Conceptual Hydrologic and Hydraulic Analysis for the Woods at West Mountain PRD

59 West Mountain Road
Queensbury NY, 12804

June 3, 2025

Prepared For:
West Mountain Development Partners, LLC and Mountain Top Ventures, LLC
59 West Mountain Road
Queensbury, NY 12804

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74 Warren Street
Saratoga Springs, NY 12866

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Appendices

Project Description

The Woods at West Mountain is a proposed destination resort that will offer year-round residential activities and accommodations for vacationers as well as the potential for year-round occupancy by residents. The resort focus is on skiing and winter recreation, however, activities including those currently existing at West Mountain Ski Area and additional ones planned at the resort will offer year-round attractions, living accommodations and services.

In concept, the proposed Woods at West Mountain will function as an adjunct facility to the existing West Mountain Ski Area. The existing base lodge, parking, ski lifts and trails, tubing hill, ropes course and mountain biking facility will continue use as the primary attraction. The West Mountain School and West Mountain Racing Club will continue to operate and grow as a Nationally Competitive Alpine Ski Racing Academy as well as continuing to host and grow ski racing events including but not limited to USSA, High School, Masters, Collegiate, Club, and International FIS races. West Mountain's robust after school ski programs, lessons and rentals will continue to thrive and expand, offering these opportunities to approximately 1,600 children. West Mountain will also continue to be a flexible day and night skiing venue for recreational skiers of all ages.

The proposed Woods at West Mountain will offer an alpine village experience with amenities as well as extended stay accommodations and services. As such, it will promote a relaxed atmosphere including access to the existing ski trails and related recreational facilities. The resort is also expected to attract permanent residents who may desire to live in a resort/recreational community, including local residents looking to downsize.

Major components of the resort include the "Base Area Alpine Village," "Townhouse Development," "Hotel/ Banquet Facility/Spa Complex/Athletic Club," "Day-Use Lodge Area," and "Single-Family Home Development."

This report was prepared to provide a high-level overview of how stormwater generated by the proposed development will be attenuated and treated in accordance with the New York State Department of Environmental Conservation GP-0-25-001. As detailed planning and construction documents are developed throughout the zoning change procedure, this conceptual Stormwater Plan will be further refined. This report is based on the on-site soil investigation results and the current PRD application under review by the Town of Queensbury. As such, actual elevations, slopes, and sizes of the proposed stormwater management system components are not final and are subject to change as the project design progresses. For the purposes of this report, design elevations were set only to provide a positive hydraulic gradient to the final outlet and are in no way representative of the actual elevations of the site. Detailed Construction Documents will be developed as the project continues through the Planned Resort Development process with the Town of Queensbury.

Stormwater Management Practices were conceptually designed for each of the aforementioned development components, with the understanding that individual Stormwater Management Plans will be prepared to treat runoff generated from the house structures for each of the 15 single-family lots.

Description Of Existing Site

The proposed Planned Resort Development (PRD) is located at 59 West Mountain Road, in the Town Queensbury, NY. The site slopes from west to east towards West Mountain Road at various slopes. The slopes >15% are primarily located within the ski trail areas, while the lower portions of the site become more level as it becomes closer to West Mountain Road. A small stream (No. 941-397) is located near the eastern property line, traversing from North to South. The stream is a class C(T) waterbody and regulated by the DEC. There is an existing pond which is classified as an "isolated wetland" per the USACE criteria. As such, it is not federally regulated. The pond is also less than 7.4 acres in size and is not unique, therefore it is not state regulated. Since the pond is not classified by NYS or the USACOE, it is not subject to the wetland regulations or setback requirements set forth by the Town of Queensbury. The existing site also contains 3 main ski trails, the A.O.A., the Midway, and the March, along with the associated Apex Chair Ski Lift, Northwest Lodge, and parking lots.

Description Of Existing Soils

The United States Department of Agriculture (USDA) soil survey obtained from the natural resource conservation service website indicates the surficial soil on the property to be of the following soil types:

Soil Symbol	Soil Name	Hydrologic Soil Group	Percent of Area
BdC	Bice very bouldery fine sandy loam, sloping	B	11.5%
BdE	Bice very bouldery fine sandy loam, steep	B	33.2%
BeC	Bice-Woodstock very bouldery fine sandy loams, sloping	B	0.0%
BeE	Bice-Woodstock very bouldery fine sandy loams, steep	B	14.0%
HnB	Hinckley cobbly sandy loam, 3 to 8 percent slopes	A	6.6%
HnC	Hinckley cobbly sandy loam, 8 to 15 percent slopes	A	2.5%
HpE	Hinckley-Plainfield complex, steep	A	4.8%
OaA	Oakville loamy fine sand, 0 to 3 percent slopes	A	4.8%
OaB	Oakville loamy fine sand, 3 to 8 percent slopes	A	8.4%
WoE	Woodstock-Rock outcrop complex, steep	D	14.2%

"A" group soils have a high infiltration rate and a low runoff potential when saturated. "B" group soils have a moderate infiltration rate when saturated. "D" group soils have a slow infiltration rate with a high runoff potential. The higher density development will primarily occur within the "A" group soils, which is ideal for the infiltration of stormwater runoff. The lower density

development will primarily be within the area of the "B" group soils. No development is proposed within the "D" group soils.

A total of six test pits were excavated at the project site on October 6, 2023. Soils within the test pits were observed to be sandy soils to the depth of the test pit, approximately 84" - 120" below ground the surface (bgs). Ground water was observed in two of the test pits at approximately 84" and 96" bgs. These results indicate that there is a substantial depth of well-drained soils that can accommodate various infiltrative green infrastructure practices. Since no percolation or infiltration tests have been conducted on the project site yet, a conservative infiltration rate of 5 in./hr. was used for conceptual analysis. Based upon the observed soil structure of the sand encountered within the test pits, an infiltration rate of 10 in./hr. or faster is more likely to occur. Additional soil investigations with infiltrative capacity testing will occur within the boundaries of the proposed stormwater management practices as the construction documents progress.

Description Of Proposed Development

The proposed development will be split into 4 phases consisting of the "Base Area Alpine Village," "Townhouse Development." "Hotel/Banquet/Spa Complex/Athletic Club/Day-Use Lodge Area" and "Single-Family Home Development."

Phase 1, The Base Area Alpine Village, will contain a new ski lodge attached to shopping/restaurant/ entertainment complex, 4 four-story apartment buildings above a below-grade parking structure, 3 three story free standing apartment buildings, 4 two-story condominium buildings, and associated surface parking lots, access roadways, and pedestrian amenities such as outdoor patios with fire pits and food kiosks, swimming pool, ice skating rink, and festival gathering area for events. This component is the most densely developed area of the project and, as such, is purposely planned for the area of the site which possesses the gentlest terrain and deepest, most suitable soil for development.

Phase 2 and Phase 3, Townhouse Development and Hotel/Banquet/Spa Complex/Athletic Club, will contain the existing Northwest Mountain Day Lodge, Outdoor Amphitheater, Duplex Townhouse Development, 80 +/- room Boutique Hotel with conference/banquet center, health/exercise facility and related parking lots and access roadways.

Phase 4, Single-Family Home Development, will consist of (50) custom single-family home lot development areas and an access roadway with a cul-de-sac and terminating in a hammerhead compliant with NYS Fire Apparatus Access Road Standards. The single-family lots will be individually designed and developed with a custom home, access driveway, and various impervious surfaces consistent with residential development (walkways, patios, pools, etc.).

There is potential for DEC wetland permits for two vehicular stream crossings, which can be accomplished by a short bridge or pipe arch culvert. The main access road from West Mountain Road to the Phase 2, 3 and 4 areas will need to be encased in a pipe, however, the stream at this point is already partially encased in a pipe and only in need of a short extension. Two-foot bridges are also proposed over the stream to provide access from a parking lot to one of the apartment buildings. The above-mentioned bridges can be accomplished without impacting the bed or banks of the stream. In addition, the open channel stream corridor through the parking lot will be landscaped with plant materials indigenous to the area and wet stream corridors.

Total site permeability cover within the PRD boundaries is anticipated as shown in Table 1 below:

Table 1. – Site Coverage

Impervious *(existing/proposed)*	±5.64 ac /±23.880 ac
Pervious *(existing/proposed)*	±319.306 ac / ±301.062 ac

Construction Phasing

It is anticipated that construction will occur in the order of the phases described above to ensure that soil disturbances do not exceed 5 acres at any given time during construction to be in compliance with the NYSDEC GP 0-25-001. A formal Construction Phasing Plan will be included within the Construction Documents.

Stormwater Management Planning

Stormwater management site planning was utilized to conserve the existing natural conditions and minimize the proposed area of impervious surfacing. To preserve natural resources, the layout was designed to cluster the development to one portion of the mountain. The higher density uses are clustered at the base of the mountain where slopes are the shallowest and the soils are anticipated to have the greatest infiltrative capacity. Clearing and grading for the development will be limited to the minimum area needed for the construction of the proposed roadway, parking lots, and buildings. To reduce site imperviousness, sidewalks are not proposed within the residential portion of the site development. Additionally, the roadway providing access to the single-family lots is reduced to a 20 ft. width.

Permanent Stormwater Controls

Stormwater management practices were selected for each development phase based upon the soil's infiltrative capacities, site slopes, and character of the portion of development in accordance with the New York State Department of Environmental Conservation Stormwater Design Manual (NYSDEC SWDM). Permanent stormwater controls for the proposed development will consist of stormwater management practices (SMP) designed to meet water quality reduction and treatment goals, in addition to attenuating the peak runoff discharge generated by the development to levels equal to or below the existing off-site discharges for the channel protection volume (CPv: 1 year 24-hour storm event), overbank flood (Qp:10-year storm event) and extreme storm ((Qf)h: 100-year storm event). Proposed SMP's for the development include, but are not limited to; infiltration basins, infiltrating bioretention basins, and underground infiltration chambers. Proposed conveyance systems for the runoff include but are not limited to strategically placed catch basins and storm pipes and rip-rap lines swales.

The required runoff reduction for the project will be achieved through the use of infiltration practices with runoff reduction capacity. Each of the proposed infiltration practices will have an upgradient pretreatment device to filter sediment from the runoff in accordance with the NYSDEC SWDM. Proposed pretreatment practices for the development include but are not limited to; pea gravel filter strips, forebays, and underground isolator chamber rows. For the purposes of this report, the pretreatment devices were not included in the stormwater calculations, though the location and size of the devices were considered spatially within the layout of the stormwater system. The Green infrastructure (GI) practices were sized in accordance with the NYSDEC SWDM, and applied under the proposed stormwater management

system to provide a total runoff reduction volume (RRv) greater than or equal to the minimum RRv generated from the proposed development. The remaining WQv, after the application of the RRv practices, is then treated by GI and SMPS with volume treatment capacity.

Due to the level of high density development within the Base Alpin Village resulting in limited green space, underground infiltration practices located under the parking areas are the most feasible solution to treating the high volume of runoff from this area. Soils in this area are deep (over 120 inches), excessively to highly permeable sands in which no groundwater or bedrock was encountered during the on-site soil investigations (TP #1 and #2). This will allow for the installation of larger subsurface chambers with a greater retention capacity. This section of development is encompassed within subcatchment SC-4. All excess runoff from the upgradient subcatchments is ultimately conveyed to the subsurface infiltration chamber beds within SC-4.

Stormwater runoff generated by the Townhouses and Hotel/Banquet/Spa Complex/Athletic Club areas will be treated by a mix combination of infiltration practices. Infiltration basins will be used in larger, more open green spaces and bio retention practices will be used within green islands located within the bounds of the impervious roadway and buildings. An underground infiltration chamber system will be installed under the parking lot. As in all other phases of the project, on-site soil testing that was performed confirmed the presence of deep well drained sands (TP #3 and #4). This section of development is contained within Subcatchment SC-3.

Stormwater generated by the single-family lots will be treated with a GI stormwater practice, such as rain gardens, bioretention basins, infiltration basins, and/or permeable pavements, located on the lot itself. Stormwater generated by the proposed single-family lot access road will be collected and conveyed to the lower infiltration practices via road side rip-rap lined swales with check dams. Due the steep slopes in this area, it is not feasible to place a larger scale infiltration practice within the vicinity of road, requiring the stormwater to be treated in the lower portions of the site. The access roadway was included within Subcatchment SC-2.

The site was divided into 5 subcatchment areas based on the flow direction of runoff generated from the proposed buildings, paved surfaces, landscaped areas and undisturbed areas. Additional consideration of the subcatchment divisions included the development phasing to ensure that each phase will function individually prior to the completion of the entire site build-out. Subcatchment land cover and runoff control descriptions are provided in Table 2.

Table 2. - Subcatchment Area Descriptions

Sub-catchment	Portion of Development	Stormwater control measures
1S	Lands outside of proposed disturbance area	Runoff generated upgradient of the development will be diverted via rip-rap lined swale around the project. The runoff will primarily follow existing drainage patterns to Design Point #1.
2S	Single-family residential lot access road, Day-Use Lodge	Runoff generated by the access roadway will be conveyed via roadside rip-rap lined swales to stilling basins. The stilling basins will outlet to an infiltration basin, infiltration

	Area, Hotel/Banquet Facility/Spa Complex/Athletic Club	chambers, and a bioretention basin. Excess runoff from these practices will outlet to the system of infiltration practices within SC-3 via storm pipes.
3S	Townhouse Development	Runoff generated by the impervious surfaces will be collected via roadside swales and a system of strategically placed catch basins and storm pipes then conveyed to a series of bioretention basins. Excess runoff from the bioretention basins will outlet to a subsurface infiltration chamber bed. Excess runoff from the subsurface chambers will be split between an infiltration basin within SC-3 and the series of infiltration chambers within SC-5.
4S	Base Area Alpine Village	Runoff generated by the impervious surfaces will be collected via a system of strategically placed catch basins and storm pipes then conveyed to a series of underground infiltration chambers under the proposed parking lots. Excess runoff will outlet the chamber bed via storm pipe and discharge to Design Point #1.
5S	Duplex Townhouses	Runoff generated by the duplex townhouses and associated driveways will be conveyed via overland flow to an infiltration basin. Excess runoff will outlet the basin via broad crested weir to Design Point #1.

Notes:
1. Refer to the construction drawings for permanent runoff control measure locations and details.
2. Stormwater management control measures shall be in accordance with New York State Stormwater Management Design Manual, July 2024.

Based on the soil hydrologic groups in the proposed construction areas, the following curve numbers were assumed for the hydrologic analyses:

Land Cover Type	Curve Number
>75% grass cover, fair, HSG A	CN 39
>75% grass cover, fair, HSG B	CN 61
>75% grass cover, fair, HSG C	CN 74
Woods, good, HSG A	CN 30
Woods, good, HSG B	CN 55
Woods, good, HSG C	CN 70
Building	CN 98
Hardscape	CN 98

Design storm events were assumed to be customized storm curves based upon extreme precipitation data in New York & New England available through a joint collaboration between the northeast regional climate center and natural resources conservation service for Type II, 24-hour 1-year, 10-year, and 100-year storm events. Rainfall magnitudes for the storm events were determined as follows: 2.22 inches, 3.66 inches, and 6.06 inches. The runoff rates were modeled using HydrocAD version 10.0 software which calculates runoff based on the modified SCS TR-20 method. The peak runoff discharge passing through the proposed stormwater management

system will be attenuated to be less than or equal to the pre-development flow rates for the 1-year, 10-year, and 100-year 24-hour storm at established discharge design point.

Peak off-site discharge rates for the 24-hour 1-year, 10-year, and 100-year storm are summarized in the following table:

Table 3. - Peak off-site discharge rates

Location	1-year storm peak discharge (ft^3/s)		10-year storm peak discharge (ft^3/s)		100-year storm peak discharge (ft^3/s)	
	Pre	Post	Pre	Post	Pre	Post
Design point #1	0.8	0.6	29.0	22.6	203.3	163.2

Channel protection volume requirements are waived as the reduction of the entirety of the CPv is achieved through runoff reduction and infiltration systems.

