Stormwater Management Report

Vessel Multi-Family Development
446 Hopmeadow Street
Simsbury, CT 06089

December 16, 2022
Revised: February 24, 2023
Revised: March 17, 2023

Prepared for:
Vessel Technologies, Inc.
46 West 55th Street
New York, NY 10019

Prepared by:
H+H Engineering Associates, LLC
232 Greenmanville Avenue
Suite 201
Mystic, CT 06355

H+H ENGINEERING ASSOCIATES

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TECHNICAL APPENDIX

1. INTRODUCTION

The project is located at 446 Hopmeadow Street (U.S. Route 202/CT Route 10) in Simsbury, Connecticut (hereinafter referred to as the "Site") and is identified as Lot N003C on Tax Assessor's Map G13, Block 142. The Site is located on the east side of Hopmeadow Street, approximately 200 feet north of the intersection of Hopmeadow Street and Powder Forest Drive. The Site is 1.96 acres with 149.9 linear feet of frontage along Hopmeadow Street and is currently developed as a single-family residence (see Figure 1 – Site Location Map). The Site is located in the High Density Residential 'R-15' Zoning District. Adjacent properties are located in the High Density Residential 'R-15' Zone, the Low Density Residential 'R-40' Zone, the Planned Area Development 'PAD' Zone, and the Designed Multiple Residence 'RD' Zone. The Site is not located within a FEMA Flood Hazard Zone (see Figure 2 – Firmette Map). Existing topography on site is moderate with contours ranging from elevation 102 along the southern property line, to elevation 84 along the northern property line. Per the geotechnical investigation performed by GEI Consultants, Inc., soils on site consist of silty clays and silty loams (Hydrologic Groups 'C' and 'D') below elevation 98, and sandy loams (Hydrologic Group 'A') above elevation 98. For information regarding the geotechnical investigation and soil classifications, refer to the Geotechnical Report.

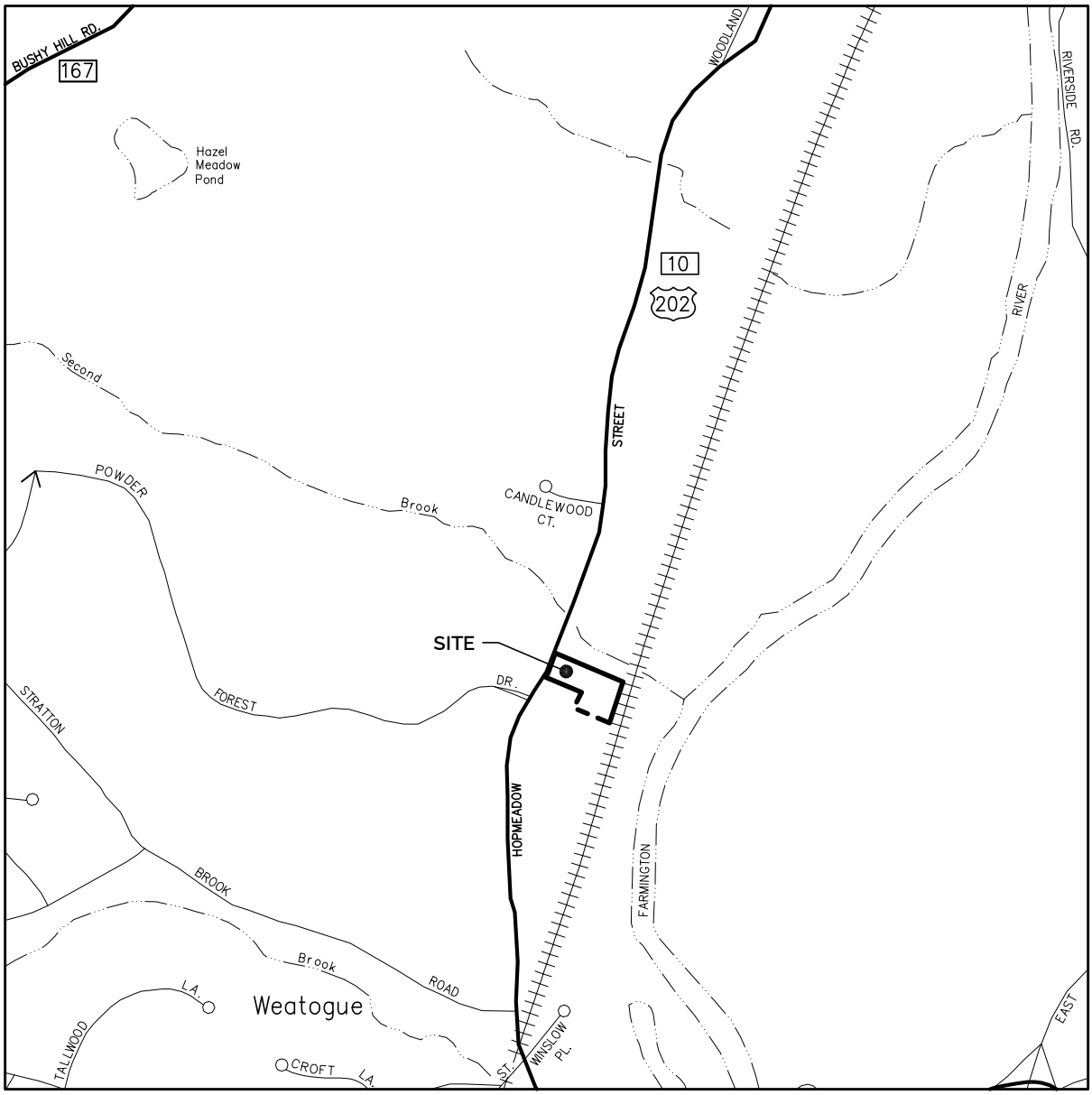
The proposed development consists of the construction of a new four-story 14,063 square-foot multi-family residential building, consisting of 77 one-bedroom units (575 square-feet) and 3 two-bedroom units (1,048 square-feet). Site improvements will include a new two-way access drive from Hopmeadow Street, a new 95 vehicle parking lot, new sanitary sewer, water, and electrical service connections, new landscaping improvements, and a new stormwater management system.

This report presents the basis of the project hydrologic and hydraulic analysis of the site, the design for the new site drainage systems, and Best Management Practices (BMPs) incorporated into the site design to manage and treat stormwater runoff in accordance with the 2004 CT DEEP Stormwater Quality Manual (SQM) and the Town of Simsbury Zoning Regulations.

2. PURPOSE OF REPORT

This report presents the basis of design for stormwater management including drainage and stormwater treatment. The report demonstrates that the development:

- Does not increase peak rates of runoff from watersheds encompassing the new buildings and parking areas.
- Does not degrade the quality of receiving groundwater, waterbodies, or watercourses.
- Complies with the 2004 CT DEEP SQM and the Town of Simsbury stormwater management standards.



1,000 500 0 1,000

SCALE IN FEET

PROJECT NO. 2022-0013	SCALE: 1"=1,000'
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SHEET NUMBER:	1 OF 1
DRAWING: FIGURE 1	

STORMWATER REPORT - SITE LOCATION MAP

VESSEL MULTI-FAMILY HOUSING

446 HOPMEADOW STREET, SIMSBURY, CT 06089

VESSEL TECHNOLOGIES, INC.

46 WEST 55TH STREET, NEW YORK, NY 10019

H+H ENGINEERING ASSOCIATES

232 Greenmanville Avenue
Suite 201
Mystic, CT 06355
860-980-8008 (O); 413-579-4488 (M)
www.hh-engineers.com

National Flood Hazard Layer FIRMette

FEMA

72°49'2"W 41°51'32"N

FIGURE 2

0 250 500 1,000 1,500 2,000 Feet

1:6,000

72°48'24"W 41°51'6"N

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

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/22/2022 at 1:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

3. BASIS OF DESIGN

The layout, grading and drainage design for the project are shown on the Site Development Plans. The basis of the grading and drainage design is as follows:

1. Rainfall data is from the National Weather Service NOAA Atlas 14, Volume 10, Version 3.
2. Drainage systems are designed to meet or exceed the water quality and peak rate of runoff goals established in the 2004 CT DEEP SQM.
3. Stormwater treatment Best Management Practices (BMPs) are designed to remove pollutants, such as nutrients, solids, metals, pathogens, pesticides, and hydrocarbons from stormwater runoff and to reduce temperatures of runoff from paved surfaces during hot weather.
4. Pretreatment of runoff for the removal of sediments, oil and grease will be accomplished using deep sump catch basins and outlet hoods.
5. BMPs for this project include an underground infiltration system with isolator rows designed to infiltrate the runoff generated from the proposed parking lot, a bioretention basin designed to treat and infiltrate the runoff generated from the building rooftop, and an Infiltration Trench and a drywell/collection basin designed to capture and infiltrate off-site runoff entering the Site.

4. HYDROLOGIC AND HYDRAULIC METHODS

The methods described in Urban Hydrology for Small Watersheds, 2nd Edition, (Technical Release Number 55 [TR-55]) from the Natural Resources Conservation Service (formerly the Soil Conservation Service – [SCS], 1986) were used to calculate stormwater peak-flow generated from pre- and post-development conditions. These methods, which are incorporated into the HydroCAD computer software program, use well documented procedures to calculate stormwater runoff volume, peak-flow rate of discharge, hydrographs and storage volumes required for floodwater reservoirs in small watersheds. The method uses the SCS Runoff Curve Number method to estimate runoff volume, calculate times of concentration, produce tabular hydrographs, and estimate basin storage capacity. Output data from all computer analysis and design are provided in the Technical Appendix.

This report presents the basis of the hydrologic and hydraulic analysis and design of the stormwater management including drainage and stormwater treatment systems completed in accordance with the Connecticut Department of Transportation Drainage Manual (Drainage Manual). The report also presents a Stormwater Management Plan prepared in accordance, to the greatest extent practical, with the 2004 CT DEEP SQM. Times of concentration applicable to the pre- and post-development were developed using the NRCS-velocity method. A minimum time of concentration of 5 minutes was used for paved surfaces and 10 minutes for vegetated areas.

5. STORMWATER MANAGEMENT

The existing site is developed as a single-family residence and includes buildings, a paved driveway, walkways, and lawn and wooded areas. Site improvements will increase impervious areas, resulting in rate and volume increases of stormwater runoff from the Site. Hydrologic analyses of pre- and post-development conditions were completed to assess these increases and to design mitigation measures for water quality and to reduce post-development discharges.

5.1 Existing Condition Drainage Areas and Analysis Points

The existing drainage pattern for the site in the vicinity of the proposed improvements is characterized by one drainage area that drains to the north toward Second Brook and the associated wetland, as shown on Figure 3 – Pre-Development Drainage Area Map, and described as follows:

- **DA1**: Approximately 4.67 acres of land, currently developed as multiple single-family residences, and includes 2.48 acres of lawn, 1.78 acres of woods, 0.39 acres of impervious surfaces (rooftops, pavement), and 0.02 acres of gravel.
- **Drainage Analysis Point 1**: The drainage analysis point is the southern edge of the off-site wetland to the north of the Site.

5.2 Proposed Condition Drainage Areas

The proposed development results in the modification of the drainage areas along with changes in impervious coverage (building rooftop, pavement surfaces and concrete surfaces). These conditions are shown on Figure 4 – Post-Development Drainage Area Map. The existing Drainage Area, DA1, was subdivided into 5 drainage areas and described as follows:

- **DA1**: Approximately 1.67 acres of land, located mostly off-site, consisting of 0.83 acres of lawn, 0.66 acres of woods and 0.20 acres of impervious surfaces that drain to Stormwater Management Area C (Infiltration Trench).
- **DA2**: For analysis purposes, the proposed condition DA2 was subdivided into 2 subareas.
    - **DA2A**: Approximately 0.32 acres of new building rooftop that is directed to Stormwater Management Area B (Bioretention Basin).
    - **DA2B**: Approximately 0.13 acres of land, located on-site, consisting of lawn, that drains to Stormwater Management Area B (Bioretention Basin),
- **DA3**: Approximately 0.29 acres of land, located mostly offsite and along Hopmeadow Street, consisting of 0.13 acres of lawn, 0.13 acres of woods, and 0.03 acres of impervious surfaces that drains to Stormwater Management Area D (drywell and basin).
- **DA4**: For analysis purposes, the proposed condition DA4 was subdivided into 4 subareas.

- **DA4A**: Approximately 0.22 acres of land consisting of 0.20 acres of new pavement and walkways, and 0.02 acres of landscaping, that is directed to Stormwater Management Area A1 (ADS Stormtech MC-3500).
- **DA4B**: Approximately 0.17 acres of land consisting of 0.15 acres of new pavement and walkways, and 0.02 acres of landscaping, that is directed to Stormwater Management Area A2 (ADS Stormtech MC-3500).
- **DA4C**: Approximately 0.38 acres of on-site and off-site land, consisting of 0.30 acres of new pavement and walkways, and 0.05 acres of lawn and landscaping, and 0.03 acres of woods, that is directed to Stormwater Management Area A3 (ADS Stormtech MC-3500).
- **DA4D**: Approximately 0.27 acres of land consisting of 0.22 acres of new pavement and walkways, and 0.05 acres of landscaping, that is directed to Stormwater Management Area A4 (ADS Stormtech MC-3500).

- **DA5**: Approximately 1.23 acres of land north and east of the proposed improvements consisting of 0.52 acres of lawn, 0.70 acres of woods and 0.01 acres of impervious surfaces that drain to the wetland.

Modeling results for the existing and proposed conditions drainage areas are provided in Figure 5 – Stormwater Runoff Summary, and the hydrologic and hydraulic modeling parameters are provided in the HydroCAD printouts (Technical Appendix).

5.3 Proposed Condition Stormwater Management BMPs

For the post-development conditions, the intent of the proposed stormwater management improvements is to route stormwater runoff from new impervious surfaces through the proposed stormwater BMPs to provide water quality treatment, peak rate reduction, and promote groundwater recharge through infiltration. Additionally, runoff generated off-site that crosses onto the Site will be captured and infiltrated. Four separate Stormwater Management Areas are included in the design and are described below:

- **Stormwater Management Area A:** ADS Stormtech MC-3500 Underground Infiltration/Detention System with Isolator Rows – Catch basins within the parking lot direct the runoff from the parking area (DA4A, DA4B, DA4C and DA4D) into four separate ADS Stormtech MC-3500 infiltration/detention systems (Stormwater Management Area A1, A2, A3, and A4), which will retain, attenuate and infiltrate stormwater runoff from the impervious areas and treat stormwater runoff through filtration using Isolator Rows that are sized to treat inflows exceeding the 100-year storm event and infiltrate through the 2-year storm event. The Isolator Rows are rows of chambers wrapped in filter fabric which allow for sediment settling as stormwater fills the chamber and flows through the filter fabric and into the other chambers. The retained water in these chambers is then infiltrated back into the ground. Overflow from the chambers is directed to an outlet pipe and riprap apron located to the north.

- **Stormwater Management Area B:** Bioretention Basin – The stormwater runoff generated from the proposed building rooftop (DA2A) and a portion of on-site lawn (DA2B) will be collected and discharged into the proposed Bioretention Basin which will retain, attenuate, and infiltrate stormwater runoff and treat stormwater runoff through plant filtration and infiltration. The Bioretention Basin is designed to infiltrate up to the 1-year storm event. Overflow from the basin is directed to an outlet pipe with a flared end section and riprap apron located in the northeast corner of the Site. An overflow spillway is proposed to direct runoff away from the building in case of emergency. The Bioretention Basin plantings are native and have been selected by a Landscape Architect and are based on the Plant List found in the 2004 CT DEEP SQM.
- **Stormwater Management Area C:** Curtain Drain and Infiltration Trench – Off-site stormwater runoff generated from the properties to the south continue onto the Site. A portion of this runoff (DA1) is collected by a Curtain Drain Infiltration Trench prior to reaching the proposed parking lot and is designed to infiltrate stormwater runoff through the 2-year storm event. Overflow from the infiltration trenchis directed to an outlet pipe and riprap apron located to the north.
- **Stormwater Management Area D:** Drywell and Collection Basin – Off-site stormwater runoff generated from the properties to the south (DA3) continue onto the Site. This runoff is collected by a shallow detention basin surrounding a 6'(dia.) x 4'(h) concrete drywell which is designed to infiltrate stormwater runoff. The detention basin also provides stormwater storage capacity for larger storm events. The Drywell and Collection Basin is designed to infiltrate through the 100-year storm event. An overflow spillway is proposed to direct runoff toward the on-site catchment system.

The Water Quality Volume & Water Quality Flow Calculations for Stormwater Management Areas A and B are included in the Technical Appendix. A summary of the stage and storage volume for Stormwater Management Areas A, B, C and D is included in Figure 6 – Stage-Storage Summaries.

PEAK RATE OF RUNOFF (CFS) SUMMARY

STORM FREQUENCY	ANALYSIS POINT - EDGE OF WETLAND		
	EXISTING	PROPOSED	CHANGE
WQV	0.00	0.00	NO CHANGE
2-YEAR	0.80	1.12	+0.32
10-YEAR	4.25	3.16	-1.09
25-YEAR	7.11	5.28	-1.83
100-YEAR	12.14	10.77	-1.37

RUNOFF VOLUME (CF) SUMMARY

STORM FREQUENCY	ANALYSIS POINT - EDGE OF WETLAND		
	EXISTING	PROPOSED	CHANGE
WQV	0	54	+54
2-YEAR	6,523	5,248	-1,275
10-YEAR	23,181	23,095	-86
25-YEAR	36,449	36,731	+282
100-YEAR	59,790	59,728	-62

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DRAWING: FIGURE 5	

STORMWATER REPORT - STORMWATER RUNOFF SUMMARY

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446 HOPMEADOW STREET, SIMSBURY, CT 06089
VESSEL TECHNOLOGIES, INC.
46 WEST 55TH STREET, NEW YORK, NY 10019

H+H ENGINEERING ASSOCIATES
232 Greenmanville Avenue
Suite 201
Mystic, CT 06355
860-980-8008 (O); 413-579-4488 (M)
www.hh-engineers.com

STORMWATER MANAGEMENT AREA 'A1'
ADS STORMTECH MC-3500 INFILTRATION SYSTEM

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	85.78	362
2-YEAR	87.69	2,034
10-YEAR	88.03	2,305
25-YEAR	88.49	2,648
100-YEAR	89.01	2,990

ADS STORMTECH MC-3500 INFILTRATION SYSTEM ELEVATIONS:
TOP OF STONE ELEV. = 90.50
TOP OF CHAMBER ELEV. = 89.50
BOTTOM OF CHAMBER ELEV. = 85.75
BOTTOM OF STONE ELEV. = 85.00

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (MANHOLE COVER) ELEV. = 92.70
RECTANGULAR WEIR INV. ELEV. = 89.35
6" DIA. ORIFICE = 88.50
4" DIA. ORIFICE = 87.70
12" INV. OUT ELEV. = 85.80

EXFILTRATION RATE = 0.1 IN/HR

STORMWATER MANAGEMENT AREA 'A2'
ADS STORMTECH MC-3500 INFILTRATION SYSTEM

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	87.41	270
2-YEAR	88.93	1,565
10-YEAR	89.22	1,805
25-YEAR	89.53	2,060
100-YEAR	89.91	2,363

ADS STORMTECH MC-3500 INFILTRATION SYSTEM ELEVATIONS:
TOP OF STONE ELEV. = 92.30
TOP OF CHAMBER ELEV. = 91.30
BOTTOM OF CHAMBER ELEV. = 87.55
BOTTOM OF STONE ELEV. = 86.80

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (MANHOLE COVER) ELEV. = 94.20
RECTANGULAR WEIR INV. ELEV. = 91.05
6" DIA. UPPER ORIFICE = 89.55
4" DIA. LOWER ORIFICE = 88.95
12" INV. OUT ELEV. = 87.60

EXFILTRATION RATE = 0.1 IN/HR

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DRAWING: FIGURE 6	

STORMWATER REPORT -
STORMWATER TREATMENT PRACTICES
STAGE-STORAGE SUMMARIES

VESSEL MULTI-FAMILY HOUSING
446 HOPMEADOW STREET, SIMSBURY, CT 06089
VESSEL TECHNOLOGIES, INC.
46 WEST 55TH STREET, NEW YORK, NY 10019

H+H ENGINEERING ASSOCIATES
232 Greenmanville Avenue
Suite 201
Mystic, CT 06355
860-980-8008 (O); 413-579-4488 (M)
www.hh-engineers.com

STORMWATER MANAGEMENT AREA 'A3'
ADS STORMTECH MC-3500 INFILTRATION SYSTEM

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	87.47	173
2-YEAR	89.54	2,539
10-YEAR	89.95	3,034
25-YEAR	90.56	3,718
100-YEAR	91.27	4,405

ADS STORMTECH MC-3500 INFILTRATION SYSTEM ELEVATIONS:
TOP OF STONE ELEV. = 92.70
TOP OF CHAMBER ELEV. = 91.70
BOTTOM OF CHAMBER ELEV. = 87.95
BOTTOM OF STONE ELEV. = 87.20

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (MANHOLE COVER) ELEV. = 94.50
RECTANGULAR WEIR INV. ELEV. = 91.45
6" DIA. ORIFICE = 90.60
4" DIA. ORIFICE = 89.55
12" INV. OUT ELEV. = 88.00

EXFILTRATION RATE = 0.1 IN/HR

STORMWATER MANAGEMENT AREA 'A4'
ADS STORMTECH MC-3500 INFILTRATION SYSTEM

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	88.34	173
2-YEAR	90.33	1,994
10-YEAR	90.69	2,344
25-YEAR	91.20	2,799
100-YEAR	91.73	3,243

ADS STORMTECH MC-3500 INFILTRATION SYSTEM ELEVATIONS:
TOP OF STONE ELEV. = 93.50
TOP OF CHAMBER ELEV. = 92.50
BOTTOM OF CHAMBER ELEV. = 88.75
BOTTOM OF STONE ELEV. = 88.00

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (MANHOLE COVER) ELEV. = 96.25
RECTANGULAR WEIR INV. ELEV. = 92.25
6" DIA. UPPER ORIFICE = 91.20
4" DIA. LOWER ORIFICE = 90.35
12" INV. OUT ELEV. = 88.80

EXFILTRATION RATE = 0.1 IN/HR

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STORMWATER TREATMENT PRACTICES
STAGE-STORAGE SUMMARIES

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446 HOPMEADOW STREET, SIMSBURY, CT 06089

VESSEL TECHNOLOGIES, INC.
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STORMWATER MANAGEMENT AREA 'B'
BIORETENTION BASIN

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	91.62	756
2-YEAR	92.87	2,810
10-YEAR	93.26	3,619
25-YEAR	93.59	4,382
100-YEAR	93.74	4,757

BIORETENTION BASIN ELEVATIONS:
TOP OF BERM ELEV. = 94.80
TOP OF SPILLWAY ELEV. = 94.30
BOTTOM OF BASIN ELEV. = 91.00

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (CB GRATE) ELEV. = 93.60
5" DIA. LOWER ORIFICE = 92.75
12" INV. OUT ELEV. = 89.00

EXFILTRATION RATE = 0.1 IN/HR

STORMWATER MANAGEMENT AREA 'C'
CURTAIN DRAIN INFILTRATION TRENCH

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	87.40	0
2-YEAR	87.68	119
10-YEAR	89.96	1,069
25-YEAR	90.56	1,321
100-YEAR	90.99	1,503

INFILTRATION TRENCH ELEVATIONS:
TOP OF TRENCH ELEV. (MIN.) = 96.0
BOTTOM OF TRENCH ELEV.=87.4

OUTLET CONTROL STRUCTURE ELEVATIONS:
TOP OF FRAME (MANHOLE COVER) ELEV. = 96.50
RECTANGULAR WEIR INV. ELEV. = 90.75
4" DIA. ORIFICE = 89.75
8" INV. OUT ELEV. = 87.20

EXFILTRATION RATE = 0.1 IN/HR

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STORMWATER MANAGEMENT AREA 'D'
DRYWELL AND COLLECTION BASIN

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	91.60	0
2-YEAR	91.61	0
10-YEAR	95.58	169
25-YEAR	98.12	300
100-YEAR	98.87	562

DRYWELL ELEVATIONS:
TOP OF FRAME (CB GRATE) ELEV. = 97.50
BOTTOM OF DRYWELL ELEV. = 92.60
BOTTOM OF STONE ELEV. = 91.60

COLLECTION BASIN ELEVATIONS:
TOP OF BERM ELEV. = 100.10
TOP OF SPILLWAY ELEV. = 99.10
BOTTOM OF BASIN ELEV. = 97.50

EXFILTRATION RATE = 5.0 IN/HR

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860-980-8008 (O); 413-579-4488 (M)
www.hh-engineers.com

5.4 Storm Drain System Outlet Locations

Stormwater Management Area A – Outflow from the ADS Stormtech MC-3500 systems is directed through an outlet control structure and 18" HDPE pipe to a wooded area to the north which then sheetflows to the off-site inland wetland.

Stormwater Management Area B – Overflow from the Bioretention Basin is directed through an outlet control structure and 12" HDPE pipe to a wooded area in the northeast corner of the Site which then sheetflows to the off-site inland wetland. Emergency overflow is directed through a riprap spillway located on the northern slope of the basin and directs flow to the parking lot.

Stormwater Management Area C – Overflow from the Infiltration Trench is directed through an outlet control structure and 8" HDPE pipe to the outlet system identified in Stormwater Management Area A.

Stormwater Management Area D – Emergency overflow from the drywell and collection basin is directed through a riprap spillway located on the eastern slope of the basin and directs flow toward Stormwater Management Area A.

6. SOURCE CONTROL AND POLLUTION PREVENTION MAINTENANCE AND OPERATION

Source control and pollution prevention practices for this project are intended to eliminate the generation of pollutants at their source, reduce the types and concentration of pollutants in stormwater runoff and to assure that the BMPs continue to function to remove oil and grease and TSS. The site property managers will be responsible for maintaining the stormwater management system and the goal of this section is to inform managers about system operations.

The following maintenance and operation measures are recommended for source control.

Parking Lots

The access drive and parking areas shall be swept once per year, preferably after the end of the winter sanding season.

Landscaping

Normal landscaping maintenance shall consist of pruning, mulching, planting, mowing lawns, raking leaves, etc. Use of fertilizers and pesticides will be controlled and limited to minimal amounts necessary for healthy landscape maintenance.

Trees will be fertilized no more than once in the spring with an organic fertilizer. Shrubs and lawn will be fertilized with an organic slow-release fertilizer each spring. Liming of lawn areas to control pH will also be done in the spring if soil testing indicates that it is necessary.

Pesticides will only be used as a control method when a problem has been clearly identified and other natural control methods are not successful. All pesticide applications shall be by licensed applicators, where necessary.

Trash Collection

Trash receptacles service the facility, and dumpsters exist on-site. The pickup of trash will occur on a regular basis and all trash will be disposed of legally off-site.

Outdoor Storage

There will be no outdoor storage of hazardous chemicals, fertilizer, pesticides, or herbicides anywhere on site.

Snow Removal & Storage

Snow shall be shoveled and plowed from sidewalk and parking areas as soon as practical during and after winter storms and deposited in snow storage areas on the site or removed.

Catch Basins and Manholes

A Connecticut-Licensed hauler shall pump the sumps of onsite catch basins and manholes and shall dispose of the sand legally. Road sand may be reused for winter sanding but may not be stored on-site. As part of the hauling contract, the hauler shall notify the property owner in writing where the material is being disposed.

For the first three years each catch basin and manhole shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by Vacuum "Vactor" type of maintenance equipment. After the first three years the inspection schedule may be adjusted to meet actual operating conditions, however, one inspection shall always be conducted in April.

Stormtech underground infiltration systems and Isolator Rows

The Isolator Rows shall be cleaned at the end of construction once the contributing areas are fully stabilized. For the first year of operation following construction, the chamber rows shall be inspected once every 6 months.

After the first year of operation, the chambers shall be inspected a minimum of once per year. If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of the sediment. When the average depth of accumulation exceeds 3", a clean-out should be performed and properly disposed off-site. Clean-out should be accomplished using a Jetvac process.

A detailed maintenance logbook shall be kept on-site for the units by the property owner/manager. Information is to include, but not be limited to, the date of inspection, record of sediment depth, general observations, and date of cleaning performed.

Maintenance of all Stormtech systems should follow all manufacturers' recommendations.

Bioretention Basin

The Bioretention Basin shall be inspected every six months and/or after storm events of 2 inches of rainfall or greater. Inspections shall include the following:

- Inspect filter media standing water or other evidence of clogging.
- Check for sediment accumulation, trash, and debris.
- Check for blockages, structural integrity, and evidence of erosion at inlets, outlets, and overflow spillways.

Regular maintenance includes the following:

- Prune trees and shrubs as needed.
- Basin floor/side slopes shall be mowed 6" to 8" as needed. grass clippings, leaves and accumulated sediment and debris shall be removed during the summer; however, plant matter shall be left in place over winter months to insulate the soil and add organic matter to the soil. removal criteria shall include when plant matter is smothering or killing vegetation and aesthetics.
- Remove sediment greater than 1.0 inch deep in March-April in the filter media bed in a manner to minimize damage to vegetation.
- Inspect soil and repair eroded areas seasonally or as necessary.
- Remove any invasive species (including roots) that have become established within the basin and embankments.
- If there is an accumulation of organic debris or sediment on the floor of the basin, or if ponded water is regularly observed more than 48 hours after a rainfall event, the top 6" shall be removed and the exposed soil surface rototilled to a depth of 12". Sedimentation should be removed when it is visibly dry and readily separates from the basin floor to minimize smearing. After this work has been done, the bottom of the basin shall be restored to its original condition.
- No pesticides or non-organic fertilizers shall be used in areas draining to the bioretention basin.

Drywells and Collection Basins

The drywells shall be cleaned at the end of construction once the contributing areas are fully stabilized. For the first year of operation following construction, the drywells shall be inspected once every 6 months.

