |
|   | Runoff Area=33,123 sf 15.76% Impervious Runoff Depth=2.21" Slope=0.0100 '/' Tc=33.1 min CN=76 Runoff=1.06 cfs 0.140 af           |
| Subcatchment 10S: Prop. to Street                     | Runoff Area=592 sf 83.11% Impervious Runoff Depth=3.91"<br>Tc=5.0 min CN=94 Runoff=0.06 cfs 0.004 af                             |
| Subcatchment E1: Exist. to Stream Flow Length=460'    | Runoff Area=243,161 sf 28.05% Impervious Runoff Depth=2.46" Slope=0.0100 '/' Tc=42.0 min CN=79 Runoff=7.72 cfs 1.145 af          |
| Subcatchment E2: Exist. To East                       | Runoff Area=148,590 sf 21.32% Impervious Runoff Depth=2.21" Flow Length=370' Tc=37.0 min CN=76 Runoff=4.50 cfs 0.628 af          |
| Subcatchment E3: Exist. To Street                     | Runoff Area=1,271 sf 37.21% Impervious Runoff Depth=2.81"<br>Tc=5.0 min CN=83 Runoff=0.10 cfs 0.007 af                           |
|   | <b>th</b> Runoff Area=42,453 sf 19.69% Impervious Runoff Depth=2.29" Slope=0.0100 '/' Tc=42.6 min CN=77 Runoff=1.24 cfs 0.186 af |
| Reach 1E: Exist. to Stream (DCP1)                     | Inflow=7.72 cfs 1.145 af<br>Outflow=7.72 cfs 1.145 af  |
| Reach 1P: Prop. to Stream (DCP1)                      | Inflow=6.97 cfs 0.965 af<br>Outflow=6.97 cfs 0.965 af  |
| Reach 2E: Exist East Wetland (DCP2)                   | Inflow=4.50 cfs 0.628 af   |

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|-----------------------------------|---|
|                                   |   |

Prepared by Cavanaro Consulting Printed 1/26/2022 HydroCAD® 10.00-24 s/n 01769 © 2018 HydroCAD Software Solutions LLC Page 20 Inflow=4.33 cfs 0.609 af Reach 2P: Prop. to East Wetland (DCP2) Outflow=4.33 cfs 0.609 af Inflow=0.10 cfs 0.007 af Reach 3E: Exist To Street (DCP3) Outflow=0.10 cfs 0.007 af Inflow=0.06 cfs 0.004 af Reach 3P: Prop. To Street (DCP3) Outflow=0.06 cfs 0.004 af Inflow=1.24 cfs 0.186 af Reach 4E: Exist North Wetland (DCP4) Outflow=1.24 cfs 0.186 af Inflow=1.06 cfs 0.140 af Reach 4P: Prop. to North Wetland (DCP4) Outflow=1.06 cfs 0.140 af Pond 7P: MH Peak Elev=88.51' Inflow=2.60 cfs 0.181 af 15.0" Round Culvert n=0.011 L=60.0' S=0.0100 '/' Outflow=2.60 cfs 0.181 af Peak Elev=88.66' Inflow=1.47 cfs 0.102 af Pond 9P: CB 4 12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=1.47 cfs 0.102 af Peak Elev=88.14' Inflow=6.28 cfs 0.436 af Pond 10P: MH 18.0" Round Culvert n=0.011 L=95.0' S=0.0142 '/' Outflow=6.28 cfs 0.436 af Peak Elev=89.70' Inflow=3.68 cfs 0.255 af Pond 12P: MH 15.0" Round Culvert n=0.011 L=240.0' S=0.0075 '/' Outflow=3.68 cfs 0.255 af Peak Elev=90.09' Inflow=1.75 cfs 0.122 af Pond 13P: CB6 12.0" Round Culvert n=0.011 L=62.0' S=0.0089 '/' Outflow=1.75 cfs 0.122 af Pond MH1: MH Peak Elev=87.82' Inflow=1.41 cfs 0.101 af 12.0" Round Culvert n=0.011 L=40.0' S=0.0050 '/' Outflow=1.41 cfs 0.101 af Pond MH2: CB 3 Peak Elev=88.61' Inflow=1.13 cfs 0.079 af 12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=1.13 cfs 0.079 af Pond MH3: CB5 Peak Elev=90.14' Inflow=1.93 cfs 0.134 af 12.0" Round Culvert n=0.011 L=65.0' S=0.0085 '/' Outflow=1.93 cfs 0.134 af Pond P1: POND 1 SC-310 Peak Elev=87.80' Storage=1,044 cf Inflow=1.41 cfs 0.101 af Discarded=0.25 cfs 0.098 af Primary=0.15 cfs 0.003 af Outflow=0.40 cfs 0.101 af Pond P2: POND 2 SC-740 Peak Elev=86.90' Storage=5,529 cf Inflow=6.28 cfs 0.436 af Discarded=0.82 cfs 0.415 af Primary=0.52 cfs 0.022 af Outflow=1.34 cfs 0.436 af Peak Elev=86.69' Inflow=0.15 cfs 0.003 af Pond R1: Pond1 Outlet - 12" RCP 12.0" Round Culvert n=0.011 L=25.0' S=0.0120'/' Outflow=0.15 cfs 0.003 af

Peak Elev=85.36' Inflow=0.52 cfs 0.022 af

12.0" Round Culvert n=0.011 L=35.0' S=0.0143 '/' Outflow=0.52 cfs 0.022 af

Pond R4: Pond 2 Outlet - 12" RCP

Type III 24-hr 10 Year Event Rainfall=4.60"

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Link 0 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 6.00 Inflow=0.16 cfs 0.007 af
Area= 0.036 ac 100.00% Imperv. Primary=0.94 cfs 0.044 af

Link 2L: 1 - 10 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce Inflow=0.12 cfs 0.005 af Area= 0.028 ac 100.00% Imperv. Primary=0.12 cfs 0.005 af

**Lino** Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 10.00 Inflow=0.16 cfs 0.007 af Area= 0.036 ac 100.00% Imperv. Primary=1.56 cfs 0.073 af

Link 10 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce x 2.00 Inflow=0.12 cfs 0.005 af Area= 0.028 ac 100.00% Imperv. Primary=0.24 cfs 0.009 af

Total Runoff Area = 19.348 ac Runoff Volume = 4.065 af Average Runoff Depth = 2.52" 70.29% Pervious = 13.600 ac 29.71% Impervious = 5.748 ac HydroCAD® 10.00-24 s/n 01769 © 2018 HydroCAD Software Solutions LLC

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### **Summary for Subcatchment 1S: Prop. to Steam**

Runoff = 6.09 cfs @ 12.55 hrs, Volume= 0.861 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

|   | Α     | rea (sf) | CN E                             | escription    |            |  |  |  |  |  |
|---|-------|----------|----------------------------------|---------------|------------|--|--|--|--|--|
| * |       | 48,878   | 98 Water Surface Wetlands, HSG C |               |            |  |  |  |  |  |
|   |       | 77,137   | 74 >75% Grass cover, Good, HSG C |               |            |  |  |  |  |  |
| * |       | 4,305    |                                  | alls othe r   |            | ,  |  |  |  |  |
|   |       | 1,100    | 87 E                             | )irt roads, l | HSG C      |  |  |  |  |  |
|   |       | 18,844   | 70 V                             | Voods, Go     | od, HSG C  |  |  |  |  |  |
| * |       | 2,457    | 98 E                             | xisit,. Roo   | f          |  |  |  |  |  |
| * |       | 5,683    | 98 E                             | xisit. Pave   | ement      |  |  |  |  |  |
| * |       | 1,485    | 74 F                             | Prop. Patios  | S          |  |  |  |  |  |
|   | 1     | 59,889   | 83 V                             | Veighted A    | verage     |  |  |  |  |  |
|   |       | 98,566   | 6                                | 1.65% Per     | vious Area |  |  |  |  |  |
|   |       | 61,323   | 3                                | 8.35% Imp     | ervious Ar | ea   |  |  |  |  |
|   |       |          |                                  |               |            |  |  |  |  |  |
|   | Тс    | Length   | Slope                            | Velocity      | Capacity   | Description                                |  |  |  |  |
|   | (min) | (feet)   | (ft/ft)                          | (ft/sec)      | (cfs)      |  |  |  |  |  |
|   | 28.3  | 50       | 0.0100                           | 0.03          | )3         | Sheet Flow,                                |  |  |  |  |
|   |       |          |                                  |               |            | Woods: Dense underbrush n= 0.800 P2= 3.20" |  |  |  |  |
|   | 1.7   | 50       | 0.0100                           | 0.50          |            | Shallow Concentrated Flow,                 |  |  |  |  |
|   |       |          |                                  |               |            | Woodland Kv= 5.0 fps                       |  |  |  |  |
|   | 0.7   | 30       | 0.0100                           | 0.70          |            | Shallow Concentrated Flow,                 |  |  |  |  |
|   |       |          |                                  |               |            | Short Grass Pasture Kv= 7.0 fps            |  |  |  |  |
|   | 3.7   | 110      | 0.0100 0.50                      |               |            | Shallow Concentrated Flow, shallow         |  |  |  |  |
|   |       |          |                                  |               |            | Woodland Kv= 5.0 fps                       |  |  |  |  |
|   | 3.9   | 790      | 0.0100                           | 3.35          | 20.11      | Channel Flow, Stream                       |  |  |  |  |
|   |       |          |                                  |               |            | Area= 6.0 sf Perim= 7.0' r= 0.86'          |  |  |  |  |
|   |       |          |                                  |               |            | n= 0.040 Earth, cobble bottom, clean sides |  |  |  |  |
|   | 38.3  | 1,030    | Total                            |               |            |  |  |  |  |  |

### Summary for Subcatchment 3S: Prop to CB #3

Runoff = 1.13 cfs @ 12.07 hrs, Volume= 0.079 af, Depth= 3.10"

| <br>Area (sf) | CN | Description                   |  |  |  |
|---------------|----|-------------------------------|--|--|--|
| 6,841         | 98 | Paved parking, HSG C          |  |  |  |
| <br>6,421     | 74 | >75% Grass cover, Good, HSG C |  |  |  |
| 13,262        | 86 | Weighted Average              |  |  |  |
| 6,421         |    | 48.42% Pervious Area          |  |  |  |
| 6,841         |    | 51.58% Impervious Area        |  |  |  |

Type III 24-hr 10 Year Event Rainfall=4.60"

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| T    | c Le | ength | •       | Velocity | Capacity | Description          |
|------|------|-------|---------|----------|----------|----------------------|
| (min | ) (  | feet) | (ft/ft) | (ft/sec) | (cfs)    |                      |
| 5.0  | )    |       |         |          |          | Direct Entry, DIRECT |

### **Summary for Subcatchment 4S: Prop to CB#4**

Runoff = 1.47 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

|    | Area (sf)  | CN      | Description  |                               |                      |  |  |  |  |  |  |  |
|----|------------|---------|--------------|-------------------------------|----------------------|--|--|--|--|--|--|--|
| *  | 1,652      | 98      | Paved park   | Paved parking, HSG C-Sidewalk |                      |  |  |  |  |  |  |  |
|    | 7,912      | 98      | Paved park   | Paved parking, HSG C          |                      |  |  |  |  |  |  |  |
|    | 6,706      | 74      | >75% Gras    | s cover, Go                   | ood, HSG C           |  |  |  |  |  |  |  |
|    | 16,270     | 88      | Weighted A   | Weighted Average              |                      |  |  |  |  |  |  |  |
|    | 6,706      |         | 41.22% Per   | rvious Area                   | a                    |  |  |  |  |  |  |  |
|    | 9,564      |         | 58.78% lm    | pervious Ar                   | rea                  |  |  |  |  |  |  |  |
|    |            |         |              |                               |                      |  |  |  |  |  |  |  |
|    | Tc Length  |         | ,            | Capacity                      | Description          |  |  |  |  |  |  |  |
| (n | nin) (feet | t) (ft/ | ft) (ft/sec) | (cfs)                         |                      |  |  |  |  |  |  |  |
|    | 5.0        |         |              |                               | Direct Entry, DIRECT |  |  |  |  |  |  |  |

### Summary for Subcatchment 5S: Prop. to CB # 5

Runoff = 1.93 cfs @ 12.07 hrs, Volume= 0.134 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

|   | Α    | rea (sf) | CN      | Description                     |             |   |  |  |  |  |  |  |
|---|------|----------|---------|---------------------------------|-------------|---|--|--|--|--|--|--|
| * |      | 466      | 98      | Paved parking, HSG C - Sidewalk |             |   |  |  |  |  |  |  |
| * |      | 10,390   | 98      | Paved park                      | ing, HSG C  | C - rroad-drives                        |  |  |  |  |  |  |
|   |      | 11,712   | 74      | >75% Grass cover, Good, HSG C   |             |   |  |  |  |  |  |  |
|   |      | 22,568   | 86      | Weighted Average                |             |   |  |  |  |  |  |  |
|   |      | 11,712   |         | 51.90% Pei                      | vious Area  | a e e e e e e e e e e e e e e e e e e e |  |  |  |  |  |  |
|   |      | 10,856   |         | 48.10% lm                       | pervious Ar | rea                                     |  |  |  |  |  |  |
|   |      |          |         |                                 |             |   |  |  |  |  |  |  |
|   | Tc   | Length   | Slope   | ,                               | Capacity    | Description                             |  |  |  |  |  |  |
| ( | min) | (feet)   | (ft/ft) | (ft/sec)                        | (cfs)       |   |  |  |  |  |  |  |
|   | 5.0  |          |         |                                 |             | Direct Entry,                           |  |  |  |  |  |  |

# Summary for Subcatchment 6S: Prop. to CB # 6

Runoff = 1.75 cfs @ 12.07 hrs, Volume= 0.122 af, Depth= 3.19"

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|   | Α     | rea (sf) | CN      | Description                         |             |               |  |  |  |  |  |
|---|-------|----------|---------|-------------------------------------|-------------|---------------|--|--|--|--|--|
| * |       | 959      | 98      | Paved parking, HSG C - Sidewalk     |             |               |  |  |  |  |  |
| * |       | 9,836    | 98      | Paved parking, HSG C - rroad-drives |             |               |  |  |  |  |  |
| _ |       | 9,122    | 74      | >75% Gras                           | s cover, Go | ood, HSG C    |  |  |  |  |  |
|   |       | 19,917   | 87      | Weighted Average                    |             |               |  |  |  |  |  |
|   |       | 9,122    |         | 45.80% Pei                          | rvious Area | a             |  |  |  |  |  |
|   |       | 10,795   |         | 54.20% lmp                          | pervious Ar | rea           |  |  |  |  |  |
|   | То    | Longth   | Clone   | Volocity                            | Conneity    | Description   |  |  |  |  |  |
|   | Tc    | Length   | Slope   | ,                                   | Capacity    | ·             |  |  |  |  |  |
|   | (min) | (feet)   | (ft/ft) | (ft/sec)                            | (cfs)       |               |  |  |  |  |  |
|   | 5.0   |          |         |                                     |             | Direct Entry, |  |  |  |  |  |

### Summary for Subcatchment 7S: Prop. to Pond 1

Runoff = 1.41 cfs @ 12.07 hrs, Volume=

0.101 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

| Ar    | rea (sf) | CN      | Description                   |             |                      |  |  |  |  |  |
|-------|----------|---------|-------------------------------|-------------|----------------------|--|--|--|--|--|
|       | 10,533   | 98      | Paved parking, HSG C          |             |                      |  |  |  |  |  |
|       | 4,098    | 74      | >75% Grass cover, Good, HSG C |             |                      |  |  |  |  |  |
|       | 14,631   | 91      | Weighted Average              |             |                      |  |  |  |  |  |
|       | 4,098    |         | 28.01% Pervious Area          |             |                      |  |  |  |  |  |
|       | 10,533   |         | 71.99% Imp                    | pervious Ar | ea                   |  |  |  |  |  |
| _     |          | 01      |                               | 0 "         | 5                    |  |  |  |  |  |
| Tc    | Length   | Slope   | ,                             | Capacity    | Description          |  |  |  |  |  |
| (min) | (feet)   | (ft/ft) | (ft/sec)                      | (cfs)       |                      |  |  |  |  |  |
| 5.0   |          |         |                               |             | Direct Entry, DIRECT |  |  |  |  |  |

# Summary for Subcatchment 8S: Prop. to East Wetland

Runoff = 4.00 cfs @ 12.54 hrs, Volume=

0.557 af, Depth= 2.29"

|   | Area (sf) | CN | Description                   |  |
|---|-----------|----|-------------------------------|--|
| * | 25,672    | 98 | Water Surface Wetlands, HSG C |  |
|   | 40,951    | 74 | >75% Grass cover, Good, HSG C |  |
|   | 58,938    | 70 | Woods, Good, HSG C            |  |
| * | 1,155     | 74 | Patio                         |  |
| * | 377       | 98 | ret wall                      |  |
|   | 127,093   | 77 | Weighted Average              |  |
|   | 101,044   |    | 79.50% Pervious Area          |  |
|   | 26,049    |    | 20.50% Impervious Area        |  |

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|   | Tc    | Length | Slope   | Velocity | Capacity | Description                                |
|---|-------|--------|---------|----------|----------|--|
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    | ·  |
|   | 28.3  | 50     | 0.0100  | 0.03     |          | Sheet Flow,                                |
|   |       |        |         |          |          | Woods: Dense underbrush n= 0.800 P2= 3.20" |
|   | 8.7   | 320    | 0.0150  | 0.61     |          | Shallow Concentrated Flow, shallow         |
|   |       |        |         |          |          | Woodland Kv= 5.0 fps                       |
|   | 37.0  | 370    | Total   |          |          |  |