Water quality volumes (WQv) were established in accordance with the New York State Department of Environmental Conservation Stormwater Management Design Manual, January 2024, with a 90% recurrence interval storm event rainfall magnitude assumed to be 1.20-inches based on site locality. The following table summarizes the RRv and treated WQv values of the green infrastructure practices and standard management practices used to pre-treat a RRv min.= 36,760 cf cubic feet and a WQv = 101,729 cubic feet.:

Table 4. Green infrastructure and standard management practice summary

Subcatchment	Green infrastructure/SMP provided	RRv provided (ft^3)	WQv treated (ft^3)
SC-2, SC-3, SC-5	Infiltration Basin	47,395	0
SC-2, SC-3, SC-4	Infiltration Chambers	111,375	90,926
SC2, SC-3	Infiltrating Bioretention	42,516	5,708

RRv total = 201,285 ft^3 ≥ min. RRv; RRv + $WQv_{treated}$ = 297,920 ft^3 > WQv

Conclusion

Based upon the results of the subsurface soil investigation and the conceptual stormwater model, the proposed stormwater system for the Woods at West Mountain will exceed the requirements set forth by the NYSDEC and the Town of Queensbury. The stormwater system will continue to be developed along with the detailed Construction Documents as the project proceeds through the town PRD process.

SWPPP report prepared by:

Matthew E. Huntington, PE
Principal for Studio A | Landscape Architecture + Engineering

Appendix A
Soil Information

DESIGN BY: ####
DRAWN BY: ####
CHECKED BY: ####

PLOTTED BY: CLOUGHMAN
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LEGEND

- WOODS, GOOD, HSG A
- WOODS, GOOD, HSG B
- WOODS, GOOD, HSG D
- GRASS, GOOD, HSG A
- GRASS, GOOD, HSG B
- GRASS, GOOD, HSG D
- BUILDING
- ROAD/PARKING
- INFILTRATION BASIN
- PRETREATMENT
- BIORETENTION BASIN
- SWALE
- INFILTRATION CHAMBERS
- STORM PIPE

NORTH

GRAPHIC SCALE
200 0 100 200 400
1 INCH = 200 FEET
ON 24" X 36" SHEET

REVISIONS

DATE	DESCRIPTION

DRAWINGS
NOT FOR
CONSTRUCTION

PREPARED FOR
WEST MOUNTAIN DEVELOPMENT
PARTNERS, LLC
59 WEST MOUNTAIN ROAD
QUEENSBURY, NY 12084

PROJECT
NORTH WEST MOUNTAIN
PRD

DRAWING TITLE
TEST PIT LOCATION MAP

PROJECT NO.	21071
DATE: 05/02/2025	DRAWING NO. C-0.20
DWG 1 OF 1	

Deep Hole Test Pit Log

PROJECT: Woods at West Mountain PRD
Project No. 21071
Weather: 70°F Coudy

Date: 10-06-2023

Test Pit #1	
	Elevation ±425
Depth (inches)	Soil Description
0-6”	Topsoil
6-120”	Light Brown Poorly Graded Sand
No Bedrock or Groundwater Encountered	

Photos:

Test Pit #2	
	Elevation ±455
Depth (inches)	Soil Description
0-6”	Topsoil
6-84”	Dark Brown Sandy Loam
No Bedrock Encountered Groundwater Encountered @ 84”	

Photos:

Test Pit #3	
	Elevation ± 487
Depth (inches)	Soil Description
0-6”	Topsoil
6-24”	Yellow Brown Sandy Loam
24-96”	Medium Brown Sandy Loam
No Bedrock Encountered Groundwater Encountered @ 96”	

Photos:

Test Pit #4	
	Elevation ± 495
Depth (inches)	Soil Description
0-6”	Topsoil
6-112”	Medium Brown Sandy Loam w/6”-24” cobbles
No Bedrock or Groundwater Encountered	

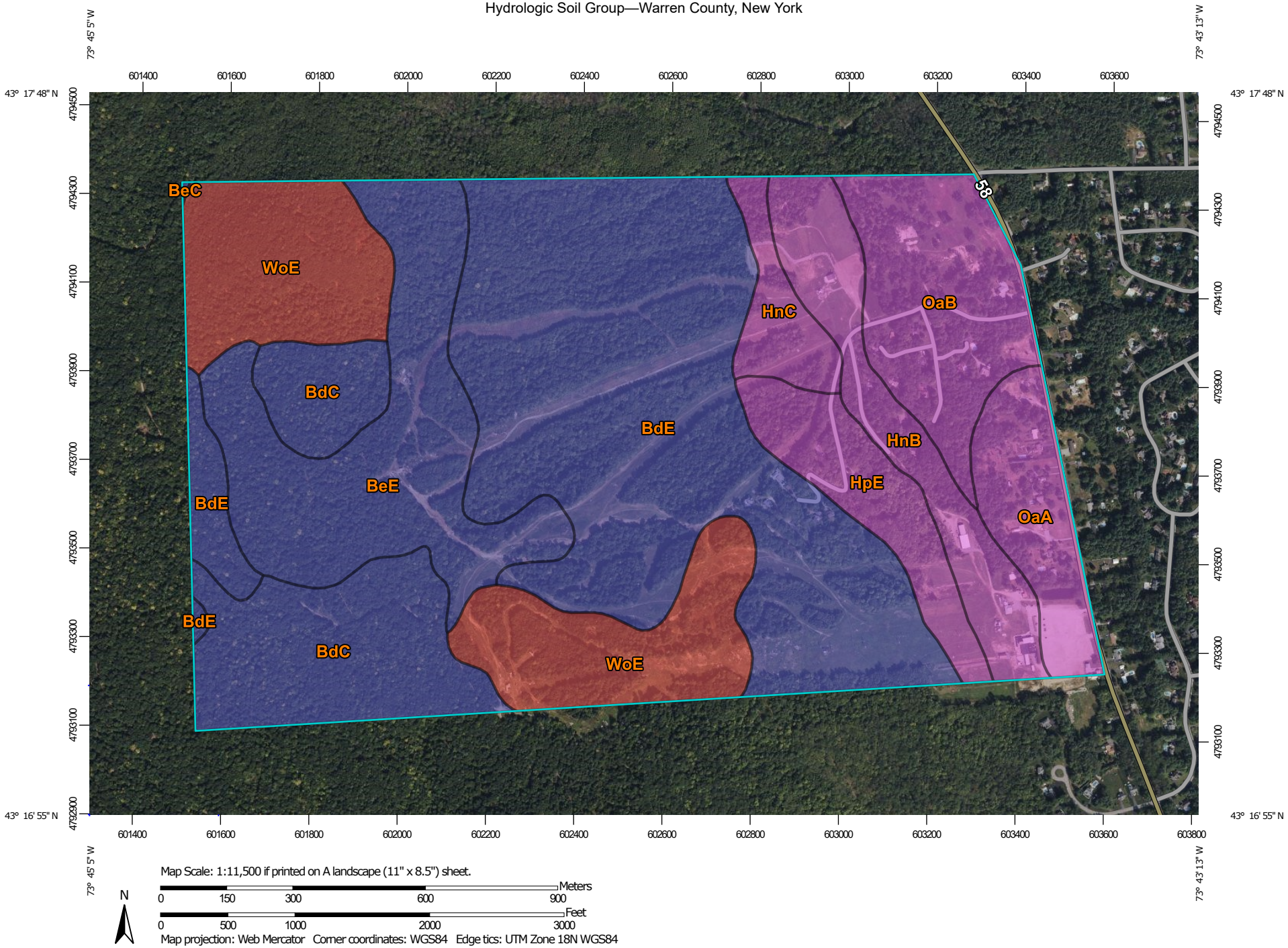
Photos:

Test Pit #5	
	Elevation ±560
Depth (inches)	Soil Description
0-12”	Topsoil and Organics
12-96”	Light Brown Poorly Graded Sand w/6”-24” cobbles
No Bedrock or Groundwater Encountered	

Photos:

Test Pit #6	
	Elevation ± 650
Depth (inches)	Soil Description
0-12”	Topsoil and Organics
12-96”	Yellow Brown Sandy Loam w/6”-24” cobbles
No Bedrock or Groundwater Encountered	

Photos: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HnB
HpE
OaA
58
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N
Meters
0 150 300 600 900
Feet
0 500 1000 2000 3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Warren County, New York
Survey Area Data: Version 24, Aug 29, 2024

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

Date(s) aerial images were photographed: Sep 9, 2022—Oct 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BdC	Bice very bouldery fine sandy loam, sloping	B	66.3	11.5%
BdE	Bice very bouldery fine sandy loam, steep	B	191.6	33.2%
BeC	Bice-Woodstock very bouldery fine sandy loams, sloping	B	0.1	0.0%
BeE	Bice-Woodstock very bouldery fine sandy loams, steep	B	80.5	14.0%
HnB	Hinckley cobbly sandy loam, 3 to 8 percent slopes	A	38.0	6.6%
HnC	Hinckley cobbly sandy loam, 8 to 15 percent slopes	A	14.2	2.5%
HpE	Hinckley-Plainfield complex, steep	A	27.6	4.8%
OaA	Oakville loamy fine sand, 0 to 3 percent slopes	A	27.6	4.8%
OaB	Oakville loamy fine sand, 3 to 8 percent slopes	A	48.2	8.4%
WoE	Woodstock-Rock outcrop complex, steep	D	82.0	14.2%
Totals for Area of Interest			**576.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

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

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

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

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

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

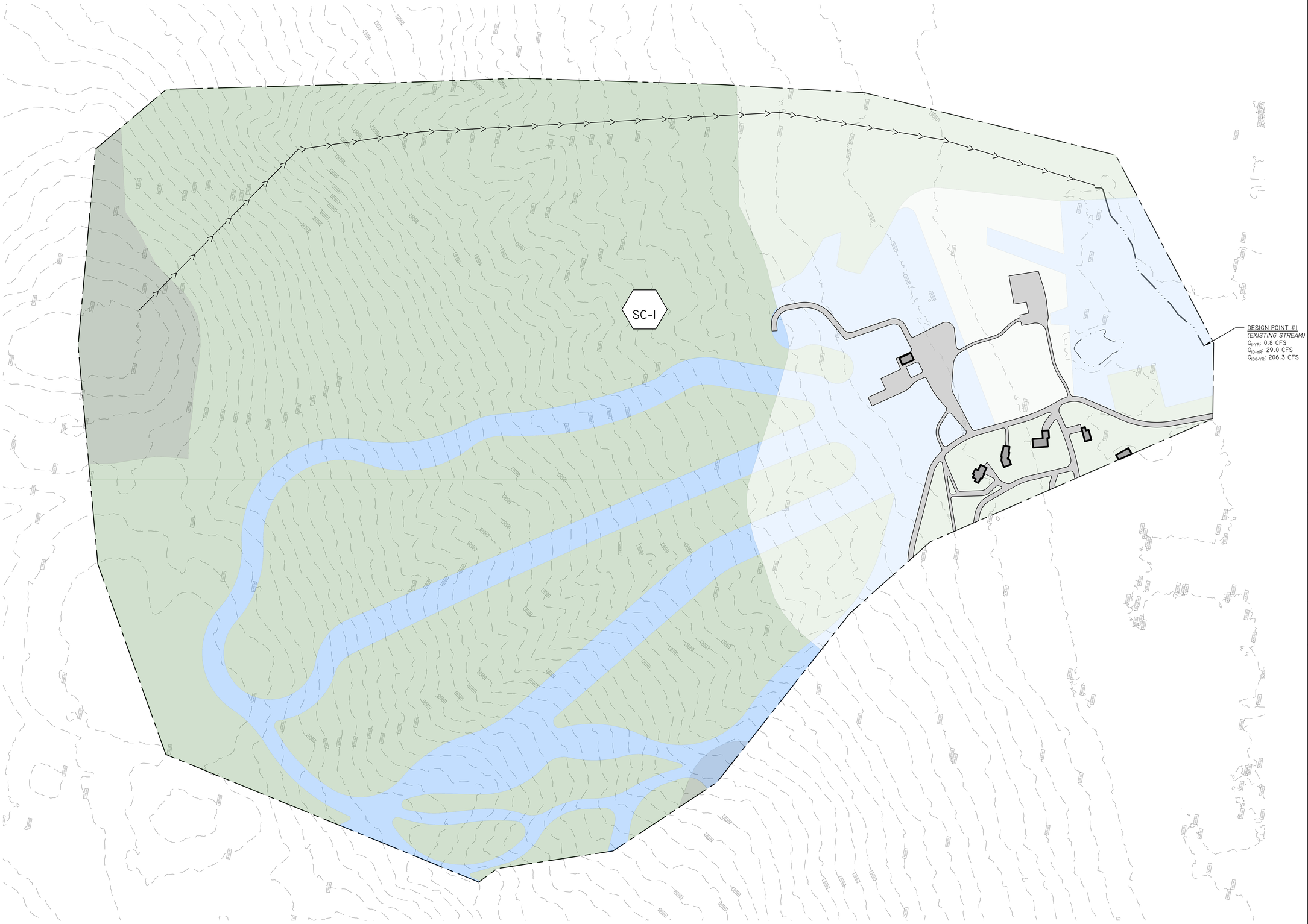
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix B
Stormwater Subcatchment Maps



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DRAWN BY: ####
CHECKED BY: ####

PLOTTED BY: CLOUGHMAN
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LEGEND
- PROPERTY LINE
- SUBCATCHMENT BOUNDARY
- TIME OF CONCENTRATION
- WOODS, GOOD, HSG A
- WOODS/GRASS COMBO, FAIR, HSG C
- WOODS, GOOD, HSG B
- WOODS, GOOD, HSG D
- GRASS, FAIR, HSG A
- GRASS, GOOD, HSG B
- GRASS, GOOD, HSG D
- BUILDING
- ROAD/PARKING