After the first year of operation, the drywells shall be inspected a minimum of once per year. If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of the sediment. When the average depth of accumulation exceeds 3", a clean-out should be performed and properly disposed off-site. Clean-out should be accomplished using a Jetvac process.

Collection Basins shall be routinely checked for sediment accumulation, trash, and debris. Basin shall be mowed to 4-6" as needed. Grass clippings, leaves and accumulated sediment and debris shall be removed. Remove any invasive species (including roots) that have become established within the basin and embankments.

A detailed maintenance logbook shall be kept on-site for the units by the property owner/manager. information is to include, but not be limited to, the date of inspection, record of sediment depth, general observations, and date of cleaning performed.

7. CONCLUSION

The new stormwater management improvements were designed in accordance with the 2004 CT DEEP SQM and Simsbury regulations. BMPs were incorporated in the site design that attenuate post-development runoff rates, treat in excess of the WQV/WQF and infiltrate in excess of the WQV and GRV from the development. Overall, the stormwater management system provides quantitative and qualitative improvements for the site.

H+H ENGINEERING ASSOCIATES
232 Greenmanville Avenue
Suite 201
Mystic, CT 06355
860-980-8008 (O); 413-579-4488 (M)
www.hh-engineers.com

STAMP

REV.	DESCRIPTION OF REVISION	DATE	APPR
1	SOIL GROUP REVISIONS	3/17/2023	SMM

PRE-DEVELOPMENT DRAINAGE AREA MAP

VESSEL MULTI-FAMILY HOUSING
PROPERTY ADDRESS
446 HOPMEADOW STREET, SIMSBURY, CT 06089
PREPARED FOR:
VESSEL RE HOLDINGS, LLC
46 WEST 55TH STREET, NEW YORK, NY 10019

N W E S

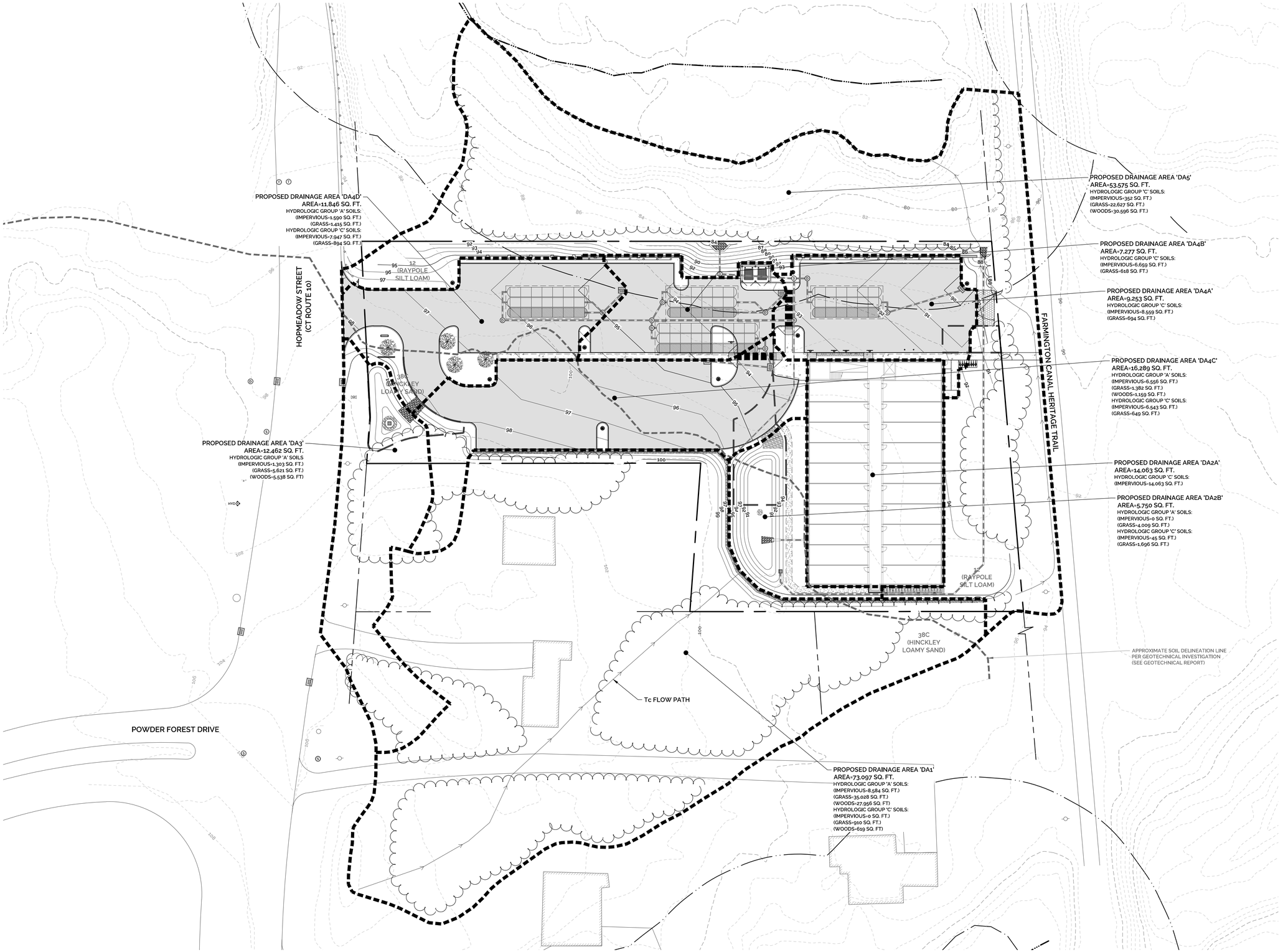
30 15 0 30
SCALE IN FEET

PROJECT NO.	SCALE:
2022-0013	1" = 30'
DRAWN BY: SMM	DATE: 12/16/2022
CHECKED BY: SMM	DATE: 12/16/2022

DRAWING
FIGURE 3

SHEET NUMBER: 1 OF 1

Z:\SHARED\HH ENGINEERING ASSOCIATES\PROJECTS\2022\2022-0013 - VESSEL - 446 HOPMEADOW ST, SIMSBURY\DWGS\DRAINAGE\EXISTING DRAINAGE.DWG Tab: DA MAP - EXISTING Saved: 3/17/2023 4:48 PM Plotted: 3/17/2023 4:48 PM



H+H ENGINEERING ASSOCIATES
232 Greenmanville Avenue
Suite 201
Mystic, CT 06355
860-980-8008 (O); 413-579-4488 (M)
www.hh-engineers.com

STAMP

REV.	DESCRIPTION OF REVISION	DATE	APPR.
2	SOIL GROUP AND DRAINAGE AREA REVISIONS	3/17/2023	SMM
1	REVISIONS PER REVIEW COMMENTS	2/24/2023	SMM

POST-DEVELOPMENT DRAINAGE AREA MAP

VESSEL MULTI-FAMILY HOUSING
PROPERTY ADDRESS:
446 HOPMEADOW STREET, SIMSBURY, CT 06089
PREPARED FOR:
VESSEL RE HOLDINGS, LLC
46 WEST 55TH STREET, NEW YORK, NY 10019

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S

30 15 0 30
SCALE IN FEET

PROJECT NO.	SCALE:
2022-0013	1" = 30'
DRAWN BY: SMM	DATE: 12/16/2022
CHECKED BY: SMM	DATE: 12/16/2022

DRAWING
FIGURE 4

SHEET NUMBER: 1 OF 1

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Technical Appendices
for
Stormwater Management Report

Vessel Multi-Family Development
446 Hopmeadow Street
Simsbury, CT 06089

December 16, 2022
Revised: February 24, 2023
Revised: March 17, 2023

Prepared for:
Vessel Technologies, Inc.
46 West 55th Street
New York, NY 10019

Prepared by:
H+H Engineering Associates, LLC
232 Greenmanville Avenue
Suite 201
Mystic, CT 06355

H+H ENGINEERING ASSOCIATES

Appendix A – Water Quality Volume and Water Quality Flow Calculations

WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'A1'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023

Water Quality Volume (WQV)

0.21 ac	A = Area draining to the practice
0.20 ac	A_I = Impervious area draining to the practice
0.95 decimal	I = Percent impervious area draining to the practice, in decimal form
0.91 unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.19 ac-in	WQV = 1" x R_V x A
692 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches	P = amount of rainfall.
0.91 inches	Q = Water Quality Depth. Q=WQV/A
99 unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10*[Q^2+1.25*Q*P]^{0.5})$
0.1 inches	S = potential maximum retention. S = (1000/CN) - 10
0.017 inches	Ia = initial abstraction. Ia=0.2S
5.0 minutes	T_c = Time of Concentration
650.0 cfs/mi^2/in	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.193 cfs	WQF = qu x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac

Designer Notes:

Stormwater Management Area 'A1'

ADS Stormtech SC-3500 Infiltration System

ADS Stormtech SC-740 Isolator Row Sizing:

(1) Isolator row with 6 units is provided

Treated flow rate = 0.40 CFS / unit X 6 units = 2.40 CFS

Treated flow rate > WQF

(Inflow rate from 100-year storm event = 1.83 CFS)

qu obtained from exhibit 4-III for NRCS type III rainfall distribution

HHH ENGINEERING ASSOCIATES

WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'A2'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023

Water Quality Volume (WQV)

0.17 ac	A = Area draining to the practice
0.15 ac	A_I = Impervious area draining to the practice
0.88 decimal	I = Percent impervious area draining to the practice, in decimal form
0.84 unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.14 ac-in	WQV = 1" x R_V x A
521 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches	P = amount of rainfall.
0.84 inches	Q = Water Quality Depth. Q=WQV/A
99 unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10*[Q^2+1.25*Q*P]^{0.5})$
0.1 inches	S = potential maximum retention. S = (1000/CN) - 10
0.029 inches	Ia = initial abstraction. Ia=0.2S
5.0 minutes	T_c = Time of Concentration
650.0 cfs/mi^2/in	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.146 cfs	WQF = qu x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac

Designer Notes:

Stormwater Management Area 'A2'

ADS Stormtech SC-3500 Infiltration System

ADS Stormtech SC-740 Isolator Row Sizing:

(1) Isolator row with 6 units is provided

Treated flow rate = 0.40 CFS / unit X 6 units = 2.40 CFS

Treated flow rate > WQF

(Inflow rate from 100-year storm event = 1.44 CFS)

qu obtained from exhibit 4-III for NRCS type III rainfall distribution

HHH ENGINEERING ASSOCIATES

WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'A3'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023

Water Quality Volume (WQV)

0.38 ac	A = Area draining to the practice
0.30 ac	A_I = Impervious area draining to the practice
0.80 decimal	I = Percent impervious area draining to the practice, in decimal form
0.77 unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.29 ac-in	WQV = 1" x R_V x A
1,051 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches	P = amount of rainfall.
0.77 inches	Q = Water Quality Depth. Q=WQV/A
98 unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10^{*}[Q^2+1.25^{*}Q^{*}P]^{0.5})$
0.2 inches	S = potential maximum retention. S = (1000/CN) - 10
0.045 inches	Ia = initial abstraction. Ia=0.2S
5.0 minutes	T_c = Time of Concentration
650.0 cfs/mi^2/in	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.294 cfs	WQF = qu x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac

Designer Notes:

Stormwater Management Area 'A3'

ADS Stormtech SC-3500 Infiltration System

ADS Stormtech SC-740 Isolator Row Sizing:

(1) Isolator row with 9 units is provided

Treated flow rate = 0.40 CFS / unit X 9 units = 3.60 CFS

Treated flow rate > WQF

(Inflow rate from 100-year storm event = 2.55 CFS)

qu obtained from exhibit 4-III for NRCS type III rainfall distribution

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WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'A4'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023

Water Quality Volume (WQV)

0.27 ac	A = Area draining to the practice
0.22 ac	A_I = Impervious area draining to the practice
0.81 decimal	I = Percent impervious area draining to the practice, in decimal form
0.78 unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.21 ac-in	WQV = 1" x R_V x A
768 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches	P = amount of rainfall.
0.78 inches	Q = Water Quality Depth. Q=WQV/A
98 unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10*[Q^2+1.25*Q*P]^{0.5})$
0.2 inches	S = potential maximum retention. S = (1000/CN) - 10
0.043 inches	Ia = initial abstraction. Ia=0.2S
5.0 minutes	T_c = Time of Concentration
650.0 $cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.215 cfs	WQF = qu x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer Notes:

Stormwater Management Area 'A4'

ADS Stormtech SC-3500 Infiltration System

ADS Stormtech SC-740 Isolator Row Sizing:

(1) Isolator row with 7 units is provided

Treated flow rate = 0.40 CFS / unit X 7 units = 2.80 CFS

Treated flow rate > WQF

(Inflow rate from 100-year storm event = 1.89 CFS)

qu obtained from exhibit 4-III for NRCS type III rainfall distribution

HH ENGINEERING ASSOCIATES

WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'B'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023

Water Quality Volume (WQV)

0.46 ac	A = Area draining to the practice
0.32 ac	A_I = Impervious area draining to the practice
0.71 decimal	I = Percent impervious area draining to the practice, in decimal form
0.69 unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.31 ac-in	WQV = 1" x R_V x A
1,138 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches	P = amount of rainfall.
0.69 inches	Q = Water Quality Depth. Q=WQV/A
97 unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10*[Q^2+1.25*Q*P]^{0.5})$
0.3 inches	S = potential maximum retention. S = (1000/CN) - 10
0.066 inches	Ia = initial abstraction. Ia=0.2S
minutes	T_c = Time of Concentration
$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.000 cfs	WQF = qu x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer Notes:

Stormwater Management Area 'B'

Bioretention Basin

Treated volume (volume stored prior to discharging) = 2,589 CF

Contributing WQV = 1,138 CF

Treated volume = 228% of Water Quality Volume

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WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'C'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023

Water Quality Volume (WQV)

1.68 ac	A = Area draining to the practice
0.20 ac	A_I = Impervious area draining to the practice
0.12 decimal	I = Percent impervious area draining to the practice, in decimal form
0.16 unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.26 ac-in	WQV = 1" x R_V x A
958 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches	P = amount of rainfall.
0.16 inches	Q = Water Quality Depth. Q=WQV/A
84 unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10*[Q^2+1.25*Q*P]^{0.5})$
1.9 inches	S = potential maximum retention. S = (1000/CN) - 10
0.374 inches	Ia = initial abstraction. Ia=0.2S
minutes	T_c = Time of Concentration
$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.000 cfs	WQF = qu x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer Notes:

Stormwater Management Area 'C'

Curtain Drain Infiltration Trench

Treated volume (volume stored prior to discharging) = 982 CF

Contributing WQV = 958 CF

Treated volume = 103% of Water Quality Volume

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WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'D'

Project:	446 Hopmeadow Street, Simsbury	**Calculated By**	**Date**
Client:	Vessel Technologies, Inc.	SMM	12/14/2022
			Revised 2/24/2023
			Revised 3/17/2023

Water Quality Volume (WQV)

0.29 ac	A = Area draining to the practice
0.03 ac	A_I = Impervious area draining to the practice
0.10 decimal	I = Percent impervious area draining to the practice, in decimal form
0.14 unitless	R_V = Runoff coefficient = 0.05 + (0.9 x I)
0.04 ac-in	WQV = 1" x R_V x A
150 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches	P = amount of rainfall.
0.14 inches	Q = Water Quality Depth. Q=WQV/A
84 unitless	CN = unit peak discharge curve number. $CN=1000/(10+5P+10Q-10*[Q^2+1.25*Q*P]^{0.5})$
2.0 inches	S = potential maximum retention. S = (1000/CN) - 10
0.391 inches	Ia = initial abstraction. Ia=0.2S
minutes	T_c = Time of Concentration
$cfs/mi^2/in$	qu is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III
0.000 cfs	WQF = qu x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$

Designer Notes:

Stormwater Management Area 'D'

Drywell and Collection Basin

Treated volume (volume stored through 100-yr event) = 562 CF

Contributing WQV = 150 CF

Treated volume = 375% of Water Quality Volume

HHH ENGINEERING ASSOCIATES

Appendix B – Riprap Apron Design

Outlet Protection Design Outlet EW-1

Reference: Connecticut Department of Transportation Drainage Manual, Dated October 2000

A. Apron width at culvert end (W_1) = 3 Sp where Sp = outlet pipe diameter

B. Apron length (La) = $\frac{1.8\,(Q-5)}{(Sp)^{3/2}} + 10$

C. Apron width at downstream end (W) = 3Sp + 0.7La where La = apron length

Type A Riprap Apron (Tailwater Condition) : TW<0.5 dia of outlet

Peak Q(25yr)= 1.32 cfs PIPE DIA= 1.25 ft

A. W_1= 3(Sp) = ft 4 ft

B. La = $\frac{1.8\,(Q-5)}{(Sp)^{1.5}} + 10$ = ft 6 ft

C. W_2 = 3(Sp) + 0.7(La) = ft 8 ft

Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

Outlet Velocity - mps (fps)	Riprap Specification
0-2.44 (0-8)	Modified
2.44-3.05 (8-10)	Intermediate
3.05-4.27 (10-14)	Standard

V(25yr)= 3.4 fps Therfore; Use Modified Riprap

Outlet Protection Design Outlet FES-1

Reference: Connecticut Department of Transportation Drainage Manual, Dated October 2000

A. Apron width at culvert end (W_1) = 3 Sp where Sp = outlet pipe diameter

B. Apron length (La) = $\frac{1.8\,(Q-5)}{(Sp)^{3/2}}$ + 10

C. Apron width at downstream end (W) = 3Sp + 0.7La where La = apron length

Type A Riprap Apron (Tailwater Condition) : TW<0.5 dia of outlet

Peak Q(25yr)= 0.53 cfs PIPE DIA= 1 ft

A. W_1= 3(Sp) = ft 3 ft

B. La = $\frac{1.8\,(Q-5)}{(Sp)^{1.5}}$ + 10 = ft **Use 5' min.** 2 ft

C. W_2 = 3(Sp) + 0.7(La) = ft 5 ft

Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

Outlet Velocity - mps (fps)	Riprap Specification
0-2.44 (0-8)	Modified
2.44-3.05 (8-10)	Intermediate
3.05-4.27 (10-14)	Standard

V(25yr)= 2.8 fps Therfore; Use Modified Riprap

Outlet Protection Design Outlet FES-2

Reference: Connecticut Department of Transportation Drainage Manual, Dated October 2000

A. Apron width at culvert end (W_1) = 3 Sp where Sp = outlet pipe diameter

B. Apron length (La) = $\frac{1.8\,(Q-5)}{(Sp)^{3/2}} + 10$

C. Apron width at downstream end (W) = 3Sp + 0.7La where La = apron length

Type A Riprap Apron (Tailwater Condition) : TW<0.5 dia of outlet

Peak Q(25yr)= 2.16 cfs PIPE DIA= 1 ft

A. W_1= 3(Sp) = ft 3 ft

B. La = $\frac{1.8\,(Q-5)}{(Sp)^{1.5}} + 10$ = ft 5 ft

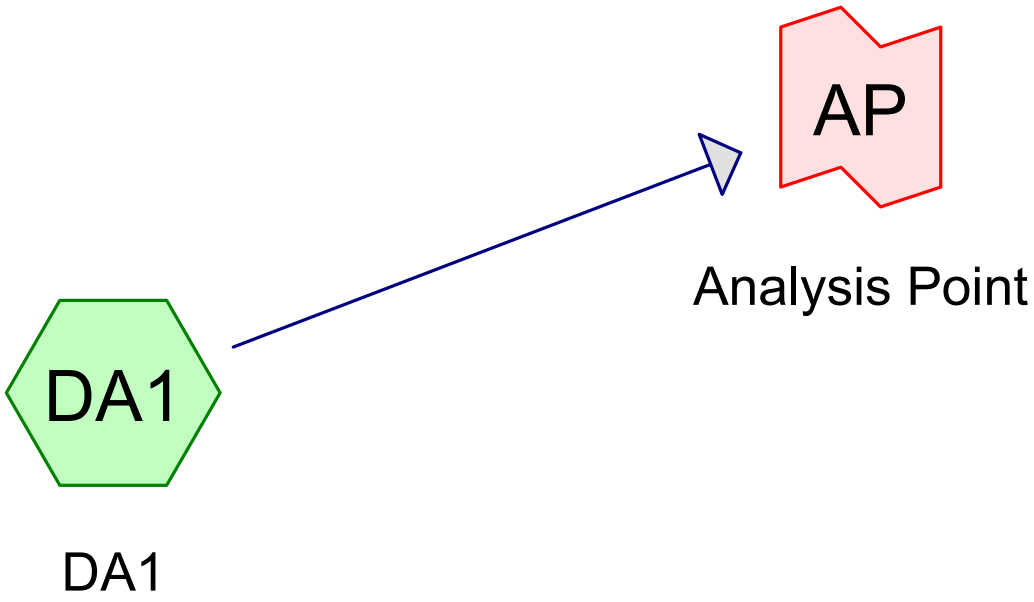
C. W_2 = 3(Sp) + 0.7(La) = ft 7 ft

Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

Outlet Velocity - mps (fps)	Riprap Specification
0-2.44 (0-8)	Modified
2.44-3.05 (8-10)	Intermediate
3.05-4.27 (10-14)	Standard

V(25yr)= 5.05 fps Therfore; Use Modified Riprap

Appendix C – Pre-Development HydroCAD Report



Subcat Reach Pond Link

Routing Diagram for pre development
Prepared by HH Engineering Assoc, Printed 3/18/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WQV	Type III 24-hr		Default	24.00	1	1.00	2
2	2-Year	Type III 24-hr		Default	24.00	1	3.32	2
3	10-Year	Type III 24-hr		Default	24.00	1	5.35	2
4	25-Year	Type III 24-hr		Default	24.00	1	6.61	2
5	100-Year	Type III 24-hr		Default	24.00	1	8.56	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
623	76	Gravel roads, HSG A (DA1)
61	89	Gravel roads, HSG C (DA1)
51,183	39	Pasture/grassland/range, Good, HSG A (DA1)
56,941	74	Pasture/grassland/range, Good, HSG C (DA1)
7,684	98	Paved parking, HSG A (DA1)
4,264	98	Paved parking, HSG C (DA1)
4,055	98	Roofs, HSG A (DA1)
883	98	Roofs, HSG C (DA1)
36,606	30	Woods, Good, HSG A (DA1)
41,312	70	Woods, Good, HSG C (DA1)
203,612	**58**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
100,151	HSG A	DA1
0	HSG B	
103,461	HSG C	DA1
0	HSG D	
0	Other	
203,612		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
623	0	61	0	0	684	Gravel roads
51,183	0	56,941	0	0	108,124	Pasture/grassland/range, Good
7,684	0	4,264	0	0	11,948	Paved parking
4,055	0	883	0	0	4,938	Roofs
36,606	0	41,312	0	0	77,918	Woods, Good
100,151	**0**	**103,461**	**0**	**0**	**203,612**	**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=203,612 sf 8.29% Impervious Runoff Depth=0.00"
Flow Length=764' Tc=22.5 min CN=58 Runoff=0.00 cfs 0 cf

Link AP: Analysis Point Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 203,612 sf Runoff Volume = 0 cf Average Runoff Depth = 0.00"
91.71% Pervious = 186,726 sf 8.29% Impervious = 16,886 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr WQV Rainfall=1.00"

Area (sf)	CN	Description
7,684	98	Paved parking, HSG A
4,264	98	Paved parking, HSG C
4,055	98	Roofs, HSG A
883	98	Roofs, HSG C
623	76	Gravel roads, HSG A
61	89	Gravel roads, HSG C
51,183	39	Pasture/grassland/range, Good, HSG A
56,941	74	Pasture/grassland/range, Good, HSG C
36,606	30	Woods, Good, HSG A
41,312	70	Woods, Good, HSG C
203,612	58	Weighted Average
186,726		91.71% Pervious Area
16,886		8.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
2.0	127	0.0450	1.06		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
1.5	136	0.0441	1.47		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
3.4	283	0.0750	1.37		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
22.5	764	Total			

Summary for Link AP: Analysis Point

Inflow Area = 203,612 sf, 8.29% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=203,612 sf 8.29% Impervious Runoff Depth=0.38"
Flow Length=764' Tc=22.5 min CN=58 Runoff=0.80 cfs 6,523 cf

Link AP: Analysis Point Inflow=0.80 cfs 6,523 cf
Primary=0.80 cfs 6,523 cf

Total Runoff Area = 203,612 sf Runoff Volume = 6,523 cf Average Runoff Depth = 0.38"
91.71% Pervious = 186,726 sf 8.29% Impervious = 16,886 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.80 cfs @ 12.49 hrs, Volume= 6,523 cf, Depth= 0.38"
Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.32"

Area (sf)	CN	Description
7,684	98	Paved parking, HSG A
4,264	98	Paved parking, HSG C
4,055	98	Roofs, HSG A
883	98	Roofs, HSG C
623	76	Gravel roads, HSG A
61	89	Gravel roads, HSG C
51,183	39	Pasture/grassland/range, Good, HSG A
56,941	74	Pasture/grassland/range, Good, HSG C
36,606	30	Woods, Good, HSG A
41,312	70	Woods, Good, HSG C
203,612	58	Weighted Average
186,726		91.71% Pervious Area
16,886		8.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
2.0	127	0.0450	1.06		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
1.5	136	0.0441	1.47		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
3.4	283	0.0750	1.37		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
22.5	764	Total			

Summary for Link AP: Analysis Point

Inflow Area = 203,612 sf, 8.29% Impervious, Inflow Depth = 0.38" for 2-Year event
Inflow = 0.80 cfs @ 12.49 hrs, Volume= 6,523 cf
Primary = 0.80 cfs @ 12.49 hrs, Volume= 6,523 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=203,612 sf 8.29% Impervious Runoff Depth=1.37"
Flow Length=764' Tc=22.5 min CN=58 Runoff=4.25 cfs 23,181 cf

Link AP: Analysis Point Inflow=4.25 cfs 23,181 cf
Primary=4.25 cfs 23,181 cf

Total Runoff Area = 203,612 sf Runoff Volume = 23,181 cf Average Runoff Depth = 1.37"
91.71% Pervious = 186,726 sf 8.29% Impervious = 16,886 sf

Summary for Subcatchment DA1: DA1

Runoff = 4.25 cfs @ 12.36 hrs, Volume= 23,181 cf, Depth= 1.37"
Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description
7,684	98	Paved parking, HSG A
4,264	98	Paved parking, HSG C
4,055	98	Roofs, HSG A
883	98	Roofs, HSG C
623	76	Gravel roads, HSG A
61	89	Gravel roads, HSG C
51,183	39	Pasture/grassland/range, Good, HSG A
56,941	74	Pasture/grassland/range, Good, HSG C
36,606	30	Woods, Good, HSG A
41,312	70	Woods, Good, HSG C
203,612	58	Weighted Average
186,726		91.71% Pervious Area
16,886		8.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
2.0	127	0.0450	1.06		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
1.5	136	0.0441	1.47		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
3.4	283	0.0750	1.37		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
22.5	764	Total			

Summary for Link AP: Analysis Point

Inflow Area = 203,612 sf, 8.29% Impervious, Inflow Depth = 1.37" for 10-Year event
Inflow = 4.25 cfs @ 12.36 hrs, Volume= 23,181 cf
Primary = 4.25 cfs @ 12.36 hrs, Volume= 23,181 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=203,612 sf 8.29% Impervious Runoff Depth=2.15"
Flow Length=764' Tc=22.5 min CN=58 Runoff=7.11 cfs 36,449 cf

Link AP: Analysis Point Inflow=7.11 cfs 36,449 cf
Primary=7.11 cfs 36,449 cf

Total Runoff Area = 203,612 sf Runoff Volume = 36,449 cf Average Runoff Depth = 2.15"
91.71% Pervious = 186,726 sf 8.29% Impervious = 16,886 sf

Summary for Subcatchment DA1: DA1

Runoff = 7.11 cfs @ 12.34 hrs, Volume= 36,449 cf, Depth= 2.15"
Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=6.61"

Area (sf)	CN	Description
7,684	98	Paved parking, HSG A
4,264	98	Paved parking, HSG C
4,055	98	Roofs, HSG A
883	98	Roofs, HSG C
623	76	Gravel roads, HSG A
61	89	Gravel roads, HSG C
51,183	39	Pasture/grassland/range, Good, HSG A
56,941	74	Pasture/grassland/range, Good, HSG C
36,606	30	Woods, Good, HSG A
41,312	70	Woods, Good, HSG C
203,612	58	Weighted Average
186,726		91.71% Pervious Area
16,886		8.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
2.0	127	0.0450	1.06		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
1.5	136	0.0441	1.47		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
3.4	283	0.0750	1.37		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
22.5	764	Total			

Summary for Link AP: Analysis Point

Inflow Area = 203,612 sf, 8.29% Impervious, Inflow Depth = 2.15" for 25-Year event
Inflow = 7.11 cfs @ 12.34 hrs, Volume= 36,449 cf
Primary = 7.11 cfs @ 12.34 hrs, Volume= 36,449 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=203,612 sf 8.29% Impervious Runoff Depth=3.52"
Flow Length=764' Tc=22.5 min CN=58 Runoff=12.14 cfs 59,790 cf

Link AP: Analysis Point Inflow=12.14 cfs 59,790 cf
Primary=12.14 cfs 59,790 cf

Total Runoff Area = 203,612 sf Runoff Volume = 59,790 cf Average Runoff Depth = 3.52"
91.71% Pervious = 186,726 sf 8.29% Impervious = 16,886 sf