## Summary for Subcatchment 9S: Prop. to North Wetland

Runoff = 1.06 cfs @ 12.47 hrs, Volume= 0.140 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

|    | Α    | rea (sf) | CN      | Description                   |                |  |  |  |  |  |  |  |
|----|------|----------|---------|-------------------------------|----------------|--|--|--|--|--|--|--|
| *  |      | 906      | 98      | Water Surface Wetlands, HSG C |                |  |  |  |  |  |  |  |
|    |      | 2,744    | 98      | Paved parking, HSG C          |                |  |  |  |  |  |  |  |
|    |      | 16,242   | 74      | >75% Ġras                     | s cover, Go    | ood, HSG C                                 |  |  |  |  |  |  |
|    |      | 1,286    | 98      | Roofs, HSC                    | G C - infiltra | ted  |  |  |  |  |  |  |
| *  |      | 283      | 98      | walls othe r                  | imp.           |  |  |  |  |  |  |  |
|    |      | 11,662   | 70      | Woods, Go                     | od, HSG C      |  |  |  |  |  |  |  |
|    |      | 33,123   | 76      | Weighted A                    | verage         |  |  |  |  |  |  |  |
|    |      | 27,904   |         | 84.24% Pe                     | rvious Area    |  |  |  |  |  |  |  |
|    |      | 5,219    |         | 15.76% Imp                    | pervious Are   | ea   |  |  |  |  |  |  |
|    |      |          |         |                               |                |  |  |  |  |  |  |  |
|    | Тс   | Length   | Slope   | <ul><li>Velocity</li></ul>    | Capacity       | Description                                |  |  |  |  |  |  |
| (n | nin) | (feet)   | (ft/ft) | (ft/sec)                      | (cfs)          |  |  |  |  |  |  |  |
| 2  | 28.3 | 50       | 0.0100  | 0.03                          |                | Sheet Flow, Sheet                          |  |  |  |  |  |  |
|    |      |          |         |                               |                | Woods: Dense underbrush n= 0.800 P2= 3.20" |  |  |  |  |  |  |
|    | 4.8  | 430      | 0.0100  | 1.50                          |                | Shallow Concentrated Flow, shallow         |  |  |  |  |  |  |
|    |      |          |         |                               |                | Grassed Waterway Kv= 15.0 fps              |  |  |  |  |  |  |
| 3  | 33.1 | 480      | Total   |                               |                |  |  |  |  |  |  |  |

### Summary for Subcatchment 10S: Prop. to Street

Runoff = 0.06 cfs @ 12.07 hrs, Volume= 0.004 af, Depth= 3.91"

| Area (sf) | CN | Description                   |  |  |  |
|-----------|----|-------------------------------|--|--|--|
| 492       | 98 | Paved parking, HSG C          |  |  |  |
| 100       | 74 | >75% Grass cover, Good, HSG C |  |  |  |
| 592       | 94 | Weighted Average              |  |  |  |
| 100       |    | 16.89% Pervious Area          |  |  |  |
| 492       |    | 83.11% Impervious Area        |  |  |  |

Type III 24-hr 10 Year Event Rainfall=4.60"

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| Tc<br>(min) | - | • | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|---|---|----------------------|-------------------|----------------------|
| 5.0         |   |   |                      |                   | Direct Entry, DIRECT |

Shoot Littly, Shales

# **Summary for Subcatchment E1: Exist. to Stream**

Runoff = 7.72 cfs @ 12.56 hrs, Volume= 1.145 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

|   | Α     | rea (sf) | CN I    | Description                   |             |  |  |  |  |  |
|---|-------|----------|---------|-------------------------------|-------------|--|--|--|--|--|
| * |       | 48,977   | 98 \    | Water Surface Wetlands, HSG C |             |  |  |  |  |  |
|   |       | 11,952   | 98 I    | Paved park                    | ing, HSG C  |  |  |  |  |  |
|   |       | 34,335   | 74      | >75% Gras                     | s cover, Go | ood, HSG C                                 |  |  |  |  |
|   |       | 2,457    | 98 I    | Roofs, HSC                    | G C         |  |  |  |  |  |
| * |       | 4,820    | 98 v    | walls othe r                  | imp.        |  |  |  |  |  |
|   |       | 8,801    | 87 I    | Dirt roads, l                 | HSG C       |  |  |  |  |  |
| _ | 1     | 31,819   | 70 \    | Noods, Go                     | od, HSG C   |  |  |  |  |  |
|   | 2     | 243,161  | 79 \    | Neighted A                    | verage      |  |  |  |  |  |
|   | 1     | 74,955   |         | 71.95% Pei                    | rvious Area |  |  |  |  |  |
|   |       | 68,206   | 2       | 28.05% Imp                    | pervious Ar | ea   |  |  |  |  |
|   | Τ.    | 1 41.    | 01      | V/-134                        | 0           | Describe the co                            |  |  |  |  |
|   | Tc    | Length   | Slope   |                               | Capacity    | Description                                |  |  |  |  |
| _ | (min) | (feet)   | (ft/ft) | (ft/sec)                      | (cfs)       |  |  |  |  |  |
|   | 28.3  | 50       | 0.0100  | 0.03                          |             | Sheet Flow, Sheet                          |  |  |  |  |
|   |       |          |         |                               |             | Woods: Dense underbrush n= 0.800 P2= 3.20" |  |  |  |  |
|   | 13.7  | 410      | 0.0100  | 0.50                          |             | Shallow Concentrated Flow, shallow - woods |  |  |  |  |
| _ |       |          |         |                               |             | Woodland Kv= 5.0 fps                       |  |  |  |  |
|   | 42.0  | 460      | Total   |                               |             |  |  |  |  |  |

### **Summary for Subcatchment E2: Exist. To East Weltands**

Runoff = 4.50 cfs @ 12.54 hrs, Volume= 0.628 af, Depth= 2.21"

|   | Area (sf) | CN | Description                   |  |
|---|-----------|----|-------------------------------|--|
| * | 25,672    | 98 | Water Surface Wetlands, HSG C |  |
|   | 5,792     | 98 | Paved parking, HSG C          |  |
|   | 9,907     | 74 | >75% Grass cover, Good, HSG C |  |
| * | 217       | 98 | walls othe rimp.              |  |
|   | 107,002   | 70 | Woods, Good, HSG C            |  |
|   | 148,590   | 76 | Weighted Average              |  |
|   | 116,909   |    | 78.68% Pervious Area          |  |
|   | 31,681    |    | 21.32% Impervious Area        |  |

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| Tc    | Length | Slope   | Velocity | Capacity | Description                                |
|-------|--------|---------|----------|----------|--|
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    | ·  |
| 28.3  | 50     | 0.0100  | 0.03     |          | Sheet Flow, Sheet                          |
|       |        |         |          |          | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| 8.7   | 320    | 0.0150  | 0.61     |          | Shallow Concentrated Flow, shallow - woods |
|       |        |         |          |          | Woodland Kv= 5.0 fps                       |
| 37 N  | 370    | Total   |          |          |  |

## **Summary for Subcatchment E3: Exist. To Street**

0.10 cfs @ 12.07 hrs, Volume= 0.007 af, Depth= 2.81" Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 10 Year Event Rainfall=4.60"

|             | rea (sf)         | CN Description             |            |                   |               |  |  |  |
|-------------|------------------|----------------------------|------------|-------------------|---------------|--|--|--|
|             | 473              | 98 Paved parking, HSG C    |            |                   |               |  |  |  |
|             | 798              | 74                         |            |                   |               |  |  |  |
|             | 1,271            | 83                         | Weighted A |                   |               |  |  |  |
|             | 798              | 798 62.79% Pervious Area   |            |                   |               |  |  |  |
|             | 473              | 473 37.21% Impervious Area |            |                   |               |  |  |  |
| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft)           | ,          | Capacity<br>(cfs) | Description   |  |  |  |
| 5.0         |                  |                            |            |                   | Direct Entry, |  |  |  |

Direct Entry,

### Summary for Subcatchment E4: Exist. to Wetlands North

0.186 af, Depth= 2.29" Runoff 1.24 cfs @ 12.59 hrs, Volume=

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 907       | 98 | Water Surface Wetlands, HSG C |
|   | 5,644     | 98 | Paved parking, HSG C          |
|   | 12,783    | 74 | >75% Grass cover, Good, HSG C |
| * | 520       | 98 | walls othe rimp.              |
|   | 21,313    | 70 | Woods, Good, HSG C            |
|   | 1,286     | 98 | Roofs, HSG C                  |
|   | 42,453    | 77 | Weighted Average              |
|   | 34,096    |    | 80.31% Pervious Area          |
|   | 8,357     |    | 19.69% Impervious Area        |

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|   | Tc    | Length | Slope   | Velocity | Capacity | Description                                |
|---|-------|--------|---------|----------|----------|--|
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    | ·  |
|   | 28.3  | 50     | 0.0100  | 0.03     |          | Sheet Flow, Sheet                          |
|   |       |        |         |          |          | Woods: Dense underbrush n= 0.800 P2= 3.20" |
|   | 14.3  | 430    | 0.0100  | 0.50     |          | Shallow Concentrated Flow, shallow - woods |
| _ |       |        |         |          |          | Woodland Kv= 5.0 fps                       |
|   | 42.6  | 480    | Total   |          |          |  |

### **Summary for Reach 1E: Exist. to Stream (DCP1)**

Inflow Area = 5.582 ac, 28.05% Impervious, Inflow Depth = 2.46" for 10 Year Event event

Inflow = 7.72 cfs @ 12.56 hrs, Volume= 1.145 af

Outflow = 7.72 cfs @ 12.56 hrs, Volume= 1.145 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### **Summary for Reach 1P: Prop. to Stream (DCP1)**

Inflow Area = 5.387 ac, 43.52% Impervious, Inflow Depth = 2.15" for 10 Year Event event

Inflow = 6.97 cfs @ 12.49 hrs, Volume= 0.965 af

Outflow = 6.97 cfs @ 12.49 hrs, Volume= 0.965 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## **Summary for Reach 2E: Exist East Wetland (DCP2)**

Inflow Area = 3.411 ac, 21.32% Impervious, Inflow Depth = 2.21" for 10 Year Event event

Inflow = 4.50 cfs @ 12.54 hrs, Volume= 0.628 af

Outflow = 4.50 cfs @ 12.54 hrs, Volume= 0.628 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# Summary for Reach 2P: Prop. to East Wetland (DCP2)

Inflow Area = 3.317 ac, 27.22% Impervious, Inflow Depth = 2.20" for 10 Year Event event

Inflow = 4.33 cfs @ 12.47 hrs, Volume= 0.609 af

Outflow = 4.33 cfs @ 12.47 hrs, Volume= 0.609 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# **Summary for Reach 3E: Exist To Street (DCP3)**

Inflow Area = 0.029 ac, 37.21% Impervious, Inflow Depth = 2.81" for 10 Year Event event

Inflow = 0.10 cfs @ 12.07 hrs, Volume= 0.007 af

Outflow = 0.10 cfs @ 12.07 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

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## Summary for Reach 3P: Prop. To Street (DCP3)

Inflow Area = 0.014 ac, 83.11% Impervious, Inflow Depth = 3.91" for 10 Year Event event

Inflow = 0.06 cfs @ 12.07 hrs, Volume= 0.004 af

Outflow = 0.06 cfs @ 12.07 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### **Summary for Reach 4E: Exist North Wetland (DCP4)**

Inflow Area = 0.975 ac, 19.69% Impervious, Inflow Depth = 2.29" for 10 Year Event event

Inflow = 1.24 cfs @ 12.59 hrs, Volume= 0.186 af

Outflow = 1.24 cfs @ 12.59 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### Summary for Reach 4P: Prop. to North Wetland (DCP4)

Inflow Area = 0.760 ac, 15.76% Impervious, Inflow Depth = 2.21" for 10 Year Event event

Inflow = 1.06 cfs @ 12.47 hrs, Volume= 0.140 af

Outflow = 1.06 cfs @ 12.47 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## **Summary for Pond 7P: MH**

Inflow Area = 0.678 ac, 55.55% Impervious, Inflow Depth = 3.20" for 10 Year Event event

Inflow = 2.60 cfs @ 12.07 hrs, Volume= 0.181 af

Outflow = 2.60 cfs @ 12.07 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min

Primary = 2.60 cfs @ 12.07 hrs, Volume= 0.181 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.51' @ 12.08 hrs

Primary OutFlow Max=2.56 cfs @ 12.07 hrs HW=88.50' TW=88.14' (Dynamic Tailwater)
—1=Culvert (Outlet Controls 2.56 cfs @ 3.14 fps)

# Summary for Pond 9P: CB 4

Inflow Area = 0.374 ac, 58.78% Impervious, Inflow Depth = 3.29" for 10 Year Event event

Inflow = 1.47 cfs @ 12.07 hrs, Volume= 0.102 af

Outflow = 1.47 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Primary = 1.47 cfs @ 12.07 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Type III 24-hr 10 Year Event Rainfall=4.60"

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Peak Elev= 88.66' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.67' | <b>12.0" Round Culvert</b> L= 22.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=1.38 cfs @ 12.07 hrs HW=88.65' TW=88.50' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.38 cfs @ 2.24 fps)

#### **Summary for Pond 10P: MH**

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 3.17" for 10 Year Event event Inflow = 0.436 af

Outflow = 6.28 cfs @ 12.07 hrs, Volume= 0.436 af, Atten= 0%, Lag= 0.0 min

Primary = 6.28 cfs @ 12.07 hrs, Volume= 0.436 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.14' @ 12.07 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 86.85' | <b>18.0" Round Culvert</b> L= 95.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 86.85' / 85.50' S= 0.0142 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf   |

Primary OutFlow Max=6.27 cfs @ 12.07 hrs HW=88.14' TW=86.01' (Dynamic Tailwater) 1=Culvert (Inlet Controls 6.27 cfs @ 3.87 fps)

### **Summary for Pond 12P: MH**

Inflow Area = 0.975 ac, 50.96% Impervious, Inflow Depth = 3.14" for 10 Year Event event Inflow = 3.68 cfs @ 12.07 hrs, Volume= 0.255 af

Outflow = 3.68 cfs @ 12.07 hrs, Volume= 0.255 af, Atten= 0%, Lag= 0.0 min

Primary = 3.68 cfs @ 12.07 hrs, Volume= 0.255 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 89.70' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 88.65' | <b>15.0" Round Culvert</b> L= 240.0' Ke= 0.500 Inlet / Outlet Invert= 88.65' / 86.85' S= 0.0075 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=3.66 cfs @ 12.07 hrs HW=89.69' TW=88.14' (Dynamic Tailwater) 1=Culvert (Outlet Controls 3.66 cfs @ 4.52 fps)

Type III 24-hr 10 Year Event Rainfall=4.60"

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### **Summary for Pond 13P: CB6**

Inflow Area = 0.457 ac, 54.20% Impervious, Inflow Depth = 3.19" for 10 Year Event event

Inflow = 1.75 cfs @ 12.07 hrs, Volume= 0.122 af

Outflow = 1.75 cfs @ 12.07 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min

Primary = 1.75 cfs @ 12.07 hrs, Volume= 0.122 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 90.09' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices  |
|--------|---------|--------|---|
| #1     | Primary | 89.20' | <b>12.0" Round Culvert</b> L= 62.0' Ke= 0.500 Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0089 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=1.72 cfs @ 12.07 hrs HW=90.09' TW=89.69' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.72 cfs @ 3.10 fps)

### **Summary for Pond MH1: MH**

Inflow Area = 0.336 ac, 71.99% Impervious, Inflow Depth = 3.59" for 10 Year Event event

Inflow = 1.41 cfs @ 12.07 hrs, Volume= 0.101 af

Outflow = 1.41 cfs @ 12.07 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min

Primary = 1.41 cfs @ 12.07 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 87.82' @ 12.38 hrs

Flood Elev= 89.00'

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.00' | <b>12.0" Round Culvert</b> L= 40.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 87.00' / 86.80' S= 0.0050 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=1.41 cfs @ 12.07 hrs HW=87.72' TW=87.24' (Dynamic Tailwater) 1=Culvert (Barrel Controls 1.41 cfs @ 3.24 fps)

## **Summary for Pond MH2: CB 3**

Inflow Area = 0.304 ac, 51.58% Impervious, Inflow Depth = 3.10" for 10 Year Event event

Inflow = 1.13 cfs @ 12.07 hrs, Volume= 0.079 af

Outflow = 1.13 cfs @ 12.07 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min

Primary = 1.13 cfs @ 12.07 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.61' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.67' | <b>12.0" Round Culvert</b> L= 22.0' Ke= 0.500                  |
|        | -       |        | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean. Flow Area= 0.79 sf   |

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Primary OutFlow Max=1.04 cfs @ 12.07 hrs HW=88.60' TW=88.50' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.04 cfs @ 1.79 fps)

### **Summary for Pond MH3: CB5**

Inflow Area = 0.518 ac, 48.10% Impervious, Inflow Depth = 3.10" for 10 Year Event event

Inflow = 1.93 cfs @ 12.07 hrs, Volume= 0.134 af

Outflow = 1.93 cfs @ 12.07 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min

Primary = 1.93 cfs @, 12.07 hrs, Volume = 0.134 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 90.14' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices  |
|--------|---------|--------|---|
| #1     | Primary | 89.20' | <b>12.0" Round Culvert</b> L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0085 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean. Flow Area= 0.79 sf |

Primary OutFlow Max=1.90 cfs @ 12.07 hrs HW=90.13' TW=89.69' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.90 cfs @ 3.25 fps)