NORTH

GRAPHIC SCALE
200 0 100 200 400
1 INCH = 200 FEET
ON 24" X 36" SHEET

REVISIONS

DATE	DESCRIPTION

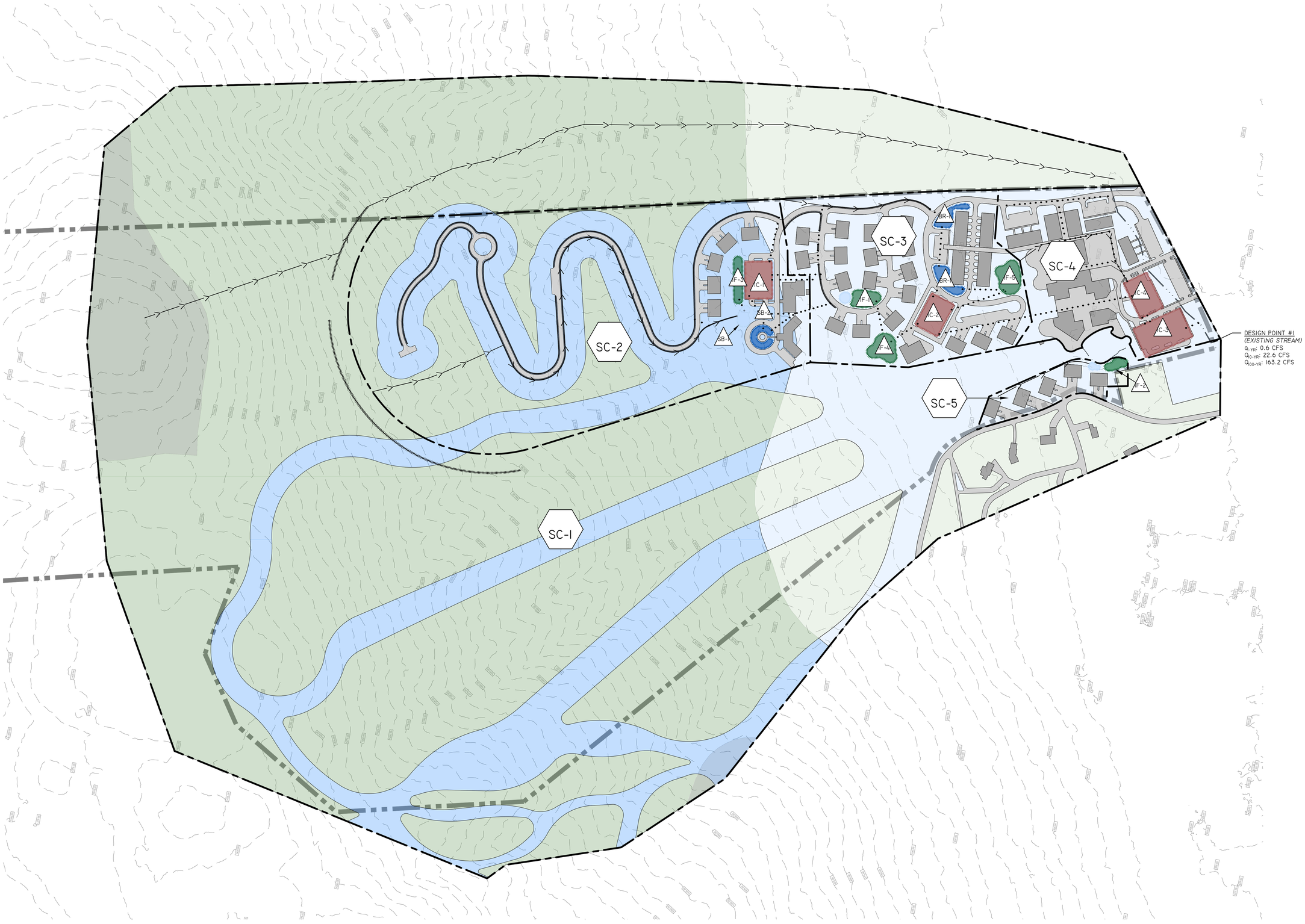
DRAWINGS
NOT FOR
CONSTRUCTION

PREPARED FOR
WEST MOUNTAIN DEVELOPMENT PARTNERS, LLC
59 WEST MOUNTAIN ROAD
QUEENSBURY, NY 12084

PROJECT
NORTH WEST MOUNTAIN PRD

DRAWING TITLE
PRE CONSTRUCTION SUBCATCHMENT PLAN

PROJECT NO.	21071
DATE: 05/02/2025	DRAWING NO. SW-1
DWG 1 OF 2	



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74 Warren Street
Saratoga Springs, NY12866
518.450.4030

LEGEND

- PROPERTY LINE
- SUBCATCHMENT BOUNDARY
- TIME OF CONCENTRATION
- WOODS, GOOD, HSG A
- WOODS, GOOD, HSG B
- WOODS, GOOD, HSG D
- GRASS, GOOD, HSG A
- GRASS, GOOD, HSG B
- GRASS, GOOD, HSG D
- BUILDING
- ROAD/PARKING
- INFILTRATION BASIN
- PRETREATMENT
- BIORETENTION BASIN
- SWALE
- INFILTRATION CHAMBERS
- STORM PIPE

NORTH

GRAPHIC SCALE
200 0 100 200 400
1 INCH = 200 FEET
ON 24" X 36" SHEET

REVISIONS

DATE	DESCRIPTION

DRAWINGS
NOT FOR
CONSTRUCTION

PREPARED FOR
WEST MOUNTAIN DEVELOPMENT
PARTNERS, LLC
59 WEST MOUNTAIN ROAD
QUEENSBURY, NY 12084

PROJECT
NORTH WEST MOUNTAIN
PRD

DRAWING TITLE
POST CONSTRUCTION
SUBCATCHMENT PLAN

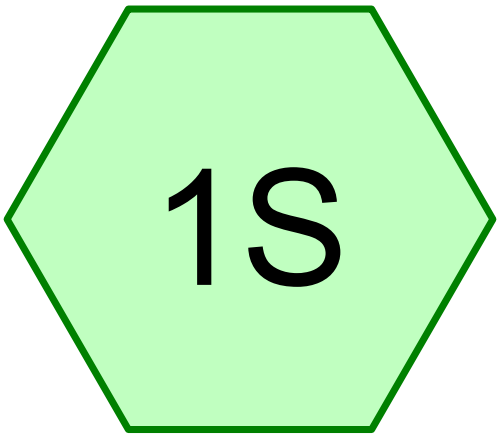
PROJECT NO.	21071
DATE: 05/02/2025	DRAWING NO. SW-2
DWG 2 OF 2	

DESIGN BY: ####
DRAWN BY: ####
CHECKED BY: ####

PLOTTED BY: CLOUGHMAN
SAVE DATE: 5/2/2025 4:08 PM
FILE NAME: K:\PROJECTS\21071 - North West Mt. PUD\DWG\SD SHEETS\CONCEPT STORMWATER\21071_SWM PROP.dwg

Appendix C
Stormwater Calculations

Pre-Construction



Subcat Reach Pond Link

Routing Diagram for 21071_EXIST
Prepared by {enter your company name here}, Printed 6/3/2025

Summary for Subcatchment 1S:

Runoff = 0.8 cfs @ 18.90 hrs, Volume= 25,237 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.22"

	Area (sf)	CN	Description
*	15,311	98	Building
*	230,187	98	Road
*	0	98	Walkway
	1,595,532	30	Woods, Good, HSG A
	8,318,703	55	Woods, Good, HSG B
	570,997	77	Woods, Good, HSG D
	1,426,647	49	50-75% Grass cover, Fair, HSG A
	1,489,817	61	>75% Grass cover, Good, HSG B
	27,363	80	>75% Grass cover, Good, HSG D
	479,893	43	Woods/grass comb., Fair, HSG A
	14,154,450	53	Weighted Average
	13,908,952		98.27% Pervious Area
	245,498		1.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.4800	0.14		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
4.6	950	0.4800	3.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	575	0.2600	2.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.1	1,669	0.1800	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.6	764	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	734	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
56.9	4,792	Total			

Summary for Subcatchment 1S:

Runoff = 29.0 cfs @ 12.83 hrs, Volume= 390,304 cf, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.66"

	Area (sf)	CN	Description
*	15,311	98	Building
*	230,187	98	Road
*	0	98	Walkway
	1,595,532	30	Woods, Good, HSG A
	8,318,703	55	Woods, Good, HSG B
	570,997	77	Woods, Good, HSG D
	1,426,647	49	50-75% Grass cover, Fair, HSG A
	1,489,817	61	>75% Grass cover, Good, HSG B
	27,363	80	>75% Grass cover, Good, HSG D
	479,893	43	Woods/grass comb., Fair, HSG A
	14,154,450	53	Weighted Average
	13,908,952		98.27% Pervious Area
	245,498		1.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.4800	0.14		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
4.6	950	0.4800	3.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	575	0.2600	2.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.1	1,669	0.1800	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.6	764	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	734	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
56.9	4,792	Total			

Summary for Subcatchment 1S:

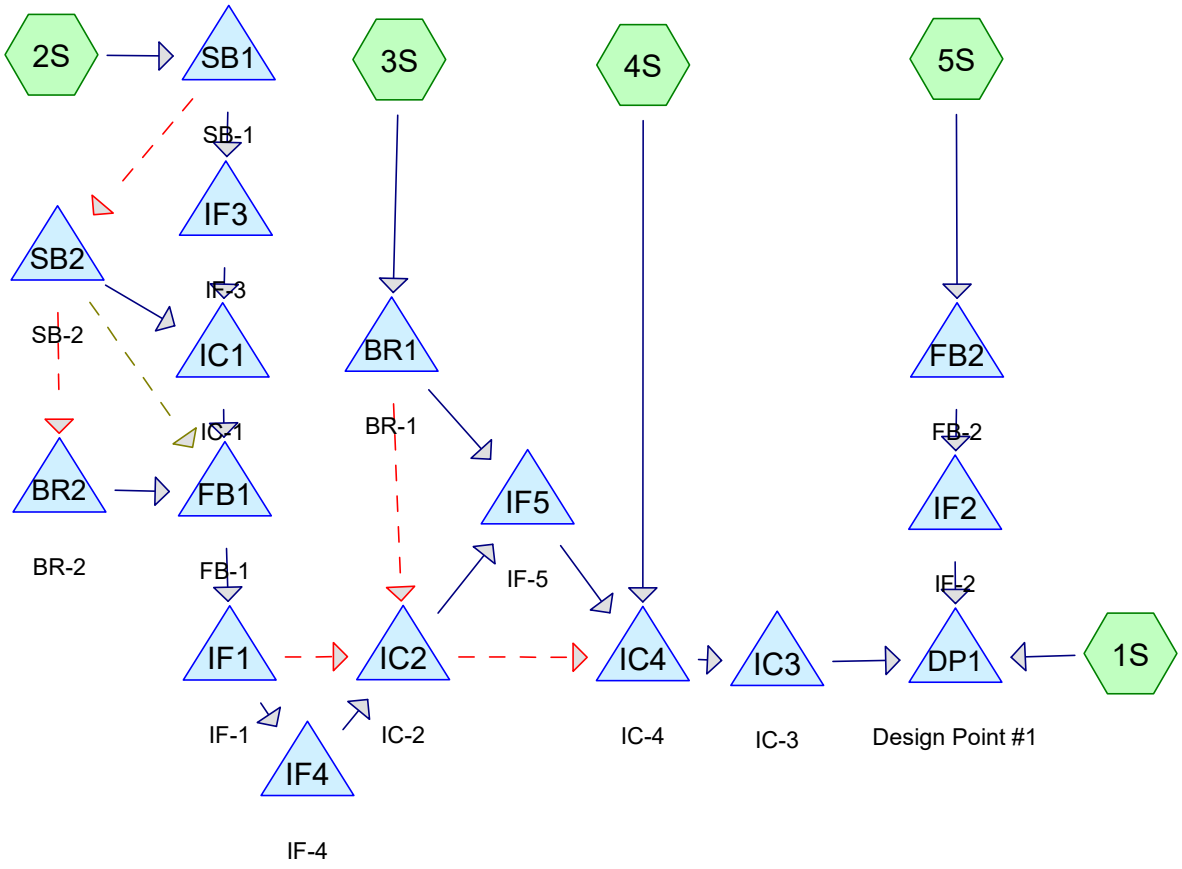
Runoff = 206.3 cfs @ 12.70 hrs, Volume= 1,647,522 cf, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=6.06"

	Area (sf)	CN	Description
*	15,311	98	Building
*	230,187	98	Road
*	0	98	Walkway
	1,595,532	30	Woods, Good, HSG A
	8,318,703	55	Woods, Good, HSG B
	570,997	77	Woods, Good, HSG D
	1,426,647	49	50-75% Grass cover, Fair, HSG A
	1,489,817	61	>75% Grass cover, Good, HSG B
	27,363	80	>75% Grass cover, Good, HSG D
	479,893	43	Woods/grass comb., Fair, HSG A
	14,154,450	53	Weighted Average
	13,908,952		98.27% Pervious Area
	245,498		1.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.4800	0.14		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
4.6	950	0.4800	3.46		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.8	575	0.2600	2.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.1	1,669	0.1800	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.6	764	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	734	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
56.9	4,792	Total			

Post-Construction



Subcat Reach Pond Link

Routing Diagram for 21071_POST

Prepared by {enter your company name here}, Printed 6/3/2025

Summary for Subcatchment 1S:

Runoff = 0.6 cfs @ 18.94 hrs, Volume= 19,099 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.22"

	Area (sf)	CN	Description
*	13,570	98	Building
*	87,535	98	Road
*	0	98	Walkway
	1,400,154	30	Woods, Good, HSG A
	6,589,592	55	Woods, Good, HSG B
	570,997	77	Woods, Good, HSG D
	725,290	39	>75% Grass cover, Good, HSG A
	1,297,504	61	>75% Grass cover, Good, HSG B
	27,363	80	>75% Grass cover, Good, HSG D
	10,712,005	53	Weighted Average
	10,610,900		99.06% Pervious Area
	101,105		0.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.4100	0.13		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
4.5	857	0.4100	3.20		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	251	0.1000	5.35	71.31	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.100 Earth, dense brush, high stage
2.1	426	0.4600	3.39		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.1	1,669	0.1800	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	747	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.1	784	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
57.4	4,834	Total			

Summary for Subcatchment 2S:

Runoff = 1.8 cfs @ 12.32 hrs, Volume= 23,012 cf, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.22"

	Area (sf)	CN	Description
*	45,871	98	Building
*	151,012	98	Road
*	1,711	98	Walkway
	0	30	Woods, Good, HSG A
	676,427	55	Woods, Good, HSG B
	0	70	Woods, Good, HSG C
	54,087	39	>75% Grass cover, Good, HSG A
	1,060,932	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	1,990,040	62	Weighted Average
	1,791,446		90.02% Pervious Area
	198,594		9.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.3300	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
3.2	550	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.7	2,179	0.1400	6.33	84.37	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.100 Very weedy reaches w/pools
22.5	2,829	Total			

Summary for Subcatchment 3S:

Runoff = 1.7 cfs @ 12.13 hrs, Volume= 11,575 cf, Depth= 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.22"

	Area (sf)	CN	Description
*	132,660	98	Building
*	189,134	98	Road
*	6,658	98	Walkway
	0	30	Woods, Good, HSG A
	0	58	Woods/grass comb., Good, HSG B
	0	70	Woods, Good, HSG C
	450,007	39	>75% Grass cover, Good, HSG A
	0	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	778,459	64	Weighted Average
	450,007		57.81% Pervious Area
	328,452		42.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	31	0.0600	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
1.7	176	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	512	0.0600	4.14	55.23	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.100 Very weedy reaches w/pools
14.3	719	Total			

Summary for Subcatchment 4S:

Runoff = 11.1 cfs @ 12.02 hrs, Volume= 27,133 cf, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.22"

	Area (sf)	CN	Description
*	95,630	98	Building
*	149,954	98	Road
*	124,574	98	Walkway
	0	30	Woods, Good, HSG A
	0	58	Woods/grass comb., Good, HSG B
	0	70	Woods, Good, HSG C
	199,912	39	>75% Grass cover, Good, HSG A
	0	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	570,070	77	Weighted Average
	199,912		35.07% Pervious Area
	370,158		64.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	33	0.0250	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.58"
1.4	90	0.0150	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.58"
2.0	570	0.0100	4.68	14.70	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.020 Corrugated PE, corrugated interior
9.4	693	Total			

Summary for Subcatchment 5S:

Runoff = 0.1 cfs @ 12.10 hrs, Volume= 1,201 cf, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.22"

	Area (sf)	CN	Description
*	23,999	98	Building
*	17,871	98	Road
*	0	98	Walkway
	3,865	30	Woods, Good, HSG A
	0	58	Woods/grass comb., Good, HSG B
	0	70	Woods, Good, HSG C
	58,141	39	>75% Grass cover, Good, HSG A
	0	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	103,876	62	Weighted Average
	62,006		59.69% Pervious Area
	41,870		40.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.1000	0.20		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.58"
2.7	362	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.0	462	Total			

Summary for Pond BR1: BR-1

Inflow Area = 778,459 sf, 42.19% Impervious, Inflow Depth = 0.18" for 1-yr event
Inflow = 1.7 cfs @ 12.13 hrs, Volume= 11,575 cf
Outflow = 1.3 cfs @ 12.13 hrs, Volume= 11,575 cf, Atten= 27%, Lag= 0.0 min
Discarded = 1.3 cfs @ 12.13 hrs, Volume= 11,575 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Secondary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 14.34' @ 12.24 hrs Surf.Area= 10,880 sf Storage= 398 cf

Plug-Flow detention time= 3.8 min calculated for 11,573 cf (100% of inflow)
Center-of-Mass det. time= 3.8 min (966.1 - 962.2)