Summary for Subcatchment DA1: DA1

Runoff = 12.14 cfs @ 12.32 hrs, Volume= 59,790 cf, Depth= 3.52"
Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
7,684	98	Paved parking, HSG A
4,264	98	Paved parking, HSG C
4,055	98	Roofs, HSG A
883	98	Roofs, HSG C
623	76	Gravel roads, HSG A
61	89	Gravel roads, HSG C
51,183	39	Pasture/grassland/range, Good, HSG A
56,941	74	Pasture/grassland/range, Good, HSG C
36,606	30	Woods, Good, HSG A
41,312	70	Woods, Good, HSG C
203,612	58	Weighted Average
186,726		91.71% Pervious Area
16,886		8.29% Impervious Area

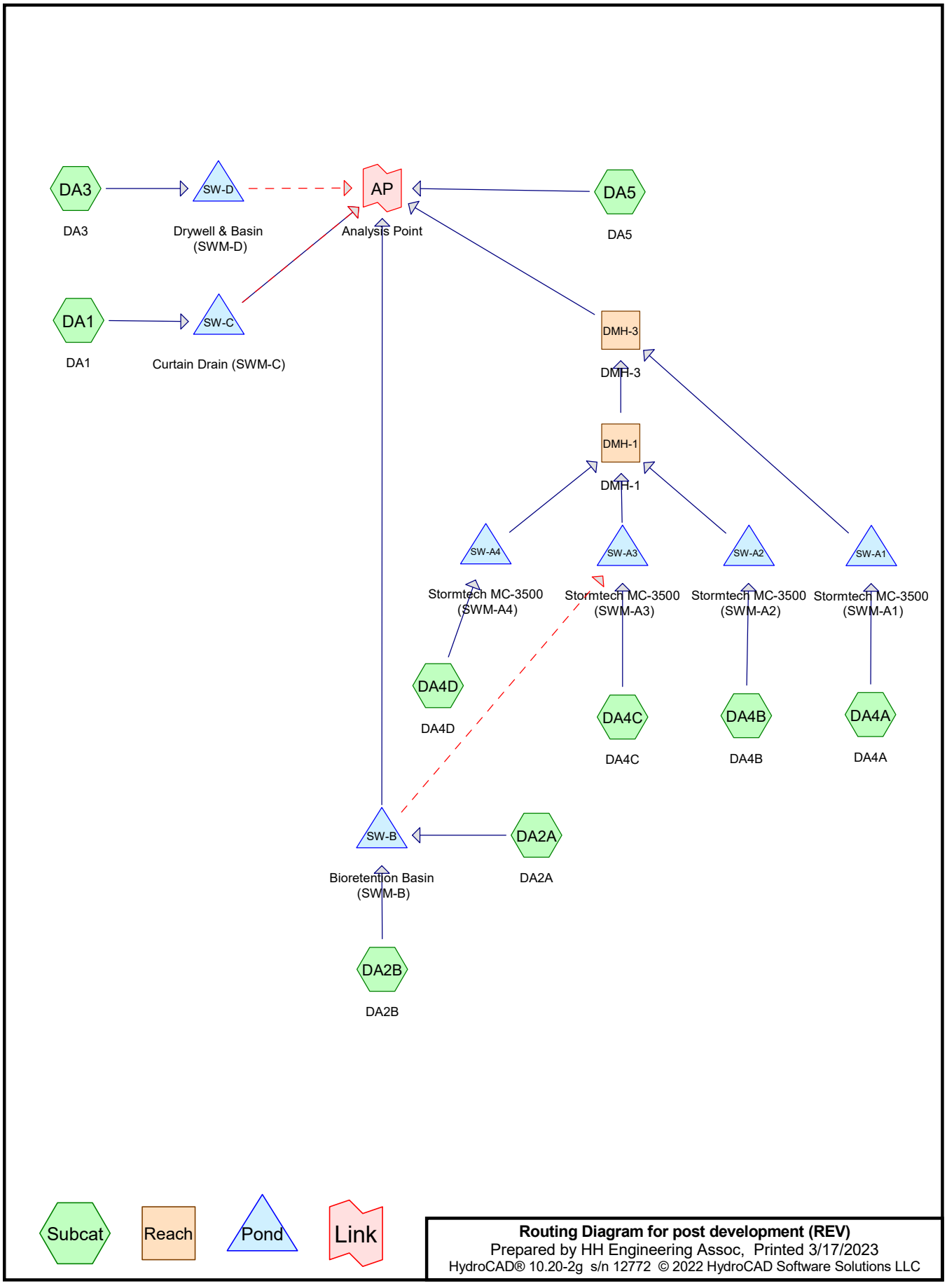
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
2.0	127	0.0450	1.06		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
1.5	136	0.0441	1.47		**Shallow Concentrated Flow, shallow** Short Grass Pasture Kv= 7.0 fps
3.4	283	0.0750	1.37		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
22.5	764	Total			

Summary for Link AP: Analysis Point

Inflow Area = 203,612 sf, 8.29% Impervious, Inflow Depth = 3.52" for 100-Year event
Inflow = 12.14 cfs @ 12.32 hrs, Volume= 59,790 cf
Primary = 12.14 cfs @ 12.32 hrs, Volume= 59,790 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Appendix D – Post-Development HydroCAD Report



Routing Diagram for post development (REV)
Prepared by HH Engineering Assoc, Printed 3/17/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WQV	Type III 24-hr		Default	24.00	1	1.00	2
2	2-Year	Type III 24-hr		Default	24.00	1	3.32	2
3	10-Year	Type III 24-hr		Default	24.00	1	5.35	2
4	25-Year	Type III 24-hr		Default	24.00	1	6.61	2
5	100-Year	Type III 24-hr		Default	24.00	1	8.56	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
47,455	39	>75% Grass cover, Good, HSG A (DA1, DA2B, DA3, DA4C, DA4D)
28,088	74	>75% Grass cover, Good, HSG C (DA1, DA2B, DA4A, DA4B, DA4C, DA4D, DA5)
18,033	98	Paved parking, HSG A (DA1, DA3, DA4C, DA4D)
30,105	98	Paved parking, HSG C (DA2B, DA4A, DA4B, DA4C, DA4D, DA5)
14,063	98	Roofs, HSG C (DA2A)
34,653	30	Woods, Good, HSG A (DA1, DA3, DA4C)
31,215	70	Woods, Good, HSG C (DA1, DA5)
203,612	**65**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
100,141	HSG A	DA1, DA2B, DA3, DA4C, DA4D
0	HSG B	
103,471	HSG C	DA1, DA2A, DA2B, DA4A, DA4B, DA4C, DA4D, DA5
0	HSG D	
0	Other	
203,612		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
47,455	0	28,088	0	0	75,543	>75% Grass cover, Good	
18,033	0	30,105	0	0	48,138	Paved parking	
0	0	14,063	0	0	14,063	Roofs	
34,653	0	31,215	0	0	65,868	Woods, Good	
100,141	**0**	**103,471**	**0**	**0**	**203,612**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	SW-A1	85.00	84.95	6.0	0.0083	0.012	0.0	12.0	0.0
2	SW-A2	86.65	84.85	93.0	0.0194	0.012	0.0	15.0	0.0
3	SW-A3	86.65	84.85	93.0	0.0194	0.012	0.0	15.0	0.0
4	SW-A4	88.80	86.90	98.0	0.0194	0.012	0.0	12.0	0.0
5	SW-B	89.00	87.00	361.0	0.0055	0.010	0.0	15.0	0.0
6	SW-C	87.20	85.45	108.0	0.0162	0.010	0.0	8.0	0.0

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=73,097 sf 11.74% Impervious Runoff Depth=0.00"
Flow Length=337' Tc=17.4 min CN=43 Runoff=0.00 cfs 0 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=0.79"
Tc=5.0 min CN=98 Runoff=0.30 cfs 927 cf

Subcatchment DA2B: DA2B Runoff Area=5,750 sf 0.78% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=50 Runoff=0.00 cfs 0 cf

Subcatchment DA3: DA3 Runoff Area=12,462 sf 10.46% Impervious Runoff Depth=0.00"
Tc=10.0 min CN=41 Runoff=0.00 cfs 0 cf

Subcatchment DA4A: DA4A Runoff Area=9,253 sf 92.50% Impervious Runoff Depth=0.63"
Tc=5.0 min CN=96 Runoff=0.16 cfs 486 cf

Subcatchment DA4B: DA4B Runoff Area=7,277 sf 91.51% Impervious Runoff Depth=0.63"
Tc=5.0 min CN=96 Runoff=0.13 cfs 382 cf

Subcatchment DA4C: DA4C Runoff Area=16,289 sf 80.42% Impervious Runoff Depth=0.22"
Tc=10.0 min CN=87 Runoff=0.07 cfs 304 cf

Subcatchment DA4D: DA4D Runoff Area=11,846 sf 80.51% Impervious Runoff Depth=0.28"
Tc=10.0 min CN=89 Runoff=0.07 cfs 281 cf

Subcatchment DA5: DA5 Runoff Area=53,575 sf 0.66% Impervious Runoff Depth=0.01"
Flow Length=332' Tc=11.4 min CN=72 Runoff=0.00 cfs 54 cf

Reach DMH-1: DMH-1 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Reach DMH-3: DMH-3 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond SW-A1: Stormtech MC-3500 (SWM-A1) Peak Elev=85.78' Storage=362 cf Inflow=0.16 cfs 486 cf
Discarded=0.00 cfs 486 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 486 cf

Pond SW-A2: Stormtech MC-3500 (SWM-A2) Peak Elev=87.41' Storage=270 cf Inflow=0.13 cfs 382 cf
Discarded=0.00 cfs 382 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 382 cf

Pond SW-A3: Stormtech MC-3500 (SWM-A3) Peak Elev=87.47' Storage=173 cf Inflow=0.07 cfs 304 cf
Discarded=0.00 cfs 304 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 304 cf

Pond SW-A4: Stormtech MC-3500 (SWM-A4) Peak Elev=88.34' Storage=173 cf Inflow=0.07 cfs 281 cf
Discarded=0.00 cfs 281 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 281 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=91.62' Storage=756 cf Inflow=0.30 cfs 927 cf
Discarded=0.00 cfs 678 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 678 cf

Pond SW-C: Curtain Drain (SWM-C) Peak Elev=87.40' Storage=0 cf Inflow=0.00 cfs 0 cf
Discarded=0.00 cfs 0 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=91.60' Storage=0 cf Inflow=0.00 cfs 0 cf
Discarded=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Link AP: Analysis Point Inflow=0.00 cfs 54 cf
Primary=0.00 cfs 54 cf

Total Runoff Area = 203,612 sf Runoff Volume = 2,434 cf Average Runoff Depth = 0.14"
69.45% Pervious = 141,411 sf 30.55% Impervious = 62,201 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond SW-C : Curtain Drain (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr WQV Rainfall=1.00"

Area (sf)	CN	Description
8,584	98	Paved parking, HSG A
35,028	39	>75% Grass cover, Good, HSG A
910	74	>75% Grass cover, Good, HSG C
27,956	30	Woods, Good, HSG A
619	70	Woods, Good, HSG C
73,097	43	Weighted Average
64,513		88.26% Pervious Area
8,584		11.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, Sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	20	0.3400	4.08		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
17.4	337	Total			

Summary for Subcatchment DA2A: DA2A

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 927 cf, Depth= 0.79"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr WQV Rainfall=1.00"

Area (sf)	CN	Description
14,063	98	Roofs, HSG C
14,063		100.00% Impervious Area

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

Summary for Subcatchment DA2B: DA2B

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr WQV Rainfall=1.00"

Area (sf)	CN	Description
45	98	Paved parking, HSG C
4,009	39	>75% Grass cover, Good, HSG A
1,696	74	>75% Grass cover, Good, HSG C
5,750	50	Weighted Average
5,705		99.22% Pervious Area
45		0.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct**

Summary for Subcatchment DA3: DA3

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond SW-D : Drywell & Basin (SWM-D)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr WQV Rainfall=1.00"

Area (sf)	CN	Description
1,303	98	Paved parking, HSG A
5,621	39	>75% Grass cover, Good, HSG A
5,538	30	Woods, Good, HSG A
12,462	41	Weighted Average
11,159		89.54% Pervious Area
1,303		10.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA4A: DA4A

Runoff = 0.16 cfs @ 12.07 hrs, Volume= 486 cf, Depth= 0.63"
Routed to Pond SW-A1 : Stormtech MC-3500 (SWM-A1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr WQV Rainfall=1.00"

Area (sf)	CN	Description
8,559	98	Paved parking, HSG C
694	74	>75% Grass cover, Good, HSG C
9,253	96	Weighted Average
694		7.50% Pervious Area
8,559		92.50% Impervious Area

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

Summary for Subcatchment DA4B: DA4B

Runoff = 0.13 cfs @ 12.07 hrs, Volume= 382 cf, Depth= 0.63"
Routed to Pond SW-A2 : Stormtech MC-3500 (SWM-A2)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr WQV Rainfall=1.00"

Area (sf)	CN	Description
6,659	98	Paved parking, HSG C
618	74	>75% Grass cover, Good, HSG C
7,277	96	Weighted Average
618		8.49% Pervious Area
6,659		91.51% Impervious Area

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

Summary for Subcatchment DA4C: DA4C

Runoff = 0.07 cfs @ 12.16 hrs, Volume= 304 cf, Depth= 0.22"
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr WQV Rainfall=1.00"

Area (sf)	CN	Description
6,556	98	Paved parking, HSG A
6,543	98	Paved parking, HSG C
1,382	39	>75% Grass cover, Good, HSG A
649	74	>75% Grass cover, Good, HSG C
1,159	30	Woods, Good, HSG A
16,289	87	Weighted Average
3,190		19.58% Pervious Area
13,099		80.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA4D: DA4D

Runoff = 0.07 cfs @ 12.15 hrs, Volume= 281 cf, Depth= 0.28"
Routed to Pond SW-A4 : Stormtech MC-3500 (SWM-A4)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr WQV Rainfall=1.00"

Area (sf)	CN	Description
1,590	98	Paved parking, HSG A
7,947	98	Paved parking, HSG C
1,415	39	>75% Grass cover, Good, HSG A
894	74	>75% Grass cover, Good, HSG C
11,846	89	Weighted Average
2,309		19.49% Pervious Area
9,537		80.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA5: DA5

Runoff = 0.00 cfs @ 15.60 hrs, Volume= 54 cf, Depth= 0.01"
Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr WQV Rainfall=1.00"

Area (sf)	CN	Description
352	98	Paved parking, HSG C
22,627	74	>75% Grass cover, Good, HSG C
30,596	70	Woods, Good, HSG C
53,575	72	Weighted Average
53,223		99.34% Pervious Area
352		0.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1330	0.27		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
7.5	82	0.0240	0.18		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
1.9	118	0.0220	1.04		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
0.2	14	0.0500	1.12		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.2	32	0.1400	2.62		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
0.5	68	0.2350	2.42		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
11.4	332	Total			

Summary for Reach DMH-1: DMH-1

Inflow Area = 35,412 sf, 82.73% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach DMH-3: DMH-3

Inflow Area = 44,665 sf, 84.75% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Inflow Area = 9,253 sf, 92.50% Impervious, Inflow Depth = 0.63" for WQV event
Inflow = 0.16 cfs @ 12.07 hrs, Volume= 486 cf
Outflow = 0.00 cfs @ 11.02 hrs, Volume= 486 cf, Atten= 98%, Lag= 0.0 min
Discarded = 0.00 cfs @ 11.02 hrs, Volume= 486 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 85.78' @ 19.82 hrs Surf.Area= 1,108 sf Storage= 362 cf

Plug-Flow detention time= 1,358.9 min calculated for 486 cf (100% of inflow)
Center-of-Mass det. time= 1,359.0 min (2,172.2 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	85.00'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	85.75'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	85.00'	**12.0" Round Outlet Pipe** L= 6.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 85.00' / 84.95' S= 0.0083 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	87.70'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.50'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	89.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	85.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.02 hrs HW=85.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=85.00' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A1: Stormtech MC-3500 (SWM-A1) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

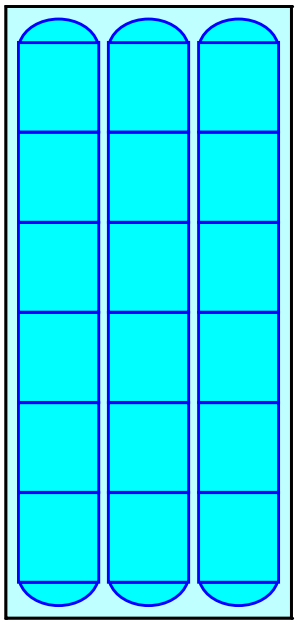
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

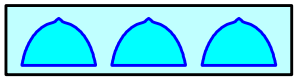
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.00	**1,108**	0
85.10	1,108	44
85.20	1,108	89
85.30	1,108	133
85.40	1,108	177
85.50	1,108	222
85.60	1,108	266
85.70	1,108	310
85.80	1,108	378
85.90	1,108	470
86.00	1,108	561
86.10	1,108	652
86.20	1,108	743
86.30	1,108	833
86.40	1,108	922
86.50	1,108	1,012
86.60	1,108	1,101
86.70	1,108	1,189
86.80	1,108	1,277
86.90	1,108	1,364
87.00	1,108	1,451
87.10	1,108	1,537
87.20	1,108	1,623
87.30	1,108	1,708
87.40	1,108	1,792
87.50	1,108	1,875
87.60	1,108	1,958
87.70	1,108	2,039
87.80	1,108	2,120
87.90	1,108	2,200
88.00	1,108	2,279
88.10	1,108	2,356
88.20	1,108	2,432
88.30	1,108	2,507
88.40	1,108	2,581
88.50	1,108	2,653
88.60	1,108	2,724
88.70	1,108	2,792
88.80	1,108	2,859
88.90	1,108	2,923
89.00	1,108	2,984
89.10	1,108	3,042
89.20	1,108	3,094
89.30	1,108	3,144
89.40	1,108	3,191
89.50	1,108	3,236
89.60	1,108	3,281
89.70	1,108	3,325
89.80	1,108	3,369
89.90	1,108	3,414
90.00	1,108	3,458
90.10	1,108	3,502
90.20	1,108	3,547
90.30	1,108	3,591
90.40	1,108	3,635
90.50	1,108	**3,680**

Summary for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Inflow Area = 7,277 sf, 91.51% Impervious, Inflow Depth = 0.63" for WQV event
Inflow = 0.13 cfs @ 12.07 hrs, Volume= 382 cf
Outflow = 0.00 cfs @ 11.34 hrs, Volume= 382 cf, Atten= 98%, Lag= 0.0 min
Discarded = 0.00 cfs @ 11.34 hrs, Volume= 382 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 87.41' @ 17.86 hrs Surf.Area= 1,108 sf Storage= 270 cf

Plug-Flow detention time= 1,040.5 min calculated for 382 cf (100% of inflow)
Center-of-Mass det. time= 1,040.9 min (1,854.1 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	86.80'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	87.55'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.65'	**15.0" Round Outlet Pipe** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 86.65' / 84.85' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	88.95'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.55'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.05'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	86.80'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.34 hrs HW=86.86' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.80' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.00 cfs of 0.11 cfs potential flow)
├**2=Low Flow Orifice** (Controls 0.00 cfs)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A2: Stormtech MC-3500 (SWM-A2) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

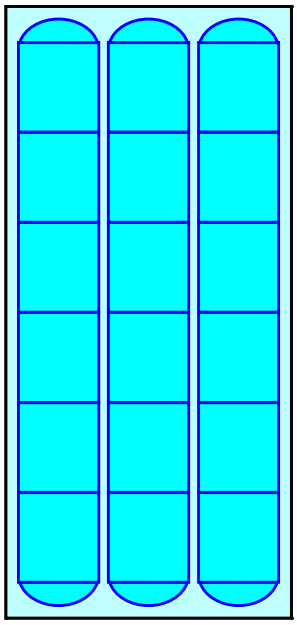
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

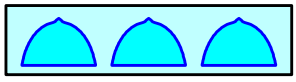
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
86.80	**1,108**	0
86.90	1,108	44
87.00	1,108	89
87.10	1,108	133
87.20	1,108	177
87.30	1,108	222
87.40	1,108	266
87.50	1,108	310
87.60	1,108	378
87.70	1,108	470
87.80	1,108	561
87.90	1,108	652
88.00	1,108	743
88.10	1,108	833
88.20	1,108	922
88.30	1,108	1,012
88.40	1,108	1,101
88.50	1,108	1,189
88.60	1,108	1,277
88.70	1,108	1,364
88.80	1,108	1,451
88.90	1,108	1,537
89.00	1,108	1,623
89.10	1,108	1,708
89.20	1,108	1,792
89.30	1,108	1,875
89.40	1,108	1,958
89.50	1,108	2,039
89.60	1,108	2,120
89.70	1,108	2,200
89.80	1,108	2,279
89.90	1,108	2,356
90.00	1,108	2,432
90.10	1,108	2,507
90.20	1,108	2,581
90.30	1,108	2,653
90.40	1,108	2,724
90.50	1,108	2,792
90.60	1,108	2,859
90.70	1,108	2,923
90.80	1,108	2,984
90.90	1,108	3,042
91.00	1,108	3,094
91.10	1,108	3,144
91.20	1,108	3,191
91.30	1,108	3,236
91.40	1,108	3,281
91.50	1,108	3,325
91.60	1,108	3,369
91.70	1,108	3,414
91.80	1,108	3,458
91.90	1,108	3,502
92.00	1,108	3,547
92.10	1,108	3,591
92.20	1,108	3,635
92.30	1,108	**3,680**

Summary for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Inflow Area = 16,289 sf, 80.42% Impervious, Inflow Depth = 0.22" for WQV event
Inflow = 0.07 cfs @ 12.16 hrs, Volume= 304 cf
Outflow = 0.00 cfs @ 12.16 hrs, Volume= 304 cf, Atten= 95%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.16 hrs, Volume= 304 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 87.47' @ 17.42 hrs Surf.Area= 1,598 sf Storage= 173 cf

Plug-Flow detention time= 528.5 min calculated for 304 cf (100% of inflow)
Center-of-Mass det. time= 528.8 min (1,417.0 - 888.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	87.20'	2,292 cf	**22.75'W x 70.23'L x 5.50'H Field A** 8,788 cf Overall - 3,058 cf Embedded = 5,729 cf x 40.0% Voids
#2A	87.95'	3,058 cf	**ADS_StormTech MC-3500 d +Cap** x 27 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 27 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,350 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.65'	**15.0" Round Outlet Pipe** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 86.65' / 84.85' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	89.55'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.60'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.45'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	87.20'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.16 hrs HW=87.26' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.20' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.00 cfs of 1.31 cfs potential flow)
├**2=Low Flow Orifice** (Controls 0.00 cfs)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A3: Stormtech MC-3500 (SWM-A3) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

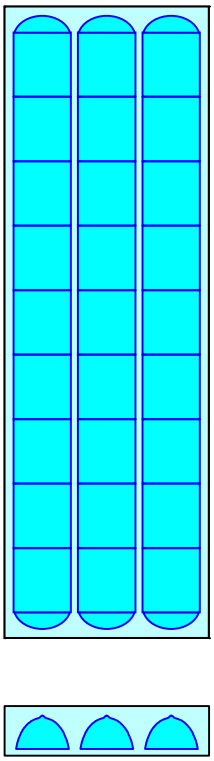
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

27 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,058.1 cf Chamber Storage

8,787.5 cf Field - 3,058.1 cf Chambers = 5,729.4 cf Stone x 40.0% Voids = 2,291.8 cf Stone Storage

Chamber Storage + Stone Storage = 5,349.9 cf = 0.123 af
Overall Storage Efficiency = 60.9%
Overall System Size = 70.23' x 22.75' x 5.50'

27 Chambers
325.5 cy Field
212.2 cy Stone



Stage-Area-Storage for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.20	**1,598**	0
87.30	1,598	64
87.40	1,598	128
87.50	1,598	192
87.60	1,598	256
87.70	1,598	320
87.80	1,598	383
87.90	1,598	447
88.00	1,598	546
88.10	1,598	680
88.20	1,598	813
88.30	1,598	946
88.40	1,598	1,078
88.50	1,598	1,210
88.60	1,598	1,341
88.70	1,598	1,471
88.80	1,598	1,601
88.90	1,598	1,730
89.00	1,598	1,858
89.10	1,598	1,986
89.20	1,598	2,113
89.30	1,598	2,238
89.40	1,598	2,363
89.50	1,598	2,487
89.60	1,598	2,610
89.70	1,598	2,731
89.80	1,598	2,852
89.90	1,598	2,971
90.00	1,598	3,089
90.10	1,598	3,205
90.20	1,598	3,320
90.30	1,598	3,433
90.40	1,598	3,544
90.50	1,598	3,653
90.60	1,598	3,760
90.70	1,598	3,865
90.80	1,598	3,968
90.90	1,598	4,067
91.00	1,598	4,164
91.10	1,598	4,257
91.20	1,598	4,346
91.30	1,598	4,430
91.40	1,598	4,506
91.50	1,598	4,577
91.60	1,598	4,645
91.70	1,598	4,711
91.80	1,598	4,775
91.90	1,598	4,839
92.00	1,598	4,903
92.10	1,598	4,966
92.20	1,598	5,030
92.30	1,598	5,094
92.40	1,598	5,158
92.50	1,598	5,222
92.60	1,598	5,286
92.70	1,598	**5,350**

Summary for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Inflow Area = 11,846 sf, 80.51% Impervious, Inflow Depth = 0.28" for WQV event
Inflow = 0.07 cfs @ 12.15 hrs, Volume= 281 cf
Outflow = 0.00 cfs @ 12.10 hrs, Volume= 281 cf, Atten= 96%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.10 hrs, Volume= 281 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 88.34' @ 17.66 hrs Surf.Area= 1,271 sf Storage= 173 cf

Plug-Flow detention time= 646.3 min calculated for 281 cf (100% of inflow)
Center-of-Mass det. time= 646.6 min (1,520.2 - 873.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	88.00'	1,838 cf	**22.75'W x 55.89'L x 5.50'H Field A** 6,993 cf Overall - 2,398 cf Embedded = 4,595 cf x 40.0% Voids
#2A	88.75'	2,398 cf	**ADS_StormTech MC-3500 d +Cap** x 21 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 21 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**12.0" Round Outlet Pipe** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 86.90' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	90.35'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.20'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	88.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.10 hrs HW=88.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=88.00' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A4: Stormtech MC-3500 (SWM-A4) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

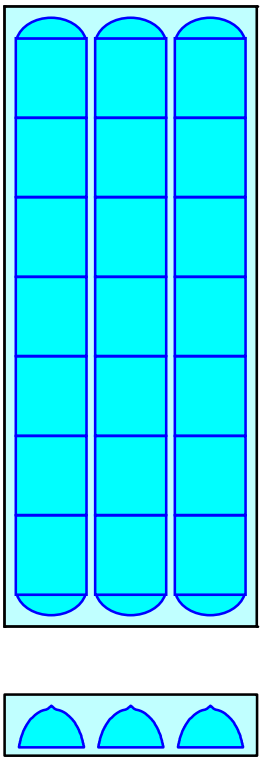
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

21 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,398.4 cf Chamber Storage

6,993.2 cf Field - 2,398.4 cf Chambers = 4,594.8 cf Stone x 40.0% Voids = 1,837.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,236.3 cf = 0.097 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 22.75' x 5.50'

21 Chambers
259.0 cy Field
170.2 cy Stone



Stage-Area-Storage for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**1,271**	0
88.10	1,271	51
88.20	1,271	102
88.30	1,271	153
88.40	1,271	203
88.50	1,271	254
88.60	1,271	305
88.70	1,271	356
88.80	1,271	434
88.90	1,271	540
89.00	1,271	645
89.10	1,271	750
89.20	1,271	854
89.30	1,271	958
89.40	1,271	1,062
89.50	1,271	1,165
89.60	1,271	1,267
89.70	1,271	1,369
89.80	1,271	1,471
89.90	1,271	1,571
90.00	1,271	1,672
90.10	1,271	1,771
90.20	1,271	1,870
90.30	1,271	1,967
90.40	1,271	2,064
90.50	1,271	2,161
90.60	1,271	2,256
90.70	1,271	2,350
90.80	1,271	2,443
90.90	1,271	2,535
91.00	1,271	2,626
91.10	1,271	2,715
91.20	1,271	2,803
91.30	1,271	2,889
91.40	1,271	2,974
91.50	1,271	3,057
91.60	1,271	3,138
91.70	1,271	3,217
91.80	1,271	3,294
91.90	1,271	3,368
92.00	1,271	3,438
92.10	1,271	3,504
92.20	1,271	3,565
92.30	1,271	3,621
92.40	1,271	3,676
92.50	1,271	3,728
92.60	1,271	3,779
92.70	1,271	3,829
92.80	1,271	3,880
92.90	1,271	3,931
93.00	1,271	3,982
93.10	1,271	4,033
93.20	1,271	4,084
93.30	1,271	4,135
93.40	1,271	4,185
93.50	1,271	**4,236**

Summary for Pond SW-B: Bioretention Basin (SWM-B)

Inflow Area = 19,813 sf, 71.21% Impervious, Inflow Depth = 0.56" for WQV event
Inflow = 0.30 cfs @ 12.07 hrs, Volume= 927 cf
Outflow = 0.00 cfs @ 22.77 hrs, Volume= 678 cf, Atten= 99%, Lag= 642.1 min
Discarded = 0.00 cfs @ 22.77 hrs, Volume= 678 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 91.62' @ 22.77 hrs Surf.Area= 1,358 sf Storage= 756 cf

Plug-Flow detention time= 1,675.6 min calculated for 678 cf (73% of inflow)
Center-of-Mass det. time= 1,588.0 min (2,375.0 - 786.9)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	7,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,079	0	0
92.00	1,528	1,304	1,304
93.00	2,023	1,776	3,079
94.00	2,663	2,343	5,422
94.80	3,231	2,358	7,780