#### **Summary for Pond P1: POND 1 SC-310**

| Inflow Area = | 0.336 ac, 71.99% Impervious, Inflow De | epth = 3.59" for 10 Year Event event |
|---------------|--|--------------------------------------|
| Inflow =      | 1.41 cfs @ 12.07 hrs, Volume=          | 0.101 af                             |
| Outflow =     | 0.40 cfs @ 12.40 hrs, Volume=          | 0.101 af, Atten= 71%, Lag= 19.5 min  |
| Discarded =   | 0.25 cfs @ 11.75 hrs, Volume=          | 0.098 af                             |
| Primary =     | 0.15 cfs @ 12.40 hrs, Volume=          | 0.003 af                             |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 87.80' @ 12.40 hrs Surf.Area= 1,330 sf Storage= 1,044 cf

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

Center-of-Mass det. time= 21.2 min ( 809.8 - 788.7 )

| Volume              | Invert               | Avail.         | Storage          | Storage Description                   | on  |   |   |
|---------------------|----------------------|----------------|------------------|---------------------------------------|---|---|---|
| #1                  | 86.50'               |                | 929 cf           | Custom Stage Da<br>3.059 cf Overall - | , ,   | ed below (Recalc)<br>= 2,322 cf  x 40.0% Void | S |
| #2                  | 87.00'               |                | 737 cf           | ADS_StormTech<br>Effective Size= 28   | <b>SC-310 +Cap</b> x 5<br>3.9"W x 16.0"H =><br>0"W x 16.0"H x 7.5 | •   |   |
|                     |                      | ,              | 1,666 cf         | Total Available Sto                   |   |   |   |
| Elevation<br>(feet) | Surf. <i>i</i><br>(s | Area<br>sq-ft) | Perim.<br>(feet) | Inc.Store<br>(cubic-feet)             | Cum.Store<br>(cubic-feet)   | Wet.Area<br>(sq-ft)                           |   |
| 86.50<br>88.80      |                      | ,330<br>.330   | 187.0<br>187.0   | 0<br>3.059                            | 0<br>3.059  | 1,330<br>1,760                                |   |

Type III 24-hr 10 Year Event Rainfall=4.60"

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| Device | Routing   | Invert | Outlet Devices                                |                        |
|--------|-----------|--------|---|------------------------|
| #1     | Primary   | 87.70' | 6.0" Horiz. Orifice/Grate C= 0.600 Limited to | weir flow at low heads |
| #2     | Discarded | 86.50' | 0.25 cfs Exfiltration when above 86.50'       |                        |

**Discarded OutFlow** Max=0.25 cfs @ 11.75 hrs HW=86.53' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.15 cfs @ 12.40 hrs HW=87.80' TW=86.69' (Dynamic Tailwater) 1=Orifice/Grate (Weir Controls 0.15 cfs @ 1.02 fps)

#### **Summary for Pond P2: POND 2 SC-740**

| Inflow Area = | 1.653 ac, 52.84% Impervious, Inflow | / Depth = 3.17" for  10 Year Event ev | ent |
|---------------|-------------------------------------|---------------------------------------|-----|
| Inflow =      | 6.28 cfs @ 12.07 hrs, Volume=       | 0.436 af                              |     |
| Outflow =     | 1.34 cfs @ 12.49 hrs, Volume=       | 0.436 af, Atten= 79%, Lag= 24.8 m     | in  |
| Discarded =   | 0.82 cfs @ 11.71 hrs, Volume=       | 0.415 af                              |     |
| Primary =     | 0.52 cfs @ 12.49 hrs, Volume=       | 0.022 af                              |     |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 86.90' @ 12.49 hrs Surf.Area= 4,300 sf Storage= 5,529 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 38.5 min ( 842.7 - 804.2 )

| Volume  | Invert  | : Avai   | il.Storage              | e Storage Description   |                     |                                     |  |  |  |
|---|---------|----------|-------------------------|-------------------------|---------------------|-------------------------------------|--|--|--|
| #1  | 85.00   | 1        | 3,944 cf                | <b>Custom Stage Dat</b> | a (Irregular) Liste | d below (Recalc)                    |  |  |  |
|   |         |          |                         | •                       | •                   | $ed = 9,859 cf \times 40.0\% Voids$ |  |  |  |
| #2  | 85.50   | 1        | 5,191 cf                | ADS_StormTech S         |                     |                                     |  |  |  |
| Effective Size=   |         |          |                         |                         | 6"W x 30.0"H => 6   | 6.45 sf x 7.12'L = 45.9 cf          |  |  |  |
|   |         |          |                         | Overall Size= 51.0"     | W x 30.0"H x 7.56   | 6'L with 0.44' Overlap              |  |  |  |
|   |         |          |                         | 113 Chambers in 1       | 2 Rows              |                                     |  |  |  |
| 9,135 cf  |         |          | Total Available Storage |                         |                     |                                     |  |  |  |
|   |         |          |                         |                         |                     |                                     |  |  |  |
| Elevation   | on S    | urf.Area | Perim.                  | Inc.Store               | Cum.Store           | Wet.Area                            |  |  |  |
| (fee  | et)     | (sq-ft)  |                         | (cubic-feet)            | (cubic-feet)        | (sq-ft)                             |  |  |  |
| 85.0  | 00      | 4,300    | 328.0                   | 0                       | 0                   | 4,300                               |  |  |  |
| 88.5  | 50      | 4,300    |                         | 15,050                  | 15,050              | 5,448                               |  |  |  |
|   |         |          |                         |                         |                     |                                     |  |  |  |
| Device  | Routing | <u> </u> | vert Outle              | et Devices              |                     |                                     |  |  |  |
| #1  | Primary | 86       | 5.50' <b>9.0"</b>       | Vert. Orifice/Grate     | C= 0.600            |                                     |  |  |  |
| #2 Discarded 85.00' 0.82 cfs Exfiltration when above 85.00' |         |          |                         |                         |                     |                                     |  |  |  |

**Discarded OutFlow** Max=0.82 cfs @ 11.71 hrs HW=85.04' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=0.52 cfs @ 12.49 hrs HW=86.90' TW=85.36' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 0.52 cfs @ 2.15 fps)

Type III 24-hr 10 Year Event Rainfall=4.60"

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### Summary for Pond R1: Pond1 Outlet - 12" RCP

Inflow Area = 0.336 ac, 71.99% Impervious, Inflow Depth = 0.11" for 10 Year Event event

Inflow = 0.15 cfs @ 12.40 hrs, Volume= 0.003 af

Outflow = 0.15 cfs @ 12.40 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary = 0.15 cfs @ 12.40 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 86.69' @ 12.40 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 86.50' | <b>12.0"</b> Round Culvert L= 25.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 86.50' / 86.20' S= 0.0120 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=0.15 cfs @ 12.40 hrs HW=86.69' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 0.15 cfs @ 1.49 fps)

### Summary for Pond R4: Pond 2 Outlet - 12" RCP

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 0.16" for 10 Year Event event

Inflow = 0.52 cfs @ 12.49 hrs, Volume= 0.022 af

Outflow = 0.52 cfs @ 12.49 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Primary = 0.52 cfs @ 12.49 hrs, Volume= 0.022 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 85.36' @ 12.49 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 85.00' | <b>12.0" Round Culvert</b> L= 35.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 85.00' / 84.50' S= 0.0143 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=0.52 cfs @ 12.49 hrs HW=85.36' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 0.52 cfs @ 2.04 fps)

## Summary for Link 1L: 6- 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 2.47" for 10 Year Event event

Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.007 af

Primary = 0.94 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 6.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

10 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Type III 24-hr 10 Year Event Rainfall=4.60"

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### Summary for Link 2L: 1 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 1.96" for 10 Year Event event

Inflow = 0.12 cfs @ 12.10 hrs, Volume= 0.005 af

Primary = 0.12 cfs @ 12.10 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

10 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

### Summary for Link 3L: 10 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 2.47" for 10 Year Event event

Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.007 af

Primary = 1.56 cfs @ 12.09 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 10.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

10 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

### Summary for Link 4L: 2 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 1.96" for 10 Year Event event

Inflow = 0.12 cfs @ 12.10 hrs, Volume= 0.005 af

Primary = 0.24 cfs @ 12.10 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

10 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

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Outflow=6.04 cfs 0.839 af

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

| reduit reduing by by in elect in                   | ia metrica i ona reating by by i eter ma metrica   |
|--|--|
| Subcatchment 1S: Prop. to Steam Flow Length=1,030  | Runoff Area=159,889 sf 38.35% Impervious Runoff Depth=3.63"<br>' Slope=0.0100 '/' Tc=38.3 min CN=83 Runoff=7.82 cfs 1.110 af |
| Subcatchment 3S: Prop to CB #3                     | Runoff Area=13,262 sf 51.58% Impervious Runoff Depth=3.94"<br>Tc=5.0 min CN=86 Runoff=1.43 cfs 0.100 af                      |
| Subcatchment 4S: Prop to CB#4                      | Runoff Area=16,270 sf 58.78% Impervious Runoff Depth=4.15"<br>Tc=5.0 min CN=88 Runoff=1.83 cfs 0.129 af                      |
| Subcatchment 5S: Prop. to CB # 5                   | Runoff Area=22,568 sf 48.10% Impervious Runoff Depth=3.94"<br>Tc=5.0 min CN=86 Runoff=2.43 cfs 0.170 af                      |
| Subcatchment 6S: Prop. to CB # 6                   | Runoff Area=19,917 sf 54.20% Impervious Runoff Depth=4.04"<br>Tc=5.0 min CN=87 Runoff=2.19 cfs 0.154 af                      |
| Subcatchment 7S: Prop. to Pond 1                   | Runoff Area=14,631 sf 71.99% Impervious Runoff Depth=4.47"<br>Tc=5.0 min CN=91 Runoff=1.73 cfs 0.125 af                      |
| Subcatchment 8S: Prop. to East Wetland             | Runoff Area=127,093 sf 20.50% Impervious Runoff Depth=3.05" Flow Length=370' Tc=37.0 min CN=77 Runoff=5.33 cfs 0.741 af      |
|  | d Runoff Area=33,123 sf 15.76% Impervious Runoff Depth=2.95" Slope=0.0100 '/' Tc=33.1 min CN=76 Runoff=1.42 cfs 0.187 af     |
| Subcatchment 10S: Prop. to Street                  | Runoff Area=592 sf 83.11% Impervious Runoff Depth=4.80"<br>Tc=5.0 min CN=94 Runoff=0.07 cfs 0.005 af                         |
| Subcatchment E1: Exist. to Stream Flow Length=460' | Runoff Area=243,161 sf 28.05% Impervious Runoff Depth=3.24" Slope=0.0100 '/' Tc=42.0 min CN=79 Runoff=10.18 cfs 1.506 af     |
| Subcatchment E2: Exist. To East                    | Runoff Area=148,590 sf 21.32% Impervious Runoff Depth=2.95" Flow Length=370' Tc=37.0 min CN=76 Runoff=6.04 cfs 0.839 af      |
| Subcatchment E3: Exist. To Street                  | Runoff Area=1,271 sf 37.21% Impervious Runoff Depth=3.63"<br>Tc=5.0 min CN=83 Runoff=0.13 cfs 0.009 af                       |
|  | rthRunoff Area=42,453 sf 19.69% Impervious Runoff Depth=3.05" Slope=0.0100 '/' Tc=42.6 min CN=77 Runoff=1.66 cfs 0.247 af    |
| Reach 1E: Exist. to Stream (DCP1)                  | Inflow=10.18 cfs 1.506 af<br>Outflow=10.18 cfs 1.506 af  |
| Reach 1P: Prop. to Stream (DCP1)                   | Inflow=9.63 cfs 1.300 af<br>Outflow=9.63 cfs 1.300 af  |
| Reach 2E: Exist East Wetland (DCP2)                | Inflow=6.04 cfs 0.839 af   |

| Concord | CT_ | Rockland | DEV/ | 1_25_22 |
|---------|-----|----------|------|---------|
| Concord |     | ROCKIANO | IRTV | I - Z   |

Pond R4: Pond 2 Outlet - 12" RCP

Type III 24-hr 25 Year Event Rainfall=5.50"

Peak Elev=85.62' Inflow=1.37 cfs 0.075 af

12.0" Round Culvert n=0.011 L=35.0' S=0.0143 '/' Outflow=1.37 cfs 0.075 af

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|---|--|--|--|--|--|--|
| Reach 2P: Prop. to East W   | etland (DCP2) Inflow=5.86 cfs 0.822 af Outflow=5.86 cfs 0.822 af   |  |  |  |  |  |
|   | Outliow=5.86 cis 0.822 ai  |  |  |  |  |  |
| Reach 3E: Exist To Street   | <b>DCP3)</b> Inflow=0.13 cfs 0.009 af Outflow=0.13 cfs 0.009 af  |  |  |  |  |  |
| Reach 3P: Prop. To Street   | (DCP3) Inflow=0.07 cfs 0.005 af Outflow=0.07 cfs 0.005 af  |  |  |  |  |  |
| Reach 4E: Exist North Wet   | land (DCP4) Inflow=1.66 cfs 0.247 af Outflow=1.66 cfs 0.247 af   |  |  |  |  |  |
| Reach 4P: Prop. to North \  | <b>Vetland (DCP4)</b> Inflow=1.42 cfs 0.187 af Outflow=1.42 cfs 0.187 af   |  |  |  |  |  |
| Pond 7P: MH   | Peak Elev=88.79' Inflow=3.26 cfs 0.229 af 15.0" Round Culvert n=0.011 L=60.0' S=0.0100 '/' Outflow=3.26 cfs 0.229 af                       |  |  |  |  |  |
| Pond 9P: CB 4   | Peak Elev=89.01' Inflow=1.83 cfs 0.129 af 12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=1.83 cfs 0.129 af                       |  |  |  |  |  |
| Pond 10P: MH  | Peak Elev=88.46' Inflow=7.88 cfs 0.553 af 18.0" Round Culvert n=0.011 L=95.0' S=0.0142 '/' Outflow=7.88 cfs 0.553 af                       |  |  |  |  |  |
| Pond 12P: MH  | Peak Elev=89.93' Inflow=4.62 cfs 0.324 af 15.0" Round Culvert n=0.011 L=240.0' S=0.0075 '/' Outflow=4.62 cfs 0.324 af                      |  |  |  |  |  |
| Pond 13P: CB6   | Peak Elev=90.32' Inflow=2.19 cfs 0.154 af 12.0" Round Culvert n=0.011 L=62.0' S=0.0089 '/' Outflow=2.19 cfs 0.154 af                       |  |  |  |  |  |
| Pond MH1: MH  | Peak Elev=87.98' Inflow=1.73 cfs 0.125 af 12.0" Round Culvert n=0.011 L=40.0' S=0.0050 '/' Outflow=1.73 cfs 0.125 af                       |  |  |  |  |  |
| Pond MH2: CB 3  | Peak Elev=88.93' Inflow=1.43 cfs 0.100 af 12.0" Round Culvert n=0.011 L=22.0' S=0.0100 '/' Outflow=1.43 cfs 0.100 af                       |  |  |  |  |  |
| Pond MH3: CB5   | Peak Elev=90.38' Inflow=2.43 cfs 0.170 af 12.0" Round Culvert n=0.011 L=65.0' S=0.0085 '/' Outflow=2.43 cfs 0.170 af                       |  |  |  |  |  |
| Pond P1: POND 1 SC-310  | Peak Elev=87.93' Storage=1,157 cf Inflow=1.73 cfs 0.125 af Discarded=0.25 cfs 0.112 af Primary=0.46 cfs 0.013 af Outflow=0.71 cfs 0.125 af |  |  |  |  |  |
| Pond P2: POND 2 SC-740  | Peak Elev=87.29' Storage=6,664 cf Inflow=7.88 cfs 0.553 af Discarded=0.82 cfs 0.478 af Primary=1.37 cfs 0.075 af Outflow=2.19 cfs 0.553 af |  |  |  |  |  |
| Pond R1: Pond1 Outlet - 1:  | Peak Elev=86.84' Inflow=0.46 cfs 0.013 af 12.0" Round Culvert n=0.011 L=25.0' S=0.0120 '/' Outflow=0.46 cfs 0.013 af                       |  |  |  |  |  |

Type III 24-hr 25 Year Event Rainfall=5.50"

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Ling5 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 6.00 Inflow=0.19 cfs 0.010 af Area= 0.036 ac 100.00% Imperv. Primary=1.13 cfs 0.061 af

Link 2L: 1 - 25 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce Inflow=0.15 cfs 0.007 af Area= 0.028 ac 100.00% Imperv. Primary=0.15 cfs 0.007 af

Lias Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 10.00 Inflow=0.19 cfs 0.010 af Area= 0.036 ac 100.00% Imperv. Primary=1.88 cfs 0.102 af

Link 25 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce x 2.00 Inflow=0.15 cfs 0.007 af
Area= 0.028 ac 100.00% Imperv. Primary=0.30 cfs 0.013 af

Total Runoff Area = 19.348 ac Runoff Volume = 5.323 af Average Runoff Depth = 3.30" 70.29% Pervious = 13.600 ac 29.71% Impervious = 5.748 ac

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### **Summary for Subcatchment 1S: Prop. to Steam**