Volume	Invert	Avail.Storage	Storage Description
#1	14.25'	14,553 cf	**Cell 1 (Prismatic)** Listed below (Recalc)
#2	14.25'	17,840 cf	**Cell 2 (Prismatic)** Listed below (Recalc)
		32,393 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	4,834	0.0	0	0
15.25	4,834	40.0	1,934	1,934
19.25	4,834	20.0	3,867	5,801
20.75	6,836	100.0	8,753	14,553

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	6,046	0.0	0	0
15.25	6,046	40.0	2,418	2,418
19.25	6,046	20.0	4,837	7,255
20.75	8,067	100.0	10,585	17,840

Device	Routing	Invert	Outlet Devices
#1	Primary	14.25'	**36.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.25' / 14.25' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 7.07 sf
#2	Device 1	19.75'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	14.25'	**5.000 in/hr Exfiltration over Surface area**
#4	Secondary	14.25'	**24.0" Round Culvert** L= 70.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.25' / 10.00' S= 0.0607 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#5	Device 4	20.25'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=1.3 cfs @ 12.13 hrs HW=14.32' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 1.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=14.25' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)
└**2=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.01 hrs HW=14.25' (Free Discharge)
└**4=Culvert** (Controls 0.0 cfs)
└**5=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond BR2: BR-2

Inflow	=	0.3 cfs @	15.19 hrs, Volume=	8,503 cf	
Outflow	=	0.3 cfs @	15.26 hrs, Volume=	8,503 cf,	Atten= 0%, Lag= 4.5 min
Discarded	=	0.3 cfs @	15.26 hrs, Volume=	8,503 cf	
Primary	=	0.0 cfs @	0.01 hrs, Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 18.30' @ 15.26 hrs Surf.Area= 3,686 sf Storage= 75 cf

Plug-Flow detention time= 3.7 min calculated for 8,502 cf (100% of inflow)
Center-of-Mass det. time= 3.7 min (1,152.6 - 1,148.9)

Volume	Invert	Avail.Storage	Storage Description
#1	18.25'	11,595 cf	**Cell 1 (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
18.25	3,686	0.0	0	0
19.25	3,686	40.0	1,474	1,474
23.25	3,686	20.0	2,949	4,423
24.75	5,877	100.0	7,172	11,595

Device	Routing	Invert	Outlet Devices
#1	Primary	18.25'	**36.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.25' / 18.25' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 7.07 sf
#2	Device 1	24.25'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	18.25'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.4 cfs @ 15.26 hrs HW=18.30' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.4 cfs)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=18.25' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)
└**2=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond DP1: Design Point #1

Inflow Area = 14,154,450 sf, 7.35% Impervious, Inflow Depth = 0.02" for 1-yr event
Inflow = 0.6 cfs @ 18.94 hrs, Volume= 19,100 cf
Primary = 0.6 cfs @ 18.94 hrs, Volume= 19,100 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Pond FB1: FB-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Outflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 14.25' @ 0.01 hrs Surf.Area= 636 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	14.25'	5,295 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	636	0	0
15.25	934	785	785
16.25	1,289	1,112	1,897
17.25	1,670	1,480	3,376
18.25	2,168	1,919	5,295

Device	Routing	Invert	Outlet Devices
#1	Primary	17.25'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=14.25' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond FB2: FB-2

Inflow Area = 103,876 sf, 40.31% Impervious, Inflow Depth = 0.14" for 1-yr event
Inflow = 0.1 cfs @ 12.10 hrs, Volume= 1,201 cf
Outflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 7.38' @ 24.63 hrs Surf.Area= 867 sf Storage= 1,201 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	4.75'	2,750 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.75	127	0	0
5.75	340	234	234
6.75	641	491	724
7.75	999	820	1,544
8.75	1,413	1,206	2,750

Device	Routing	Invert	Outlet Devices
#1	Primary	7.75'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=4.75' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond IC1: IC-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.04" for 1-yr event
Inflow = 0.3 cfs @ 15.19 hrs, Volume= 6,030 cf
Outflow = 0.3 cfs @ 15.22 hrs, Volume= 6,030 cf, Atten= 0%, Lag= 2.3 min
Discarded = 0.3 cfs @ 15.22 hrs, Volume= 6,030 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 20.75' @ 15.22 hrs Surf.Area= 0.494 ac Storage= 0.001 af

Plug-Flow detention time= 2.2 min calculated for 6,030 cf (100% of inflow)
Center-of-Mass det. time= 2.2 min (1,141.7 - 1,139.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.75'	0.481 af	**172.50'W x 124.66'L x 3.75'H Field A** 1.851 af Overall - 0.650 af Embedded = 1.202 af x 40.0% Voids
#2A	21.50'	0.650 af	**ADS_StormTech DC-780 +Cap** x 612 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 612 Chambers in 36 Rows
		1.130 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	21.50'	**24.0" Round Culvert X 2.00** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.50' / 20.75' S= 0.0750 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Discarded	20.75'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.5 cfs @ 15.22 hrs HW=20.75' (Free Discharge)
2=Exfiltration (Exfiltration Controls 2.5 cfs)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=20.75' (Free Discharge)
1=Culvert (Controls 0.0 cfs)

Summary for Pond IC2: IC-2

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Outflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Secondary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 9.50' @ 0.01 hrs Surf.Area= 0.453 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	0.441 af	**167.75'W x 117.54'L x 3.75'H Field A** 1.697 af Overall - 0.594 af Embedded = 1.103 af x 40.0% Voids
#2A	10.25'	0.594 af	**ADS_StormTech DC-780 +Cap** x 560 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 560 Chambers in 35 Rows
		1.036 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	10.00'	**24.0" Round Culvert** L= 263.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.00' / 8.50' S= 0.0057 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	11.00'	**12.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.00' / 11.00' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#3	Discarded	9.50'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 0.01 hrs HW=9.50' (Free Discharge)
3=Exfiltration (Passes 0.0 cfs of 2.3 cfs potential flow)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=9.50' (Free Discharge)
1=Culvert (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.01 hrs HW=9.50' (Free Discharge)
2=Culvert (Controls 0.0 cfs)

Summary for Pond IC3: IC-3

Inflow Area = 3,338,569 sf, 26.87% Impervious, Inflow Depth = 0.01" for 1-yr event
Inflow = 1.8 cfs @ 12.16 hrs, Volume= 2,785 cf
Outflow = 1.8 cfs @ 12.21 hrs, Volume= 2,785 cf, Atten= 4%, Lag= 2.6 min
Discarded = 1.8 cfs @ 12.21 hrs, Volume= 2,784 cf
Primary = 0.0 cfs @ 12.21 hrs, Volume= 1 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 0.02' @ 12.21 hrs Surf.Area= 0.801 ac Storage= 0.005 af

Plug-Flow detention time= 2.2 min calculated for 2,785 cf (100% of inflow)
Center-of-Mass det. time= 2.2 min (741.2 - 739.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.777 af	**239.00'W x 146.02'L x 3.75'H Field A** 3.004 af Overall - 1.062 af Embedded = 1.943 af x 40.0% Voids
#2A	0.75'	1.062 af	**ADS_StormTech DC-780 +Cap** x 1000 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 1000 Chambers in 50 Rows
		1.839 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 0.00' / 0.00' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Discarded	0.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=4.0 cfs @ 12.21 hrs HW=0.02' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 4.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.21 hrs HW=0.02' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.0 cfs @ 0.06 fps)

Summary for Pond IC4: IC-4

Inflow Area = 3,338,569 sf, 26.87% Impervious, Inflow Depth = 0.10" for 1-yr event
Inflow = 11.1 cfs @ 12.02 hrs, Volume= 27,133 cf
Outflow = 4.4 cfs @ 12.16 hrs, Volume= 27,133 cf, Atten= 61%, Lag= 8.4 min
Discarded = 2.5 cfs @ 11.88 hrs, Volume= 24,348 cf
Primary = 1.8 cfs @ 12.16 hrs, Volume= 2,785 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 5.32' @ 12.16 hrs Surf.Area= 0.501 ac Storage= 0.114 af

Plug-Flow detention time= 7.9 min calculated for 27,130 cf (100% of inflow)
Center-of-Mass det. time= 7.9 min (884.0 - 876.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.75'	0.487 af	**120.25'W x 181.62'L x 3.75'H Field A** 1.880 af Overall - 0.663 af Embedded = 1.217 af x 40.0% Voids
#2A	5.50'	0.663 af	**ADS_StormTech DC-780 +Cap** x 625 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 625 Chambers in 25 Rows
		1.150 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	4.75'	**24.0" Round Culvert X 2.00** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.75' / 4.75' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Discarded	4.75'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.5 cfs @ 11.88 hrs HW=4.79' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 2.5 cfs)

Primary OutFlow Max=1.8 cfs @ 12.16 hrs HW=5.32' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.8 cfs @ 1.87 fps)

Summary for Pond IF1: IF-1

Inflow Area =	1,990,040 sf,	9.98% Impervious,	Inflow Depth =	0.00" for 1-yr event
Inflow =	0.0 cfs @	0.01 hrs, Volume=	0 cf	
Outflow =	0.0 cfs @	0.01 hrs, Volume=	0 cf, Atten= 0%, Lag= 0.0 min	
Discarded =	0.0 cfs @	0.01 hrs, Volume=	0 cf	
Primary =	0.0 cfs @	0.01 hrs, Volume=	0 cf	
Secondary =	0.0 cfs @	0.01 hrs, Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 14.25' @ 0.01 hrs Surf.Area= 5,000 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	14.25'	27,739 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	5,000	0	0
15.25	5,916	5,458	5,458
16.25	6,892	6,404	11,862
17.25	7,924	7,408	19,270
18.25	9,013	8,469	27,739

Device	Routing	Invert	Outlet Devices
#1	Primary	15.25'	**30.0" Round Culvert** L= 200.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.25' / 14.00' S= 0.0063 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 4.91 sf
#2	Device 1	17.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	16.25'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Discarded	14.25'	**5.000 in/hr Exfiltration over Surface area**
#5	Secondary	14.25'	**24.0" Round Culvert** L= 200.0' CMP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 14.25' / 10.00' S= 0.0213 '/' Cc= 0.900
n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#6 Device 5 16.75' **24.0" Horiz. Orifice/Grate** C= 0.600
Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 0.01 hrs HW=14.25' (Free Discharge)
└**4=Exfiltration** (Passes 0.0 cfs of 0.6 cfs potential flow)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=14.25' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)
  ├**2=Orifice/Grate** (Controls 0.0 cfs)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.01 hrs HW=14.25' (Free Discharge)
└**5=Culvert** (Controls 0.0 cfs)
  └**6=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond IF2: IF-2

Inflow Area =	103,876 sf,	40.31% Impervious,	Inflow Depth =	0.00" for 1-yr event
Inflow =	0.0 cfs @	0.01 hrs, Volume=	0 cf	
Outflow =	0.0 cfs @	0.01 hrs, Volume=	0 cf, Atten= 0%, Lag= 0.0 min	
Discarded =	0.0 cfs @	0.01 hrs, Volume=	0 cf	
Primary =	0.0 cfs @	0.01 hrs, Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 4.75' @ 0.01 hrs Surf.Area= 1,492 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	4.75'	11,336 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.75	1,492	0	0
5.75	2,113	1,803	1,803
6.75	2,792	2,453	4,255
7.75	3,526	3,159	7,414
8.75	4,318	3,922	11,336

Device	Routing	Invert	Outlet Devices
#1	Primary	8.25'	**12.5' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	4.75'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 0.01 hrs HW=4.75' (Free Discharge)
└**2=Exfiltration** (Passes 0.0 cfs of 0.2 cfs potential flow)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=4.75' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond IF3: IF-3

Inflow Area =	1,990,040 sf,	9.98% Impervious,	Inflow Depth =	0.00"	for 1-yr event
Inflow =	0.0 cfs @	0.01 hrs, Volume=	0 cf		
Outflow =	0.0 cfs @	0.01 hrs, Volume=	0 cf,	Atten= 0%,	Lag= 0.0 min
Discarded =	0.0 cfs @	0.01 hrs, Volume=	0 cf		
Primary =	0.0 cfs @	0.01 hrs, Volume=	0 cf		

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 25.50' @ 0.01 hrs Surf.Area= 3,081 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	22,792 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	3,081	0	0
26.50	4,340	3,711	3,711
27.50	5,656	4,998	8,709
28.50	7,027	6,342	15,050
29.50	8,457	7,742	22,792

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**24.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 20.75' S= 0.1583 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Device 1	29.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	28.00'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Discarded	25.50'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 0.01 hrs HW=25.50' (Free Discharge)
└**4=Exfiltration** (Passes 0.0 cfs of 0.4 cfs potential flow)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=25.50' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)
  ├**2=Orifice/Grate** (Controls 0.0 cfs)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond IF4: IF-4

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Outflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 12.00' @ 0.01 hrs Surf.Area= 8,249 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	12.00'	42,481 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
12.00	8,249	0	0
13.00	9,385	8,817	8,817
14.00	10,578	9,982	18,799
15.00	11,827	11,203	30,001
16.00	13,133	12,480	42,481

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	**24.0" Round Culvert** L= 150.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.00' / 10.00' S= 0.0133 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Device 1	15.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	12.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 0.01 hrs HW=12.00' (Free Discharge)
↑—**3=Exfiltration** (Passes 0.0 cfs of 1.0 cfs potential flow)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=12.00' (Free Discharge)
↑—**1=Culvert** (Controls 0.0 cfs)
↑—**2=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond IF5: IF-5

Inflow Area = 2,768,499 sf, 19.04% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Outflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

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

Peak Elev= 5.50' @ 0.01 hrs Surf.Area= 9,136 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	46,127 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	9,136	0	0
6.50	10,284	9,710	9,710
7.50	11,489	10,887	20,597
8.50	12,751	12,120	32,717
9.50	14,069	13,410	46,127

Device	Routing	Invert	Outlet Devices
#1	Primary	5.50'	**24.0" Round Culvert** L= 150.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.50' / 3.50' S= 0.0133 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Device 1	8.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	5.50'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 0.01 hrs HW=5.50' (Free Discharge)
↑—**3=Exfiltration** (Passes 0.0 cfs of 1.1 cfs potential flow)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=5.50' (Free Discharge)
↑—**1=Culvert** (Controls 0.0 cfs)
↑—**2=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond SB1: SB-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.14" for 1-yr event
Inflow = 1.8 cfs @ 12.32 hrs, Volume= 23,012 cf
Outflow = 0.6 cfs @ 14.53 hrs, Volume= 14,533 cf, Atten= 65%, Lag= 133.1 min
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Secondary = 0.6 cfs @ 14.53 hrs, Volume= 14,533 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 32.54' @ 14.53 hrs Surf.Area= 3,863 sf Storage= 8,644 cf

Plug-Flow detention time= 271.8 min calculated for 14,531 cf (63% of inflow)
Center-of-Mass det. time= 128.1 min (1,118.9 - 990.8)

Volume	Invert	Avail.Storage	Storage Description
#1	29.50'	12,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
29.50	1,897	0	0
30.50	2,485	2,191	2,191
31.50	3,130	2,808	4,999
32.50	3,831	3,481	8,479
33.50	4,590	4,211	12,690

Device	Routing	Invert	Outlet Devices
#1	Primary	32.75'	**26.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Secondary	32.50'	**30.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=29.50' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.6 cfs @ 14.53 hrs HW=32.54' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.6 cfs @ 0.48 fps)

Summary for Pond SB2: SB-2

Inflow	=	0.6 cfs @	14.53 hrs, Volume=	14,533 cf	
Outflow	=	0.6 cfs @	15.19 hrs, Volume=	14,533 cf,	Atten= 7%, Lag= 39.1 min
Primary	=	0.3 cfs @	15.19 hrs, Volume=	6,030 cf	
Secondary	=	0.3 cfs @	15.19 hrs, Volume=	8,503 cf	
Tertiary	=	0.0 cfs @	0.01 hrs, Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 25.78' @ 15.19 hrs Surf.Area= 2,558 sf Storage= 703 cf

Plug-Flow detention time= 26.3 min calculated for 14,533 cf (100% of inflow)
Center-of-Mass det. time= 26.1 min (1,145.0 - 1,118.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	15,093 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	2,373	0	0
26.50	3,023	2,698	2,698
27.50	3,731	3,377	6,075
28.50	4,495	4,113	10,188
29.50	5,315	4,905	15,093

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**36.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 25.50' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 7.07 sf
#2	Device 1	28.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	27.25'	**48.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	25.50'	**6.0" Vert. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#5	Secondary	25.50'	**18.0" Round Culvert** L= 71.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 24.50' S= 0.0141 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#6	Device 5	29.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 5	27.50'	**24.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#8	Device 5	25.50'	**6.0" Vert. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#9	Tertiary	25.50'	**24.0" Round Culvert** L= 300.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 18.25' S= 0.0242 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#10	Device 9	29.25'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#11	Device 9	27.75'	**48.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.3 cfs @ 15.19 hrs HW=25.78' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.3 cfs @ 1.14 fps)
  ├─**2=Orifice/Grate** (Controls 0.0 cfs)
  ├─**3=Orifice/Grate** (Controls 0.0 cfs)
  └─**4=Orifice/Grate** (Passes 0.3 cfs of 1.3 cfs potential flow)

Secondary OutFlow Max=0.3 cfs @ 15.19 hrs HW=25.78' (Free Discharge)
└─**5=Culvert** (Inlet Controls 0.3 cfs @ 1.43 fps)
  ├─**6=Orifice/Grate** (Controls 0.0 cfs)
  ├─**7=Orifice/Grate** (Controls 0.0 cfs)
  └─**8=Orifice/Grate** (Passes 0.3 cfs of 1.3 cfs potential flow)

Tertiary OutFlow Max=0.0 cfs @ 0.01 hrs HW=25.50' (Free Discharge)
└─**9=Culvert** (Controls 0.0 cfs)
  ├─**10=Orifice/Grate** (Controls 0.0 cfs)
  └─**11=Orifice/Grate** (Controls 0.0 cfs)

Summary for Subcatchment 1S:

Runoff = 21.8 cfs @ 12.82 hrs, Volume= 295,379 cf, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.66"

	Area (sf)	CN	Description
*	13,570	98	Building
*	87,535	98	Road
*	0	98	Walkway
	1,400,154	30	Woods, Good, HSG A
	6,589,592	55	Woods, Good, HSG B
	570,997	77	Woods, Good, HSG D
	725,290	39	>75% Grass cover, Good, HSG A
	1,297,504	61	>75% Grass cover, Good, HSG B
	27,363	80	>75% Grass cover, Good, HSG D
	10,712,005	53	Weighted Average
	10,610,900		99.06% Pervious Area
	101,105		0.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.4100	0.13		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
4.5	857	0.4100	3.20		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	251	0.1000	5.35	71.31	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.100 Earth, dense brush, high stage
2.1	426	0.4600	3.39		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.1	1,669	0.1800	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	747	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.1	784	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
57.4	4,834	Total			

Summary for Subcatchment 2S:

Runoff = 25.7 cfs @ 12.19 hrs, Volume= 114,750 cf, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.66"

	Area (sf)	CN	Description
*	45,871	98	Building
*	151,012	98	Road
*	1,711	98	Walkway
	0	30	Woods, Good, HSG A
	676,427	55	Woods, Good, HSG B
	0	70	Woods, Good, HSG C
	54,087	39	>75% Grass cover, Good, HSG A
	1,060,932	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	1,990,040	62	Weighted Average
	1,791,446		90.02% Pervious Area
	198,594		9.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.3300	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
3.2	550	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.7	2,179	0.1400	6.33	84.37	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.100 Very weedy reaches w/pools
22.5	2,829	Total			

Summary for Subcatchment 3S:

Runoff = 16.2 cfs @ 12.09 hrs, Volume= 51,088 cf, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.66"

	Area (sf)	CN	Description
*	132,660	98	Building
*	189,134	98	Road
*	6,658	98	Walkway
	0	30	Woods, Good, HSG A
	0	58	Woods/grass comb., Good, HSG B
	0	70	Woods, Good, HSG C
	450,007	39	>75% Grass cover, Good, HSG A
	0	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	778,459	64	Weighted Average
	450,007		57.81% Pervious Area
	328,452		42.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	31	0.0600	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
1.7	176	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	512	0.0600	4.14	55.23	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.100 Very weedy reaches w/pools
14.3	719	Total			

Summary for Subcatchment 4S:

Runoff = 32.0 cfs @ 12.02 hrs, Volume= 73,655 cf, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.66"

	Area (sf)	CN	Description
*	95,630	98	Building
*	149,954	98	Road
*	124,574	98	Walkway
	0	30	Woods, Good, HSG A
	0	58	Woods/grass comb., Good, HSG B
	0	70	Woods, Good, HSG C
	199,912	39	>75% Grass cover, Good, HSG A
	0	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	570,070	77	Weighted Average
	199,912		35.07% Pervious Area
	370,158		64.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	33	0.0250	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.58"
1.4	90	0.0150	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.58"
2.0	570	0.0100	4.68	14.70	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.020 Corrugated PE, corrugated interior
9.4	693	Total			

Summary for Subcatchment 5S:

Runoff = 2.1 cfs @ 12.05 hrs, Volume= 5,990 cf, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.66"

	Area (sf)	CN	Description
*	23,999	98	Building
*	17,871	98	Road
*	0	98	Walkway
	3,865	30	Woods, Good, HSG A
	0	58	Woods/grass comb., Good, HSG B
	0	70	Woods, Good, HSG C
	58,141	39	>75% Grass cover, Good, HSG A
	0	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	103,876	62	Weighted Average
	62,006		59.69% Pervious Area
	41,870		40.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.1000	0.20		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.58"
2.7	362	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.0	462	Total			

Summary for Pond BR1: BR-1

Inflow Area = 778,459 sf, 42.19% Impervious, Inflow Depth = 0.79" for 10-yr event
Inflow = 16.2 cfs @ 12.09 hrs, Volume= 51,088 cf
Outflow = 1.5 cfs @ 13.47 hrs, Volume= 51,088 cf, Atten= 91%, Lag= 82.8 min
Discarded = 1.4 cfs @ 13.47 hrs, Volume= 50,958 cf
Primary = 0.1 cfs @ 13.47 hrs, Volume= 131 cf
Secondary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 19.76' @ 13.47 hrs Surf.Area= 12,253 sf Storage= 18,978 cf

Plug-Flow detention time= 139.3 min calculated for 51,081 cf (100% of inflow)
Center-of-Mass det. time= 139.3 min (1,031.1 - 891.8)

Volume	Invert	Avail.Storage	Storage Description
#1	14.25'	14,553 cf	**Cell 1 (Prismatic)** Listed below (Recalc)
#2	14.25'	17,840 cf	**Cell 2 (Prismatic)** Listed below (Recalc)
		32,393 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	4,834	0.0	0	0
15.25	4,834	40.0	1,934	1,934
19.25	4,834	20.0	3,867	5,801
20.75	6,836	100.0	8,753	14,553

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	6,046	0.0	0	0
15.25	6,046	40.0	2,418	2,418
19.25	6,046	20.0	4,837	7,255
20.75	8,067	100.0	10,585	17,840

Device	Routing	Invert	Outlet Devices
#1	Primary	14.25'	**36.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.25' / 14.25' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 7.07 sf
#2	Device 1	19.75'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	14.25'	**5.000 in/hr Exfiltration over Surface area**
#4	Secondary	14.25'	**24.0" Round Culvert** L= 70.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.25' / 10.00' S= 0.0607 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#5	Device 4	20.25'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=1.4 cfs @ 13.47 hrs HW=19.76' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 1.4 cfs)

Primary OutFlow Max=0.1 cfs @ 13.47 hrs HW=19.76' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 53.8 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.1 cfs @ 0.36 fps)

Secondary OutFlow Max=0.0 cfs @ 0.01 hrs HW=14.25' (Free Discharge)
└**4=Culvert** (Controls 0.0 cfs)
└**5=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond BR2: BR-2

Inflow	=	7.5 cfs @	12.34 hrs, Volume=	52,254 cf	
Outflow	=	4.7 cfs @	12.70 hrs, Volume=	52,254 cf,	Atten= 38%, Lag= 21.4 min
Discarded	=	0.6 cfs @	12.70 hrs, Volume=	34,803 cf	
Primary	=	4.1 cfs @	12.70 hrs, Volume=	17,452 cf	

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 24.46' @ 12.70 hrs Surf.Area= 5,457 sf Storage= 9,966 cf

Plug-Flow detention time= 146.9 min calculated for 52,247 cf (100% of inflow)
Center-of-Mass det. time= 146.9 min (1,101.2 - 954.3)

Volume	Invert	Avail.Storage	Storage Description
#1	18.25'	11,595 cf	**Cell 1 (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
18.25	3,686	0.0	0	0
19.25	3,686	40.0	1,474	1,474
23.25	3,686	20.0	2,949	4,423
24.75	5,877	100.0	7,172	11,595

Device	Routing	Invert	Outlet Devices
#1	Primary	18.25'	**36.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.25' / 18.25' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 7.07 sf
#2	Device 1	24.25'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	18.25'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.6 cfs @ 12.70 hrs HW=24.46' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.6 cfs)

Primary OutFlow Max=4.0 cfs @ 12.70 hrs HW=24.46' (Free Discharge)
↑—**1=Culvert** (Passes 4.0 cfs of 58.3 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 4.0 cfs @ 1.51 fps)

Summary for Pond DP1: Design Point #1

Inflow Area = 14,154,450 sf, 7.35% Impervious, Inflow Depth = 0.25" for 10-yr event
Inflow = 22.6 cfs @ 12.82 hrs, Volume= 298,028 cf
Primary = 22.6 cfs @ 12.82 hrs, Volume= 298,028 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Pond FB1: FB-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.11" for 10-yr event
Inflow = 4.3 cfs @ 12.70 hrs, Volume= 18,709 cf
Outflow = 3.2 cfs @ 12.91 hrs, Volume= 15,333 cf, Atten= 26%, Lag= 12.4 min
Primary = 3.2 cfs @ 12.91 hrs, Volume= 15,333 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 17.41' @ 12.91 hrs Surf.Area= 1,750 sf Storage= 3,651 cf

Plug-Flow detention time= 60.6 min calculated for 15,333 cf (82% of inflow)
Center-of-Mass det. time= 21.6 min (873.2 - 851.6)

Volume	Invert	Avail.Storage	Storage Description
#1	14.25'	5,295 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	636	0	0
15.25	934	785	785
16.25	1,289	1,112	1,897
17.25	1,670	1,480	3,376
18.25	2,168	1,919	5,295

Device	Routing	Invert	Outlet Devices
#1	Primary	17.25'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=3.1 cfs @ 12.91 hrs HW=17.41' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.1 cfs @ 0.98 fps)

Summary for Pond FB2: FB-2

Inflow Area = 103,876 sf, 40.31% Impervious, Inflow Depth = 0.69" for 10-yr event
Inflow = 2.1 cfs @ 12.05 hrs, Volume= 5,990 cf
Outflow = 0.7 cfs @ 12.24 hrs, Volume= 4,446 cf, Atten= 65%, Lag= 11.4 min
Primary = 0.7 cfs @ 12.24 hrs, Volume= 4,446 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 7.85' @ 12.24 hrs Surf.Area= 1,039 sf Storage= 1,641 cf

Plug-Flow detention time= 172.3 min calculated for 4,446 cf (74% of inflow)
Center-of-Mass det. time= 64.0 min (961.1 - 897.1)

Volume	Invert	Avail.Storage	Storage Description
#1	4.75'	2,750 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.75	127	0	0
5.75	340	234	234
6.75	641	491	724
7.75	999	820	1,544
8.75	1,413	1,206	2,750

Device	Routing	Invert	Outlet Devices
#1	Primary	7.75'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=0.7 cfs @ 12.24 hrs HW=7.85' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.7 cfs @ 0.75 fps)

Summary for Pond IC1: IC-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.30" for 10-yr event
Inflow = 9.3 cfs @ 12.34 hrs, Volume= 50,304 cf
Outflow = 2.9 cfs @ 13.00 hrs, Volume= 50,304 cf, Atten= 69%, Lag= 39.6 min
Discarded = 2.5 cfs @ 12.20 hrs, Volume= 49,047 cf
Primary = 0.4 cfs @ 13.00 hrs, Volume= 1,257 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 21.70' @ 13.00 hrs Surf.Area= 0.494 ac Storage= 0.233 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 25.8 min (955.3 - 929.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.75'	0.481 af	**172.50'W x 124.66'L x 3.75'H Field A** 1.851 af Overall - 0.650 af Embedded = 1.202 af x 40.0% Voids
#2A	21.50'	0.650 af	**ADS_StormTech DC-780 +Cap** x 612 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 612 Chambers in 36 Rows
		1.130 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	21.50'	**24.0" Round Culvert X 2.00** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.50' / 20.75' S= 0.0750 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Discarded	20.75'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.5 cfs @ 12.20 hrs HW=20.79' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 2.5 cfs)

Primary OutFlow Max=0.4 cfs @ 13.00 hrs HW=21.70' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.4 cfs @ 1.21 fps)

Summary for Pond IC2: IC-2

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Outflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Secondary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 9.50' @ 0.01 hrs Surf.Area= 0.453 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	0.441 af	**167.75'W x 117.54'L x 3.75'H Field A** 1.697 af Overall - 0.594 af Embedded = 1.103 af x 40.0% Voids
#2A	10.25'	0.594 af	**ADS_StormTech DC-780 +Cap** x 560 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 560 Chambers in 35 Rows
		1.036 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	10.00'	**24.0" Round Culvert** L= 263.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.00' / 8.50' S= 0.0057 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	11.00'	**12.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.00' / 11.00' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#3	Discarded	9.50'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 0.01 hrs HW=9.50' (Free Discharge)
↑—**3=Exfiltration** (Passes 0.0 cfs of 2.3 cfs potential flow)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=9.50' (Free Discharge)
↑—**1=Culvert** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.01 hrs HW=9.50' (Free Discharge)
↑—**2=Culvert** (Controls 0.0 cfs)

Summary for Pond IC3: IC-3

Inflow Area = 3,338,569 sf, 26.87% Impervious, Inflow Depth = 0.09" for 10-yr event
Inflow = 10.5 cfs @ 12.15 hrs, Volume= 26,117 cf
Outflow = 5.0 cfs @ 12.62 hrs, Volume= 26,117 cf, Atten= 52%, Lag= 28.1 min
Discarded = 4.0 cfs @ 12.00 hrs, Volume= 23,468 cf
Primary = 1.0 cfs @ 12.62 hrs, Volume= 2,648 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 0.59' @ 12.62 hrs Surf.Area= 0.801 ac Storage= 0.188 af

Plug-Flow detention time= 18.5 min calculated for 26,113 cf (100% of inflow)
Center-of-Mass det. time= 18.5 min (764.4 - 745.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.777 af	**239.00'W x 146.02'L x 3.75'H Field A** 3.004 af Overall - 1.062 af Embedded = 1.943 af x 40.0% Voids
#2A	0.75'	1.062 af	**ADS_StormTech DC-780 +Cap** x 1000 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 1000 Chambers in 50 Rows
		1.839 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 0.00' / 0.00' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Discarded	0.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=4.0 cfs @ 12.00 hrs HW=0.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 4.0 cfs)

Primary OutFlow Max=1.0 cfs @ 12.62 hrs HW=0.59' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.0 cfs @ 1.91 fps)

Summary for Pond IC4: IC-4

Inflow Area = 3,338,569 sf, 26.87% Impervious, Inflow Depth = 0.26" for 10-yr event
Inflow = 32.0 cfs @ 12.02 hrs, Volume= 73,655 cf
Outflow = 13.0 cfs @ 12.15 hrs, Volume= 73,655 cf, Atten= 59%, Lag= 8.0 min
Discarded = 2.5 cfs @ 11.70 hrs, Volume= 47,538 cf
Primary = 10.5 cfs @ 12.15 hrs, Volume= 26,117 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 6.13' @ 12.15 hrs Surf.Area= 0.501 ac Storage= 0.417 af

Plug-Flow detention time= 13.3 min calculated for 73,644 cf (100% of inflow)
Center-of-Mass det. time= 13.3 min (858.2 - 844.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.75'	0.487 af	**120.25'W x 181.62'L x 3.75'H Field A** 1.880 af Overall - 0.663 af Embedded = 1.217 af x 40.0% Voids
#2A	5.50'	0.663 af	**ADS_StormTech DC-780 +Cap** x 625 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 625 Chambers in 25 Rows
		1.150 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	4.75'	**24.0" Round Culvert X 2.00** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.75' / 4.75' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Discarded	4.75'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.5 cfs @ 11.70 hrs HW=4.79' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 2.5 cfs)

Primary OutFlow Max=10.4 cfs @ 12.15 hrs HW=6.13' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 10.4 cfs @ 3.19 fps)

Summary for Pond IF1: IF-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.09" for 10-yr event
Inflow = 3.2 cfs @ 12.91 hrs, Volume= 15,333 cf
Outflow = 0.7 cfs @ 14.66 hrs, Volume= 15,333 cf, Atten= 78%, Lag= 105.1 min
Discarded = 0.7 cfs @ 14.66 hrs, Volume= 15,333 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Secondary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 15.27' @ 14.66 hrs Surf.Area= 5,933 sf Storage= 5,561 cf

Plug-Flow detention time= 92.0 min calculated for 15,333 cf (100% of inflow)
Center-of-Mass det. time= 92.0 min (965.2 - 873.2)

Volume	Invert	Avail.Storage	Storage Description
#1	14.25'	27,739 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	5,000	0	0
15.25	5,916	5,458	5,458
16.25	6,892	6,404	11,862
17.25	7,924	7,408	19,270
18.25	9,013	8,469	27,739

Device	Routing	Invert	Outlet Devices
#1	Primary	15.25'	**30.0" Round Culvert** L= 200.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.25' / 14.00' S= 0.0063 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 4.91 sf
#2	Device 1	17.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	16.25'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Discarded	14.25'	**5.000 in/hr Exfiltration over Surface area**
#5	Secondary	14.25'	**24.0" Round Culvert** L= 200.0' CMP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 14.25' / 10.00' S= 0.0213 '/' Cc= 0.900
n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#6 Device 5 16.75' **24.0" Horiz. Orifice/Grate** C= 0.600
Limited to weir flow at low heads

Discarded OutFlow Max=0.7 cfs @ 14.66 hrs HW=15.27' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.7 cfs)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=14.25' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)
  ├**2=Orifice/Grate** (Controls 0.0 cfs)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.01 hrs HW=14.25' (Free Discharge)
└**5=Culvert** (Controls 0.0 cfs)
  └**6=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond IF2: IF-2

Inflow Area = 103,876 sf, 40.31% Impervious, Inflow Depth = 0.51" for 10-yr event
Inflow = 0.7 cfs @ 12.24 hrs, Volume= 4,446 cf
Outflow = 0.2 cfs @ 13.22 hrs, Volume= 4,446 cf, Atten= 73%, Lag= 59.1 min
Discarded = 0.2 cfs @ 13.22 hrs, Volume= 4,446 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 5.12' @ 13.22 hrs Surf.Area= 1,725 sf Storage= 603 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 22.6 min (983.7 - 961.1)

Volume	Invert	Avail.Storage	Storage Description
#1	4.75'	11,336 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.75	1,492	0	0
5.75	2,113	1,803	1,803
6.75	2,792	2,453	4,255
7.75	3,526	3,159	7,414
8.75	4,318	3,922	11,336

Device	Routing	Invert	Outlet Devices
#1	Primary	8.25'	**12.5' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	4.75'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.2 cfs @ 13.22 hrs HW=5.12' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=4.75' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond IF3: IF-3

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.02" for 10-yr event
Inflow = 4.5 cfs @ 12.20 hrs, Volume= 3,713 cf
Outflow = 0.5 cfs @ 12.52 hrs, Volume= 3,713 cf, Atten= 89%, Lag= 18.9 min
Discarded = 0.5 cfs @ 12.52 hrs, Volume= 3,713 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 26.34' @ 12.52 hrs Surf.Area= 4,138 sf Storage= 3,029 cf

Plug-Flow detention time= 62.0 min calculated for 3,713 cf (100% of inflow)
Center-of-Mass det. time= 62.0 min (799.0 - 737.0)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	22,792 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	3,081	0	0
26.50	4,340	3,711	3,711
27.50	5,656	4,998	8,709
28.50	7,027	6,342	15,050
29.50	8,457	7,742	22,792

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**24.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 20.75' S= 0.1583 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Device 1	29.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	28.00'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Discarded	25.50'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.5 cfs @ 12.52 hrs HW=26.34' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=25.50' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)
  └**2=Orifice/Grate** (Controls 0.0 cfs)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond IF4: IF-4

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Outflow = 0.0 cfs @ 0.01 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.0 cfs @ 0.01 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 12.00' @ 0.01 hrs Surf.Area= 8,249 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	12.00'	42,481 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
12.00	8,249	0	0
13.00	9,385	8,817	8,817
14.00	10,578	9,982	18,799
15.00	11,827	11,203	30,001
16.00	13,133	12,480	42,481

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	**24.0" Round Culvert** L= 150.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.00' / 10.00' S= 0.0133 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Device 1	15.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	12.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 0.01 hrs HW=12.00' (Free Discharge)
└**3=Exfiltration** (Passes 0.0 cfs of 1.0 cfs potential flow)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=12.00' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)
└**2=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond IF5: IF-5

Inflow Area = 2,768,499 sf, 19.04% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.1 cfs @ 13.47 hrs, Volume= 131 cf
Outflow = 0.1 cfs @ 13.56 hrs, Volume= 131 cf, Atten= 7%, Lag= 5.9 min
Discarded = 0.1 cfs @ 13.56 hrs, Volume= 131 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

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

Peak Elev= 5.50' @ 13.56 hrs Surf.Area= 9,139 sf Storage= 25 cf

Plug-Flow detention time= 5.8 min calculated for 131 cf (100% of inflow)
Center-of-Mass det. time= 5.7 min (815.4 - 809.6)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	46,127 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	9,136	0	0
6.50	10,284	9,710	9,710
7.50	11,489	10,887	20,597
8.50	12,751	12,120	32,717
9.50	14,069	13,410	46,127

Device	Routing	Invert	Outlet Devices
#1	Primary	5.50'	**24.0" Round Culvert** L= 150.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.50' / 3.50' S= 0.0133 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Device 1	8.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	5.50'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.1 cfs @ 13.56 hrs HW=5.50' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 1.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=5.50' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)
└**2=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond SB1: SB-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.69" for 10-yr event
Inflow = 25.7 cfs @ 12.19 hrs, Volume= 114,750 cf
Outflow = 25.6 cfs @ 12.20 hrs, Volume= 106,271 cf, Atten= 0%, Lag= 0.6 min
Primary = 4.5 cfs @ 12.20 hrs, Volume= 3,713 cf
Secondary = 21.1 cfs @ 12.20 hrs, Volume= 102,558 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 32.93' @ 12.20 hrs Surf.Area= 4,155 sf Storage= 10,181 cf

Plug-Flow detention time= 55.3 min calculated for 106,256 cf (93% of inflow)
Center-of-Mass det. time= 17.3 min (925.0 - 907.8)

Volume	Invert	Avail.Storage	Storage Description
#1	29.50'	12,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
29.50	1,897	0	0
30.50	2,485	2,191	2,191
31.50	3,130	2,808	4,999
32.50	3,831	3,481	8,479
33.50	4,590	4,211	12,690

Device	Routing	Invert	Outlet Devices
#1	Primary	32.75'	**26.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Secondary	32.50'	**30.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.5 cfs @ 12.20 hrs HW=32.93' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 4.5 cfs @ 0.98 fps)

Secondary OutFlow Max=21.1 cfs @ 12.20 hrs HW=32.93' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 21.1 cfs @ 1.65 fps)

Summary for Pond SB2: SB-2

Inflow	=	21.1 cfs @	12.20 hrs, Volume=	102,558 cf	
Outflow	=	16.8 cfs @	12.34 hrs, Volume=	102,558 cf,	Atten= 20%, Lag= 8.3 min
Primary	=	9.3 cfs @	12.34 hrs, Volume=	50,304 cf	
Secondary	=	7.5 cfs @	12.34 hrs, Volume=	52,254 cf	
Tertiary	=	0.0 cfs @	0.01 hrs, Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 27.52' @ 12.34 hrs Surf.Area= 3,742 sf Storage= 6,131 cf

Plug-Flow detention time= 10.4 min calculated for 102,558 cf (100% of inflow)
Center-of-Mass det. time= 10.2 min (942.1 - 931.8)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	15,093 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	2,373	0	0
26.50	3,023	2,698	2,698
27.50	3,731	3,377	6,075
28.50	4,495	4,113	10,188
29.50	5,315	4,905	15,093

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**36.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 25.50' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 7.07 sf
#2	Device 1	28.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	27.25'	**48.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	25.50'	**6.0" Vert. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#5	Secondary	25.50'	**18.0" Round Culvert** L= 71.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 24.50' S= 0.0141 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#6	Device 5	29.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 5	27.50'	**24.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#8	Device 5	25.50'	**6.0" Vert. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#9	Tertiary	25.50'	**24.0" Round Culvert** L= 300.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 18.25' S= 0.0242 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#10	Device 9	29.25'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#11	Device 9	27.75'	**48.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.3 cfs @ 12.34 hrs HW=27.51' (Free Discharge)
└─**1=Culvert** (Passes 9.3 cfs of 14.1 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.0 cfs)
  ├─**3=Orifice/Grate** (Orifice Controls 1.7 cfs @ 1.65 fps)
  └─**4=Orifice/Grate** (Orifice Controls 7.5 cfs @ 6.40 fps)

Secondary OutFlow Max=7.5 cfs @ 12.34 hrs HW=27.51' (Free Discharge)
└─**5=Culvert** (Passes 7.5 cfs of 7.6 cfs potential flow)
  ├─**6=Orifice/Grate** (Controls 0.0 cfs)
  ├─**7=Orifice/Grate** (Orifice Controls 0.0 cfs @ 0.39 fps)
  └─**8=Orifice/Grate** (Orifice Controls 7.5 cfs @ 6.40 fps)

Tertiary OutFlow Max=0.0 cfs @ 0.01 hrs HW=25.50' (Free Discharge)
└─**9=Culvert** (Controls 0.0 cfs)
  ├─**10=Orifice/Grate** (Controls 0.0 cfs)
  └─**11=Orifice/Grate** (Controls 0.0 cfs)

Summary for Subcatchment 1S:

Runoff = 155.8 cfs @ 12.69 hrs, Volume= 1,246,835 cf, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=6.06"

	Area (sf)	CN	Description
*	13,570	98	Building
*	87,535	98	Road
*	0	98	Walkway
	1,400,154	30	Woods, Good, HSG A
	6,589,592	55	Woods, Good, HSG B
	570,997	77	Woods, Good, HSG D
	725,290	39	>75% Grass cover, Good, HSG A
	1,297,504	61	>75% Grass cover, Good, HSG B
	27,363	80	>75% Grass cover, Good, HSG D
	10,712,005	53	Weighted Average
	10,610,900		99.06% Pervious Area
	101,105		0.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	100	0.4100	0.13		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
4.5	857	0.4100	3.20		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	251	0.1000	5.35	71.31	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.100 Earth, dense brush, high stage
2.1	426	0.4600	3.39		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.1	1,669	0.1800	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	747	0.0700	1.32		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.1	784	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
57.4	4,834	Total			

Summary for Subcatchment 2S:

Runoff = 97.0 cfs @ 12.17 hrs, Volume= 353,501 cf, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=6.06"

	Area (sf)	CN	Description
*	45,871	98	Building
*	151,012	98	Road
*	1,711	98	Walkway
	0	30	Woods, Good, HSG A
	676,427	55	Woods, Good, HSG B
	0	70	Woods, Good, HSG C
	54,087	39	>75% Grass cover, Good, HSG A
	1,060,932	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	1,990,040	62	Weighted Average
	1,791,446		90.02% Pervious Area
	198,594		9.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.3300	0.12		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
3.2	550	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.7	2,179	0.1400	6.33	84.37	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.100 Very weedy reaches w/pools
22.5	2,829	Total			

Summary for Subcatchment 3S:

Runoff = 53.8 cfs @ 12.07 hrs, Volume= 149,611 cf, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=6.06"

	Area (sf)	CN	Description
*	132,660	98	Building
*	189,134	98	Road
*	6,658	98	Walkway
	0	30	Woods, Good, HSG A
	0	58	Woods/grass comb., Good, HSG B
	0	70	Woods, Good, HSG C
	450,007	39	>75% Grass cover, Good, HSG A
	0	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	778,459	64	Weighted Average
	450,007		57.81% Pervious Area
	328,452		42.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	31	0.0600	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.58"
1.7	176	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	512	0.0600	4.14	55.23	**Parabolic Channel,** W=10.00' D=2.00' Area=13.3 sf Perim=11.0' n= 0.100 Very weedy reaches w/pools
14.3	719	Total			

Summary for Subcatchment 4S:

Runoff = 72.3 cfs @ 12.01 hrs, Volume= 167,768 cf, Depth= 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=6.06"

	Area (sf)	CN	Description
*	95,630	98	Building
*	149,954	98	Road
*	124,574	98	Walkway
	0	30	Woods, Good, HSG A
	0	58	Woods/grass comb., Good, HSG B
	0	70	Woods, Good, HSG C
	199,912	39	>75% Grass cover, Good, HSG A
	0	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	570,070	77	Weighted Average
	199,912		35.07% Pervious Area
	370,158		64.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	33	0.0250	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.58"
1.4	90	0.0150	1.08		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.58"
2.0	570	0.0100	4.68	14.70	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.020 Corrugated PE, corrugated interior
9.4	693	Total			

Summary for Subcatchment 5S:

Runoff = 7.4 cfs @ 12.04 hrs, Volume= 18,452 cf, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=6.06"

	Area (sf)	CN	Description
*	23,999	98	Building
*	17,871	98	Road
*	0	98	Walkway
	3,865	30	Woods, Good, HSG A
	0	58	Woods/grass comb., Good, HSG B
	0	70	Woods, Good, HSG C
	58,141	39	>75% Grass cover, Good, HSG A
	0	61	>75% Grass cover, Good, HSG B
	0	74	>75% Grass cover, Good, HSG C
	103,876	62	Weighted Average
	62,006		59.69% Pervious Area
	41,870		40.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.1000	0.20		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.58"
2.7	362	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.0	462	Total			

Summary for Pond BR1: BR-1

Inflow Area = 778,459 sf, 42.19% Impervious, Inflow Depth = 2.31" for 100-yr event
Inflow = 53.8 cfs @ 12.07 hrs, Volume= 149,611 cf
Outflow = 44.2 cfs @ 12.14 hrs, Volume= 149,611 cf, Atten= 18%, Lag= 4.5 min
Discarded = 1.7 cfs @ 12.14 hrs, Volume= 77,421 cf
Primary = 34.8 cfs @ 12.14 hrs, Volume= 67,527 cf
Secondary = 7.7 cfs @ 12.14 hrs, Volume= 4,664 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 20.65' @ 12.14 hrs Surf.Area= 14,623 sf Storage= 30,851 cf

Plug-Flow detention time= 96.2 min calculated for 149,591 cf (100% of inflow)
Center-of-Mass det. time= 96.2 min (952.6 - 856.4)

Volume	Invert	Avail.Storage	Storage Description
#1	14.25'	14,553 cf	**Cell 1 (Prismatic)** Listed below (Recalc)
#2	14.25'	17,840 cf	**Cell 2 (Prismatic)** Listed below (Recalc)
		32,393 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	4,834	0.0	0	0
15.25	4,834	40.0	1,934	1,934
19.25	4,834	20.0	3,867	5,801
20.75	6,836	100.0	8,753	14,553

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	6,046	0.0	0	0
15.25	6,046	40.0	2,418	2,418
19.25	6,046	20.0	4,837	7,255
20.75	8,067	100.0	10,585	17,840

Device	Routing	Invert	Outlet Devices
#1	Primary	14.25'	**36.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.25' / 14.25' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 7.07 sf
#2	Device 1	19.75'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	14.25'	**5.000 in/hr Exfiltration over Surface area**
#4	Secondary	14.25'	**24.0" Round Culvert** L= 70.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.25' / 10.00' S= 0.0607 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#5	Device 4	20.25'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=1.7 cfs @ 12.14 hrs HW=20.64' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 1.7 cfs)

Primary OutFlow Max=34.8 cfs @ 12.14 hrs HW=20.64' (Free Discharge)
└**1=Culvert** (Passes 34.8 cfs of 59.4 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 34.8 cfs @ 3.09 fps)

Secondary OutFlow Max=7.6 cfs @ 12.14 hrs HW=20.64' (Free Discharge)
└**4=Culvert** (Passes 7.6 cfs of 27.7 cfs potential flow)
└**5=Orifice/Grate** (Weir Controls 7.6 cfs @ 2.05 fps)

Summary for Pond BR2: BR-2

Inflow	=	11.1 cfs @	12.21 hrs, Volume=	118,288 cf	
Outflow	=	10.2 cfs @	12.37 hrs, Volume=	118,288 cf,	Atten= 8%, Lag= 9.6 min
Discarded	=	0.7 cfs @	12.37 hrs, Volume=	37,361 cf	
Primary	=	9.6 cfs @	12.37 hrs, Volume=	80,927 cf	

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 24.63' @ 12.37 hrs Surf.Area= 5,699 sf Storage= 10,890 cf

Plug-Flow detention time= 72.1 min calculated for 118,272 cf (100% of inflow)
Center-of-Mass det. time= 72.1 min (1,021.8 - 949.7)

Volume	Invert	Avail.Storage	Storage Description
#1	18.25'	11,595 cf	**Cell 1 (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
18.25	3,686	0.0	0	0
19.25	3,686	40.0	1,474	1,474
23.25	3,686	20.0	2,949	4,423
24.75	5,877	100.0	7,172	11,595

Device	Routing	Invert	Outlet Devices
#1	Primary	18.25'	**36.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.25' / 18.25' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 7.07 sf
#2	Device 1	24.25'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	18.25'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.7 cfs @ 12.37 hrs HW=24.63' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.7 cfs)

Primary OutFlow Max=9.6 cfs @ 12.37 hrs HW=24.63' (Free Discharge)
└**1=Culvert** (Passes 9.6 cfs of 59.3 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 9.6 cfs @ 2.01 fps)

Summary for Pond DP1: Design Point #1

Inflow Area = 14,154,450 sf, 7.35% Impervious, Inflow Depth = 1.13" for 100-yr event
Inflow = 163.2 cfs @ 12.69 hrs, Volume= 1,328,925 cf
Primary = 163.2 cfs @ 12.69 hrs, Volume= 1,328,925 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Pond FB1: FB-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 1.22" for 100-yr event
Inflow = 44.5 cfs @ 12.34 hrs, Volume= 202,550 cf
Outflow = 44.5 cfs @ 12.35 hrs, Volume= 199,174 cf, Atten= 0%, Lag= 0.6 min
Primary = 44.5 cfs @ 12.35 hrs, Volume= 199,174 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 18.14' @ 12.35 hrs Surf.Area= 2,112 sf Storage= 5,053 cf

Plug-Flow detention time= 12.7 min calculated for 199,147 cf (98% of inflow)
Center-of-Mass det. time= 2.9 min (838.1 - 835.2)

Volume	Invert	Avail.Storage	Storage Description
#1	14.25'	5,295 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	636	0	0
15.25	934	785	785
16.25	1,289	1,112	1,897
17.25	1,670	1,480	3,376
18.25	2,168	1,919	5,295

Device	Routing	Invert	Outlet Devices
#1	Primary	17.25'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=44.4 cfs @ 12.35 hrs HW=18.14' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 44.4 cfs @ 2.51 fps)

Summary for Pond FB2: FB-2

Inflow Area = 103,876 sf, 40.31% Impervious, Inflow Depth = 2.13" for 100-yr event
Inflow = 7.4 cfs @ 12.04 hrs, Volume= 18,452 cf
Outflow = 7.4 cfs @ 12.05 hrs, Volume= 16,908 cf, Atten= 1%, Lag= 0.7 min
Primary = 7.4 cfs @ 12.05 hrs, Volume= 16,908 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 8.18' @ 12.05 hrs Surf.Area= 1,178 sf Storage= 2,014 cf

Plug-Flow detention time= 60.2 min calculated for 16,908 cf (92% of inflow)
Center-of-Mass det. time= 16.4 min (874.7 - 858.3)

Volume	Invert	Avail.Storage	Storage Description
#1	4.75'	2,750 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.75	127	0	0
5.75	340	234	234
6.75	641	491	724
7.75	999	820	1,544
8.75	1,413	1,206	2,750

Device	Routing	Invert	Outlet Devices
#1	Primary	7.75'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=7.4 cfs @ 12.05 hrs HW=8.18' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 7.4 cfs @ 1.71 fps)

Summary for Pond IC1: IC-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 1.15" for 100-yr event
Inflow = 53.5 cfs @ 12.23 hrs, Volume= 191,216 cf
Outflow = 33.0 cfs @ 12.52 hrs, Volume= 191,216 cf, Atten= 38%, Lag= 17.2 min
Discarded = 2.5 cfs @ 11.94 hrs, Volume= 89,294 cf
Primary = 30.5 cfs @ 12.52 hrs, Volume= 101,923 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 24.13' @ 12.52 hrs Surf.Area= 0.494 ac Storage= 1.058 af

Plug-Flow detention time= 32.6 min calculated for 191,216 cf (100% of inflow)
Center-of-Mass det. time= 32.6 min (898.3 - 865.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	20.75'	0.481 af	**172.50'W x 124.66'L x 3.75'H Field A** 1.851 af Overall - 0.650 af Embedded = 1.202 af x 40.0% Voids
#2A	21.50'	0.650 af	**ADS_StormTech DC-780 +Cap** x 612 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 612 Chambers in 36 Rows
		1.130 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	21.50'	**24.0" Round Culvert X 2.00** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.50' / 20.75' S= 0.0750 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Discarded	20.75'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.5 cfs @ 11.94 hrs HW=20.80' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 2.5 cfs)

Primary OutFlow Max=30.5 cfs @ 12.52 hrs HW=24.13' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 30.5 cfs @ 4.86 fps)

Summary for Pond IC2: IC-2

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.62" for 100-yr event
Inflow = 20.5 cfs @ 12.91 hrs, Volume= 102,191 cf
Outflow = 13.8 cfs @ 13.28 hrs, Volume= 102,191 cf, Atten= 33%, Lag= 22.2 min
Discarded = 2.3 cfs @ 12.10 hrs, Volume= 39,736 cf
Primary = 10.0 cfs @ 13.28 hrs, Volume= 57,899 cf
Secondary = 1.5 cfs @ 13.28 hrs, Volume= 4,555 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 11.97' @ 13.28 hrs Surf.Area= 0.453 ac Storage= 0.750 af

Plug-Flow detention time= 44.6 min calculated for 102,191 cf (100% of inflow)

Center-of-Mass det. time= 44.6 min (842.0 - 797.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	0.441 af	**167.75'W x 117.54'L x 3.75'H Field A** 1.697 af Overall - 0.594 af Embedded = 1.103 af x 40.0% Voids
#2A	10.25'	0.594 af	**ADS_StormTech DC-780 +Cap** x 560 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 560 Chambers in 35 Rows
		1.036 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	10.00'	**24.0" Round Culvert** L= 263.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.00' / 8.50' S= 0.0057 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	11.00'	**12.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.00' / 11.00' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#3	Discarded	9.50'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.3 cfs @ 12.10 hrs HW=9.55' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 2.3 cfs)

Primary OutFlow Max=10.0 cfs @ 13.28 hrs HW=11.97' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 10.0 cfs @ 4.01 fps)

Secondary OutFlow Max=1.5 cfs @ 13.28 hrs HW=11.97' (Free Discharge)
↑—**2=Culvert** (Barrel Controls 1.5 cfs @ 2.51 fps)

Summary for Pond IC3: IC-3

Inflow Area = 3,338,569 sf, 26.87% Impervious, Inflow Depth = 0.55" for 100-yr event
Inflow = 33.1 cfs @ 12.12 hrs, Volume= 152,383 cf
Outflow = 11.7 cfs @ 13.84 hrs, Volume= 152,383 cf, Atten= 65%, Lag= 102.9 min
Discarded = 4.0 cfs @ 11.85 hrs, Volume= 70,293 cf
Primary = 7.7 cfs @ 13.84 hrs, Volume= 82,090 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1.72' @ 13.84 hrs Surf.Area= 0.801 ac Storage= 0.885 af

Plug-Flow detention time= 48.5 min calculated for 152,383 cf (100% of inflow)
Center-of-Mass det. time= 48.5 min (839.6 - 791.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.777 af	**239.00'W x 146.02'L x 3.75'H Field A** 3.004 af Overall - 1.062 af Embedded = 1.943 af x 40.0% Voids
#2A	0.75'	1.062 af	**ADS_StormTech DC-780 +Cap** x 1000 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 1000 Chambers in 50 Rows
		1.839 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 0.00' / 0.00' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Discarded	0.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=4.0 cfs @ 11.85 hrs HW=0.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 4.0 cfs)

Primary OutFlow Max=7.7 cfs @ 13.84 hrs HW=1.72' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 7.7 cfs @ 3.59 fps)

Summary for Pond IC4: IC-4

Inflow Area = 3,338,569 sf, 26.87% Impervious, Inflow Depth = 0.85" for 100-yr event
Inflow = 72.3 cfs @ 12.01 hrs, Volume= 237,679 cf
Outflow = 35.7 cfs @ 12.12 hrs, Volume= 237,679 cf, Atten= 51%, Lag= 6.8 min
Discarded = 2.5 cfs @ 11.26 hrs, Volume= 85,296 cf
Primary = 33.1 cfs @ 12.12 hrs, Volume= 152,383 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 7.70' @ 12.12 hrs Surf.Area= 0.501 ac Storage= 0.982 af

Plug-Flow detention time= 18.4 min calculated for 237,646 cf (100% of inflow)
Center-of-Mass det. time= 18.4 min (840.3 - 821.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.75'	0.487 af	**120.25'W x 181.62'L x 3.75'H Field A** 1.880 af Overall - 0.663 af Embedded = 1.217 af x 40.0% Voids
#2A	5.50'	0.663 af	**ADS_StormTech DC-780 +Cap** x 625 Inside #1 Effective Size= 45.4"W x 30.0"H => 6.49 sf x 7.12'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 625 Chambers in 25 Rows
		1.150 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	4.75'	**24.0" Round Culvert X 2.00** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.75' / 4.75' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Discarded	4.75'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.5 cfs @ 11.26 hrs HW=4.79' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 2.5 cfs)

Primary OutFlow Max=33.1 cfs @ 12.12 hrs HW=7.70' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 33.1 cfs @ 5.27 fps)

Summary for Pond IF1: IF-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 1.20" for 100-yr event
Inflow = 44.5 cfs @ 12.35 hrs, Volume= 199,174 cf
Outflow = 39.3 cfs @ 12.59 hrs, Volume= 199,174 cf, Atten= 12%, Lag= 14.0 min
Discarded = 1.0 cfs @ 12.59 hrs, Volume= 45,115 cf
Primary = 21.2 cfs @ 12.59 hrs, Volume= 111,727 cf
Secondary = 17.1 cfs @ 12.59 hrs, Volume= 42,332 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 18.02' @ 12.59 hrs Surf.Area= 8,765 sf Storage= 25,713 cf

Plug-Flow detention time= 52.5 min calculated for 199,147 cf (100% of inflow)
Center-of-Mass det. time= 52.5 min (890.5 - 838.1)

Volume	Invert	Avail.Storage	Storage Description
#1	14.25'	27,739 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.25	5,000	0	0
15.25	5,916	5,458	5,458
16.25	6,892	6,404	11,862
17.25	7,924	7,408	19,270
18.25	9,013	8,469	27,739

Device	Routing	Invert	Outlet Devices
#1	Primary	15.25'	**30.0" Round Culvert** L= 200.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.25' / 14.00' S= 0.0063 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 4.91 sf
#2	Device 1	17.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	16.25'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Discarded	14.25'	**5.000 in/hr Exfiltration over Surface area**
#5	Secondary	14.25'	**24.0" Round Culvert** L= 200.0' CMP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 14.25' / 10.00' S= 0.0213 '/' Cc= 0.900
n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#6 Device 5 16.75' **24.0" Horiz. Orifice/Grate** C= 0.600
Limited to weir flow at low heads

Discarded OutFlow Max=1.0 cfs @ 12.59 hrs HW=18.02' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 1.0 cfs)

Primary OutFlow Max=21.2 cfs @ 12.59 hrs HW=18.02' (Free Discharge)
└**1=Culvert** (Barrel Controls 21.2 cfs @ 4.87 fps)
├**2=Orifice/Grate** (Passes < 2.9 cfs potential flow)
└**3=Orifice/Grate** (Passes < 43.2 cfs potential flow)

Secondary OutFlow Max=17.1 cfs @ 12.59 hrs HW=18.02' (Free Discharge)
└**5=Culvert** (Passes 17.1 cfs of 19.9 cfs potential flow)
└**6=Orifice/Grate** (Orifice Controls 17.1 cfs @ 5.43 fps)

Summary for Pond IF2: IF-2

Inflow Area = 103,876 sf, 40.31% Impervious, Inflow Depth = 1.95" for 100-yr event
Inflow = 7.4 cfs @ 12.05 hrs, Volume= 16,908 cf
Outflow = 0.4 cfs @ 13.72 hrs, Volume= 16,908 cf, Atten= 94%, Lag= 100.3 min
Discarded = 0.4 cfs @ 13.72 hrs, Volume= 16,908 cf
Primary = 0.0 cfs @ 0.01 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 7.80' @ 13.72 hrs Surf.Area= 3,569 sf Storage= 7,605 cf

Plug-Flow detention time= 226.9 min calculated for 16,908 cf (100% of inflow)
Center-of-Mass det. time= 226.9 min (1,101.6 - 874.7)

Volume	Invert	Avail.Storage	Storage Description
#1	4.75'	11,336 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.75	1,492	0	0
5.75	2,113	1,803	1,803
6.75	2,792	2,453	4,255
7.75	3,526	3,159	7,414
8.75	4,318	3,922	11,336

Device	Routing	Invert	Outlet Devices
#1	Primary	8.25'	**12.5' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	4.75'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.4 cfs @ 13.72 hrs HW=7.80' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.4 cfs)

Primary OutFlow Max=0.0 cfs @ 0.01 hrs HW=4.75' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond IF3: IF-3

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.30" for 100-yr event
Inflow = 33.1 cfs @ 12.18 hrs, Volume= 49,170 cf
Outflow = 20.8 cfs @ 12.32 hrs, Volume= 49,170 cf, Atten= 37%, Lag= 8.9 min
Discarded = 0.9 cfs @ 12.32 hrs, Volume= 15,816 cf
Primary = 19.9 cfs @ 12.32 hrs, Volume= 33,354 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 29.28' @ 12.32 hrs Surf.Area= 8,135 sf Storage= 20,926 cf

Plug-Flow detention time= 61.8 min calculated for 49,163 cf (100% of inflow)
Center-of-Mass det. time= 61.9 min (798.6 - 736.7)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	22,792 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	3,081	0	0
26.50	4,340	3,711	3,711
27.50	5,656	4,998	8,709
28.50	7,027	6,342	15,050
29.50	8,457	7,742	22,792

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**24.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 20.75' S= 0.1583 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Device 1	29.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	28.00'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Discarded	25.50'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.9 cfs @ 12.32 hrs HW=29.27' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.9 cfs)

Primary OutFlow Max=19.9 cfs @ 12.32 hrs HW=29.27' (Free Discharge)
└**1=Culvert** (Inlet Controls 19.9 cfs @ 6.33 fps)
  ├**2=Orifice/Grate** (Passes < 3.0 cfs potential flow)
  └**3=Orifice/Grate** (Passes < 33.3 cfs potential flow)

Summary for Pond IF4: IF-4

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 0.67" for 100-yr event
Inflow = 21.2 cfs @ 12.59 hrs, Volume= 111,727 cf
Outflow = 12.8 cfs @ 13.12 hrs, Volume= 111,727 cf, Atten= 40%, Lag= 32.2 min
Discarded = 1.5 cfs @ 13.12 hrs, Volume= 56,532 cf
Primary = 11.3 cfs @ 13.12 hrs, Volume= 55,195 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 15.67' @ 13.12 hrs Surf.Area= 12,706 sf Storage= 38,254 cf

Plug-Flow detention time= 142.7 min calculated for 111,712 cf (100% of inflow)
Center-of-Mass det. time= 142.7 min (961.4 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	12.00'	42,481 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
12.00	8,249	0	0
13.00	9,385	8,817	8,817
14.00	10,578	9,982	18,799
15.00	11,827	11,203	30,001
16.00	13,133	12,480	42,481

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	**24.0" Round Culvert** L= 150.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.00' / 10.00' S= 0.0133 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Device 1	15.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	12.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.5 cfs @ 13.12 hrs HW=15.67' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 1.5 cfs)

Primary OutFlow Max=11.3 cfs @ 13.12 hrs HW=15.67' (Free Discharge)
↑**1=Culvert** (Passes 11.3 cfs of 19.2 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 11.3 cfs @ 2.68 fps)

Summary for Pond IF5: IF-5

Inflow Area = 2,768,499 sf, 19.04% Impervious, Inflow Depth = 0.54" for 100-yr event
Inflow = 34.8 cfs @ 12.14 hrs, Volume= 125,427 cf
Outflow = 12.6 cfs @ 13.37 hrs, Volume= 125,427 cf, Atten= 64%, Lag= 73.5 min
Discarded = 1.6 cfs @ 13.37 hrs, Volume= 60,071 cf
Primary = 11.0 cfs @ 13.37 hrs, Volume= 65,356 cf

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

Peak Elev= 9.41' @ 13.37 hrs Surf.Area= 13,950 sf Storage= 44,864 cf

Plug-Flow detention time= 142.5 min calculated for 125,409 cf (100% of inflow)
Center-of-Mass det. time= 142.5 min (938.7 - 796.2)

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	46,127 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5.50	9,136	0	0
6.50	10,284	9,710	9,710
7.50	11,489	10,887	20,597
8.50	12,751	12,120	32,717
9.50	14,069	13,410	46,127

Device	Routing	Invert	Outlet Devices
#1	Primary	5.50'	**24.0" Round Culvert** L= 150.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.50' / 3.50' S= 0.0133 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Device 1	8.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	5.50'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.6 cfs @ 13.37 hrs HW=9.41' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 1.6 cfs)

Primary OutFlow Max=11.0 cfs @ 13.37 hrs HW=9.41' (Free Discharge)
└**1=Culvert** (Passes 11.0 cfs of 19.8 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 11.0 cfs @ 2.66 fps)

Summary for Pond SB1: SB-1

Inflow Area = 1,990,040 sf, 9.98% Impervious, Inflow Depth = 2.13" for 100-yr event
Inflow = 97.0 cfs @ 12.17 hrs, Volume= 353,501 cf
Outflow = 96.9 cfs @ 12.18 hrs, Volume= 345,022 cf, Atten= 0%, Lag= 0.4 min
Primary = 33.1 cfs @ 12.18 hrs, Volume= 49,170 cf
Secondary = 63.8 cfs @ 12.18 hrs, Volume= 295,851 cf

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 33.36' @ 12.18 hrs Surf.Area= 4,481 sf Storage= 12,040 cf

Plug-Flow detention time= 19.5 min calculated for 345,022 cf (98% of inflow)
Center-of-Mass det. time= 5.8 min (874.7 - 869.0)

Volume	Invert	Avail.Storage	Storage Description
#1	29.50'	12,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
29.50	1,897	0	0
30.50	2,485	2,191	2,191
31.50	3,130	2,808	4,999
32.50	3,831	3,481	8,479
33.50	4,590	4,211	12,690

Device	Routing	Invert	Outlet Devices
#1	Primary	32.75'	**26.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Secondary	32.50'	**30.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=33.1 cfs @ 12.18 hrs HW=33.36' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 33.1 cfs @ 2.10 fps)

Secondary OutFlow Max=63.7 cfs @ 12.18 hrs HW=33.36' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 63.7 cfs @ 2.48 fps)

Summary for Pond SB2: SB-2

Inflow	=	63.8 cfs @	12.18 hrs, Volume=	295,851 cf	
Outflow	=	62.2 cfs @	12.21 hrs, Volume=	295,851 cf,	Atten= 2%, Lag= 2.1 min
Primary	=	34.6 cfs @	12.21 hrs, Volume=	157,863 cf	
Secondary	=	11.1 cfs @	12.21 hrs, Volume=	118,288 cf	
Tertiary	=	16.6 cfs @	12.21 hrs, Volume=	19,701 cf	

Routing by Stor-Ind method, Time Span= 0.01-72.00 hrs, dt= 0.01 hrs
Peak Elev= 29.02' @ 12.21 hrs Surf.Area= 4,922 sf Storage= 12,642 cf

Plug-Flow detention time= 6.5 min calculated for 295,810 cf (100% of inflow)
Center-of-Mass det. time= 6.5 min (904.2 - 897.7)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	15,093 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	2,373	0	0
26.50	3,023	2,698	2,698
27.50	3,731	3,377	6,075
28.50	4,495	4,113	10,188
29.50	5,315	4,905	15,093

Device	Routing	Invert	Outlet Devices
#1	Primary	25.50'	**36.0" Round Culvert** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 25.50' S= 0.0000 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 7.07 sf
#2	Device 1	28.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	27.25'	**48.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	25.50'	**6.0" Vert. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#5	Secondary	25.50'	**18.0" Round Culvert** L= 71.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 24.50' S= 0.0141 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#6	Device 5	29.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#7	Device 5	27.50'	**24.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#8	Device 5	25.50'	**6.0" Vert. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads
#9	Tertiary	25.50'	**24.0" Round Culvert** L= 300.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.50' / 18.25' S= 0.0242 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#10	Device 9	29.25'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#11	Device 9	27.75'	**48.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=34.7 cfs @ 12.21 hrs HW=29.02' (Free Discharge)
└─**1=Culvert** (Passes 34.7 cfs of 34.8 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 2.9 cfs @ 1.70 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 21.6 cfs @ 5.39 fps)
  └─**4=Orifice/Grate** (Orifice Controls 10.3 cfs @ 8.71 fps)

Secondary OutFlow Max=11.1 cfs @ 12.21 hrs HW=29.02' (Free Discharge)
└─**5=Culvert** (Barrel Controls 11.1 cfs @ 6.25 fps)
  ├─**6=Orifice/Grate** (Passes < 0.1 cfs potential flow)
  ├─**7=Orifice/Grate** (Passes < 9.6 cfs potential flow)
  └─**8=Orifice/Grate** (Passes < 10.3 cfs potential flow)

Tertiary OutFlow Max=16.6 cfs @ 12.21 hrs HW=29.02' (Free Discharge)
└─**9=Culvert** (Passes 16.6 cfs of 19.0 cfs potential flow)
  ├─**10=Orifice/Grate** (Controls 0.0 cfs)
  └─**11=Orifice/Grate** (Orifice Controls 16.6 cfs @ 4.15 fps)

Green Infrastrucure Calculations

NOI SUMMARY

#	Question	Value *cf*	Value *af*
28	Total WQv Req'd	101,729	2.335
30	Total RRv Prov.	231,254	5.309
31	RRv. Prov. > WQv Req'd	yes	
32	Min. RRv	36,760	0.844
32a	RRv Prov. > Min. RRv	yes	
33a	Total WQv Prov.	96,634	2.218
34	WQv Prov. + RRv Prov.	327,889	7.527
35	WQv + RRv > WQv Req'd	yes	
		Req'd *af*	Provided *af*
36	CPv	*0.000*	*7.527*
		Pre *cfs*	Post *cfs*
37	Overbank	29.0	22.6
38	Qf	206.3	163.2

Green Infrastrucure Calculations

WATER QUALITY VOLUME

P = 1.2 in.

DP-ID	Total Area *ac.*	Proposed Imp. Imp. Area *ac.*	Proposed Imp. Percent Imp.	Rv	WQv Req'd *cf*	WQv Total *cf*	SMP Description
1	*No new development in subcatchment - WQv treatment not required*						-
2	45.685	4.559	10%	0.14	27824	27824	-
3	17.871	7.540	42%	0.43	33453	33453	-
4	*13.087*	8.498	*65%*	*0.63*	*36165*	36165	-
5	2.385	0.961	40%	0.41	4288	4288	-
Total	79.028	21.558	27%	0.30	101729	101729	

SOILS DATA

Soil Group	Area	S
A	155.60	55%
B	338.50	40%
C	0.00	30%
D	82.00	20%
Total	576.10	41%

PRACTICE SUMMARY

GI Practice	Total Area *ac.*	Total Imp. Area *ac.*	RRv Prov. *cf*	WQv Treated *cf*
IF-2	65.941	13.061	77,364	0
IF-4	76.643	20.597	111,375	90,926
F-4	63.556	12.099	42,516	5,708
Total	206.140	45.757	231,254	96,634

Infiltration Basin *(IF-2)*

Practice ID:	IF-1					
Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
3	17.87	7.54	0.42	0.43	33453	1.2

Basin Sizing			
Design Vol.	33453	*cf*	
Basal Area Req'd	16726	*sf*	
Design Depth	2	*ft*	*from b/basin to first outlet device*
Basal Area Provided	5000	*sf*	
Vol. Provided*	10000	*cf*	
Runoff Reduction			
RRv	10000	*cf*	*100% of basin vol.*
WQV	0	*cf*	

Practice ID:	IF-2					
Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
5	2.38	0.96	0.40	0.41	4288	1.2

Basin Sizing			
Design Vol.	4288	*cf*	
Basal Area Req'd	1225	*sf*	
Design Depth	3.5	*ft*	*from b/basin to first outlet device*
Basal Area Provided	1492	*sf*	
Vol. Provided	5222	*cf*	
Runoff Reduction			
RRv	5222	*cf*	*100% of basin vol.*
WQV	0	*cf*	

Infiltration Basin *(IF-2)*

Practice ID:	IF-3					
Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
2	45.69	4.56	0.10	0.14	27824	1.2
Basin Sizing						
Design Vol.		27824	*cf*			
Basal Area Req'd		11129	*sf*			
Design Depth		2.5	*ft*	*from b/basin to first outlet device*		
Basal Area Provided		3081	*sf*			
Vol. Provided		7703	*cf*			
Runoff Reduction						
RRv		7703	*cf*	*100% of basin vol.*		
WQV		0	*cf*			

Practice ID:	IF-4					
Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
3	17.87	7.54	0.42	0.43	33453	1.2
Basin Sizing						
Design Vol.		33453	*cf*			
Basal Area Req'd		11151	*sf*			
Design Depth		3	*ft*	*from b/basin to first outlet device*		
Basal Area Provided		8249	*sf*			
Vol. Provided		24747	*cf*			
Runoff Reduction						
RRv		24747	*cf*	*100% of basin vol.*		
WQV		0	*cf*			

Infiltration Basin *(IF-2)*

Practice ID:	IF-5

Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
3	17.87	7.54	0.42	0.43	33453	1.2

Basin Sizing			
Design Vol.	33453	*cf*	
Basal Area Req'd	10293	*sf*	
Design Depth	3.25	*ft*	*from b/basin to first outlet device*
Basal Area Provided	9136	*sf*	
Vol. Provided	29692	*cf*	

Runoff Reduction			
RRv	29692	*cf*	*100% of basin vol.*
WQV	0	*cf*	

Infiltration Chamber *(IF-4)*

Practice ID:	IC-1					
Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
2	45.69	4.56	0.10	0.14	27824	1.2
Basin Sizing						
depth of stone		3.8	*ft*			
Surface Area Req'd		7420	*sf*			
Surface Area Prov'd		21504	*sf*			
Vol. of Stone		20935	*cf*	*see hydrocad*		
Vol. of Chamber		28298	*cf*	*see hydrocad*		
Runoff Reduction						
RRv		27824	*cf*	*100% of basin vol. or WQV req'd*		
WQv		21409	*cf*			

Practice ID:	IC-2					
Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
3	17.87	7.54	0.42	0.43	33453	1.2
Basin Sizing						
depth of stone		3.8	*ft*			
Surface Area Req'd		8921	*sf*			
Surface Area Prov'd		19539	*sf*			
Vol. of Stone		19217	*cf*	*see hydrocad*		
Vol. of Chamber		25894	*cf*	*see hydrocad*		
Runoff Reduction						
RRv		33453	*cf*	*100% of basin vol. or WQV req'd*		
WQv		11658	*cf*			

Infiltration Chamber *(IF-4)*

Practice ID:	IC-3					
Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
4	13.09	8.50	0.65	0.63	36165	1.2
Basin Sizing						
depth of stone	3.8	*ft*				
Surface Area Req'd	9644	*sf*				
Surface Area Prov'd	34894	*sf*				
Vol. of Stone	33851	*cf*	*see hydrocad*			
Vol. of Chamber	46239	*cf*	*see hydrocad*			
Runoff Reduction						
RRv	36165	*cf*	*100% of basin vol. or WQV req'd*			
WQv	43925	*cf*				

Practice ID:	IC-4					
Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
4	13.09	8.50	0.65	0.63	36165	1.2
Basin Sizing						
depth of stone	3.8	*ft*				
Surface Area Req'd	9644	*sf*				
Surface Area Prov'd	21720	*sf*				
Vol. of Stone	21199	*cf*	*see hydrocad*			
Vol. of Chamber	28899	*cf*	*see hydrocad*			
Runoff Reduction						
RRv	36165	*cf*	*100% of basin vol. or WQV req'd*			
WQv	13933	*cf*				

Infiltration Bioretention *(F-4)*

Practice ID:	BR-1					
Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
2	45.69	4.56	0.10	0.14	27824	1.2
Basin Sizing						
Filter Media Depth		4	*ft*	*2.5ft. - 4ft.*		
Permeability Rate		1	*ft/day*			
Avg. Ht. of Ponding		0.5	*ft*	*1 ft. max*		
Max. Drain Time		2	*days*			
Filter Area		14903	*sf*			
WQv Provided		33532	*cf*			
Runoff Reduction						
RRv		27824	*cf*	*100% RRv Provided*		
WQv Treated		5708	*cf*			

Practice ID:	BR-2					
Subcatchment Data						
SC-ID	**Total Area** *ac*	**Imp. Area** *ac*	**Percent Imp.**	**Rv**	**WQv** *cf*	**P** *in*
2	45.69	4.56	0.10	0.14	27824	1.2
Basin Sizing						
Filter Media Depth		4	*ft*	*2.5ft. - 4ft.*		
Permeability Rate		1	*ft/day*			
Avg. Ht. of Ponding		1.0	*ft*	*1 ft. max*		
Max. Drain Time		2	*days*			
Filter Area		5877	*sf*			
WQv Provided		14693	*cf*			
Runoff Reduction						
RRv		14693	*cf*	*100% RRv Provided*		
WQv Treated		0	*cf*	*Remaining Vol. not reduced*		