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**15.0" Round Outlet Pipe** L= 361.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.00' / 87.00' S= 0.0055 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	92.75'	**5.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	93.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	94.30'	**6.0' 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
#5	Discarded	91.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 22.77 hrs HW=91.62' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.00 cfs of 6.41 cfs potential flow)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  └**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-B: Bioretention Basin (SWM-B)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,079	0
91.05	1,101	55
91.10	1,124	110
91.15	1,146	167
91.20	1,169	225
91.25	1,191	284
91.30	1,214	344
91.35	1,236	405
91.40	1,259	468
91.45	1,281	531
91.50	1,304	596
91.55	1,326	661
91.60	1,348	728
91.65	1,371	796
91.70	1,393	865
91.75	1,416	936
91.80	1,438	1,007
91.85	1,461	1,079
91.90	1,483	1,153
91.95	1,506	1,228
92.00	1,528	1,304
92.05	1,553	1,381
92.10	1,577	1,459
92.15	1,602	1,538
92.20	1,627	1,619
92.25	1,652	1,701
92.30	1,676	1,784
92.35	1,701	1,869
92.40	1,726	1,954
92.45	1,751	2,041
92.50	1,776	2,129
92.55	1,800	2,219
92.60	1,825	2,309
92.65	1,850	2,401
92.70	1,875	2,494
92.75	1,899	2,589
92.80	1,924	2,684
92.85	1,949	2,781
92.90	1,974	2,879
92.95	1,998	2,978
93.00	2,023	3,079
93.05	2,055	3,181
93.10	2,087	3,284
93.15	2,119	3,390
93.20	2,151	3,496
93.25	2,183	3,605
93.30	2,215	3,715
93.35	2,247	3,826
93.40	2,279	3,939
93.45	2,311	4,054
93.50	2,343	4,171
93.55	2,375	4,288
93.60	2,407	4,408
93.65	2,439	4,529
93.70	2,471	4,652
93.75	2,503	4,776
93.80	2,535	4,902
93.85	2,567	5,030
93.90	2,599	5,159
93.95	2,631	5,290
94.00	2,663	5,422
94.05	2,698	5,556
94.10	2,734	5,692
94.15	2,770	5,829
94.20	2,805	5,969
94.25	2,841	6,110
94.30	2,876	6,253
94.35	2,911	6,398
94.40	2,947	6,544
94.45	2,983	6,692
94.50	3,018	6,842
94.55	3,053	6,994
94.60	3,089	7,148
94.65	3,125	7,303
94.70	3,160	7,460
94.75	3,196	7,619
94.80	**3,231**	**7,780**

Summary for Pond SW-C: Curtain Drain (SWM-C)

Inflow Area = 73,097 sf, 11.74% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 87.40' @ 0.00 hrs Surf.Area= 1,045 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	87.40'	3,804 cf	**2.50'W x 418.00'L x 9.10'H Prismatoid** 9,509 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**8.0" Round Outlet Pipe** L= 108.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.20' / 85.45' S= 0.0162 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Primary	89.75'	**4.0" Vert. Low flow orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.75'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	87.40'	**0.100 in/hr Exfiltration over Surface area**
#5	Secondary	96.00'	**200.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**4=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
├**1=Outlet Pipe** (Passes 0.00 cfs of 0.13 cfs potential flow)
│└**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└**2=Low flow orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-C: Curtain Drain (SWM-C)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.40	**1,045**	0
87.50	1,045	42
87.60	1,045	84
87.70	1,045	125
87.80	1,045	167
87.90	1,045	209
88.00	1,045	251
88.10	1,045	293
88.20	1,045	334
88.30	1,045	376
88.40	1,045	418
88.50	1,045	460
88.60	1,045	502
88.70	1,045	543
88.80	1,045	585
88.90	1,045	627
89.00	1,045	669
89.10	1,045	711
89.20	1,045	752
89.30	1,045	794
89.40	1,045	836
89.50	1,045	878
89.60	1,045	920
89.70	1,045	961
89.80	1,045	1,003
89.90	1,045	1,045
90.00	1,045	1,087
90.10	1,045	1,129
90.20	1,045	1,170
90.30	1,045	1,212
90.40	1,045	1,254
90.50	1,045	1,296
90.60	1,045	1,338
90.70	1,045	1,379
90.80	1,045	1,421
90.90	1,045	1,463
91.00	1,045	1,505
91.10	1,045	1,547
91.20	1,045	1,588
91.30	1,045	1,630
91.40	1,045	1,672
91.50	1,045	1,714
91.60	1,045	1,756
91.70	1,045	1,797
91.80	1,045	1,839
91.90	1,045	1,881
92.00	1,045	1,923
92.10	1,045	1,965
92.20	1,045	2,006
92.30	1,045	2,048
92.40	1,045	2,090
92.50	1,045	2,132
92.60	1,045	2,174
92.70	1,045	2,215
92.80	1,045	2,257
92.90	1,045	2,299
93.00	1,045	2,341
93.10	1,045	2,383
93.20	1,045	2,424
93.30	1,045	2,466
93.40	1,045	2,508
93.50	1,045	2,550
93.60	1,045	2,592
93.70	1,045	2,633
93.80	1,045	2,675
93.90	1,045	2,717
94.00	1,045	2,759
94.10	1,045	2,801
94.20	1,045	2,842
94.30	1,045	2,884
94.40	1,045	2,926
94.50	1,045	2,968
94.60	1,045	3,010
94.70	1,045	3,051
94.80	1,045	3,093
94.90	1,045	3,135
95.00	1,045	3,177
95.10	1,045	3,219
95.20	1,045	3,260
95.30	1,045	3,302
95.40	1,045	3,344
95.50	1,045	3,386
95.60	1,045	3,428
95.70	1,045	3,469
95.80	1,045	3,511
95.90	1,045	3,553
96.00	1,045	3,595
96.10	1,045	3,637
96.20	1,045	3,678
96.30	1,045	3,720
96.40	1,045	3,762
96.50	1,045	**3,804**

Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 12,462 sf, 10.46% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 91.60' @ 0.00 hrs Surf.Area= 31 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	91.60'	1,595 cf	**Drywell & Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.60	31	0	0
92.60	44	38	38
93.60	44	44	82
94.60	44	44	126
95.60	44	44	170
96.60	44	44	214
97.49	4	21	235
97.50	29	0	235
98.00	145	44	279
99.00	560	353	631
100.00	1,135	848	1,479
100.10	1,187	116	1,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.60'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	99.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**1=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-D: Drywell & Basin (SWM-D)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	31	0
91.70	32	3
91.80	34	6
91.90	35	10
92.00	36	13
92.10	38	17
92.20	39	21
92.30	40	25
92.40	41	29
92.50	43	33
92.60	44	38
92.70	44	42
92.80	44	46
92.90	44	51
93.00	44	55
93.10	44	60
93.20	44	64
93.30	44	68
93.40	44	73
93.50	44	77
93.60	44	82
93.70	44	86
93.80	44	90
93.90	44	95
94.00	44	99
94.10	44	104
94.20	44	108
94.30	44	112
94.40	44	117
94.50	44	121
94.60	44	126
94.70	44	130
94.80	44	134
94.90	44	139
95.00	44	143
95.10	44	148
95.20	44	152
95.30	44	156
95.40	44	161
95.50	44	165
95.60	44	170
95.70	44	174
95.80	44	178
95.90	44	183
96.00	44	187
96.10	44	192
96.20	44	196
96.30	44	200
96.40	44	205
96.50	44	209
96.60	44	214
96.70	40	218
96.80	35	221
96.90	31	225
97.00	26	228
97.10	22	230
97.20	17	232
97.30	13	233
97.40	8	234
97.50	29	235
97.60	52	239
97.70	75	245
97.80	99	254
97.90	122	265
98.00	145	279
98.10	186	295
98.20	228	316
98.30	269	341
98.40	311	370
98.50	353	403
98.60	394	440
98.70	435	482
98.80	477	527
98.90	518	577
99.00	560	631
99.10	617	690
99.20	675	755
99.30	732	825
99.40	790	901
99.50	848	983
99.60	905	1,071
99.70	962	1,164
99.80	1,020	1,263
99.90	1,077	1,368
100.00	1,135	1,479
100.10	**1,187**	**1,595**

Summary for Link AP: Analysis Point

Inflow Area = 191,150 sf, 31.86% Impervious, Inflow Depth = 0.00" for WQV event
Inflow = 0.00 cfs @ 15.60 hrs, Volume= 54 cf
Primary = 0.00 cfs @ 15.60 hrs, Volume= 54 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=73,097 sf 11.74% Impervious Runoff Depth=0.03"
Flow Length=337' Tc=17.4 min CN=43 Runoff=0.01 cfs 196 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=3.09"
Tc=5.0 min CN=98 Runoff=1.08 cfs 3,618 cf

Subcatchment DA2B: DA2B Runoff Area=5,750 sf 0.78% Impervious Runoff Depth=0.15"
Tc=10.0 min CN=50 Runoff=0.00 cfs 74 cf

Subcatchment DA3: DA3 Runoff Area=12,462 sf 10.46% Impervious Runoff Depth=0.01"
Tc=10.0 min CN=41 Runoff=0.00 cfs 14 cf

Subcatchment DA4A: DA4A Runoff Area=9,253 sf 92.50% Impervious Runoff Depth=2.87"
Tc=5.0 min CN=96 Runoff=0.68 cfs 2,211 cf

Subcatchment DA4B: DA4B Runoff Area=7,277 sf 91.51% Impervious Runoff Depth=2.87"
Tc=5.0 min CN=96 Runoff=0.54 cfs 1,739 cf

Subcatchment DA4C: DA4C Runoff Area=16,289 sf 80.42% Impervious Runoff Depth=2.02"
Tc=10.0 min CN=87 Runoff=0.77 cfs 2,744 cf

Subcatchment DA4D: DA4D Runoff Area=11,846 sf 80.51% Impervious Runoff Depth=2.19"
Tc=10.0 min CN=89 Runoff=0.61 cfs 2,163 cf

Subcatchment DA5: DA5 Runoff Area=53,575 sf 0.66% Impervious Runoff Depth=1.00"
Flow Length=332' Tc=11.4 min CN=72 Runoff=1.12 cfs 4,487 cf

Reach DMH-1: DMH-1 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Reach DMH-3: DMH-3 Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond SW-A1: Stormtech MC-3500 (SWM-A1) Peak Elev=87.69' Storage=2,034 cf Inflow=0.68 cfs 2,211 cf
Discarded=0.00 cfs 619 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 619 cf

Pond SW-A2: Stormtech MC-3500 (SWM-A2) Peak Elev=88.93' Storage=1,565 cf Inflow=0.54 cfs 1,739 cf
Discarded=0.00 cfs 616 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 616 cf

Pond SW-A3: Stormtech MC-3500 (SWM-A3) Peak Elev=89.54' Storage=2,539 cf Inflow=0.77 cfs 2,744 cf
Discarded=0.00 cfs 841 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 841 cf

Pond SW-A4: Stormtech MC-3500 (SWM-A4) Peak Elev=90.33' Storage=1,994 cf Inflow=0.61 cfs 2,163 cf
Discarded=0.00 cfs 675 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 675 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=92.87' Storage=2,810 cf Inflow=1.08 cfs 3,692 cf
Discarded=0.00 cfs 1,005 cf Primary=0.04 cfs 762 cf Secondary=0.00 cfs 0 cf Outflow=0.04 cfs 1,767 cf

Pond SW-C: Curtain Drain (SWM-C) Peak Elev=87.68' Storage=119 cf Inflow=0.01 cfs 196 cf
Discarded=0.00 cfs 196 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 196 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=91.61' Storage=0 cf Inflow=0.00 cfs 14 cf
Discarded=0.00 cfs 14 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 14 cf

Link AP: Analysis Point Inflow=1.12 cfs 5,248 cf
Primary=1.12 cfs 5,248 cf

Total Runoff Area = 203,612 sf Runoff Volume = 17,245 cf Average Runoff Depth = 1.02"
69.45% Pervious = 141,411 sf 30.55% Impervious = 62,201 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.01 cfs @ 16.88 hrs, Volume= 196 cf, Depth= 0.03"
Routed to Pond SW-C : Curtain Drain (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.32"

Area (sf)	CN	Description
8,584	98	Paved parking, HSG A
35,028	39	>75% Grass cover, Good, HSG A
910	74	>75% Grass cover, Good, HSG C
27,956	30	Woods, Good, HSG A
619	70	Woods, Good, HSG C
73,097	43	Weighted Average
64,513		88.26% Pervious Area
8,584		11.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, Sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	20	0.3400	4.08		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
17.4	337	Total			

Summary for Subcatchment DA2A: DA2A

Runoff = 1.08 cfs @ 12.07 hrs, Volume= 3,618 cf, Depth= 3.09"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.32"

Area (sf)	CN	Description
14,063	98	Roofs, HSG C
14,063		100.00% Impervious Area

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

Summary for Subcatchment DA2B: DA2B

Runoff = 0.00 cfs @ 12.50 hrs, Volume= 74 cf, Depth= 0.15"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.32"

Area (sf)	CN	Description
45	98	Paved parking, HSG C
4,009	39	>75% Grass cover, Good, HSG A
1,696	74	>75% Grass cover, Good, HSG C
5,750	50	Weighted Average
5,705		99.22% Pervious Area
45		0.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct**

Summary for Subcatchment DA3: DA3

Runoff = 0.00 cfs @ 21.70 hrs, Volume= 14 cf, Depth= 0.01"
Routed to Pond SW-D : Drywell & Basin (SWM-D)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.32"

Area (sf)	CN	Description
1,303	98	Paved parking, HSG A
5,621	39	>75% Grass cover, Good, HSG A
5,538	30	Woods, Good, HSG A
12,462	41	Weighted Average
11,159		89.54% Pervious Area
1,303		10.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA4A: DA4A

Runoff = 0.68 cfs @ 12.07 hrs, Volume= 2,211 cf, Depth= 2.87"
Routed to Pond SW-A1 : Stormtech MC-3500 (SWM-A1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.32"

Area (sf)	CN	Description
8,559	98	Paved parking, HSG C
694	74	>75% Grass cover, Good, HSG C
9,253	96	Weighted Average
694		7.50% Pervious Area
8,559		92.50% Impervious Area

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

Summary for Subcatchment DA4B: DA4B

Runoff = 0.54 cfs @ 12.07 hrs, Volume= 1,739 cf, Depth= 2.87"
Routed to Pond SW-A2 : Stormtech MC-3500 (SWM-A2)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.32"

Area (sf)	CN	Description
6,659	98	Paved parking, HSG C
618	74	>75% Grass cover, Good, HSG C
7,277	96	Weighted Average
618		8.49% Pervious Area
6,659		91.51% Impervious Area

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

Summary for Subcatchment DA4C: DA4C

Runoff = 0.77 cfs @ 12.14 hrs, Volume= 2,744 cf, Depth= 2.02"
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.32"

Area (sf)	CN	Description
6,556	98	Paved parking, HSG A
6,543	98	Paved parking, HSG C
1,382	39	>75% Grass cover, Good, HSG A
649	74	>75% Grass cover, Good, HSG C
1,159	30	Woods, Good, HSG A
16,289	87	Weighted Average
3,190		19.58% Pervious Area
13,099		80.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA4D: DA4D

Runoff = 0.61 cfs @ 12.14 hrs, Volume= 2,163 cf, Depth= 2.19"
Routed to Pond SW-A4 : Stormtech MC-3500 (SWM-A4)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.32"

Area (sf)	CN	Description
1,590	98	Paved parking, HSG A
7,947	98	Paved parking, HSG C
1,415	39	>75% Grass cover, Good, HSG A
894	74	>75% Grass cover, Good, HSG C
11,846	89	Weighted Average
2,309		19.49% Pervious Area
9,537		80.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA5: DA5

Runoff = 1.12 cfs @ 12.17 hrs, Volume= 4,487 cf, Depth= 1.00"
Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.32"

Area (sf)	CN	Description
352	98	Paved parking, HSG C
22,627	74	>75% Grass cover, Good, HSG C
30,596	70	Woods, Good, HSG C
53,575	72	Weighted Average
53,223		99.34% Pervious Area
352		0.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1330	0.27		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
7.5	82	0.0240	0.18		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
1.9	118	0.0220	1.04		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
0.2	14	0.0500	1.12		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.2	32	0.1400	2.62		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
0.5	68	0.2350	2.42		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
11.4	332	Total			

Summary for Reach DMH-1: DMH-1

Inflow Area = 35,412 sf, 82.73% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach DMH-3: DMH-3

Inflow Area = 44,665 sf, 84.75% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Inflow Area = 9,253 sf, 92.50% Impervious, Inflow Depth = 2.87" for 2-Year event
Inflow = 0.68 cfs @ 12.07 hrs, Volume= 2,211 cf
Outflow = 0.00 cfs @ 6.28 hrs, Volume= 619 cf, Atten= 100%, Lag= 0.0 min
Discarded = 0.00 cfs @ 6.28 hrs, Volume= 619 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 87.69' @ 24.08 hrs Surf.Area= 1,108 sf Storage= 2,034 cf

Plug-Flow detention time= 1,705.8 min calculated for 619 cf (28% of inflow)
Center-of-Mass det. time= 1,536.3 min (2,308.4 - 772.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	85.00'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	85.75'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	85.00'	**12.0" Round Outlet Pipe** L= 6.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 85.00' / 84.95' S= 0.0083 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	87.70'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.50'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	89.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	85.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 6.28 hrs HW=85.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=85.00' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A1: Stormtech MC-3500 (SWM-A1) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

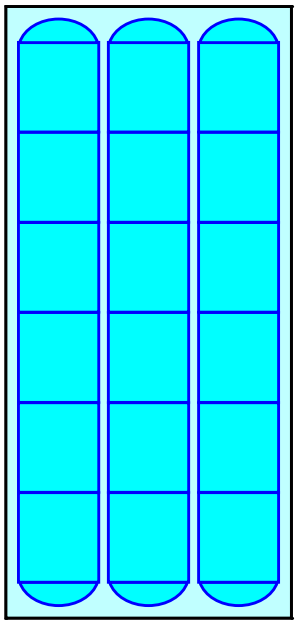
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

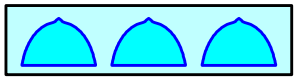
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.00	**1,108**	0
85.10	1,108	44
85.20	1,108	89
85.30	1,108	133
85.40	1,108	177
85.50	1,108	222
85.60	1,108	266
85.70	1,108	310
85.80	1,108	378
85.90	1,108	470
86.00	1,108	561
86.10	1,108	652
86.20	1,108	743
86.30	1,108	833
86.40	1,108	922
86.50	1,108	1,012
86.60	1,108	1,101
86.70	1,108	1,189
86.80	1,108	1,277
86.90	1,108	1,364
87.00	1,108	1,451
87.10	1,108	1,537
87.20	1,108	1,623
87.30	1,108	1,708
87.40	1,108	1,792
87.50	1,108	1,875
87.60	1,108	1,958
87.70	1,108	2,039
87.80	1,108	2,120
87.90	1,108	2,200
88.00	1,108	2,279
88.10	1,108	2,356
88.20	1,108	2,432
88.30	1,108	2,507
88.40	1,108	2,581
88.50	1,108	2,653
88.60	1,108	2,724
88.70	1,108	2,792
88.80	1,108	2,859
88.90	1,108	2,923
89.00	1,108	2,984
89.10	1,108	3,042
89.20	1,108	3,094
89.30	1,108	3,144
89.40	1,108	3,191
89.50	1,108	3,236
89.60	1,108	3,281
89.70	1,108	3,325
89.80	1,108	3,369
89.90	1,108	3,414
90.00	1,108	3,458
90.10	1,108	3,502
90.20	1,108	3,547
90.30	1,108	3,591
90.40	1,108	3,635
90.50	1,108	**3,680**

Summary for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Inflow Area = 7,277 sf, 91.51% Impervious, Inflow Depth = 2.87" for 2-Year event
Inflow = 0.54 cfs @ 12.07 hrs, Volume= 1,739 cf
Outflow = 0.00 cfs @ 6.78 hrs, Volume= 616 cf, Atten= 100%, Lag= 0.0 min
Discarded = 0.00 cfs @ 6.78 hrs, Volume= 616 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 88.93' @ 24.07 hrs Surf.Area= 1,108 sf Storage= 1,565 cf

Plug-Flow detention time= 1,692.1 min calculated for 616 cf (35% of inflow)
Center-of-Mass det. time= 1,546.3 min (2,318.4 - 772.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	86.80'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	87.55'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.65'	**15.0" Round Outlet Pipe** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 86.65' / 84.85' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	88.95'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.55'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.05'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	86.80'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 6.78 hrs HW=86.86' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.80' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.00 cfs of 0.11 cfs potential flow)
├**2=Low Flow Orifice** (Controls 0.00 cfs)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A2: Stormtech MC-3500 (SWM-A2) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

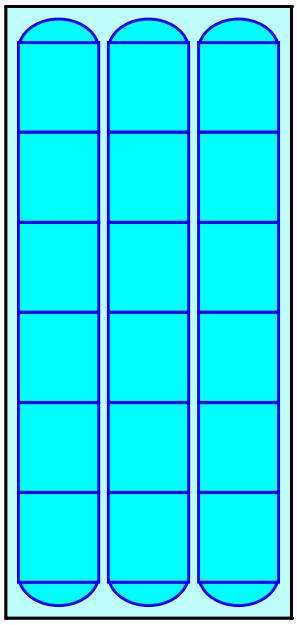
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

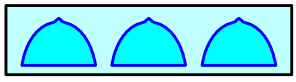
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
86.80	**1,108**	0
86.90	1,108	44
87.00	1,108	89
87.10	1,108	133
87.20	1,108	177
87.30	1,108	222
87.40	1,108	266
87.50	1,108	310
87.60	1,108	378
87.70	1,108	470
87.80	1,108	561
87.90	1,108	652
88.00	1,108	743
88.10	1,108	833
88.20	1,108	922
88.30	1,108	1,012
88.40	1,108	1,101
88.50	1,108	1,189
88.60	1,108	1,277
88.70	1,108	1,364
88.80	1,108	1,451
88.90	1,108	1,537
89.00	1,108	1,623
89.10	1,108	1,708
89.20	1,108	1,792
89.30	1,108	1,875
89.40	1,108	1,958
89.50	1,108	2,039
89.60	1,108	2,120
89.70	1,108	2,200
89.80	1,108	2,279
89.90	1,108	2,356
90.00	1,108	2,432
90.10	1,108	2,507
90.20	1,108	2,581
90.30	1,108	2,653
90.40	1,108	2,724
90.50	1,108	2,792
90.60	1,108	2,859
90.70	1,108	2,923
90.80	1,108	2,984
90.90	1,108	3,042
91.00	1,108	3,094
91.10	1,108	3,144
91.20	1,108	3,191
91.30	1,108	3,236
91.40	1,108	3,281
91.50	1,108	3,325
91.60	1,108	3,369
91.70	1,108	3,414
91.80	1,108	3,458
91.90	1,108	3,502
92.00	1,108	3,547
92.10	1,108	3,591
92.20	1,108	3,635
92.30	1,108	**3,680**

Summary for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Inflow Area = 16,289 sf, 80.42% Impervious, Inflow Depth = 2.02" for 2-Year event
Inflow = 0.77 cfs @ 12.14 hrs, Volume= 2,744 cf
Outflow = 0.00 cfs @ 9.58 hrs, Volume= 841 cf, Atten= 100%, Lag= 0.0 min
Discarded = 0.00 cfs @ 9.58 hrs, Volume= 841 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 89.54' @ 24.16 hrs Surf.Area= 1,598 sf Storage= 2,539 cf

Plug-Flow detention time= 1,736.0 min calculated for 841 cf (31% of inflow)
Center-of-Mass det. time= 1,604.2 min (2,425.2 - 821.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	87.20'	2,292 cf	**22.75'W x 70.23'L x 5.50'H Field A** 8,788 cf Overall - 3,058 cf Embedded = 5,729 cf x 40.0% Voids
#2A	87.95'	3,058 cf	**ADS_StormTech MC-3500 d +Cap** x 27 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 27 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,350 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.65'	**15.0" Round Outlet Pipe** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 86.65' / 84.85' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	89.55'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.60'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.45'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	87.20'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 9.58 hrs HW=87.26' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.20' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.00 cfs of 1.31 cfs potential flow)
├**2=Low Flow Orifice** (Controls 0.00 cfs)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A3: Stormtech MC-3500 (SWM-A3) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

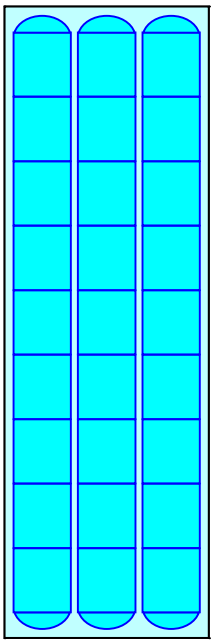
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

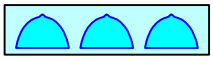
27 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,058.1 cf Chamber Storage

8,787.5 cf Field - 3,058.1 cf Chambers = 5,729.4 cf Stone x 40.0% Voids = 2,291.8 cf Stone Storage

Chamber Storage + Stone Storage = 5,349.9 cf = 0.123 af
Overall Storage Efficiency = 60.9%
Overall System Size = 70.23' x 22.75' x 5.50'

27 Chambers
325.5 cy Field
212.2 cy Stone





Stage-Area-Storage for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.20	**1,598**	0
87.30	1,598	64
87.40	1,598	128
87.50	1,598	192
87.60	1,598	256
87.70	1,598	320
87.80	1,598	383
87.90	1,598	447
88.00	1,598	546
88.10	1,598	680
88.20	1,598	813
88.30	1,598	946
88.40	1,598	1,078
88.50	1,598	1,210
88.60	1,598	1,341
88.70	1,598	1,471
88.80	1,598	1,601
88.90	1,598	1,730
89.00	1,598	1,858
89.10	1,598	1,986
89.20	1,598	2,113
89.30	1,598	2,238
89.40	1,598	2,363
89.50	1,598	2,487
89.60	1,598	2,610
89.70	1,598	2,731
89.80	1,598	2,852
89.90	1,598	2,971
90.00	1,598	3,089
90.10	1,598	3,205
90.20	1,598	3,320
90.30	1,598	3,433
90.40	1,598	3,544
90.50	1,598	3,653
90.60	1,598	3,760
90.70	1,598	3,865
90.80	1,598	3,968
90.90	1,598	4,067
91.00	1,598	4,164
91.10	1,598	4,257
91.20	1,598	4,346
91.30	1,598	4,430
91.40	1,598	4,506
91.50	1,598	4,577
91.60	1,598	4,645
91.70	1,598	4,711
91.80	1,598	4,775
91.90	1,598	4,839
92.00	1,598	4,903
92.10	1,598	4,966
92.20	1,598	5,030
92.30	1,598	5,094
92.40	1,598	5,158
92.50	1,598	5,222
92.60	1,598	5,286
92.70	1,598	**5,350**

Summary for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Inflow Area = 11,846 sf, 80.51% Impervious, Inflow Depth = 2.19" for 2-Year event
Inflow = 0.61 cfs @ 12.14 hrs, Volume= 2,163 cf
Outflow = 0.00 cfs @ 9.14 hrs, Volume= 675 cf, Atten= 100%, Lag= 0.0 min
Discarded = 0.00 cfs @ 9.14 hrs, Volume= 675 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 90.33' @ 24.16 hrs Surf.Area= 1,271 sf Storage= 1,994 cf

Plug-Flow detention time= 1,728.5 min calculated for 675 cf (31% of inflow)
Center-of-Mass det. time= 1,595.4 min (2,408.8 - 813.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	88.00'	1,838 cf	**22.75'W x 55.89'L x 5.50'H Field A** 6,993 cf Overall - 2,398 cf Embedded = 4,595 cf x 40.0% Voids
#2A	88.75'	2,398 cf	**ADS_StormTech MC-3500 d +Cap** x 21 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 21 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**12.0" Round Outlet Pipe** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 86.90' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	90.35'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.20'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	88.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 9.14 hrs HW=88.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=88.00' (Free Discharge)
└**1=Outlet Pipe** (Controls 0.00 cfs)
  ├**2=Low Flow Orifice** (Controls 0.00 cfs)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A4: Stormtech MC-3500 (SWM-A4) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

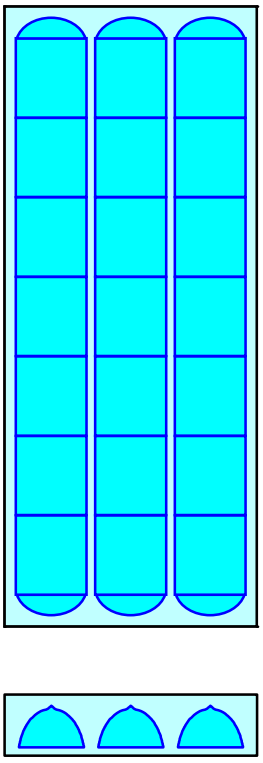
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

21 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,398.4 cf Chamber Storage

6,993.2 cf Field - 2,398.4 cf Chambers = 4,594.8 cf Stone x 40.0% Voids = 1,837.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,236.3 cf = 0.097 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 22.75' x 5.50'