Runoff = 7.82 cfs @ 12.52 hrs, Volume= 1.110 af, Depth= 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

|   | Α     | rea (sf) | CN E    | escription                       |              |  |  |  |  |  |
|---|-------|----------|---------|----------------------------------|--------------|--|--|--|--|--|
| * |       | 48,878   | 98 V    | 98 Water Surface Wetlands, HSG C |              |  |  |  |  |  |
|   |       | 77,137   |         | ,                                |              |  |  |  |  |  |
| * |       | 4,305    | 98 v    |                                  |              |  |  |  |  |  |
|   |       | 1,100    | 87 E    | · ·                              |              |  |  |  |  |  |
|   |       | 18,844   | 70 V    | Voods, Go                        | od, HSG C    |  |  |  |  |  |
| * |       | 2,457    | 98 E    | xisit,. Roo                      | f            |  |  |  |  |  |
| * |       | 5,683    | 98 E    | xisit. Pave                      | ement        |  |  |  |  |  |
| * |       | 1,485    | 74 F    | Prop. Patios                     | 3            |  |  |  |  |  |
|   | 1     | 59,889   | 83 V    | Veighted A                       | verage       |  |  |  |  |  |
|   |       | 98,566   | 6       | 1.65% Per                        | vious Area   |  |  |  |  |  |
|   |       | 61,323   | 3       | 8.35% Imp                        | pervious Are | ea   |  |  |  |  |
|   |       |          |         |                                  |              |  |  |  |  |  |
|   | Tc    | Length   | Slope   | Velocity                         | Capacity     | Description                                |  |  |  |  |
| _ | (min) | (feet)   | (ft/ft) | (ft/sec)                         | (cfs)        |  |  |  |  |  |
|   | 28.3  | 50       | 0.0100  | 0.03                             |              | Sheet Flow,                                |  |  |  |  |
|   |       |          |         |                                  |              | Woods: Dense underbrush n= 0.800 P2= 3.20" |  |  |  |  |
|   | 1.7   | 50       | 0.0100  | 0.50                             |              | Shallow Concentrated Flow,                 |  |  |  |  |
|   |       |          |         |                                  |              | Woodland Kv= 5.0 fps                       |  |  |  |  |
|   | 0.7   | 30       | 0.0100  | 0.70                             |              | Shallow Concentrated Flow,                 |  |  |  |  |
|   |       |          |         |                                  |              | Short Grass Pasture Kv= 7.0 fps            |  |  |  |  |
|   | 3.7   | 110      | 0.0100  | 0.50                             |              | Shallow Concentrated Flow, shallow         |  |  |  |  |
|   |       |          |         |                                  |              | Woodland Kv= 5.0 fps                       |  |  |  |  |
|   | 3.9   | 790      | 0.0100  | 3.35                             | 20.11        | Channel Flow, Stream                       |  |  |  |  |
|   |       |          |         |                                  |              | Area= 6.0 sf Perim= 7.0' r= 0.86'          |  |  |  |  |
| _ |       |          |         |                                  |              | n= 0.040 Earth, cobble bottom, clean sides |  |  |  |  |
|   | 38.3  | 1,030    | Total   |                                  |              |  |  |  |  |  |

#### Summary for Subcatchment 3S: Prop to CB #3

Runoff = 1.43 cfs @ 12.07 hrs, Volume= 0.100 af, Depth= 3.94"

| <br>Area (sf) | CN | Description                   |  |  |  |
|---------------|----|-------------------------------|--|--|--|
| 6,841         | 98 | Paved parking, HSG C          |  |  |  |
| <br>6,421     | 74 | >75% Grass cover, Good, HSG C |  |  |  |
| 13,262        | 86 | Weighted Average              |  |  |  |
| 6,421         |    | 48.42% Pervious Area          |  |  |  |
| 6,841         |    | 51.58% Impervious Area        |  |  |  |

Type III 24-hr 25 Year Event Rainfall=5.50"

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

### **Summary for Subcatchment 4S: Prop to CB#4**

Runoff = 1.83 cfs @ 12.07 hrs, Volume= 0.129 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

|    | Area   | (sf) | CN I    | Description                   |            |                      |  |  |  |
|----|--------|------|---------|-------------------------------|------------|----------------------|--|--|--|
| *  | 1,6    | 352  | 98 F    | Paved parking, HSG C-Sidewalk |            |                      |  |  |  |
|    | 7,9    | 912  | 98 F    | Paved park                    | ing, HSG C |                      |  |  |  |
|    | 6,7    | 706  | 74 >    | >75% Grass cover, Good, HSG C |            |                      |  |  |  |
|    | 16,2   | 270  | 88 \    | Veighted Average              |            |                      |  |  |  |
|    | 6,7    | 706  | 4       | 41.22% Pervious Area          |            |                      |  |  |  |
|    | 9,5    | 564  | į       | 58.78% Impervious Area        |            |                      |  |  |  |
|    |        |      |         |                               |            |                      |  |  |  |
|    |        | ngth | Slope   | ,                             | Capacity   | Description          |  |  |  |
| (m | in) (f | eet) | (ft/ft) | (ft/sec)                      | (cfs)      |                      |  |  |  |
| 5  | 5.0    |      |         |                               |            | Direct Entry, DIRECT |  |  |  |

## Summary for Subcatchment 5S: Prop. to CB # 5

Runoff = 2.43 cfs @ 12.07 hrs, Volume= 0.170 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

|   | A     | rea (sf) | CN      | Description                     |             |   |  |  |  |  |
|---|-------|----------|---------|---------------------------------|-------------|---|--|--|--|--|
| * |       | 466      | 98      | Paved parking, HSG C - Sidewalk |             |   |  |  |  |  |
| * |       | 10,390   | 98      | ⊃aved park                      | ing, HSG C  | C - rroad-drives                        |  |  |  |  |
|   |       | 11,712   | 74      | >75% Gras                       | s cover, Go | ood, HSG C                              |  |  |  |  |
|   |       | 22,568   | 86      | Weighted Average                |             |   |  |  |  |  |
|   |       | 11,712   | ;       | 51.90% Pei                      | vious Area  | a e e e e e e e e e e e e e e e e e e e |  |  |  |  |
|   |       | 10,856   |         | 48.10% lm <mark>։</mark>        | pervious Ar | rea                                     |  |  |  |  |
|   |       |          |         |                                 |             |   |  |  |  |  |
|   | Тс    | Length   | Slope   | ,                               | Capacity    | Description                             |  |  |  |  |
| _ | (min) | (feet)   | (ft/ft) | t) (ft/sec) (cfs)               |             |   |  |  |  |  |
|   | 5.0   |          |         |                                 |             | Direct Entry,                           |  |  |  |  |

## Summary for Subcatchment 6S: Prop. to CB # 6

Runoff = 2.19 cfs @ 12.07 hrs, Volume= 0.154 af, Depth= 4.04"

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|   | Α     | rea (sf) | CN                    | Description |             |                  |  |  |  |
|---|-------|----------|-----------------------|-------------|-------------|------------------|--|--|--|
| * |       | 959      | 98                    | Paved park  | ing, HSG C  | C - Sidewalk     |  |  |  |
| * |       | 9,836    | 98                    | Paved park  | ing, HSG C  | C - rroad-drives |  |  |  |
| _ |       | 9,122    | 74                    | >75% Gras   | s cover, Go | ood, HSG C       |  |  |  |
|   |       | 19,917   | 7 87 Weighted Average |             |             |                  |  |  |  |
|   |       | 9,122    |                       | 45.80% Pei  | rvious Area | a                |  |  |  |
|   |       | 10,795   |                       | 54.20% lmp  | pervious Ar | rea              |  |  |  |
|   | То    | Longth   | Clone                 | Volocity    | Conneity    | Description      |  |  |  |
|   | Tc    | Length   | Slope                 | ,           | Capacity    | ·                |  |  |  |
|   | (min) | (feet)   | (ft/ft)               | (ft/sec)    | (cfs)       |                  |  |  |  |
|   | 5.0   |          |                       |             |             | Direct Entry,    |  |  |  |

### Summary for Subcatchment 7S: Prop. to Pond 1

Runoff = 1.73 cfs @ 12.07 hrs, Volume=

0.125 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

| A           | rea (sf)         | CN              | Description          |                   |                      |  |  |  |
|-------------|------------------|-----------------|----------------------|-------------------|----------------------|--|--|--|
|             | 10,533           | 98              | Paved parking, HSG C |                   |                      |  |  |  |
|             | 4,098            | 74              | >75% Gras            | s cover, Go       | ood, HSG C           |  |  |  |
|             | 14,631           | 91              | Weighted A           | Weighted Average  |                      |  |  |  |
|             | 4,098            |                 | 28.01% Per           | rvious Area       | 1                    |  |  |  |
|             | 10,533           |                 | 71.99% lm            | pervious Ar       | rea                  |  |  |  |
| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft | ,                    | Capacity<br>(cfs) | Description          |  |  |  |
| 5.0         | (.501)           | (1010           | , (.900)             | (0.0)             | Direct Entry, DIRECT |  |  |  |

# Summary for Subcatchment 8S: Prop. to East Wetland

Runoff = 5.33 cfs @ 12.53 hrs, Volume=

0.741 af, Depth= 3.05"

|   | Area (sf) | CN | Description                     |  |
|---|-----------|----|---------------------------------|--|
| * | 25,672    | 98 | B Water Surface Wetlands, HSG C |  |
|   | 40,951    | 74 | >75% Grass cover, Good, HSG C   |  |
|   | 58,938    | 70 | Woods, Good, HSG C              |  |
| * | 1,155     | 74 | Patio                           |  |
| * | 377       | 98 | ret wall                        |  |
|   | 127,093   | 77 | Weighted Average                |  |
|   | 101,044   |    | 79.50% Pervious Area            |  |
|   | 26,049    |    | 20.50% Impervious Area          |  |

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|   | Tc    | Length | Slope   | Velocity | Capacity | Description                                |
|---|-------|--------|---------|----------|----------|--|
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    | ·  |
|   | 28.3  | 50     | 0.0100  | 0.03     |          | Sheet Flow,                                |
|   |       |        |         |          |          | Woods: Dense underbrush n= 0.800 P2= 3.20" |
|   | 8.7   | 320    | 0.0150  | 0.61     |          | Shallow Concentrated Flow, shallow         |
|   |       |        |         |          |          | Woodland Kv= 5.0 fps                       |
|   | 37.0  | 370    | Total   |          |          |  |

## Summary for Subcatchment 9S: Prop. to North Wetland

Runoff = 1.42 cfs @ 12.47 hrs, Volume= 0.187

0.187 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

|   | Α     | rea (sf) | CN [    | Description                   |               |  |  |  |
|---|-------|----------|---------|-------------------------------|---------------|--|--|--|
| * |       | 906      | 98 \    | Water Surface Wetlands, HSG C |               |  |  |  |
|   |       | 2,744    | 98 F    | Paved park                    | ing, HSG C    |  |  |  |
|   |       | 16,242   | 74 >    | >75% Ġras                     | s cover, Go   | ood, HSG C                                 |  |  |
|   |       | 1,286    | 98 F    | Roofs, HSC                    | GC - infiltra | ted  |  |  |
| * |       | 283      | 98 v    | valls othe r                  | imp.          |  |  |  |
|   |       | 11,662   | 70 \    | Voods, Go                     | od, HSG C     |  |  |  |
|   |       | 33,123   | 76 \    | Veighted A                    | verage        |  |  |  |
|   |       | 27,904   | 8       | 34.24% Pei                    | rvious Area   |  |  |  |
|   |       | 5,219    | •       | 15.76% Imp                    | pervious Are  | ea   |  |  |
|   |       |          |         |                               |               |  |  |  |
|   | Тс    | Length   | Slope   | Velocity                      | Capacity      | Description                                |  |  |
|   | (min) | (feet)   | (ft/ft) | (ft/sec)                      | (cfs)         |  |  |  |
|   | 28.3  | 50       | 0.0100  | 0.03                          |               | Sheet Flow, Sheet                          |  |  |
|   |       |          |         |                               |               | Woods: Dense underbrush n= 0.800 P2= 3.20" |  |  |
|   | 4.8   | 430      | 0.0100  | 1.50                          |               | Shallow Concentrated Flow, shallow         |  |  |
|   |       |          |         |                               |               | Grassed Waterway Kv= 15.0 fps              |  |  |
|   | 33.1  | 480      | Total   | ·                             |               |  |  |  |

#### Summary for Subcatchment 10S: Prop. to Street

Runoff = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af, Depth= 4.80"

| Area (sf) | CN | Description                   |  |  |  |
|-----------|----|-------------------------------|--|--|--|
| 492       | 98 | Paved parking, HSG C          |  |  |  |
| 100       | 74 | >75% Grass cover, Good, HSG C |  |  |  |
| 592       | 94 | Weighted Average              |  |  |  |
| 100       |    | 16.89% Pervious Area          |  |  |  |
| 492       |    | 83.11% Impervious Area        |  |  |  |

Type III 24-hr 25 Year Event Rainfall=5.50"

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

## Summary for Subcatchment E1: Exist. to Stream

Runoff = 10.18 cfs @ 12.56 hrs, Volume= 1.506 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

|   | Α     | rea (sf) | CN     | Description   |                               |  |  |  |  |  |  |
|---|-------|----------|--------|---------------|-------------------------------|--|--|--|--|--|--|
| * |       | 48,977   | 98     | Water Surfa   | Water Surface Wetlands, HSG C |  |  |  |  |  |  |
|   |       | 11,952   | 98     | Paved park    | ing, HSG C                    |  |  |  |  |  |  |
|   |       | 34,335   | 74     | >75% Gras     | s cover, Go                   | ood, HSG C                                 |  |  |  |  |  |
|   |       | 2,457    | 98     | Roofs, HSC    | G C                           |  |  |  |  |  |  |
| * |       | 4,820    |        | walls othe r  |                               |  |  |  |  |  |  |
|   |       | 8,801    |        | Dirt roads, l |                               |  |  |  |  |  |  |
| _ | 1     | 31,819   | 70     | Woods, Go     | od, HSG C                     |  |  |  |  |  |  |
|   | 2     | 243,161  | 79     | Weighted A    | verage                        |  |  |  |  |  |  |
|   | 1     | 74,955   |        | 71.95% Pei    | rvious Area                   |  |  |  |  |  |  |
|   |       | 68,206   |        | 28.05% Imp    | pervious Are                  | ea   |  |  |  |  |  |
|   |       |          |        |               |                               |  |  |  |  |  |  |
|   | Тс    | Length   | Slope  |               | Capacity                      | Description                                |  |  |  |  |  |
| _ | (min) | (feet)   | (ft/ft | (ft/sec)      | (cfs)                         |  |  |  |  |  |  |
|   | 28.3  | 50       | 0.0100 | 0.03          |                               | Sheet Flow, Sheet                          |  |  |  |  |  |
|   |       |          |        |               |                               | Woods: Dense underbrush n= 0.800 P2= 3.20" |  |  |  |  |  |
|   | 13.7  | 410      | 0.0100 | 0.50          |                               | Shallow Concentrated Flow, shallow - woods |  |  |  |  |  |
| _ |       |          |        |               |                               | Woodland Kv= 5.0 fps                       |  |  |  |  |  |
|   | 42.0  | 460      | Total  |               |                               |  |  |  |  |  |  |

## Summary for Subcatchment E2: Exist. To East Weltands

Runoff = 6.04 cfs @ 12.53 hrs, Volume= 0.839 af, Depth= 2.95"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 25,672    | 98 | Water Surface Wetlands, HSG C |
|   | 5,792     | 98 | Paved parking, HSG C          |
|   | 9,907     | 74 | >75% Grass cover, Good, HSG C |
| * | 217       | 98 | walls othe rimp.              |
|   | 107,002   | 70 | Woods, Good, HSG C            |
|   | 148,590   | 76 | Weighted Average              |
|   | 116,909   |    | 78.68% Pervious Area          |
|   | 31,681    |    | 21.32% Impervious Area        |

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| Тс    | Length | Slope   | Velocity | Capacity | Description                                |
|-------|--------|---------|----------|----------|--|
| (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    | <u> </u>                                   |
| 28.3  | 50     | 0.0100  | 0.03     |          | Sheet Flow, Sheet                          |
|       |        |         |          |          | Woods: Dense underbrush n= 0.800 P2= 3.20" |
| 8.7   | 320    | 0.0150  | 0.61     |          | Shallow Concentrated Flow, shallow - woods |
|       |        |         |          |          | Woodland Kv= 5.0 fps                       |
| 37.0  | 370    | Total   |          |          | <u> </u>                                   |

## **Summary for Subcatchment E3: Exist. To Street**

0.13 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 3.63" Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 25 Year Event Rainfall=5.50"

| A           | rea (sf)         | CN               | Description          |                   |               |  |  |  |  |  |
|-------------|------------------|------------------|----------------------|-------------------|---------------|--|--|--|--|--|
|             | 473              | 98               | Paved parking, HSG C |                   |               |  |  |  |  |  |
|             | 798              | 74               | >75% Gras            | s cover, Go       | lood, HSG C   |  |  |  |  |  |
|             | 1,271            | 83               | Weighted A           | verage            |               |  |  |  |  |  |
|             | 798              |                  | 62.79% Pei           | vious Area        | a             |  |  |  |  |  |
|             | 473              |                  | 37.21% lmp           | pervious Ar       | rea           |  |  |  |  |  |
| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | ,                    | Capacity<br>(cfs) | ·             |  |  |  |  |  |
| 5.0         | -                | _                | -                    |                   | Direct Entry, |  |  |  |  |  |

Direct Entry,

### Summary for Subcatchment E4: Exist. to Wetlands North

0.247 af, Depth= 3.05" Runoff 1.66 cfs @ 12.59 hrs, Volume=

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 907       | 98 | Water Surface Wetlands, HSG C |
|   | 5,644     | 98 | Paved parking, HSG C          |
|   | 12,783    | 74 | >75% Grass cover, Good, HSG C |
| * | 520       | 98 | walls othe rimp.              |
|   | 21,313    | 70 | Woods, Good, HSG C            |
|   | 1,286     | 98 | Roofs, HSG C                  |
|   | 42,453    | 77 | Weighted Average              |
|   | 34,096    |    | 80.31% Pervious Area          |
|   | 8,357     |    | 19.69% Impervious Area        |