21 Chambers
259.0 cy Field
170.2 cy Stone



Stage-Area-Storage for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**1,271**	0
88.10	1,271	51
88.20	1,271	102
88.30	1,271	153
88.40	1,271	203
88.50	1,271	254
88.60	1,271	305
88.70	1,271	356
88.80	1,271	434
88.90	1,271	540
89.00	1,271	645
89.10	1,271	750
89.20	1,271	854
89.30	1,271	958
89.40	1,271	1,062
89.50	1,271	1,165
89.60	1,271	1,267
89.70	1,271	1,369
89.80	1,271	1,471
89.90	1,271	1,571
90.00	1,271	1,672
90.10	1,271	1,771
90.20	1,271	1,870
90.30	1,271	1,967
90.40	1,271	2,064
90.50	1,271	2,161
90.60	1,271	2,256
90.70	1,271	2,350
90.80	1,271	2,443
90.90	1,271	2,535
91.00	1,271	2,626
91.10	1,271	2,715
91.20	1,271	2,803
91.30	1,271	2,889
91.40	1,271	2,974
91.50	1,271	3,057
91.60	1,271	3,138
91.70	1,271	3,217
91.80	1,271	3,294
91.90	1,271	3,368
92.00	1,271	3,438
92.10	1,271	3,504
92.20	1,271	3,565
92.30	1,271	3,621
92.40	1,271	3,676
92.50	1,271	3,728
92.60	1,271	3,779
92.70	1,271	3,829
92.80	1,271	3,880
92.90	1,271	3,931
93.00	1,271	3,982
93.10	1,271	4,033
93.20	1,271	4,084
93.30	1,271	4,135
93.40	1,271	4,185
93.50	1,271	**4,236**

Summary for Pond SW-B: Bioretention Basin (SWM-B)

Inflow Area = 19,813 sf, 71.21% Impervious, Inflow Depth = 2.24" for 2-Year event
Inflow = 1.08 cfs @ 12.07 hrs, Volume= 3,692 cf
Outflow = 0.04 cfs @ 15.29 hrs, Volume= 1,767 cf, Atten= 96%, Lag= 193.1 min
Discarded = 0.00 cfs @ 15.29 hrs, Volume= 1,005 cf
Primary = 0.04 cfs @ 15.29 hrs, Volume= 762 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 92.87' @ 15.29 hrs Surf.Area= 1,956 sf Storage= 2,810 cf

Plug-Flow detention time= 1,152.0 min calculated for 1,766 cf (48% of inflow)
Center-of-Mass det. time= 1,020.1 min (1,779.8 - 759.6)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	7,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,079	0	0
92.00	1,528	1,304	1,304
93.00	2,023	1,776	3,079
94.00	2,663	2,343	5,422
94.80	3,231	2,358	7,780

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**15.0" Round Outlet Pipe** L= 361.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.00' / 87.00' S= 0.0055 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	92.75'	**5.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	93.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	94.30'	**6.0' 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
#5	Discarded	91.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 15.29 hrs HW=92.87' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.04 cfs @ 15.29 hrs HW=92.87' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.04 cfs of 8.31 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.04 cfs @ 1.15 fps)
  └**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-B: Bioretention Basin (SWM-B)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,079	0
91.05	1,101	55
91.10	1,124	110
91.15	1,146	167
91.20	1,169	225
91.25	1,191	284
91.30	1,214	344
91.35	1,236	405
91.40	1,259	468
91.45	1,281	531
91.50	1,304	596
91.55	1,326	661
91.60	1,348	728
91.65	1,371	796
91.70	1,393	865
91.75	1,416	936
91.80	1,438	1,007
91.85	1,461	1,079
91.90	1,483	1,153
91.95	1,506	1,228
92.00	1,528	1,304
92.05	1,553	1,381
92.10	1,577	1,459
92.15	1,602	1,538
92.20	1,627	1,619
92.25	1,652	1,701
92.30	1,676	1,784
92.35	1,701	1,869
92.40	1,726	1,954
92.45	1,751	2,041
92.50	1,776	2,129
92.55	1,800	2,219
92.60	1,825	2,309
92.65	1,850	2,401
92.70	1,875	2,494
92.75	1,899	2,589
92.80	1,924	2,684
92.85	1,949	2,781
92.90	1,974	2,879
92.95	1,998	2,978
93.00	2,023	3,079
93.05	2,055	3,181
93.10	2,087	3,284
93.15	2,119	3,390
93.20	2,151	3,496
93.25	2,183	3,605
93.30	2,215	3,715
93.35	2,247	3,826
93.40	2,279	3,939
93.45	2,311	4,054
93.50	2,343	4,171
93.55	2,375	4,288
93.60	2,407	4,408
93.65	2,439	4,529
93.70	2,471	4,652
93.75	2,503	4,776
93.80	2,535	4,902
93.85	2,567	5,030
93.90	2,599	5,159
93.95	2,631	5,290
94.00	2,663	5,422
94.05	2,698	5,556
94.10	2,734	5,692
94.15	2,770	5,829
94.20	2,805	5,969
94.25	2,841	6,110
94.30	2,876	6,253
94.35	2,911	6,398
94.40	2,947	6,544
94.45	2,983	6,692
94.50	3,018	6,842
94.55	3,053	6,994
94.60	3,089	7,148
94.65	3,125	7,303
94.70	3,160	7,460
94.75	3,196	7,619
94.80	**3,231**	**7,780**

Summary for Pond SW-C: Curtain Drain (SWM-C)

Inflow Area = 73,097 sf, 11.74% Impervious, Inflow Depth = 0.03" for 2-Year event
Inflow = 0.01 cfs @ 16.88 hrs, Volume= 196 cf
Outflow = 0.00 cfs @ 16.74 hrs, Volume= 196 cf, Atten= 62%, Lag= 0.0 min
Discarded = 0.00 cfs @ 16.74 hrs, Volume= 196 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 87.68' @ 24.24 hrs Surf.Area= 1,045 sf Storage= 119 cf

Plug-Flow detention time= 481.0 min calculated for 196 cf (100% of inflow)
Center-of-Mass det. time= 481.6 min (1,631.1 - 1,149.5)

Volume	Invert	Avail.Storage	Storage Description
#1	87.40'	3,804 cf	**2.50'W x 418.00'L x 9.10'H Prismatoid** 9,509 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**8.0" Round Outlet Pipe** L= 108.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.20' / 85.45' S= 0.0162 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Primary	89.75'	**4.0" Vert. Low flow orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.75'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	87.40'	**0.100 in/hr Exfiltration over Surface area**
#5	Secondary	96.00'	**200.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 16.74 hrs HW=87.49' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
├**1=Outlet Pipe** (Passes 0.00 cfs of 0.13 cfs potential flow)
│└**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└**2=Low flow orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-C: Curtain Drain (SWM-C)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.40	**1,045**	0
87.50	1,045	42
87.60	1,045	84
87.70	1,045	125
87.80	1,045	167
87.90	1,045	209
88.00	1,045	251
88.10	1,045	293
88.20	1,045	334
88.30	1,045	376
88.40	1,045	418
88.50	1,045	460
88.60	1,045	502
88.70	1,045	543
88.80	1,045	585
88.90	1,045	627
89.00	1,045	669
89.10	1,045	711
89.20	1,045	752
89.30	1,045	794
89.40	1,045	836
89.50	1,045	878
89.60	1,045	920
89.70	1,045	961
89.80	1,045	1,003
89.90	1,045	1,045
90.00	1,045	1,087
90.10	1,045	1,129
90.20	1,045	1,170
90.30	1,045	1,212
90.40	1,045	1,254
90.50	1,045	1,296
90.60	1,045	1,338
90.70	1,045	1,379
90.80	1,045	1,421
90.90	1,045	1,463
91.00	1,045	1,505
91.10	1,045	1,547
91.20	1,045	1,588
91.30	1,045	1,630
91.40	1,045	1,672
91.50	1,045	1,714
91.60	1,045	1,756
91.70	1,045	1,797
91.80	1,045	1,839
91.90	1,045	1,881
92.00	1,045	1,923
92.10	1,045	1,965
92.20	1,045	2,006
92.30	1,045	2,048
92.40	1,045	2,090
92.50	1,045	2,132
92.60	1,045	2,174
92.70	1,045	2,215
92.80	1,045	2,257
92.90	1,045	2,299
93.00	1,045	2,341
93.10	1,045	2,383
93.20	1,045	2,424
93.30	1,045	2,466
93.40	1,045	2,508
93.50	1,045	2,550
93.60	1,045	2,592
93.70	1,045	2,633
93.80	1,045	2,675
93.90	1,045	2,717
94.00	1,045	2,759
94.10	1,045	2,801
94.20	1,045	2,842
94.30	1,045	2,884
94.40	1,045	2,926
94.50	1,045	2,968
94.60	1,045	3,010
94.70	1,045	3,051
94.80	1,045	3,093
94.90	1,045	3,135
95.00	1,045	3,177
95.10	1,045	3,219
95.20	1,045	3,260
95.30	1,045	3,302
95.40	1,045	3,344
95.50	1,045	3,386
95.60	1,045	3,428
95.70	1,045	3,469
95.80	1,045	3,511
95.90	1,045	3,553
96.00	1,045	3,595
96.10	1,045	3,637
96.20	1,045	3,678
96.30	1,045	3,720
96.40	1,045	3,762
96.50	1,045	**3,804**

Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 12,462 sf, 10.46% Impervious, Inflow Depth = 0.01" for 2-Year event
Inflow = 0.00 cfs @ 21.70 hrs, Volume= 14 cf
Outflow = 0.00 cfs @ 21.91 hrs, Volume= 14 cf, Atten= 0%, Lag= 12.4 min
Discarded = 0.00 cfs @ 21.91 hrs, Volume= 14 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 91.61' @ 21.91 hrs Surf.Area= 31 sf Storage= 0 cf

Plug-Flow detention time= 12.0 min calculated for 14 cf (100% of inflow)
Center-of-Mass det. time= 12.0 min (1,231.7 - 1,219.6)

Volume	Invert	Avail.Storage	Storage Description
#1	91.60'	1,595 cf	**Drywell & Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.60	31	0	0
92.60	44	38	38
93.60	44	44	82
94.60	44	44	126
95.60	44	44	170
96.60	44	44	214
97.49	4	21	235
97.50	29	0	235
98.00	145	44	279
99.00	560	353	631
100.00	1,135	848	1,479
100.10	1,187	116	1,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.60'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	99.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.00 cfs @ 21.91 hrs HW=91.61' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-D: Drywell & Basin (SWM-D)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	31	0
91.70	32	3
91.80	34	6
91.90	35	10
92.00	36	13
92.10	38	17
92.20	39	21
92.30	40	25
92.40	41	29
92.50	43	33
92.60	44	38
92.70	44	42
92.80	44	46
92.90	44	51
93.00	44	55
93.10	44	60
93.20	44	64
93.30	44	68
93.40	44	73
93.50	44	77
93.60	44	82
93.70	44	86
93.80	44	90
93.90	44	95
94.00	44	99
94.10	44	104
94.20	44	108
94.30	44	112
94.40	44	117
94.50	44	121
94.60	44	126
94.70	44	130
94.80	44	134
94.90	44	139
95.00	44	143
95.10	44	148
95.20	44	152
95.30	44	156
95.40	44	161
95.50	44	165
95.60	44	170
95.70	44	174
95.80	44	178
95.90	44	183
96.00	44	187
96.10	44	192
96.20	44	196
96.30	44	200
96.40	44	205
96.50	44	209
96.60	44	214
96.70	40	218
96.80	35	221
96.90	31	225
97.00	26	228
97.10	22	230
97.20	17	232
97.30	13	233
97.40	8	234
97.50	29	235
97.60	52	239
97.70	75	245
97.80	99	254
97.90	122	265
98.00	145	279
98.10	186	295
98.20	228	316
98.30	269	341
98.40	311	370
98.50	353	403
98.60	394	440
98.70	435	482
98.80	477	527
98.90	518	577
99.00	560	631
99.10	617	690
99.20	675	755
99.30	732	825
99.40	790	901
99.50	848	983
99.60	905	1,071
99.70	962	1,164
99.80	1,020	1,263
99.90	1,077	1,368
100.00	1,135	1,479
100.10	**1,187**	**1,595**

Summary for Link AP: Analysis Point

Inflow Area = 191,150 sf, 31.86% Impervious, Inflow Depth = 0.33" for 2-Year event
Inflow = 1.12 cfs @ 12.17 hrs, Volume= 5,248 cf
Primary = 1.12 cfs @ 12.17 hrs, Volume= 5,248 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=73,097 sf 11.74% Impervious Runoff Depth=0.46"
Flow Length=337' Tc=17.4 min CN=43 Runoff=0.30 cfs 2,781 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=5.11"
Tc=5.0 min CN=98 Runoff=1.75 cfs 5,992 cf

Subcatchment DA2B: DA2B Runoff Area=5,750 sf 0.78% Impervious Runoff Depth=0.84"
Tc=10.0 min CN=50 Runoff=0.08 cfs 403 cf

Subcatchment DA3: DA3 Runoff Area=12,462 sf 10.46% Impervious Runoff Depth=0.36"
Tc=10.0 min CN=41 Runoff=0.04 cfs 376 cf

Subcatchment DA4A: DA4A Runoff Area=9,253 sf 92.50% Impervious Runoff Depth=4.88"
Tc=5.0 min CN=96 Runoff=1.13 cfs 3,763 cf

Subcatchment DA4B: DA4B Runoff Area=7,277 sf 91.51% Impervious Runoff Depth=4.88"
Tc=5.0 min CN=96 Runoff=0.89 cfs 2,960 cf

Subcatchment DA4C: DA4C Runoff Area=16,289 sf 80.42% Impervious Runoff Depth=3.90"
Tc=10.0 min CN=87 Runoff=1.46 cfs 5,291 cf

Subcatchment DA4D: DA4D Runoff Area=11,846 sf 80.51% Impervious Runoff Depth=4.11"
Tc=10.0 min CN=89 Runoff=1.11 cfs 4,055 cf

Subcatchment DA5: DA5 Runoff Area=53,575 sf 0.66% Impervious Runoff Depth=2.47"
Flow Length=332' Tc=11.4 min CN=72 Runoff=2.95 cfs 11,031 cf

Reach DMH-1: DMH-1 Inflow=0.50 cfs 5,446 cf
Outflow=0.50 cfs 5,446 cf

Reach DMH-3: DMH-3 Inflow=0.67 cfs 6,957 cf
Outflow=0.67 cfs 6,957 cf

Pond SW-A1: Stormtech MC-3500 (SWM-A1) Peak Elev=88.03' Storage=2,305 cf Inflow=1.13 cfs 3,763 cf
Discarded=0.00 cfs 635 cf Primary=0.17 cfs 1,510 cf Outflow=0.17 cfs 2,145 cf

Pond SW-A2: Stormtech MC-3500 (SWM-A2) Peak Elev=89.22' Storage=1,805 cf Inflow=0.89 cfs 2,960 cf
Discarded=0.00 cfs 633 cf Primary=0.13 cfs 1,165 cf Outflow=0.13 cfs 1,797 cf

Pond SW-A3: Stormtech MC-3500 (SWM-A3) Peak Elev=89.95' Storage=3,034 cf Inflow=1.46 cfs 5,291 cf
Discarded=0.00 cfs 868 cf Primary=0.20 cfs 2,465 cf Outflow=0.21 cfs 3,333 cf

Pond SW-A4: Stormtech MC-3500 (SWM-A4) Peak Elev=90.69' Storage=2,344 cf Inflow=1.11 cfs 4,055 cf
Discarded=0.00 cfs 697 cf Primary=0.18 cfs 1,817 cf Outflow=0.18 cfs 2,514 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=93.26' Storage=3,619 cf Inflow=1.79 cfs 6,394 cf
Discarded=0.01 cfs 1,030 cf Primary=0.36 cfs 3,428 cf Secondary=0.00 cfs 0 cf Outflow=0.36 cfs 4,457 cf

Pond SW-C: Curtain Drain (SWM-C) Peak Elev=89.96' Storage=1,069 cf Inflow=0.30 cfs 2,781 cf
Discarded=0.00 cfs 521 cf Primary=0.09 cfs 1,680 cf Secondary=0.00 cfs 0 cf Outflow=0.09 cfs 2,201 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=95.58' Storage=169 cf Inflow=0.04 cfs 376 cf
Discarded=0.01 cfs 376 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 376 cf

Link AP: Analysis Point Inflow=3.16 cfs 23,095 cf
Primary=3.16 cfs 23,095 cf

Total Runoff Area = 203,612 sf Runoff Volume = 36,652 cf Average Runoff Depth = 2.16"
69.45% Pervious = 141,411 sf 30.55% Impervious = 62,201 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.30 cfs @ 12.49 hrs, Volume= 2,781 cf, Depth= 0.46"
Routed to Pond SW-C : Curtain Drain (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description
8,584	98	Paved parking, HSG A
35,028	39	>75% Grass cover, Good, HSG A
910	74	>75% Grass cover, Good, HSG C
27,956	30	Woods, Good, HSG A
619	70	Woods, Good, HSG C
73,097	43	Weighted Average
64,513		88.26% Pervious Area
8,584		11.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, Sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	20	0.3400	4.08		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
17.4	337	Total			

Summary for Subcatchment DA2A: DA2A

Runoff = 1.75 cfs @ 12.07 hrs, Volume= 5,992 cf, Depth= 5.11"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description
14,063	98	Roofs, HSG C
14,063		100.00% Impervious Area

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

Summary for Subcatchment DA2B: DA2B

Runoff = 0.08 cfs @ 12.18 hrs, Volume= 403 cf, Depth= 0.84"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description
45	98	Paved parking, HSG C
4,009	39	>75% Grass cover, Good, HSG A
1,696	74	>75% Grass cover, Good, HSG C
5,750	50	Weighted Average
5,705		99.22% Pervious Area
45		0.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct**

Summary for Subcatchment DA3: DA3

Runoff = 0.04 cfs @ 12.43 hrs, Volume= 376 cf, Depth= 0.36"
Routed to Pond SW-D : Drywell & Basin (SWM-D)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description
1,303	98	Paved parking, HSG A
5,621	39	>75% Grass cover, Good, HSG A
5,538	30	Woods, Good, HSG A
12,462	41	Weighted Average
11,159		89.54% Pervious Area
1,303		10.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA4A: DA4A

Runoff = 1.13 cfs @ 12.07 hrs, Volume= 3,763 cf, Depth= 4.88"
Routed to Pond SW-A1 : Stormtech MC-3500 (SWM-A1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description
8,559	98	Paved parking, HSG C
694	74	>75% Grass cover, Good, HSG C
9,253	96	Weighted Average
694		7.50% Pervious Area
8,559		92.50% Impervious Area

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

Summary for Subcatchment DA4B: DA4B

Runoff = 0.89 cfs @ 12.07 hrs, Volume= 2,960 cf, Depth= 4.88"
Routed to Pond SW-A2 : Stormtech MC-3500 (SWM-A2)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description
6,659	98	Paved parking, HSG C
618	74	>75% Grass cover, Good, HSG C
7,277	96	Weighted Average
618		8.49% Pervious Area
6,659		91.51% Impervious Area

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

Summary for Subcatchment DA4C: DA4C

Runoff = 1.46 cfs @ 12.14 hrs, Volume= 5,291 cf, Depth= 3.90"
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description
6,556	98	Paved parking, HSG A
6,543	98	Paved parking, HSG C
1,382	39	>75% Grass cover, Good, HSG A
649	74	>75% Grass cover, Good, HSG C
1,159	30	Woods, Good, HSG A
16,289	87	Weighted Average
3,190		19.58% Pervious Area
13,099		80.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA4D: DA4D

Runoff = 1.11 cfs @ 12.14 hrs, Volume= 4,055 cf, Depth= 4.11"
Routed to Pond SW-A4 : Stormtech MC-3500 (SWM-A4)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description
1,590	98	Paved parking, HSG A
7,947	98	Paved parking, HSG C
1,415	39	>75% Grass cover, Good, HSG A
894	74	>75% Grass cover, Good, HSG C
11,846	89	Weighted Average
2,309		19.49% Pervious Area
9,537		80.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA5: DA5

Runoff = 2.95 cfs @ 12.16 hrs, Volume= 11,031 cf, Depth= 2.47"
Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description
352	98	Paved parking, HSG C
22,627	74	>75% Grass cover, Good, HSG C
30,596	70	Woods, Good, HSG C
53,575	72	Weighted Average
53,223		99.34% Pervious Area
352		0.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1330	0.27		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
7.5	82	0.0240	0.18		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
1.9	118	0.0220	1.04		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
0.2	14	0.0500	1.12		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.2	32	0.1400	2.62		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
0.5	68	0.2350	2.42		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
11.4	332	Total			

Summary for Reach DMH-1: DMH-1

Inflow Area = 35,412 sf, 82.73% Impervious, Inflow Depth = 1.85" for 10-Year event
Inflow = 0.50 cfs @ 12.66 hrs, Volume= 5,446 cf
Outflow = 0.50 cfs @ 12.66 hrs, Volume= 5,446 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach DMH-3: DMH-3

Inflow Area = 44,665 sf, 84.75% Impervious, Inflow Depth = 1.87" for 10-Year event
Inflow = 0.67 cfs @ 12.63 hrs, Volume= 6,957 cf
Outflow = 0.67 cfs @ 12.63 hrs, Volume= 6,957 cf, Atten= 0%, Lag= 0.0 min
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Inflow Area = 9,253 sf, 92.50% Impervious, Inflow Depth = 4.88" for 10-Year event
Inflow = 1.13 cfs @ 12.07 hrs, Volume= 3,763 cf
Outflow = 0.17 cfs @ 12.54 hrs, Volume= 2,145 cf, Atten= 85%, Lag= 28.1 min
Discarded = 0.00 cfs @ 4.22 hrs, Volume= 635 cf
Primary = 0.17 cfs @ 12.54 hrs, Volume= 1,510 cf
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 88.03' @ 12.54 hrs Surf.Area= 1,108 sf Storage= 2,305 cf

Plug-Flow detention time= 671.5 min calculated for 2,145 cf (57% of inflow)
Center-of-Mass det. time= 561.0 min (1,320.9 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	85.00'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	85.75'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	85.00'	**12.0" Round Outlet Pipe** L= 6.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 85.00' / 84.95' S= 0.0083 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	87.70'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.50'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	89.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	85.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 4.22 hrs HW=85.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.17 cfs @ 12.54 hrs HW=88.03' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.17 cfs of 6.02 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.17 cfs @ 1.97 fps)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A1: Stormtech MC-3500 (SWM-A1) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

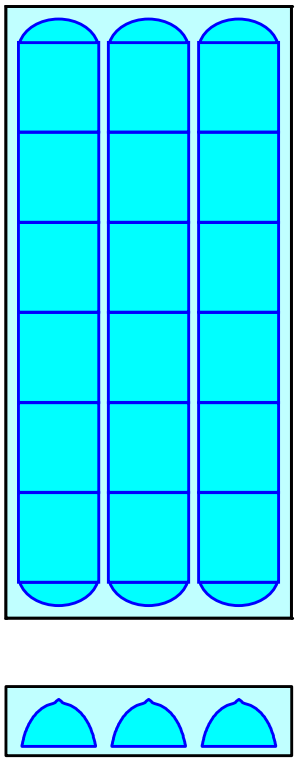
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone



Stage-Area-Storage for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.00	**1,108**	0
85.10	1,108	44
85.20	1,108	89
85.30	1,108	133
85.40	1,108	177
85.50	1,108	222
85.60	1,108	266
85.70	1,108	310
85.80	1,108	378
85.90	1,108	470
86.00	1,108	561
86.10	1,108	652
86.20	1,108	743
86.30	1,108	833
86.40	1,108	922
86.50	1,108	1,012
86.60	1,108	1,101
86.70	1,108	1,189
86.80	1,108	1,277
86.90	1,108	1,364
87.00	1,108	1,451
87.10	1,108	1,537
87.20	1,108	1,623
87.30	1,108	1,708
87.40	1,108	1,792
87.50	1,108	1,875
87.60	1,108	1,958
87.70	1,108	2,039
87.80	1,108	2,120
87.90	1,108	2,200
88.00	1,108	2,279
88.10	1,108	2,356
88.20	1,108	2,432
88.30	1,108	2,507
88.40	1,108	2,581
88.50	1,108	2,653
88.60	1,108	2,724
88.70	1,108	2,792
88.80	1,108	2,859
88.90	1,108	2,923
89.00	1,108	2,984
89.10	1,108	3,042
89.20	1,108	3,094
89.30	1,108	3,144
89.40	1,108	3,191
89.50	1,108	3,236
89.60	1,108	3,281
89.70	1,108	3,325
89.80	1,108	3,369
89.90	1,108	3,414
90.00	1,108	3,458
90.10	1,108	3,502
90.20	1,108	3,547
90.30	1,108	3,591
90.40	1,108	3,635
90.50	1,108	**3,680**

Summary for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Inflow Area = 7,277 sf, 91.51% Impervious, Inflow Depth = 4.88" for 10-Year event
Inflow = 0.89 cfs @ 12.07 hrs, Volume= 2,960 cf
Outflow = 0.13 cfs @ 12.55 hrs, Volume= 1,797 cf, Atten= 85%, Lag= 28.5 min
Discarded = 0.00 cfs @ 4.62 hrs, Volume= 633 cf
Primary = 0.13 cfs @ 12.55 hrs, Volume= 1,165 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 89.22' @ 12.55 hrs Surf.Area= 1,108 sf Storage= 1,805 cf

Plug-Flow detention time= 742.4 min calculated for 1,797 cf (61% of inflow)
Center-of-Mass det. time= 637.3 min (1,397.1 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	86.80'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	87.55'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.65'	**15.0" Round Outlet Pipe** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 86.65' / 84.85' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	88.95'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.55'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.05'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	86.80'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 4.62 hrs HW=86.86' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.13 cfs @ 12.55 hrs HW=89.22' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.13 cfs of 8.23 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.13 cfs @ 1.75 fps)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A2: Stormtech MC-3500 (SWM-A2) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

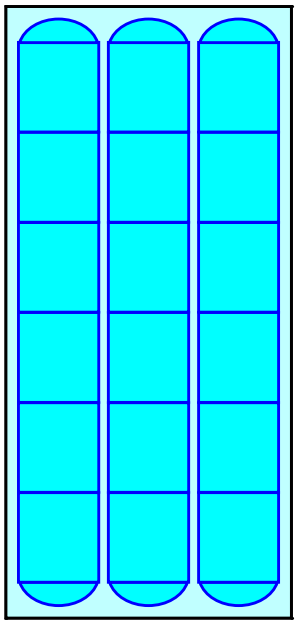
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

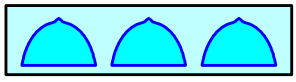
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
86.80	**1,108**	0
86.90	1,108	44
87.00	1,108	89
87.10	1,108	133
87.20	1,108	177
87.30	1,108	222
87.40	1,108	266
87.50	1,108	310
87.60	1,108	378
87.70	1,108	470
87.80	1,108	561
87.90	1,108	652
88.00	1,108	743
88.10	1,108	833
88.20	1,108	922
88.30	1,108	1,012
88.40	1,108	1,101
88.50	1,108	1,189
88.60	1,108	1,277
88.70	1,108	1,364
88.80	1,108	1,451
88.90	1,108	1,537
89.00	1,108	1,623
89.10	1,108	1,708
89.20	1,108	1,792
89.30	1,108	1,875
89.40	1,108	1,958
89.50	1,108	2,039
89.60	1,108	2,120
89.70	1,108	2,200
89.80	1,108	2,279
89.90	1,108	2,356
90.00	1,108	2,432
90.10	1,108	2,507
90.20	1,108	2,581
90.30	1,108	2,653
90.40	1,108	2,724
90.50	1,108	2,792
90.60	1,108	2,859
90.70	1,108	2,923
90.80	1,108	2,984
90.90	1,108	3,042
91.00	1,108	3,094
91.10	1,108	3,144
91.20	1,108	3,191
91.30	1,108	3,236
91.40	1,108	3,281
91.50	1,108	3,325
91.60	1,108	3,369
91.70	1,108	3,414
91.80	1,108	3,458
91.90	1,108	3,502
92.00	1,108	3,547
92.10	1,108	3,591
92.20	1,108	3,635
92.30	1,108	**3,680**

Summary for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Inflow Area = 16,289 sf, 80.42% Impervious, Inflow Depth = 3.90" for 10-Year event
Inflow = 1.46 cfs @ 12.14 hrs, Volume= 5,291 cf
Outflow = 0.21 cfs @ 12.76 hrs, Volume= 3,333 cf, Atten= 86%, Lag= 37.6 min
Discarded = 0.00 cfs @ 7.64 hrs, Volume= 868 cf
Primary = 0.20 cfs @ 12.76 hrs, Volume= 2,465 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 89.95' @ 12.76 hrs Surf.Area= 1,598 sf Storage= 3,034 cf

Plug-Flow detention time= 613.9 min calculated for 3,333 cf (63% of inflow)
Center-of-Mass det. time= 513.2 min (1,315.6 - 802.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	87.20'	2,292 cf	**22.75'W x 70.23'L x 5.50'H Field A** 8,788 cf Overall - 3,058 cf Embedded = 5,729 cf x 40.0% Voids
#2A	87.95'	3,058 cf	**ADS_StormTech MC-3500 d +Cap** x 27 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 27 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,350 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.65'	**15.0" Round Outlet Pipe** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 86.65' / 84.85' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	89.55'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.60'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.45'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	87.20'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 7.64 hrs HW=87.26' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.20 cfs @ 12.76 hrs HW=89.95' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.20 cfs of 9.67 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.20 cfs @ 2.34 fps)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A3: Stormtech MC-3500 (SWM-A3) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

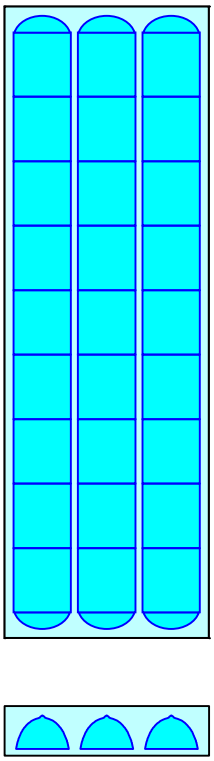
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

27 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,058.1 cf Chamber Storage

8,787.5 cf Field - 3,058.1 cf Chambers = 5,729.4 cf Stone x 40.0% Voids = 2,291.8 cf Stone Storage

Chamber Storage + Stone Storage = 5,349.9 cf = 0.123 af
Overall Storage Efficiency = 60.9%
Overall System Size = 70.23' x 22.75' x 5.50'

27 Chambers
325.5 cy Field
212.2 cy Stone



Stage-Area-Storage for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.20	**1,598**	0
87.30	1,598	64
87.40	1,598	128
87.50	1,598	192
87.60	1,598	256
87.70	1,598	320
87.80	1,598	383
87.90	1,598	447
88.00	1,598	546
88.10	1,598	680
88.20	1,598	813
88.30	1,598	946
88.40	1,598	1,078
88.50	1,598	1,210
88.60	1,598	1,341
88.70	1,598	1,471
88.80	1,598	1,601
88.90	1,598	1,730
89.00	1,598	1,858
89.10	1,598	1,986
89.20	1,598	2,113
89.30	1,598	2,238
89.40	1,598	2,363
89.50	1,598	2,487
89.60	1,598	2,610
89.70	1,598	2,731
89.80	1,598	2,852
89.90	1,598	2,971
90.00	1,598	3,089
90.10	1,598	3,205
90.20	1,598	3,320
90.30	1,598	3,433
90.40	1,598	3,544
90.50	1,598	3,653
90.60	1,598	3,760
90.70	1,598	3,865
90.80	1,598	3,968
90.90	1,598	4,067
91.00	1,598	4,164
91.10	1,598	4,257
91.20	1,598	4,346
91.30	1,598	4,430
91.40	1,598	4,506
91.50	1,598	4,577
91.60	1,598	4,645
91.70	1,598	4,711
91.80	1,598	4,775
91.90	1,598	4,839
92.00	1,598	4,903
92.10	1,598	4,966
92.20	1,598	5,030
92.30	1,598	5,094
92.40	1,598	5,158
92.50	1,598	5,222
92.60	1,598	5,286
92.70	1,598	**5,350**

Summary for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Inflow Area = 11,846 sf, 80.51% Impervious, Inflow Depth = 4.11" for 10-Year event
Inflow = 1.11 cfs @ 12.14 hrs, Volume= 4,055 cf
Outflow = 0.18 cfs @ 12.68 hrs, Volume= 2,514 cf, Atten= 84%, Lag= 32.8 min
Discarded = 0.00 cfs @ 7.16 hrs, Volume= 697 cf
Primary = 0.18 cfs @ 12.68 hrs, Volume= 1,817 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 90.69' @ 12.68 hrs Surf.Area= 1,271 sf Storage= 2,344 cf

Plug-Flow detention time= 635.4 min calculated for 2,514 cf (62% of inflow)
Center-of-Mass det. time= 534.2 min (1,329.9 - 795.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	88.00'	1,838 cf	**22.75'W x 55.89'L x 5.50'H Field A** 6,993 cf Overall - 2,398 cf Embedded = 4,595 cf x 40.0% Voids
#2A	88.75'	2,398 cf	**ADS_StormTech MC-3500 d +Cap** x 21 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 21 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**12.0" Round Outlet Pipe** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 86.90' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	90.35'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.20'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	88.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 7.16 hrs HW=88.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.18 cfs @ 12.68 hrs HW=90.69' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.18 cfs of 4.46 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.18 cfs @ 2.03 fps)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A4: Stormtech MC-3500 (SWM-A4) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

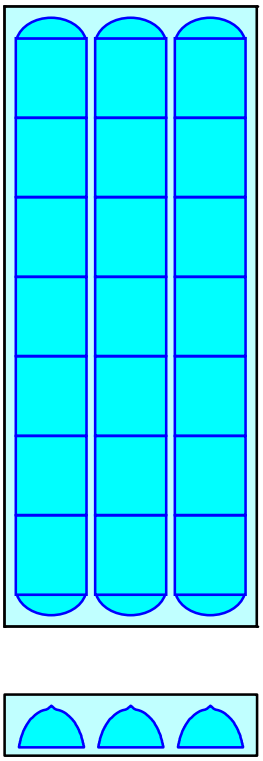
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

21 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,398.4 cf Chamber Storage

6,993.2 cf Field - 2,398.4 cf Chambers = 4,594.8 cf Stone x 40.0% Voids = 1,837.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,236.3 cf = 0.097 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 22.75' x 5.50'

21 Chambers
259.0 cy Field
170.2 cy Stone



Stage-Area-Storage for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**1,271**	0
88.10	1,271	51
88.20	1,271	102
88.30	1,271	153
88.40	1,271	203
88.50	1,271	254
88.60	1,271	305
88.70	1,271	356
88.80	1,271	434
88.90	1,271	540
89.00	1,271	645
89.10	1,271	750
89.20	1,271	854
89.30	1,271	958
89.40	1,271	1,062
89.50	1,271	1,165
89.60	1,271	1,267
89.70	1,271	1,369
89.80	1,271	1,471
89.90	1,271	1,571
90.00	1,271	1,672
90.10	1,271	1,771
90.20	1,271	1,870
90.30	1,271	1,967
90.40	1,271	2,064
90.50	1,271	2,161
90.60	1,271	2,256
90.70	1,271	2,350
90.80	1,271	2,443
90.90	1,271	2,535
91.00	1,271	2,626
91.10	1,271	2,715
91.20	1,271	2,803
91.30	1,271	2,889
91.40	1,271	2,974
91.50	1,271	3,057
91.60	1,271	3,138
91.70	1,271	3,217
91.80	1,271	3,294
91.90	1,271	3,368
92.00	1,271	3,438
92.10	1,271	3,504
92.20	1,271	3,565
92.30	1,271	3,621
92.40	1,271	3,676
92.50	1,271	3,728
92.60	1,271	3,779
92.70	1,271	3,829
92.80	1,271	3,880
92.90	1,271	3,931
93.00	1,271	3,982
93.10	1,271	4,033
93.20	1,271	4,084
93.30	1,271	4,135
93.40	1,271	4,185
93.50	1,271	**4,236**

Summary for Pond SW-B: Bioretention Basin (SWM-B)

Inflow Area = 19,813 sf, 71.21% Impervious, Inflow Depth = 3.87" for 10-Year event
Inflow = 1.79 cfs @ 12.07 hrs, Volume= 6,394 cf
Outflow = 0.36 cfs @ 12.50 hrs, Volume= 4,457 cf, Atten= 80%, Lag= 25.9 min
Discarded = 0.01 cfs @ 12.50 hrs, Volume= 1,030 cf
Primary = 0.36 cfs @ 12.50 hrs, Volume= 3,428 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 93.26' @ 12.50 hrs Surf.Area= 2,187 sf Storage= 3,619 cf

Plug-Flow detention time= 567.3 min calculated for 4,456 cf (70% of inflow)
Center-of-Mass det. time= 468.4 min (1,224.7 - 756.3)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	7,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,079	0	0
92.00	1,528	1,304	1,304
93.00	2,023	1,776	3,079
94.00	2,663	2,343	5,422
94.80	3,231	2,358	7,780

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**15.0" Round Outlet Pipe** L= 361.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.00' / 87.00' S= 0.0055 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	92.75'	**5.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	93.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	94.30'	**6.0' 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
#5	Discarded	91.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.50 hrs HW=93.26' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.36 cfs @ 12.50 hrs HW=93.26' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.36 cfs of 8.66 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.36 cfs @ 2.63 fps)
  └**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-B: Bioretention Basin (SWM-B)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,079	0
91.05	1,101	55
91.10	1,124	110
91.15	1,146	167
91.20	1,169	225
91.25	1,191	284
91.30	1,214	344
91.35	1,236	405
91.40	1,259	468
91.45	1,281	531
91.50	1,304	596
91.55	1,326	661
91.60	1,348	728
91.65	1,371	796
91.70	1,393	865
91.75	1,416	936
91.80	1,438	1,007
91.85	1,461	1,079
91.90	1,483	1,153
91.95	1,506	1,228
92.00	1,528	1,304
92.05	1,553	1,381
92.10	1,577	1,459
92.15	1,602	1,538
92.20	1,627	1,619
92.25	1,652	1,701
92.30	1,676	1,784
92.35	1,701	1,869
92.40	1,726	1,954
92.45	1,751	2,041
92.50	1,776	2,129
92.55	1,800	2,219
92.60	1,825	2,309
92.65	1,850	2,401
92.70	1,875	2,494
92.75	1,899	2,589
92.80	1,924	2,684
92.85	1,949	2,781
92.90	1,974	2,879
92.95	1,998	2,978
93.00	2,023	3,079
93.05	2,055	3,181
93.10	2,087	3,284
93.15	2,119	3,390
93.20	2,151	3,496
93.25	2,183	3,605
93.30	2,215	3,715
93.35	2,247	3,826
93.40	2,279	3,939
93.45	2,311	4,054
93.50	2,343	4,171
93.55	2,375	4,288
93.60	2,407	4,408
93.65	2,439	4,529
93.70	2,471	4,652
93.75	2,503	4,776
93.80	2,535	4,902
93.85	2,567	5,030
93.90	2,599	5,159
93.95	2,631	5,290
94.00	2,663	5,422
94.05	2,698	5,556
94.10	2,734	5,692
94.15	2,770	5,829
94.20	2,805	5,969
94.25	2,841	6,110
94.30	2,876	6,253
94.35	2,911	6,398
94.40	2,947	6,544
94.45	2,983	6,692
94.50	3,018	6,842
94.55	3,053	6,994
94.60	3,089	7,148
94.65	3,125	7,303
94.70	3,160	7,460
94.75	3,196	7,619
94.80	**3,231**	**7,780**

Summary for Pond SW-C: Curtain Drain (SWM-C)

Inflow Area = 73,097 sf, 11.74% Impervious, Inflow Depth = 0.46" for 10-Year event
Inflow = 0.30 cfs @ 12.49 hrs, Volume= 2,781 cf
Outflow = 0.09 cfs @ 14.55 hrs, Volume= 2,201 cf, Atten= 69%, Lag= 123.6 min
Discarded = 0.00 cfs @ 12.26 hrs, Volume= 521 cf
Primary = 0.09 cfs @ 14.55 hrs, Volume= 1,680 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 89.96' @ 14.55 hrs Surf.Area= 1,045 sf Storage= 1,069 cf

Plug-Flow detention time= 547.0 min calculated for 2,200 cf (79% of inflow)
Center-of-Mass det. time= 461.3 min (1,420.9 - 959.6)

Volume	Invert	Avail.Storage	Storage Description
#1	87.40'	3,804 cf	**2.50'W x 418.00'L x 9.10'H Prismatoid** 9,509 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**8.0" Round Outlet Pipe** L= 108.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.20' / 85.45' S= 0.0162 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Primary	89.75'	**4.0" Vert. Low flow orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.75'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	87.40'	**0.100 in/hr Exfiltration over Surface area**
#5	Secondary	96.00'	**200.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 12.26 hrs HW=87.50' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.09 cfs @ 14.55 hrs HW=89.96' (Free Discharge)
├**1=Outlet Pipe** (Passes 0.00 cfs of 2.47 cfs potential flow)
│└**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└**2=Low flow orifice** (Orifice Controls 0.09 cfs @ 1.55 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-C: Curtain Drain (SWM-C)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.40	**1,045**	0
87.50	1,045	42
87.60	1,045	84
87.70	1,045	125
87.80	1,045	167
87.90	1,045	209
88.00	1,045	251
88.10	1,045	293
88.20	1,045	334
88.30	1,045	376
88.40	1,045	418
88.50	1,045	460
88.60	1,045	502
88.70	1,045	543
88.80	1,045	585
88.90	1,045	627
89.00	1,045	669
89.10	1,045	711
89.20	1,045	752
89.30	1,045	794
89.40	1,045	836
89.50	1,045	878
89.60	1,045	920
89.70	1,045	961
89.80	1,045	1,003
89.90	1,045	1,045
90.00	1,045	1,087
90.10	1,045	1,129
90.20	1,045	1,170
90.30	1,045	1,212
90.40	1,045	1,254
90.50	1,045	1,296
90.60	1,045	1,338
90.70	1,045	1,379
90.80	1,045	1,421
90.90	1,045	1,463
91.00	1,045	1,505
91.10	1,045	1,547
91.20	1,045	1,588
91.30	1,045	1,630
91.40	1,045	1,672
91.50	1,045	1,714
91.60	1,045	1,756
91.70	1,045	1,797
91.80	1,045	1,839
91.90	1,045	1,881
92.00	1,045	1,923
92.10	1,045	1,965
92.20	1,045	2,006
92.30	1,045	2,048
92.40	1,045	2,090
92.50	1,045	2,132
92.60	1,045	2,174
92.70	1,045	2,215
92.80	1,045	2,257
92.90	1,045	2,299
93.00	1,045	2,341
93.10	1,045	2,383
93.20	1,045	2,424
93.30	1,045	2,466
93.40	1,045	2,508
93.50	1,045	2,550
93.60	1,045	2,592
93.70	1,045	2,633
93.80	1,045	2,675
93.90	1,045	2,717
94.00	1,045	2,759
94.10	1,045	2,801
94.20	1,045	2,842
94.30	1,045	2,884
94.40	1,045	2,926
94.50	1,045	2,968
94.60	1,045	3,010
94.70	1,045	3,051
94.80	1,045	3,093
94.90	1,045	3,135
95.00	1,045	3,177
95.10	1,045	3,219
95.20	1,045	3,260
95.30	1,045	3,302
95.40	1,045	3,344
95.50	1,045	3,386
95.60	1,045	3,428
95.70	1,045	3,469
95.80	1,045	3,511
95.90	1,045	3,553
96.00	1,045	3,595
96.10	1,045	3,637
96.20	1,045	3,678
96.30	1,045	3,720
96.40	1,045	3,762
96.50	1,045	**3,804**

Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 12,462 sf, 10.46% Impervious, Inflow Depth = 0.36" for 10-Year event
Inflow = 0.04 cfs @ 12.43 hrs, Volume= 376 cf
Outflow = 0.01 cfs @ 12.58 hrs, Volume= 376 cf, Atten= 86%, Lag= 9.2 min
Discarded = 0.01 cfs @ 12.58 hrs, Volume= 376 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 95.58' @ 20.05 hrs Surf.Area= 44 sf Storage= 169 cf

Plug-Flow detention time= 380.3 min calculated for 376 cf (100% of inflow)
Center-of-Mass det. time= 380.3 min (1,350.7 - 970.4)

Volume	Invert	Avail.Storage	Storage Description
#1	91.60'	1,595 cf	**Drywell & Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.60	31	0	0
92.60	44	38	38
93.60	44	44	82
94.60	44	44	126
95.60	44	44	170
96.60	44	44	214
97.49	4	21	235
97.50	29	0	235
98.00	145	44	279
99.00	560	353	631
100.00	1,135	848	1,479
100.10	1,187	116	1,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.60'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	99.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.01 cfs @ 12.58 hrs HW=92.62' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-D: Drywell & Basin (SWM-D)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	31	0
91.70	32	3
91.80	34	6
91.90	35	10
92.00	36	13
92.10	38	17
92.20	39	21
92.30	40	25
92.40	41	29
92.50	43	33
92.60	44	38
92.70	44	42
92.80	44	46
92.90	44	51
93.00	44	55
93.10	44	60
93.20	44	64
93.30	44	68
93.40	44	73
93.50	44	77
93.60	44	82
93.70	44	86
93.80	44	90
93.90	44	95
94.00	44	99
94.10	44	104
94.20	44	108
94.30	44	112
94.40	44	117
94.50	44	121
94.60	44	126
94.70	44	130
94.80	44	134
94.90	44	139
95.00	44	143
95.10	44	148
95.20	44	152
95.30	44	156
95.40	44	161
95.50	44	165
95.60	44	170
95.70	44	174
95.80	44	178
95.90	44	183
96.00	44	187
96.10	44	192
96.20	44	196
96.30	44	200
96.40	44	205
96.50	44	209
96.60	44	214
96.70	40	218
96.80	35	221
96.90	31	225
97.00	26	228
97.10	22	230
97.20	17	232
97.30	13	233
97.40	8	234
97.50	29	235
97.60	52	239
97.70	75	245
97.80	99	254
97.90	122	265
98.00	145	279
98.10	186	295
98.20	228	316
98.30	269	341
98.40	311	370
98.50	353	403
98.60	394	440
98.70	435	482
98.80	477	527
98.90	518	577
99.00	560	631
99.10	617	690
99.20	675	755
99.30	732	825
99.40	790	901
99.50	848	983
99.60	905	1,071
99.70	962	1,164
99.80	1,020	1,263
99.90	1,077	1,368
100.00	1,135	1,479
100.10	**1,187**	**1,595**

Summary for Link AP: Analysis Point

Inflow Area = 191,150 sf, 31.86% Impervious, Inflow Depth = 1.45" for 10-Year event
Inflow = 3.16 cfs @ 12.17 hrs, Volume= 23,095 cf
Primary = 3.16 cfs @ 12.17 hrs, Volume= 23,095 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=73,097 sf 11.74% Impervious Runoff Depth=0.91"
Flow Length=337' Tc=17.4 min CN=43 Runoff=0.82 cfs 5,546 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=6.37"
Tc=5.0 min CN=98 Runoff=2.16 cfs 7,467 cf

Subcatchment DA2B: DA2B Runoff Area=5,750 sf 0.78% Impervious Runoff Depth=1.45"
Tc=10.0 min CN=50 Runoff=0.16 cfs 697 cf

Subcatchment DA3: DA3 Runoff Area=12,462 sf 10.46% Impervious Runoff Depth=0.77"
Tc=10.0 min CN=41 Runoff=0.12 cfs 798 cf

Subcatchment DA4A: DA4A Runoff Area=9,253 sf 92.50% Impervious Runoff Depth=6.14"
Tc=5.0 min CN=96 Runoff=1.41 cfs 4,731 cf

Subcatchment DA4B: DA4B Runoff Area=7,277 sf 91.51% Impervious Runoff Depth=6.14"
Tc=5.0 min CN=96 Runoff=1.11 cfs 3,720 cf

Subcatchment DA4C: DA4C Runoff Area=16,289 sf 80.42% Impervious Runoff Depth=5.10"
Tc=10.0 min CN=87 Runoff=1.89 cfs 6,927 cf

Subcatchment DA4D: DA4D Runoff Area=11,846 sf 80.51% Impervious Runoff Depth=5.33"
Tc=10.0 min CN=89 Runoff=1.42 cfs 5,260 cf

Subcatchment DA5: DA5 Runoff Area=53,575 sf 0.66% Impervious Runoff Depth=3.50"
Flow Length=332' Tc=11.4 min CN=72 Runoff=4.21 cfs 15,622 cf

Reach DMH-1: DMH-1 Inflow=0.99 cfs 9,014 cf
Outflow=0.99 cfs 9,014 cf

Reach DMH-3: DMH-3 Inflow=1.32 cfs 11,485 cf
Outflow=1.32 cfs 11,485 cf

Pond SW-A1: Stormtech MC-3500 (SWM-A1) Peak Elev=88.49' Storage=2,648 cf Inflow=1.41 cfs 4,731 cf
Discarded=0.00 cfs 640 cf Primary=0.33 cfs 2,471 cf Outflow=0.34 cfs 3,111 cf

Pond SW-A2: Stormtech MC-3500 (SWM-A2) Peak Elev=89.53' Storage=2,060 cf Inflow=1.11 cfs 3,720 cf
Discarded=0.00 cfs 638 cf Primary=0.27 cfs 1,918 cf Outflow=0.27 cfs 2,556 cf

Pond SW-A3: Stormtech MC-3500 (SWM-A3) Peak Elev=90.56' Storage=3,718 cf Inflow=1.89 cfs 6,927 cf
Discarded=0.00 cfs 880 cf Primary=0.39 cfs 4,086 cf Outflow=0.39 cfs 4,966 cf

Pond SW-A4: Stormtech MC-3500 (SWM-A4) Peak Elev=91.20' Storage=2,799 cf Inflow=1.42 cfs 5,260 cf
Discarded=0.00 cfs 706 cf Primary=0.35 cfs 3,010 cf Outflow=0.35 cfs 3,717 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=93.59' Storage=4,382 cf Inflow=2.27 cfs 8,164 cf
Discarded=0.01 cfs 1,042 cf Primary=0.52 cfs 5,181 cf Secondary=0.00 cfs 0 cf Outflow=0.53 cfs 6,223 cf

Pond SW-C: Curtain Drain (SWM-C) Peak Elev=90.56' Storage=1,321 cf Inflow=0.82 cfs 5,546 cf
Discarded=0.00 cfs 522 cf Primary=0.34 cfs 4,443 cf Secondary=0.00 cfs 0 cf Outflow=0.34 cfs 4,964 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=98.12' Storage=300 cf Inflow=0.12 cfs 798 cf
Discarded=0.02 cfs 798 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 798 cf

Link AP: Analysis Point Inflow=5.28 cfs 36,731 cf
Primary=5.28 cfs 36,731 cf

Total Runoff Area = 203,612 sf Runoff Volume = 50,767 cf Average Runoff Depth = 2.99"
69.45% Pervious = 141,411 sf 30.55% Impervious = 62,201 sf

Summary for Subcatchment DA1: DA1

Runoff = 0.82 cfs @ 12.35 hrs, Volume= 5,546 cf, Depth= 0.91"
Routed to Pond SW-C : Curtain Drain (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=6.61"

Area (sf)	CN	Description
8,584	98	Paved parking, HSG A
35,028	39	>75% Grass cover, Good, HSG A
910	74	>75% Grass cover, Good, HSG C
27,956	30	Woods, Good, HSG A
619	70	Woods, Good, HSG C
73,097	43	Weighted Average
64,513		88.26% Pervious Area
8,584		11.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, Sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	20	0.3400	4.08		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
17.4	337	Total			

Summary for Subcatchment DA2A: DA2A

Runoff = 2.16 cfs @ 12.07 hrs, Volume= 7,467 cf, Depth= 6.37"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=6.61"

Area (sf)	CN	Description
14,063	98	Roofs, HSG C
14,063		100.00% Impervious Area

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

Summary for Subcatchment DA2B: DA2B

Runoff = 0.16 cfs @ 12.16 hrs, Volume= 697 cf, Depth= 1.45"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=6.61"

Area (sf)	CN	Description
45	98	Paved parking, HSG C
4,009	39	>75% Grass cover, Good, HSG A
1,696	74	>75% Grass cover, Good, HSG C
5,750	50	Weighted Average
5,705		99.22% Pervious Area
45		0.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct**

Summary for Subcatchment DA3: DA3

Runoff = 0.12 cfs @ 12.23 hrs, Volume= 798 cf, Depth= 0.77"
Routed to Pond SW-D : Drywell & Basin (SWM-D)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=6.61"

Area (sf)	CN	Description
1,303	98	Paved parking, HSG A
5,621	39	>75% Grass cover, Good, HSG A
5,538	30	Woods, Good, HSG A
12,462	41	Weighted Average
11,159		89.54% Pervious Area
1,303		10.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA4A: DA4A

Runoff = 1.41 cfs @ 12.07 hrs, Volume= 4,731 cf, Depth= 6.14"
Routed to Pond SW-A1 : Stormtech MC-3500 (SWM-A1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=6.61"

Area (sf)	CN	Description
8,559	98	Paved parking, HSG C
694	74	>75% Grass cover, Good, HSG C
9,253	96	Weighted Average
694		7.50% Pervious Area
8,559		92.50% Impervious Area

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

Summary for Subcatchment DA4B: DA4B

Runoff = 1.11 cfs @ 12.07 hrs, Volume= 3,720 cf, Depth= 6.14"
Routed to Pond SW-A2 : Stormtech MC-3500 (SWM-A2)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=6.61"

Area (sf)	CN	Description
6,659	98	Paved parking, HSG C
618	74	>75% Grass cover, Good, HSG C
7,277	96	Weighted Average
618		8.49% Pervious Area
6,659		91.51% Impervious Area

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

Summary for Subcatchment DA4C: DA4C

Runoff = 1.89 cfs @ 12.14 hrs, Volume= 6,927 cf, Depth= 5.10"
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=6.61"

Area (sf)	CN	Description
6,556	98	Paved parking, HSG A
6,543	98	Paved parking, HSG C
1,382	39	>75% Grass cover, Good, HSG A
649	74	>75% Grass cover, Good, HSG C
1,159	30	Woods, Good, HSG A
16,289	87	Weighted Average
3,190		19.58% Pervious Area
13,099		80.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA4D: DA4D

Runoff = 1.42 cfs @ 12.14 hrs, Volume= 5,260 cf, Depth= 5.33"
Routed to Pond SW-A4 : Stormtech MC-3500 (SWM-A4)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=6.61"

Area (sf)	CN	Description
1,590	98	Paved parking, HSG A
7,947	98	Paved parking, HSG C
1,415	39	>75% Grass cover, Good, HSG A
894	74	>75% Grass cover, Good, HSG C
11,846	89	Weighted Average
2,309		19.49% Pervious Area
9,537		80.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA5: DA5

Runoff = 4.21 cfs @ 12.16 hrs, Volume= 15,622 cf, Depth= 3.50"
Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=6.61"

Area (sf)	CN	Description
352	98	Paved parking, HSG C
22,627	74	>75% Grass cover, Good, HSG C
30,596	70	Woods, Good, HSG C
53,575	72	Weighted Average
53,223		99.34% Pervious Area
352		0.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1330	0.27		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
7.5	82	0.0240	0.18		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
1.9	118	0.0220	1.04		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
0.2	14	0.0500	1.12		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.2	32	0.1400	2.62		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
0.5	68	0.2350	2.42		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
11.4	332	Total			

Summary for Reach DMH-1: DMH-1

Inflow Area = 35,412 sf, 82.73% Impervious, Inflow Depth = 3.05" for 25-Year event
Inflow = 0.99 cfs @ 12.54 hrs, Volume= 9,014 cf
Outflow = 0.99 cfs @ 12.54 hrs, Volume= 9,014 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach DMH-3: DMH-3

Inflow Area = 44,665 sf, 84.75% Impervious, Inflow Depth = 3.09" for 25-Year event
Inflow = 1.32 cfs @ 12.51 hrs, Volume= 11,485 cf
Outflow = 1.32 cfs @ 12.51 hrs, Volume= 11,485 cf, Atten= 0%, Lag= 0.0 min
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Inflow Area = 9,253 sf, 92.50% Impervious, Inflow Depth = 6.14" for 25-Year event
Inflow = 1.41 cfs @ 12.07 hrs, Volume= 4,731 cf
Outflow = 0.34 cfs @ 12.44 hrs, Volume= 3,111 cf, Atten= 76%, Lag= 22.3 min
Discarded = 0.00 cfs @ 3.50 hrs, Volume= 640 cf
Primary = 0.33 cfs @ 12.44 hrs, Volume= 2,471 cf
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 88.49' @ 12.44 hrs Surf.Area= 1,108 sf Storage= 2,648 cf

Plug-Flow detention time= 511.2 min calculated for 3,111 cf (66% of inflow)
Center-of-Mass det. time= 411.2 min (1,166.4 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	85.00'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	85.75'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	85.00'	**12.0" Round Outlet Pipe** L= 6.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 85.00' / 84.95' S= 0.0083 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	87.70'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.50'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	89.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	85.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 3.50 hrs HW=85.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.33 cfs @ 12.44 hrs HW=88.49' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.33 cfs of 6.54 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.33 cfs @ 3.81 fps)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A1: Stormtech MC-3500 (SWM-A1) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

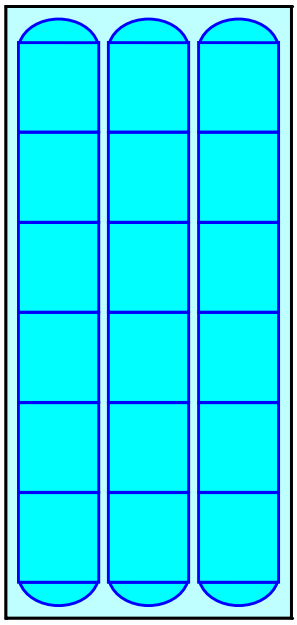
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

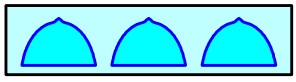
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.00	**1,108**	0
85.10	1,108	44
85.20	1,108	89
85.30	1,108	133
85.40	1,108	177
85.50	1,108	222
85.60	1,108	266
85.70	1,108	310
85.80	1,108	378
85.90	1,108	470
86.00	1,108	561
86.10	1,108	652
86.20	1,108	743
86.30	1,108	833
86.40	1,108	922
86.50	1,108	1,012
86.60	1,108	1,101
86.70	1,108	1,189
86.80	1,108	1,277
86.90	1,108	1,364
87.00	1,108	1,451
87.10	1,108	1,537
87.20	1,108	1,623
87.30	1,108	1,708
87.40	1,108	1,792
87.50	1,108	1,875
87.60	1,108	1,958
87.70	1,108	2,039
87.80	1,108	2,120
87.90	1,108	2,200
88.00	1,108	2,279
88.10	1,108	2,356
88.20	1,108	2,432
88.30	1,108	2,507
88.40	1,108	2,581
88.50	1,108	2,653
88.60	1,108	2,724
88.70	1,108	2,792
88.80	1,108	2,859
88.90	1,108	2,923
89.00	1,108	2,984
89.10	1,108	3,042
89.20	1,108	3,094
89.30	1,108	3,144
89.40	1,108	3,191
89.50	1,108	3,236
89.60	1,108	3,281
89.70	1,108	3,325
89.80	1,108	3,369
89.90	1,108	3,414
90.00	1,108	3,458
90.10	1,108	3,502
90.20	1,108	3,547
90.30	1,108	3,591
90.40	1,108	3,635
90.50	1,108	**3,680**

Summary for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Inflow Area = 7,277 sf, 91.51% Impervious, Inflow Depth = 6.14" for 25-Year event
Inflow = 1.11 cfs @ 12.07 hrs, Volume= 3,720 cf
Outflow = 0.27 cfs @ 12.43 hrs, Volume= 2,556 cf, Atten= 75%, Lag= 21.8 min
Discarded = 0.00 cfs @ 3.84 hrs, Volume= 638 cf
Primary = 0.27 cfs @ 12.43 hrs, Volume= 1,918 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 89.53' @ 12.43 hrs Surf.Area= 1,108 sf Storage= 2,060 cf