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|   | Тс    | Length | Slope   | Velocity | Capacity | Description                                |
|---|-------|--------|---------|----------|----------|--|
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    |  |
|   | 28.3  | 50     | 0.0100  | 0.03     |          | Sheet Flow, Sheet                          |
|   |       |        |         |          |          | Woods: Dense underbrush n= 0.800 P2= 3.20" |
|   | 14.3  | 430    | 0.0100  | 0.50     |          | Shallow Concentrated Flow, shallow - woods |
| _ |       |        |         |          |          | Woodland Kv= 5.0 fps                       |
|   | 42.6  | 480    | Total   |          |          |  |

### **Summary for Reach 1E: Exist. to Stream (DCP1)**

Inflow Area = 5.582 ac, 28.05% Impervious, Inflow Depth = 3.24" for 25 Year Event event

Inflow = 10.18 cfs @ 12.56 hrs, Volume= 1.506 af

Outflow = 10.18 cfs @ 12.56 hrs, Volume= 1.506 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### **Summary for Reach 1P: Prop. to Stream (DCP1)**

Inflow Area = 5.387 ac, 43.52% Impervious, Inflow Depth = 2.90" for 25 Year Event event

Inflow = 9.63 cfs @ 12.47 hrs, Volume= 1.300 af

Outflow = 9.63 cfs @ 12.47 hrs, Volume= 1.300 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## **Summary for Reach 2E: Exist East Wetland (DCP2)**

Inflow Area = 3.411 ac, 21.32% Impervious, Inflow Depth = 2.95" for 25 Year Event event

Inflow = 6.04 cfs @ 12.53 hrs, Volume= 0.839 af

Outflow = 6.04 cfs @ 12.53 hrs, Volume= 0.839 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# Summary for Reach 2P: Prop. to East Wetland (DCP2)

Inflow Area = 3.317 ac, 27.22% Impervious, Inflow Depth = 2.97" for 25 Year Event event

Inflow = 5.86 cfs @ 12.46 hrs, Volume= 0.822 af

Outflow = 5.86 cfs @ 12.46 hrs, Volume= 0.822 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# Summary for Reach 3E: Exist To Street (DCP3)

Inflow Area = 0.029 ac, 37.21% Impervious, Inflow Depth = 3.63" for 25 Year Event event

Inflow = 0.13 cfs @ 12.07 hrs, Volume= 0.009 af

Outflow = 0.13 cfs @ 12.07 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

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### **Summary for Reach 3P: Prop. To Street (DCP3)**

Inflow Area = 0.014 ac, 83.11% Impervious, Inflow Depth = 4.80" for 25 Year Event event

Inflow = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af

Outflow = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### **Summary for Reach 4E: Exist North Wetland (DCP4)**

Inflow Area = 0.975 ac, 19.69% Impervious, Inflow Depth = 3.05" for 25 Year Event event

Inflow = 1.66 cfs @ 12.59 hrs, Volume= 0.247 af

Outflow = 1.66 cfs @ 12.59 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### Summary for Reach 4P: Prop. to North Wetland (DCP4)

Inflow Area = 0.760 ac, 15.76% Impervious, Inflow Depth = 2.95" for 25 Year Event event

Inflow = 1.42 cfs @ 12.47 hrs, Volume= 0.187 af

Outflow = 1.42 cfs @ 12.47 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## **Summary for Pond 7P: MH**

Inflow Area = 0.678 ac, 55.55% Impervious, Inflow Depth = 4.05" for 25 Year Event event

Inflow = 3.26 cfs @ 12.07 hrs, Volume= 0.229 af

Outflow = 3.26 cfs @ 12.07 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.0 min

Primary = 3.26 cfs @ 12.07 hrs, Volume= 0.229 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.79' @ 12.08 hrs

Primary OutFlow Max=3.18 cfs @ 12.07 hrs HW=88.78' TW=88.46' (Dynamic Tailwater) 1=Culvert (Outlet Controls 3.18 cfs @ 3.03 fps)

# Summary for Pond 9P: CB 4

Inflow Area = 0.374 ac, 58.78% Impervious, Inflow Depth = 4.15" for 25 Year Event event

Inflow = 1.83 cfs @ 12.07 hrs, Volume= 0.129 af

Outflow = 1.83 cfs @ 12.07 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min

Primary = 1.83 cfs @ 12.07 hrs, Volume= 0.129 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Type III 24-hr 25 Year Event Rainfall=5.50"

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Peak Elev= 89.01' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.67' | <b>12.0" Round Culvert</b> L= 22.0' Ke= 0.500                  |
|        | -       |        | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=1.68 cfs @ 12.07 hrs HW=88.98' TW=88.78' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.68 cfs @ 2.14 fps)

### **Summary for Pond 10P: MH**

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 4.01" for 25 Year Event event

Inflow = 7.88 cfs @ 12.07 hrs, Volume= 0.553 af

Outflow = 7.88 cfs @ 12.07 hrs, Volume= 0.553 af, Atten= 0%, Lag= 0.0 min

Primary = 7.88 cfs @ 12.07 hrs, Volume= 0.553 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.46' @ 12.07 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 86.85' | <b>18.0" Round Culvert</b> L= 95.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 86.85' / 85.50' S= 0.0142 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf   |

Primary OutFlow Max=7.87 cfs @ 12.07 hrs HW=88.46' TW=86.34' (Dynamic Tailwater) 1=Culvert (Inlet Controls 7.87 cfs @ 4.45 fps)

### **Summary for Pond 12P: MH**

Inflow Area = 0.975 ac, 50.96% Impervious, Inflow Depth = 3.98" for 25 Year Event event Inflow = 0.324 af

Outflow = 4.62 cfs @ 12.07 hrs, Volume= 0.324 af, Atten= 0%, Lag= 0.0 min

Primary = 4.62 cfs @ 12.07 hrs, Volume= 0.324 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 89.93' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 88.65' | <b>15.0" Round Culvert</b> L= 240.0' Ke= 0.500 Inlet / Outlet Invert= 88.65' / 86.85' S= 0.0075 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=4.59 cfs @ 12.07 hrs HW=89.93' TW=88.46' (Dynamic Tailwater) 1=Culvert (Outlet Controls 4.59 cfs @ 4.54 fps)

Type III 24-hr 25 Year Event Rainfall=5.50"

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#### **Summary for Pond 13P: CB6**

Inflow Area = 0.457 ac, 54.20% Impervious, Inflow Depth = 4.04" for 25 Year Event event

Inflow = 2.19 cfs @ 12.07 hrs, Volume= 0.154 af

Outflow = 2.19 cfs @ 12.07 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

Primary = 2.19 cfs @ 12.07 hrs, Volume= 0.154 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 90.32' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices  |
|--------|---------|--------|---|
| #1     | Primary | 89.20' | <b>12.0" Round Culvert</b> L= 62.0' Ke= 0.500 Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0089 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=2.13 cfs @ 12.07 hrs HW=90.30' TW=89.93' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.13 cfs @ 3.06 fps)

### **Summary for Pond MH1: MH**

Inflow Area = 0.336 ac, 71.99% Impervious, Inflow Depth = 4.47" for 25 Year Event event

Inflow = 1.73 cfs @ 12.07 hrs, Volume= 0.125 af

Outflow = 1.73 cfs @ 12.07 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min

Primary = 1.73 cfs @. 12.07 hrs, Volume = 0.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 87.98' @ 12.24 hrs

Flood Elev= 89.00'

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.00' | <b>12.0" Round Culvert</b> L= 40.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 87.00' / 86.80' S= 0.0050 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=1.66 cfs @ 12.07 hrs HW=87.83' TW=87.46' (Dynamic Tailwater) 1=Culvert (Outlet Controls 1.66 cfs @ 3.24 fps)

## **Summary for Pond MH2: CB 3**

Inflow Area = 0.304 ac, 51.58% Impervious, Inflow Depth = 3.94" for 25 Year Event event

Inflow = 1.43 cfs @ 12.07 hrs, Volume= 0.100 af

Outflow = 1.43 cfs @ 12.07 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Primary = 1.43 cfs @ 12.07 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.93' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.67' | <b>12.0" Round Culvert</b> L= 22.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

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Primary OutFlow Max=1.25 cfs @ 12.07 hrs HW=88.89' TW=88.78' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.25 cfs @ 1.59 fps)

### **Summary for Pond MH3: CB5**

Inflow Area = 0.518 ac, 48.10% Impervious, Inflow Depth = 3.94" for 25 Year Event event

Inflow = 2.43 cfs @ 12.07 hrs, Volume= 0.170 af

Outflow = 2.43 cfs @ 12.07 hrs, Volume= 0.170 af, Atten= 0%, Lag= 0.0 min

Primary = 2.43 cfs @ 12.07 hrs, Volume= 0.170 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 90.38' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 89.20' | <b>12.0" Round Culvert</b> L= 65.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0085 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=2.37 cfs @ 12.07 hrs HW=90.37' TW=89.93' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.37 cfs @ 3.26 fps)

### **Summary for Pond P1: POND 1 SC-310**

| Inflow Area = | 0.336 ac, 71.99% Impervious, Inflow I | Depth = 4.47" for 25 Year Event event |
|---------------|---------------------------------------|---------------------------------------|
| Inflow =      | 1.73 cfs @ 12.07 hrs, Volume=         | 0.125 af                              |
| Outflow =     | 0.71 cfs @ 12.26 hrs, Volume=         | 0.125 af, Atten= 59%, Lag= 11.5 min   |
| Discarded =   | 0.25 cfs @ 11.70 hrs, Volume=         | 0.112 af                              |
| Primary =     | 0.46 cfs @ 12.26 hrs, Volume=         | 0.013 af                              |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 87.93' @ 12.26 hrs Surf.Area= 1,330 sf Storage= 1,157 cf

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

Center-of-Mass det. time= 20.2 min (803.1 - 782.8)

| Volume    | Invert | Avail.Storage  | Storage Description   | n            |                       |  |  |
|-----------|--------|--|---|--------------|-----------------------|--|--|
| #1        | 86.50' | 929 cf Custom Stage Data (Irregular) Listed below (Recalc) |   |              |                       |  |  |
|           |        |  | 3,059 cf Overall - 737 cf Embedded = 2,322 cf x 40.0% Voids   |              |                       |  |  |
| #2        | 87.00' | 737 cf   | ADS_StormTech SC-310 +Cap x 50 Inside #1                      |              |                       |  |  |
|           |        |  | Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf |              |                       |  |  |
|           |        |  |   |              | 'L with 0.44' Overlap |  |  |
|           |        |  | 50 Chambers in 5  | Rows         |                       |  |  |
|           |        | 1,666 cf   | Total Available Sto   | orage        |                       |  |  |
|           |        |  |   |              |                       |  |  |
| Elevation | Surf.A | rea Perim.   | Inc.Store   | Cum.Store    | Wet.Area              |  |  |
| (feet)    | (so    | q-ft) (feet)   | (cubic-feet)  | (cubic-feet) | (sq-ft)               |  |  |
| 86.50     | 1,     | 330 187.0  | 0   | 0            | 1,330                 |  |  |
| 88.80     | 1.     | 330 187.0  | 3.059   | 3.059        | 1.760                 |  |  |

Type III 24-hr 25 Year Event Rainfall=5.50"

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| Device | Routing   | Invert | Outlet Devices             |           |                                   |
|--------|-----------|--------|----------------------------|-----------|-----------------------------------|
| #1     | Primary   | 87.70' | 6.0" Horiz. Orifice/Grate  | C= 0.600  | Limited to weir flow at low heads |
| #2     | Discarded | 86.50' | 0.25 cfs Exfiltration when | above 86. | 50'                               |

**Discarded OutFlow** Max=0.25 cfs @ 11.70 hrs HW=86.53' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.46 cfs @ 12.26 hrs HW=87.93' TW=86.84' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 0.46 cfs @ 2.32 fps)

#### **Summary for Pond P2: POND 2 SC-740**

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 4.01" for 25 Year Event event 7.88 cfs @ 12.07 hrs, Volume= 0.553 af Outflow = 2.19 cfs @ 12.41 hrs, Volume= 0.553 af, Atten= 72%, Lag= 20.4 min 0.82 cfs @ 11.66 hrs, Volume= 0.478 af Primary = 1.37 cfs @ 12.41 hrs, Volume= 0.075 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 87.29' @ 12.41 hrs Surf.Area= 4,300 sf Storage= 6,664 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 38.2 min ( 835.8 - 797.6 )

| Volume    | Invert  | : Avai   | il.Storage | Storage Description   | า               |                                     |  |
|-----------|---|----------|------------|---|-----------------|-------------------------------------|--|
| #1        | 85.00   | 1        | 3,944 cf   | Custom Stage Data (Irregular) Listed below (Recalc)           |                 |                                     |  |
|           |   |          |            |   | •               | $ed = 9,859 cf \times 40.0\% Voids$ |  |
| #2        | 85.50   | 1        | 5,191 cf   |   |                 |                                     |  |
|           |   |          |            | Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf |                 |                                     |  |
|           | Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap |          |            |   |                 |                                     |  |
|           | 113 Chambers in 12 Rows                                   |          |            |   |                 |                                     |  |
|           | 9,135 cf Total Available Storage                          |          |            |   |                 |                                     |  |
|           |   |          |            |   |                 |                                     |  |
| Elevation | on S  | urf.Area | Perim.     | Inc.Store   | Cum.Store       | Wet.Area                            |  |
| (fee      | et)   | (sq-ft)  | (feet)     | (cubic-feet)  | (cubic-feet)    | (sq-ft)                             |  |
| 85.0      | 00  | 4,300    | 328.0      | 0   | 0               | 4,300                               |  |
| 88.5      | 50  | 4,300    | 328.0      | 15,050  | 15,050          | 5,448                               |  |
| Davisa    | Douting   | In       | vort Outl  | ot Dovisoo  |                 |                                     |  |
| Device    | Routing In  |          |            | et Devices  |                 |                                     |  |
| #1        | Primary   |          |            | Vert. Orifice/Grate   | C= 0.600        |                                     |  |
| #2        | #2 Discarded 85.00' <b>0.8</b>                            |          |            | cfs Exfiltration who  | en above 85.00' |                                     |  |

**Discarded OutFlow** Max=0.82 cfs @ 11.66 hrs HW=85.04' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=1.37 cfs @ 12.41 hrs HW=87.29' TW=85.62' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 1.37 cfs @ 3.10 fps)

Type III 24-hr 25 Year Event Rainfall=5.50"

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## Summary for Pond R1: Pond1 Outlet - 12" RCP

Inflow Area = 0.336 ac, 71.99% Impervious, Inflow Depth = 0.47" for 25 Year Event event

Inflow = 0.46 cfs @ 12.26 hrs, Volume= 0.013 af

Outflow = 0.46 cfs @ 12.26 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Primary = 0.46 cfs @ 12.26 hrs, Volume= 0.013 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 86.84' @ 12.26 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 86.50' | <b>12.0"</b> Round Culvert L= 25.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 86.50' / 86.20' S= 0.0120 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=0.46 cfs @ 12.26 hrs HW=86.84' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 0.46 cfs @ 1.97 fps)

## Summary for Pond R4: Pond 2 Outlet - 12" RCP

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 0.54" for 25 Year Event event

Inflow = 1.37 cfs @ 12.41 hrs, Volume= 0.075 af

Outflow = 1.37 cfs @ 12.41 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Primary = 1.37 cfs @ 12.41 hrs, Volume= 0.075 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 85.62' @ 12.41 hrs

| Device | Routing | Invert | Outlet Devices   |  |  |  |
|--------|---------|--------|--|--|--|--|
| #1     | Primary | 85.00' | <b>12.0" Round Culvert</b> L= 35.0' Ke= 0.500                  |  |  |  |
|        |         |        | Inlet / Outlet Invert= 85.00' / 84.50' S= 0.0143 '/' Cc= 0.900 |  |  |  |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |  |  |  |

Primary OutFlow Max=1.37 cfs @ 12.41 hrs HW=85.62' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.37 cfs @ 2.68 fps)

## Summary for Link 1L: 6- 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 3.44" for 25 Year Event event

Inflow = 0.19 cfs @ 12.10 hrs, Volume= 0.010 af

Primary = 1.13 cfs @ 12.10 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 6.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

25 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Type III 24-hr 25 Year Event Rainfall=5.50"

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## Summary for Link 2L: 1 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 2.91" for 25 Year Event event

Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.007 af

Primary = 0.15 cfs @ 12.09 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

25 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

## Summary for Link 3L: 10 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 3.44" for 25 Year Event event

Inflow = 0.19 cfs @ 12.10 hrs, Volume= 0.010 af

Primary = 1.88 cfs @ 12.10 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 10.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

25 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

## Summary for Link 4L: 2 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 2.91" for 25 Year Event event

Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.007 af

Primary = 0.30 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

25 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

Type III 24-hr 100 Year Event Rainfall=7.00"

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Outflow=8.70 cfs 1.210 af

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Time span=0.00-35.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

| <b>3</b> , ,  | 5 , ,  |
|---|--|
| Subcatchment 1S: Prop. to Steam<br>Flow Length=1,030' | Runoff Area=159,889 sf 38.35% Impervious Runoff Depth=5.03" Slope=0.0100 '/' Tc=38.3 min CN=83 Runoff=10.73 cfs 1.538 af   |
| Subcatchment 3S: Prop to CB #3                        | Runoff Area=13,262 sf 51.58% Impervious Runoff Depth=5.37"<br>Tc=5.0 min CN=86 Runoff=1.92 cfs 0.136 af                    |
| Subcatchment 4S: Prop to CB#4                         | Runoff Area=16,270 sf 58.78% Impervious Runoff Depth=5.59"<br>Tc=5.0 min CN=88 Runoff=2.43 cfs 0.174 af                    |
| Subcatchment 5S: Prop. to CB # 5                      | Runoff Area=22,568 sf 48.10% Impervious Runoff Depth=5.37"<br>Tc=5.0 min CN=86 Runoff=3.27 cfs 0.232 af                    |
| Subcatchment 6S: Prop. to CB # 6                      | Runoff Area=19,917 sf 54.20% Impervious Runoff Depth=5.48"<br>Tc=5.0 min CN=87 Runoff=2.93 cfs 0.209 af                    |
| Subcatchment 7S: Prop. to Pond 1                      | Runoff Area=14,631 sf 71.99% Impervious Runoff Depth=5.94"<br>Tc=5.0 min CN=91 Runoff=2.27 cfs 0.166 af                    |
| Subcatchment 8S: Prop. to East Wetland                | Runoff Area=127,093 sf 20.50% Impervious Runoff Depth=4.37" Flow Length=370' Tc=37.0 min CN=77 Runoff=7.63 cfs 1.061 af    |
|   | nd Runoff Area=33,123 sf 15.76% Impervious Runoff Depth=4.26" Slope=0.0100 '/' Tc=33.1 min CN=76 Runoff=2.05 cfs 0.270 af  |
| Subcatchment 10S: Prop. to Street                     | Runoff Area=592 sf 83.11% Impervious Runoff Depth=6.29"<br>Tc=5.0 min CN=94 Runoff=0.09 cfs 0.007 af                       |
| Subcatchment E1: Exist. to Stream Flow Length=460'    | Runoff Area=243,161 sf 28.05% Impervious Runoff Depth=4.58" Slope=0.0100 '/' Tc=42.0 min CN=79 Runoff=14.37 cfs 2.133 af   |
| Subcatchment E2: Exist. To East                       | Runoff Area=148,590 sf 21.32% Impervious Runoff Depth=4.26" Flow Length=370' Tc=37.0 min CN=76 Runoff=8.70 cfs 1.210 af    |
| Subcatchment E3: Exist. To Street                     | Runoff Area=1,271 sf 37.21% Impervious Runoff Depth=5.03"<br>Tc=5.0 min CN=83 Runoff=0.17 cfs 0.012 af                     |
|   | orthRunoff Area=42,453 sf 19.69% Impervious Runoff Depth=4.37" 'Slope=0.0100'/' Tc=42.6 min CN=77 Runoff=2.37 cfs 0.355 af |
| Reach 1E: Exist. to Stream (DCP1)                     | Inflow=14.37 cfs 2.133 af<br>Outflow=14.37 cfs 2.133 af  |
| Reach 1P: Prop. to Stream (DCP1)                      | Inflow=13.76 cfs 1.875 af<br>Outflow=13.76 cfs 1.875 af  |
| Reach 2E: Exist East Wetland (DCP2)                   | Inflow=8.70 cfs 1.210 af   |

| Canaard | CT   | Dookland | DEV/  | 1 25 22 |
|---------|------|----------|-------|---------|
| Concord | SI - | Rockland | KEV ' | 1-25-22 |

Type III 24-hr 100 Year Event Rainfall=7.00"

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|                             |   | _   |
| Reach 2P: Prop. to East We  | etland (DCP2)   | Inflow=8.57 cfs 1.188 af                              |
|                             |   | Outflow=8.57 cfs 1.188 af                             |
| Reach 3E: Exist To Street ( | DCP3)   | Inflow=0.17 cfs 0.012 af                              |
|                             | •   | Outflow=0.17 cfs 0.012 af                             |
| Decel OD Due To Office      | (DODO)  | l-fl0 00 -f- 0 007 -f                                 |
| Reach 3P: Prop. To Street   | (DCP3)  | Inflow=0.09 cfs 0.007 af<br>Outflow=0.09 cfs 0.007 af |
|                             |   | Guillew 6.66 6.6 6.667 al                             |
| Reach 4E: Exist North Wet   | and (DCP4)  | Inflow=2.37 cfs 0.355 af                              |
|                             |   | Outflow=2.37 cfs 0.355 af                             |
| Reach 4P: Prop. to North V  | letland (DCP4)  | Inflow=2.05 cfs 0.270 af                              |
| riodon in Frioprio Horari   | (20. 1)   | Outflow=2.05 cfs 0.270 af                             |
| D 1-D 1411                  | D 1 EL 20   | 071 1 (1 4 0 5 6 0 0 4 0 6                            |
| Pond 7P: MH                 | Реак Elev=89.<br>15.0" Round Culvert n=0.011 L=60.0' S=0.0100 | 67' Inflow=4.35 cfs 0.310 af                          |
|                             | 10.0 Modifie Guiveit ii 0.011 E 00.0 C 0.0100                 | , Julion 1.00 010 0.010 ui                            |
| Pond 9P: CB 4               |   | 06' Inflow=2.43 cfs 0.174 af                          |
|                             | 12.0" Round Culvert n=0.011 L=22.0' S=0.0100                  | /' Outflow=2.43 cfs 0.174 af                          |
| Pond 10P: MH                | Peak Elev=89.1  | 4' Inflow=10.54 cfs 0.751 af                          |
|                             | 18.0" Round Culvert n=0.011 L=95.0' S=0.0142 '/'              |   |
| David 40D. MIL              | Dook Flour-04   | 201 Inflame C 20 etc. 0 440 et                        |
| Pond 12P: MH                | 15.0" Round Culvert n=0.011 L=240.0' S=0.0075                 | 30' Inflow=6.20 cfs 0.440 af                          |
|                             |   | ,   |
| Pond 13P: CB6               |   | 91' Inflow=2.93 cfs 0.209 af                          |
|                             | 12.0" Round Culvert n=0.011 L=62.0' S=0.0089                  | /' Outflow=2.93 cfs 0.209 at                          |
| Pond MH1: MH                | Peak Elev=88.   | 49' Inflow=2.27 cfs 0.166 af                          |
|                             | 12.0" Round Culvert n=0.011 L=40.0' S=0.0050                  | /' Outflow=2.27 cfs 0.166 af                          |
| Dand MU2: CB 2              | Dook Floy=90  | 92' Inflow=1.92 cfs 0.136 af                          |
| Pond MH2: CB 3              | 12.0" Round Culvert n=0.011 L=22.0' S=0.0100                  |   |
|                             |   |   |
| Pond MH3: CB5               |   | 07' Inflow=3.27 cfs 0.232 af                          |
|                             | 12.0" Round Culvert n=0.011 L=65.0' S=0.0085                  | / Outilow=3.27 cis 0.232 ai                           |
| Pond P1: POND 1 SC-310      | Peak Elev=88.42' Storage=1,462                                | 2 cf Inflow=2.27 cfs 0.166 af                         |
| С                           | Discarded=0.25 cfs 0.135 af Primary=0.80 cfs 0.031 a          | of Outflow=1.05 cfs 0.166 af                          |
| Pond P2: POND 2 SC-740      | Peak Elev=88.29' Storage=8,770                                | of Inflow=10.5/Lofe 0.751 of                          |
|                             | iscarded=0.82 cfs 0.576 af Primary=2.53 cfs 0.175 و           |   |
|                             | ·   |   |
| Pond R1: Pond1 Outlet - 12  |   | 96' Inflow=0.80 cfs 0.031 af                          |
|                             | 12.0" Round Culvert n=0.011 L=25.0' S=0.0120                  | / Outriow=0.80 cts 0.031 at                           |

Pond R4: Pond 2 Outlet - 12" RCP Peak Elev=85.94' Inflow=2.53 cfs 0.175 af 12.0" Round Culvert n=0.011 L=35.0' S=0.0143 '/' Outflow=2.53 cfs 0.175 af

Type III 24-hr 100 Year Event Rainfall=7.00"

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Ling Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 6.00 Inflow=0.23 cfs 0.014 af Area= 0.036 ac 100.00% Imperv. Primary=1.39 cfs 0.085 af

Link 2L: 1 100 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce Inflow=0.18 cfs 0.010 af Area= 0.028 ac 100.00% Imperv. Primary=0.18 cfs 0.010 af

Link Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce x 10.00 Inflow=0.23 cfs 0.014 af Area= 0.036 ac 100.00% Imperv. Primary=2.31 cfs 0.142 af

Link100 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce x 2.00 Inflow=0.18 cfs 0.010 af Area= 0.028 ac 100.00% Imperv. Primary=0.36 cfs 0.020 af

Total Runoff Area = 19.348 ac Runoff Volume = 7.503 af Average Runoff Depth = 4.65" 70.29% Pervious = 13.600 ac 29.71% Impervious = 5.748 ac HydroCAD® 10.00-24 s/n 01769 © 2018 HydroCAD Software Solutions LLC

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## **Summary for Subcatchment 1S: Prop. to Steam**

Runoff = 10.73 cfs @ 12.51 hrs, Volume= 1.538 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

|   | Α     | rea (sf) | CN E                             | escription   |            |  |  |  |  |  |
|---|-------|----------|----------------------------------|--------------|------------|--|--|--|--|--|
| * |       | 48,878   |                                  | •            |            |  |  |  |  |  |
|   |       | 77,137   | 74 >75% Grass cover, Good, HSG C |              |            |  |  |  |  |  |
| * |       | 4,305    |                                  | alls othe r  |            | ,  |  |  |  |  |
|   |       | 1,100    | 87 E                             |              |            |  |  |  |  |  |
|   |       | 18,844   | 70 V                             | Voods, Go    | od, HSG C  |  |  |  |  |  |
| * |       | 2,457    | 98 E                             | xisit,. Roo  | f          |  |  |  |  |  |
| * |       | 5,683    | 98 E                             | xisit. Pave  | ement      |  |  |  |  |  |
| * |       | 1,485    | 74 F                             | Prop. Patios | S          |  |  |  |  |  |
|   | 1     | 59,889   | 83 V                             | Veighted A   | verage     |  |  |  |  |  |
|   |       | 98,566   | 6                                | 1.65% Per    | vious Area |  |  |  |  |  |
|   |       | 61,323   | 3                                | 8.35% lmp    | ervious Ar | ea   |  |  |  |  |
|   |       |          |                                  |              |            |  |  |  |  |  |
|   | Тс    | Length   | Slope                            | Velocity     | Capacity   | Description                                |  |  |  |  |
|   | (min) | (feet)   | (ft/ft)                          | (ft/sec)     | (cfs)      |  |  |  |  |  |
|   | 28.3  | 50       | 0.0100                           | 0.03         |            | Sheet Flow,                                |  |  |  |  |
|   |       |          |                                  |              |            | Woods: Dense underbrush n= 0.800 P2= 3.20" |  |  |  |  |
|   | 1.7   | 50       | 0.0100                           | 0.50         |            | Shallow Concentrated Flow,                 |  |  |  |  |
|   |       |          |                                  |              |            | Woodland Kv= 5.0 fps                       |  |  |  |  |
|   | 0.7   | 30       | 0.0100                           | 0.70         |            | Shallow Concentrated Flow,                 |  |  |  |  |
|   |       |          |                                  |              |            | Short Grass Pasture Kv= 7.0 fps            |  |  |  |  |
|   | 3.7   | 110      | 0.0100                           | 0.50         |            | Shallow Concentrated Flow, shallow         |  |  |  |  |
|   |       |          |                                  |              |            | Woodland Kv= 5.0 fps                       |  |  |  |  |
|   | 3.9   | 790      | 0.0100                           | 3.35         | 20.11      | Channel Flow, Stream                       |  |  |  |  |
|   |       |          |                                  |              |            | Area= 6.0 sf Perim= 7.0' r= 0.86'          |  |  |  |  |
|   |       |          |                                  |              |            | n= 0.040 Earth, cobble bottom, clean sides |  |  |  |  |
|   | 38.3  | 1,030    | Total                            |              |            |  |  |  |  |  |

#### Summary for Subcatchment 3S: Prop to CB #3

Runoff = 1.92 cfs @ 12.07 hrs, Volume= 0.136 af, Depth= 5.37"

| <br>Area (sf) | CN | Description                   |  |  |  |
|---------------|----|-------------------------------|--|--|--|
| 6,841         | 98 | Paved parking, HSG C          |  |  |  |
| <br>6,421     | 74 | >75% Grass cover, Good, HSG C |  |  |  |
| 13,262        | 86 | Weighted Average              |  |  |  |
| 6,421         |    | 48.42% Pervious Area          |  |  |  |
| 6,841         |    | 51.58% Impervious Area        |  |  |  |

Type III 24-hr 100 Year Event Rainfall=7.00"

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|   | Тс    | Length | Slope   | Velocity | Capacity | Description          |
|---|-------|--------|---------|----------|----------|----------------------|
| ( | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    |                      |
|   | 5.0   | ·      | ·       | ·        | ·        | Direct Entry, DIRECT |

## **Summary for Subcatchment 4S: Prop to CB#4**

Runoff = 2.43 cfs @ 12.07 hrs, Volume= 0.174 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

|    | Area (sf | ) CN     | Description  |                               |                      |  |  |  |
|----|----------|----------|--------------|-------------------------------|----------------------|--|--|--|
| *  | 1,65     | 2 98     | Paved park   | ing, HSG C                    | C-Sidewalk           |  |  |  |
|    | 7,912    | 2 98     | Paved park   | ing, HSG (                    |                      |  |  |  |
|    | 6,70     | 6 74     | >75% Gras    | >75% Grass cover, Good, HSG C |                      |  |  |  |
|    | 16,270   | 0 88     | Weighted A   | Weighted Average              |                      |  |  |  |
|    | 6,70     | 6        | 41.22% Per   | rvious Area                   | a                    |  |  |  |
|    | 9,56     | 4        | 58.78% lmp   | pervious Ar                   | rea                  |  |  |  |
|    |          |          |              |                               |                      |  |  |  |
|    | Tc Leng  |          | ,            | Capacity                      | Description          |  |  |  |
| (m | in) (fee | et) (ft/ | ft) (ft/sec) | (cfs)                         |                      |  |  |  |
| ;  | 5.0      |          |              |                               | Direct Entry, DIRECT |  |  |  |

## Summary for Subcatchment 5S: Prop. to CB # 5

Runoff = 3.27 cfs @ 12.07 hrs, Volume= 0.232 af, Depth= 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

|   | Α    | rea (sf) | CN      | Description              |             |   |  |  |  |
|---|------|----------|---------|--------------------------|-------------|---|--|--|--|
| * |      | 466      | 98      | Paved park               | ing, HSG C  | C - Sidewalk                            |  |  |  |
| * |      | 10,390   | 98      | Paved park               | ing, HSG C  | C - rroad-drives                        |  |  |  |
|   |      | 11,712   | 74      | >75% Gras                | s cover, Go | ood, HSG C                              |  |  |  |
|   |      | 22,568   | 86      | Weighted Average         |             |   |  |  |  |
|   |      | 11,712   |         | 51.90% Pe                | rvious Area | a e e e e e e e e e e e e e e e e e e e |  |  |  |
|   |      | 10,856   |         | 48.10% lm <mark>լ</mark> | pervious Ar | rea                                     |  |  |  |
|   |      |          |         |                          |             |   |  |  |  |
|   | Tc   | Length   | Slope   | ,                        | Capacity    | Description                             |  |  |  |
| ( | min) | (feet)   | (ft/ft) | (ft/sec)                 | (cfs)       |   |  |  |  |
|   | 5.0  |          |         |                          |             | Direct Entry,                           |  |  |  |

## Summary for Subcatchment 6S: Prop. to CB # 6

Runoff = 2.93 cfs @ 12.07 hrs, Volume= 0.209 af, Depth= 5.48"

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|   | Area (sf)    | CN    | Description  |                  |                  |  |  |  |
|---|--------------|-------|--------------|------------------|------------------|--|--|--|
| * | 959          | 98    | Paved park   | ing, HSG C       | C - Sidewalk     |  |  |  |
| * | 9,836        | 98    | Paved park   | ing, HSG (       | C - rroad-drives |  |  |  |
|   | 9,122        | 74    | >75% Gras    | s cover, Go      | ood, HSG C       |  |  |  |
|   | 19,917       | 87    | Weighted A   | Weighted Average |                  |  |  |  |
|   | 9,122        |       | 45.80% Per   | vious Area       | a                |  |  |  |
|   | 10,795       |       | 54.20% lmp   | pervious Ar      | rea              |  |  |  |
|   | T. 1         | 01    |              | 0                | December 6       |  |  |  |
| , | Tc Length    | Slop  | ,            | Capacity         | Description      |  |  |  |
| ( | (min) (feet) | (ft/1 | ft) (ft/sec) | (cfs)            |                  |  |  |  |
|   | 5.0          |       |              |                  | Direct Entry,    |  |  |  |

## Summary for Subcatchment 7S: Prop. to Pond 1

Runoff = 2.27 cfs @ 12.07 hrs, Volume= 0.166 af, Depth= 5.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| A     | rea (sf) | CN     | Description            |             |                      |  |  |
|-------|----------|--------|------------------------|-------------|----------------------|--|--|
|       | 10,533   | 98     | Paved park             | ing, HSG C  |                      |  |  |
|       | 4,098    | 74     | >75% Gras              | s cover, Go | ood, HSG C           |  |  |
|       | 14,631   | 91     | Weighted Average       |             |                      |  |  |
|       | 4,098    |        | 28.01% Pervious Area   |             |                      |  |  |
|       | 10,533   |        | 71.99% Impervious Area |             |                      |  |  |
| _     |          | 01     |                        | 0 "         |                      |  |  |
| Tc    | Length   | Slope  | ,                      | Capacity    | Description          |  |  |
| (min) | (feet)   | (ft/ft | ) (ft/sec)             | (cfs)       |                      |  |  |
| 5.0   |          |        |                        |             | Direct Entry, DIRECT |  |  |

## Summary for Subcatchment 8S: Prop. to East Wetland

Runoff = 7.63 cfs @ 12.50 hrs, Volume= 1.061 af, Depth= 4.37"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 25,672    | 98 | Water Surface Wetlands, HSG C |
|   | 40,951    | 74 | >75% Grass cover, Good, HSG C |
|   | 58,938    | 70 | Woods, Good, HSG C            |
| * | 1,155     | 74 | Patio                         |
| * | 377       | 98 | ret wall                      |
|   | 127,093   | 77 | Weighted Average              |
|   | 101,044   |    | 79.50% Pervious Area          |
|   | 26,049    |    | 20.50% Impervious Area        |

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|   | Tc    | Length | Slope   | Velocity | Capacity | Description                                |
|---|-------|--------|---------|----------|----------|--|
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    | ·  |
|   | 28.3  | 50     | 0.0100  | 0.03     |          | Sheet Flow,                                |
|   |       |        |         |          |          | Woods: Dense underbrush n= 0.800 P2= 3.20" |
|   | 8.7   | 320    | 0.0150  | 0.61     |          | Shallow Concentrated Flow, shallow         |
|   |       |        |         |          |          | Woodland Kv= 5.0 fps                       |
|   | 37.0  | 370    | Total   |          |          |  |

## Summary for Subcatchment 9S: Prop. to North Wetland

Runoff = 2.05 cfs @ 12.47 hrs, Volume= 0.270 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

|    | Α    | rea (sf) | CN      | Description                     |                |  |  |
|----|------|----------|---------|---------------------------------|----------------|--|--|
| *  |      | 906      | 98      | 8 Water Surface Wetlands, HSG C |                |  |  |
|    |      | 2,744    | 98      | Paved park                      | ing, HSG C     |  |  |
|    |      | 16,242   | 74      | >75% Ġras                       | s cover, Go    | ood, HSG C                                 |  |
|    |      | 1,286    | 98      | Roofs, HSC                      | G C - infiltra | ted  |  |
| *  |      | 283      | 98      | walls othe r                    | imp.           |  |  |
|    |      | 11,662   | 70      | Woods, Go                       | od, HSG C      |  |  |
|    |      | 33,123   | 76      | Weighted A                      | verage         |  |  |
|    |      | 27,904   |         | 84.24% Pe                       | rvious Area    |  |  |
|    |      | 5,219    |         | 15.76% Imp                      | pervious Are   | ea   |  |
|    |      |          |         |                                 |                |  |  |
|    | Тс   | Length   | Slope   | <ul><li>Velocity</li></ul>      | Capacity       | Description                                |  |
| (n | nin) | (feet)   | (ft/ft) | (ft/sec)                        | (cfs)          |  |  |
| 2  | 28.3 | 50       | 0.0100  | 0.03                            |                | Sheet Flow, Sheet                          |  |
|    |      |          |         |                                 |                | Woods: Dense underbrush n= 0.800 P2= 3.20" |  |
|    | 4.8  | 430      | 0.0100  | 1.50                            |                | Shallow Concentrated Flow, shallow         |  |
|    |      |          |         |                                 |                | Grassed Waterway Kv= 15.0 fps              |  |
| 3  | 33.1 | 480      | Total   |                                 |                |  |  |

## Summary for Subcatchment 10S: Prop. to Street

Runoff = 0.09 cfs @ 12.07 hrs, Volume= 0.007 af, Depth= 6.29"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 492       | 98 | Paved parking, HSG C          |
| 100       | 74 | >75% Grass cover, Good, HSG C |
| 592       | 94 | Weighted Average              |
| 100       |    | 16.89% Pervious Area          |
| 492       |    | 83.11% Impervious Area        |

Type III 24-hr 100 Year Event Rainfall=7.00"

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

# Summary for Subcatchment E1: Exist. to Stream

Runoff = 14.37 cfs @ 12.56 hrs, Volume= 2.133 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

|   | Α     | rea (sf) | CN I                  | Description   |             |  |
|---|-------|----------|-----------------------|---------------|-------------|--|
| * |       | 48,977   | 98 \                  | Nater Surfa   | ace Wetlan  | ds, HSG C                                  |
|   |       | 11,952   | 98 I                  | Paved park    | ing, HSG C  |  |
|   |       | 34,335   | 74                    | >75% Gras     | s cover, Go | ood, HSG C                                 |
|   |       | 2,457    | 98 I                  | Roofs, HSG    | S C         |  |
| * |       | 4,820    | 98 v                  | walls othe r  | imp.        |  |
|   |       | 8,801    |                       | Dirt roads, l |             |  |
| _ | 1     | 31,819   | 70 \                  | Noods, Go     | od, HSG C   |  |
|   | 2     | 243,161  | 79 \                  | Neighted A    | verage      |  |
|   | 1     | 74,955   |                       | 71.95% Pei    | rvious Area |  |
|   |       | 68,206   | 28.05% Impervious Are |               |             | ea   |
|   |       |          |                       |               |             |  |
|   | Тс    | Length   | Slope                 |               | Capacity    | Description                                |
| _ | (min) | (feet)   | (ft/ft)               | (ft/sec)      | (cfs)       |  |
|   | 28.3  | 50       | 0.0100                | 0.03          |             | Sheet Flow, Sheet                          |
|   |       |          |                       |               |             | Woods: Dense underbrush n= 0.800 P2= 3.20" |
|   | 13.7  | 410      | 0.0100                | 0.50          |             | Shallow Concentrated Flow, shallow - woods |
| _ |       |          |                       |               |             | Woodland Kv= 5.0 fps                       |
|   | 42.0  | 460      | Total                 |               |             |  |

## Summary for Subcatchment E2: Exist. To East Weltands

Runoff = 8.70 cfs @ 12.50 hrs, Volume= 1.210 af, Depth= 4.26"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 25,672    | 98 | Water Surface Wetlands, HSG C |
|   | 5,792     | 98 | Paved parking, HSG C          |
|   | 9,907     | 74 | >75% Grass cover, Good, HSG C |
| * | 217       | 98 | walls othe rimp.              |
|   | 107,002   | 70 | Woods, Good, HSG C            |
|   | 148,590   | 76 | Weighted Average              |
|   | 116,909   |    | 78.68% Pervious Area          |
|   | 31,681    |    | 21.32% Impervious Area        |

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|   | Tc    | Length | Slope   | Velocity | Capacity | Description                                |
|---|-------|--------|---------|----------|----------|--|
| _ | (min) | (feet) | (ft/ft) | (ft/sec) | (cfs)    |  |
|   | 28.3  | 50     | 0.0100  | 0.03     |          | Sheet Flow, Sheet                          |
|   |       |        |         |          |          | Woods: Dense underbrush n= 0.800 P2= 3.20" |
|   | 8.7   | 320    | 0.0150  | 0.61     |          | Shallow Concentrated Flow, shallow - woods |
|   |       |        |         |          |          | Woodland Kv= 5.0 fps                       |
|   | 37.0  | 370    | Total   |          |          |  |

## **Summary for Subcatchment E3: Exist. To Street**

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Type III 24-hr 100 Year Event Rainfall=7.00"

| A     | rea (sf) | CN      | Description            |                               |               |  |  |  |
|-------|----------|---------|------------------------|-------------------------------|---------------|--|--|--|
|       | 473      | 98      | Paved park             | ing, HSG C                    | C             |  |  |  |
|       | 798      | 74      | >75% Ġras              | >75% Grass cover, Good, HSG C |               |  |  |  |
|       | 1,271    | 83      | Weighted Average       |                               |               |  |  |  |
|       | 798      |         | 62.79% Per             | vious Area                    | a             |  |  |  |
|       | 473      |         | 37.21% Impervious Area |                               |               |  |  |  |
| Tc    | Length   | Slope   | ,                      | Capacity                      | ·             |  |  |  |
| (min) | (feet)   | (ft/ft) | (ft/sec)               | (cfs)                         |               |  |  |  |
| 5.0   |          |         |                        |                               | Direct Entry, |  |  |  |

## Summary for Subcatchment E4: Exist. to Wetlands North

Runoff = 2.37 cfs @ 12.59 hrs, Volume= 0.355 af, Depth= 4.37"

|   | Area (sf) | CN | Description                   |
|---|-----------|----|-------------------------------|
| * | 907       | 98 | Water Surface Wetlands, HSG C |
|   | 5,644     | 98 | Paved parking, HSG C          |
|   | 12,783    | 74 | >75% Grass cover, Good, HSG C |
| * | 520       | 98 | walls othe rimp.              |
|   | 21,313    | 70 | Woods, Good, HSG C            |
|   | 1,286     | 98 | Roofs, HSG C                  |
|   | 42,453    | 77 | Weighted Average              |
|   | 34,096    |    | 80.31% Pervious Area          |
|   | 8,357     |    | 19.69% Impervious Area        |

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|   | Tc<br>(min) | Length (feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity (cfs) | Description  |
|---|-------------|---------------|------------------|----------------------|----------------|--|
| Ī | 28.3        | 50            | 0.0100           | 0.03                 |                | Sheet Flow, Sheet  |
|   | 14.3        | 430           | 0.0100           | 0.50                 |                | Woods: Dense underbrush n= 0.800 P2= 3.20"  Shallow Concentrated Flow, shallow - woods |
| - | 42.6        | 480           | Total            |                      |                | Woodland Kv= 5.0 fps   |

## **Summary for Reach 1E: Exist. to Stream (DCP1)**

Inflow Area = 5.582 ac, 28.05% Impervious, Inflow Depth = 4.58" for 100 Year Event event

Inflow = 14.37 cfs @ 12.56 hrs, Volume= 2.133 af

Outflow = 14.37 cfs @ 12.56 hrs, Volume= 2.133 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## **Summary for Reach 1P: Prop. to Stream (DCP1)**

Inflow Area = 5.387 ac, 43.52% Impervious, Inflow Depth = 4.18" for 100 Year Event event

Inflow = 13.76 cfs @ 12.47 hrs, Volume= 1.875 af

Outflow = 13.76 cfs @ 12.47 hrs, Volume= 1.875 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# **Summary for Reach 2E: Exist East Wetland (DCP2)**

Inflow Area = 3.411 ac, 21.32% Impervious, Inflow Depth = 4.26" for 100 Year Event event

Inflow = 8.70 cfs @ 12.50 hrs, Volume= 1.210 af

Outflow = 8.70 cfs @ 12.50 hrs, Volume= 1.210 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# Summary for Reach 2P: Prop. to East Wetland (DCP2)

Inflow Area = 3.317 ac, 27.22% Impervious, Inflow Depth = 4.30" for 100 Year Event event

Inflow = 8.57 cfs @ 12.46 hrs, Volume= 1.188 af

Outflow = 8.57 cfs @ 12.46 hrs, Volume= 1.188 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# **Summary for Reach 3E: Exist To Street (DCP3)**

Inflow Area = 0.029 ac, 37.21% Impervious, Inflow Depth = 5.03" for 100 Year Event event

Inflow = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af

Outflow = 0.17 cfs @ 12.07 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

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## Summary for Reach 3P: Prop. To Street (DCP3)

Inflow Area = 0.014 ac, 83.11% Impervious, Inflow Depth = 6.29" for 100 Year Event event

Inflow = 0.09 cfs @ 12.07 hrs, Volume= 0.007 af

Outflow = 0.09 cfs @ 12.07 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Summary for Reach 4E: Exist North Wetland (DCP4)

Inflow Area = 0.975 ac, 19.69% Impervious, Inflow Depth = 4.37" for 100 Year Event event

Inflow = 2.37 cfs @ 12.59 hrs, Volume= 0.355 af

Outflow = 2.37 cfs @ 12.59 hrs, Volume= 0.355 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Summary for Reach 4P: Prop. to North Wetland (DCP4)

Inflow Area = 0.760 ac, 15.76% Impervious, Inflow Depth = 4.26" for 100 Year Event event

Inflow = 2.05 cfs @ 12.47 hrs, Volume= 0.270 af

Outflow = 2.05 cfs @ 12.47 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## **Summary for Pond 7P: MH**

Inflow Area = 0.678 ac, 55.55% Impervious, Inflow Depth = 5.49" for 100 Year Event event

Inflow = 4.35 cfs @ 12.07 hrs, Volume= 0.310 af

Outflow = 4.35 cfs @ 12.07 hrs, Volume= 0.310 af, Atten= 0%, Lag= 0.0 min

Primary = 4.35 cfs @ 12.07 hrs, Volume= 0.310 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 89.67' @ 12.08 hrs

Primary OutFlow Max=4.23 cfs @ 12.07 hrs HW=89.64' TW=89.13' (Dynamic Tailwater) 1=Culvert (Inlet Controls 4.23 cfs @ 3.45 fps)

# **Summary for Pond 9P: CB 4**

Inflow Area = 0.374 ac, 58.78% Impervious, Inflow Depth = 5.59" for 100 Year Event event

Inflow = 2.43 cfs @ 12.07 hrs, Volume= 0.174 af

Outflow = 2.43 cfs @ 12.07 hrs, Volume= 0.174 af, Atten= 0%, Lag= 0.0 min

Primary = 2.43 cfs @ 12.07 hrs, Volume= 0.174 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

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Peak Elev= 90.06' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.67' | <b>12.0" Round Culvert</b> L= 22.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=2.13 cfs @ 12.07 hrs HW=89.96' TW=89.64' (Dynamic Tailwater) 1=Culvert (Inlet Controls 2.13 cfs @ 2.71 fps)

## **Summary for Pond 10P: MH**

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 5.45" for 100 Year Event event

Inflow = 10.54 cfs @ 12.07 hrs, Volume= 0.751 af

Outflow = 10.54 cfs @ 12.07 hrs, Volume= 0.751 af, Atten= 0%, Lag= 0.0 min

Primary = 10.54 cfs @ 12.07 hrs, Volume= 0.751 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 89.14' @ 12.07 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 86.85' | <b>18.0" Round Culvert</b> L= 95.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 86.85' / 85.50' S= 0.0142 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf   |

Primary OutFlow Max=10.53 cfs @ 12.07 hrs HW=89.13' TW=86.96' (Dynamic Tailwater) 1=Culvert (Inlet Controls 10.53 cfs @ 5.96 fps)

## **Summary for Pond 12P: MH**

Inflow Area = 0.975 ac, 50.96% Impervious, Inflow Depth = 5.42" for 100 Year Event event

Inflow = 6.20 cfs @ 12.07 hrs, Volume= 0.440 af

Outflow = 6.20 cfs @ 12.07 hrs, Volume= 0.440 af, Atten= 0%, Lag= 0.0 min

Primary = 6.20 cfs @ 12.07 hrs, Volume= 0.440 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 91.30' @ 12.08 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 88.65' | <b>15.0" Round Culvert</b> L= 240.0' Ke= 0.500 Inlet / Outlet Invert= 88.65' / 86.85' S= 0.0075 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf |

Primary OutFlow Max=6.15 cfs @ 12.07 hrs HW=91.28' TW=89.13' (Dynamic Tailwater) 1=Culvert (Outlet Controls 6.15 cfs @ 5.01 fps)

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#### **Summary for Pond 13P: CB6**

Inflow Area = 0.457 ac, 54.20% Impervious, Inflow Depth = 5.48" for 100 Year Event event

Inflow = 2.93 cfs @ 12.07 hrs, Volume= 0.209 af

Outflow = 2.93 cfs @ 12.07 hrs, Volume= 0.209 af, Atten= 0%, Lag= 0.0 min

Primary = 2.93 cfs @ 12.07 hrs, Volume= 0.209 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 91.91' @ 12.08 hrs

 Device
 Routing
 Invert
 Outlet Devices

 #1
 Primary
 89.20'
 12.0" Round Culvert L= 62.0' Ke= 0.500 Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0089 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=2.62 cfs @ 12.07 hrs HW=91.78' TW=91.28' (Dynamic Tailwater) 1=Culvert (Outlet Controls 2.62 cfs @ 3.34 fps)

## **Summary for Pond MH1: MH**

Inflow Area = 0.336 ac, 71.99% Impervious, Inflow Depth = 5.94" for 100 Year Event event

Inflow = 2.27 cfs @ 12.07 hrs, Volume= 0.166 af

Outflow = 2.27 cfs @ 12.07 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min

Primary = 2.27 cfs @ 12.07 hrs, Volume= 0.166 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 88.49' @ 12.21 hrs

Flood Elev= 89.00'

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.00' | <b>12.0" Round Culvert</b> L= 40.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 87.00' / 86.80' S= 0.0050 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=2.01 cfs @ 12.07 hrs HW=88.14' TW=87.85' (Dynamic Tailwater) 1=Culvert (Inlet Controls 2.01 cfs @ 2.56 fps)

## **Summary for Pond MH2: CB 3**

Inflow Area = 0.304 ac, 51.58% Impervious, Inflow Depth = 5.37" for 100 Year Event event

Inflow = 1.92 cfs @ 12.07 hrs, Volume= 0.136 af

Outflow = 1.92 cfs @ 12.07 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min

Primary = 1.92 cfs @ 12.07 hrs, Volume= 0.136 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 89.92' @ 12.09 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 87.67' | <b>12.0" Round Culvert</b> L= 22.0' Ke= 0.500                  |
|        | _       |        | Inlet / Outlet Invert= 87.67' / 87.45' S= 0.0100 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

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Primary OutFlow Max=1.54 cfs @ 12.07 hrs HW=89.81' TW=89.64' (Dynamic Tailwater) 1=Culvert (Inlet Controls 1.54 cfs @ 1.96 fps)

## **Summary for Pond MH3: CB5**

Inflow Area = 0.518 ac, 48.10% Impervious, Inflow Depth = 5.37" for 100 Year Event event

Inflow = 3.27 cfs @ 12.07 hrs, Volume= 0.232 af

Outflow = 3.27 cfs @ 12.07 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min

Primary = 3.27 cfs @, 12.07 hrs, Volume = 0.232 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 92.07' @ 12.08 hrs

 Device
 Routing
 Invert
 Outlet Devices

 #1
 Primary
 89.20'
 12.0" Round Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 89.20' / 88.65' S= 0.0085 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=3.01 cfs @ 12.07 hrs HW=91.95' TW=91.28' (Dynamic Tailwater) 1=Culvert (Outlet Controls 3.01 cfs @ 3.83 fps)

## **Summary for Pond P1: POND 1 SC-310**

| Inflow Area = | 0.336 ac, 71.99% Impervious, Inflow Depth = 5.94" for 100 Year Event event |
|---------------|--|
| Inflow =      | 2.27 cfs @ 12.07 hrs, Volume= 0.166 af                                     |
| Outflow =     | 1.05 cfs @ 12.22 hrs, Volume= 0.166 af, Atten= 54%, Lag= 8.8 min           |
| Discarded =   | 0.25 cfs @ 11.63 hrs, Volume= 0.135 af                                     |
| Primary =     | 0.80 cfs @ 12.22 hrs, Volume= 0.031 af                                     |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 88.42' @ 12.22 hrs Surf.Area= 1,330 sf Storage= 1,462 cf

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

Center-of-Mass det. time= 19.7 min (795.1 - 775.5)

| Volume    | Invert | Avail.S | torage | Storage Description | on                   |   |       |
|-----------|--------|---------|--------|---------------------|----------------------|---|-------|
| #1        | 86.50' |         | 929 cf | Custom Stage Da     | ata (Irregular) List | ed below (Recalc)                             |       |
|           |        |         |        | 3,059 cf Overall -  | 737 cf Embedded      | $= 2,322 \text{ cf } \times 40.0\% \text{ V}$ | /oids |
| #2        | 87.00' |         | 737 cf | ADS_StormTech       | -                    |   |       |
|           |        |         |        | _                   |                      | 2.07  sf x  7.12'L = 14.                      |       |
|           |        |         |        |                     |                      | 56'L with 0.44' Overlap                       | )     |
|           |        |         |        | 50 Chambers in 5    | Rows                 |   |       |
|           |        | 1,      | 666 cf | Total Available St  | orage                |   |       |
|           |        |         |        |                     |                      |   |       |
| Elevation | Surf./ | Area    | Perim. | Inc.Store           | Cum.Store            | Wet.Area                                      |       |
| (feet)    | (s     | sq-ft)  | (feet) | (cubic-feet)        | (cubic-feet)         | (sq-ft)                                       |       |
| 86.50     | 1      | ,330    | 187.0  | 0                   | 0                    | 1,330   |       |
| 88.80     | 1      | .330    | 187.0  | 3,059               | 3,059                | 1,760   |       |

Type III 24-hr 100 Year Event Rainfall=7.00"

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| Device | Routing   | Invert | Outlet Devices             |           |                                   |
|--------|-----------|--------|----------------------------|-----------|-----------------------------------|
| #1     | Primary   | 87.70' | 6.0" Horiz. Orifice/Grate  | C= 0.600  | Limited to weir flow at low heads |
| #2     | Discarded | 86.50' | 0.25 cfs Exfiltration when | above 86. | 50'                               |

**Discarded OutFlow** Max=0.25 cfs @ 11.63 hrs HW=86.52' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.80 cfs @ 12.22 hrs HW=88.42' TW=86.96' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 0.80 cfs @ 4.08 fps)

#### **Summary for Pond P2: POND 2 SC-740**

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 5.45" for 100 Year Event event 10.54 cfs @ 12.07 hrs, Volume= 0.751 af Outflow = 3.35 cfs @ 12.36 hrs, Volume= 0.751 af, Atten= 68%, Lag= 17.4 min 0.82 cfs @ 11.49 hrs, Volume= 0.576 af Primary = 2.53 cfs @ 12.36 hrs, Volume= 0.175 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs Peak Elev= 88.29' @ 12.36 hrs Surf.Area= 4,300 sf Storage= 8,770 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow) Center-of-Mass det. time= 37.6 min ( 826.8 - 789.2 )

| Volume    | Invert    | Avail   | l.Storage        | Storage Description     | n   |                                     |  |  |  |
|-----------|-----------|---------|------------------|-------------------------|---|-------------------------------------|--|--|--|
| #1        | 85.00'    |         | 3,944 cf         | <b>Custom Stage Dat</b> | a (Irregular) Liste                       | d below (Recalc)                    |  |  |  |
|           |           |         |                  | •                       | •   | $ed = 9,859 cf \times 40.0\% Voids$ |  |  |  |
| #2        | 85.50'    |         | 5,191 cf         |                         | ADS_StormTech SC-740 +Cap x 113 Inside #1 |                                     |  |  |  |
|           |           |         |                  | Effective Size= 44.     | 6"W x 30.0"H => 6                         | 6.45 sf x 7.12'L = 45.9 cf          |  |  |  |
|           |           |         |                  | Overall Size= 51.0'     | 'W x 30.0"H x 7.56                        | 6'L with 0.44' Overlap              |  |  |  |
|           |           |         |                  | 113 Chambers in 1       | 2 Rows                                    | ·                                   |  |  |  |
|           |           |         | 9,135 cf         | Total Available Sto     | rage                                      |                                     |  |  |  |
| Elevation | on Su     | rf.Area | Perim.           | Inc.Store               | Cum.Store                                 | Wet.Area                            |  |  |  |
| (fee      |           | (sq-ft) | (feet)           | (cubic-feet)            | (cubic-feet)                              | (sq-ft)                             |  |  |  |
| 85.0      | 00        | 4,300   | 328.0            | 0                       | 0   | 4,300                               |  |  |  |
| 88.5      | 50        | 4,300   | 328.0            | 15,050                  | 15,050                                    | 5,448                               |  |  |  |
| D         | D tim     | 1       |                  | A.D. day                |   |                                     |  |  |  |
| Device    | Routing   | Inv     | vert Outle       | et Devices              |   |                                     |  |  |  |
| #1        | Primary   |         |                  | Vert. Orifice/Grate     | C= 0.600                                  |                                     |  |  |  |
| #2        | Discarded | 85.     | .00' <b>0.82</b> | cfs Exfiltration who    | en above 85.00'                           |                                     |  |  |  |

**Discarded OutFlow** Max=0.82 cfs @ 11.49 hrs HW=85.04' (Free Discharge) **2=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=2.53 cfs @ 12.36 hrs HW=88.29' TW=85.94' (Dynamic Tailwater) 1=Orifice/Grate (Orifice Controls 2.53 cfs @ 5.72 fps)

Type III 24-hr 100 Year Event Rainfall=7.00"

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## Summary for Pond R1: Pond1 Outlet - 12" RCP

Inflow Area = 0.336 ac, 71.99% Impervious, Inflow Depth = 1.11" for 100 Year Event event

Inflow = 0.80 cfs @ 12.22 hrs, Volume= 0.031 af

Outflow = 0.80 cfs @ 12.22 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Primary = 0.80 cfs @ 12.22 hrs, Volume= 0.031 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 86.96' @ 12.22 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 86.50' | <b>12.0"</b> Round Culvert L= 25.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 86.50' / 86.20' S= 0.0120 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf |

Primary OutFlow Max=0.80 cfs @ 12.22 hrs HW=86.96' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 0.80 cfs @ 2.30 fps)

## Summary for Pond R4: Pond 2 Outlet - 12" RCP

Inflow Area = 1.653 ac, 52.84% Impervious, Inflow Depth = 1.27" for 100 Year Event event

Inflow = 2.53 cfs @ 12.36 hrs, Volume= 0.175 af

Outflow = 2.53 cfs @ 12.36 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.0 min

Primary = 2.53 cfs @ 12.36 hrs, Volume= 0.175 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

Peak Elev= 85.94' @ 12.36 hrs

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 85.00' | <b>12.0" Round Culvert</b> L= 35.0' Ke= 0.500                  |
|        |         |        | Inlet / Outlet Invert= 85.00' / 84.50' S= 0.0143 '/' Cc= 0.900 |
|        |         |        | n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf   |

Primary OutFlow Max=2.53 cfs @ 12.36 hrs HW=85.94' TW=0.00' (Dynamic Tailwater) 1=Culvert (Inlet Controls 2.53 cfs @ 3.30 fps)

## Summary for Link 1L: 6- 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 4.80" for 100 Year Event event

Inflow = 0.23 cfs @ 12.10 hrs, Volume= 0.014 af

Primary = 1.39 cfs @ 12.10 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 6.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

100 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

Type III 24-hr 100 Year Event Rainfall=7.00"

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## Summary for Link 2L: 1 - 1200 House

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 4.27" for 100 Year Event event

Inflow = 0.18 cfs @ 12.10 hrs, Volume= 0.010 af

Primary = 0.18 cfs @ 12.10 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

100 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce

## Summary for Link 3L: 10 - 1550 Houses

Inflow Area = 0.036 ac,100.00% Impervious, Inflow Depth = 4.80" for 100 Year Event event

Inflow = 0.23 cfs @ 12.10 hrs, Volume= 0.014 af

Primary = 2.31 cfs @ 12.10 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 10.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

100 Year Event Outflow Imported from 1 house with inf. 1550~Reach 2R.hce

## Summary for Link 4L: 2 - 1200 House

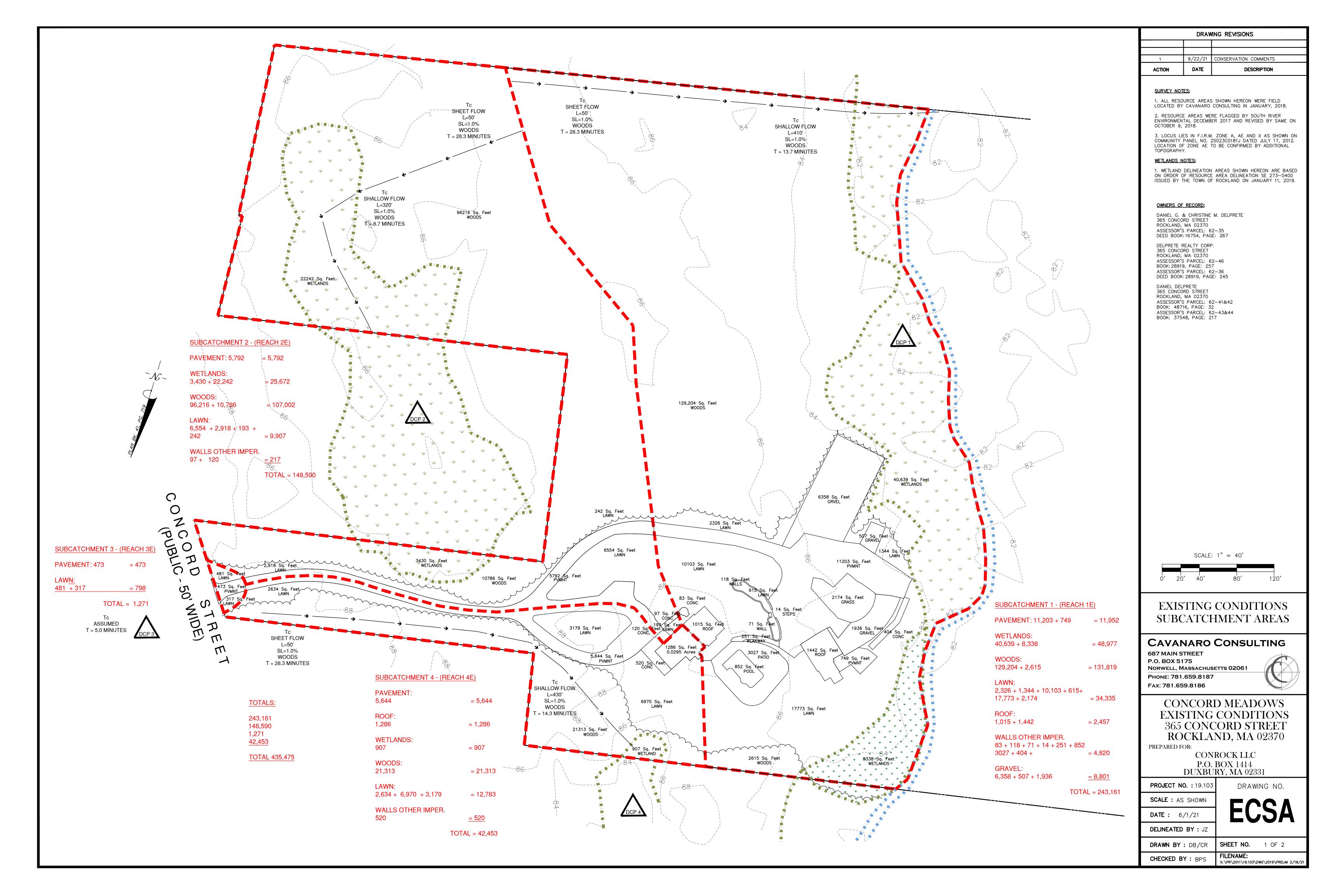
Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth = 4.27" for 100 Year Event event

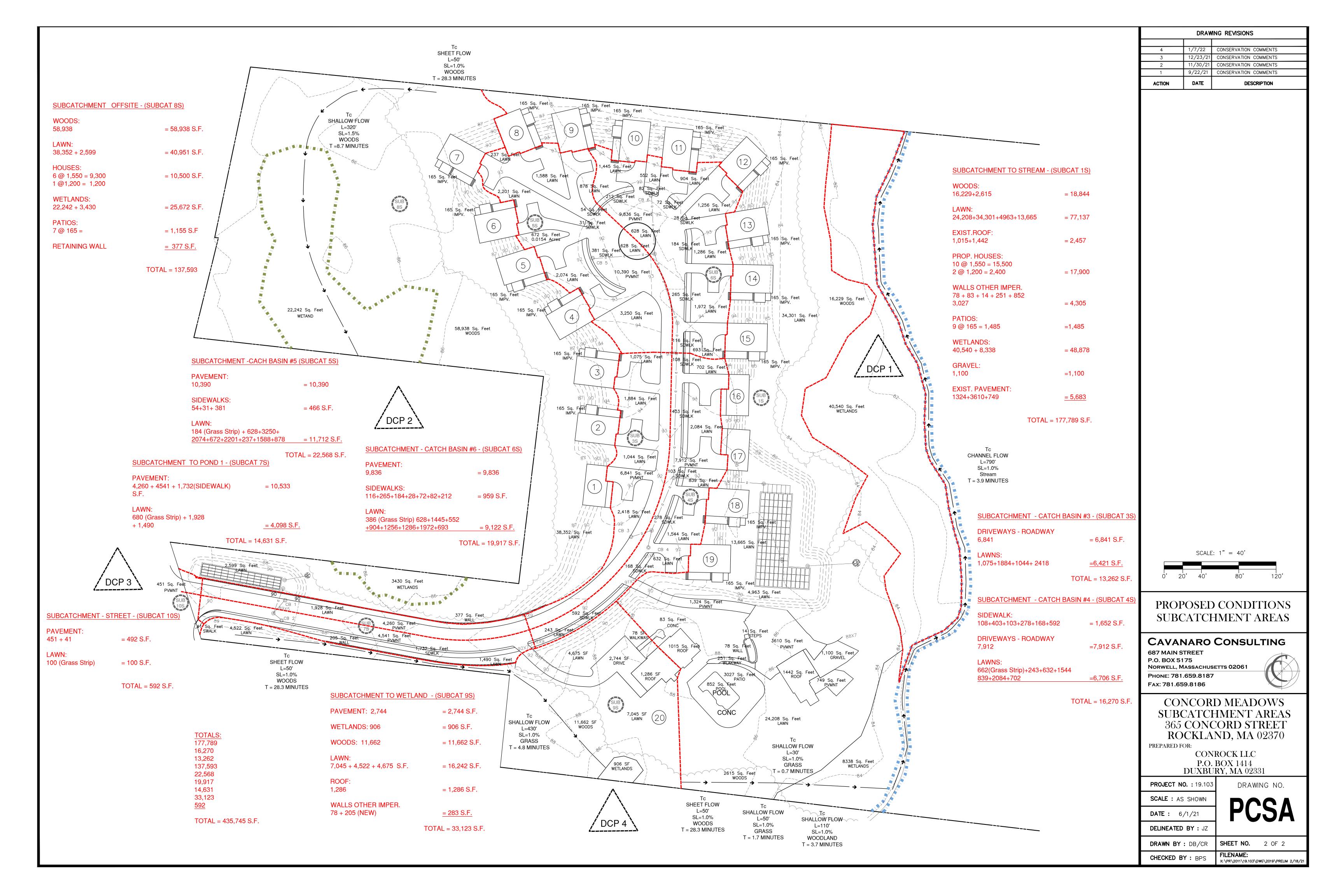
Inflow = 0.18 cfs @ 12.10 hrs, Volume= 0.010 af

Primary = 0.36 cfs @ 12.10 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow x 2.00, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

100 Year Event Outflow Imported from 1 house w inf. 1200~Reach 2R.hce





# **SECTION V**

PROJECT PLANS See Attached