Plug-Flow detention time= 566.7 min calculated for 2,556 cf (69% of inflow)
Center-of-Mass det. time= 470.9 min (1,226.1 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	86.80'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	87.55'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.65'	**15.0" Round Outlet Pipe** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 86.65' / 84.85' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	88.95'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.55'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.05'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	86.80'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 3.84 hrs HW=86.86' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.27 cfs @ 12.43 hrs HW=89.53' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.27 cfs of 8.86 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.27 cfs @ 3.08 fps)
├**3=Upper Orifice** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A2: Stormtech MC-3500 (SWM-A2) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

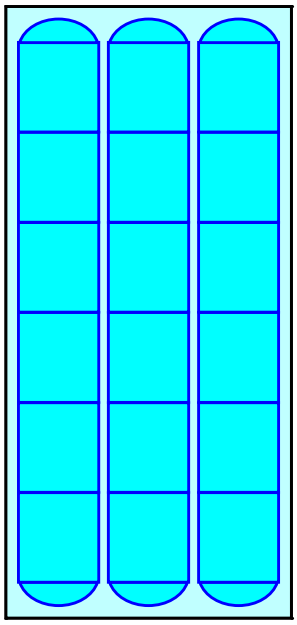
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

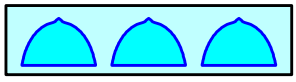
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
86.80	**1,108**	0
86.90	1,108	44
87.00	1,108	89
87.10	1,108	133
87.20	1,108	177
87.30	1,108	222
87.40	1,108	266
87.50	1,108	310
87.60	1,108	378
87.70	1,108	470
87.80	1,108	561
87.90	1,108	652
88.00	1,108	743
88.10	1,108	833
88.20	1,108	922
88.30	1,108	1,012
88.40	1,108	1,101
88.50	1,108	1,189
88.60	1,108	1,277
88.70	1,108	1,364
88.80	1,108	1,451
88.90	1,108	1,537
89.00	1,108	1,623
89.10	1,108	1,708
89.20	1,108	1,792
89.30	1,108	1,875
89.40	1,108	1,958
89.50	1,108	2,039
89.60	1,108	2,120
89.70	1,108	2,200
89.80	1,108	2,279
89.90	1,108	2,356
90.00	1,108	2,432
90.10	1,108	2,507
90.20	1,108	2,581
90.30	1,108	2,653
90.40	1,108	2,724
90.50	1,108	2,792
90.60	1,108	2,859
90.70	1,108	2,923
90.80	1,108	2,984
90.90	1,108	3,042
91.00	1,108	3,094
91.10	1,108	3,144
91.20	1,108	3,191
91.30	1,108	3,236
91.40	1,108	3,281
91.50	1,108	3,325
91.60	1,108	3,369
91.70	1,108	3,414
91.80	1,108	3,458
91.90	1,108	3,502
92.00	1,108	3,547
92.10	1,108	3,591
92.20	1,108	3,635
92.30	1,108	**3,680**

Summary for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Inflow Area = 16,289 sf, 80.42% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 1.89 cfs @ 12.14 hrs, Volume= 6,927 cf
Outflow = 0.39 cfs @ 12.61 hrs, Volume= 4,966 cf, Atten= 79%, Lag= 28.2 min
Discarded = 0.00 cfs @ 6.74 hrs, Volume= 880 cf
Primary = 0.39 cfs @ 12.61 hrs, Volume= 4,086 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 90.56' @ 12.61 hrs Surf.Area= 1,598 sf Storage= 3,718 cf

Plug-Flow detention time= 457.9 min calculated for 4,966 cf (72% of inflow)
Center-of-Mass det. time= 368.0 min (1,163.0 - 795.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	87.20'	2,292 cf	**22.75'W x 70.23'L x 5.50'H Field A** 8,788 cf Overall - 3,058 cf Embedded = 5,729 cf x 40.0% Voids
#2A	87.95'	3,058 cf	**ADS_StormTech MC-3500 d +Cap** x 27 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 27 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,350 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.65'	**15.0" Round Outlet Pipe** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 86.65' / 84.85' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	89.55'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.60'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.45'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	87.20'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 6.74 hrs HW=87.26' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.39 cfs @ 12.61 hrs HW=90.56' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.39 cfs of 10.71 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.39 cfs @ 4.42 fps)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A3: Stormtech MC-3500 (SWM-A3) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

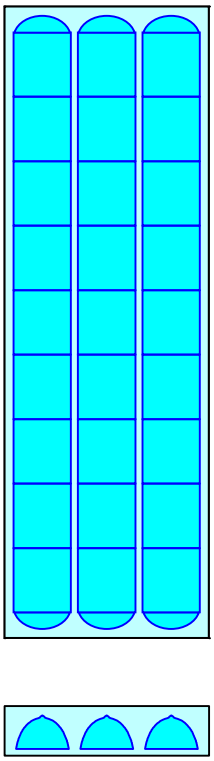
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

27 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,058.1 cf Chamber Storage

8,787.5 cf Field - 3,058.1 cf Chambers = 5,729.4 cf Stone x 40.0% Voids = 2,291.8 cf Stone Storage

Chamber Storage + Stone Storage = 5,349.9 cf = 0.123 af
Overall Storage Efficiency = 60.9%
Overall System Size = 70.23' x 22.75' x 5.50'

27 Chambers
325.5 cy Field
212.2 cy Stone



Stage-Area-Storage for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.20	**1,598**	0
87.30	1,598	64
87.40	1,598	128
87.50	1,598	192
87.60	1,598	256
87.70	1,598	320
87.80	1,598	383
87.90	1,598	447
88.00	1,598	546
88.10	1,598	680
88.20	1,598	813
88.30	1,598	946
88.40	1,598	1,078
88.50	1,598	1,210
88.60	1,598	1,341
88.70	1,598	1,471
88.80	1,598	1,601
88.90	1,598	1,730
89.00	1,598	1,858
89.10	1,598	1,986
89.20	1,598	2,113
89.30	1,598	2,238
89.40	1,598	2,363
89.50	1,598	2,487
89.60	1,598	2,610
89.70	1,598	2,731
89.80	1,598	2,852
89.90	1,598	2,971
90.00	1,598	3,089
90.10	1,598	3,205
90.20	1,598	3,320
90.30	1,598	3,433
90.40	1,598	3,544
90.50	1,598	3,653
90.60	1,598	3,760
90.70	1,598	3,865
90.80	1,598	3,968
90.90	1,598	4,067
91.00	1,598	4,164
91.10	1,598	4,257
91.20	1,598	4,346
91.30	1,598	4,430
91.40	1,598	4,506
91.50	1,598	4,577
91.60	1,598	4,645
91.70	1,598	4,711
91.80	1,598	4,775
91.90	1,598	4,839
92.00	1,598	4,903
92.10	1,598	4,966
92.20	1,598	5,030
92.30	1,598	5,094
92.40	1,598	5,158
92.50	1,598	5,222
92.60	1,598	5,286
92.70	1,598	**5,350**

Summary for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Inflow Area = 11,846 sf, 80.51% Impervious, Inflow Depth = 5.33" for 25-Year event
Inflow = 1.42 cfs @ 12.14 hrs, Volume= 5,260 cf
Outflow = 0.35 cfs @ 12.56 hrs, Volume= 3,717 cf, Atten= 75%, Lag= 25.6 min
Discarded = 0.00 cfs @ 6.22 hrs, Volume= 706 cf
Primary = 0.35 cfs @ 12.56 hrs, Volume= 3,010 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 91.20' @ 12.56 hrs Surf.Area= 1,271 sf Storage= 2,799 cf

Plug-Flow detention time= 473.1 min calculated for 3,717 cf (71% of inflow)
Center-of-Mass det. time= 382.0 min (1,170.7 - 788.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	88.00'	1,838 cf	**22.75'W x 55.89'L x 5.50'H Field A** 6,993 cf Overall - 2,398 cf Embedded = 4,595 cf x 40.0% Voids
#2A	88.75'	2,398 cf	**ADS_StormTech MC-3500 d +Cap** x 21 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 21 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**12.0" Round Outlet Pipe** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 86.90' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	90.35'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.20'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	88.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 6.22 hrs HW=88.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.35 cfs @ 12.56 hrs HW=91.20' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.35 cfs of 5.21 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.35 cfs @ 3.97 fps)
  ├**3=Upper Orifice** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A4: Stormtech MC-3500 (SWM-A4) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

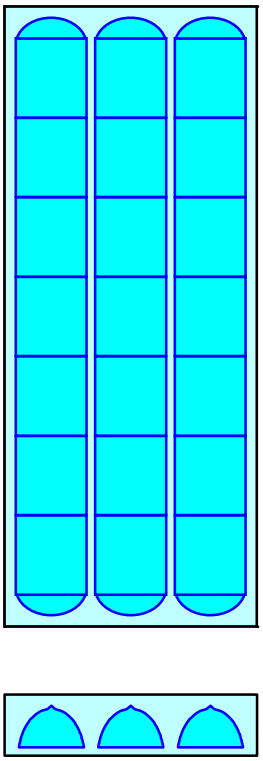
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

21 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,398.4 cf Chamber Storage

6,993.2 cf Field - 2,398.4 cf Chambers = 4,594.8 cf Stone x 40.0% Voids = 1,837.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,236.3 cf = 0.097 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 22.75' x 5.50'

21 Chambers
259.0 cy Field
170.2 cy Stone



Stage-Area-Storage for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**1,271**	0
88.10	1,271	51
88.20	1,271	102
88.30	1,271	153
88.40	1,271	203
88.50	1,271	254
88.60	1,271	305
88.70	1,271	356
88.80	1,271	434
88.90	1,271	540
89.00	1,271	645
89.10	1,271	750
89.20	1,271	854
89.30	1,271	958
89.40	1,271	1,062
89.50	1,271	1,165
89.60	1,271	1,267
89.70	1,271	1,369
89.80	1,271	1,471
89.90	1,271	1,571
90.00	1,271	1,672
90.10	1,271	1,771
90.20	1,271	1,870
90.30	1,271	1,967
90.40	1,271	2,064
90.50	1,271	2,161
90.60	1,271	2,256
90.70	1,271	2,350
90.80	1,271	2,443
90.90	1,271	2,535
91.00	1,271	2,626
91.10	1,271	2,715
91.20	1,271	2,803
91.30	1,271	2,889
91.40	1,271	2,974
91.50	1,271	3,057
91.60	1,271	3,138
91.70	1,271	3,217
91.80	1,271	3,294
91.90	1,271	3,368
92.00	1,271	3,438
92.10	1,271	3,504
92.20	1,271	3,565
92.30	1,271	3,621
92.40	1,271	3,676
92.50	1,271	3,728
92.60	1,271	3,779
92.70	1,271	3,829
92.80	1,271	3,880
92.90	1,271	3,931
93.00	1,271	3,982
93.10	1,271	4,033
93.20	1,271	4,084
93.30	1,271	4,135
93.40	1,271	4,185
93.50	1,271	**4,236**

Summary for Pond SW-B: Bioretention Basin (SWM-B)

Inflow Area = 19,813 sf, 71.21% Impervious, Inflow Depth = 4.94" for 25-Year event
Inflow = 2.27 cfs @ 12.07 hrs, Volume= 8,164 cf
Outflow = 0.53 cfs @ 12.48 hrs, Volume= 6,223 cf, Atten= 77%, Lag= 24.3 min
Discarded = 0.01 cfs @ 12.48 hrs, Volume= 1,042 cf
Primary = 0.52 cfs @ 12.48 hrs, Volume= 5,181 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 93.59' @ 12.48 hrs Surf.Area= 2,400 sf Storage= 4,382 cf

Plug-Flow detention time= 452.4 min calculated for 6,221 cf (76% of inflow)
Center-of-Mass det. time= 364.9 min (1,120.2 - 755.3)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	7,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,079	0	0
92.00	1,528	1,304	1,304
93.00	2,023	1,776	3,079
94.00	2,663	2,343	5,422
94.80	3,231	2,358	7,780

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**15.0" Round Outlet Pipe** L= 361.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.00' / 87.00' S= 0.0055 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	92.75'	**5.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	93.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	94.30'	**6.0' 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
#5	Discarded	91.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.48 hrs HW=93.59' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.52 cfs @ 12.48 hrs HW=93.59' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.52 cfs of 8.94 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.52 cfs @ 3.82 fps)
  └**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-B: Bioretention Basin (SWM-B)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,079	0
91.05	1,101	55
91.10	1,124	110
91.15	1,146	167
91.20	1,169	225
91.25	1,191	284
91.30	1,214	344
91.35	1,236	405
91.40	1,259	468
91.45	1,281	531
91.50	1,304	596
91.55	1,326	661
91.60	1,348	728
91.65	1,371	796
91.70	1,393	865
91.75	1,416	936
91.80	1,438	1,007
91.85	1,461	1,079
91.90	1,483	1,153
91.95	1,506	1,228
92.00	1,528	1,304
92.05	1,553	1,381
92.10	1,577	1,459
92.15	1,602	1,538
92.20	1,627	1,619
92.25	1,652	1,701
92.30	1,676	1,784
92.35	1,701	1,869
92.40	1,726	1,954
92.45	1,751	2,041
92.50	1,776	2,129
92.55	1,800	2,219
92.60	1,825	2,309
92.65	1,850	2,401
92.70	1,875	2,494
92.75	1,899	2,589
92.80	1,924	2,684
92.85	1,949	2,781
92.90	1,974	2,879
92.95	1,998	2,978
93.00	2,023	3,079
93.05	2,055	3,181
93.10	2,087	3,284
93.15	2,119	3,390
93.20	2,151	3,496
93.25	2,183	3,605
93.30	2,215	3,715
93.35	2,247	3,826
93.40	2,279	3,939
93.45	2,311	4,054
93.50	2,343	4,171
93.55	2,375	4,288
93.60	2,407	4,408
93.65	2,439	4,529
93.70	2,471	4,652
93.75	2,503	4,776
93.80	2,535	4,902
93.85	2,567	5,030
93.90	2,599	5,159
93.95	2,631	5,290
94.00	2,663	5,422
94.05	2,698	5,556
94.10	2,734	5,692
94.15	2,770	5,829
94.20	2,805	5,969
94.25	2,841	6,110
94.30	2,876	6,253
94.35	2,911	6,398
94.40	2,947	6,544
94.45	2,983	6,692
94.50	3,018	6,842
94.55	3,053	6,994
94.60	3,089	7,148
94.65	3,125	7,303
94.70	3,160	7,460
94.75	3,196	7,619
94.80	**3,231**	**7,780**

Summary for Pond SW-C: Curtain Drain (SWM-C)

Inflow Area = 73,097 sf, 11.74% Impervious, Inflow Depth = 0.91" for 25-Year event
Inflow = 0.82 cfs @ 12.35 hrs, Volume= 5,546 cf
Outflow = 0.34 cfs @ 12.88 hrs, Volume= 4,964 cf, Atten= 59%, Lag= 31.5 min
Discarded = 0.00 cfs @ 12.12 hrs, Volume= 522 cf
Primary = 0.34 cfs @ 12.88 hrs, Volume= 4,443 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 90.56' @ 12.88 hrs Surf.Area= 1,045 sf Storage= 1,321 cf

Plug-Flow detention time= 262.8 min calculated for 4,963 cf (89% of inflow)
Center-of-Mass det. time= 214.3 min (1,140.2 - 925.8)

Volume	Invert	Avail.Storage	Storage Description
#1	87.40'	3,804 cf	**2.50'W x 418.00'L x 9.10'H Prismatoid** 9,509 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**8.0" Round Outlet Pipe** L= 108.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.20' / 85.45' S= 0.0162 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Primary	89.75'	**4.0" Vert. Low flow orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.75'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	87.40'	**0.100 in/hr Exfiltration over Surface area**
#5	Secondary	96.00'	**200.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 12.12 hrs HW=87.50' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.34 cfs @ 12.88 hrs HW=90.56' (Free Discharge)
├**1=Outlet Pipe** (Passes 0.00 cfs of 2.66 cfs potential flow)
│└**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└**2=Low flow orifice** (Orifice Controls 0.34 cfs @ 3.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-C: Curtain Drain (SWM-C)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.40	**1,045**	0
87.50	1,045	42
87.60	1,045	84
87.70	1,045	125
87.80	1,045	167
87.90	1,045	209
88.00	1,045	251
88.10	1,045	293
88.20	1,045	334
88.30	1,045	376
88.40	1,045	418
88.50	1,045	460
88.60	1,045	502
88.70	1,045	543
88.80	1,045	585
88.90	1,045	627
89.00	1,045	669
89.10	1,045	711
89.20	1,045	752
89.30	1,045	794
89.40	1,045	836
89.50	1,045	878
89.60	1,045	920
89.70	1,045	961
89.80	1,045	1,003
89.90	1,045	1,045
90.00	1,045	1,087
90.10	1,045	1,129
90.20	1,045	1,170
90.30	1,045	1,212
90.40	1,045	1,254
90.50	1,045	1,296
90.60	1,045	1,338
90.70	1,045	1,379
90.80	1,045	1,421
90.90	1,045	1,463
91.00	1,045	1,505
91.10	1,045	1,547
91.20	1,045	1,588
91.30	1,045	1,630
91.40	1,045	1,672
91.50	1,045	1,714
91.60	1,045	1,756
91.70	1,045	1,797
91.80	1,045	1,839
91.90	1,045	1,881
92.00	1,045	1,923
92.10	1,045	1,965
92.20	1,045	2,006
92.30	1,045	2,048
92.40	1,045	2,090
92.50	1,045	2,132
92.60	1,045	2,174
92.70	1,045	2,215
92.80	1,045	2,257
92.90	1,045	2,299
93.00	1,045	2,341
93.10	1,045	2,383
93.20	1,045	2,424
93.30	1,045	2,466
93.40	1,045	2,508
93.50	1,045	2,550
93.60	1,045	2,592
93.70	1,045	2,633
93.80	1,045	2,675
93.90	1,045	2,717
94.00	1,045	2,759
94.10	1,045	2,801
94.20	1,045	2,842
94.30	1,045	2,884
94.40	1,045	2,926
94.50	1,045	2,968
94.60	1,045	3,010
94.70	1,045	3,051
94.80	1,045	3,093
94.90	1,045	3,135
95.00	1,045	3,177
95.10	1,045	3,219
95.20	1,045	3,260
95.30	1,045	3,302
95.40	1,045	3,344
95.50	1,045	3,386
95.60	1,045	3,428
95.70	1,045	3,469
95.80	1,045	3,511
95.90	1,045	3,553
96.00	1,045	3,595
96.10	1,045	3,637
96.20	1,045	3,678
96.30	1,045	3,720
96.40	1,045	3,762
96.50	1,045	**3,804**

Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 12,462 sf, 10.46% Impervious, Inflow Depth = 0.77" for 25-Year event
Inflow = 0.12 cfs @ 12.23 hrs, Volume= 798 cf
Outflow = 0.02 cfs @ 14.83 hrs, Volume= 798 cf, Atten= 80%, Lag= 156.0 min
Discarded = 0.02 cfs @ 14.83 hrs, Volume= 798 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 98.12' @ 14.83 hrs Surf.Area= 197 sf Storage= 300 cf

Plug-Flow detention time= 367.4 min calculated for 798 cf (100% of inflow)
Center-of-Mass det. time= 367.6 min (1,298.0 - 930.5)

Volume	Invert	Avail.Storage	Storage Description
#1	91.60'	1,595 cf	**Drywell & Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.60	31	0	0
92.60	44	38	38
93.60	44	44	82
94.60	44	44	126
95.60	44	44	170
96.60	44	44	214
97.49	4	21	235
97.50	29	0	235
98.00	145	44	279
99.00	560	353	631
100.00	1,135	848	1,479
100.10	1,187	116	1,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.60'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	99.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.02 cfs @ 14.83 hrs HW=98.12' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-D: Drywell & Basin (SWM-D)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	31	0
91.70	32	3
91.80	34	6
91.90	35	10
92.00	36	13
92.10	38	17
92.20	39	21
92.30	40	25
92.40	41	29
92.50	43	33
92.60	44	38
92.70	44	42
92.80	44	46
92.90	44	51
93.00	44	55
93.10	44	60
93.20	44	64
93.30	44	68
93.40	44	73
93.50	44	77
93.60	44	82
93.70	44	86
93.80	44	90
93.90	44	95
94.00	44	99
94.10	44	104
94.20	44	108
94.30	44	112
94.40	44	117
94.50	44	121
94.60	44	126
94.70	44	130
94.80	44	134
94.90	44	139
95.00	44	143
95.10	44	148
95.20	44	152
95.30	44	156
95.40	44	161
95.50	44	165
95.60	44	170
95.70	44	174
95.80	44	178
95.90	44	183
96.00	44	187
96.10	44	192
96.20	44	196
96.30	44	200
96.40	44	205
96.50	44	209
96.60	44	214
96.70	40	218
96.80	35	221
96.90	31	225
97.00	26	228
97.10	22	230
97.20	17	232
97.30	13	233
97.40	8	234
97.50	29	235
97.60	52	239
97.70	75	245
97.80	99	254
97.90	122	265
98.00	145	279
98.10	186	295
98.20	228	316
98.30	269	341
98.40	311	370
98.50	353	403
98.60	394	440
98.70	435	482
98.80	477	527
98.90	518	577
99.00	560	631
99.10	617	690
99.20	675	755
99.30	732	825
99.40	790	901
99.50	848	983
99.60	905	1,071
99.70	962	1,164
99.80	1,020	1,263
99.90	1,077	1,368
100.00	1,135	1,479
100.10	**1,187**	**1,595**

Summary for Link AP: Analysis Point

Inflow Area = 191,150 sf, 31.86% Impervious, Inflow Depth = 2.31" for 25-Year event
Inflow = 5.28 cfs @ 12.19 hrs, Volume= 36,731 cf
Primary = 5.28 cfs @ 12.19 hrs, Volume= 36,731 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1: DA1 Runoff Area=73,097 sf 11.74% Impervious Runoff Depth=1.82"
Flow Length=337' Tc=17.4 min CN=43 Runoff=2.10 cfs 11,097 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=8.32"
Tc=5.0 min CN=98 Runoff=2.80 cfs 9,750 cf

Subcatchment DA2B: DA2B Runoff Area=5,750 sf 0.78% Impervious Runoff Depth=2.60"
Tc=10.0 min CN=50 Runoff=0.33 cfs 1,245 cf

Subcatchment DA3: DA3 Runoff Area=12,462 sf 10.46% Impervious Runoff Depth=1.61"
Tc=10.0 min CN=41 Runoff=0.36 cfs 1,670 cf

Subcatchment DA4A: DA4A Runoff Area=9,253 sf 92.50% Impervious Runoff Depth=8.08"
Tc=5.0 min CN=96 Runoff=1.83 cfs 6,230 cf

Subcatchment DA4B: DA4B Runoff Area=7,277 sf 91.51% Impervious Runoff Depth=8.08"
Tc=5.0 min CN=96 Runoff=1.44 cfs 4,900 cf

Subcatchment DA4C: DA4C Runoff Area=16,289 sf 80.42% Impervious Runoff Depth=7.00"
Tc=10.0 min CN=87 Runoff=2.55 cfs 9,496 cf

Subcatchment DA4D: DA4D Runoff Area=11,846 sf 80.51% Impervious Runoff Depth=7.24"
Tc=10.0 min CN=89 Runoff=1.89 cfs 7,144 cf

Subcatchment DA5: DA5 Runoff Area=53,575 sf 0.66% Impervious Runoff Depth=5.19"
Flow Length=332' Tc=11.4 min CN=72 Runoff=6.24 cfs 23,167 cf

Reach DMH-1: DMH-1 Inflow=2.69 cfs 14,611 cf
Outflow=2.69 cfs 14,611 cf

Reach DMH-3: DMH-3 Inflow=3.51 cfs 18,574 cf
Outflow=3.51 cfs 18,574 cf

Pond SW-A1: Stormtech MC-3500 (SWM-A1) Peak Elev=89.01' Storage=2,990 cf Inflow=1.83 cfs 6,230 cf
Discarded=0.00 cfs 645 cf Primary=0.93 cfs 3,964 cf Outflow=0.93 cfs 4,609 cf

Pond SW-A2: Stormtech MC-3500 (SWM-A2) Peak Elev=89.91' Storage=2,363 cf Inflow=1.44 cfs 4,900 cf
Discarded=0.00 cfs 644 cf Primary=0.68 cfs 3,090 cf Outflow=0.68 cfs 3,734 cf

Pond SW-A3: Stormtech MC-3500 (SWM-A3) Peak Elev=91.27' Storage=4,405 cf Inflow=2.55 cfs 9,496 cf
Discarded=0.00 cfs 894 cf Primary=1.14 cfs 6,638 cf Outflow=1.14 cfs 7,532 cf

Pond SW-A4: Stormtech MC-3500 (SWM-A4) Peak Elev=91.73' Storage=3,243 cf Inflow=1.89 cfs 7,144 cf
Discarded=0.00 cfs 717 cf Primary=0.97 cfs 4,882 cf Outflow=0.97 cfs 5,599 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=93.74' Storage=4,757 cf Inflow=3.04 cfs 10,995 cf
Discarded=0.01 cfs 1,055 cf Primary=1.99 cfs 7,995 cf Secondary=0.00 cfs 0 cf Outflow=2.00 cfs 9,050 cf

Pond SW-C: Curtain Drain (SWM-C) Peak Elev=90.99' Storage=1,503 cf Inflow=2.10 cfs 11,097 cf
Discarded=0.00 cfs 524 cf Primary=2.04 cfs 9,991 cf Secondary=0.00 cfs 0 cf Outflow=2.05 cfs 10,515 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=98.87' Storage=562 cf Inflow=0.36 cfs 1,670 cf
Discarded=0.06 cfs 1,670 cf Secondary=0.00 cfs 0 cf Outflow=0.06 cfs 1,670 cf

Link AP: Analysis Point Inflow=10.77 cfs 59,728 cf
Primary=10.77 cfs 59,728 cf

Total Runoff Area = 203,612 sf Runoff Volume = 74,700 cf Average Runoff Depth = 4.40"
69.45% Pervious = 141,411 sf 30.55% Impervious = 62,201 sf

Summary for Subcatchment DA1: DA1

Runoff = 2.10 cfs @ 12.28 hrs, Volume= 11,097 cf, Depth= 1.82"
Routed to Pond SW-C : Curtain Drain (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
8,584	98	Paved parking, HSG A
35,028	39	>75% Grass cover, Good, HSG A
910	74	>75% Grass cover, Good, HSG C
27,956	30	Woods, Good, HSG A
619	70	Woods, Good, HSG C
73,097	43	Weighted Average
64,513		88.26% Pervious Area
8,584		11.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	24	0.0824	0.23		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		**Sheet Flow, Sheetflow** Woods: Light underbrush n= 0.400 P2= 3.43"
0.6	35	0.0368	0.96		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.1	20	0.3400	4.08		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
17.4	337	Total			

Summary for Subcatchment DA2A: DA2A

Runoff = 2.80 cfs @ 12.07 hrs, Volume= 9,750 cf, Depth= 8.32"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
14,063	98	Roofs, HSG C
14,063		100.00% Impervious Area

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

Summary for Subcatchment DA2B: DA2B

Runoff = 0.33 cfs @ 12.15 hrs, Volume= 1,245 cf, Depth= 2.60"
Routed to Pond SW-B : Bioretention Basin (SWM-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
45	98	Paved parking, HSG C
4,009	39	>75% Grass cover, Good, HSG A
1,696	74	>75% Grass cover, Good, HSG C
5,750	50	Weighted Average
5,705		99.22% Pervious Area
45		0.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct**

Summary for Subcatchment DA3: DA3

Runoff = 0.36 cfs @ 12.17 hrs, Volume= 1,670 cf, Depth= 1.61"
Routed to Pond SW-D : Drywell & Basin (SWM-D)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
1,303	98	Paved parking, HSG A
5,621	39	>75% Grass cover, Good, HSG A
5,538	30	Woods, Good, HSG A
12,462	41	Weighted Average
11,159		89.54% Pervious Area
1,303		10.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA4A: DA4A

Runoff = 1.83 cfs @ 12.07 hrs, Volume= 6,230 cf, Depth= 8.08"
Routed to Pond SW-A1 : Stormtech MC-3500 (SWM-A1)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
8,559	98	Paved parking, HSG C
694	74	>75% Grass cover, Good, HSG C
9,253	96	Weighted Average
694		7.50% Pervious Area
8,559		92.50% Impervious Area

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

Summary for Subcatchment DA4B: DA4B

Runoff = 1.44 cfs @ 12.07 hrs, Volume= 4,900 cf, Depth= 8.08"
Routed to Pond SW-A2 : Stormtech MC-3500 (SWM-A2)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
6,659	98	Paved parking, HSG C
618	74	>75% Grass cover, Good, HSG C
7,277	96	Weighted Average
618		8.49% Pervious Area
6,659		91.51% Impervious Area

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

Summary for Subcatchment DA4C: DA4C

Runoff = 2.55 cfs @ 12.13 hrs, Volume= 9,496 cf, Depth= 7.00"
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
6,556	98	Paved parking, HSG A
6,543	98	Paved parking, HSG C
1,382	39	>75% Grass cover, Good, HSG A
649	74	>75% Grass cover, Good, HSG C
1,159	30	Woods, Good, HSG A
16,289	87	Weighted Average
3,190		19.58% Pervious Area
13,099		80.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA4D: DA4D

Runoff = 1.89 cfs @ 12.13 hrs, Volume= 7,144 cf, Depth= 7.24"
Routed to Pond SW-A4 : Stormtech MC-3500 (SWM-A4)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
1,590	98	Paved parking, HSG A
7,947	98	Paved parking, HSG C
1,415	39	>75% Grass cover, Good, HSG A
894	74	>75% Grass cover, Good, HSG C
11,846	89	Weighted Average
2,309		19.49% Pervious Area
9,537		80.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Summary for Subcatchment DA5: DA5

Runoff = 6.24 cfs @ 12.16 hrs, Volume= 23,167 cf, Depth= 5.19"
Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
352	98	Paved parking, HSG C
22,627	74	>75% Grass cover, Good, HSG C
30,596	70	Woods, Good, HSG C
53,575	72	Weighted Average
53,223		99.34% Pervious Area
352		0.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1330	0.27		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
7.5	82	0.0240	0.18		**Sheet Flow, Sheetflow** Grass: Short n= 0.150 P2= 3.43"
1.9	118	0.0220	1.04		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
0.2	14	0.0500	1.12		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
0.2	32	0.1400	2.62		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
0.5	68	0.2350	2.42		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
11.4	332	Total			

Summary for Reach DMH-1: DMH-1

Inflow Area = 35,412 sf, 82.73% Impervious, Inflow Depth = 4.95" for 100-Year event
Inflow = 2.69 cfs @ 12.33 hrs, Volume= 14,611 cf
Outflow = 2.69 cfs @ 12.33 hrs, Volume= 14,611 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach DMH-3: DMH-3

Inflow Area = 44,665 sf, 84.75% Impervious, Inflow Depth = 4.99" for 100-Year event
Inflow = 3.51 cfs @ 12.30 hrs, Volume= 18,574 cf
Outflow = 3.51 cfs @ 12.30 hrs, Volume= 18,574 cf, Atten= 0%, Lag= 0.0 min
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Inflow Area = 9,253 sf, 92.50% Impervious, Inflow Depth = 8.08" for 100-Year event
Inflow = 1.83 cfs @ 12.07 hrs, Volume= 6,230 cf
Outflow = 0.93 cfs @ 12.19 hrs, Volume= 4,609 cf, Atten= 49%, Lag= 7.4 min
Discarded = 0.00 cfs @ 2.76 hrs, Volume= 645 cf
Primary = 0.93 cfs @ 12.19 hrs, Volume= 3,964 cf
Routed to Reach DMH-3 : DMH-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 89.01' @ 12.19 hrs Surf.Area= 1,108 sf Storage= 2,990 cf

Plug-Flow detention time= 389.6 min calculated for 4,609 cf (74% of inflow)
Center-of-Mass det. time= 301.3 min (1,051.5 - 750.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	85.00'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	85.75'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	85.00'	**12.0" Round Outlet Pipe** L= 6.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 85.00' / 84.95' S= 0.0083 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	87.70'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	88.50'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	89.35'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	85.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 2.76 hrs HW=85.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.93 cfs @ 12.19 hrs HW=89.01' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.93 cfs of 7.08 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.45 cfs @ 5.15 fps)
├**3=Upper Orifice** (Orifice Controls 0.48 cfs @ 2.45 fps)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A1: Stormtech MC-3500 (SWM-A1) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

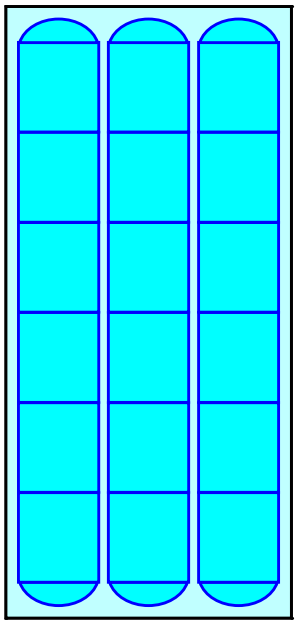
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

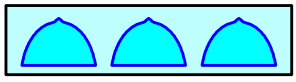
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A1: Stormtech MC-3500 (SWM-A1)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
85.00	**1,108**	0
85.10	1,108	44
85.20	1,108	89
85.30	1,108	133
85.40	1,108	177
85.50	1,108	222
85.60	1,108	266
85.70	1,108	310
85.80	1,108	378
85.90	1,108	470
86.00	1,108	561
86.10	1,108	652
86.20	1,108	743
86.30	1,108	833
86.40	1,108	922
86.50	1,108	1,012
86.60	1,108	1,101
86.70	1,108	1,189
86.80	1,108	1,277
86.90	1,108	1,364
87.00	1,108	1,451
87.10	1,108	1,537
87.20	1,108	1,623
87.30	1,108	1,708
87.40	1,108	1,792
87.50	1,108	1,875
87.60	1,108	1,958
87.70	1,108	2,039
87.80	1,108	2,120
87.90	1,108	2,200
88.00	1,108	2,279
88.10	1,108	2,356
88.20	1,108	2,432
88.30	1,108	2,507
88.40	1,108	2,581
88.50	1,108	2,653
88.60	1,108	2,724
88.70	1,108	2,792
88.80	1,108	2,859
88.90	1,108	2,923
89.00	1,108	2,984
89.10	1,108	3,042
89.20	1,108	3,094
89.30	1,108	3,144
89.40	1,108	3,191
89.50	1,108	3,236
89.60	1,108	3,281
89.70	1,108	3,325
89.80	1,108	3,369
89.90	1,108	3,414
90.00	1,108	3,458
90.10	1,108	3,502
90.20	1,108	3,547
90.30	1,108	3,591
90.40	1,108	3,635
90.50	1,108	**3,680**

Summary for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Inflow Area = 7,277 sf, 91.51% Impervious, Inflow Depth = 8.08" for 100-Year event
Inflow = 1.44 cfs @ 12.07 hrs, Volume= 4,900 cf
Outflow = 0.68 cfs @ 12.21 hrs, Volume= 3,734 cf, Atten= 52%, Lag= 8.4 min
Discarded = 0.00 cfs @ 3.02 hrs, Volume= 644 cf
Primary = 0.68 cfs @ 12.21 hrs, Volume= 3,090 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 89.91' @ 12.21 hrs Surf.Area= 1,108 sf Storage= 2,363 cf

Plug-Flow detention time= 430.4 min calculated for 3,734 cf (76% of inflow)
Center-of-Mass det. time= 346.0 min (1,096.2 - 750.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	86.80'	1,611 cf	**22.75'W x 48.72'L x 5.50'H Field A** 6,096 cf Overall - 2,069 cf Embedded = 4,028 cf x 40.0% Voids
#2A	87.55'	2,069 cf	**ADS_StormTech MC-3500 d +Cap** x 18 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 18 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		3,680 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.65'	**15.0" Round Outlet Pipe** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 86.65' / 84.85' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	88.95'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	89.55'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.05'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	86.80'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 3.02 hrs HW=86.86' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.68 cfs @ 12.21 hrs HW=89.91' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.68 cfs of 9.59 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.37 cfs @ 4.28 fps)
  ├**3=Upper Orifice** (Orifice Controls 0.31 cfs @ 2.04 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A2: Stormtech MC-3500 (SWM-A2) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

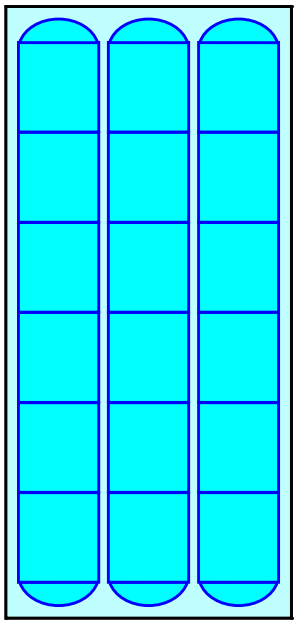
6 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 46.72' Row Length +12.0" End Stone x 2 = 48.72' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

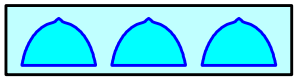
18 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,068.5 cf Chamber Storage

6,096.1 cf Field - 2,068.5 cf Chambers = 4,027.6 cf Stone x 40.0% Voids = 1,611.0 cf Stone Storage

Chamber Storage + Stone Storage = 3,679.6 cf = 0.084 af
Overall Storage Efficiency = 60.4%
Overall System Size = 48.72' x 22.75' x 5.50'

18 Chambers
225.8 cy Field
149.2 cy Stone





Stage-Area-Storage for Pond SW-A2: Stormtech MC-3500 (SWM-A2)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
86.80	**1,108**	0
86.90	1,108	44
87.00	1,108	89
87.10	1,108	133
87.20	1,108	177
87.30	1,108	222
87.40	1,108	266
87.50	1,108	310
87.60	1,108	378
87.70	1,108	470
87.80	1,108	561
87.90	1,108	652
88.00	1,108	743
88.10	1,108	833
88.20	1,108	922
88.30	1,108	1,012
88.40	1,108	1,101
88.50	1,108	1,189
88.60	1,108	1,277
88.70	1,108	1,364
88.80	1,108	1,451
88.90	1,108	1,537
89.00	1,108	1,623
89.10	1,108	1,708
89.20	1,108	1,792
89.30	1,108	1,875
89.40	1,108	1,958
89.50	1,108	2,039
89.60	1,108	2,120
89.70	1,108	2,200
89.80	1,108	2,279
89.90	1,108	2,356
90.00	1,108	2,432
90.10	1,108	2,507
90.20	1,108	2,581
90.30	1,108	2,653
90.40	1,108	2,724
90.50	1,108	2,792
90.60	1,108	2,859
90.70	1,108	2,923
90.80	1,108	2,984
90.90	1,108	3,042
91.00	1,108	3,094
91.10	1,108	3,144
91.20	1,108	3,191
91.30	1,108	3,236
91.40	1,108	3,281
91.50	1,108	3,325
91.60	1,108	3,369
91.70	1,108	3,414
91.80	1,108	3,458
91.90	1,108	3,502
92.00	1,108	3,547
92.10	1,108	3,591
92.20	1,108	3,635
92.30	1,108	**3,680**

Summary for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Inflow Area = 16,289 sf, 80.42% Impervious, Inflow Depth = 7.00" for 100-Year event
Inflow = 2.55 cfs @ 12.13 hrs, Volume= 9,496 cf
Outflow = 1.14 cfs @ 12.38 hrs, Volume= 7,532 cf, Atten= 55%, Lag= 14.9 min
Discarded = 0.00 cfs @ 5.58 hrs, Volume= 894 cf
Primary = 1.14 cfs @ 12.38 hrs, Volume= 6,638 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 91.27' @ 12.38 hrs Surf.Area= 1,598 sf Storage= 4,405 cf

Plug-Flow detention time= 340.6 min calculated for 7,532 cf (79% of inflow)
Center-of-Mass det. time= 263.8 min (1,050.4 - 786.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	87.20'	2,292 cf	**22.75'W x 70.23'L x 5.50'H Field A** 8,788 cf Overall - 3,058 cf Embedded = 5,729 cf x 40.0% Voids
#2A	87.95'	3,058 cf	**ADS_StormTech MC-3500 d +Cap** x 27 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 27 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,350 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	86.65'	**15.0" Round Outlet Pipe** L= 93.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 86.65' / 84.85' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	89.55'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.60'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	91.45'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	87.20'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 5.58 hrs HW=87.26' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.14 cfs @ 12.38 hrs HW=91.27' (Free Discharge)
└**1=Outlet Pipe** (Passes 1.14 cfs of 11.81 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.52 cfs @ 6.00 fps)
├**3=Upper Orifice** (Orifice Controls 0.61 cfs @ 3.12 fps)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A3: Stormtech MC-3500 (SWM-A3) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

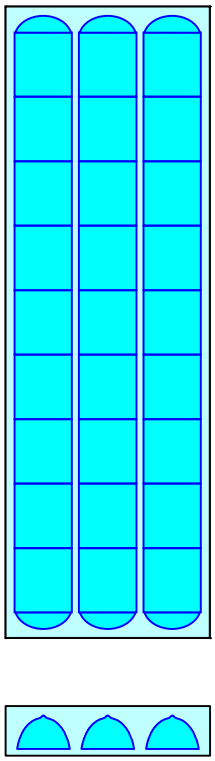
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

27 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,058.1 cf Chamber Storage

8,787.5 cf Field - 3,058.1 cf Chambers = 5,729.4 cf Stone x 40.0% Voids = 2,291.8 cf Stone Storage

Chamber Storage + Stone Storage = 5,349.9 cf = 0.123 af
Overall Storage Efficiency = 60.9%
Overall System Size = 70.23' x 22.75' x 5.50'

27 Chambers
325.5 cy Field
212.2 cy Stone



Stage-Area-Storage for Pond SW-A3: Stormtech MC-3500 (SWM-A3)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.20	**1,598**	0
87.30	1,598	64
87.40	1,598	128
87.50	1,598	192
87.60	1,598	256
87.70	1,598	320
87.80	1,598	383
87.90	1,598	447
88.00	1,598	546
88.10	1,598	680
88.20	1,598	813
88.30	1,598	946
88.40	1,598	1,078
88.50	1,598	1,210
88.60	1,598	1,341
88.70	1,598	1,471
88.80	1,598	1,601
88.90	1,598	1,730
89.00	1,598	1,858
89.10	1,598	1,986
89.20	1,598	2,113
89.30	1,598	2,238
89.40	1,598	2,363
89.50	1,598	2,487
89.60	1,598	2,610
89.70	1,598	2,731
89.80	1,598	2,852
89.90	1,598	2,971
90.00	1,598	3,089
90.10	1,598	3,205
90.20	1,598	3,320
90.30	1,598	3,433
90.40	1,598	3,544
90.50	1,598	3,653
90.60	1,598	3,760
90.70	1,598	3,865
90.80	1,598	3,968
90.90	1,598	4,067
91.00	1,598	4,164
91.10	1,598	4,257
91.20	1,598	4,346
91.30	1,598	4,430
91.40	1,598	4,506
91.50	1,598	4,577
91.60	1,598	4,645
91.70	1,598	4,711
91.80	1,598	4,775
91.90	1,598	4,839
92.00	1,598	4,903
92.10	1,598	4,966
92.20	1,598	5,030
92.30	1,598	5,094
92.40	1,598	5,158
92.50	1,598	5,222
92.60	1,598	5,286
92.70	1,598	**5,350**

Summary for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Inflow Area = 11,846 sf, 80.51% Impervious, Inflow Depth = 7.24" for 100-Year event
Inflow = 1.89 cfs @ 12.13 hrs, Volume= 7,144 cf
Outflow = 0.97 cfs @ 12.34 hrs, Volume= 5,599 cf, Atten= 49%, Lag= 12.1 min
Discarded = 0.00 cfs @ 5.10 hrs, Volume= 717 cf
Primary = 0.97 cfs @ 12.34 hrs, Volume= 4,882 cf
Routed to Reach DMH-1 : DMH-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 91.73' @ 12.34 hrs Surf.Area= 1,271 sf Storage= 3,243 cf

Plug-Flow detention time= 351.0 min calculated for 5,598 cf (78% of inflow)
Center-of-Mass det. time= 273.2 min (1,054.0 - 780.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	88.00'	1,838 cf	**22.75'W x 55.89'L x 5.50'H Field A** 6,993 cf Overall - 2,398 cf Embedded = 4,595 cf x 40.0% Voids
#2A	88.75'	2,398 cf	**ADS_StormTech MC-3500 d +Cap** x 21 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 21 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,236 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	88.80'	**12.0" Round Outlet Pipe** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 88.80' / 86.90' S= 0.0194 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	90.35'	**4.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.20'	**6.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	92.25'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	88.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 5.10 hrs HW=88.06' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.97 cfs @ 12.34 hrs HW=91.73' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.97 cfs of 5.90 cfs potential flow)
├**2=Low Flow Orifice** (Orifice Controls 0.46 cfs @ 5.31 fps)
├**3=Upper Orifice** (Orifice Controls 0.50 cfs @ 2.56 fps)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SW-A4: Stormtech MC-3500 (SWM-A4) - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

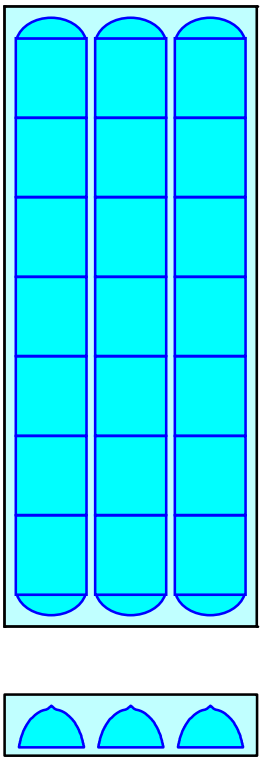
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

21 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,398.4 cf Chamber Storage

6,993.2 cf Field - 2,398.4 cf Chambers = 4,594.8 cf Stone x 40.0% Voids = 1,837.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,236.3 cf = 0.097 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 22.75' x 5.50'

21 Chambers
259.0 cy Field
170.2 cy Stone



Stage-Area-Storage for Pond SW-A4: Stormtech MC-3500 (SWM-A4)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**1,271**	0
88.10	1,271	51
88.20	1,271	102
88.30	1,271	153
88.40	1,271	203
88.50	1,271	254
88.60	1,271	305
88.70	1,271	356
88.80	1,271	434
88.90	1,271	540
89.00	1,271	645
89.10	1,271	750
89.20	1,271	854
89.30	1,271	958
89.40	1,271	1,062
89.50	1,271	1,165
89.60	1,271	1,267
89.70	1,271	1,369
89.80	1,271	1,471
89.90	1,271	1,571
90.00	1,271	1,672
90.10	1,271	1,771
90.20	1,271	1,870
90.30	1,271	1,967
90.40	1,271	2,064
90.50	1,271	2,161
90.60	1,271	2,256
90.70	1,271	2,350
90.80	1,271	2,443
90.90	1,271	2,535
91.00	1,271	2,626
91.10	1,271	2,715
91.20	1,271	2,803
91.30	1,271	2,889
91.40	1,271	2,974
91.50	1,271	3,057
91.60	1,271	3,138
91.70	1,271	3,217
91.80	1,271	3,294
91.90	1,271	3,368
92.00	1,271	3,438
92.10	1,271	3,504
92.20	1,271	3,565
92.30	1,271	3,621
92.40	1,271	3,676
92.50	1,271	3,728
92.60	1,271	3,779
92.70	1,271	3,829
92.80	1,271	3,880
92.90	1,271	3,931
93.00	1,271	3,982
93.10	1,271	4,033
93.20	1,271	4,084
93.30	1,271	4,135
93.40	1,271	4,185
93.50	1,271	**4,236**

Summary for Pond SW-B: Bioretention Basin (SWM-B)

Inflow Area = 19,813 sf, 71.21% Impervious, Inflow Depth = 6.66" for 100-Year event
Inflow = 3.04 cfs @ 12.07 hrs, Volume= 10,995 cf
Outflow = 2.00 cfs @ 12.17 hrs, Volume= 9,050 cf, Atten= 34%, Lag= 5.6 min
Discarded = 0.01 cfs @ 12.17 hrs, Volume= 1,055 cf
Primary = 1.99 cfs @ 12.17 hrs, Volume= 7,995 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond SW-A3 : Stormtech MC-3500 (SWM-A3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 93.74' @ 12.17 hrs Surf.Area= 2,498 sf Storage= 4,757 cf

Plug-Flow detention time= 348.2 min calculated for 9,047 cf (82% of inflow)
Center-of-Mass det. time= 274.5 min (1,028.7 - 754.2)

Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	7,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,079	0	0
92.00	1,528	1,304	1,304
93.00	2,023	1,776	3,079
94.00	2,663	2,343	5,422
94.80	3,231	2,358	7,780

Device	Routing	Invert	Outlet Devices
#1	Primary	89.00'	**15.0" Round Outlet Pipe** L= 361.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.00' / 87.00' S= 0.0055 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	92.75'	**5.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	93.60'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	94.30'	**6.0' 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
#5	Discarded	91.00'	**0.100 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.17 hrs HW=93.74' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=1.97 cfs @ 12.17 hrs HW=93.74' (Free Discharge)
└**1=Outlet Pipe** (Passes 1.97 cfs of 9.06 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.58 cfs @ 4.26 fps)
  └**3=Grate** (Weir Controls 1.39 cfs @ 1.23 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-B: Bioretention Basin (SWM-B)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,079	0
91.05	1,101	55
91.10	1,124	110
91.15	1,146	167
91.20	1,169	225
91.25	1,191	284
91.30	1,214	344
91.35	1,236	405
91.40	1,259	468
91.45	1,281	531
91.50	1,304	596
91.55	1,326	661
91.60	1,348	728
91.65	1,371	796
91.70	1,393	865
91.75	1,416	936
91.80	1,438	1,007
91.85	1,461	1,079
91.90	1,483	1,153
91.95	1,506	1,228
92.00	1,528	1,304
92.05	1,553	1,381
92.10	1,577	1,459
92.15	1,602	1,538
92.20	1,627	1,619
92.25	1,652	1,701
92.30	1,676	1,784
92.35	1,701	1,869
92.40	1,726	1,954
92.45	1,751	2,041
92.50	1,776	2,129
92.55	1,800	2,219
92.60	1,825	2,309
92.65	1,850	2,401
92.70	1,875	2,494
92.75	1,899	2,589
92.80	1,924	2,684
92.85	1,949	2,781
92.90	1,974	2,879
92.95	1,998	2,978
93.00	2,023	3,079
93.05	2,055	3,181
93.10	2,087	3,284
93.15	2,119	3,390
93.20	2,151	3,496
93.25	2,183	3,605
93.30	2,215	3,715
93.35	2,247	3,826
93.40	2,279	3,939
93.45	2,311	4,054
93.50	2,343	4,171
93.55	2,375	4,288
93.60	2,407	4,408
93.65	2,439	4,529
93.70	2,471	4,652
93.75	2,503	4,776
93.80	2,535	4,902
93.85	2,567	5,030
93.90	2,599	5,159
93.95	2,631	5,290
94.00	2,663	5,422
94.05	2,698	5,556
94.10	2,734	5,692
94.15	2,770	5,829
94.20	2,805	5,969
94.25	2,841	6,110
94.30	2,876	6,253
94.35	2,911	6,398
94.40	2,947	6,544
94.45	2,983	6,692
94.50	3,018	6,842
94.55	3,053	6,994
94.60	3,089	7,148
94.65	3,125	7,303
94.70	3,160	7,460
94.75	3,196	7,619
94.80	**3,231**	**7,780**

Summary for Pond SW-C: Curtain Drain (SWM-C)

Inflow Area = 73,097 sf, 11.74% Impervious, Inflow Depth = 1.82" for 100-Year event
Inflow = 2.10 cfs @ 12.28 hrs, Volume= 11,097 cf
Outflow = 2.05 cfs @ 12.34 hrs, Volume= 10,515 cf, Atten= 3%, Lag= 3.7 min
Discarded = 0.00 cfs @ 11.92 hrs, Volume= 524 cf
Primary = 2.04 cfs @ 12.34 hrs, Volume= 9,991 cf
Routed to Link AP : Analysis Point
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 90.99' @ 12.34 hrs Surf.Area= 1,045 sf Storage= 1,503 cf

Plug-Flow detention time= 133.2 min calculated for 10,515 cf (95% of inflow)
Center-of-Mass det. time= 106.1 min (1,004.2 - 898.2)

Volume	Invert	Avail.Storage	Storage Description
#1	87.40'	3,804 cf	**2.50'W x 418.00'L x 9.10'H Prismatoid** 9,509 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	87.20'	**8.0" Round Outlet Pipe** L= 108.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 87.20' / 85.45' S= 0.0162 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Primary	89.75'	**4.0" Vert. Low flow orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	90.75'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	87.40'	**0.100 in/hr Exfiltration over Surface area**
#5	Secondary	96.00'	**200.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.00 cfs @ 11.92 hrs HW=87.49' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=2.01 cfs @ 12.34 hrs HW=90.99' (Free Discharge)
├**1=Outlet Pipe** (Passes 1.58 cfs of 2.78 cfs potential flow)
│└**3=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.58 cfs @ 1.62 fps)
└**2=Low flow orifice** (Orifice Controls 0.44 cfs @ 5.00 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.40' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-C: Curtain Drain (SWM-C)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
87.40	**1,045**	0
87.50	1,045	42
87.60	1,045	84
87.70	1,045	125
87.80	1,045	167
87.90	1,045	209
88.00	1,045	251
88.10	1,045	293
88.20	1,045	334
88.30	1,045	376
88.40	1,045	418
88.50	1,045	460
88.60	1,045	502
88.70	1,045	543
88.80	1,045	585
88.90	1,045	627
89.00	1,045	669
89.10	1,045	711
89.20	1,045	752
89.30	1,045	794
89.40	1,045	836
89.50	1,045	878
89.60	1,045	920
89.70	1,045	961
89.80	1,045	1,003
89.90	1,045	1,045
90.00	1,045	1,087
90.10	1,045	1,129
90.20	1,045	1,170
90.30	1,045	1,212
90.40	1,045	1,254
90.50	1,045	1,296
90.60	1,045	1,338
90.70	1,045	1,379
90.80	1,045	1,421
90.90	1,045	1,463
91.00	1,045	1,505
91.10	1,045	1,547
91.20	1,045	1,588
91.30	1,045	1,630
91.40	1,045	1,672
91.50	1,045	1,714
91.60	1,045	1,756
91.70	1,045	1,797
91.80	1,045	1,839
91.90	1,045	1,881
92.00	1,045	1,923
92.10	1,045	1,965
92.20	1,045	2,006
92.30	1,045	2,048
92.40	1,045	2,090
92.50	1,045	2,132
92.60	1,045	2,174
92.70	1,045	2,215
92.80	1,045	2,257
92.90	1,045	2,299
93.00	1,045	2,341
93.10	1,045	2,383
93.20	1,045	2,424
93.30	1,045	2,466
93.40	1,045	2,508
93.50	1,045	2,550
93.60	1,045	2,592
93.70	1,045	2,633
93.80	1,045	2,675
93.90	1,045	2,717
94.00	1,045	2,759
94.10	1,045	2,801
94.20	1,045	2,842
94.30	1,045	2,884
94.40	1,045	2,926
94.50	1,045	2,968
94.60	1,045	3,010
94.70	1,045	3,051
94.80	1,045	3,093
94.90	1,045	3,135
95.00	1,045	3,177
95.10	1,045	3,219
95.20	1,045	3,260
95.30	1,045	3,302
95.40	1,045	3,344
95.50	1,045	3,386
95.60	1,045	3,428
95.70	1,045	3,469
95.80	1,045	3,511
95.90	1,045	3,553
96.00	1,045	3,595
96.10	1,045	3,637
96.20	1,045	3,678
96.30	1,045	3,720
96.40	1,045	3,762
96.50	1,045	**3,804**

Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 12,462 sf, 10.46% Impervious, Inflow Depth = 1.61" for 100-Year event
Inflow = 0.36 cfs @ 12.17 hrs, Volume= 1,670 cf
Outflow = 0.06 cfs @ 13.54 hrs, Volume= 1,670 cf, Atten= 84%, Lag= 82.1 min
Discarded = 0.06 cfs @ 13.54 hrs, Volume= 1,670 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 98.87' @ 13.54 hrs Surf.Area= 506 sf Storage= 562 cf

Plug-Flow detention time= 230.7 min calculated for 1,670 cf (100% of inflow)
Center-of-Mass det. time= 230.6 min (1,129.6 - 899.0)

Volume	Invert	Avail.Storage	Storage Description
#1	91.60'	1,595 cf	**Drywell & Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.60	31	0	0
92.60	44	38	38
93.60	44	44	82
94.60	44	44	126
95.60	44	44	170
96.60	44	44	214
97.49	4	21	235
97.50	29	0	235
98.00	145	44	279
99.00	560	353	631
100.00	1,135	848	1,479
100.10	1,187	116	1,595

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.60'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	99.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.06 cfs @ 13.54 hrs HW=98.87' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.60' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond SW-D: Drywell & Basin (SWM-D)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.60	31	0
91.70	32	3
91.80	34	6
91.90	35	10
92.00	36	13
92.10	38	17
92.20	39	21
92.30	40	25
92.40	41	29
92.50	43	33
92.60	44	38
92.70	44	42
92.80	44	46
92.90	44	51
93.00	44	55
93.10	44	60
93.20	44	64
93.30	44	68
93.40	44	73
93.50	44	77
93.60	44	82
93.70	44	86
93.80	44	90
93.90	44	95
94.00	44	99
94.10	44	104
94.20	44	108
94.30	44	112
94.40	44	117
94.50	44	121
94.60	44	126
94.70	44	130
94.80	44	134
94.90	44	139
95.00	44	143
95.10	44	148
95.20	44	152
95.30	44	156
95.40	44	161
95.50	44	165
95.60	44	170
95.70	44	174
95.80	44	178
95.90	44	183
96.00	44	187
96.10	44	192
96.20	44	196
96.30	44	200
96.40	44	205
96.50	44	209
96.60	44	214
96.70	40	218
96.80	35	221
96.90	31	225
97.00	26	228
97.10	22	230
97.20	17	232
97.30	13	233
97.40	8	234
97.50	29	235
97.60	52	239
97.70	75	245
97.80	99	254
97.90	122	265
98.00	145	279
98.10	186	295
98.20	228	316
98.30	269	341
98.40	311	370
98.50	353	403
98.60	394	440
98.70	435	482
98.80	477	527
98.90	518	577
99.00	560	631
99.10	617	690
99.20	675	755
99.30	732	825
99.40	790	901
99.50	848	983
99.60	905	1,071
99.70	962	1,164
99.80	1,020	1,263
99.90	1,077	1,368
100.00	1,135	1,479
100.10	**1,187**	**1,595**

Summary for Link AP: Analysis Point

Inflow Area = 191,150 sf, 31.86% Impervious, Inflow Depth = 3.75" for 100-Year event
Inflow = 10.77 cfs @ 12.32 hrs, Volume= 59,728 cf
Primary = 10.77 cfs @ 12.32 hrs, Volume= 59,728 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs