STORMWATER REPORT
AND
DRAINAGE CALCULATIONS

SITE PLAN
THIRD STREET

in

Ayer, MA

February 20, 2024

File No. 24001.00

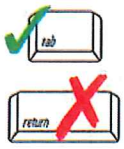
STORMWATER CHECKLIST

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

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[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

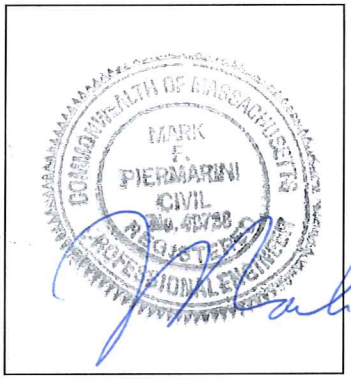
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



2-20-24

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

- [X] New development
- [ ] Redevelopment
- [ ] Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☒ Other (describe): SUBSURFACE INFILTRATION SYSTEMS

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

- ☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- ☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- ☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

- ☒ Soil Analysis provided.
- ☒ Required Recharge Volume calculation provided.
- ☐ Required Recharge volume reduced through use of the LID site Design Credits.
- ☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.
  - ☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]
- ☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.
- ☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- ☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- ☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
  - ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
  - ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
  - ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- ☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- ☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality N/A - HOUSING DEVELOPMENT WITH LESS THAN 4 LOTS

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs) N/A

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

N/A

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☒ The project is ***not*** covered by a NPDES Construction General Permit. LESS THAN 1 ACRE OF DISTURBANCE

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

STORMWATER REPORT

STORMWATER REPORT

SITE PLAN

THIRD STREET

in

Ayer, MA

February 20, 2024

Stormwater Report – Third Street

Introduction

This Stormwater Report has been prepared in accordance with the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Standards and the Stormwater Management Handbook.

The project will consist of the construction of three single family homes with associated driveways, site grading and utilities on Third Street in Ayer, MA.

Project Type

The project will consist of the construction of three single family homes with associated driveways, site grading and utilities on Third Street in Ayer, MA.

The project will be designed as a new development.

LID Measures

The LID measures considered are minimizing disturbance to existing trees, wetland areas, floodplain and site design practices including subsurface drainage systems.

Standard 1: No New Untreated Discharges

The project is designed so that there are no new stormwater point discharges that discharge untreated stormwater into, or cause erosion to, wetlands and waters. The site drainage system will consist of subsurface drainage systems.

Standard 2: Peak Rate Attenuation:

The project drainage system was designed to attenuate the peak discharge rates and volumes of runoff from the site. As stated in the "Drainage Calculations", through the use of the subsurface drainage systems the runoff rates and volumes for the post-development conditions can be effectively maintained at or below pre-development runoff rates and volumes off site. The calculations considered the 2, 10, 25 and 100 year, 24 hour storm events. The calculations were completed using NRCS Technical Release 55.

Standard 3: Recharge

The site is located in an area of Merrimac-Urban Land complex (NRCS Soil Type A) and Birchwood Soils (NRCS Soil Type A/D). The Soil type designations are from the NRCS web site soil survey. Soil test pits were performed and confirmed the soils as a sand (Type A). The proposed subsurface drainage systems will provide a total of approximately 1,615 C.F. of storage for recharge of runoff (as shown in the attached Recharge Volume Calculations within the drainage calculations). Therefore, standard 3 has been met.

Standard 4: Water Quality

The project consists of the construction of three single family homes with associated driveways, site grading and utilities. The proposed area drains accept drainage from the lots only. The Massachusetts Department of Environmental Protection does not apply to a single family house. A single family home use is considered to produce "clean runoff". Therefore, the standard of 80% TSS removal has been met.

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

The project area does not contain a land use with higher potential pollutant loads.

Standard 6: Critical Areas

The stormwater management system proposed for the site does not discharge to a critical area.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

The proposed project is not a redevelopment project.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

The site plans for the proposed subdivision indicate the proposed locations of the erosion controls and other information as required addressing the construction period erosion and sediment control. Additional information regarding the construction period protection, inspection, and maintenance of the stormwater management system can be found in the attached document "Stormwater Management System Inspection and Maintenance Plan – Site Plan, Third Street, Ayer, MA" dated February 20, 2024.

The construction on the site will result in the disturbance of less than one acre of land therefore an NPDES Permit will not be required for this project.

Standard 9: Operation and Maintenance Plan

Items required under Standard 9 are provided in the attached document"Stormwater Management System Inspection and Maintenance Plan – Site Plan, Third Street, Ayer, MA" dated February 20, 2024. This document includes information pertaining to the protection, inspection, and maintenance of the installed stormwater management system both during and after the construction period.

Standard 10: Prohibition of Illicit Discharges

The proposed Third Street project does not include any illicit discharges of stormwater or other source of illicit discharge. No use of the site will include discharges to the stormwater management system that include any wastewater discharges or discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease.

The project site plans show the locations of all components of the stormwater management system.

_____ _____

Owner's Signature Date

Registered Professional Engineers Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Signature

2-20-24

Date

DRAINAGE CALCULATIONS

DRAINAGE DATA

PROJECT:	PROJECT NO.:	DATE:
Third Street	24001	2/20/24

OBJECTIVE:

Calculate the overland storm water flows for the pre-development and post-development conditions and design a drainage system to control the peak runoff rates and volumes from the site for the 2, 10, 25 and 100 year storm events.

STORM FREQUENCY:

2, 10, 25 & 100 year storm events

SOIL TYPE/GROUP:

Merrimac – Urban Land Complex (626B) (Soil Type A)
Birchwood (320B) (Soil Type A/D)

Soil testing on the site confirms a medium to course sand. (Soil Type A)
(Refer to soil testing logs on the site plan)

CALCULATION METHOD:

SCS Method - TR 55

DRAINAGE SUMMARY:

Refer to next sheet.

INTRODUCTION

The overland flow drainage calculations were performed using the SCS method and TR-55.

The project area for the Aho Development Corporation site is approximately 0.85 acres located on Third Street in Ayer, MA. The existing property (1.90 acres) consists of a single family home with lawn and driveway and a large woodland area. The proposed project will consist of the construction of three single family homes with associated driveways, lawn areas, site grading and utilities. The project area consists of steep to moderate slopes which drain toward the pond area.

The drainage system will consist of roof drains, subsurface roof infiltration systems and area drains. The proposed subsurface roof infiltration systems have been designed to infiltrate the required amount of stormwater to meet standard 3 of the stormwater management regulations.

The drainage system has been designed in accordance with the Massachusetts DEP Storm Water Standards. The following Best Management Practices (BMP) have been used on the site: Subsurface roof infiltration systems.

OBJECTIVE

Runoff rates and volumes for the watersheds listed in the following tables have been calculated for the 2, 10, 25 and 100-year storms. The subsurface roof infiltration systems have been designed to maintain pre-development rates and volumes of runoff at or below the post-development conditions.

DRAINAGE SUMMARY:

Tables I through IV below are a summary of pre-development and post-development peak runoff rates and volumes to the design point. (please refer to the "Pre- & Post-Development subcatchment" maps for delineation of these areas).

The pre-development design points and post development design points are at the same location on each subcatchment map. The design point is at the south end of the property.

TABLE I

PRE-DEVELOPMENT CONDITIONS				
WATERSHED	*FLOW (CFS)*			
	2 year	10 year	25 year	100 year
DP	0.00	0.00	0.02	0.07

TABLE II

POST-DEVELOPMENT CONDITIONS					
WATERSHED	*COMPARED TO PRE-DEVELOPMENT WATERSHED*	*FLOW (CFS)*			
		2 year	10 year	25 year	100 year
DP	(DP)	0.00 (0.00)	0.00 (0.00)	0.01 (0.02)	0.05 (0.07)

(CFS) - CUBIC FEET PER SECOND

TABLE III

PRE-DEVELOPMENT CONDITIONS				
WATERSHED	*VOLUME (AF)*			
	2 year	10 year	25 year	100 year
DP	0.000	0.000	0.007	0.026

TABLE IV

POST-DEVELOPMENT CONDITIONS					
WATERSHED	*COMPARED TO PRE-DEVELOPMENT WATERSHED*	*VOLUME (AF)*			
		2 year	10 year	25 year	100 year
DP	(DP)	0.000 (0.000)	0.000 (0.000)	0.005 (0.007)	0.021 (0.026)

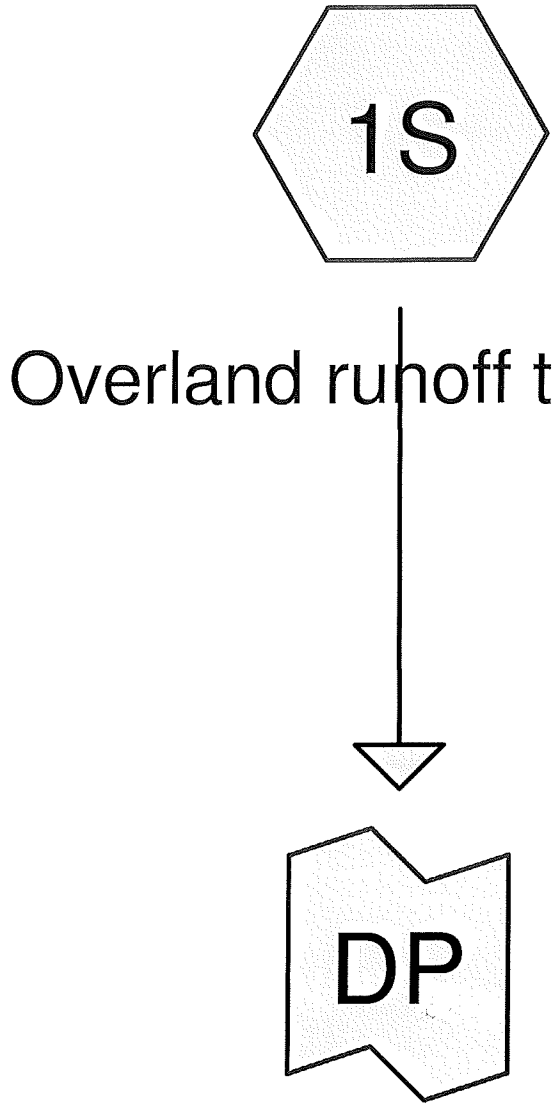
(AF) - ACRE FEET

CONCLUSION

Through the use of the proposed subsurface roof infiltration systems the runoff rates and volumes off site for the post-development condition can be effectively maintained at or below the pre-development runoff rates and volumes.

EXISTING CONDITIONS

2 YEAR STORM



Design Point

Subcat Reach Pond Link

Routing Diagram for 33 Third St - Ayer Pre-Development
Prepared by Mark Piermarini, Printed 2/16/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.150	39	>75% Grass cover, Good, HSG A (1S)
0.050	98	Impervious Area, HSG A (1S)
1.470	30	Woods, Good, HSG A (1S)
1.670	**33**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.670	HSG A	1S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.670		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.150	0.000	0.000	0.000	0.000	0.150	>75% Grass cover, Good	1S
0.050	0.000	0.000	0.000	0.000	0.050	Impervious Area	1S
1.470	0.000	0.000	0.000	0.000	1.470	Woods, Good	1S
1.670	**0.000**	**0.000**	**0.000**	**0.000**	**1.670**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Overland runoff to south Runoff Area=1.670 ac 2.99% Impervious Runoff Depth=0.00"
Flow Length=306' Tc=6.1 min CN=33 Runoff=0.00 cfs 0.000 af

Link DP: Design Point Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.670 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.00"
97.01% Pervious = 1.620 ac 2.99% Impervious = 0.050 ac

Summary for Subcatchment 1S: Overland runoff to south

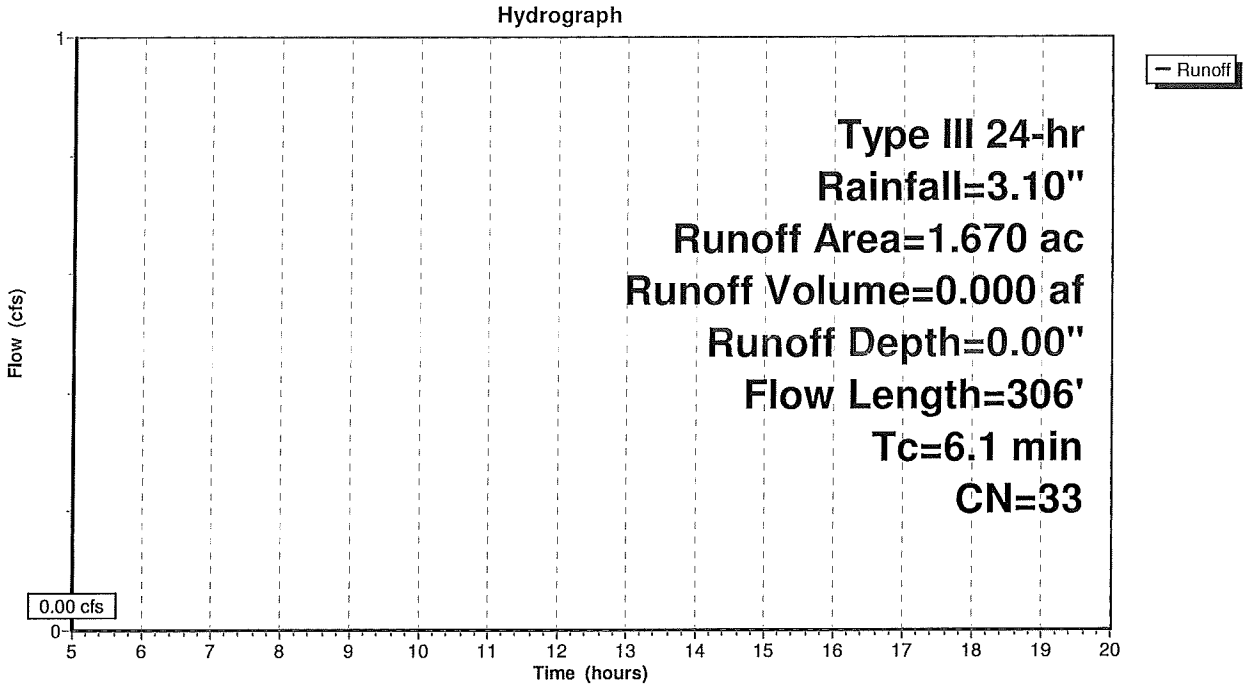
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link DP : Design Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.10"

	Area (ac)	CN	Description
*	0.050	98	Impervious Area, HSG A
	0.150	39	>75% Grass cover, Good, HSG A
	1.470	30	Woods, Good, HSG A
	1.670	33	Weighted Average
	1.620		97.01% Pervious Area
	0.050		2.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	50	0.1000	0.28		**Sheet Flow, Path 1** Grass: Short n= 0.150 P2= 3.10"
0.1	20	0.0250	3.21		**Shallow Concentrated Flow, Path 2** Paved Kv= 20.3 fps
1.1	104	0.1000	1.58		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
1.6	98	0.0410	1.01		**Shallow Concentrated Flow, Path 4** Woodland Kv= 5.0 fps
0.3	34	0.1176	1.71		**Shallow Concentrated Flow, Path 5** Woodland Kv= 5.0 fps
6.1	306	Total			

Subcatchment 1S: Overland runoff to south

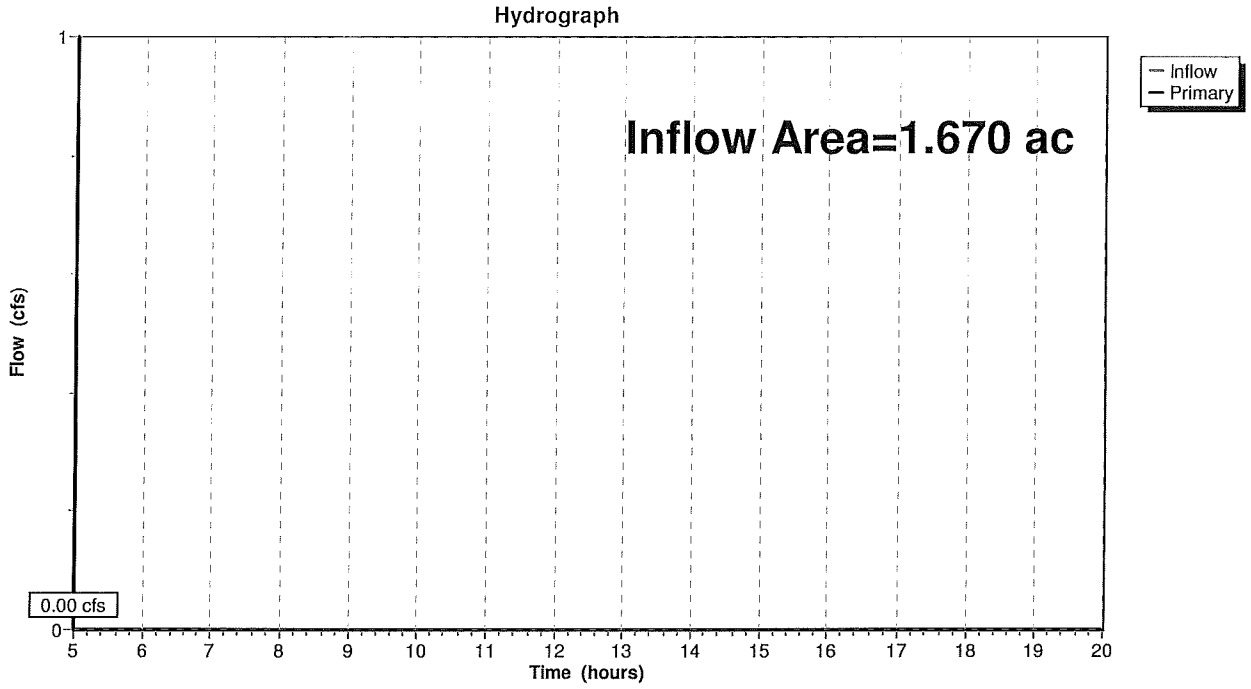


Summary for Link DP: Design Point

Inflow Area = 1.670 ac, 2.99% Impervious, Inflow Depth = 0.00"
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP: Design Point



EXISTING CONDITIONS

10 YEAR STORM

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Overland runoff to south Runoff Area=1.670 ac 2.99% Impervious Runoff Depth>0.00"
Flow Length=306' Tc=6.1 min CN=33 Runoff=0.00 cfs 0.000 af

Link DP: Design Point Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.670 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.00"
97.01% Pervious = 1.620 ac 2.99% Impervious = 0.050 ac

Summary for Subcatchment 1S: Overland runoff to south

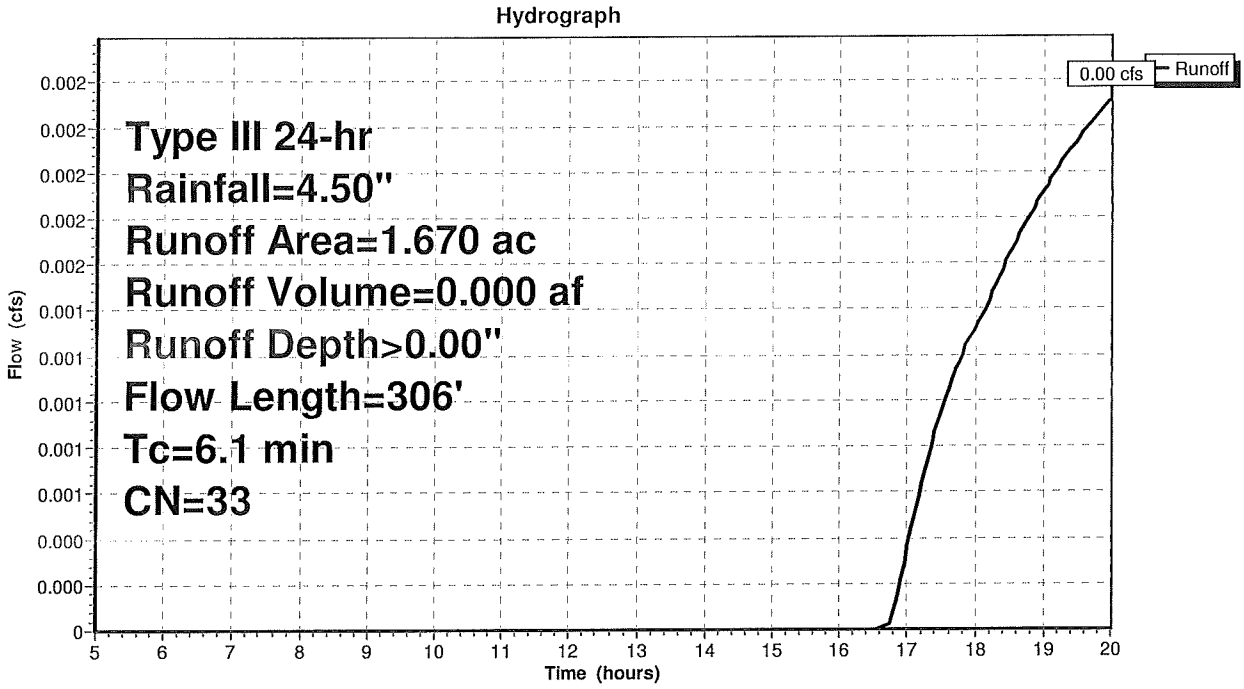
Runoff = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Depth> 0.00"
Routed to Link DP : Design Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

	Area (ac)	CN	Description
*	0.050	98	Impervious Area, HSG A
	0.150	39	>75% Grass cover, Good, HSG A
	1.470	30	Woods, Good, HSG A
	1.670	33	Weighted Average
	1.620		97.01% Pervious Area
	0.050		2.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	50	0.1000	0.28		**Sheet Flow, Path 1** Grass: Short n= 0.150 P2= 3.10"
0.1	20	0.0250	3.21		**Shallow Concentrated Flow, Path 2** Paved Kv= 20.3 fps
1.1	104	0.1000	1.58		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
1.6	98	0.0410	1.01		**Shallow Concentrated Flow, Path 4** Woodland Kv= 5.0 fps
0.3	34	0.1176	1.71		**Shallow Concentrated Flow, Path 5** Woodland Kv= 5.0 fps
6.1	306	Total			

Subcatchment 1S: Overland runoff to south

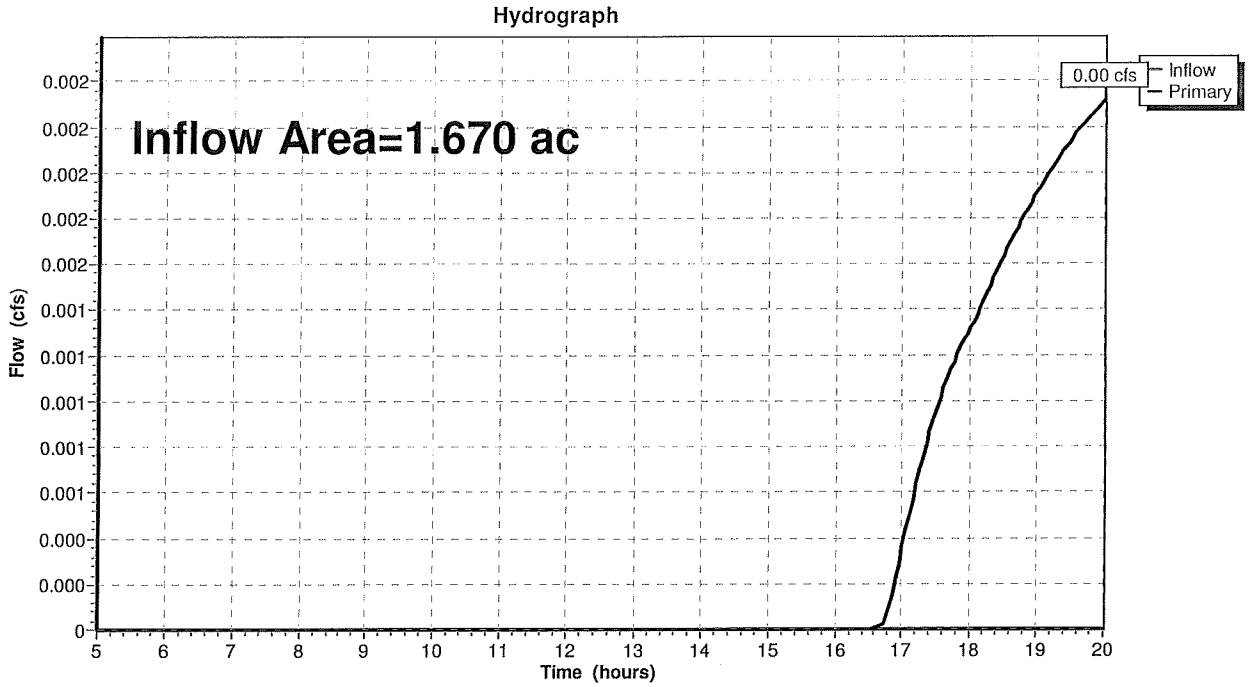


Summary for Link DP: Design Point

Inflow Area = 1.670 ac, 2.99% Impervious, Inflow Depth > 0.00"
Inflow = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP: Design Point



EXISTING CONDITIONS

25 YEAR STORM

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Overland runoff to south Runoff Area=1.670 ac 2.99% Impervious Runoff Depth>0.05"
Flow Length=306' Tc=6.1 min CN=33 Runoff=0.02 cfs 0.007 af

Link DP: Design Point Inflow=0.02 cfs 0.007 af
Primary=0.02 cfs 0.007 af

Total Runoff Area = 1.670 ac Runoff Volume = 0.007 af Average Runoff Depth = 0.05"
97.01% Pervious = 1.620 ac 2.99% Impervious = 0.050 ac

Summary for Subcatchment 1S: Overland runoff to south

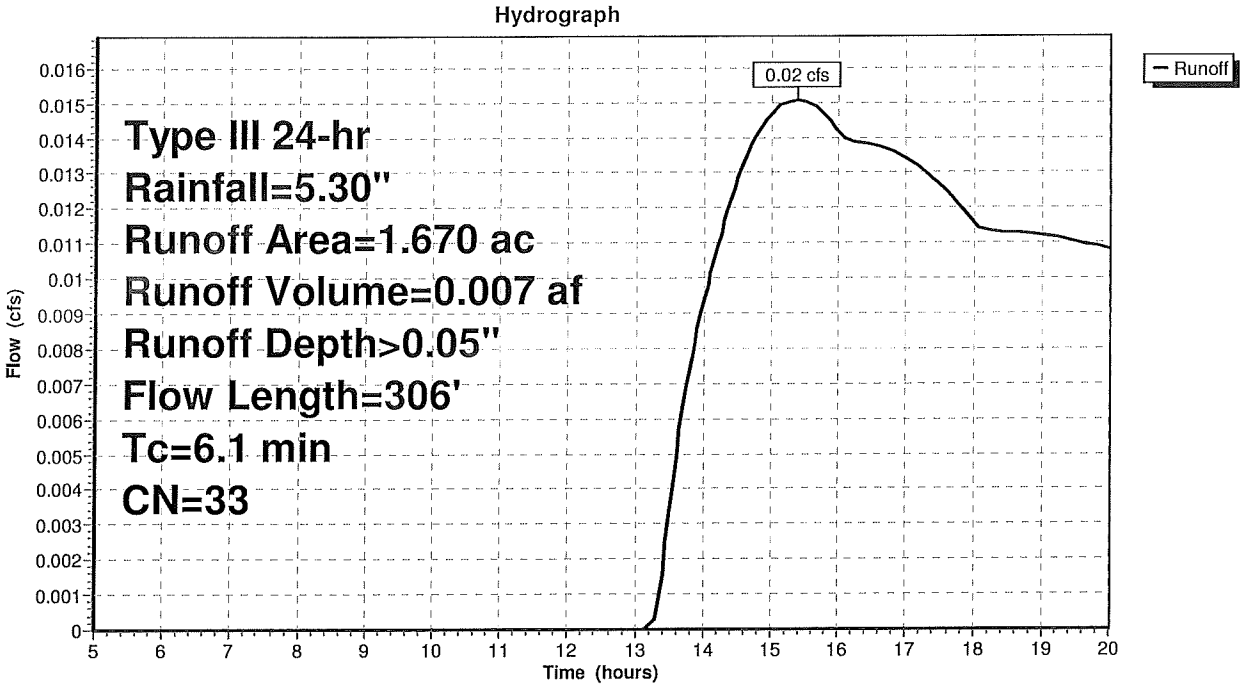
Runoff = 0.02 cfs @ 15.38 hrs, Volume= 0.007 af, Depth> 0.05"
Routed to Link DP : Design Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

	Area (ac)	CN	Description
*	0.050	98	Impervious Area, HSG A
	0.150	39	>75% Grass cover, Good, HSG A
	1.470	30	Woods, Good, HSG A
	1.670	33	Weighted Average
	1.620		97.01% Pervious Area
	0.050		2.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	50	0.1000	0.28		**Sheet Flow, Path 1** Grass: Short n= 0.150 P2= 3.10"
0.1	20	0.0250	3.21		**Shallow Concentrated Flow, Path 2** Paved Kv= 20.3 fps
1.1	104	0.1000	1.58		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
1.6	98	0.0410	1.01		**Shallow Concentrated Flow, Path 4** Woodland Kv= 5.0 fps
0.3	34	0.1176	1.71		**Shallow Concentrated Flow, Path 5** Woodland Kv= 5.0 fps
6.1	306	Total			

Subcatchment 1S: Overland runoff to south

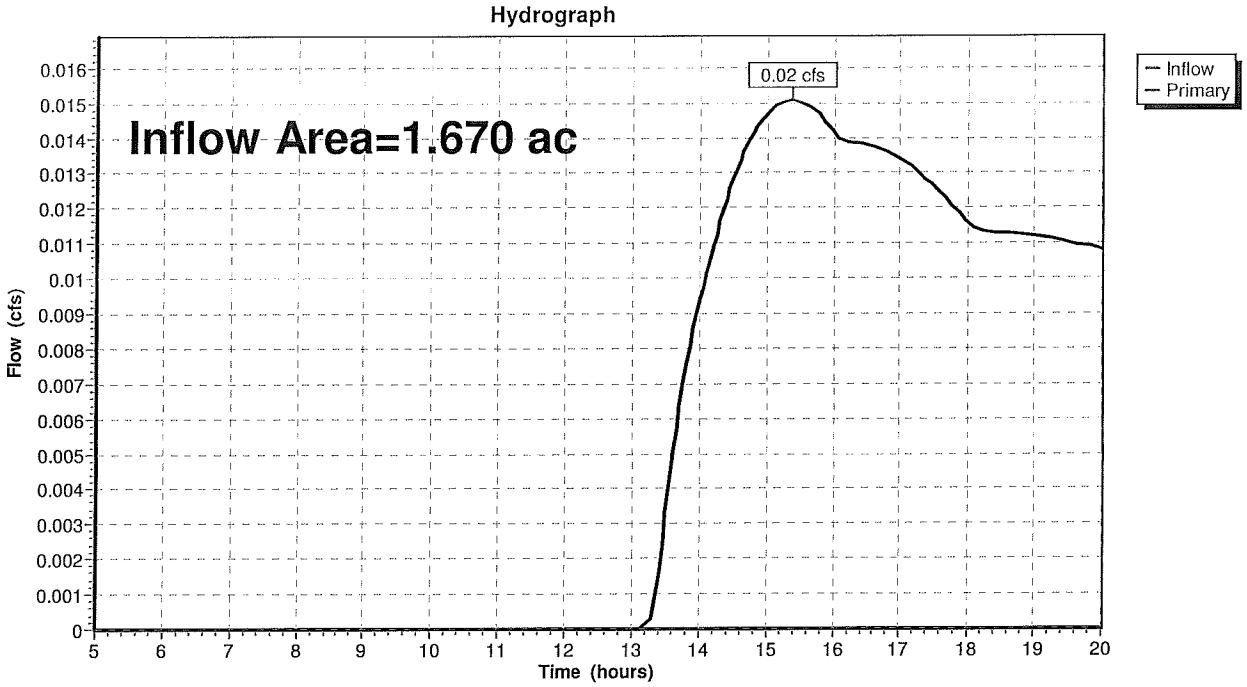


Summary for Link DP: Design Point

Inflow Area = 1.670 ac, 2.99% Impervious, Inflow Depth > 0.05"
Inflow = 0.02 cfs @ 15.38 hrs, Volume= 0.007 af
Primary = 0.02 cfs @ 15.38 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP: Design Point



EXISTING CONDITIONS

100 YEAR STORM

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Overland runoff to south Runoff Area=1.670 ac 2.99% Impervious Runoff Depth>0.19"
Flow Length=306' Tc=6.1 min CN=33 Runoff=0.07 cfs 0.026 af

Link DP: Design Point Inflow=0.07 cfs 0.026 af
Primary=0.07 cfs 0.026 af

Total Runoff Area = 1.670 ac Runoff Volume = 0.026 af Average Runoff Depth = 0.19"
97.01% Pervious = 1.620 ac 2.99% Impervious = 0.050 ac

Summary for Subcatchment 1S: Overland runoff to south

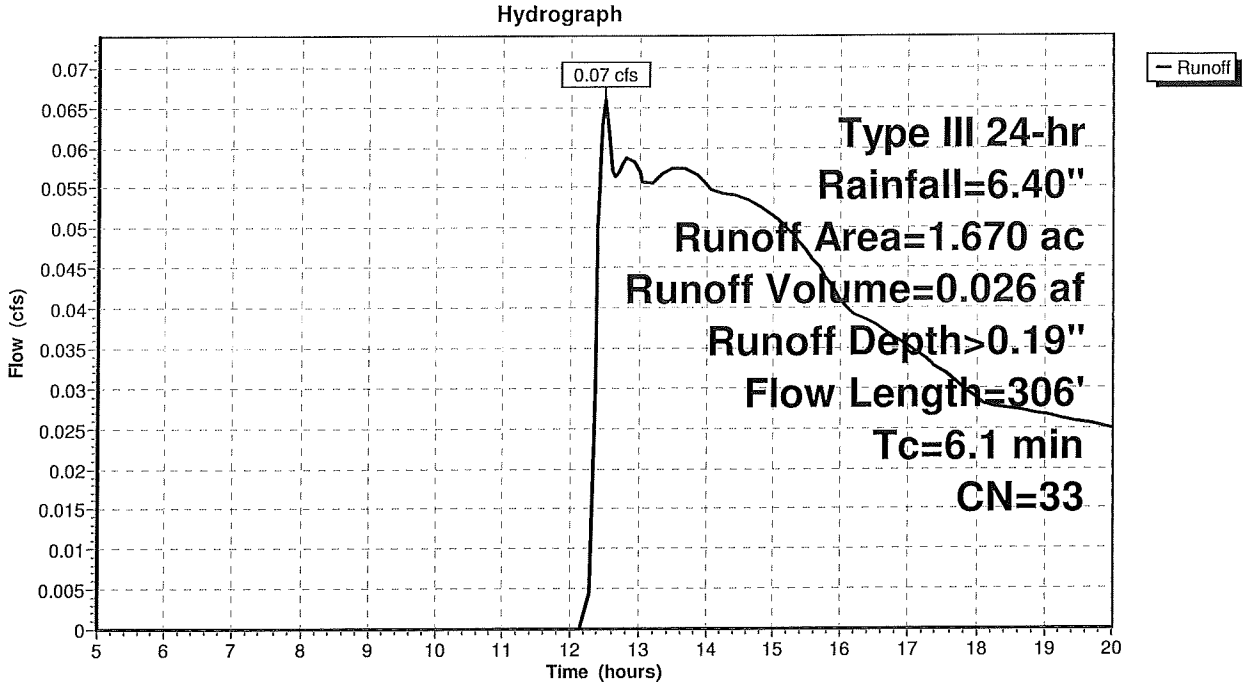
Runoff = 0.07 cfs @ 12.50 hrs, Volume= 0.026 af, Depth> 0.19"
Routed to Link DP : Design Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.40"

	Area (ac)	CN	Description
*	0.050	98	Impervious Area, HSG A
	0.150	39	>75% Grass cover, Good, HSG A
	1.470	30	Woods, Good, HSG A
	1.670	33	Weighted Average
	1.620		97.01% Pervious Area
	0.050		2.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	50	0.1000	0.28		**Sheet Flow, Path 1** Grass: Short n= 0.150 P2= 3.10"
0.1	20	0.0250	3.21		**Shallow Concentrated Flow, Path 2** Paved Kv= 20.3 fps
1.1	104	0.1000	1.58		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
1.6	98	0.0410	1.01		**Shallow Concentrated Flow, Path 4** Woodland Kv= 5.0 fps
0.3	34	0.1176	1.71		**Shallow Concentrated Flow, Path 5** Woodland Kv= 5.0 fps
6.1	306	Total			

Subcatchment 1S: Overland runoff to south

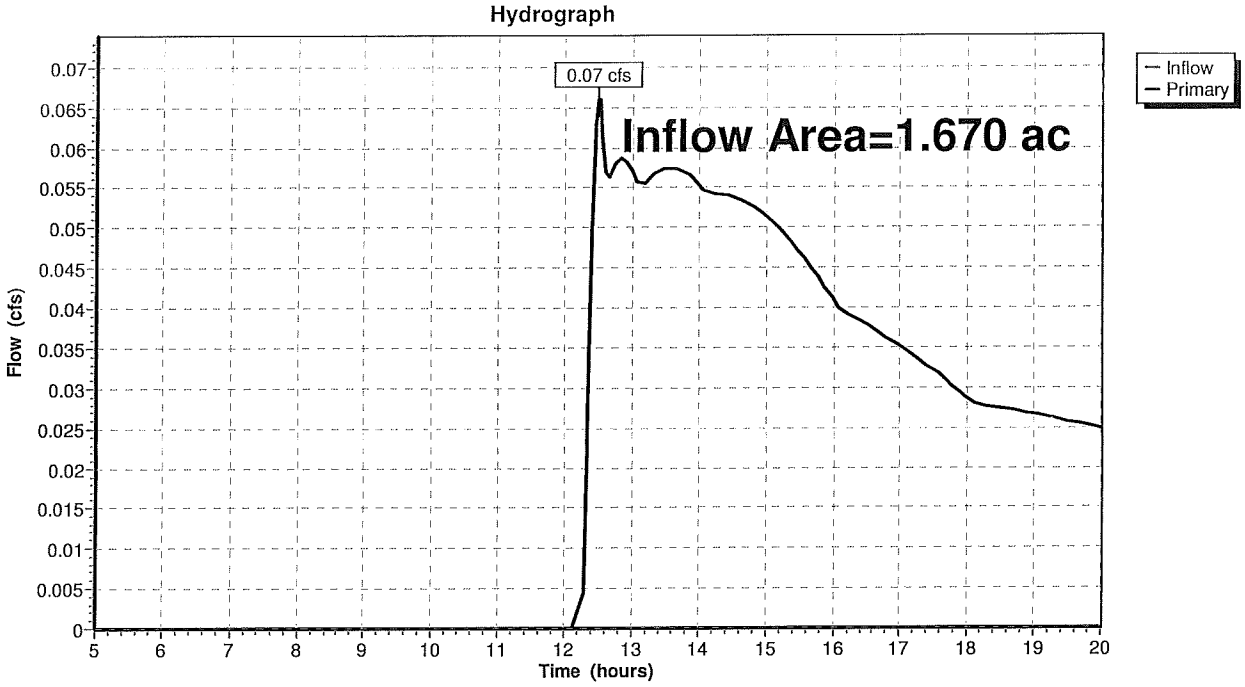


Summary for Link DP: Design Point

Inflow Area = 1.670 ac, 2.99% Impervious, Inflow Depth > 0.19"
Inflow = 0.07 cfs @ 12.50 hrs, Volume= 0.026 af
Primary = 0.07 cfs @ 12.50 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

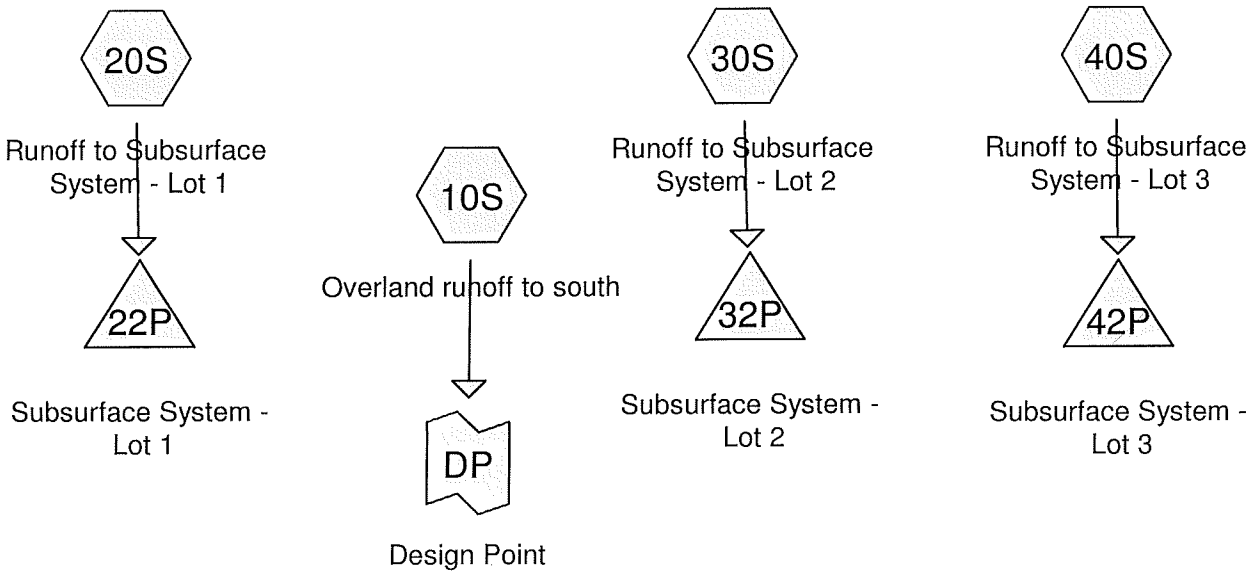
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP: Design Point



PROPOSED CONDITIONS

2 YEAR STORM



Subcat Reach Pond Link

Routing Diagram for 33 Third St - Ayer Post Development
Prepared by Mark Piermarini, Printed 2/16/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.460	39	>75% Grass cover, Good, HSG A (10S, 30S, 40S)
0.010	98	Impervious Area, HSG A (10S)
0.130	98	Roof and Driveway, HSG A (30S, 40S)
0.040	98	Roofs, HSG A (20S)
1.030	30	Woods, Good, HSG A (10S)
1.670	**40**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.670	HSG A	10S, 20S, 30S, 40S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.670		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.460	0.000	0.000	0.000	0.000	0.460	>75% Grass cover, Good	10S, 30S, 40S
0.010	0.000	0.000	0.000	0.000	0.010	Impervious Area	10S
0.130	0.000	0.000	0.000	0.000	0.130	Roof and Driveway	30S, 40S
0.040	0.000	0.000	0.000	0.000	0.040	Roofs	20S
1.030	0.000	0.000	0.000	0.000	1.030	Woods, Good	10S
1.670	**0.000**	**0.000**	**0.000**	**0.000**	**1.670**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: Overland runoff to south Runoff Area=1.350 ac 0.74% Impervious Runoff Depth=0.00"
Flow Length=214' Tc=11.9 min CN=33 Runoff=0.00 cfs 0.000 af

Subcatchment 20S: Runoff to Subsurface Runoff Area=0.040 ac 100.00% Impervious Runoff Depth>2.68"
Flow Length=90' Tc=5.0 min CN=98 Runoff=0.12 cfs 0.009 af

Subcatchment 30S: Runoff to Subsurface Runoff Area=0.180 ac 44.44% Impervious Runoff Depth>0.49"
Flow Length=76' Tc=5.0 min CN=65 Runoff=0.09 cfs 0.007 af

Subcatchment 40S: Runoff to Subsurface Runoff Area=0.100 ac 50.00% Impervious Runoff Depth>0.65"
Flow Length=95' Tc=5.0 min CN=69 Runoff=0.07 cfs 0.005 af

Pond 22P: Subsurface System - Lot 1 Peak Elev=233.39' Storage=71 cf Inflow=0.12 cfs 0.009 af
Outflow=0.04 cfs 0.009 af

Pond 32P: Subsurface System - Lot 2 Peak Elev=224.82' Storage=11 cf Inflow=0.09 cfs 0.007 af
Outflow=0.08 cfs 0.007 af

Pond 42P: Subsurface System - Lot 3 Peak Elev=224.52' Storage=6 cf Inflow=0.07 cfs 0.005 af
Outflow=0.07 cfs 0.005 af

Link DP: Design Point Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.670 ac Runoff Volume = 0.022 af Average Runoff Depth = 0.16"
89.22% Pervious = 1.490 ac 10.78% Impervious = 0.180 ac

Summary for Subcatchment 10S: Overland runoff to south

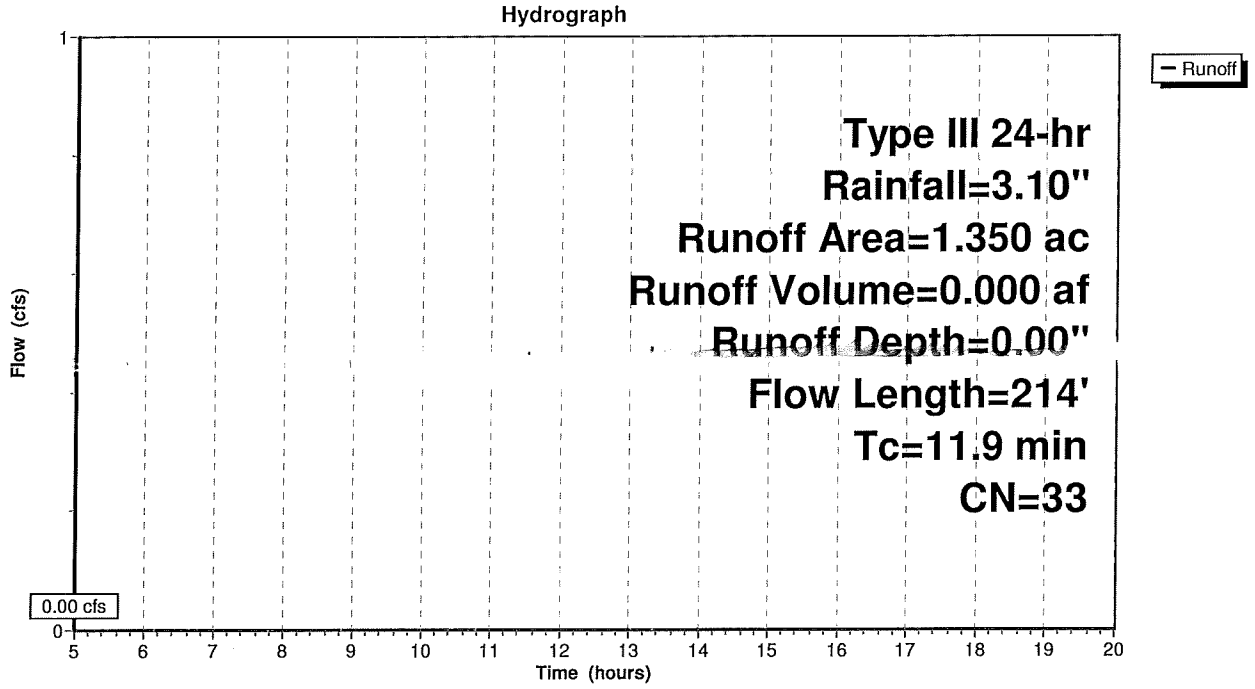
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link DP : Design Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.10"

	Area (ac)	CN	Description
*	0.010	98	Impervious Area, HSG A
	0.310	39	>75% Grass cover, Good, HSG A
	1.030	30	Woods, Good, HSG A
	1.350	33	Weighted Average
	1.340		99.26% Pervious Area
	0.010		0.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.10"
3.5	130	0.0154	0.62		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
0.3	34	0.1176	1.71		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
11.9	214	Total			

Subcatchment 10S: Overland runoff to south



Hydrograph for Subcatchment 10S: Overland runoff to south

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	**0.00**	**0.00**	18.25	2.89	0.00	0.00
5.25	0.19	0.00	0.00	18.50	2.90	0.00	0.00
5.50	0.20	0.00	0.00	18.75	2.91	0.00	0.00
5.75	0.21	0.00	0.00	19.00	2.92	0.00	0.00
6.00	0.22	0.00	0.00	19.25	2.94	0.00	0.00
6.25	0.24	0.00	0.00	19.50	2.95	0.00	0.00
6.50	0.25	0.00	0.00	19.75	2.96	0.00	0.00
6.75	0.26	0.00	0.00	20.00	**2.97**	0.00	0.00
7.00	0.28	0.00	0.00				
7.25	0.30	0.00	0.00				
7.50	0.32	0.00	0.00				
7.75	0.33	0.00	0.00				
8.00	0.35	0.00	0.00				
8.25	0.37	0.00	0.00				
8.50	0.40	0.00	0.00				
8.75	0.42	0.00	0.00				
9.00	0.45	0.00	0.00				
9.25	0.48	0.00	0.00				
9.50	0.51	0.00	0.00				
9.75	0.55	0.00	0.00				
10.00	0.59	0.00	0.00				
10.25	0.63	0.00	0.00				
10.50	0.67	0.00	0.00				
10.75	0.72	0.00	0.00				
11.00	0.78	0.00	0.00				
11.25	0.84	0.00	0.00				
11.50	0.92	0.00	0.00				
11.75	1.10	0.00	0.00				
12.00	1.55	0.00	0.00				
12.25	2.00	0.00	0.00				
12.50	2.18	0.00	0.00				
12.75	2.26	0.00	0.00				
13.00	2.32	0.00	0.00				
13.25	2.38	0.00	0.00				
13.50	2.43	0.00	0.00				
13.75	2.47	0.00	0.00				
14.00	2.51	0.00	0.00				
14.25	2.55	0.00	0.00				
14.50	2.59	0.00	0.00				
14.75	2.62	0.00	0.00				
15.00	2.65	0.00	0.00				
15.25	2.68	0.00	0.00				
15.50	2.70	0.00	0.00				
15.75	2.73	0.00	0.00				
16.00	2.75	0.00	0.00				
16.25	2.77	0.00	0.00				
16.50	2.78	0.00	0.00				
16.75	2.80	0.00	0.00				
17.00	2.82	0.00	0.00				
17.25	2.84	0.00	0.00				
17.50	2.85	0.00	0.00				
17.75	2.86	0.00	0.00				
18.00	2.88	0.00	0.00				

Summary for Subcatchment 20S: Runoff to Subsurface System - Lot 1

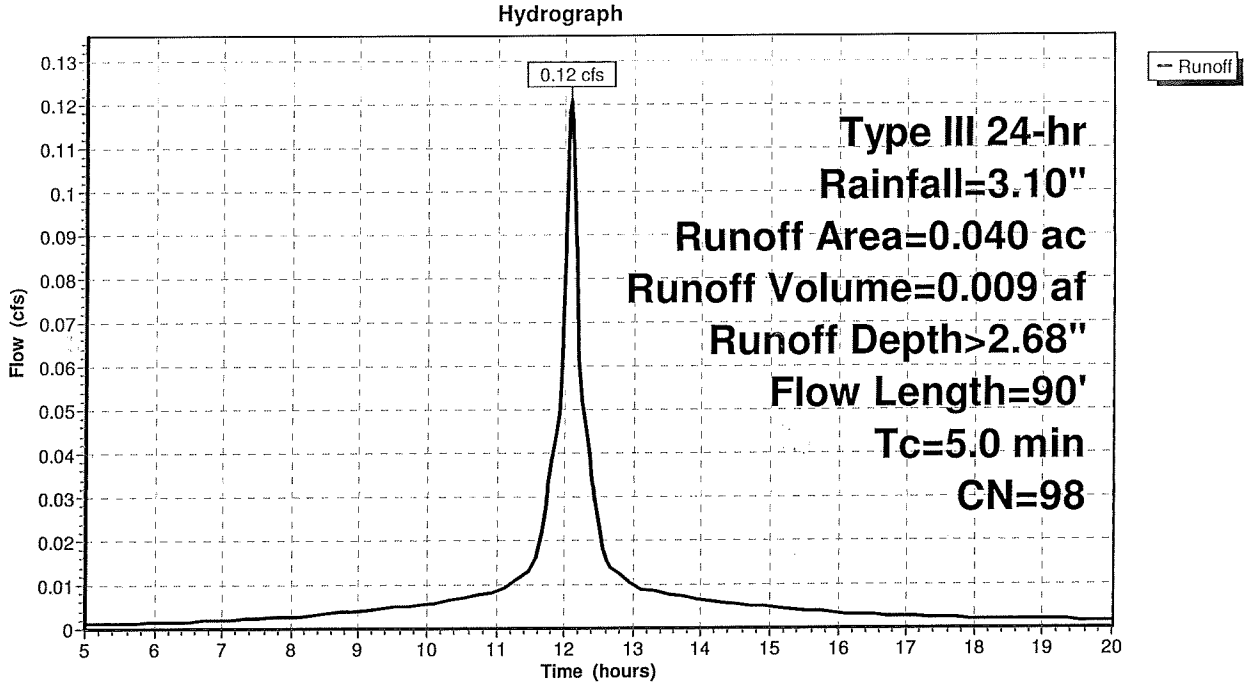
Runoff = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af, Depth> 2.68"
Routed to Pond 22P : Subsurface System - Lot 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.10"

Area (ac)	CN	Description
0.040	98	Roofs, HSG A
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	90		0.30		Direct Entry, Path 1

Subcatchment 20S: Runoff to Subsurface System - Lot 1



Hydrograph for Subcatchment 20S: Runoff to Subsurface System - Lot 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	0.05	0.00	18.25	2.89	2.66	0.00
5.25	0.19	0.06	0.00	18.50	2.90	2.67	0.00
5.50	0.20	0.07	0.00	18.75	2.91	2.68	0.00
5.75	0.21	0.08	0.00	19.00	2.92	2.69	0.00
6.00	0.22	0.09	0.00	19.25	2.94	2.70	0.00
6.25	0.24	0.10	0.00	19.50	2.95	2.71	0.00
6.50	0.25	0.11	0.00	19.75	2.96	2.72	0.00
6.75	0.26	0.12	0.00	20.00	**2.97**	**2.74**	0.00
7.00	0.28	0.13	0.00				
7.25	0.30	0.14	0.00				
7.50	0.32	0.16	0.00				
7.75	0.33	0.17	0.00				
8.00	0.35	0.19	0.00				
8.25	0.37	0.21	0.00				
8.50	0.40	0.23	0.00				
8.75	0.42	0.25	0.00				
9.00	0.45	0.27	0.00				
9.25	0.48	0.30	0.00				
9.50	0.51	0.33	0.00				
9.75	0.55	0.36	0.01				
10.00	0.59	0.40	0.01				
10.25	0.63	0.43	0.01				
10.50	0.67	0.48	0.01				
10.75	0.72	0.52	0.01				
11.00	0.78	0.57	0.01				
11.25	0.84	0.64	0.01				
11.50	0.92	0.72	0.01				
11.75	1.10	0.89	0.03				
12.00	1.55	1.33	**0.08**				
12.25	2.00	1.77	**0.05**				
12.50	2.18	1.95	0.02				
12.75	2.26	2.03	0.01				
13.00	2.32	2.10	0.01				
13.25	2.38	2.15	0.01				
13.50	2.43	2.20	0.01				
13.75	2.47	2.24	0.01				
14.00	2.51	2.28	0.01				
14.25	2.55	2.32	0.01				
14.50	2.59	2.36	0.01				
14.75	2.62	2.39	0.01				
15.00	2.65	2.42	0.00				
15.25	2.68	2.45	0.00				
15.50	2.70	2.47	0.00				
15.75	2.73	2.49	0.00				
16.00	2.75	2.52	0.00				
16.25	2.77	2.54	0.00				
16.50	2.78	2.55	0.00				
16.75	2.80	2.57	0.00				
17.00	2.82	2.59	0.00				
17.25	2.84	2.60	0.00				
17.50	2.85	2.62	0.00				
17.75	2.86	2.63	0.00				
18.00	2.88	2.65	0.00				

Summary for Subcatchment 30S: Runoff to Subsurface System - Lot 2

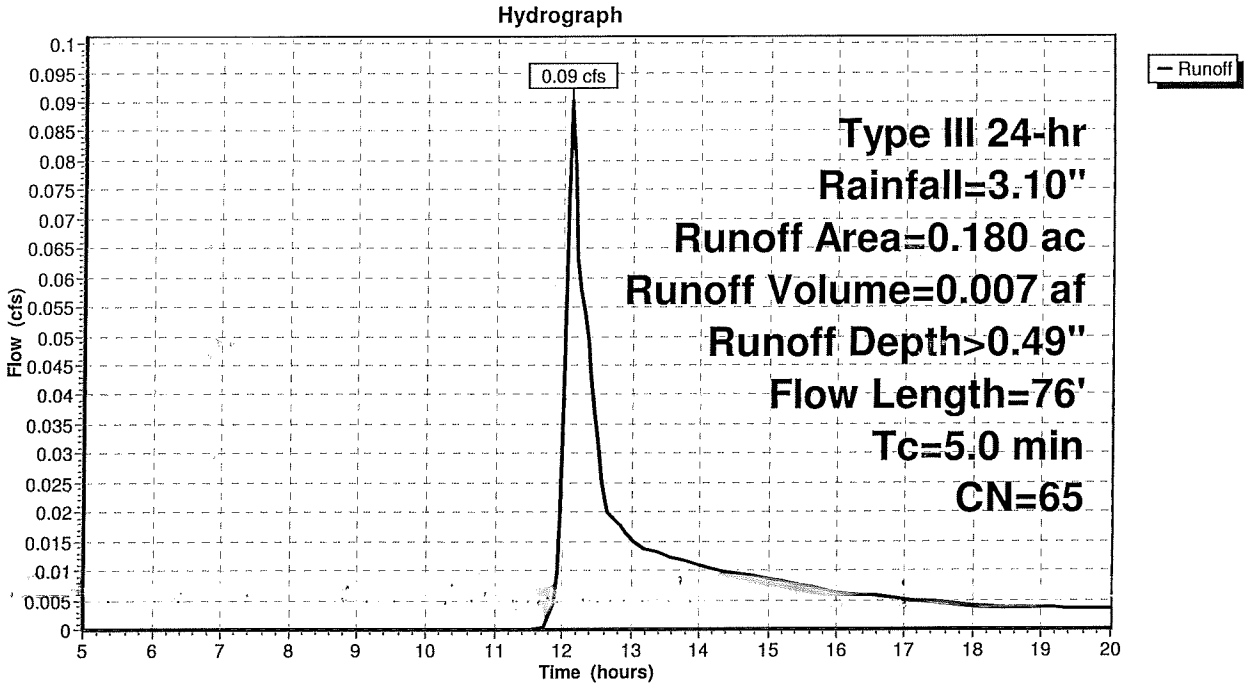
Runoff = 0.09 cfs @ 12.10 hrs, Volume= 0.007 af, Depth> 0.49"
Routed to Pond 32P : Subsurface System - Lot 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.10"

	Area (ac)	CN	Description
*	0.080	98	Roof and Driveway, HSG A
	0.100	39	>75% Grass cover, Good, HSG A
	0.180	65	Weighted Average
	0.100		55.56% Pervious Area
	0.080		44.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	76		0.25		**Direct Entry, Path 1**

Subcatchment 30S: Runoff to Subsurface System - Lot 2



Hydrograph for Subcatchment 30S: Runoff to Subsurface System - Lot 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	0.00	0.00	18.25	2.89	0.46	0.00
5.25	0.19	0.00	0.00	18.50	2.90	0.46	0.00
5.50	0.20	0.00	0.00	18.75	2.91	0.47	0.00
5.75	0.21	0.00	0.00	19.00	2.92	0.47	0.00
6.00	0.22	0.00	0.00	19.25	2.94	0.48	0.00
6.25	0.24	0.00	0.00	19.50	2.95	0.48	0.00
6.50	0.25	0.00	0.00	19.75	2.96	0.49	0.00
6.75	0.26	0.00	0.00	20.00	**2.97**	**0.49**	0.00
7.00	0.28	0.00	0.00				
7.25	0.30	0.00	0.00				
7.50	0.32	0.00	0.00				
7.75	0.33	0.00	0.00				
8.00	0.35	0.00	0.00				
8.25	0.37	0.00	0.00				
8.50	0.40	0.00	0.00				
8.75	0.42	0.00	0.00				
9.00	0.45	0.00	0.00				
9.25	0.48	0.00	0.00				
9.50	0.51	0.00	0.00				
9.75	0.55	0.00	0.00				
10.00	0.59	0.00	0.00				
10.25	0.63	0.00	0.00				
10.50	0.67	0.00	0.00				
10.75	0.72	0.00	0.00				
11.00	0.78	0.00	0.00				
11.25	0.84	0.00	0.00				
11.50	0.92	0.00	0.00				
11.75	1.10	0.00	0.00				
12.00	1.55	0.04	**0.04**				
12.25	2.00	0.13	**0.06**				
12.50	2.18	0.19	0.03				
12.75	2.26	0.21	0.02				
13.00	2.32	0.23	0.02				
13.25	2.38	0.25	0.01				
13.50	2.43	0.27	0.01				
13.75	2.47	0.29	0.01				
14.00	2.51	0.30	0.01				
14.25	2.55	0.32	0.01				
14.50	2.59	0.33	0.01				
14.75	2.62	0.34	0.01				
15.00	2.65	0.35	0.01				
15.25	2.68	0.37	0.01				
15.50	2.70	0.38	0.01				
15.75	2.73	0.39	0.01				
16.00	2.75	0.40	0.01				
16.25	2.77	0.40	0.01				
16.50	2.78	0.41	0.01				
16.75	2.80	0.42	0.01				
17.00	2.82	0.43	0.01				
17.25	2.84	0.43	0.00				
17.50	2.85	0.44	0.00				
17.75	2.86	0.45	0.00				
18.00	2.88	0.45	0.00				

Summary for Subcatchment 40S: Runoff to Subsurface System - Lot 3

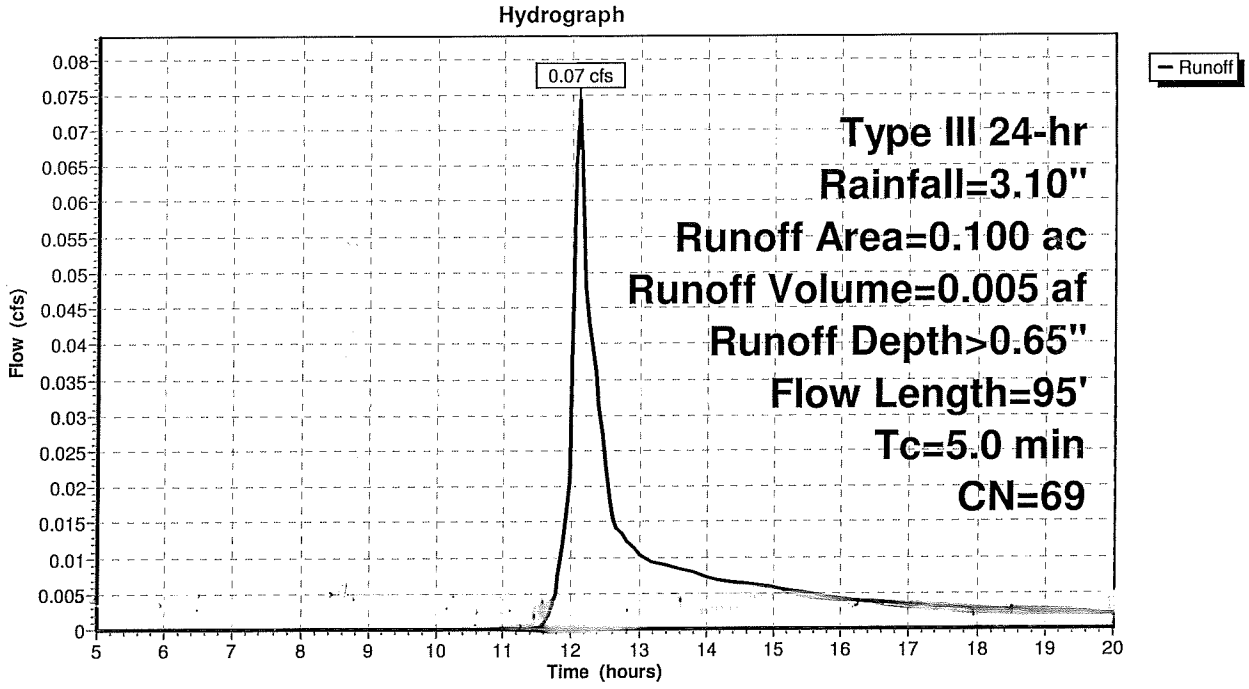
Runoff = 0.07 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 0.65"
Routed to Pond 42P : Subsurface System - Lot 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.10"

	Area (ac)	CN	Description
*	0.050	98	Roof and Driveway, HSG A
	0.050	39	>75% Grass cover, Good, HSG A
	0.100	69	Weighted Average
	0.050		50.00% Pervious Area
	0.050		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	95		0.32		**Direct Entry, Path 1**

Subcatchment 40S: Runoff to Subsurface System - Lot 3



Hydrograph for Subcatchment 40S: Runoff to Subsurface System - Lot 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	0.00	0.00	18.25	2.89	0.61	0.00
5.25	0.19	0.00	0.00	18.50	2.90	0.62	0.00
5.50	0.20	0.00	0.00	18.75	2.91	0.62	0.00
5.75	0.21	0.00	0.00	19.00	2.92	0.63	0.00
6.00	0.22	0.00	0.00	19.25	2.94	0.64	0.00
6.25	0.24	0.00	0.00	19.50	2.95	0.64	0.00
6.50	0.25	0.00	0.00	19.75	2.96	0.65	0.00
6.75	0.26	0.00	0.00	20.00	**2.97**	**0.65**	0.00
7.00	0.28	0.00	0.00				
7.25	0.30	0.00	0.00				
7.50	0.32	0.00	0.00				
7.75	0.33	0.00	0.00				
8.00	0.35	0.00	0.00				
8.25	0.37	0.00	0.00				
8.50	0.40	0.00	0.00				
8.75	0.42	0.00	0.00				
9.00	0.45	0.00	0.00				
9.25	0.48	0.00	0.00				
9.50	0.51	0.00	0.00				
9.75	0.55	0.00	0.00				
10.00	0.59	0.00	0.00				
10.25	0.63	0.00	0.00				
10.50	0.67	0.00	0.00				
10.75	0.72	0.00	0.00				
11.00	0.78	0.00	0.00				
11.25	0.84	0.00	0.00				
11.50	0.92	0.00	0.00				
11.75	1.10	0.01	0.00				
12.00	1.55	0.08	**0.04**				
12.25	2.00	0.22	**0.04**				
12.50	2.18	0.28	0.02				
12.75	2.26	0.32	0.01				
13.00	2.32	0.34	0.01				
13.25	2.38	0.37	0.01				
13.50	2.43	0.39	0.01				
13.75	2.47	0.41	0.01				
14.00	2.51	0.43	0.01				
14.25	2.55	0.44	0.01				
14.50	2.59	0.46	0.01				
14.75	2.62	0.48	0.01				
15.00	2.65	0.49	0.01				
15.25	2.68	0.50	0.01				
15.50	2.70	0.52	0.00				
15.75	2.73	0.53	0.00				
16.00	2.75	0.54	0.00				
16.25	2.77	0.55	0.00				
16.50	2.78	0.56	0.00				
16.75	2.80	0.57	0.00				
17.00	2.82	0.58	0.00				
17.25	2.84	0.58	0.00				
17.50	2.85	0.59	0.00				
17.75	2.86	0.60	0.00				
18.00	2.88	0.60	0.00				

Summary for Pond 22P: Subsurface System - Lot 1

Inflow Area = 0.040 ac,100.00% Impervious, Inflow Depth > 2.68"
Inflow = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.04 cfs @ 11.85 hrs, Volume= 0.009 af, Atten= 71%, Lag= 0.0 min
Primary = 0.04 cfs @ 11.85 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 233.39' @ 12.40 hrs Surf.Area= 180 sf Storage= 71 cf

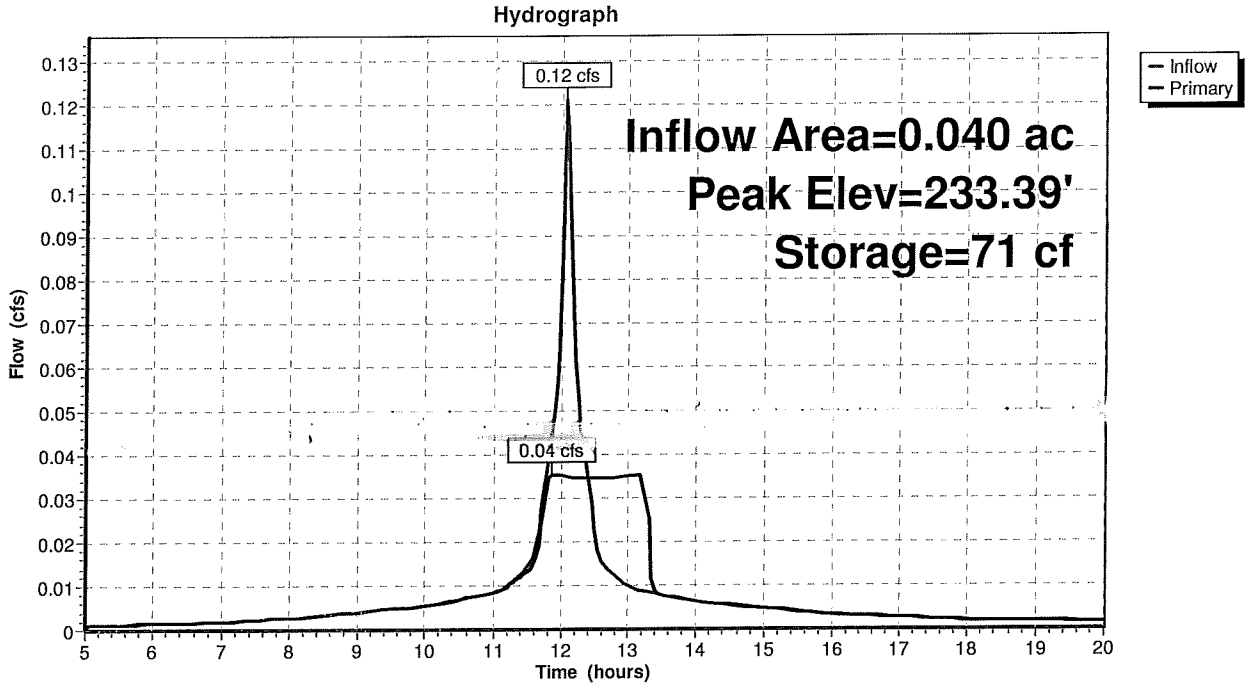
Plug-Flow detention time= 10.8 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 10.3 min (748.5 - 738.1)

Volume	Invert	Avail.Storage	Storage Description
#1	233.00'	346 cf	**Cultec R-330XLHD** x 6 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

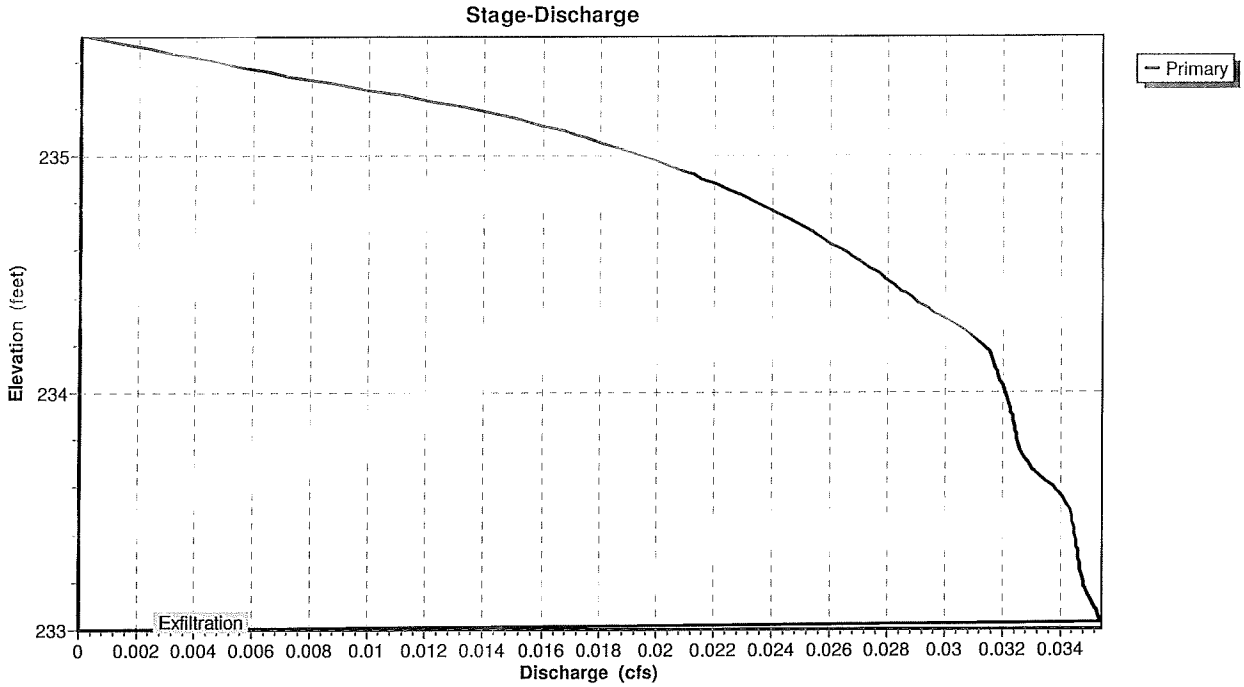
Device	Routing	Invert	Outlet Devices
#1	Primary	233.00'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.04 cfs @ 11.85 hrs HW=233.03' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

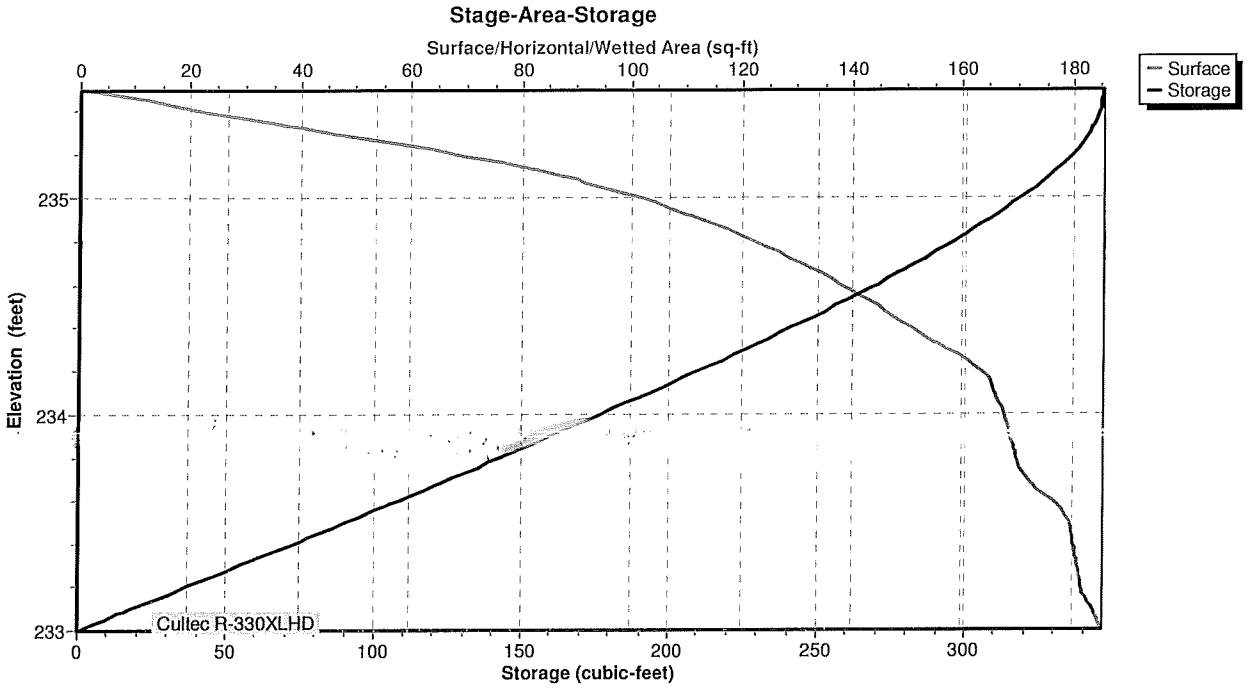
Pond 22P: Subsurface System - Lot 1



Pond 22P: Subsurface System - Lot 1



Pond 22P: Subsurface System - Lot 1



Hydrograph for Pond 22P: Subsurface System - Lot 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	233.00	0.00
5.50	0.00	0	233.00	0.00
6.00	0.00	0	233.00	0.00
6.50	0.00	0	233.00	0.00
7.00	0.00	0	233.00	0.00
7.50	0.00	0	233.00	0.00
8.00	0.00	0	233.00	0.00
8.50	0.00	0	233.00	0.00
9.00	0.00	1	233.00	0.00
9.50	0.00	1	233.00	0.00
10.00	0.01	1	233.00	0.01
10.50	0.01	1	233.00	0.01
11.00	0.01	1	233.01	0.01
11.50	0.01	2	233.01	**0.01**
12.00	**0.08**	**17**	**233.09**	0.04
12.50	**0.02**	**69**	**233.38**	0.03
13.00	0.01	31	233.17	0.03
13.50	0.01	1	233.01	0.01
14.00	0.01	1	233.00	0.01
14.50	0.01	1	233.00	0.01
15.00	0.00	1	233.00	0.00
15.50	0.00	1	233.00	0.00
16.00	0.00	0	233.00	0.00
16.50	0.00	0	233.00	0.00
17.00	0.00	0	233.00	0.00
17.50	0.00	0	233.00	0.00
18.00	0.00	0	233.00	0.00
18.50	0.00	0	233.00	0.00
19.00	0.00	0	233.00	0.00
19.50	0.00	0	233.00	0.00
20.00	0.00	0	233.00	0.00

Stage-Discharge for Pond 22P: Subsurface System - Lot 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
233.00	**0.00**	234.06	0.03	235.12	0.02
233.02	**0.04**	234.08	0.03	235.14	0.02
233.04	0.04	234.10	0.03	235.16	0.01
233.06	0.04	234.12	0.03	235.18	0.01
233.08	0.04	234.14	0.03	235.20	0.01
233.10	0.04	234.16	0.03	235.22	0.01
233.12	0.04	234.18	0.03	235.24	0.01
233.14	0.03	234.20	0.03	235.26	0.01
233.16	0.03	234.22	0.03	235.28	0.01
233.18	0.03	234.24	0.03	235.30	0.01
233.20	0.03	234.26	0.03	235.32	0.01
233.22	0.03	234.28	0.03	235.34	0.01
233.24	0.03	234.30	0.03	235.36	0.01
233.26	0.03	234.32	0.03	235.38	0.01
233.28	0.03	234.34	0.03	235.40	0.00
233.30	0.03	234.36	0.03	235.42	0.00
233.32	0.03	234.38	0.03	235.44	0.00
233.34	0.03	234.40	0.03	235.46	0.00
233.36	0.03	234.42	0.03	235.48	0.00
233.38	0.03	234.44	0.03	235.50	0.00
233.40	0.03	234.46	0.03		
233.42	0.03	234.48	0.03		
233.44	0.03	234.50	0.03		
233.46	0.03	234.52	0.03		
233.48	0.03	234.54	0.03		
233.50	0.03	234.56	0.03		
233.52	0.03	234.58	0.03		
233.54	0.03	234.60	0.03		
233.56	0.03	234.62	0.03		
233.58	0.03	234.64	0.03		
233.60	0.03	234.66	0.03		
233.62	0.03	234.68	0.03		
233.64	0.03	234.70	0.02		
233.66	0.03	234.72	0.02		
233.68	0.03	234.74	0.02		
233.70	0.03	234.76	0.02		
233.72	0.03	234.78	0.02		
233.74	0.03	234.80	0.02		
233.76	0.03	234.82	0.02		
233.78	0.03	234.84	0.02		
233.80	0.03	234.86	0.02		
233.82	0.03	234.88	0.02		
233.84	0.03	234.90	0.02		
233.86	0.03	234.92	0.02		
233.88	0.03	234.94	0.02		
233.90	0.03	234.96	0.02		
233.92	0.03	234.98	0.02		
233.94	0.03	235.00	0.02		
233.96	0.03	235.02	0.02		
233.98	0.03	235.04	0.02		
234.00	0.03	235.06	0.02		
234.02	0.03	235.08	0.02		
234.04	0.03	235.10	0.02		

Stage-Area-Storage for Pond 22P: Subsurface System - Lot 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
233.00	185	0
233.05	184	9
233.10	183	18
233.15	182	28
233.20	182	37
233.25	181	46
233.30	181	55
233.35	180	64
233.40	180	73
233.45	180	82
233.50	179	91
233.55	178	100
233.60	176	109
233.65	174	117
233.70	172	126
233.75	170	135
233.80	170	143
233.85	169	151
233.90	169	160
233.95	168	168
234.00	167	177
234.05	167	185
234.10	166	193
234.15	165	202
234.20	163	210
234.25	161	218
234.30	157	226
234.35	154	234
234.40	150	241
234.45	147	249
234.50	145	256
234.55	141	263
234.60	138	270
234.65	134	277
234.70	131	284
234.75	127	290
234.80	122	296
234.85	118	302
234.90	113	308
234.95	107	313
235.00	102	319
235.05	95	324
235.10	87	328
235.15	79	332
235.20	69	336
235.25	58	339
235.30	46	342
235.35	34	344
235.40	23	345
235.45	12	346
235.50	2	346

Summary for Pond 32P: Subsurface System - Lot 2

Inflow Area = 0.180 ac, 44.44% Impervious, Inflow Depth > 0.49"
Inflow = 0.09 cfs @ 12.10 hrs, Volume= 0.007 af
Outflow = 0.08 cfs @ 12.14 hrs, Volume= 0.007 af, Atten= 9%, Lag= 2.5 min
Primary = 0.08 cfs @ 12.14 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 224.82' @ 12.14 hrs Surf.Area= 435 sf Storage= 11 cf

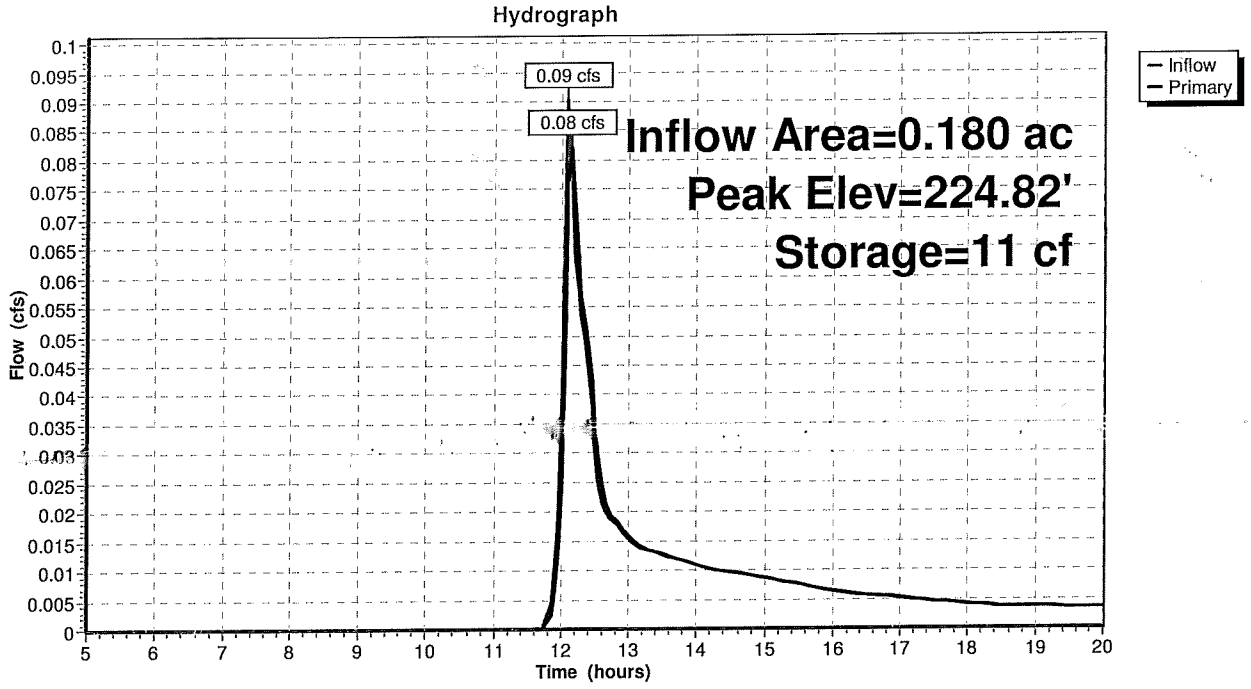
Plug-Flow detention time= 2.2 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (846.0 - 844.3)

Volume	Invert	Avail.Storage	Storage Description
#1	224.80'	816 cf	**Cultec R-330XLHD** x 15 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

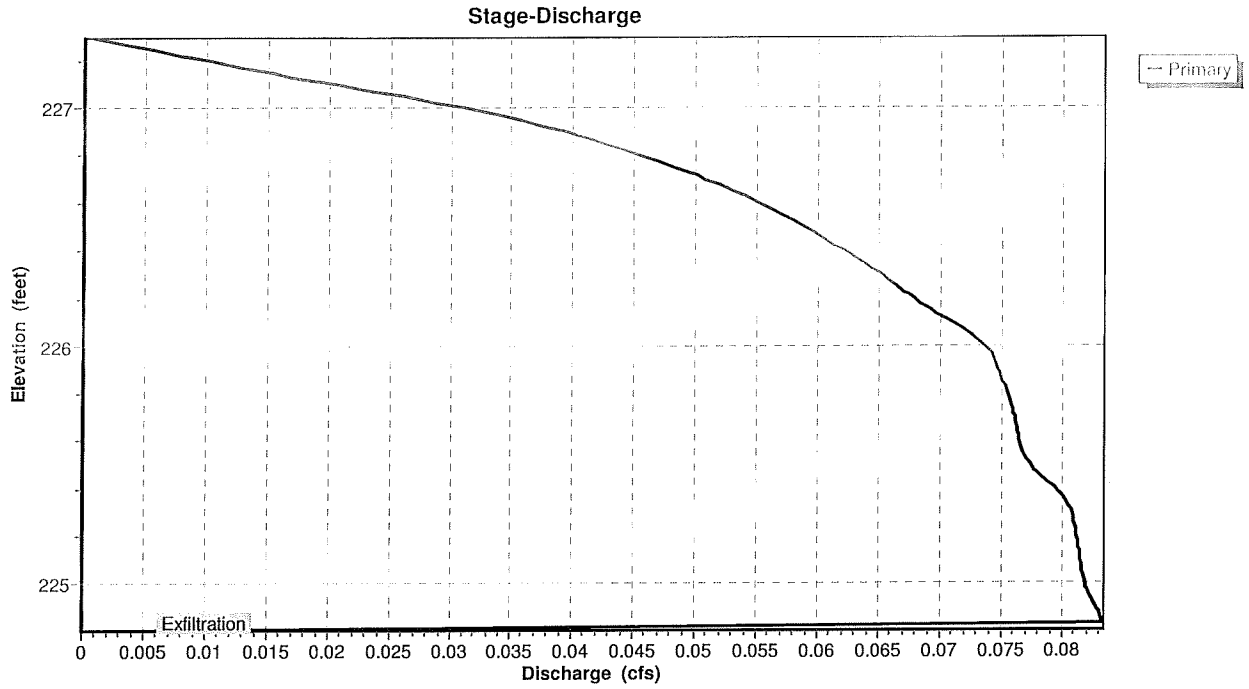
Device	Routing	Invert	Outlet Devices
#1	Primary	224.80'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.08 cfs @ 12.14 hrs HW=224.82' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

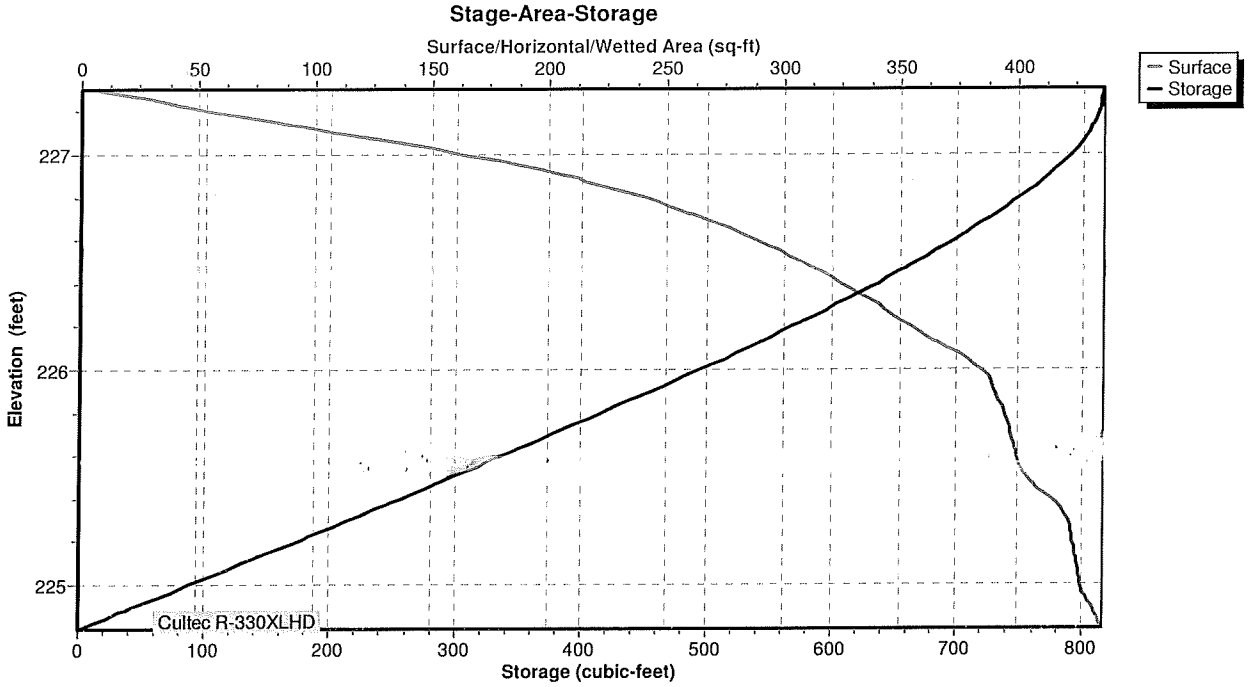
Pond 32P: Subsurface System - Lot 2



Pond 32P: Subsurface System - Lot 2



Pond 32P: Subsurface System - Lot 2



Hydrograph for Pond 32P: Subsurface System - Lot 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	224.80	0.00
5.50	0.00	0	224.80	0.00
6.00	0.00	0	224.80	0.00
6.50	0.00	0	224.80	0.00
7.00	0.00	0	224.80	0.00
7.50	0.00	0	224.80	0.00
8.00	0.00	0	224.80	0.00
8.50	0.00	0	224.80	0.00
9.00	0.00	0	224.80	0.00
9.50	0.00	0	224.80	0.00
10.00	0.00	0	224.80	0.00
10.50	0.00	0	224.80	0.00
11.00	0.00	0	224.80	0.00
11.50	0.00	0	224.80	0.00
12.00	**0.04**	**3**	**224.81**	**0.02**
12.50	**0.03**	**5**	**224.81**	**0.04**
13.00	0.02	2	224.80	0.02
13.50	0.01	2	224.80	0.01
14.00	0.01	1	224.80	0.01
14.50	0.01	1	224.80	0.01
15.00	0.01	1	224.80	0.01
15.50	0.01	1	224.80	0.01
16.00	0.01	1	224.80	0.01
16.50	0.01	1	224.80	0.01
17.00	0.01	1	224.80	0.01
17.50	0.00	1	224.80	0.00
18.00	0.00	1	224.80	0.00
18.50	0.00	1	224.80	0.00
19.00	0.00	0	224.80	0.00
19.50	0.00	0	224.80	0.00
20.00	0.00	0	224.80	0.00

Stage-Discharge for Pond 32P: **Subsurface System** - Lot 2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
224.80	0.00	225.86	0.08	226.92	0.04
224.82	0.08	225.88	0.07	226.94	0.04
224.84	0.08	225.90	0.07	226.96	0.03
224.86	0.08	225.92	0.07	226.98	0.03
224.88	0.08	225.94	0.07	227.00	0.03
224.90	0.08	225.96	0.07	227.02	0.03
224.92	0.08	225.98	0.07	227.04	0.03
224.94	0.08	226.00	0.07	227.06	0.03
224.96	0.08	226.02	0.07	227.08	0.02
224.98	0.08	226.04	0.07	227.10	0.02
225.00	0.08	226.06	0.07	227.12	0.02
225.02	0.08	226.08	0.07	227.14	0.02
225.04	0.08	226.10	0.07	227.16	0.01
225.06	0.08	226.12	0.07	227.18	0.01
225.08	0.08	226.14	0.07	227.20	0.01
225.10	0.08	226.16	0.07	227.22	0.01
225.12	0.08	226.18	0.07	227.24	0.01
225.14	0.08	226.20	0.07	227.26	0.00
225.16	0.08	226.22	0.07	227.28	0.00
225.18	0.08	226.24	0.07	227.30	0.00
225.20	0.08	226.26	0.07		
225.22	0.08	226.28	0.07		
225.24	0.08	226.30	0.07		
225.26	0.08	226.32	0.06		
225.28	0.08	226.34	0.06		
225.30	0.08	226.36	0.06		
225.32	0.08	226.38	0.06		
225.34	0.08	226.40	0.06		
225.36	0.08	226.42	0.06		
225.38	0.08	226.44	0.06		
225.40	0.08	226.46	0.06		
225.42	0.08	226.48	0.06		
225.44	0.08	226.50	0.06		
225.46	0.08	226.52	0.06		
225.48	0.08	226.54	0.06		
225.50	0.08	226.56	0.06		
225.52	0.08	226.58	0.06		
225.54	0.08	226.60	0.06		
225.56	0.08	226.62	0.05		
225.58	0.08	226.64	0.05		
225.60	0.08	226.66	0.05		
225.62	0.08	226.68	0.05		
225.64	0.08	226.70	0.05		
225.66	0.08	226.72	0.05		
225.68	0.08	226.74	0.05		
225.70	0.08	226.76	0.05		
225.72	0.08	226.78	0.05		
225.74	0.08	226.80	0.05		
225.76	0.08	226.82	0.04		
225.78	0.08	226.84	0.04		
225.80	0.08	226.86	0.04		
225.82	0.08	226.88	0.04		
225.84	0.08	226.90	0.04		

Stage-Area-Storage for Pond 32P: Subsurface System - Lot 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
224.80	**436**	0
224.85	434	22
224.90	432	43
224.95	429	65
225.00	428	86
225.05	426	108
225.10	426	129
225.15	425	150
225.20	424	172
225.25	423	193
225.30	422	214
225.35	419	235
225.40	415	256
225.45	409	276
225.50	404	297
225.55	401	317
225.60	400	337
225.65	398	357
225.70	397	377
225.75	396	396
225.80	394	416
225.85	392	436
225.90	390	455
225.95	388	475
226.00	384	494
226.05	379	513
226.10	370	532
226.15	361	550
226.20	354	568
226.25	347	586
226.30	340	603
226.35	332	620
226.40	324	636
226.45	316	652
226.50	307	668
226.55	298	683
226.60	288	697
226.65	277	712
226.70	265	725
226.75	253	738
226.80	239	750
226.85	223	762
226.90	206	773
226.95	186	783
227.00	163	791
227.05	137	799
227.10	108	805
227.15	80	810
227.20	55	813
227.25	29	815
227.30	4	**816**

Summary for Pond 42P: Subsurface System - Lot 3

Inflow Area = 0.100 ac, 50.00% Impervious, Inflow Depth > 0.65"
Inflow = 0.07 cfs @ 12.09 hrs, Volume= 0.005 af
Outflow = 0.07 cfs @ 12.12 hrs, Volume= 0.005 af, Atten= 4%, Lag= 1.4 min
Primary = 0.07 cfs @ 12.12 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 224.52' @ 12.12 hrs Surf.Area= 366 sf Storage= 6 cf

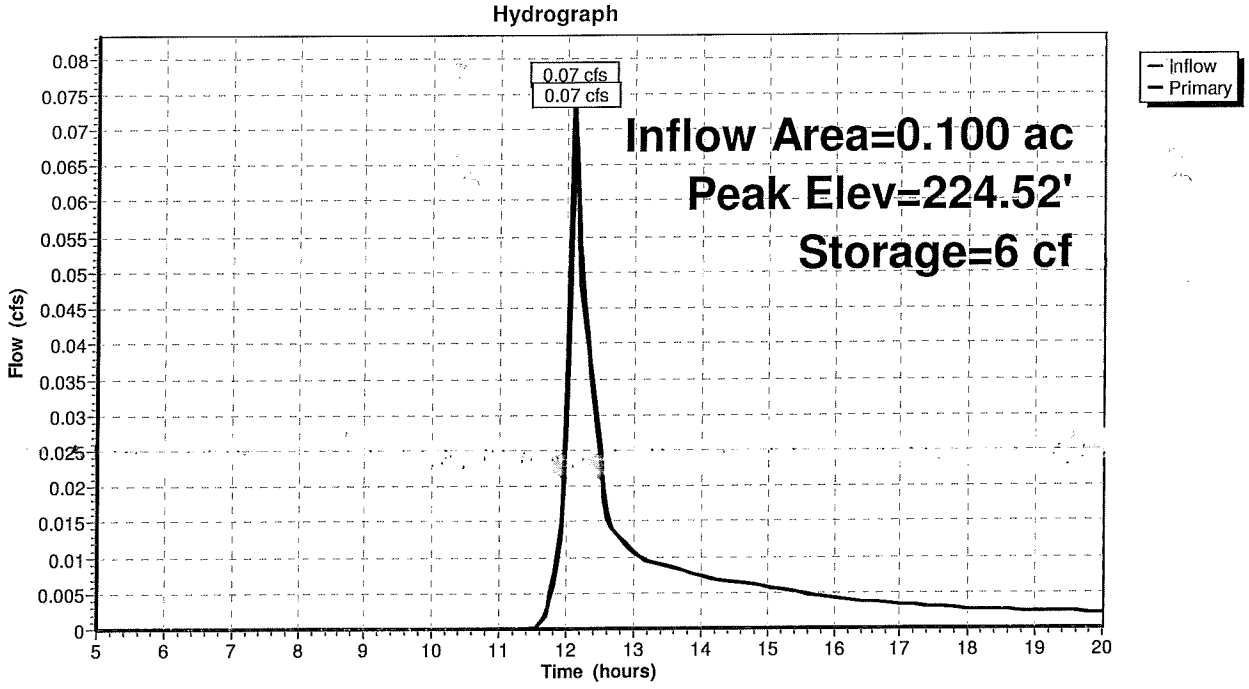
Plug-Flow detention time= 1.5 min calculated for 0.005 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (833.3 - 832.2)

Volume	Invert	Avail.Storage	Storage Description
#1	224.50'	453 cf	**Cultec R-180** x 20 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 5 rows

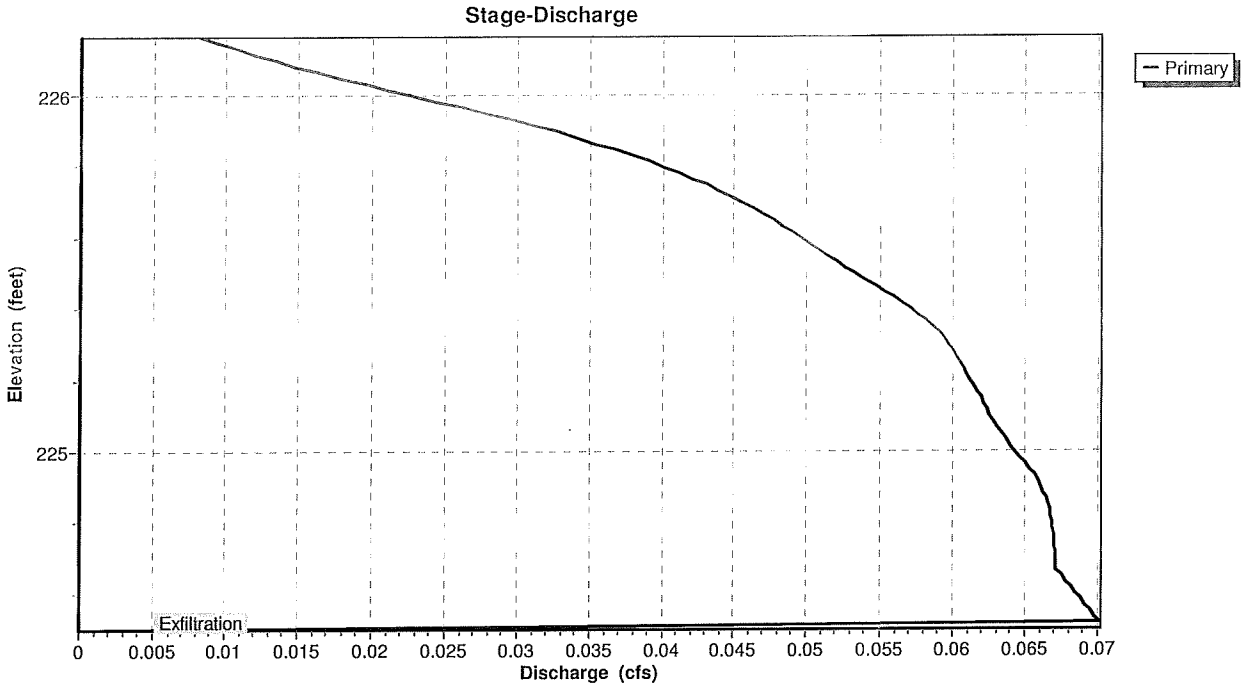
Device	Routing	Invert	Outlet Devices
#1	Primary	224.50'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.07 cfs @ 12.12 hrs HW=224.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

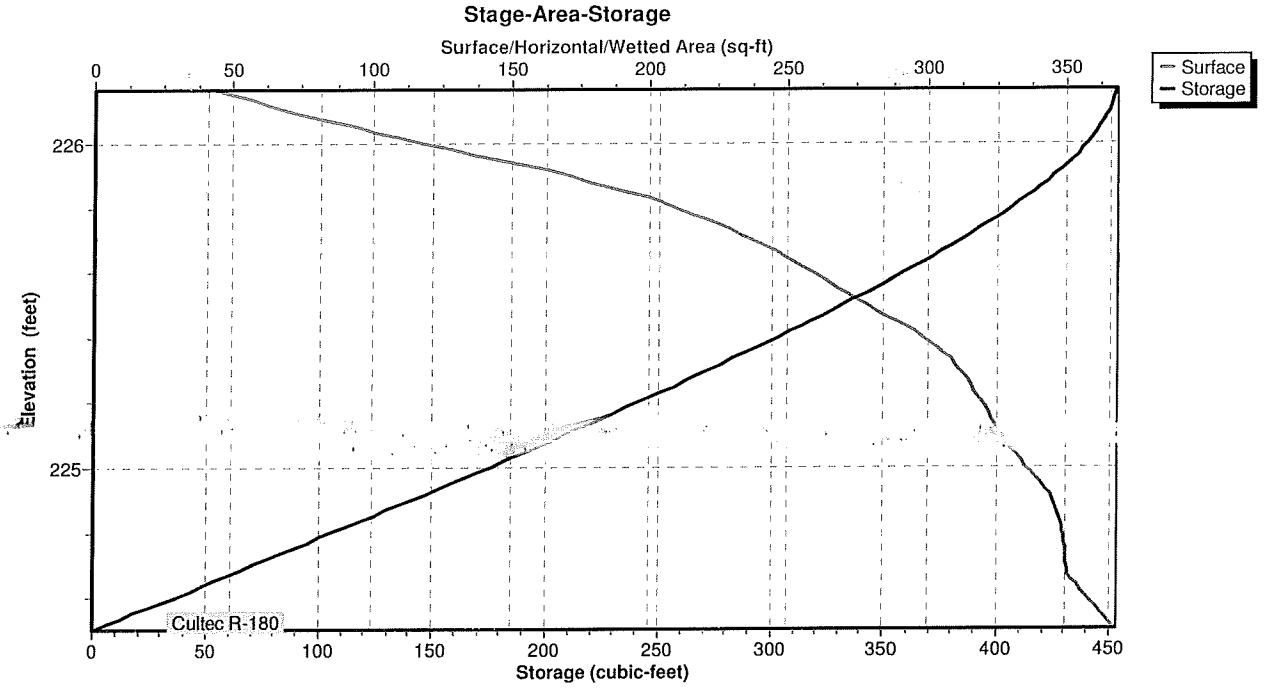
Pond 42P: Subsurface System - Lot 3



Pond 42P: Subsurface System - Lot 3



Pond 42P: Subsurface System - Lot 3



Hydrograph for Pond 42P: Subsurface System - Lot 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	224.50	0.00
5.50	0.00	0	224.50	0.00
6.00	0.00	0	224.50	0.00
6.50	0.00	0	224.50	0.00
7.00	0.00	0	224.50	0.00
7.50	0.00	0	224.50	0.00
8.00	0.00	0	224.50	0.00
8.50	0.00	0	224.50	0.00
9.00	0.00	0	224.50	0.00
9.50	0.00	0	224.50	0.00
10.00	0.00	0	224.50	0.00
10.50	0.00	0	224.50	0.00
11.00	0.00	0	224.50	0.00
11.50	0.00	0	224.50	0.00
12.00	**0.04**	3	**224.51**	**0.03**
12.50	**0.02**	**2**	**224.51**	**0.02**
13.00	0.01	1	224.50	0.01
13.50	0.01	1	224.50	0.01
14.00	0.01	1	224.50	0.01
14.50	0.01	1	224.50	0.01
15.00	0.01	1	224.50	0.01
15.50	0.00	0	224.50	0.01
16.00	0.00	0	224.50	0.00
16.50	0.00	0	224.50	0.00
17.00	0.00	0	224.50	0.00
17.50	0.00	0	224.50	0.00
18.00	0.00	0	224.50	0.00
18.50	0.00	0	224.50	0.00
19.00	0.00	0	224.50	0.00
19.50	0.00	0	224.50	0.00
20.00	0.00	0	224.50	0.00

Stage-Discharge for Pond 42P: Subsurface System - Lot 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
224.50	0.00	225.03	0.06	225.56	0.05	226.09	0.01
224.51	0.07	225.04	0.06	225.57	0.05	226.10	0.01
224.52	0.07	225.05	0.06	225.58	0.05	226.11	0.01
224.53	0.07	225.06	0.06	225.59	0.05	226.12	0.01
224.54	0.07	225.07	0.06	225.60	0.05	226.13	0.01
224.55	0.07	225.08	0.06	225.61	0.05	226.14	0.01
224.56	0.07	225.09	0.06	225.62	0.05	226.15	0.01
224.57	0.07	225.10	0.06	225.63	0.05	226.16	0.01
224.58	0.07	225.11	0.06	225.64	0.05	226.17	0.01
224.59	0.07	225.12	0.06	225.65	0.05		
224.60	0.07	225.13	0.06	225.66	0.05		
224.61	0.07	225.14	0.06	225.67	0.05		
224.62	0.07	225.15	0.06	225.68	0.05		
224.63	0.07	225.16	0.06	225.69	0.05		
224.64	0.07	225.17	0.06	225.70	0.05		
224.65	0.07	225.18	0.06	225.71	0.04		
224.66	0.07	225.19	0.06	225.72	0.04		
224.67	0.07	225.20	0.06	225.73	0.04		
224.68	0.07	225.21	0.06	225.74	0.04		
224.69	0.07	225.22	0.06	225.75	0.04		
224.70	0.07	225.23	0.06	225.76	0.04		
224.71	0.07	225.24	0.06	225.77	0.04		
224.72	0.07	225.25	0.06	225.78	0.04		
224.73	0.07	225.26	0.06	225.79	0.04		
224.74	0.07	225.27	0.06	225.80	0.04		
224.75	0.07	225.28	0.06	225.81	0.04		
224.76	0.07	225.29	0.06	225.82	0.04		
224.77	0.07	225.30	0.06	225.83	0.04		
224.78	0.07	225.31	0.06	225.84	0.04		
224.79	0.07	225.32	0.06	225.85	0.04		
224.80	0.07	225.33	0.06	225.86	0.04		
224.81	0.07	225.34	0.06	225.87	0.04		
224.82	0.07	225.35	0.06	225.88	0.03		
224.83	0.07	225.36	0.06	225.89	0.03		
224.84	0.07	225.37	0.06	225.90	0.03		
224.85	0.07	225.38	0.06	225.91	0.03		
224.86	0.07	225.39	0.06	225.92	0.03		
224.87	0.07	225.40	0.06	225.93	0.03		
224.88	0.07	225.41	0.06	225.94	0.03		
224.89	0.07	225.42	0.06	225.95	0.03		
224.90	0.07	225.43	0.06	225.96	0.03		
224.91	0.07	225.44	0.06	225.97	0.03		
224.92	0.07	225.45	0.06	225.98	0.02		
224.93	0.07	225.46	0.05	225.99	0.02		
224.94	0.07	225.47	0.05	226.00	0.02		
224.95	0.07	225.48	0.05	226.01	0.02		
224.96	0.07	225.49	0.05	226.02	0.02		
224.97	0.06	225.50	0.05	226.03	0.02		
224.98	0.06	225.51	0.05	226.04	0.02		
224.99	0.06	225.52	0.05	226.05	0.02		
225.00	0.06	225.53	0.05	226.06	0.02		
225.01	0.06	225.54	0.05	226.07	0.02		
225.02	0.06	225.55	0.05	226.08	0.02		

Stage-Area-Storage for Pond 42P: Subsurface System - Lot 3

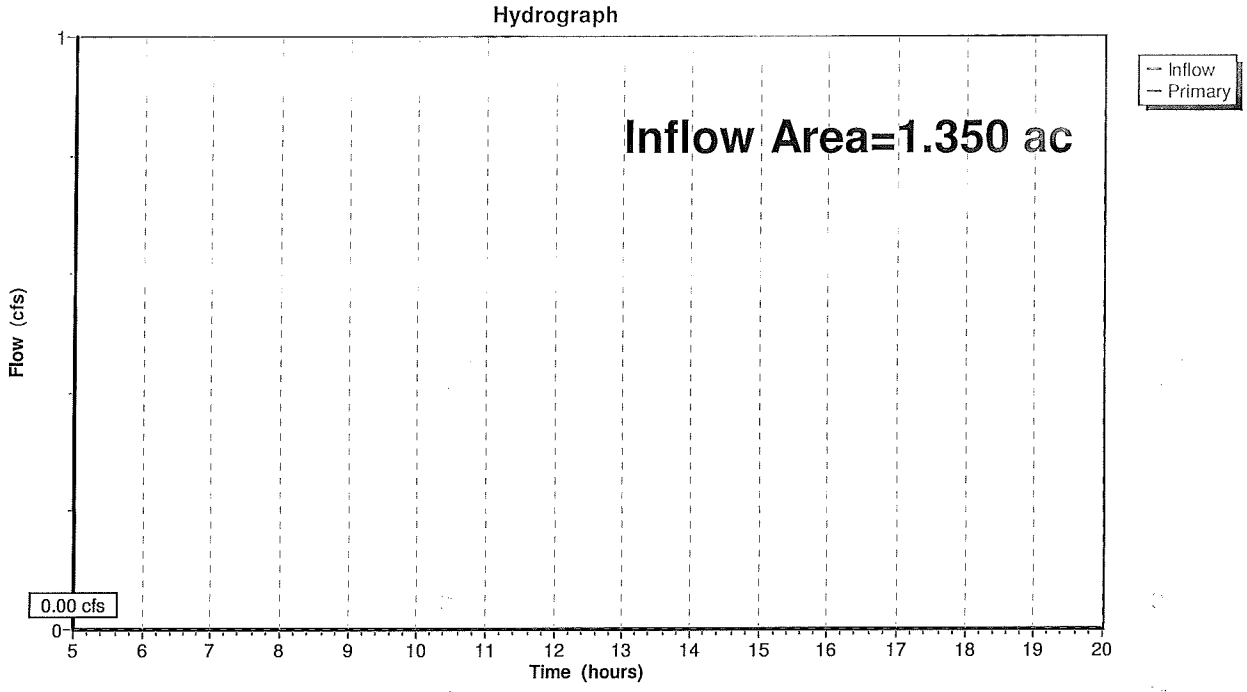
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
224.50	368	0
224.52	366	7
224.54	364	15
224.56	362	22
224.58	360	29
224.60	358	36
224.62	355	43
224.64	353	50
224.66	351	58
224.68	350	65
224.70	350	72
224.72	350	79
224.74	350	86
224.76	350	93
224.78	349	100
224.80	349	107
224.82	348	113
224.84	348	120
224.86	347	127
224.88	346	134
224.90	345	141
224.92	344	148
224.94	342	155
224.96	340	162
224.98	338	169
225.00	336	175
225.02	334	182
225.04	332	189
225.06	330	195
225.08	328	202
225.10	327	208
225.12	325	215
225.14	324	221
225.16	323	228
225.18	321	234
225.20	320	241
225.22	318	247
225.24	317	253
225.26	315	260
225.28	313	266
225.30	312	272
225.32	310	279
225.34	308	285
225.36	304	291
225.38	301	297
225.40	298	303
225.42	295	309
225.44	290	315
225.46	286	320
225.48	282	326
225.50	278	332
225.52	274	337
225.54	270	343
225.56	267	348
225.58	263	353
225.60	259	359
225.62	255	364
225.64	251	369
225.66	247	374
225.68	242	379
225.70	237	383
225.72	232	388
225.74	227	393
225.76	222	397
225.78	216	402
225.80	209	406
225.82	203	410
225.84	196	414
225.86	188	418
225.88	179	421
225.90	171	425
225.92	162	428
225.94	151	431
225.96	140	434
225.98	129	437
226.00	118	439
226.02	109	442
226.04	99	444
226.06	89	446
226.08	79	447
226.10	70	449
226.12	62	450
226.14	54	451
226.16	45	452

Summary for Link DP: Design Point

Inflow Area = 1.350 ac, 0.74% Impervious, Inflow Depth = 0.00"
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP: Design Point



Hydrograph for Link DP: Design Point

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	**0.00**	**0.00**	**0.00**	18.25	0.00	0.00	0.00
5.25	0.00	0.00	0.00	18.50	0.00	0.00	0.00
5.50	0.00	0.00	0.00	18.75	0.00	0.00	0.00
5.75	0.00	0.00	0.00	19.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	19.25	0.00	0.00	0.00
6.25	0.00	0.00	0.00	19.50	0.00	0.00	0.00
6.50	0.00	0.00	0.00	19.75	0.00	0.00	0.00
6.75	0.00	0.00	0.00	20.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00				
7.25	0.00	0.00	0.00				
7.50	0.00	0.00	0.00				
7.75	0.00	0.00	0.00				
8.00	0.00	0.00	0.00				
8.25	0.00	0.00	0.00				
8.50	0.00	0.00	0.00				
8.75	0.00	0.00	0.00				
9.00	0.00	0.00	0.00				
9.25	0.00	0.00	0.00				
9.50	0.00	0.00	0.00				
9.75	0.00	0.00	0.00				
10.00	0.00	0.00	0.00				
10.25	0.00	0.00	0.00				
10.50	0.00	0.00	0.00				
10.75	0.00	0.00	0.00				
11.00	0.00	0.00	0.00				
11.25	0.00	0.00	0.00				
11.50	0.00	0.00	0.00				
11.75	0.00	0.00	0.00				
12.00	0.00	0.00	0.00				
12.25	0.00	0.00	0.00				
12.50	0.00	0.00	0.00				
12.75	0.00	0.00	0.00				
13.00	0.00	0.00	0.00				
13.25	0.00	0.00	0.00				
13.50	0.00	0.00	0.00				
13.75	0.00	0.00	0.00				
14.00	0.00	0.00	0.00				
14.25	0.00	0.00	0.00				
14.50	0.00	0.00	0.00				
14.75	0.00	0.00	0.00				
15.00	0.00	0.00	0.00				
15.25	0.00	0.00	0.00				
15.50	0.00	0.00	0.00				
15.75	0.00	0.00	0.00				
16.00	0.00	0.00	0.00				
16.25	0.00	0.00	0.00				
16.50	0.00	0.00	0.00				
16.75	0.00	0.00	0.00				
17.00	0.00	0.00	0.00				
17.25	0.00	0.00	0.00				
17.50	0.00	0.00	0.00				
17.75	0.00	0.00	0.00				
18.00	0.00	0.00	0.00				

PROPOSED CONDITIONS

10 YEAR STORM

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: Overland runoff to south Runoff Area=1.350 ac 0.74% Impervious Runoff Depth>0.00"
Flow Length=214' Tc=11.9 min CN=33 Runoff=0.00 cfs 0.000 af

Subcatchment 20S: Runoff to Subsurface Runoff Area=0.040 ac 100.00% Impervious Runoff Depth>3.96"
Flow Length=90' Tc=5.0 min CN=98 Runoff=0.18 cfs 0.013 af

Subcatchment 30S: Runoff to Subsurface Runoff Area=0.180 ac 44.44% Impervious Runoff Depth>1.21"
Flow Length=76' Tc=5.0 min CN=65 Runoff=0.26 cfs 0.018 af

Subcatchment 40S: Runoff to Subsurface Runoff Area=0.100 ac 50.00% Impervious Runoff Depth>1.47"
Flow Length=95' Tc=5.0 min CN=69 Runoff=0.18 cfs 0.012 af

Pond 22P: Subsurface System - Lot 1 Peak Elev=233.82' Storage=146 cf Inflow=0.18 cfs 0.013 af
Outflow=0.04 cfs 0.013 af

Pond 32P: Subsurface System - Lot 2 Peak Elev=225.15' Storage=151 cf Inflow=0.26 cfs 0.018 af
Outflow=0.08 cfs 0.018 af

Pond 42P: Subsurface System - Lot 3 Peak Elev=224.73' Storage=81 cf Inflow=0.18 cfs 0.012 af
Outflow=0.07 cfs 0.012 af

Link DP: Design Point Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.670 ac Runoff Volume = 0.044 af Average Runoff Depth = 0.32"
89.22% Pervious = 1.490 ac 10.78% Impervious = 0.180 ac

Summary for Subcatchment 10S: Overland runoff to south

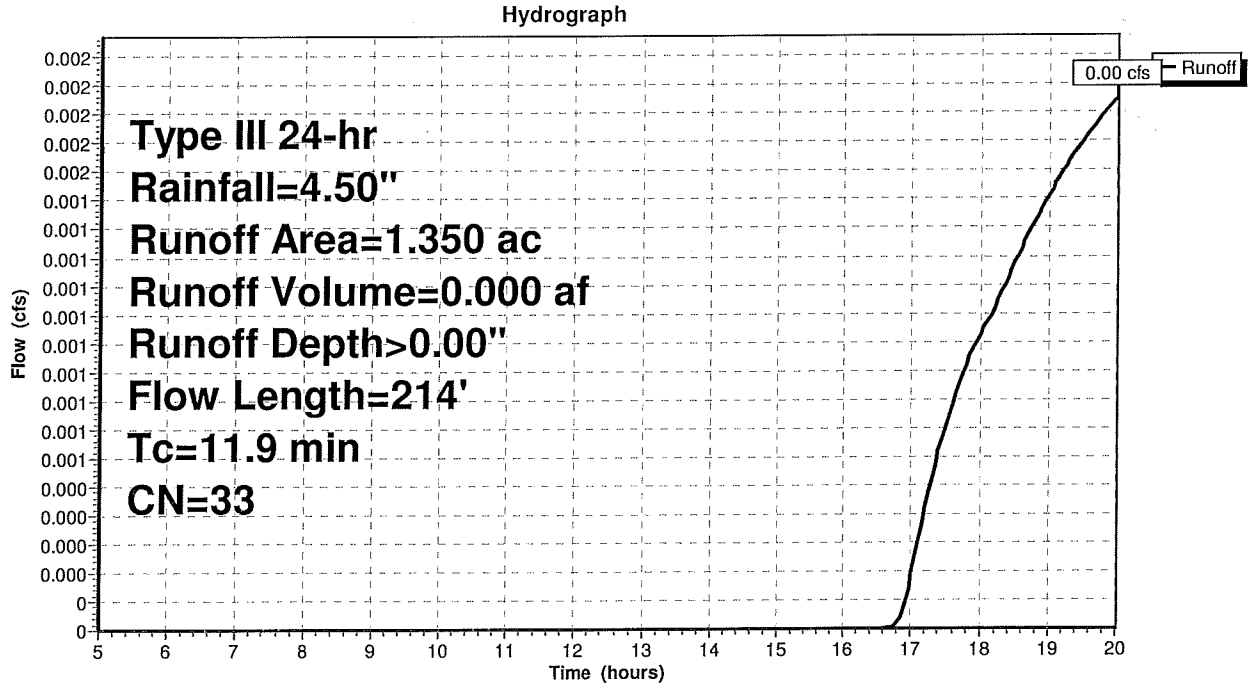
Runoff = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Depth> 0.00"
Routed to Link DP : Design Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

	Area (ac)	CN	Description
*	0.010	98	Impervious Area, HSG A
	0.310	39	>75% Grass cover, Good, HSG A
	1.030	30	Woods, Good, HSG A
	1.350	33	Weighted Average
	1.340		99.26% Pervious Area
	0.010		0.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.10"
3.5	130	0.0154	0.62		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
0.3	34	0.1176	1.71		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
11.9	214	Total			

Subcatchment 10S: Overland runoff to south



Hydrograph for Subcatchment 10S: Overland runoff to south

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.26	0.00	0.00
5.25	0.27	0.00	0.00
5.50	0.29	0.00	0.00
5.75	0.31	0.00	0.00
6.00	0.32	0.00	0.00
6.25	0.34	0.00	0.00
6.50	0.36	0.00	0.00
6.75	0.38	0.00	0.00
7.00	0.41	0.00	0.00
7.25	0.43	0.00	0.00
7.50	0.46	0.00	0.00
7.75	0.48	0.00	0.00
8.00	0.51	0.00	0.00
8.25	0.54	0.00	0.00
8.50	0.58	0.00	0.00
8.75	0.62	0.00	0.00
9.00	0.66	0.00	0.00
9.25	0.70	0.00	0.00
9.50	0.75	0.00	0.00
9.75	0.80	0.00	0.00
10.00	0.85	0.00	0.00
10.25	0.91	0.00	0.00
10.50	0.97	0.00	0.00
10.75	1.05	0.00	0.00
11.00	1.13	0.00	0.00
11.25	1.22	0.00	0.00
11.50	1.34	0.00	0.00
11.75	1.60	0.00	0.00
12.00	2.25	0.00	0.00
12.25	2.90	0.00	0.00
12.50	3.16	0.00	0.00
12.75	3.28	0.00	0.00
13.00	3.37	0.00	0.00
13.25	3.45	0.00	0.00
13.50	3.53	0.00	0.00
13.75	3.59	0.00	0.00
14.00	3.65	0.00	0.00
14.25	3.70	0.00	0.00
14.50	3.75	0.00	0.00
14.75	3.80	0.00	0.00
15.00	3.84	0.00	0.00
15.25	3.88	0.00	0.00
15.50	3.92	0.00	0.00
15.75	3.96	0.00	0.00
16.00	3.99	0.00	0.00
16.25	4.02	0.00	0.00
16.50	4.04	0.00	0.00
16.75	4.07	0.00	0.00
17.00	4.09	0.00	0.00
17.25	4.12	0.00	0.00
17.50	4.14	0.00	0.00
17.75	4.16	0.00	0.00
18.00	4.18	0.00	0.00
18.25	4.19	0.00	0.00
18.50	4.21	0.00	0.00
18.75	4.23	0.00	0.00
19.00	4.24	0.00	0.00
19.25	4.26	0.00	0.00
19.50	4.28	0.00	0.00
19.75	4.29	0.00	0.00
20.00	**4.31**	**0.00**	**0.00**

Summary for Subcatchment 20S: Runoff to Subsurface System - Lot 1

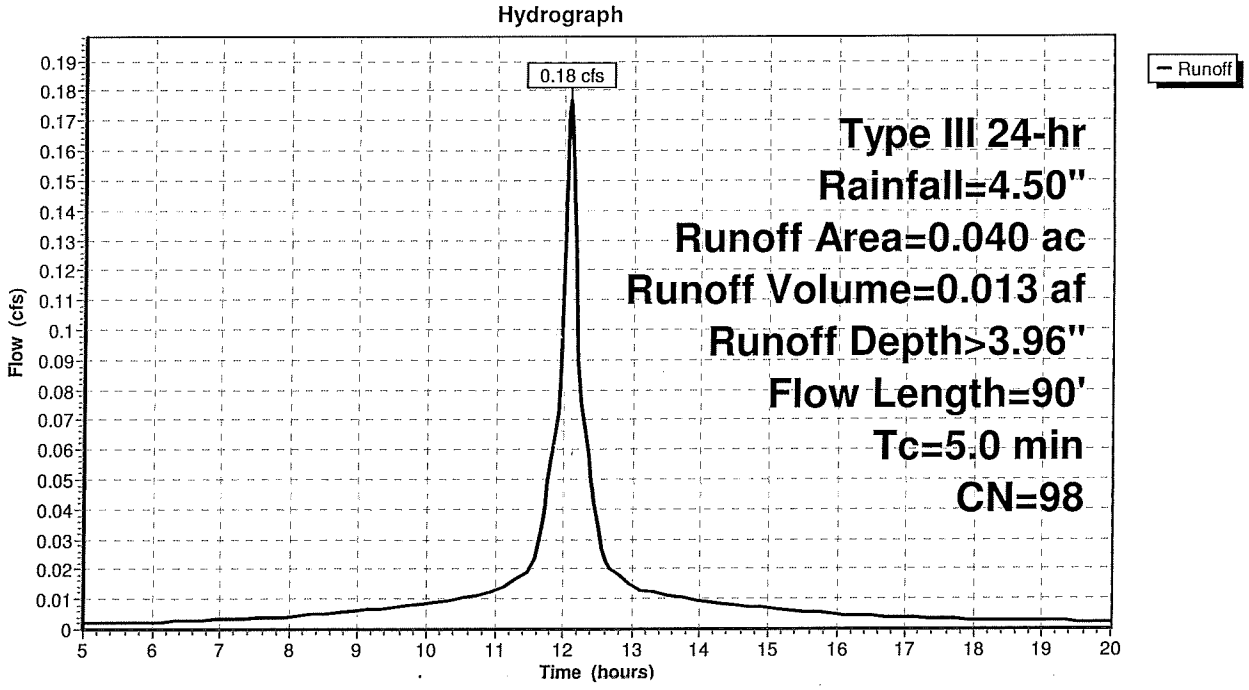
Runoff = 0.18 cfs @ 12.07 hrs, Volume= 0.013 af, Depth> 3.96"
Routed to Pond 22P : Subsurface System - Lot 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

Area (ac)	CN	Description
0.040	98	Roofs, HSG A
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	90		0.30		**Direct Entry, Path 1**

Subcatchment 20S: Runoff to Subsurface System - Lot 1



Hydrograph for Subcatchment 20S: Runoff to Subsurface System - Lot 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.26	0.11	0.00
5.25	0.27	0.12	0.00
5.50	0.29	0.14	0.00
5.75	0.31	0.15	0.00
6.00	0.32	0.16	0.00
6.25	0.34	0.18	0.00
6.50	0.36	0.20	0.00
6.75	0.38	0.22	0.00
7.00	0.41	0.24	0.00
7.25	0.43	0.26	0.00
7.50	0.46	0.28	0.00
7.75	0.48	0.30	0.00
8.00	0.51	0.33	0.00
8.25	0.54	0.36	0.00
8.50	0.58	0.39	0.01
8.75	0.62	0.42	0.01
9.00	0.66	0.46	0.01
9.25	0.70	0.50	0.01
9.50	0.75	0.55	0.01
9.75	0.80	0.60	0.01
10.00	0.85	0.65	0.01
10.25	0.91	0.70	0.01
10.50	0.97	0.77	0.01
10.75	1.05	0.84	0.01
11.00	1.13	0.91	0.01
11.25	1.22	1.01	0.02
11.50	1.34	1.12	0.02
11.75	1.60	1.38	0.05
12.00	2.25	2.02	**0.12**
12.25	2.90	2.67	**0.08**
12.50	3.16	2.93	0.03
12.75	3.28	3.05	0.02
13.00	3.37	3.14	0.01
13.25	3.45	3.22	0.01
13.50	3.53	3.29	0.01
13.75	3.59	3.36	0.01
14.00	3.65	3.42	0.01
14.25	3.70	3.47	0.01
14.50	3.75	3.52	0.01
14.75	3.80	3.57	0.01
15.00	3.84	3.61	0.01
15.25	3.88	3.65	0.01
15.50	3.92	3.69	0.01
15.75	3.96	3.72	0.01
16.00	3.99	3.75	0.00
16.25	4.02	3.78	0.00
16.50	4.04	3.81	0.00
16.75	4.07	3.83	0.00
17.00	4.09	3.86	0.00
17.25	4.12	3.88	0.00
17.50	4.14	3.90	0.00
17.75	4.16	3.92	0.00
18.00	4.18	3.94	0.00
18.25	4.19	3.96	0.00
18.50	4.21	3.98	0.00
18.75	4.23	3.99	0.00
19.00	4.24	4.01	0.00
19.25	4.26	4.03	0.00
19.50	4.28	4.04	0.00
19.75	4.29	4.06	0.00
20.00	**4.31**	**4.07**	0.00

Summary for Subcatchment 30S: Runoff to Subsurface System - Lot 2

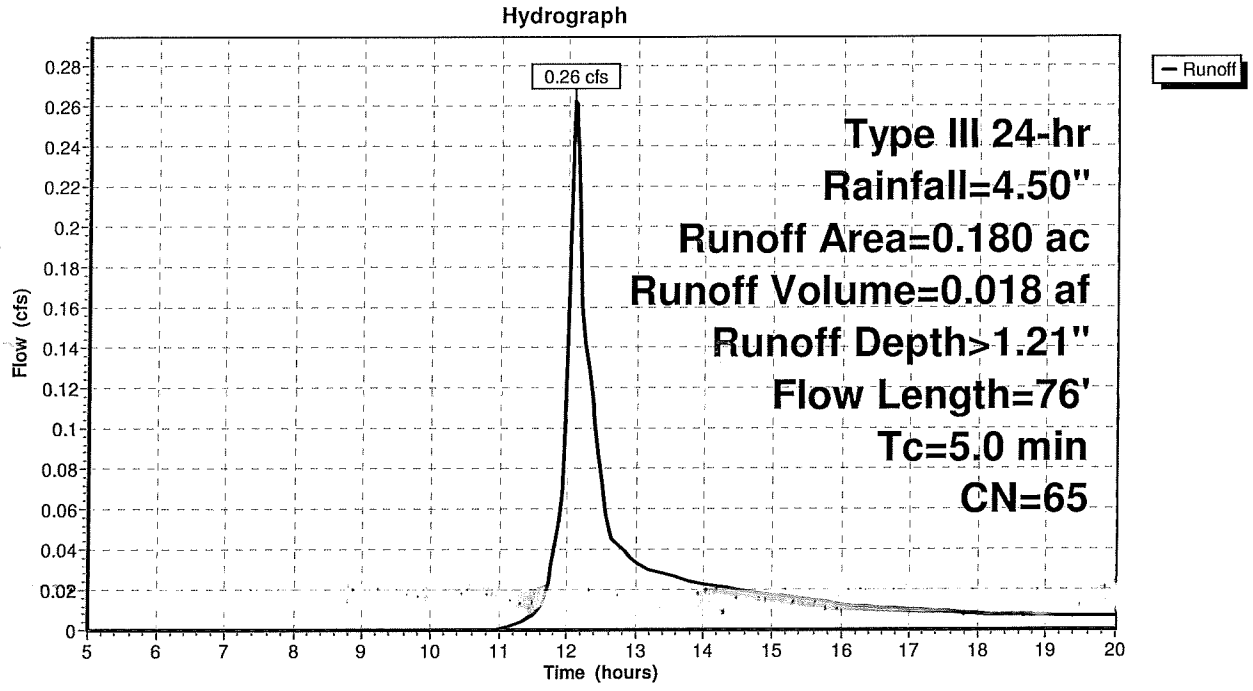
Runoff = 0.26 cfs @ 12.09 hrs, Volume= 0.018 af, Depth> 1.21"
Routed to Pond 32P : Subsurface System - Lot 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

	Area (ac)	CN	Description
*	0.080	98	Roof and Driveway, HSG A
	0.100	39	>75% Grass cover, Good, HSG A
	0.180	65	Weighted Average
	0.100		55.56% Pervious Area
	0.080		44.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	76		0.25		**Direct Entry, Path 1**

Subcatchment 30S: Runoff to Subsurface System - Lot 2



Hydrograph for Subcatchment 30S: Runoff to Subsurface System - Lot 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.26	0.00	0.00	18.25	4.19	1.14	0.01
5.25	0.27	0.00	0.00	18.50	4.21	1.15	0.01
5.50	0.29	0.00	0.00	18.75	4.23	1.16	0.01
5.75	0.31	0.00	0.00	19.00	4.24	1.17	0.01
6.00	0.32	0.00	0.00	19.25	4.26	1.18	0.01
6.25	0.34	0.00	0.00	19.50	4.28	1.19	0.01
6.50	0.36	0.00	0.00	19.75	4.29	1.20	0.01
6.75	0.38	0.00	0.00	20.00	**4.31**	**1.21**	0.01
7.00	0.41	0.00	0.00				
7.25	0.43	0.00	0.00				
7.50	0.46	0.00	0.00				
7.75	0.48	0.00	0.00				
8.00	0.51	0.00	0.00				
8.25	0.54	0.00	0.00				
8.50	0.58	0.00	0.00				
8.75	0.62	0.00	0.00				
9.00	0.66	0.00	0.00				
9.25	0.70	0.00	0.00				
9.50	0.75	0.00	0.00				
9.75	0.80	0.00	0.00				
10.00	0.85	0.00	0.00				
10.25	0.91	0.00	0.00				
10.50	0.97	0.00	0.00				
10.75	1.05	0.00	0.00				
11.00	1.13	0.00	0.00				
11.25	1.22	0.00	0.00				
11.50	1.34	0.01	0.01				
11.75	1.60	0.05	0.03				
12.00	2.25	0.21	**0.15**				
12.25	2.90	0.46	**0.14**				
12.50	3.16	0.58	0.07				
12.75	3.28	0.64	0.04				
13.00	3.37	0.69	0.03				
13.25	3.45	0.73	0.03				
13.50	3.53	0.77	0.03				
13.75	3.59	0.80	0.02				
14.00	3.65	0.83	0.02				
14.25	3.70	0.86	0.02				
14.50	3.75	0.89	0.02				
14.75	3.80	0.91	0.02				
15.00	3.84	0.94	0.02				
15.25	3.88	0.96	0.02				
15.50	3.92	0.98	0.02				
15.75	3.96	1.00	0.01				
16.00	3.99	1.02	0.01				
16.25	4.02	1.04	0.01				
16.50	4.04	1.05	0.01				
16.75	4.07	1.07	0.01				
17.00	4.09	1.08	0.01				
17.25	4.12	1.10	0.01				
17.50	4.14	1.11	0.01				
17.75	4.16	1.12	0.01				
18.00	4.18	1.13	0.01				

Summary for Subcatchment 40S: Runoff to Subsurface System - Lot 3

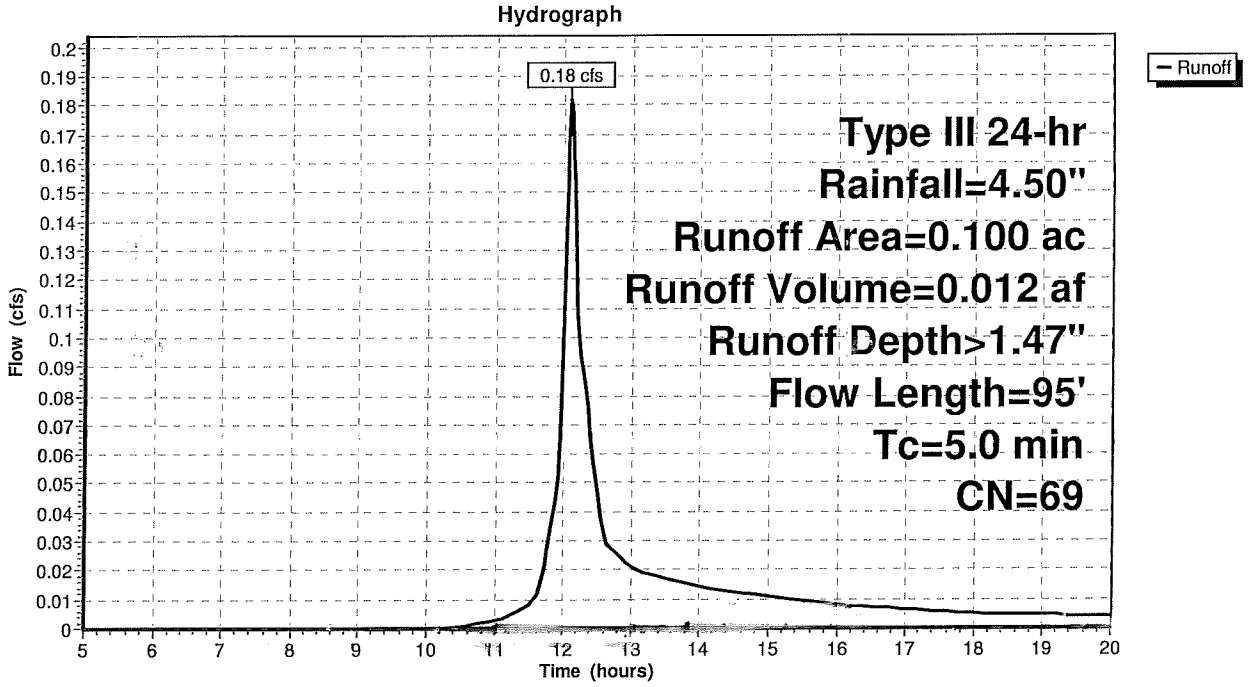
Runoff = 0.18 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 1.47"
Routed to Pond 42P : Subsurface System - Lot 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.50"

	Area (ac)	CN	Description
*	0.050	98	Roof and Driveway, HSG A
	0.050	39	>75% Grass cover, Good, HSG A
	0.100	69	Weighted Average
	0.050		50.00% Pervious Area
	0.050		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	95		0.32		**Direct Entry, Path 1**

Subcatchment 40S: Runoff to Subsurface System - Lot 3



Hydrograph for Subcatchment 40S: Runoff to Subsurface System - Lot 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.26	0.00	0.00	18.25	4.19	1.39	0.00
5.25	0.27	0.00	0.00	18.50	4.21	1.41	0.00
5.50	0.29	0.00	0.00	18.75	4.23	1.42	0.00
5.75	0.31	0.00	0.00	19.00	4.24	1.43	0.00
6.00	0.32	0.00	0.00	19.25	4.26	1.44	0.00
6.25	0.34	0.00	0.00	19.50	4.28	1.45	0.00
6.50	0.36	0.00	0.00	19.75	4.29	1.46	0.00
6.75	0.38	0.00	0.00	20.00	4.31	1.47	0.00
7.00	0.41	0.00	0.00				
7.25	0.43	0.00	0.00				
7.50	0.46	0.00	0.00				
7.75	0.48	0.00	0.00				
8.00	0.51	0.00	0.00				
8.25	0.54	0.00	0.00				
8.50	0.58	0.00	0.00				
8.75	0.62	0.00	0.00				
9.00	0.66	0.00	0.00				
9.25	0.70	0.00	0.00				
9.50	0.75	0.00	0.00				
9.75	0.80	0.00	0.00				
10.00	0.85	0.00	0.00				
10.25	0.91	0.00	0.00				
10.50	0.97	0.00	0.00				
10.75	1.05	0.00	0.00				
11.00	1.13	0.01	0.00				
11.25	1.22	0.02	0.00				
11.50	1.34	0.04	0.01				
11.75	1.60	0.09	0.03				
12.00	2.25	0.31	**0.11**				
12.25	2.90	0.62	**0.09**				
12.50	3.16	0.76	0.05				
12.75	3.28	0.82	0.03				
13.00	3.37	0.88	0.02				
13.25	3.45	0.93	0.02				
13.50	3.53	0.97	0.02				
13.75	3.59	1.01	0.02				
14.00	3.65	1.04	0.01				
14.25	3.70	1.08	0.01				
14.50	3.75	1.11	0.01				
14.75	3.80	1.14	0.01				
15.00	3.84	1.17	0.01				
15.25	3.88	1.19	0.01				
15.50	3.92	1.22	0.01				
15.75	3.96	1.24	0.01				
16.00	3.99	1.26	0.01				
16.25	4.02	1.28	0.01				
16.50	4.04	1.29	0.01				
16.75	4.07	1.31	0.01				
17.00	4.09	1.33	0.01				
17.25	4.12	1.34	0.01				
17.50	4.14	1.36	0.01				
17.75	4.16	1.37	0.01				
18.00	4.18	1.38	0.00				

Summary for Pond 22P: Subsurface System - Lot 1

Inflow Area = 0.040 ac,100.00% Impervious, Inflow Depth > 3.96"
Inflow = 0.18 cfs @ 12.07 hrs, Volume= 0.013 af
Outflow = 0.04 cfs @ 11.75 hrs, Volume= 0.013 af, Atten= 80%, Lag= 0.0 min
Primary = 0.04 cfs @ 11.75 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 233.82' @ 12.51 hrs Surf.Area= 170 sf Storage= 146 cf

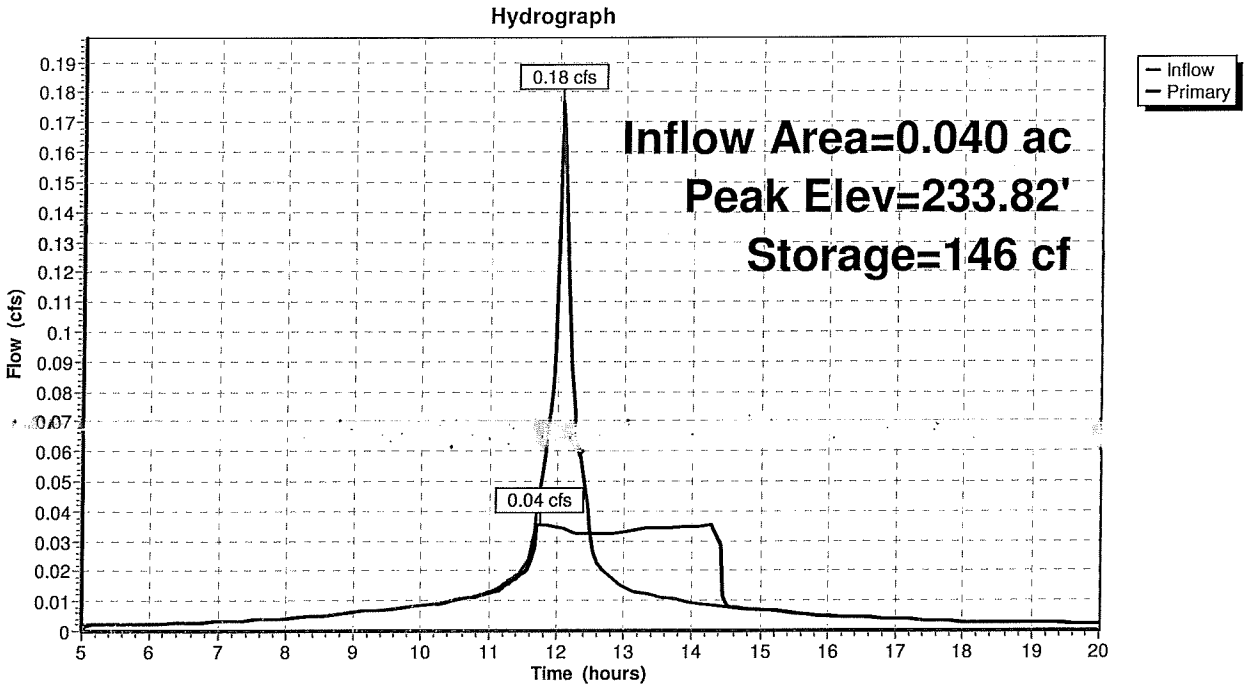
Plug-Flow detention time= 24.4 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 24.0 min (759.1 - 735.0)

Volume	Invert	Avail.Storage	Storage Description
#1	233.00'	346 cf	**Cultec R-330XLHD** x 6 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

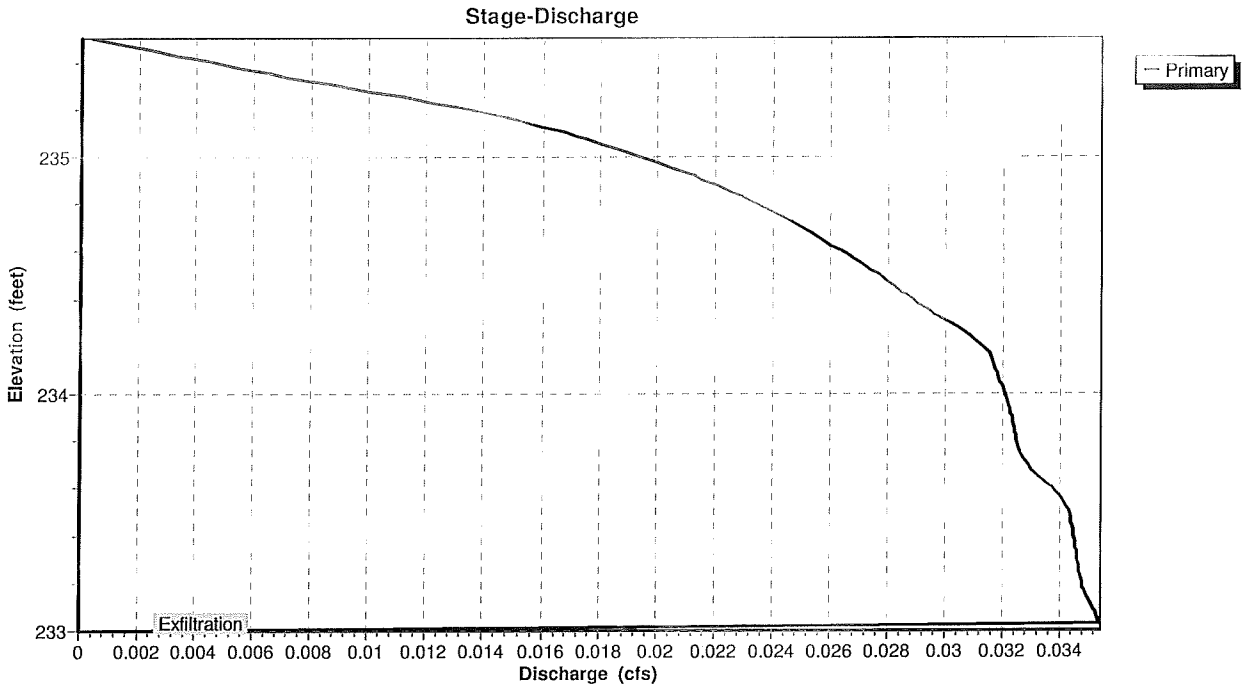
Device	Routing	Invert	Outlet Devices
#1	Primary	233.00'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.04 cfs @ 11.75 hrs HW=233.03' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.04 cfs)

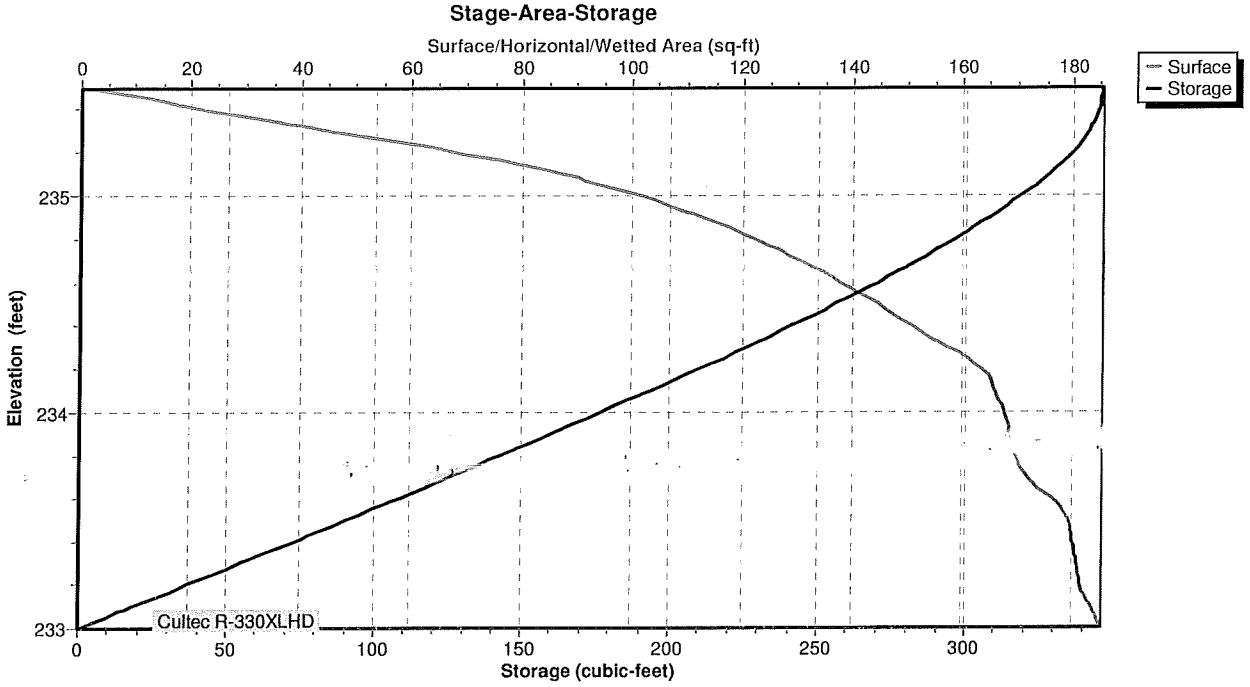
Pond 22P: Subsurface System - Lot 1



Pond 22P: Subsurface System - Lot 1



Pond 22P: Subsurface System - Lot 1



Hydrograph for Pond 22P: Subsurface System - Lot 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	233.00	0.00
5.50	0.00	0	233.00	0.00
6.00	0.00	0	233.00	0.00
6.50	0.00	0	233.00	0.00
7.00	0.00	0	233.00	0.00
7.50	0.00	0	233.00	0.00
8.00	0.00	1	233.00	0.00
8.50	0.01	1	233.00	0.01
9.00	0.01	1	233.00	0.01
9.50	0.01	1	233.01	0.01
10.00	0.01	1	233.01	0.01
10.50	0.01	1	233.01	0.01
11.00	0.01	2	233.01	0.01
11.50	0.02	3	233.01	**0.02**
12.00	**0.12**	40	233.22	**0.03**
12.50	**0.03**	**146**	**233.82**	0.03
13.00	0.01	123	233.68	0.03
13.50	0.01	85	233.47	0.03
14.00	0.01	41	233.22	0.03
14.50	0.01	1	233.01	0.01
15.00	0.01	1	233.00	0.01
15.50	0.01	1	233.00	0.01
16.00	0.00	1	233.00	0.00
16.50	0.00	1	233.00	0.00
17.00	0.00	1	233.00	0.00
17.50	0.00	0	233.00	0.00
18.00	0.00	0	233.00	0.00
18.50	0.00	0	233.00	0.00
19.00	0.00	0	233.00	0.00
19.50	0.00	0	233.00	0.00
20.00	0.00	0	233.00	0.00

Stage-Discharge for Pond 22P: Subsurface System - Lot 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
233.00	0.00	234.06	0.03	235.12	0.02
233.02	0.04	234.08	0.03	235.14	0.02
233.04	0.04	234.10	0.03	235.16	0.01
233.06	0.04	234.12	0.03	235.18	0.01
233.08	0.04	234.14	0.03	235.20	0.01
233.10	0.04	234.16	0.03	235.22	0.01
233.12	0.04	234.18	0.03	235.24	0.01
233.14	0.03	234.20	0.03	235.26	0.01
233.16	0.03	234.22	0.03	235.28	0.01
233.18	0.03	234.24	0.03	235.30	0.01
233.20	0.03	234.26	0.03	235.32	0.01
233.22	0.03	234.28	0.03	235.34	0.01
233.24	0.03	234.30	0.03	235.36	0.01
233.26	0.03	234.32	0.03	235.38	0.01
233.28	0.03	234.34	0.03	235.40	0.00
233.30	0.03	234.36	0.03	235.42	0.00
233.32	0.03	234.38	0.03	235.44	0.00
233.34	0.03	234.40	0.03	235.46	0.00
233.36	0.03	234.42	0.03	235.48	0.00
233.38	0.03	234.44	0.03	235.50	0.00
233.40	0.03	234.46	0.03		
233.42	0.03	234.48	0.03		
233.44	0.03	234.50	0.03		
233.46	0.03	234.52	0.03		
233.48	0.03	234.54	0.03		
233.50	0.03	234.56	0.03		
233.52	0.03	234.58	0.03		
233.54	0.03	234.60	0.03		
233.56	0.03	234.62	0.03		
233.58	0.03	234.64	0.03		
233.60	0.03	234.66	0.03		
233.62	0.03	234.68	0.03		
233.64	0.03	234.70	0.02		
233.66	0.03	234.72	0.02		
233.68	0.03	234.74	0.02		
233.70	0.03	234.76	0.02		
233.72	0.03	234.78	0.02		
233.74	0.03	234.80	0.02		
233.76	0.03	234.82	0.02		
233.78	0.03	234.84	0.02		
233.80	0.03	234.86	0.02		
233.82	0.03	234.88	0.02		
233.84	0.03	234.90	0.02		
233.86	0.03	234.92	0.02		
233.88	0.03	234.94	0.02		
233.90	0.03	234.96	0.02		
233.92	0.03	234.98	0.02		
233.94	0.03	235.00	0.02		
233.96	0.03	235.02	0.02		
233.98	0.03	235.04	0.02		
234.00	0.03	235.06	0.02		
234.02	0.03	235.08	0.02		
234.04	0.03	235.10	0.02		

Stage-Area-Storage for Pond 22P: Subsurface System - Lot 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
233.00	185	0
233.05	184	9
233.10	183	18
233.15	182	28
233.20	182	37
233.25	181	46
233.30	181	55
233.35	180	64
233.40	180	73
233.45	180	82
233.50	179	91
233.55	178	100
233.60	176	109
233.65	174	117
233.70	172	126
233.75	170	135
233.80	170	143
233.85	169	151
233.90	169	160
233.95	168	168
234.00	167	177
234.05	167	185
234.10	166	193
234.15	165	202
234.20	163	210
234.25	161	218
234.30	157	226
234.35	154	234
234.40	150	241
234.45	147	249
234.50	145	256
234.55	141	263
234.60	138	270
234.65	134	277
234.70	131	284
234.75	127	290
234.80	122	296
234.85	118	302
234.90	113	308
234.95	107	313
235.00	102	319
235.05	95	322
235.10	87	328
235.15	79	332
235.20	69	336
235.25	58	339
235.30	46	342
235.35	34	344
235.40	23	345
235.45	12	346
235.50	2	346

Summary for Pond 32P: Subsurface System - Lot 2

Inflow Area = 0.180 ac, 44.44% Impervious, Inflow Depth > 1.21"
Inflow = 0.26 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.08 cfs @ 13.35 hrs, Volume= 0.018 af, Atten= 68%, Lag= 75.7 min
Primary = 0.08 cfs @ 13.35 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 225.15' @ 12.47 hrs Surf.Area= 425 sf Storage= 151 cf

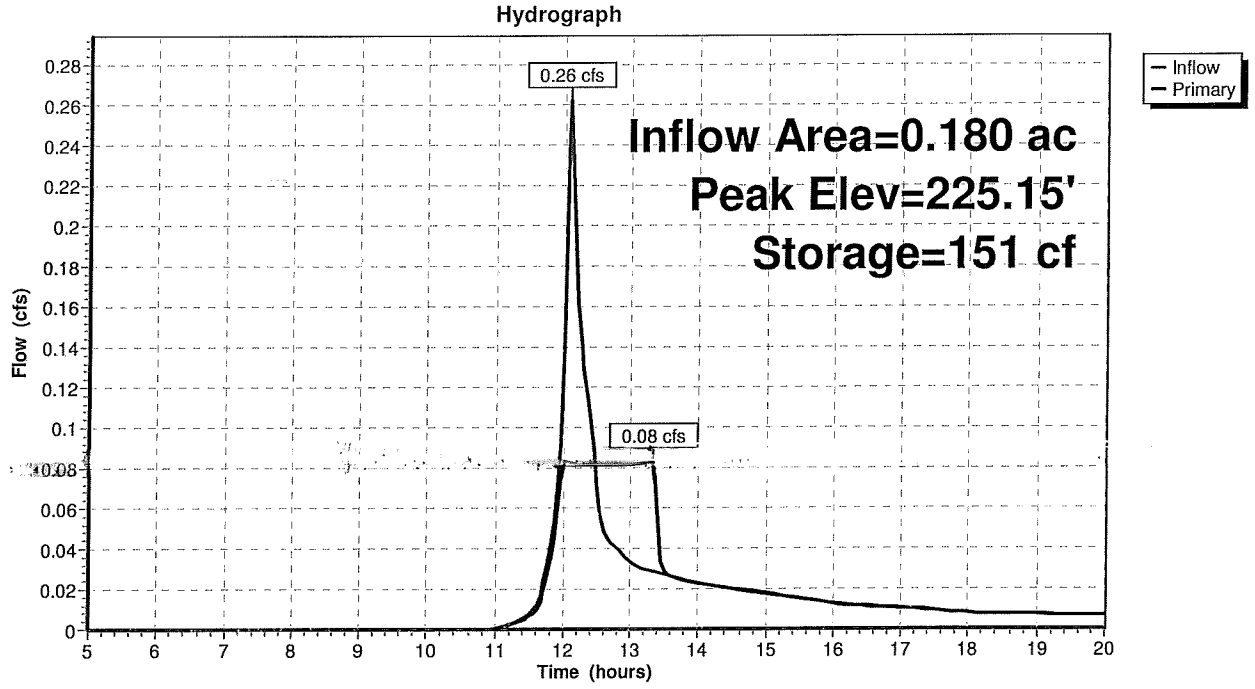
Plug-Flow detention time= 11.1 min calculated for 0.018 af (100% of inflow)
Center-of-Mass det. time= 10.7 min (832.5 - 821.7)

Volume	Invert	Avail.Storage	Storage Description
#1	224.80'	816 cf	**Cultec R-330XLHD** x 15 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

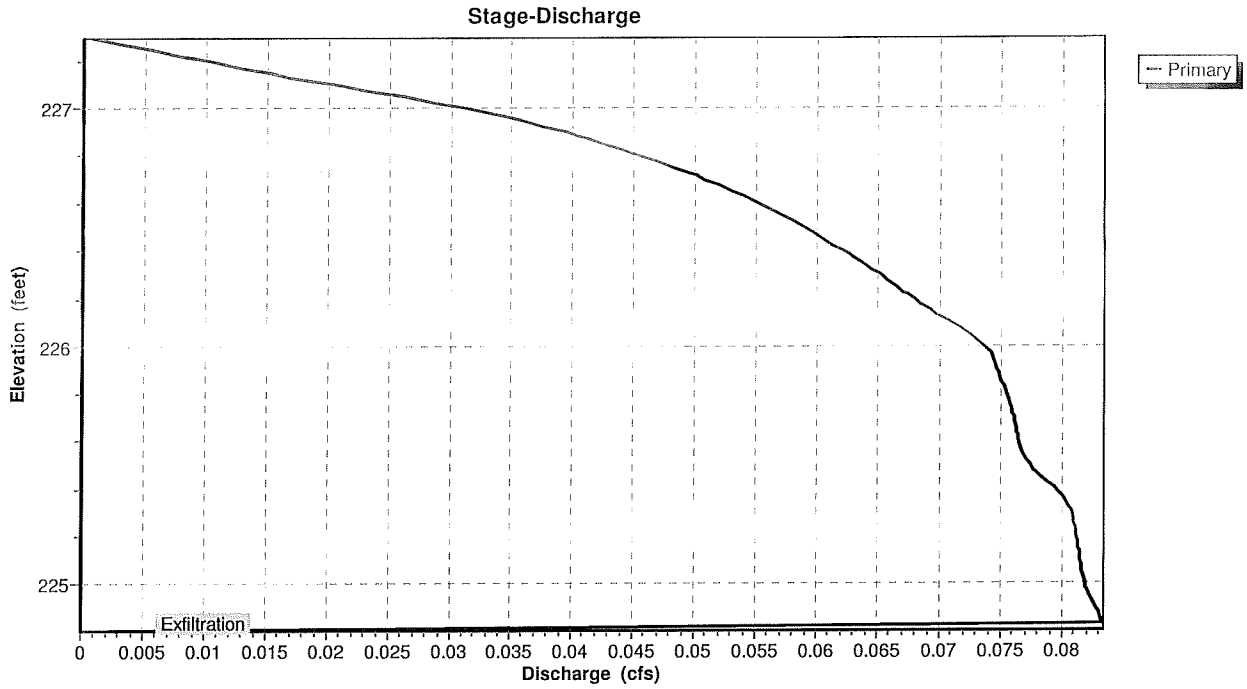
Device	Routing	Invert	Outlet Devices
#1	Primary	224.80'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.08 cfs @ 13.35 hrs HW=224.84' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.08 cfs)

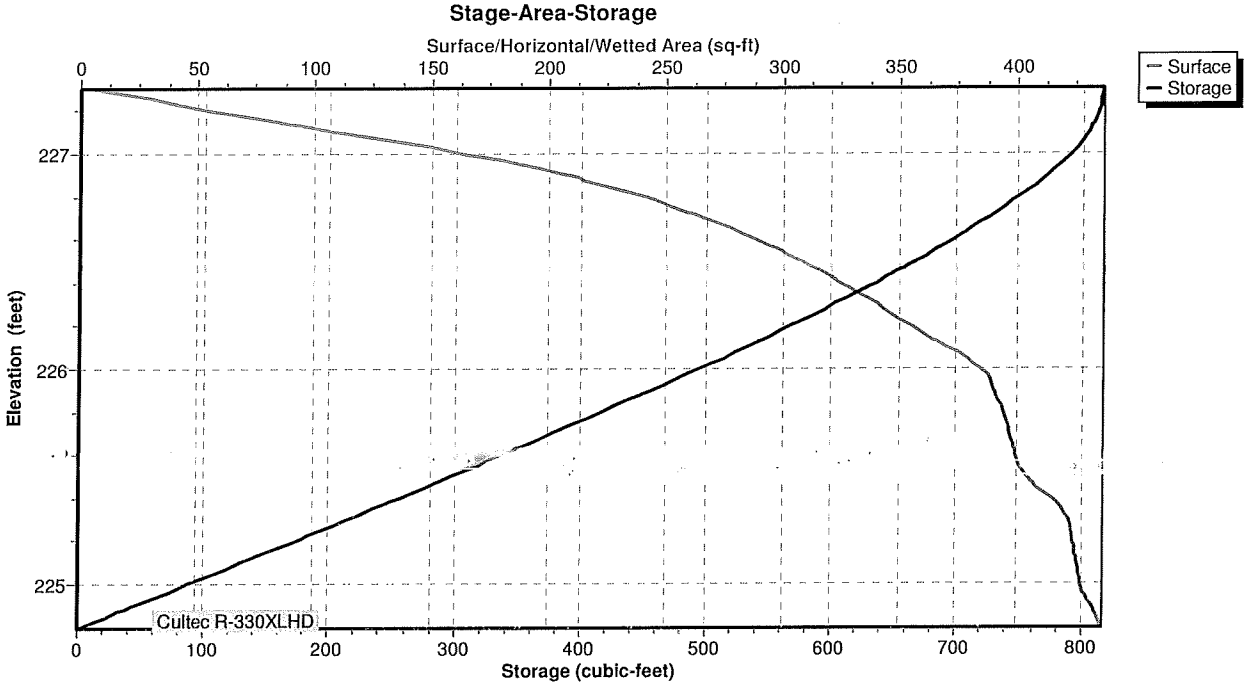
Pond 32P: Subsurface System - Lot 2



Pond 32P: Subsurface System - Lot 2



Pond 32P: Subsurface System - Lot 2



Hydrograph for Pond 32P: Subsurface System - Lot 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	224.80	0.00
5.50	0.00	0	224.80	0.00
6.00	0.00	0	224.80	0.00
6.50	0.00	0	224.80	0.00
7.00	0.00	0	224.80	0.00
7.50	0.00	0	224.80	0.00
8.00	0.00	0	224.80	0.00
8.50	0.00	0	224.80	0.00
9.00	0.00	0	224.80	0.00
9.50	0.00	0	224.80	0.00
10.00	0.00	0	224.80	0.00
10.50	0.00	0	224.80	0.00
11.00	0.00	0	224.80	0.00
11.50	0.01	1	224.80	0.01
12.00	**0.15**	**17**	**224.84**	0.08
12.50	**0.07**	**150**	**225.15**	0.08
13.00	0.03	82	224.99	**0.08**
13.50	0.03	4	224.81	**0.03**
14.00	0.02	3	224.81	0.02
14.50	0.02	3	224.81	0.02
15.00	0.02	2	224.81	0.02
15.50	0.02	2	224.80	0.02
16.00	0.01	2	224.80	0.01
16.50	0.01	1	224.80	0.01
17.00	0.01	1	224.80	0.01
17.50	0.01	1	224.80	0.01
18.00	0.01	1	224.80	0.01
18.50	0.01	1	224.80	0.01
19.00	0.01	1	224.80	0.01
19.50	0.01	1	224.80	0.01
20.00	0.01	1	224.80	0.01

Stage-Discharge for Pond 32P: Subsurface System - Lot 2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
224.80	0.00	225.86	0.08	226.92	0.04
224.82	0.08	225.88	0.07	226.94	0.04
224.84	0.08	225.90	0.07	226.96	0.03
224.86	0.08	225.92	0.07	226.98	0.03
224.88	0.08	225.94	0.07	227.00	0.03
224.90	0.08	225.96	0.07	227.02	0.03
224.92	0.08	225.98	0.07	227.04	0.03
224.94	0.08	226.00	0.07	227.06	0.03
224.96	0.08	226.02	0.07	227.08	0.02
224.98	0.08	226.04	0.07	227.10	0.02
225.00	0.08	226.06	0.07	227.12	0.02
225.02	0.08	226.08	0.07	227.14	0.02
225.04	0.08	226.10	0.07	227.16	0.01
225.06	0.08	226.12	0.07	227.18	0.01
225.08	0.08	226.14	0.07	227.20	0.01
225.10	0.08	226.16	0.07	227.22	0.01
225.12	0.08	226.18	0.07	227.24	0.01
225.14	0.08	226.20	0.07	227.26	0.00
225.16	0.08	226.22	0.07	227.28	0.00
225.18	0.08	226.24	0.07	227.30	0.00
225.20	0.08	226.26	0.07		
225.22	0.08	226.28	0.07		
225.24	0.08	226.30	0.07		
225.26	0.08	226.32	0.06		
225.28	0.08	226.34	0.06		
225.30	0.08	226.36	0.06		
225.32	0.08	226.38	0.06		
225.34	0.08	226.40	0.06		
225.36	0.08	226.42	0.06		
225.38	0.08	226.44	0.06		
225.40	0.08	226.46	0.06		
225.42	0.08	226.48	0.06		
225.44	0.08	226.50	0.06		
225.46	0.08	226.52	0.06		
225.48	0.08	226.54	0.06		
225.50	0.08	226.56	0.06		
225.52	0.08	226.58	0.06		
225.54	0.08	226.60	0.06		
225.56	0.08	226.62	0.05		
225.58	0.08	226.64	0.05		
225.60	0.08	226.66	0.05		
225.62	0.08	226.68	0.05		
225.64	0.08	226.70	0.05		
225.66	0.08	226.72	0.05		
225.68	0.08	226.74	0.05		
225.70	0.08	226.76	0.05		
225.72	0.08	226.78	0.05		
225.74	0.08	226.80	0.05		
225.76	0.08	226.82	0.04		
225.78	0.08	226.84	0.04		
225.80	0.08	226.86	0.04		
225.82	0.08	226.88	0.04		
225.84	0.08	226.90	0.04		

Stage-Area-Storage for Pond 32P: Subsurface System - Lot 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
224.80	**436**	0
224.85	434	22
224.90	432	43
224.95	429	65
225.00	428	86
225.05	426	108
225.10	426	129
225.15	425	150
225.20	424	172
225.25	423	193
225.30	422	214
225.35	419	235
225.40	415	256
225.45	409	276
225.50	404	297
225.55	401	317
225.60	400	337
225.65	398	357
225.70	397	377
225.75	396	396
225.80	394	416
225.85	392	436
225.90	390	455
225.95	388	475
226.00	384	494
226.05	379	513
226.10	370	532
226.15	361	550
226.20	354	568
226.25	347	586
226.30	340	603
226.35	332	620
226.40	324	636
226.45	316	652
226.50	307	668
226.55	298	683
226.60	288	697
226.65	277	712
226.70	265	725
226.75	253	738
226.80	239	750
226.85	223	762
226.90	206	773
226.95	186	783
227.00	163	791
227.05	137	799
227.10	108	805
227.15	80	810
227.20	55	813
227.25	29	815
227.30	4	**816**

Summary for Pond 42P: Subsurface System - Lot 3

Inflow Area = 0.100 ac, 50.00% Impervious, Inflow Depth > 1.47"
Inflow = 0.18 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.07 cfs @ 12.02 hrs, Volume= 0.012 af, Atten= 61%, Lag= 0.0 min
Primary = 0.07 cfs @ 12.02 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 224.73' @ 12.40 hrs Surf.Area= 350 sf Storage= 81 cf

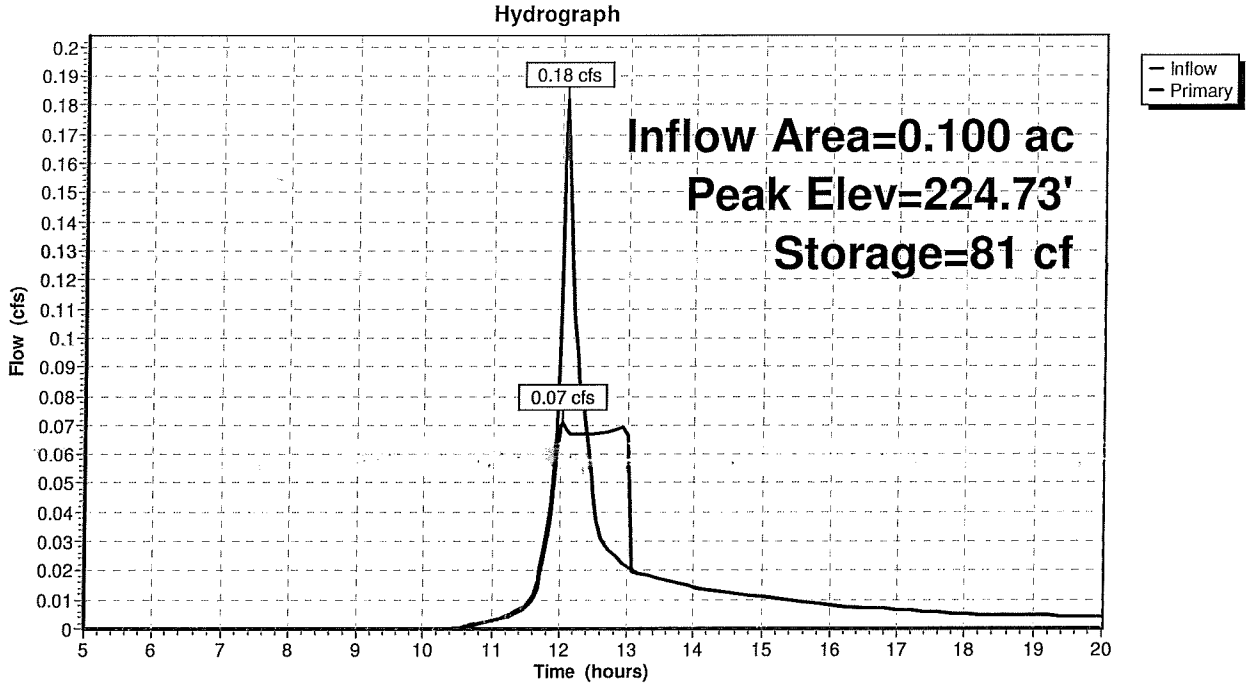
Plug-Flow detention time= 6.9 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 6.6 min (819.8 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	224.50'	453 cf	**Cultec R-180** x 20 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 5 rows

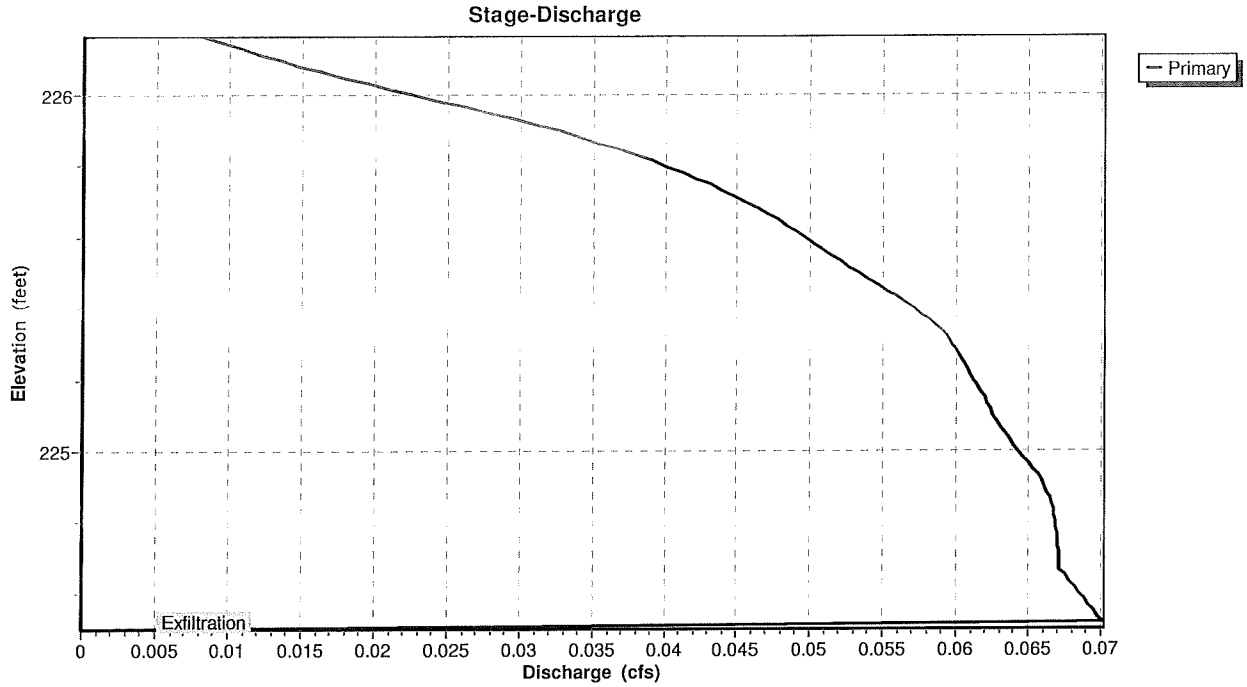
Device	Routing	Invert	Outlet Devices
#1	Primary	224.50'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.07 cfs @ 12.02 hrs HW=224.54' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

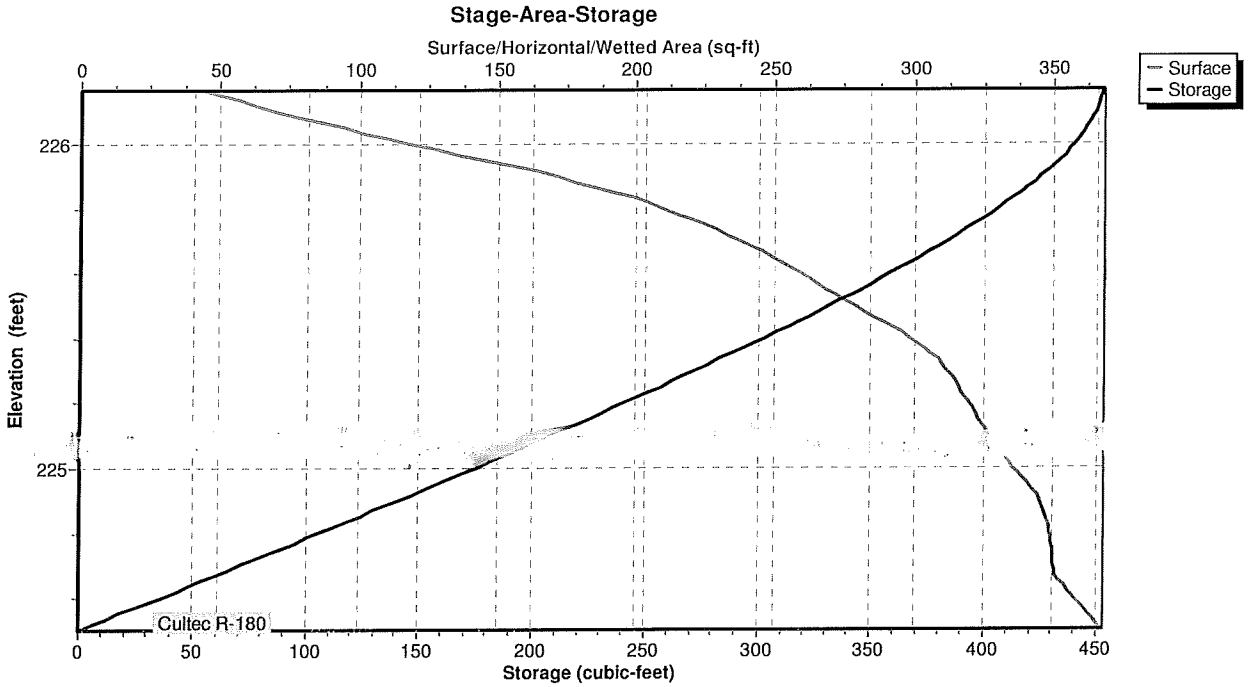
Pond 42P: Subsurface System - Lot 3



Pond 42P: Subsurface System - Lot 3



Pond 42P: Subsurface System - Lot 3



Hydrograph for Pond 42P: Subsurface System - Lot 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	224.50	0.00
5.50	0.00	0	224.50	0.00
6.00	0.00	0	224.50	0.00
6.50	0.00	0	224.50	0.00
7.00	0.00	0	224.50	0.00
7.50	0.00	0	224.50	0.00
8.00	0.00	0	224.50	0.00
8.50	0.00	0	224.50	0.00
9.00	0.00	0	224.50	0.00
9.50	0.00	0	224.50	0.00
10.00	0.00	0	224.50	0.00
10.50	0.00	0	224.50	0.00
11.00	0.00	0	224.50	0.00
11.50	0.01	1	224.50	0.01
12.00	0.11	**9**	**224.53**	**0.07**
12.50	**0.05**	**78**	**224.72**	0.07
13.00	0.02	6	224.52	0.07
13.50	0.02	2	224.50	0.02
14.00	0.01	1	224.50	0.01
14.50	0.01	1	224.50	0.01
15.00	0.01	1	224.50	0.01
15.50	0.01	1	224.50	0.01
16.00	0.01	1	224.50	0.01
16.50	0.01	1	224.50	0.01
17.00	0.01	1	224.50	0.01
17.50	0.01	0	224.50	0.01
18.00	0.00	0	224.50	0.00
18.50	0.00	0	224.50	0.00
19.00	0.00	0	224.50	0.00
19.50	0.00	0	224.50	0.00
20.00	0.00	0	224.50	0.00

Stage-Discharge for Pond 42P: Subsurface System - **Lot 3**

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
224.50	0.00	225.03	0.06	225.56	0.05	226.09	0.01
224.51	0.07	225.04	0.06	225.57	0.05	226.10	0.01
224.52	0.07	225.05	0.06	225.58	0.05	226.11	0.01
224.53	0.07	225.06	0.06	225.59	0.05	226.12	0.01
224.54	0.07	225.07	0.06	225.60	0.05	226.13	0.01
224.55	0.07	225.08	0.06	225.61	0.05	226.14	0.01
224.56	0.07	225.09	0.06	225.62	0.05	226.15	0.01
224.57	0.07	225.10	0.06	225.63	0.05	226.16	0.01
224.58	0.07	225.11	0.06	225.64	0.05	226.17	0.01
224.59	0.07	225.12	0.06	225.65	0.05		
224.60	0.07	225.13	0.06	225.66	0.05		
224.61	0.07	225.14	0.06	225.67	0.05		
224.62	0.07	225.15	0.06	225.68	0.05		
224.63	0.07	225.16	0.06	225.69	0.05		
224.64	0.07	225.17	0.06	225.70	0.05		
224.65	0.07	225.18	0.06	225.71	0.04		
224.66	0.07	225.19	0.06	225.72	0.04		
224.67	0.07	225.20	0.06	225.73	0.04		
224.68	0.07	225.21	0.06	225.74	0.04		
224.69	0.07	225.22	0.06	225.75	0.04		
224.70	0.07	225.23	0.06	225.76	0.04		
224.71	0.07	225.24	0.06	225.77	0.04		
224.72	0.07	225.25	0.06	225.78	0.04		
224.73	0.07	225.26	0.06	225.79	0.04		
224.74	0.07	225.27	0.06	225.80	0.04		
224.75	0.07	225.28	0.06	225.81	0.04		
224.76	0.07	225.29	0.06	225.82	0.04		
224.77	0.07	225.30	0.06	225.83	0.04		
224.78	0.07	225.31	0.06	225.84	0.04		
224.79	0.07	225.32	0.06	225.85	0.04		
224.80	0.07	225.33	0.06	225.86	0.04		
224.81	0.07	225.34	0.06	225.87	0.04		
224.82	0.07	225.35	0.06	225.88	0.03		
224.83	0.07	225.36	0.06	225.89	0.03		
224.84	0.07	225.37	0.06	225.90	0.03		
224.85	0.07	225.38	0.06	225.91	0.03		
224.86	0.07	225.39	0.06	225.92	0.03		
224.87	0.07	225.40	0.06	225.93	0.03		
224.88	0.07	225.41	0.06	225.94	0.03		
224.89	0.07	225.42	0.06	225.95	0.03		
224.90	0.07	225.43	0.06	225.96	0.03		
224.91	0.07	225.44	0.06	225.97	0.03		
224.92	0.07	225.45	0.06	225.98	0.02		
224.93	0.07	225.46	0.05	225.99	0.02		
224.94	0.07	225.47	0.05	226.00	0.02		
224.95	0.07	225.48	0.05	226.01	0.02		
224.96	0.07	225.49	0.05	226.02	0.02		
224.97	0.06	225.50	0.05	226.03	0.02		
224.98	0.06	225.51	0.05	226.04	0.02		
224.99	0.06	225.52	0.05	226.05	0.02		
225.00	0.06	225.53	0.05	226.06	0.02		
225.01	0.06	225.54	0.05	226.07	0.02		
225.02	0.06	225.55	0.05	226.08	0.02		

Stage-Area-Storage for Pond 42P: Subsurface System - Lot 3

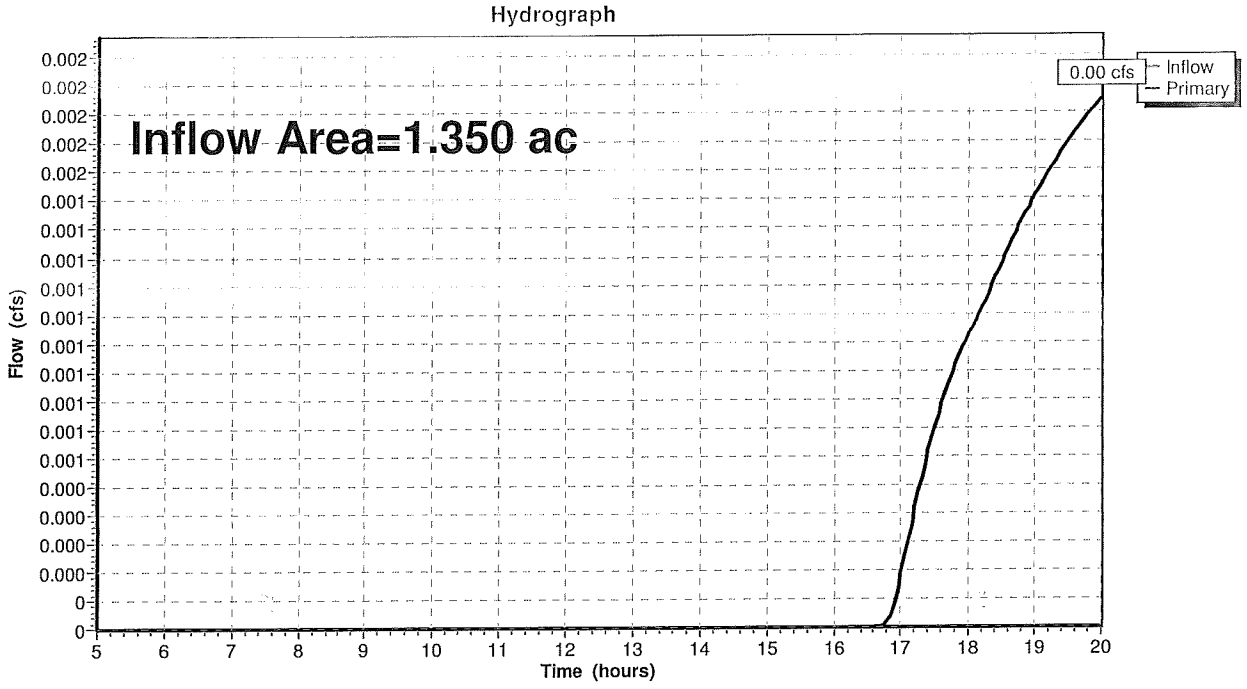
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
224.50	368	0
224.52	366	7
224.54	364	15
224.56	362	22
224.58	360	29
224.60	358	36
224.62	355	43
224.64	353	50
224.66	351	58
224.68	350	65
224.70	350	72
224.72	350	79
224.74	350	86
224.76	350	93
224.78	349	100
224.80	349	107
224.82	348	113
224.84	348	120
224.86	347	127
224.88	346	134
224.90	345	141
224.92	344	148
224.94	342	155
224.96	340	162
224.98	338	169
225.00	336	175
225.02	334	182
225.04	332	189
225.06	330	195
225.08	328	202
225.10	327	208
225.12	325	215
225.14	324	221
225.16	323	228
225.18	321	234
225.20	320	241
225.22	318	247
225.24	317	253
225.26	315	260
225.28	313	266
225.30	312	272
225.32	310	279
225.34	308	285
225.36	304	291
225.38	301	297
225.40	298	303
225.42	295	309
225.44	290	315
225.46	286	320
225.48	282	326
225.50	278	332
225.52	274	337
225.54	270	343
225.56	267	348
225.58	263	353
225.60	259	359
225.62	255	364
225.64	251	369
225.66	247	374
225.68	242	379
225.70	237	383
225.72	232	388
225.74	227	393
225.76	222	397
225.78	216	402
225.80	209	406
225.82	203	410
225.84	196	414
225.86	188	418
225.88	179	421
225.90	171	425
225.92	162	428
225.94	151	431
225.96	140	434
225.98	129	437
226.00	118	439
226.02	109	442
226.04	99	444
226.06	89	446
226.08	79	447
226.10	70	449
226.12	62	450
226.14	54	451
226.16	45	452

Summary for Link DP: Design Point

Inflow Area = 1.350 ac, 0.74% Impervious, Inflow Depth > 0.00"
Inflow = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP: Design Point



Hydrograph for Link DP: Design Point

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00	18.25	0.00	0.00	0.00
5.25	0.00	0.00	0.00	18.50	0.00	0.00	0.00
5.50	0.00	0.00	0.00	18.75	0.00	0.00	0.00
5.75	0.00	0.00	0.00	19.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	19.25	0.00	0.00	0.00
6.25	0.00	0.00	0.00	19.50	0.00	0.00	0.00
6.50	0.00	0.00	0.00	19.75	0.00	0.00	0.00
6.75	0.00	0.00	0.00	20.00	**0.00**	0.00	**0.00**
7.00	0.00	0.00	0.00				
7.25	0.00	0.00	0.00				
7.50	0.00	0.00	0.00				
7.75	0.00	0.00	0.00				
8.00	0.00	0.00	0.00				
8.25	0.00	0.00	0.00				
8.50	0.00	0.00	0.00				
8.75	0.00	0.00	0.00				
9.00	0.00	0.00	0.00				
9.25	0.00	0.00	0.00				
9.50	0.00	0.00	0.00				
9.75	0.00	0.00	0.00				
10.00	0.00	0.00	0.00				
10.25	0.00	0.00	0.00				
10.50	0.00	0.00	0.00				
10.75	0.00	0.00	0.00				
11.00	0.00	0.00	0.00				
11.25	0.00	0.00	0.00				
11.50	0.00	0.00	0.00				
11.75	0.00	0.00	0.00				
12.00	0.00	0.00	0.00				
12.25	0.00	0.00	0.00				
12.50	0.00	0.00	0.00				
12.75	0.00	0.00	0.00				
13.00	0.00	0.00	0.00				
13.25	0.00	0.00	0.00				
13.50	0.00	0.00	0.00				
13.75	0.00	0.00	0.00				
14.00	0.00	0.00	0.00				
14.25	0.00	0.00	0.00				
14.50	0.00	0.00	0.00				
14.75	0.00	0.00	0.00				
15.00	0.00	0.00	0.00				
15.25	0.00	0.00	0.00				
15.50	0.00	0.00	0.00				
15.75	0.00	0.00	0.00				
16.00	0.00	0.00	0.00				
16.25	0.00	0.00	0.00				
16.50	0.00	0.00	0.00				
16.75	0.00	0.00	0.00				
17.00	0.00	0.00	0.00				
17.25	0.00	0.00	0.00				
17.50	0.00	0.00	0.00				
17.75	0.00	0.00	0.00				
18.00	0.00	0.00	0.00				

PROPOSED CONDITIONS

25 YEAR STORM

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: Overland runoff to south Runoff Area=1.350 ac 0.74% Impervious Runoff Depth>0.05"
Flow Length=214' Tc=11.9 min CN=33 Runoff=0.01 cfs 0.005 af

Subcatchment 20S: Runoff to Subsurface Runoff Area=0.040 ac 100.00% Impervious Runoff Depth>4.69"
Flow Length=90' Tc=5.0 min CN=98 Runoff=0.21 cfs 0.016 af

Subcatchment 30S: Runoff to Subsurface Runoff Area=0.180 ac 44.44% Impervious Runoff Depth>1.70"
Flow Length=76' Tc=5.0 min CN=65 Runoff=0.38 cfs 0.025 af

Subcatchment 40S: Runoff to Subsurface Runoff Area=0.100 ac 50.00% Impervious Runoff Depth>2.01"
Flow Length=95' Tc=5.0 min CN=69 Runoff=0.25 cfs 0.017 af

Pond 22P: Subsurface System - Lot 1 Peak Elev=234.10' Storage=193 cf Inflow=0.21 cfs 0.016 af
Outflow=0.04 cfs 0.016 af

Pond 32P: Subsurface System - Lot 2 Peak Elev=225.49' Storage=291 cf Inflow=0.38 cfs 0.025 af
Outflow=0.08 cfs 0.025 af

Pond 42P: Subsurface System - Lot 3 Peak Elev=224.95' Storage=159 cf Inflow=0.25 cfs 0.017 af
Outflow=0.07 cfs 0.017 af

Link DP: Design Point Inflow=0.01 cfs 0.005 af
Primary=0.01 cfs 0.005 af

Total Runoff Area = 1.670 ac Runoff Volume = 0.063 af Average Runoff Depth = 0.45"
89.22% Pervious = 1.490 ac 10.78% Impervious = 0.180 ac

Summary for Subcatchment 10S: Overland runoff to south

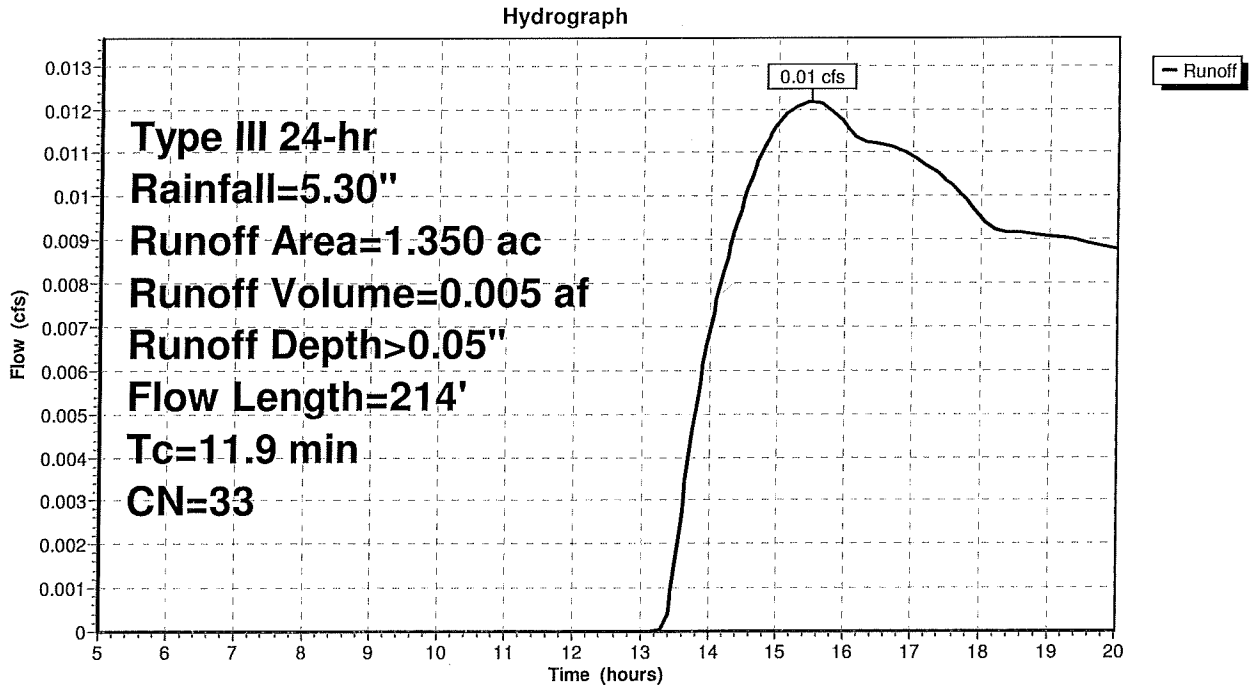
Runoff = 0.01 cfs @ 15.47 hrs, Volume= 0.005 af, Depth> 0.05"
Routed to Link DP : Design Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

	Area (ac)	CN	Description
*	0.010	98	Impervious Area, HSG A
	0.310	39	>75% Grass cover, Good, HSG A
	1.030	30	Woods, Good, HSG A
	1.350	33	Weighted Average
	1.340		99.26% Pervious Area
	0.010		0.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.10"
3.5	130	0.0154	0.62		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
0.3	34	0.1176	1.71		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
11.9	214	Total			

Subcatchment 10S: Overland runoff to south



Hydrograph for Subcatchment 10S: Overland runoff to south

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.30	0.00	0.00
5.25	0.32	0.00	0.00
5.50	0.34	0.00	0.00
5.75	0.36	0.00	0.00
6.00	0.38	0.00	0.00
6.25	0.40	0.00	0.00
6.50	0.43	0.00	0.00
6.75	0.45	0.00	0.00
7.00	0.48	0.00	0.00
7.25	0.51	0.00	0.00
7.50	0.54	0.00	0.00
7.75	0.57	0.00	0.00
8.00	0.60	0.00	0.00
8.25	0.64	0.00	0.00
8.50	0.68	0.00	0.00
8.75	0.72	0.00	0.00
9.00	0.77	0.00	0.00
9.25	0.82	0.00	0.00
9.50	0.88	0.00	0.00
9.75	0.94	0.00	0.00
10.00	1.00	0.00	0.00
10.25	1.07	0.00	0.00
10.50	1.15	0.00	0.00
10.75	1.23	0.00	0.00
11.00	1.32	0.00	0.00
11.25	1.44	0.00	0.00
11.50	1.58	0.00	0.00
11.75	1.88	0.00	0.00
12.00	2.65	0.00	0.00
12.25	3.42	0.00	0.00
12.50	3.72	0.00	0.00
12.75	3.86	0.00	0.00
13.00	3.97	0.00	0.00
13.25	4.07	0.00	0.00
13.50	4.15	0.00	0.00
13.75	4.23	0.00	0.00
14.00	4.30	0.00	0.01
14.25	4.36	0.00	0.01
14.50	4.42	0.01	0.01
14.75	4.48	0.01	0.01
15.00	4.53	0.01	0.01
15.25	4.58	0.01	**0.01**
15.50	4.62	0.01	**0.01**
15.75	4.66	0.02	0.01
16.00	4.70	0.02	0.01
16.25	4.73	0.02	0.01
16.50	4.76	0.02	0.01
16.75	4.79	0.03	0.01
17.00	4.82	0.03	0.01
17.25	4.85	0.03	0.01
17.50	4.87	0.03	0.01
17.75	4.90	0.03	0.01
18.00	4.92	0.03	0.01
18.25	4.94	0.04	0.01
18.50	4.96	0.04	0.01
18.75	4.98	0.04	0.01
19.00	5.00	0.04	0.01
19.25	5.02	0.04	0.01
19.50	5.04	0.04	0.01
19.75	5.05	0.05	0.01
20.00	**5.07**	**0.05**	0.01

Summary for Subcatchment 20S: Runoff to Subsurface System - Lot 1

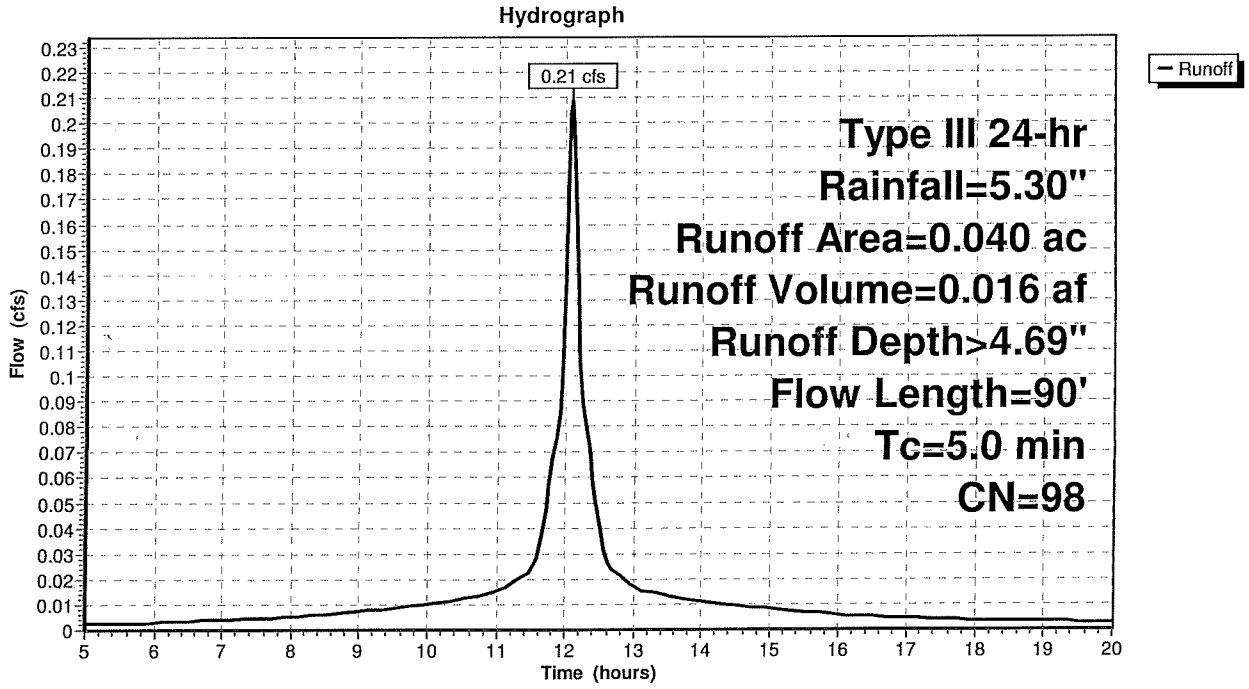
Runoff = 0.21 cfs @ 12.07 hrs, Volume= 0.016 af, Depth> 4.69"
Routed to Pond 22P : Subsurface System - Lot 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

Area (ac)	CN	Description
0.040	98	Roofs, HSG A
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	90		0.30		**Direct Entry, Path 1**

Subcatchment 20S: Runoff to Subsurface System - Lot 1



Hydrograph for Subcatchment 20S: Runoff to Subsurface System - Lot 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.30	0.15	0.00
5.25	0.32	0.16	0.00
5.50	0.34	0.18	0.00
5.75	0.36	0.20	0.00
6.00	0.38	0.21	0.00
6.25	0.40	0.23	0.00
6.50	0.43	0.25	0.00
6.75	0.45	0.28	0.00
7.00	0.48	0.30	0.00
7.25	0.51	0.33	0.00
7.50	0.54	0.35	0.00
7.75	0.57	0.38	0.00
8.00	0.60	0.41	0.01
8.25	0.64	0.45	0.01
8.50	0.68	0.49	0.01
8.75	0.72	0.53	0.01
9.00	0.77	0.57	0.01
9.25	0.82	0.62	0.01
9.50	0.88	0.67	0.01
9.75	0.94	0.73	0.01
10.00	1.00	0.79	0.01
10.25	1.07	0.86	0.01
10.50	1.15	0.93	0.01
10.75	1.23	1.02	0.01
11.00	1.32	1.11	0.01
11.25	1.44	1.22	0.02
11.50	1.58	1.36	0.02
11.75	1.88	1.66	0.06
12.00	2.65	2.42	**0.15**
12.25	3.42	3.18	**0.09**
12.50	3.72	3.49	0.04
12.75	3.86	3.63	0.02
13.00	3.97	3.74	0.02
13.25	4.07	3.83	0.01
13.50	4.15	3.92	0.01
13.75	4.23	3.99	0.01
14.00	4.30	4.06	0.01
14.25	4.36	4.13	0.01
14.50	4.42	4.18	0.01
14.75	4.48	4.24	0.01
15.00	4.53	4.29	0.01
15.25	4.58	4.34	0.01
15.50	4.62	4.38	0.01
15.75	4.66	4.42	0.01
16.00	4.70	4.46	0.01
16.25	4.73	4.49	0.01
16.50	4.76	4.52	0.01
16.75	4.79	4.56	0.00
17.00	4.82	4.58	0.00
17.25	4.85	4.61	0.00
17.50	4.87	4.64	0.00
17.75	4.90	4.66	0.00
18.00	4.92	4.68	0.00
18.25	4.94	4.70	0.00
18.50	4.96	4.72	0.00
18.75	4.98	4.74	0.00
19.00	5.00	4.76	0.00
19.25	5.02	4.78	0.00
19.50	5.04	4.80	0.00
19.75	5.05	4.82	0.00
20.00	**5.07**	**4.84**	0.00

Summary for Subcatchment 30S: Runoff to Subsurface System - Lot 2

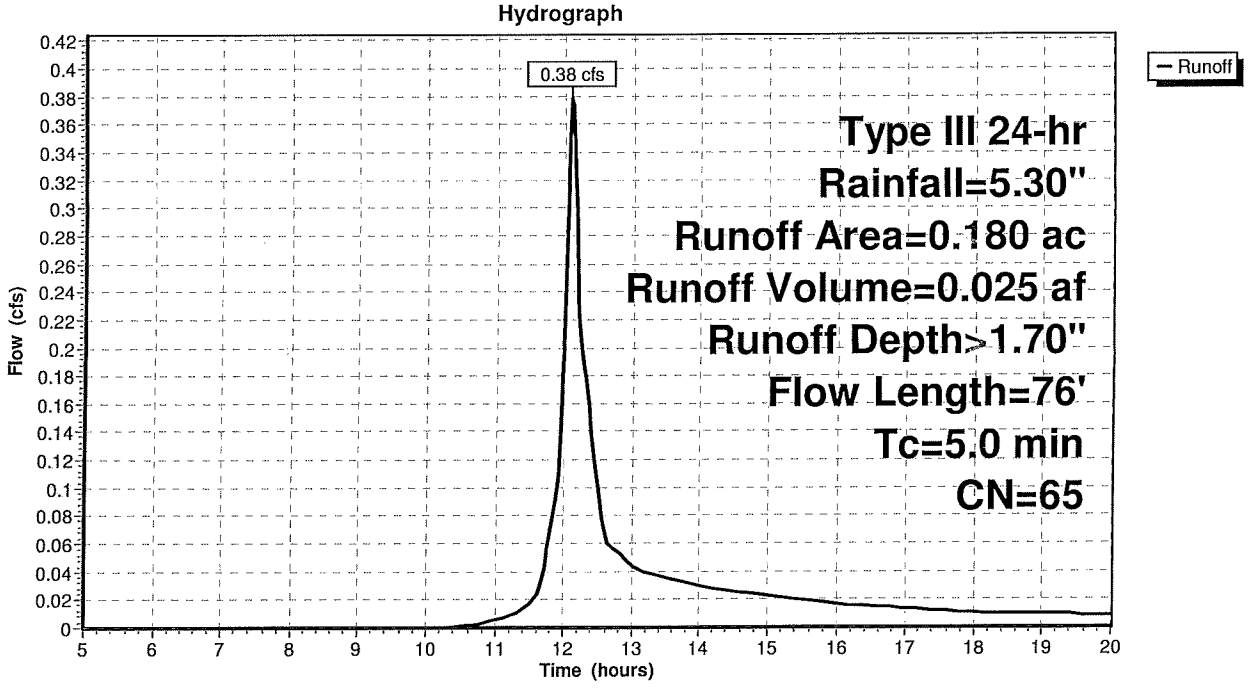
Runoff = 0.38 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 1.70"
Routed to Pond 32P : Subsurface System - Lot 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

	Area (ac)	CN	Description
*	0.080	98	Roof and Driveway, HSG A
	0.100	39	>75% Grass cover, Good, HSG A
	0.180	65	Weighted Average
	0.100		55.56% Pervious Area
	0.080		44.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	76		0.25		**Direct Entry, Path 1**

Subcatchment 30S: Runoff to Subsurface System - Lot 2



Hydrograph for Subcatchment 30S: Runoff to Subsurface System - Lot 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.30	0.00	0.00
5.25	0.32	0.00	0.00
5.50	0.34	0.00	0.00
5.75	0.36	0.00	0.00
6.00	0.38	0.00	0.00
6.25	0.40	0.00	0.00
6.50	0.43	0.00	0.00
6.75	0.45	0.00	0.00
7.00	0.48	0.00	0.00
7.25	0.51	0.00	0.00
7.50	0.54	0.00	0.00
7.75	0.57	0.00	0.00
8.00	0.60	0.00	0.00
8.25	0.64	0.00	0.00
8.50	0.68	0.00	0.00
8.75	0.72	0.00	0.00
9.00	0.77	0.00	0.00
9.25	0.82	0.00	0.00
9.50	0.88	0.00	0.00
9.75	0.94	0.00	0.00
10.00	1.00	0.00	0.00
10.25	1.07	0.00	0.00
10.50	1.15	0.00	0.00
10.75	1.23	0.00	0.00
11.00	1.32	0.01	0.01
11.25	1.44	0.02	0.01
11.50	1.58	0.04	0.02
11.75	1.88	0.10	0.06
12.00	2.65	0.36	**0.23**
12.25	3.42	0.71	**0.20**
12.50	3.72	0.87	0.10
12.75	3.86	0.95	0.06
13.00	3.97	1.01	0.04
13.25	4.07	1.07	0.04
13.50	4.15	1.12	0.04
13.75	4.23	1.16	0.03
14.00	4.30	1.21	0.03
14.25	4.36	1.24	0.03
14.50	4.42	1.28	0.03
14.75	4.48	1.32	0.02
15.00	4.53	1.35	0.02
15.25	4.58	1.38	0.02
15.50	4.62	1.41	0.02
15.75	4.66	1.43	0.02
16.00	4.70	1.45	0.02
16.25	4.73	1.48	0.02
16.50	4.76	1.50	0.01
16.75	4.79	1.52	0.01
17.00	4.82	1.54	0.01
17.25	4.85	1.55	0.01
17.50	4.87	1.57	0.01
17.75	4.90	1.58	0.01
18.00	4.92	1.60	0.01
18.25	4.94	1.61	0.01
18.50	4.96	1.63	0.01
18.75	4.98	1.64	0.01
19.00	5.00	1.65	0.01
19.25	5.02	1.67	0.01
19.50	5.04	1.68	0.01
19.75	5.05	1.69	0.01
20.00	**5.07**	**1.70**	0.01

Summary for Subcatchment 40S: Runoff to Subsurface System - Lot 3

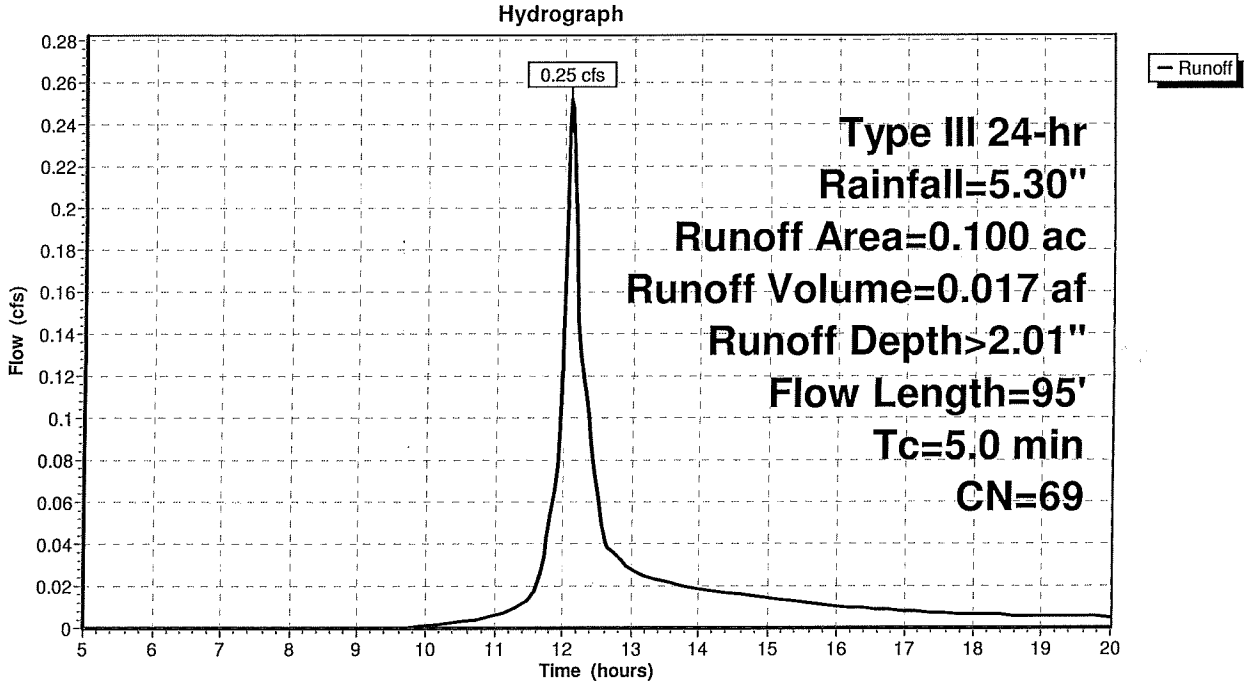
Runoff = 0.25 cfs @ 12.08 hrs, Volume= 0.017 af, Depth> 2.01"
Routed to Pond 42P : Subsurface System - Lot 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.30"

	Area (ac)	CN	Description
*	0.050	98	Roof and Driveway, HSG A
	0.050	39	>75% Grass cover, Good, HSG A
	0.100	69	Weighted Average
	0.050		50.00% Pervious Area
	0.050		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	95		0.32		**Direct Entry, Path 1**

Subcatchment 40S: Runoff to Subsurface System - Lot 3



Hydrograph for Subcatchment 40S: Runoff to Subsurface System - Lot 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.30	0.00	0.00
5.25	0.32	0.00	0.00
5.50	0.34	0.00	0.00
5.75	0.36	0.00	0.00
6.00	0.38	0.00	0.00
6.25	0.40	0.00	0.00
6.50	0.43	0.00	0.00
6.75	0.45	0.00	0.00
7.00	0.48	0.00	0.00
7.25	0.51	0.00	0.00
7.50	0.54	0.00	0.00
7.75	0.57	0.00	0.00
8.00	0.60	0.00	0.00
8.25	0.64	0.00	0.00
8.50	0.68	0.00	0.00
8.75	0.72	0.00	0.00
9.00	0.77	0.00	0.00
9.25	0.82	0.00	0.00
9.50	0.88	0.00	0.00
9.75	0.94	0.00	0.00
10.00	1.00	0.00	0.00
10.25	1.07	0.01	0.00
10.50	1.15	0.01	0.00
10.75	1.23	0.02	0.00
11.00	1.32	0.04	0.01
11.25	1.44	0.06	0.01
11.50	1.58	0.09	0.01
11.75	1.88	0.18	0.04
12.00	2.65	0.49	**0.16**
12.25	3.42	0.90	**0.13**
12.50	3.72	1.09	0.06
12.75	3.86	1.18	0.03
13.00	3.97	1.25	0.03
13.25	4.07	1.31	0.02
13.50	4.15	1.37	0.02
13.75	4.23	1.42	0.02
14.00	4.30	1.46	0.02
14.25	4.36	1.51	0.02
14.50	4.42	1.55	0.02
14.75	4.48	1.59	0.02
15.00	4.53	1.62	0.01
15.25	4.58	1.65	0.01
15.50	4.62	1.69	0.01
15.75	4.66	1.71	0.01
16.00	4.70	1.74	0.01
16.25	4.73	1.76	0.01
16.50	4.76	1.79	0.01
16.75	4.79	1.81	0.01
17.00	4.82	1.83	0.01
17.25	4.85	1.85	0.01
17.50	4.87	1.87	0.01
17.75	4.90	1.88	0.01
18.00	4.92	1.90	0.01
18.25	4.94	1.91	0.01
18.50	4.96	1.93	0.01
18.75	4.98	1.94	0.01
19.00	5.00	1.96	0.01
19.25	5.02	1.97	0.01
19.50	5.04	1.98	0.01
19.75	5.05	2.00	0.01
20.00	**5.07**	**2.01**	0.01

Summary for Pond 22P: Subsurface System - Lot 1

Inflow Area = 0.040 ac,100.00% Impervious, Inflow Depth > 4.69"
Inflow = 0.21 cfs @ 12.07 hrs, Volume= 0.016 af
Outflow = 0.04 cfs @ 11.70 hrs, Volume= 0.016 af, Atten= 83%, Lag= 0.0 min
Primary = 0.04 cfs @ 11.70 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 234.10' @ 12.55 hrs Surf.Area= 166 sf Storage= 193 cf

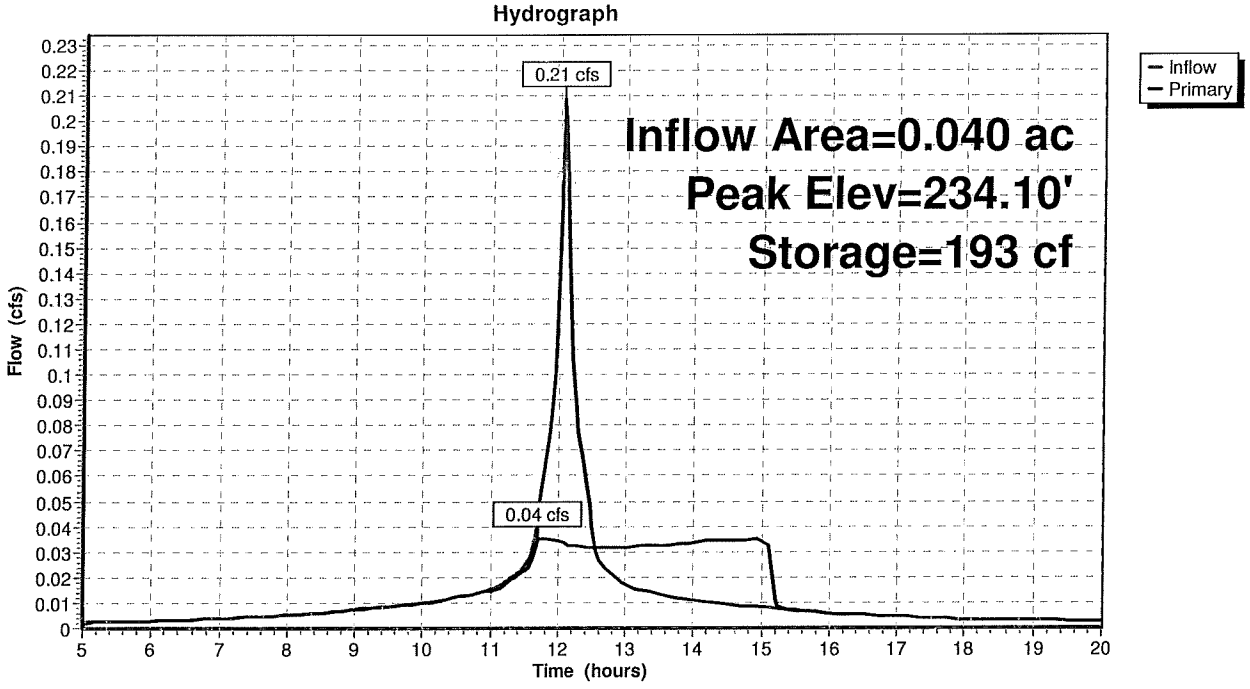
Plug-Flow detention time= 34.9 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 34.5 min (768.5 - 734.1)

Volume	Invert	Avail.Storage	Storage Description
#1	233.00'	346 cf	**Cultec R-330XLHD** x 6 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

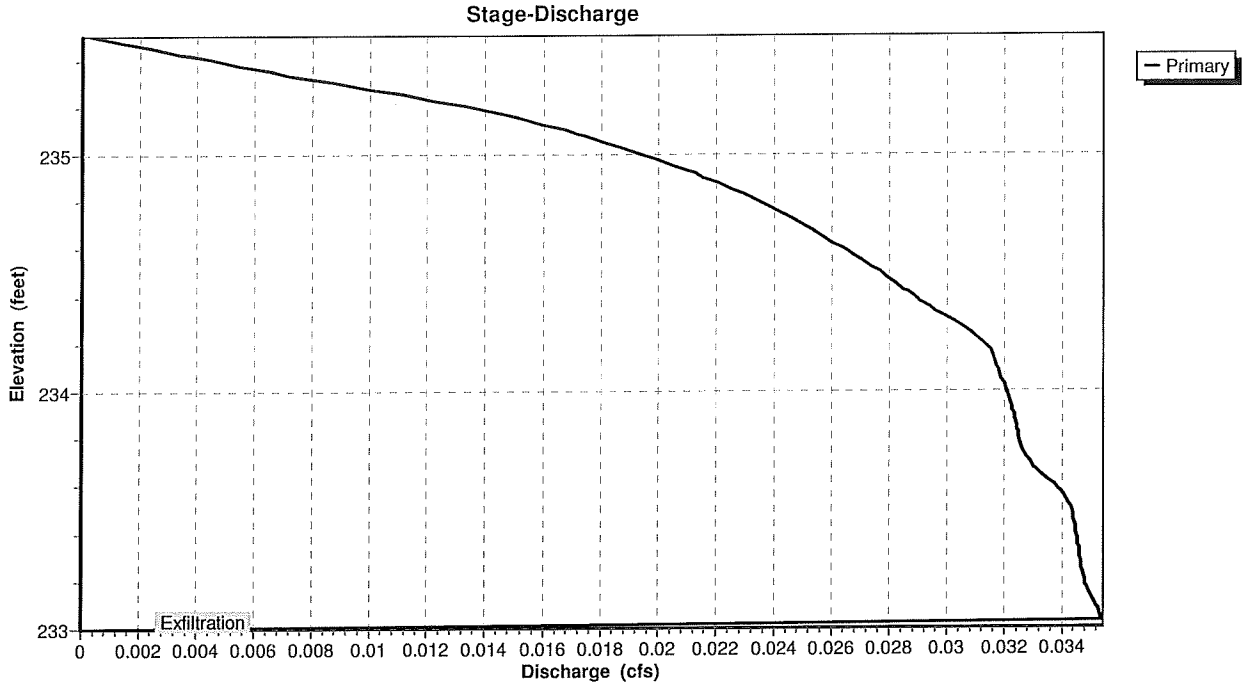
Device	Routing	Invert	Outlet Devices
#1	Primary	233.00'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.04 cfs @ 11.70 hrs HW=233.03' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

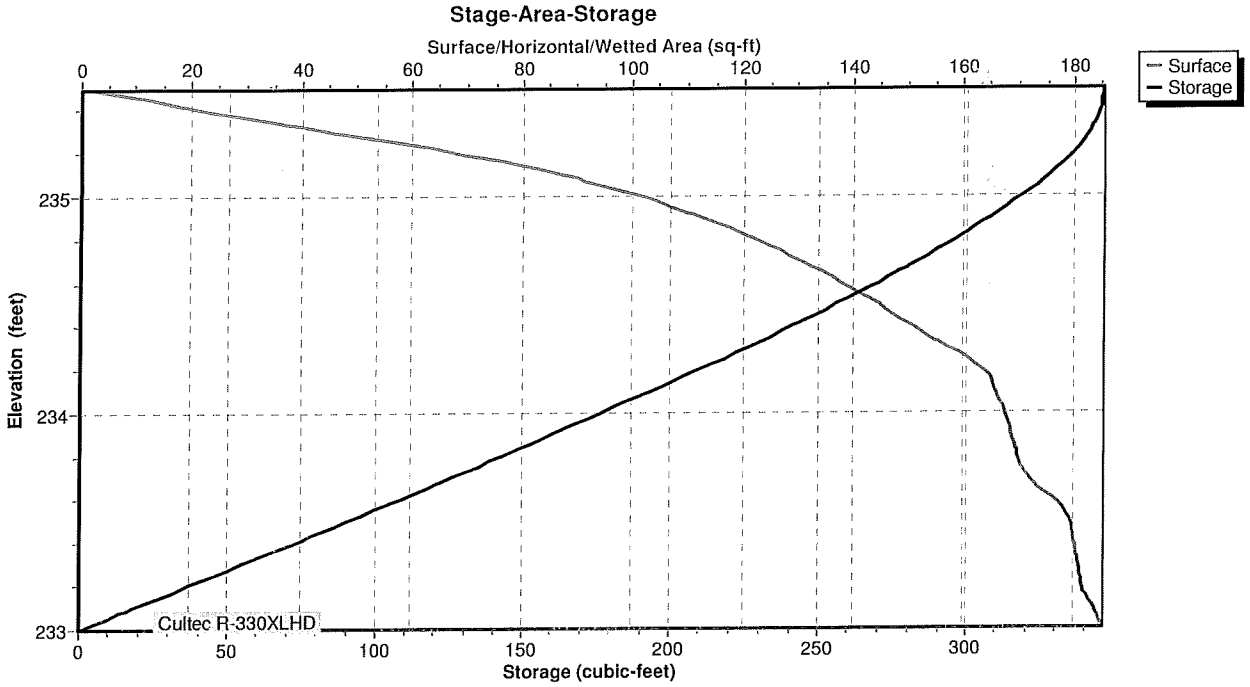
Pond 22P: Subsurface System - Lot 1



Pond 22P: Subsurface System - Lot 1



Pond 22P: Subsurface System - Lot 1



Hydrograph for Pond 22P: Subsurface System - Lot 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	233.00	0.00
5.50	0.00	0	233.00	0.00
6.00	0.00	0	233.00	0.00
6.50	0.00	0	233.00	0.00
7.00	0.00	1	233.00	0.00
7.50	0.00	1	233.00	0.00
8.00	0.01	1	233.00	0.01
8.50	0.01	1	233.00	0.01
9.00	0.01	1	233.01	0.01
9.50	0.01	1	233.01	0.01
10.00	0.01	1	233.01	0.01
10.50	0.01	2	233.01	0.01
11.00	0.01	2	233.01	0.01
11.50	0.02	3	233.02	**0.02**
12.00	**0.15**	55	233.30	**0.03**
12.50	**0.04**	**192**	**234.09**	0.03
13.00	0.02	**177**	**234.00**	0.03
13.50	0.01	145	233.81	0.03
14.00	0.01	108	233.59	0.03
14.50	0.01	64	233.35	0.03
15.00	0.01	17	233.09	0.04
15.50	0.01	1	233.00	0.01
16.00	0.01	1	233.00	0.01
16.50	0.01	1	233.00	0.01
17.00	0.00	1	233.00	0.00
17.50	0.00	1	233.00	0.00
18.00	0.00	0	233.00	0.00
18.50	0.00	0	233.00	0.00
19.00	0.00	0	233.00	0.00
19.50	0.00	0	233.00	0.00
20.00	0.00	0	233.00	0.00

Stage-Discharge for Pond 22P: Subsurface System - Lot 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
233.00	**0.00**	234.06	0.03	235.12	0.02
233.02	**0.04**	234.08	0.03	235.14	0.02
233.04	0.04	234.10	0.03	235.16	0.01
233.06	0.04	234.12	0.03	235.18	0.01
233.08	0.04	234.14	0.03	235.20	0.01
233.10	0.04	234.16	0.03	235.22	0.01
233.12	0.04	234.18	0.03	235.24	0.01
233.14	0.03	234.20	0.03	235.26	0.01
233.16	0.03	234.22	0.03	235.28	0.01
233.18	0.03	234.24	0.03	235.30	0.01
233.20	0.03	234.26	0.03	235.32	0.01
233.22	0.03	234.28	0.03	235.34	0.01
233.24	0.03	234.30	0.03	235.36	0.01
233.26	0.03	234.32	0.03	235.38	0.01
233.28	0.03	234.34	0.03	235.40	0.00
233.30	0.03	234.36	0.03	235.42	0.00
233.32	0.03	234.38	0.03	235.44	0.00
233.34	0.03	234.40	0.03	235.46	0.00
233.36	0.03	234.42	0.03	235.48	0.00
233.38	0.03	234.44	0.03	235.50	0.00
233.40	0.03	234.46	0.03		
233.42	0.03	234.48	0.03		
233.44	0.03	234.50	0.03		
233.46	0.03	234.52	0.03		
233.48	0.03	234.54	0.03		
233.50	0.03	234.56	0.03		
233.52	0.03	234.58	0.03		
233.54	0.03	234.60	0.03		
233.56	0.03	234.62	0.03		
233.58	0.03	234.64	0.03		
233.60	0.03	234.66	0.03		
233.62	0.03	234.68	0.03		
233.64	0.03	234.70	0.02		
233.66	0.03	234.72	0.02		
233.68	0.03	234.74	0.02		
233.70	0.03	234.76	0.02		
233.72	0.03	234.78	0.02		
233.74	0.03	234.80	0.02		
233.76	0.03	234.82	0.02		
233.78	0.03	234.84	0.02		
233.80	0.03	234.86	0.02		
233.82	0.03	234.88	0.02		
233.84	0.03	234.90	0.02		
233.86	0.03	234.92	0.02		
233.88	0.03	234.94	0.02		
233.90	0.03	234.96	0.02		
233.92	0.03	234.98	0.02		
233.94	0.03	235.00	0.02		
233.96	0.03	235.02	0.02		
233.98	0.03	235.04	0.02		
234.00	0.03	235.06	0.02		
234.02	0.03	235.08	0.02		
234.04	0.03	235.10	0.02		

Stage-Area-Storage for Pond 22P: Subsurface System - Lot 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
233.00	**185**	0
233.05	184	9
233.10	183	18
233.15	182	28
233.20	182	37
233.25	181	46
233.30	181	55
233.35	180	64
233.40	180	73
233.45	180	82
233.50	179	91
233.55	178	100
233.60	176	109
233.65	174	117
233.70	172	126
233.75	170	135
233.80	170	143
233.85	169	151
233.90	169	160
233.95	168	168
234.00	167	177
234.05	167	185
234.10	166	193
234.15	165	202
234.20	163	210
234.25	161	218
234.30	157	226
234.35	154	234
234.40	150	241
234.45	147	249
234.50	145	256
234.55	141	263
234.60	138	270
234.65	134	277
234.70	131	284
234.75	127	290
234.80	122	296
234.85	118	302
234.90	113	308
234.95	107	313
235.00	102	319
235.05	95	324
235.10	87	328
235.15	79	332
235.20	69	336
235.25	58	339
235.30	46	342
235.35	34	344
235.40	23	345
235.45	12	346
235.50	2	**346**

Summary for Pond 32P: Subsurface System - Lot 2

Inflow Area = 0.180 ac, 44.44% Impervious, Inflow Depth > 1.70"
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 0.025 af
Outflow = 0.08 cfs @ 11.90 hrs, Volume= 0.025 af, Atten= 78%, Lag= 0.0 min
Primary = 0.08 cfs @ 11.90 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 225.49' @ 12.55 hrs Surf.Area= 405 sf Storage= 291 cf

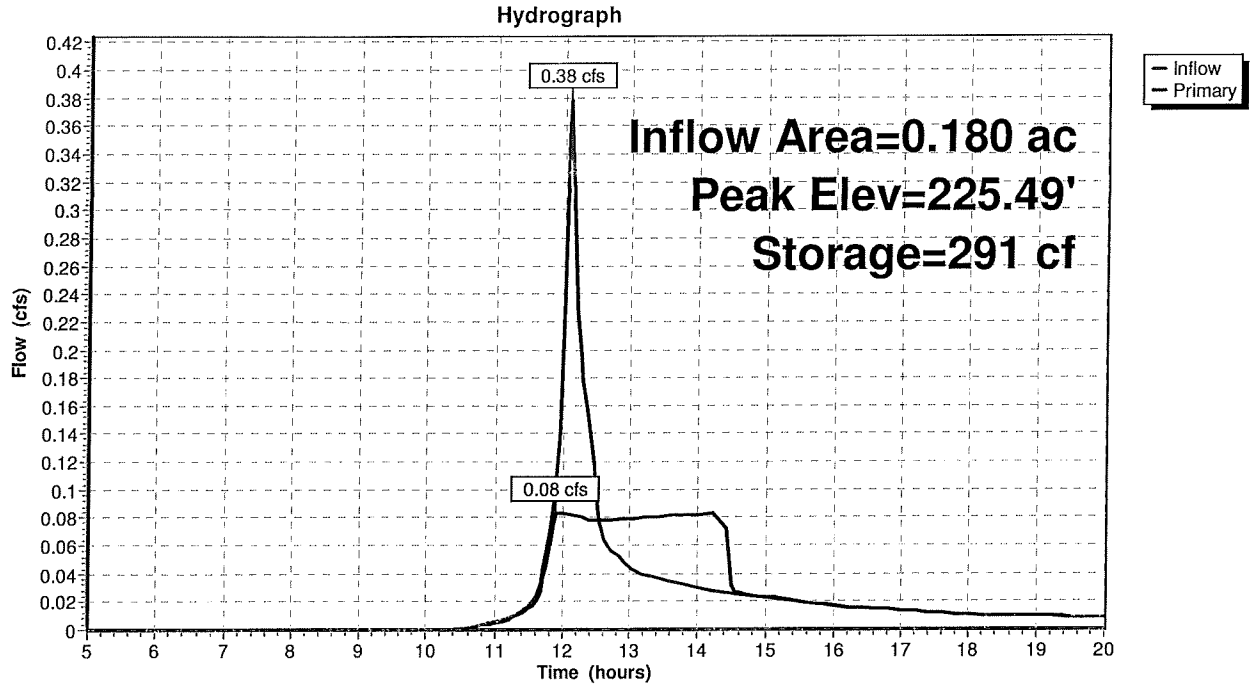
Plug-Flow detention time= 24.8 min calculated for 0.025 af (100% of inflow)
Center-of-Mass det. time= 24.3 min (838.3 - 814.0)

Volume	Invert	Avail.Storage	Storage Description
#1	224.80'	816 cf	**Cultec R-330XLHD** x 15 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

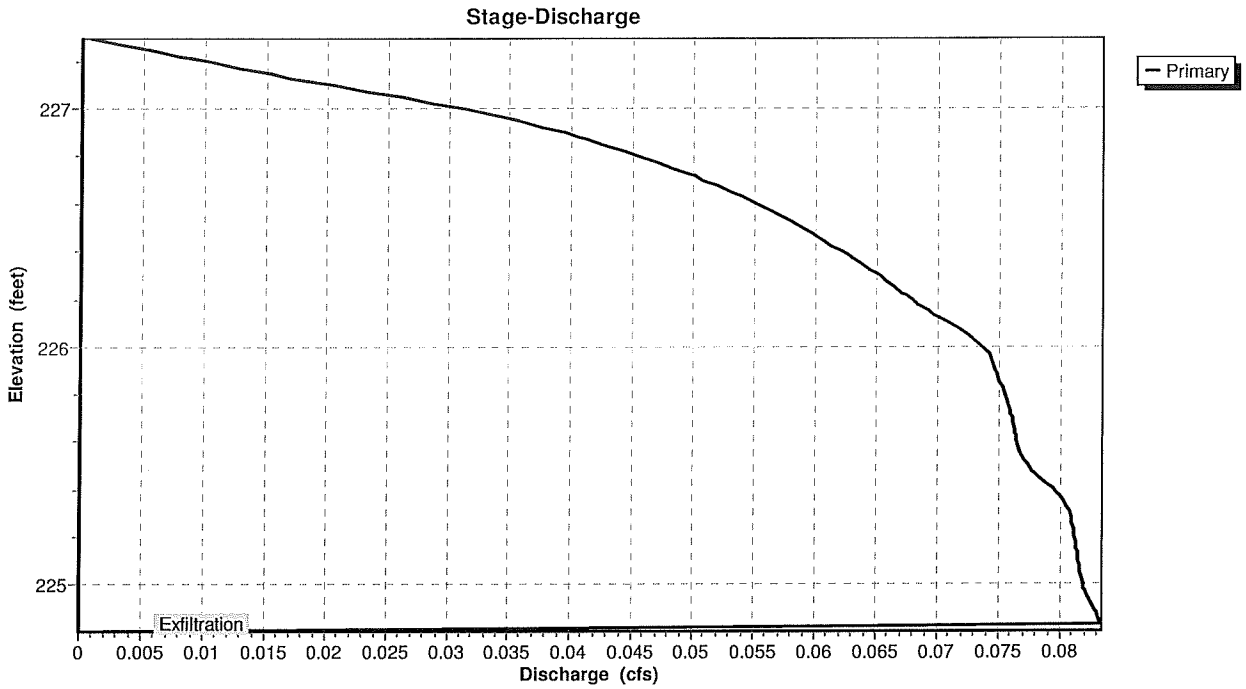
Device	Routing	Invert	Outlet Devices
#1	Primary	224.80'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.08 cfs @ 11.90 hrs HW=224.83' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.08 cfs)

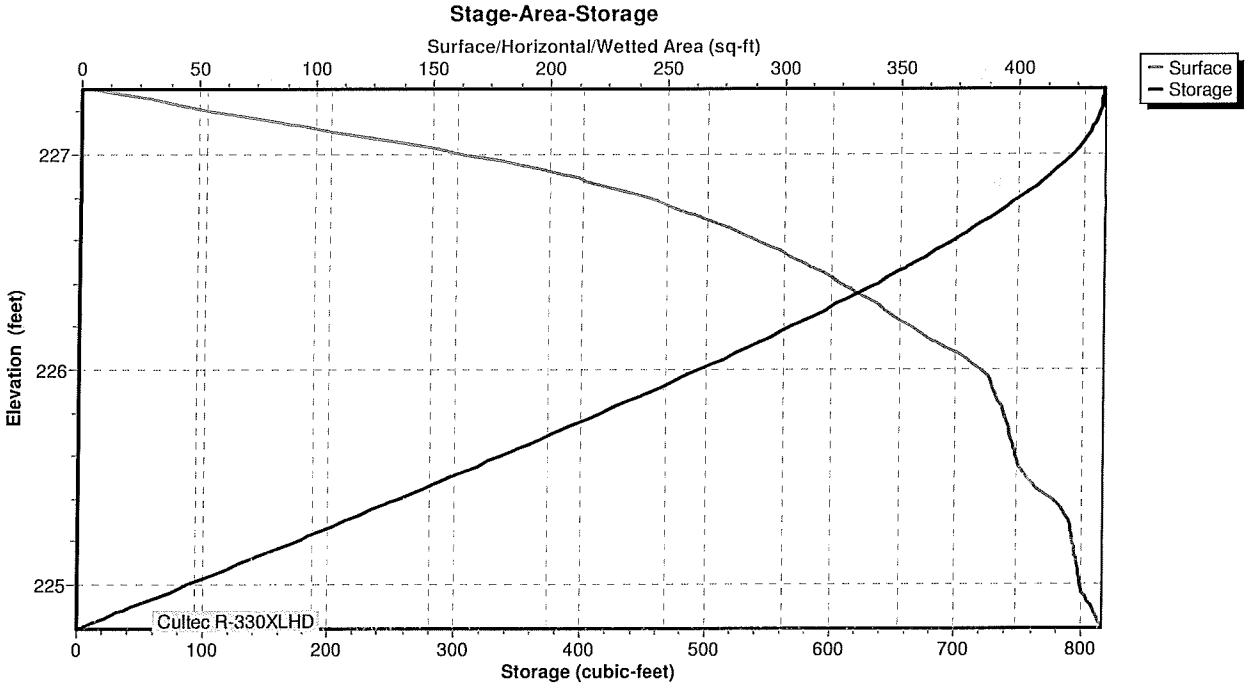
Pond 32P: Subsurface System - Lot 2



Pond 32P: Subsurface System - Lot 2



Pond 32P: Subsurface System - Lot 2



Hydrograph for Pond 32P: Subsurface System - Lot 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	224.80	0.00
5.50	0.00	0	224.80	0.00
6.00	0.00	0	224.80	0.00
6.50	0.00	0	224.80	0.00
7.00	0.00	0	224.80	0.00
7.50	0.00	0	224.80	0.00
8.00	0.00	0	224.80	0.00
8.50	0.00	0	224.80	0.00
9.00	0.00	0	224.80	0.00
9.50	0.00	0	224.80	0.00
10.00	0.00	0	224.80	0.00
10.50	0.00	0	224.80	0.00
11.00	0.01	1	224.80	0.00
11.50	0.02	2	224.80	**0.02**
12.00	**0.23**	39	224.89	**0.08**
12.50	**0.10**	**290**	**225.48**	0.08
13.00	0.04	**255**	**225.40**	0.08
13.50	0.04	180	225.22	0.08
14.00	0.03	92	225.01	0.08
14.50	0.03	4	224.81	0.03
15.00	0.02	3	224.81	0.02
15.50	0.02	3	224.81	0.02
16.00	0.02	2	224.81	0.02
16.50	0.01	2	224.80	0.01
17.00	0.01	2	224.80	0.01
17.50	0.01	2	224.80	0.01
18.00	0.01	1	224.80	0.01
18.50	0.01	1	224.80	0.01
19.00	0.01	1	224.80	0.01
19.50	0.01	1	224.80	0.01
20.00	0.01	1	224.80	0.01

Stage-Discharge for Pond 32P: Subsurface System - Lot 2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
224.80	**0.00**	225.86	0.08	226.92	0.04
224.82	**0.08**	225.88	0.07	226.94	0.04
224.84	0.08	225.90	0.07	226.96	0.03
224.86	0.08	225.92	0.07	226.98	0.03
224.88	0.08	225.94	0.07	227.00	0.03
224.90	0.08	225.96	0.07	227.02	0.03
224.92	0.08	225.98	0.07	227.04	0.03
224.94	0.08	226.00	0.07	227.06	0.03
224.96	0.08	226.02	0.07	227.08	0.02
224.98	0.08	226.04	0.07	227.10	0.02
225.00	0.08	226.06	0.07	227.12	0.02
225.02	0.08	226.08	0.07	227.14	0.02
225.04	0.08	226.10	0.07	227.16	0.01
225.06	0.08	226.12	0.07	227.18	0.01
225.08	0.08	226.14	0.07	227.20	0.01
225.10	0.08	226.16	0.07	227.22	0.01
225.12	0.08	226.18	0.07	227.24	0.01
225.14	0.08	226.20	0.07	227.26	0.00
225.16	0.08	226.22	0.07	227.28	0.00
225.18	0.08	226.24	0.07	227.30	0.00
225.20	0.08	226.26	0.07		
225.22	0.08	226.28	0.07		
225.24	0.08	226.30	0.07		
225.26	0.08	226.32	0.06		
225.28	0.08	226.34	0.06		
225.30	0.08	226.36	0.06		
225.32	0.08	226.38	0.06		
225.34	0.08	226.40	0.06		
225.36	0.08	226.42	0.06		
225.38	0.08	226.44	0.06		
225.40	0.08	226.46	0.06		
225.42	0.08	226.48	0.06		
225.44	0.08	226.50	0.06		
225.46	0.08	226.52	0.06		
225.48	0.08	226.54	0.06		
225.50	0.08	226.56	0.06		
225.52	0.08	226.58	0.06		
225.54	0.08	226.60	0.06		
225.56	0.08	226.62	0.05		
225.58	0.08	226.64	0.05		
225.60	0.08	226.66	0.05		
225.62	0.08	226.68	0.05		
225.64	0.08	226.70	0.05		
225.66	0.08	226.72	0.05		
225.68	0.08	226.74	0.05		
225.70	0.08	226.76	0.05		
225.72	0.08	226.78	0.05		
225.74	0.08	226.80	0.05		
225.76	0.08	226.82	0.04		
225.78	0.08	226.84	0.04		
225.80	0.08	226.86	0.04		
225.82	0.08	226.88	0.04		
225.84	0.08	226.90	0.04		

Stage-Area-Storage for Pond 32P: Subsurface System - Lot 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
224.80	**436**	0
224.85	434	22
224.90	432	43
224.95	429	65
225.00	428	86
225.05	426	108
225.10	426	129
225.15	425	150
225.20	424	172
225.25	423	193
225.30	422	214
225.35	419	235
225.40	415	256
225.45	409	276
225.50	404	297
225.55	401	317
225.60	400	337
225.65	398	357
225.70	397	377
225.75	396	396
225.80	394	416
225.85	392	436
225.90	390	455
225.95	388	475
226.00	384	494
226.05	379	513
226.10	370	532
226.15	361	550
226.20	354	568
226.25	347	586
226.30	340	603
226.35	332	620
226.40	324	636
226.45	316	652
226.50	307	668
226.55	298	683
226.60	288	697
226.65	277	712
226.70	265	725
226.75	253	738
226.80	239	750
226.85	223	762
226.90	206	773
226.95	186	783
227.00	163	791
227.05	137	799
227.10	108	805
227.15	80	810
227.20	55	813
227.25	29	815
227.30	4	**816**

Summary for Pond 42P: Subsurface System - Lot 3

Inflow Area = 0.100 ac, 50.00% Impervious, Inflow Depth > 2.01"
Inflow = 0.25 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.07 cfs @ 11.90 hrs, Volume= 0.017 af, Atten= 72%, Lag= 0.0 min
Primary = 0.07 cfs @ 11.90 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 224.95' @ 12.49 hrs Surf.Area= 341 sf Storage= 159 cf

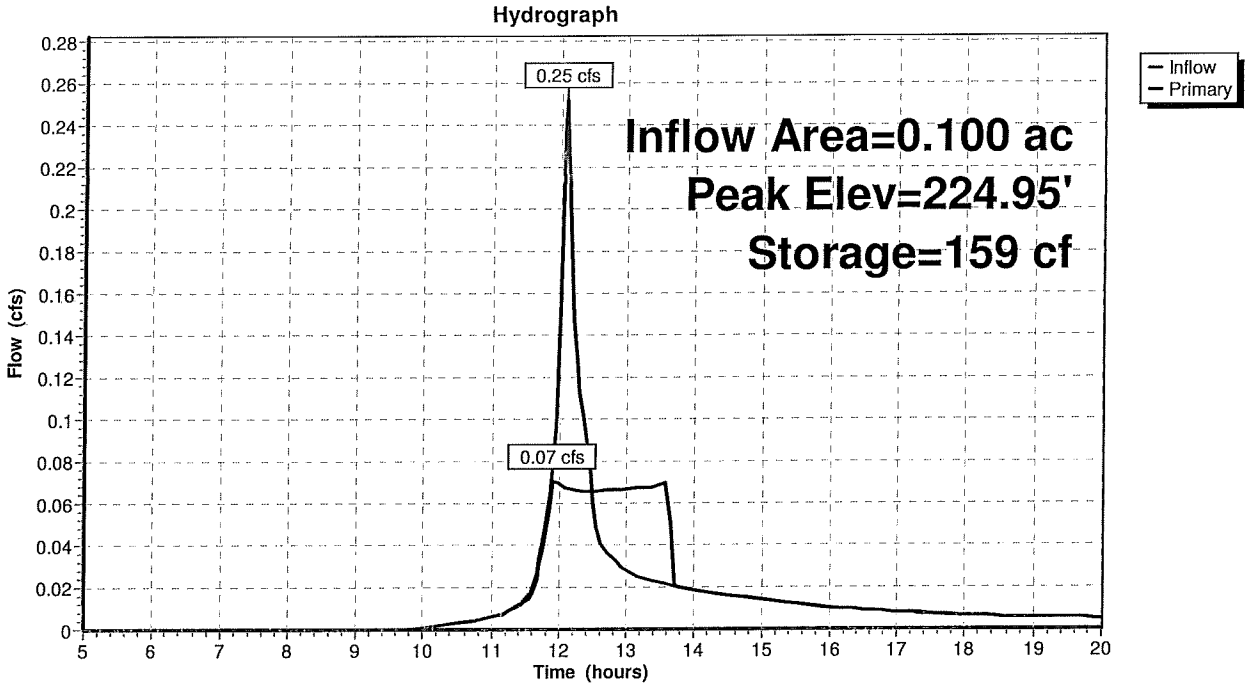
Plug-Flow detention time= 14.2 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 13.9 min (820.1 - 806.2)

Volume	Invert	Avail.Storage	Storage Description
#1	224.50'	453 cf	**Cultec R-180** x 20 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 5 rows

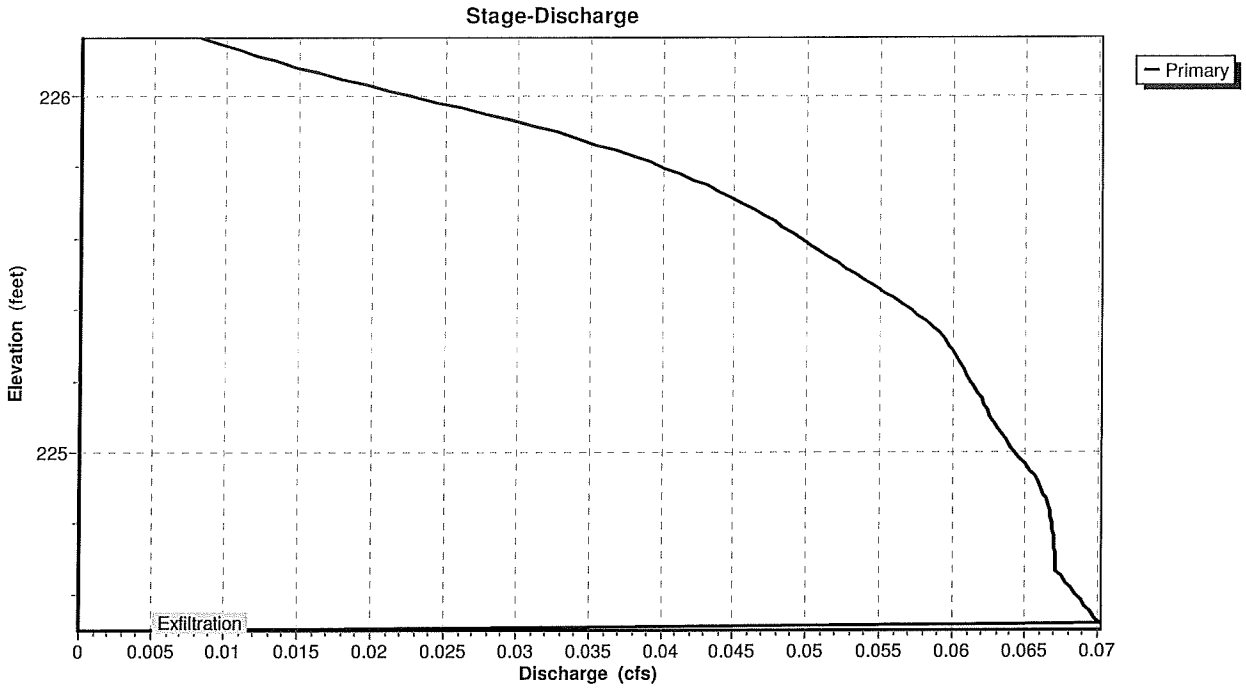
Device	Routing	Invert	Outlet Devices
#1	Primary	224.50'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.07 cfs @ 11.90 hrs HW=224.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

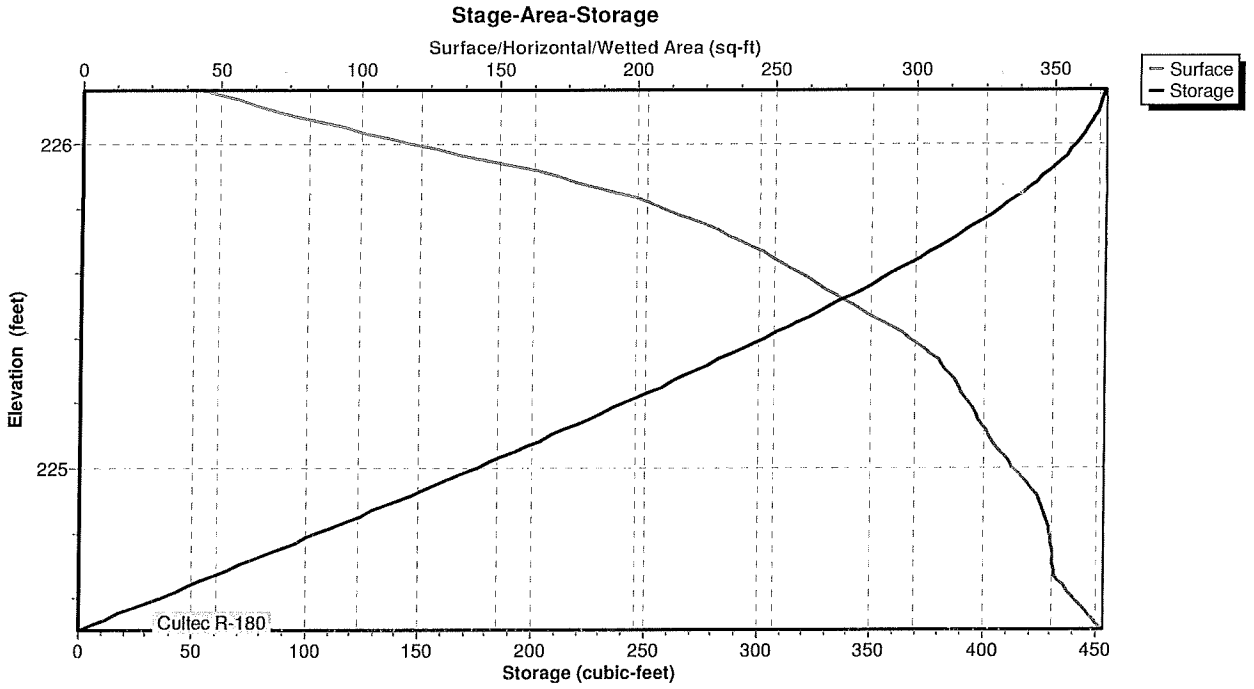
Pond 42P: Subsurface System - Lot 3



Pond 42P: Subsurface System - Lot 3



Pond 42P: Subsurface System - Lot 3



Hydrograph for Pond 42P: Subsurface System - Lot 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	224.50	0.00
5.50	0.00	0	224.50	0.00
6.00	0.00	0	224.50	0.00
6.50	0.00	0	224.50	0.00
7.00	0.00	0	224.50	0.00
7.50	0.00	0	224.50	0.00
8.00	0.00	0	224.50	0.00
8.50	0.00	0	224.50	0.00
9.00	0.00	0	224.50	0.00
9.50	0.00	0	224.50	0.00
10.00	0.00	0	224.50	0.00
10.50	0.00	0	224.50	0.00
11.00	0.01	1	224.50	0.01
11.50	0.01	1	224.50	**0.01**
12.00	**0.16**	20	224.56	**0.07**
12.50	**0.06**	**159**	**224.95**	0.07
13.00	0.03	106	224.80	0.07
13.50	0.02	28	224.58	0.07
14.00	0.02	2	224.50	0.02
14.50	0.02	1	224.50	0.02
15.00	0.01	1	224.50	0.01
15.50	0.01	1	224.50	0.01
16.00	0.01	1	224.50	0.01
16.50	0.01	1	224.50	0.01
17.00	0.01	1	224.50	0.01
17.50	0.01	1	224.50	0.01
18.00	0.01	1	224.50	0.01
18.50	0.01	1	224.50	0.01
19.00	0.01	0	224.50	0.01
19.50	0.01	0	224.50	0.01
20.00	0.01	0	224.50	0.01

Stage-Discharge for Pond 42P: Subsurface System - Lot 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
224.50	0.00	225.03	0.06	225.56	0.05	226.09	0.01
224.51	**0.07**	225.04	0.06	225.57	0.05	226.10	0.01
224.52	0.07	225.05	0.06	225.58	0.05	226.11	0.01
224.53	0.07	225.06	0.06	225.59	0.05	226.12	0.01
224.54	0.07	225.07	0.06	225.60	0.05	226.13	0.01
224.55	0.07	225.08	0.06	225.61	0.05	226.14	0.01
224.56	0.07	225.09	0.06	225.62	0.05	226.15	0.01
224.57	0.07	225.10	0.06	225.63	0.05	226.16	0.01
224.58	0.07	225.11	0.06	225.64	0.05	226.17	0.01
224.59	0.07	225.12	0.06	225.65	0.05		
224.60	0.07	225.13	0.06	225.66	0.05		
224.61	0.07	225.14	0.06	225.67	0.05		
224.62	0.07	225.15	0.06	225.68	0.05		
224.63	0.07	225.16	0.06	225.69	0.05		
224.64	0.07	225.17	0.06	225.70	0.05		
224.65	0.07	225.18	0.06	225.71	0.04		
224.66	0.07	225.19	0.06	225.72	0.04		
224.67	0.07	225.20	0.06	225.73	0.04		
224.68	0.07	225.21	0.06	225.74	0.04		
224.69	0.07	225.22	0.06	225.75	0.04		
224.70	0.07	225.23	0.06	225.76	0.04		
224.71	0.07	225.24	0.06	225.77	0.04		
224.72	0.07	225.25	0.06	225.78	0.04		
224.73	0.07	225.26	0.06	225.79	0.04		
224.74	0.07	225.27	0.06	225.80	0.04		
224.75	0.07	225.28	0.06	225.81	0.04		
224.76	0.07	225.29	0.06	225.82	0.04		
224.77	0.07	225.30	0.06	225.83	0.04		
224.78	0.07	225.31	0.06	225.84	0.04		
224.79	0.07	225.32	0.06	225.85	0.04		
224.80	0.07	225.33	0.06	225.86	0.04		
224.81	0.07	225.34	0.06	225.87	0.04		
224.82	0.07	225.35	0.06	225.88	0.03		
224.83	0.07	225.36	0.06	225.89	0.03		
224.84	0.07	225.37	0.06	225.90	0.03		
224.85	0.07	225.38	0.06	225.91	0.03		
224.86	0.07	225.39	0.06	225.92	0.03		
224.87	0.07	225.40	0.06	225.93	0.03		
224.88	0.07	225.41	0.06	225.94	0.03		
224.89	0.07	225.42	0.06	225.95	0.03		
224.90	0.07	225.43	0.06	225.96	0.03		
224.91	0.07	225.44	0.06	225.97	0.03		
224.92	0.07	225.45	0.06	225.98	0.02		
224.93	0.07	225.46	0.05	225.99	0.02		
224.94	0.07	225.47	0.05	226.00	0.02		
224.95	0.07	225.48	0.05	226.01	0.02		
224.96	0.07	225.49	0.05	226.02	0.02		
224.97	0.06	225.50	0.05	226.03	0.02		
224.98	0.06	225.51	0.05	226.04	0.02		
224.99	0.06	225.52	0.05	226.05	0.02		
225.00	0.06	225.53	0.05	226.06	0.02		
225.01	0.06	225.54	0.05	226.07	0.02		
225.02	0.06	225.55	0.05	226.08	0.02		

Stage-Area-Storage for Pond 42P: Subsurface System - Lot 3

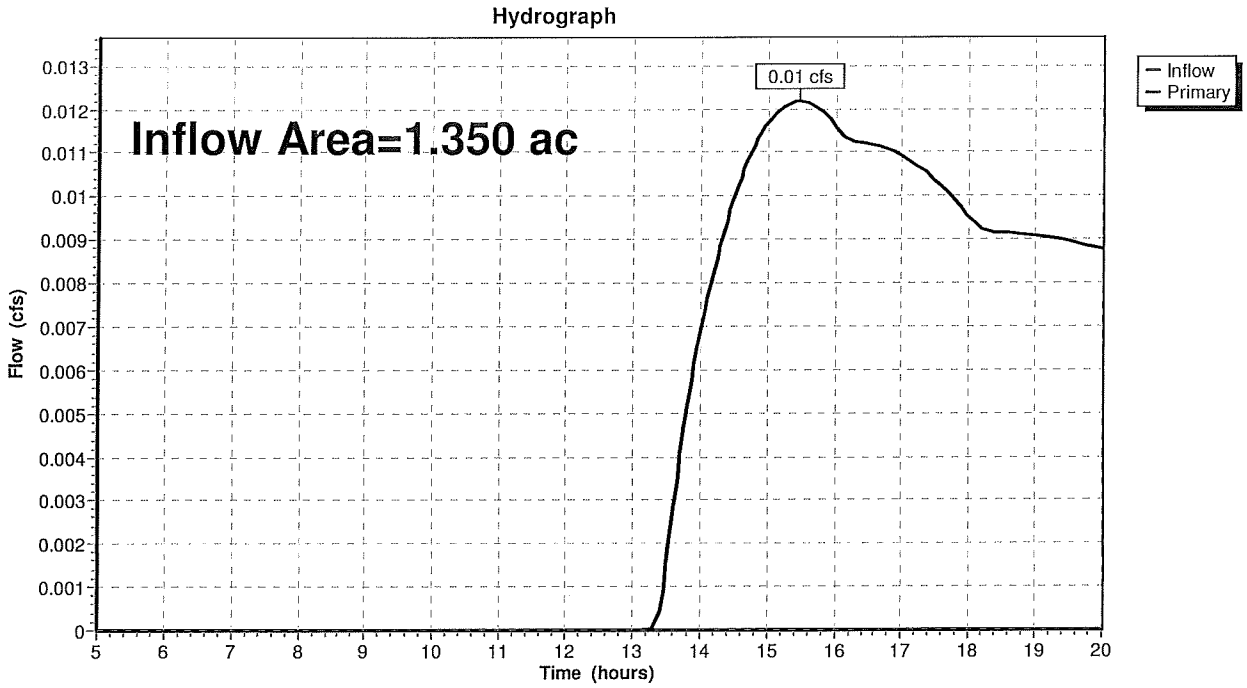
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
224.50	**368**	0
224.52	366	7
224.54	364	15
224.56	362	22
224.58	360	29
224.60	358	36
224.62	355	43
224.64	353	50
224.66	351	58
224.68	350	65
224.70	350	72
224.72	350	79
224.74	350	86
224.76	350	93
224.78	349	100
224.80	349	107
224.82	348	113
224.84	348	120
224.86	347	127
224.88	346	134
224.90	345	141
224.92	344	148
224.94	342	155
224.96	340	162
224.98	338	169
225.00	336	175
225.02	334	182
225.04	332	189
225.06	330	195
225.08	328	202
225.10	327	208
225.12	325	215
225.14	324	221
225.16	323	228
225.18	321	234
225.20	320	241
225.22	318	247
225.24	317	253
225.26	315	260
225.28	313	266
225.30	312	272
225.32	310	279
225.34	308	285
225.36	304	291
225.38	301	297
225.40	298	303
225.42	295	309
225.44	290	315
225.46	286	320
225.48	282	326
225.50	278	332
225.52	274	337
225.54	270	343
225.56	267	348
225.58	263	353
225.60	259	359
225.62	255	364
225.64	251	369
225.66	247	374
225.68	242	379
225.70	237	383
225.72	232	388
225.74	227	393
225.76	222	397
225.78	216	402
225.80	209	406
225.82	203	410
225.84	196	414
225.86	188	418
225.88	179	421
225.90	171	425
225.92	162	428
225.94	151	431
225.96	140	434
225.98	129	437
226.00	118	439
226.02	109	442
226.04	99	444
226.06	89	446
226.08	79	447
226.10	70	449
226.12	62	450
226.14	54	451
226.16	45	**452**

Summary for Link DP: Design Point

Inflow Area = 1.350 ac, 0.74% Impervious, Inflow Depth > 0.05"
Inflow = 0.01 cfs @ 15.47 hrs, Volume= 0.005 af
Primary = 0.01 cfs @ 15.47 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP: Design Point



Hydrograph for Link DP: Design Point

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00	18.25	0.01	0.00	0.01
5.25	0.00	0.00	0.00	18.50	0.01	0.00	0.01
5.50	0.00	0.00	0.00	18.75	0.01	0.00	0.01
5.75	0.00	0.00	0.00	19.00	0.01	0.00	0.01
6.00	0.00	0.00	0.00	19.25	0.01	0.00	0.01
6.25	0.00	0.00	0.00	19.50	0.01	0.00	0.01
6.50	0.00	0.00	0.00	19.75	0.01	0.00	0.01
6.75	0.00	0.00	0.00	20.00	0.01	0.00	0.01
7.00	0.00	0.00	0.00				
7.25	0.00	0.00	0.00				
7.50	0.00	0.00	0.00				
7.75	0.00	0.00	0.00				
8.00	0.00	0.00	0.00				
8.25	0.00	0.00	0.00				
8.50	0.00	0.00	0.00				
8.75	0.00	0.00	0.00				
9.00	0.00	0.00	0.00				
9.25	0.00	0.00	0.00				
9.50	0.00	0.00	0.00				
9.75	0.00	0.00	0.00				
10.00	0.00	0.00	0.00				
10.25	0.00	0.00	0.00				
10.50	0.00	0.00	0.00				
10.75	0.00	0.00	0.00				
11.00	0.00	0.00	0.00				
11.25	0.00	0.00	0.00				
11.50	0.00	0.00	0.00				
11.75	0.00	0.00	0.00				
12.00	0.00	0.00	0.00				
12.25	0.00	0.00	0.00				
12.50	0.00	0.00	0.00				
12.75	0.00	0.00	0.00				
13.00	0.00	0.00	0.00				
13.25	0.00	0.00	0.00				
13.50	0.00	0.00	0.00				
13.75	0.00	0.00	0.00				
14.00	0.01	0.00	0.01				
14.25	0.01	0.00	0.01				
14.50	0.01	0.00	0.01				
14.75	0.01	0.00	0.01				
15.00	0.01	0.00	0.01				
15.25	**0.01**	0.00	**0.01**				
15.50	**0.01**	0.00	**0.01**				
15.75	0.01	0.00	0.01				
16.00	0.01	0.00	0.01				
16.25	0.01	0.00	0.01				
16.50	0.01	0.00	0.01				
16.75	0.01	0.00	0.01				
17.00	0.01	0.00	0.01				
17.25	0.01	0.00	0.01				
17.50	0.01	0.00	0.01				
17.75	0.01	0.00	0.01				
18.00	0.01	0.00	0.01				

PROPOSED CONDITIONS

100 YEAR STORM

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: Overland runoff to south Runoff Area=1.350 ac 0.74% Impervious Runoff Depth>0.19"
Flow Length=214' Tc=11.9 min CN=33 Runoff=0.05 cfs 0.021 af

Subcatchment 20S: Runoff to Subsurface Runoff Area=0.040 ac 100.00% Impervious Runoff Depth>5.69"
Flow Length=90' Tc=5.0 min CN=98 Runoff=0.25 cfs 0.019 af

Subcatchment 30S: Runoff to Subsurface Runoff Area=0.180 ac 44.44% Impervious Runoff Depth>2.44"
Flow Length=76' Tc=5.0 min CN=65 Runoff=0.55 cfs 0.037 af

Subcatchment 40S: Runoff to Subsurface Runoff Area=0.100 ac 50.00% Impervious Runoff Depth>2.81"
Flow Length=95' Tc=5.0 min CN=69 Runoff=0.35 cfs 0.023 af

Pond 22P: Subsurface System - Lot 1 Peak Elev=234.55' Storage=263 cf Inflow=0.25 cfs 0.019 af
Outflow=0.04 cfs 0.019 af

Pond 32P: Subsurface System - Lot 2 Peak Elev=226.12' Storage=540 cf Inflow=0.55 cfs 0.037 af
Outflow=0.08 cfs 0.037 af

Pond 42P: Subsurface System - Lot 3 Peak Elev=225.39' Storage=299 cf Inflow=0.35 cfs 0.023 af
Outflow=0.07 cfs 0.023 af

Link DP: Design Point Inflow=0.05 cfs 0.021 af
Primary=0.05 cfs 0.021 af

Total Runoff Area = 1.670 ac Runoff Volume = 0.100 af Average Runoff Depth = 0.72"
89.22% Pervious = 1.490 ac 10.78% Impervious = 0.180 ac

Summary for Subcatchment 10S: Overland runoff to south

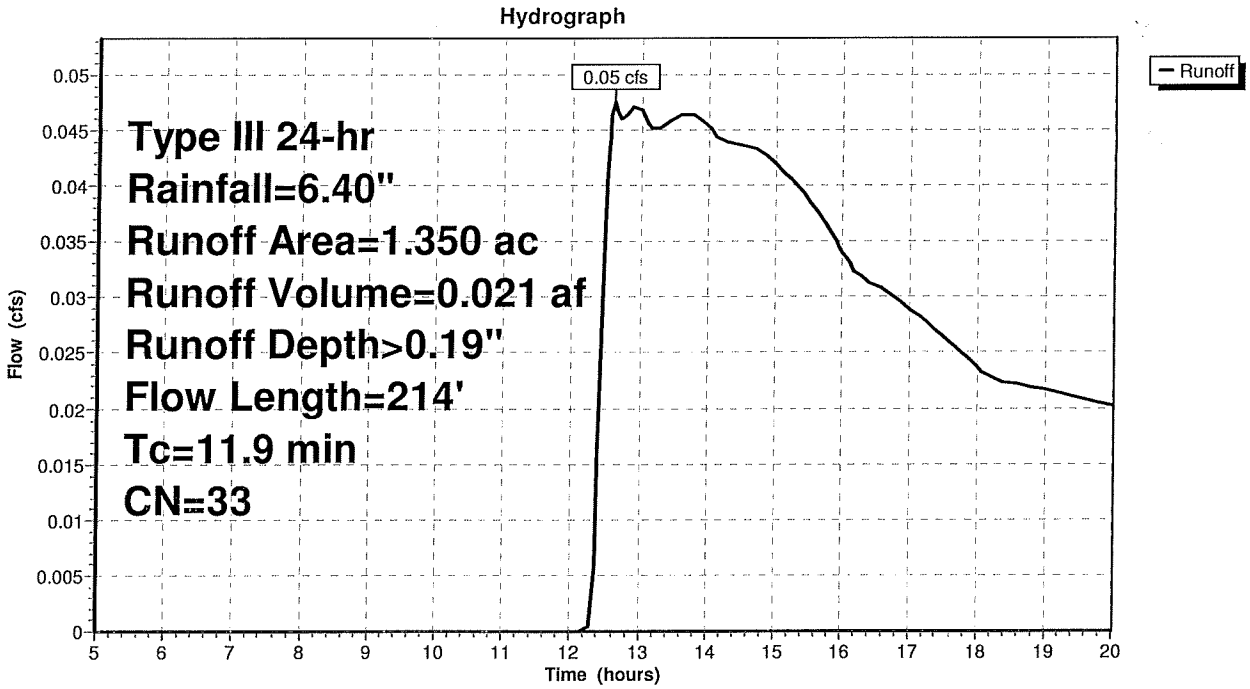
Runoff = 0.05 cfs @ 12.60 hrs, Volume= 0.021 af, Depth> 0.19"
Routed to Link DP : Design Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.40"

	Area (ac)	CN	Description
*	0.010	98	Impervious Area, HSG A
	0.310	39	>75% Grass cover, Good, HSG A
	1.030	30	Woods, Good, HSG A
	1.350	33	Weighted Average
	1.340		99.26% Pervious Area
	0.010		0.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.10"
3.5	130	0.0154	0.62		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
0.3	34	0.1176	1.71		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
11.9	214	Total			

Subcatchment 10S: Overland runoff to south



Hydrograph for Subcatchment 10S: Overland runoff to south

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.36	0.00	0.00
5.25	0.39	0.00	0.00
5.50	0.41	0.00	0.00
5.75	0.44	0.00	0.00
6.00	0.46	0.00	0.00
6.25	0.49	0.00	0.00
6.50	0.52	0.00	0.00
6.75	0.55	0.00	0.00
7.00	0.58	0.00	0.00
7.25	0.61	0.00	0.00
7.50	0.65	0.00	0.00
7.75	0.69	0.00	0.00
8.00	0.73	0.00	0.00
8.25	0.77	0.00	0.00
8.50	0.82	0.00	0.00
8.75	0.88	0.00	0.00
9.00	0.93	0.00	0.00
9.25	1.00	0.00	0.00
9.50	1.06	0.00	0.00
9.75	1.13	0.00	0.00
10.00	1.21	0.00	0.00
10.25	1.29	0.00	0.00
10.50	1.39	0.00	0.00
10.75	1.49	0.00	0.00
11.00	1.60	0.00	0.00
11.25	1.74	0.00	0.00
11.50	1.91	0.00	0.00
11.75	2.27	0.00	0.00
12.00	3.20	0.00	0.00
12.25	4.13	0.00	0.00
12.50	4.49	0.01	**0.04**
12.75	4.66	0.02	**0.05**
13.00	4.80	0.03	0.05
13.25	4.91	0.03	0.05
13.50	5.01	0.04	0.05
13.75	5.11	0.05	0.05
14.00	5.19	0.06	0.05
14.25	5.27	0.07	0.04
14.50	5.34	0.08	0.04
14.75	5.40	0.08	0.04
15.00	5.47	0.09	0.04
15.25	5.52	0.10	0.04
15.50	5.58	0.11	0.04
15.75	5.63	0.11	0.04
16.00	5.67	0.12	0.03
16.25	5.71	0.12	0.03
16.50	5.75	0.13	0.03
16.75	5.79	0.14	0.03
17.00	5.82	0.14	0.03
17.25	5.85	0.15	0.03
17.50	5.88	0.15	0.03
17.75	5.91	0.15	0.03
18.00	5.94	0.16	0.02
18.25	5.96	0.16	0.02
18.50	5.99	0.17	0.02
18.75	6.01	0.17	0.02
19.00	6.04	0.18	0.02
19.25	6.06	0.18	0.02
19.50	6.08	0.18	0.02
19.75	6.10	0.19	0.02
20.00	**6.12**	**0.19**	0.02

Summary for Subcatchment 20S: Runoff to Subsurface System - Lot 1

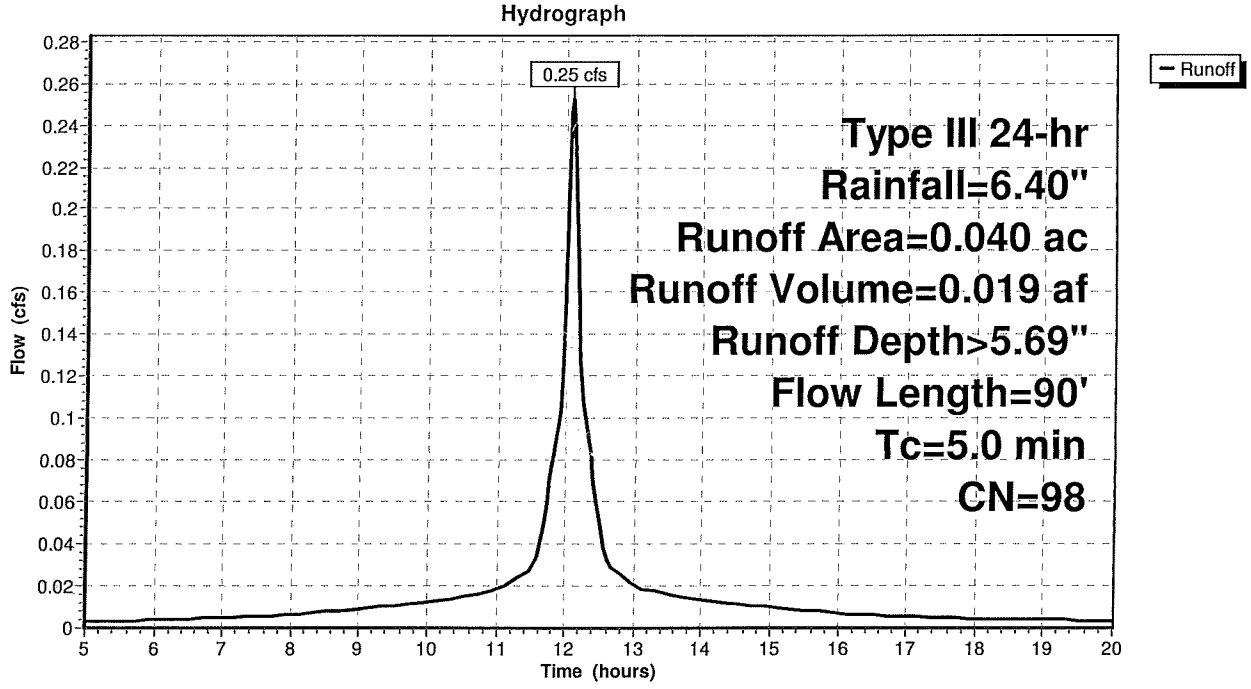
Runoff = 0.25 cfs @ 12.07 hrs, Volume= 0.019 af, Depth> 5.69"
Routed to Pond 22P : Subsurface System - Lot 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.40"

Area (ac)	CN	Description
0.040	98	Roofs, HSG A
0.040		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	90		0.30		**Direct Entry, Path 1**

Subcatchment 20S: Runoff to Subsurface System - Lot 1



Hydrograph for Subcatchment 20S: Runoff to Subsurface System - Lot 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.36	0.20	0.00
5.25	0.39	0.22	0.00
5.50	0.41	0.24	0.00
5.75	0.44	0.26	0.00
6.00	0.46	0.28	0.00
6.25	0.49	0.31	0.00
6.50	0.52	0.33	0.00
6.75	0.55	0.36	0.00
7.00	0.58	0.39	0.00
7.25	0.61	0.42	0.01
7.50	0.65	0.46	0.01
7.75	0.69	0.49	0.01
8.00	0.73	0.53	0.01
8.25	0.77	0.57	0.01
8.50	0.82	0.62	0.01
8.75	0.88	0.67	0.01
9.00	0.93	0.73	0.01
9.25	1.00	0.79	0.01
9.50	1.06	0.85	0.01
9.75	1.13	0.92	0.01
10.00	1.21	1.00	0.01
10.25	1.29	1.08	0.01
10.50	1.39	1.17	0.01
10.75	1.49	1.27	0.02
11.00	1.60	1.38	0.02
11.25	1.74	1.51	0.02
11.50	1.91	1.68	0.03
11.75	2.27	2.05	0.07
12.00	3.20	2.97	**0.18**
12.25	4.13	3.89	**0.11**
12.50	4.49	4.26	0.05
12.75	4.66	4.43	0.03
13.00	4.80	4.56	0.02
13.25	4.91	4.68	0.02
13.50	5.01	4.78	0.02
13.75	5.11	4.87	0.01
14.00	5.19	4.95	0.01
14.25	5.27	5.03	0.01
14.50	5.34	5.10	0.01
14.75	5.40	5.17	0.01
15.00	5.47	5.23	0.01
15.25	5.52	5.29	0.01
15.50	5.58	5.34	0.01
15.75	5.63	5.39	0.01
16.00	5.67	5.43	0.01
16.25	5.71	5.47	0.01
16.50	5.75	5.51	0.01
16.75	5.79	5.55	0.01
17.00	5.82	5.58	0.01
17.25	5.85	5.62	0.01
17.50	5.88	5.65	0.00
17.75	5.91	5.67	0.00
18.00	5.94	5.70	0.00
18.25	5.96	5.73	0.00
18.50	5.99	5.75	0.00
18.75	6.01	5.78	0.00
19.00	6.04	5.80	0.00
19.25	6.06	5.82	0.00
19.50	6.08	5.84	0.00
19.75	6.10	5.87	0.00
20.00	**6.12**	**5.89**	0.00

Summary for Subcatchment 30S: Runoff to Subsurface System - Lot 2

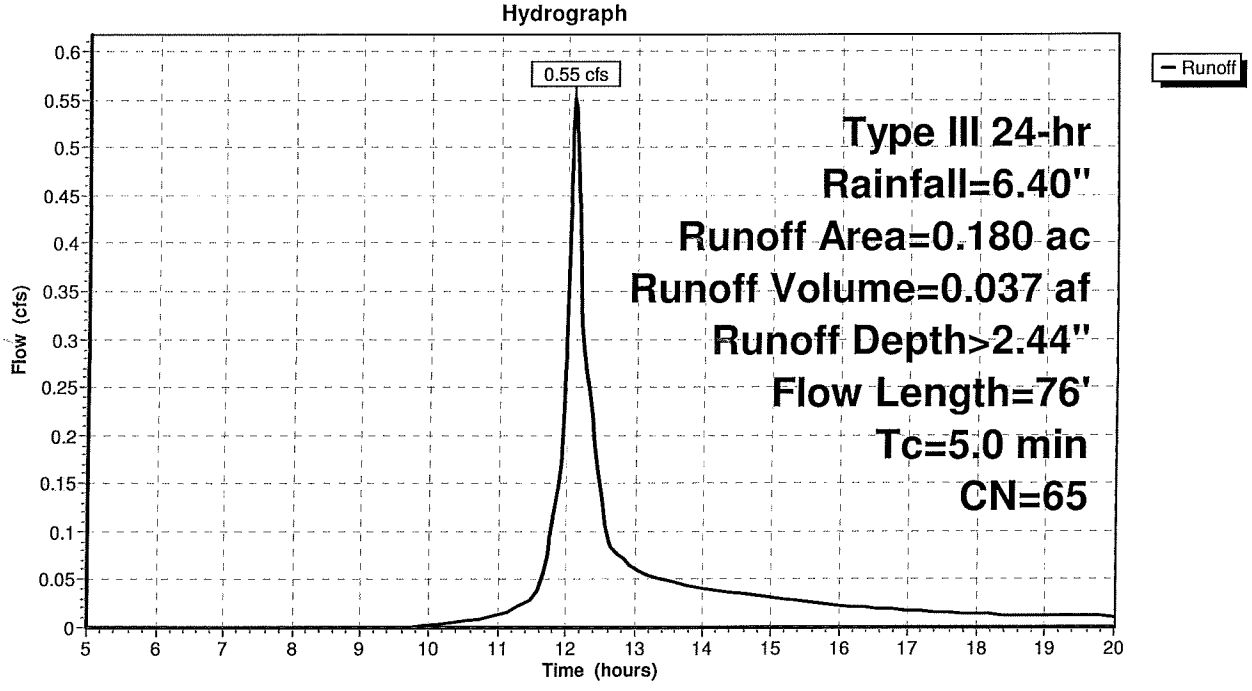
Runoff = 0.55 cfs @ 12.08 hrs, Volume= 0.037 af, Depth> 2.44"
Routed to Pond 32P : Subsurface System - Lot 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.40"

	Area (ac)	CN	Description
*	0.080	98	Roof and Driveway, HSG A
	0.100	39	>75% Grass cover, Good, HSG A
	0.180	65	Weighted Average
	0.100		55.56% Pervious Area
	0.080		44.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	76		0.25		**Direct Entry, Path 1**

Subcatchment 30S: Runoff to Subsurface System - Lot 2



Hydrograph for Subcatchment 30S: Runoff to Subsurface System - Lot 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.36	0.00	0.00
5.25	0.39	0.00	0.00
5.50	0.41	0.00	0.00
5.75	0.44	0.00	0.00
6.00	0.46	0.00	0.00
6.25	0.49	0.00	0.00
6.50	0.52	0.00	0.00
6.75	0.55	0.00	0.00
7.00	0.58	0.00	0.00
7.25	0.61	0.00	0.00
7.50	0.65	0.00	0.00
7.75	0.69	0.00	0.00
8.00	0.73	0.00	0.00
8.25	0.77	0.00	0.00
8.50	0.82	0.00	0.00
8.75	0.88	0.00	0.00
9.00	0.93	0.00	0.00
9.25	1.00	0.00	0.00
9.50	1.06	0.00	0.00
9.75	1.13	0.00	0.00
10.00	1.21	0.00	0.00
10.25	1.29	0.01	0.00
10.50	1.39	0.02	0.01
10.75	1.49	0.03	0.01
11.00	1.60	0.05	0.01
11.25	1.74	0.07	0.02
11.50	1.91	0.11	0.03
11.75	2.27	0.22	0.09
12.00	3.20	0.60	**0.34**
12.25	4.13	1.10	**0.28**
12.50	4.49	1.33	0.13
12.75	4.66	1.43	0.08
13.00	4.80	1.52	0.06
13.25	4.91	1.60	0.05
13.50	5.01	1.66	0.05
13.75	5.11	1.73	0.04
14.00	5.19	1.78	0.04
14.25	5.27	1.83	0.04
14.50	5.34	1.88	0.04
14.75	5.40	1.93	0.03
15.00	5.47	1.97	0.03
15.25	5.52	2.01	0.03
15.50	5.58	2.05	0.03
15.75	5.63	2.08	0.02
16.00	5.67	2.11	0.02
16.25	5.71	2.14	0.02
16.50	5.75	2.17	0.02
16.75	5.79	2.20	0.02
17.00	5.82	2.22	0.02
17.25	5.85	2.25	0.02
17.50	5.88	2.27	0.02
17.75	5.91	2.29	0.01
18.00	5.94	2.31	0.01
18.25	5.96	2.33	0.01
18.50	5.99	2.34	0.01
18.75	6.01	2.36	0.01
19.00	6.04	2.38	0.01
19.25	6.06	2.39	0.01
19.50	6.08	2.41	0.01
19.75	6.10	2.43	0.01
20.00	**6.12**	**2.44**	0.01

Summary for Subcatchment 40S: Runoff to Subsurface System - Lot 3

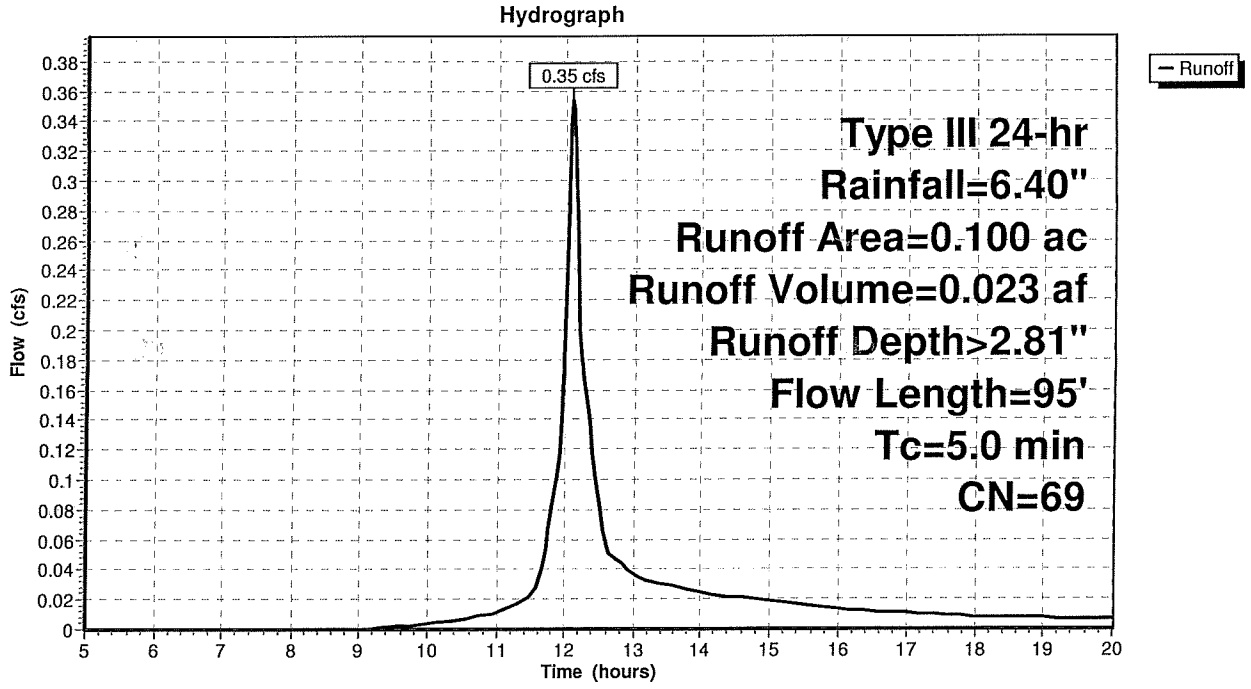
Runoff = 0.35 cfs @ 12.08 hrs, Volume= 0.023 af, Depth> 2.81"
Routed to Pond 42P : Subsurface System - Lot 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.40"

	Area (ac)	CN	Description
*	0.050	98	Roof and Driveway, HSG A
	0.050	39	>75% Grass cover, Good, HSG A
	0.100	69	Weighted Average
	0.050		50.00% Pervious Area
	0.050		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	95		0.32		**Direct Entry, Path 1**

Subcatchment 40S: Runoff to Subsurface System - Lot 3



Hydrograph for Subcatchment 40S: Runoff to Subsurface System - Lot 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.36	0.00	0.00
5.25	0.39	0.00	0.00
5.50	0.41	0.00	0.00
5.75	0.44	0.00	0.00
6.00	0.46	0.00	0.00
6.25	0.49	0.00	0.00
6.50	0.52	0.00	0.00
6.75	0.55	0.00	0.00
7.00	0.58	0.00	0.00
7.25	0.61	0.00	0.00
7.50	0.65	0.00	0.00
7.75	0.69	0.00	0.00
8.00	0.73	0.00	0.00
8.25	0.77	0.00	0.00
8.50	0.82	0.00	0.00
8.75	0.88	0.00	0.00
9.00	0.93	0.00	0.00
9.25	1.00	0.00	0.00
9.50	1.06	0.01	0.00
9.75	1.13	0.01	0.00
10.00	1.21	0.02	0.00
10.25	1.29	0.03	0.00
10.50	1.39	0.05	0.01
10.75	1.49	0.07	0.01
11.00	1.60	0.09	0.01
11.25	1.74	0.13	0.02
11.50	1.91	0.18	0.02
11.75	2.27	0.32	0.07
12.00	3.20	0.78	**0.23**
12.25	4.13	1.35	**0.17**
12.50	4.49	1.60	0.08
12.75	4.66	1.72	0.05
13.00	4.80	1.81	0.04
13.25	4.91	1.89	0.03
13.50	5.01	1.97	0.03
13.75	5.11	2.04	0.03
14.00	5.19	2.10	0.02
14.25	5.27	2.15	0.02
14.50	5.34	2.21	0.02
14.75	5.40	2.26	0.02
15.00	5.47	2.30	0.02
15.25	5.52	2.35	0.02
15.50	5.58	2.39	0.02
15.75	5.63	2.42	0.01
16.00	5.67	2.46	0.01
16.25	5.71	2.49	0.01
16.50	5.75	2.52	0.01
16.75	5.79	2.55	0.01
17.00	5.82	2.57	0.01
17.25	5.85	2.60	0.01
17.50	5.88	2.62	0.01
17.75	5.91	2.64	0.01
18.00	5.94	2.67	0.01
18.25	5.96	2.68	0.01
18.50	5.99	2.70	0.01
18.75	6.01	2.72	0.01
19.00	6.04	2.74	0.01
19.25	6.06	2.76	0.01
19.50	6.08	2.78	0.01
19.75	6.10	2.79	0.01
20.00	**6.12**	**2.81**	0.01

Summary for Pond 22P: Subsurface System - Lot 1

Inflow Area = 0.040 ac,100.00% Impervious, Inflow Depth > 5.69"
Inflow = 0.25 cfs @ 12.07 hrs, Volume= 0.019 af
Outflow = 0.04 cfs @ 11.65 hrs, Volume= 0.019 af, Atten= 86%, Lag= 0.0 min
Primary = 0.04 cfs @ 11.65 hrs, Volume= 0.019 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 234.55' @ 12.73 hrs Surf.Area= 141 sf Storage= 263 cf

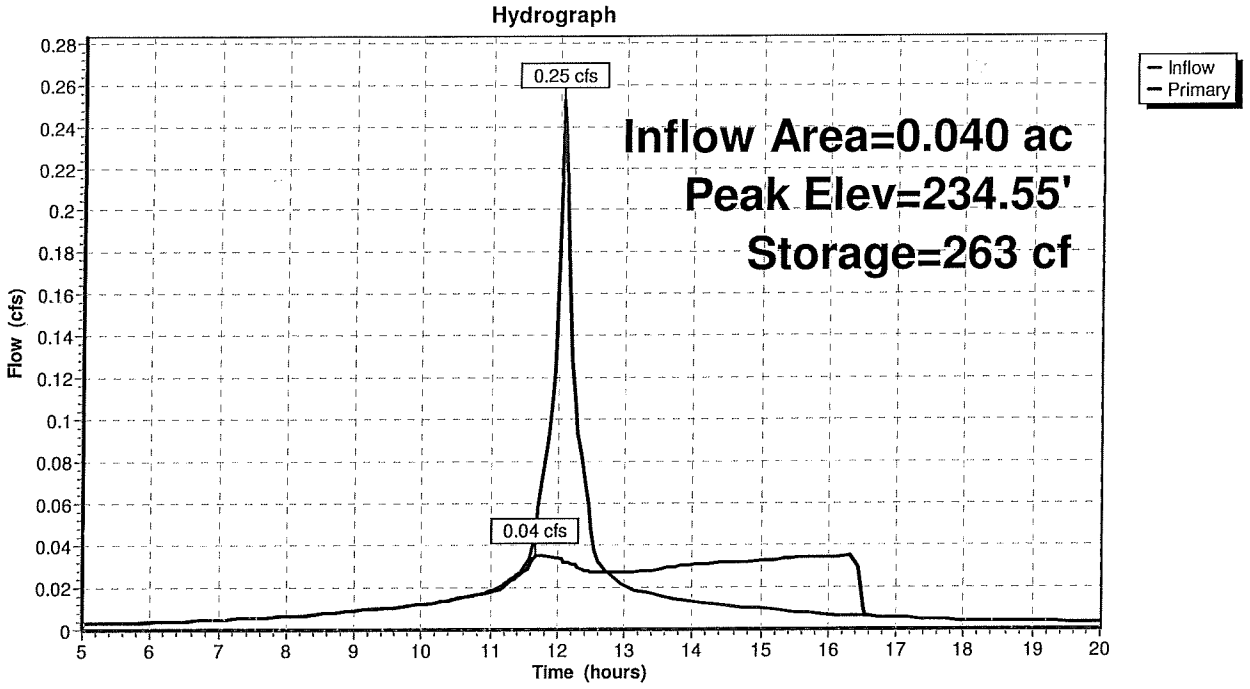
Plug-Flow detention time= 56.5 min calculated for 0.019 af (100% of inflow)
Center-of-Mass det. time= 56.0 min (789.2 - 733.1)

Volume	Invert	Avail.Storage	Storage Description
#1	233.00'	346 cf	**Cultec R-330XLHD** x 6 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

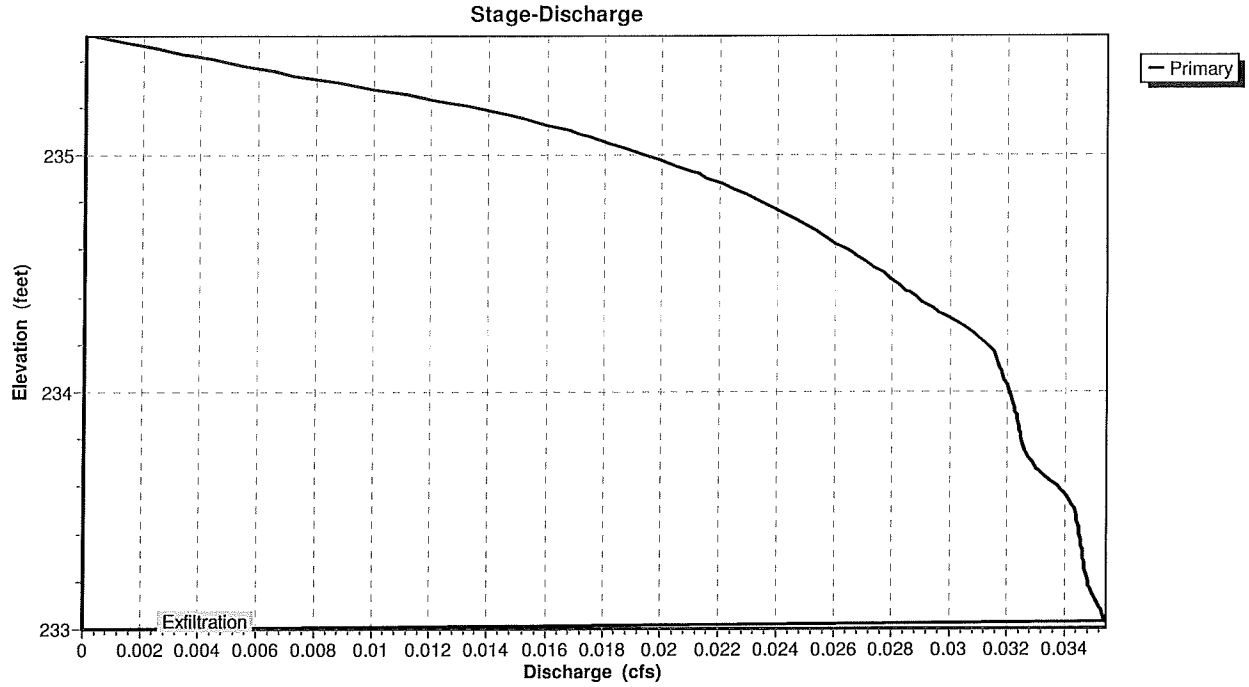
Device	Routing	Invert	Outlet Devices
#1	Primary	233.00'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.04 cfs @ 11.65 hrs HW=233.03' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

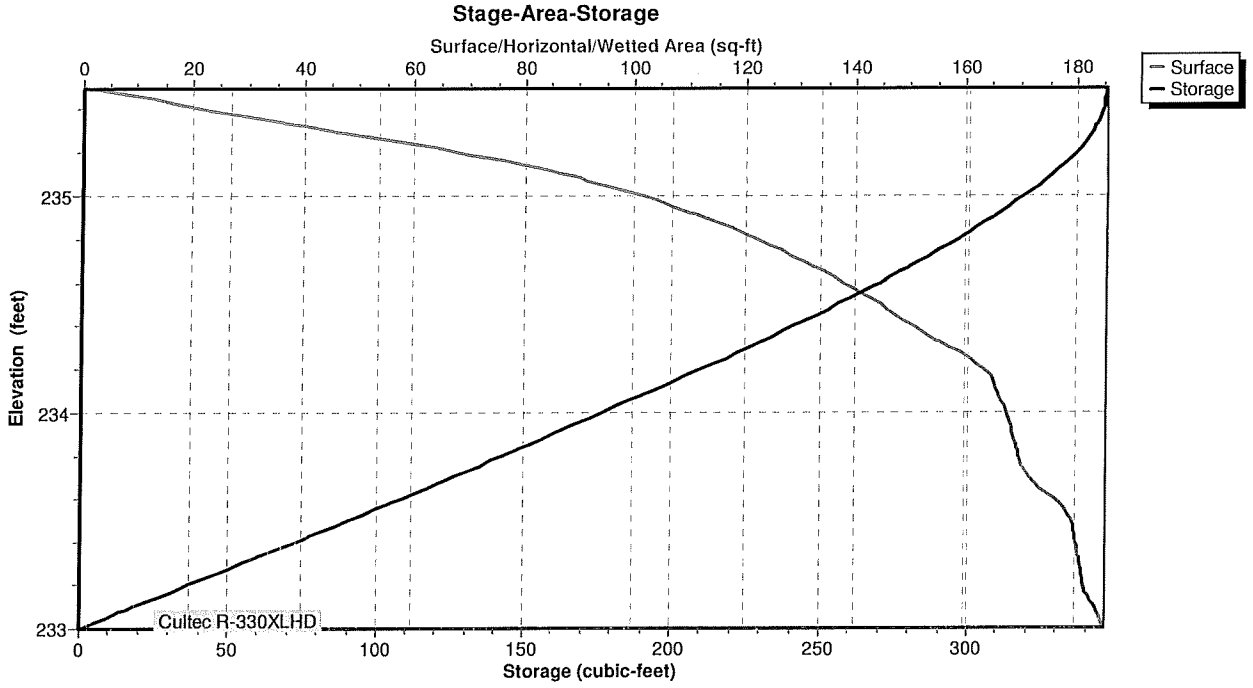
Pond 22P: Subsurface System - Lot 1



Pond 22P: Subsurface System - Lot 1



Pond 22P: Subsurface System - Lot 1



Hydrograph for Pond 22P: Subsurface System - Lot 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	233.00	0.00
5.50	0.00	0	233.00	0.00
6.00	0.00	0	233.00	0.00
6.50	0.00	1	233.00	0.00
7.00	0.00	1	233.00	0.00
7.50	0.01	1	233.00	0.01
8.00	0.01	1	233.00	0.01
8.50	0.01	1	233.01	0.01
9.00	0.01	1	233.01	0.01
9.50	0.01	1	233.01	0.01
10.00	0.01	2	233.01	0.01
10.50	0.01	2	233.01	0.01
11.00	0.02	2	233.01	0.02
11.50	0.03	4	233.02	**0.03**
12.00	**0.18**	76	233.42	**0.03**
12.50	**0.05**	**258**	**234.51**	0.03
13.00	0.02	**259**	**234.52**	0.03
13.50	0.02	241	234.40	0.03
14.00	0.01	214	234.22	0.03
14.50	0.01	179	234.01	0.03
15.00	0.01	140	233.78	0.03
15.50	0.01	96	233.53	0.03
16.00	0.01	48	233.26	0.03
16.50	0.01	1	233.01	0.01
17.00	0.01	1	233.00	0.01
17.50	0.00	1	233.00	0.00
18.00	0.00	1	233.00	0.00
18.50	0.00	1	233.00	0.00
19.00	0.00	0	233.00	0.00
19.50	0.00	0	233.00	0.00
20.00	0.00	0	233.00	0.00

Stage-Discharge for Pond 22P: Subsurface System - Lot 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
233.00	**0.00**	234.06	0.03	235.12	0.02
233.02	**0.04**	234.08	0.03	235.14	0.02
233.04	0.04	234.10	0.03	235.16	0.01
233.06	0.04	234.12	0.03	235.18	0.01
233.08	0.04	234.14	0.03	235.20	0.01
233.10	0.04	234.16	0.03	235.22	0.01
233.12	0.04	234.18	0.03	235.24	0.01
233.14	0.03	234.20	0.03	235.26	0.01
233.16	0.03	234.22	0.03	235.28	0.01
233.18	0.03	234.24	0.03	235.30	0.01
233.20	0.03	234.26	0.03	235.32	0.01
233.22	0.03	234.28	0.03	235.34	0.01
233.24	0.03	234.30	0.03	235.36	0.01
233.26	0.03	234.32	0.03	235.38	0.01
233.28	0.03	234.34	0.03	235.40	0.00
233.30	0.03	234.36	0.03	235.42	0.00
233.32	0.03	234.38	0.03	235.44	0.00
233.34	0.03	234.40	0.03	235.46	0.00
233.36	0.03	234.42	0.03	235.48	0.00
233.38	0.03	234.44	0.03	235.50	0.00
233.40	0.03	234.46	0.03		
233.42	0.03	234.48	0.03		
233.44	0.03	234.50	0.03		
233.46	0.03	234.52	0.03		
233.48	0.03	234.54	0.03		
233.50	0.03	234.56	0.03		
233.52	0.03	234.58	0.03		
233.54	0.03	234.60	0.03		
233.56	0.03	234.62	0.03		
233.58	0.03	234.64	0.03		
233.60	0.03	234.66	0.03		
233.62	0.03	234.68	0.03		
233.64	0.03	234.70	0.02		
233.66	0.03	234.72	0.02		
233.68	0.03	234.74	0.02		
233.70	0.03	234.76	0.02		
233.72	0.03	234.78	0.02		
233.74	0.03	234.80	0.02		
233.76	0.03	234.82	0.02		
233.78	0.03	234.84	0.02		
233.80	0.03	234.86	0.02		
233.82	0.03	234.88	0.02		
233.84	0.03	234.90	0.02		
233.86	0.03	234.92	0.02		
233.88	0.03	234.94	0.02		
233.90	0.03	234.96	0.02		
233.92	0.03	234.98	0.02		
233.94	0.03	235.00	0.02		
233.96	0.03	235.02	0.02		
233.98	0.03	235.04	0.02		
234.00	0.03	235.06	0.02		
234.02	0.03	235.08	0.02		
234.04	0.03	235.10	0.02		

Stage-Area-Storage for Pond 22P: Subsurface System - Lot 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
233.00	**185**	0
233.05	184	9
233.10	183	18
233.15	182	28
233.20	182	37
233.25	181	46
233.30	181	55
233.35	180	64
233.40	180	73
233.45	180	82
233.50	179	91
233.55	178	100
233.60	176	109
233.65	174	117
233.70	172	126
233.75	170	135
233.80	170	143
233.85	169	151
233.90	169	160
233.95	168	168
234.00	167	177
234.05	167	185
234.10	166	193
234.15	165	202
234.20	163	210
234.25	161	218
234.30	157	226
234.35	154	234
234.40	150	241
234.45	147	249
234.50	145	256
234.55	141	263
234.60	138	270
234.65	134	277
234.70	131	284
234.75	127	290
234.80	122	296
234.85	118	302
234.90	113	308
234.95	107	313
235.00	102	319
235.05	95	324
235.10	87	328
235.15	79	332
235.20	69	336
235.25	58	339
235.30	46	342
235.35	34	344
235.40	23	345
235.45	12	346
235.50	2	**346**

Summary for Pond 32P: Subsurface System - Lot 2

Inflow Area = 0.180 ac, 44.44% Impervious, Inflow Depth > 2.44"
Inflow = 0.55 cfs @ 12.08 hrs, Volume= 0.037 af
Outflow = 0.08 cfs @ 16.45 hrs, Volume= 0.037 af, Atten= 85%, Lag= 262.0 min
Primary = 0.08 cfs @ 16.45 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 226.12' @ 12.85 hrs Surf.Area= 366 sf Storage= 540 cf

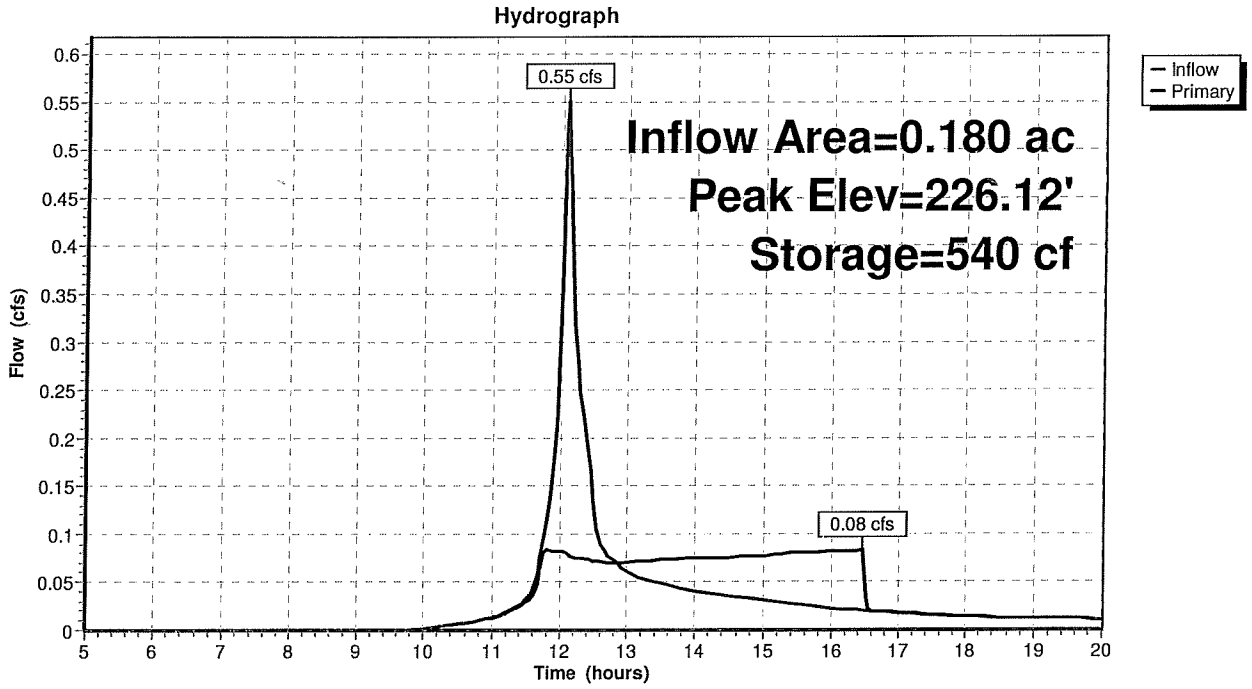
Plug-Flow detention time= 59.9 min calculated for 0.037 af (100% of inflow)
Center-of-Mass det. time= 59.5 min (865.5 - 805.9)

Volume	Invert	Avail.Storage	Storage Description
#1	224.80'	816 cf	**Cultec R-330XLHD** x 15 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

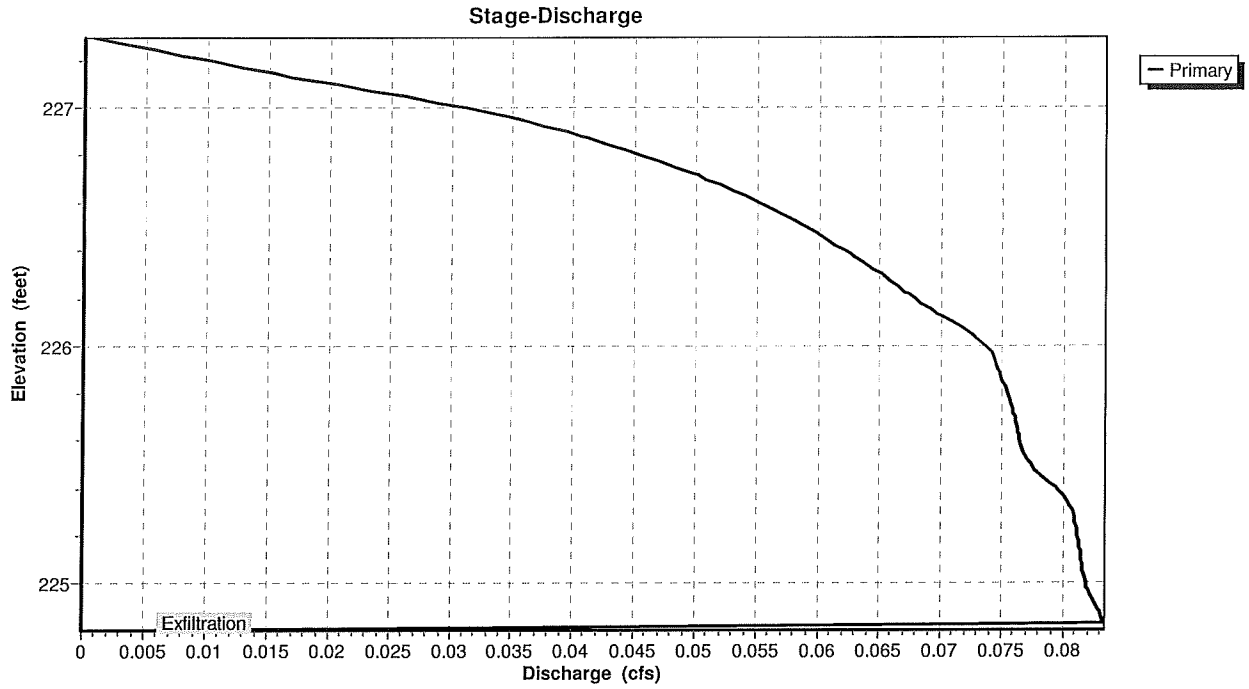
Device	Routing	Invert	Outlet Devices
#1	Primary	224.80'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.08 cfs @ 16.45 hrs HW=224.83' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.08 cfs)

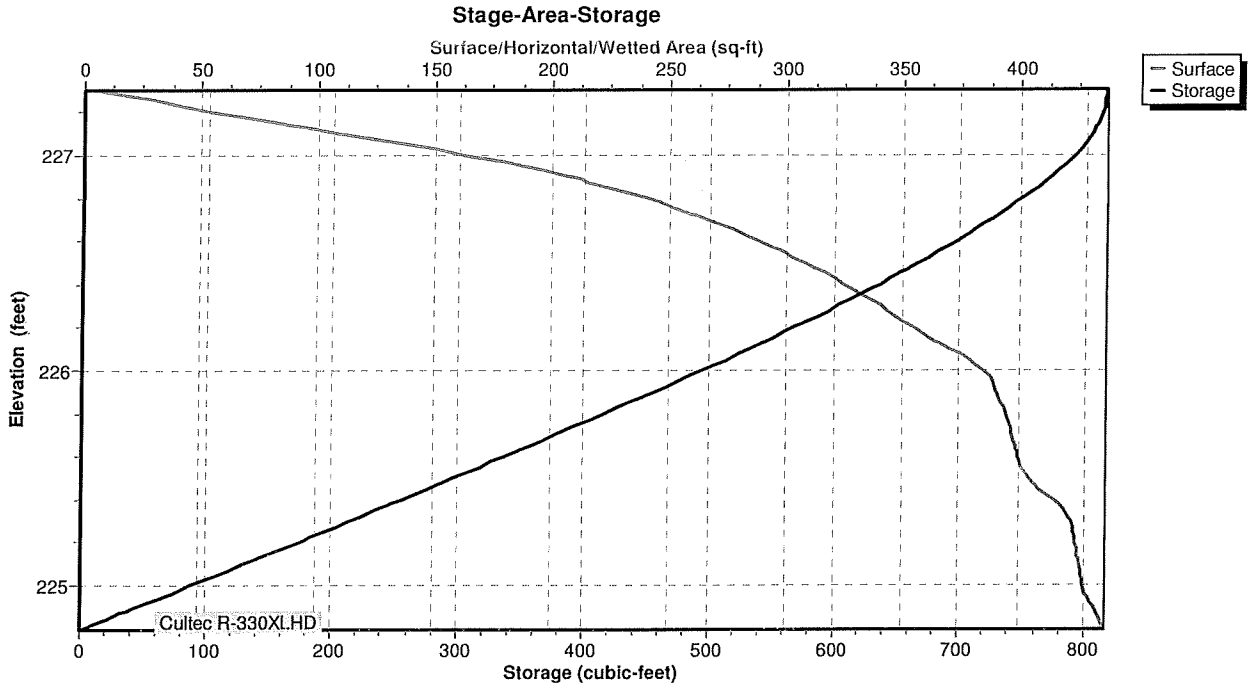
Pond 32P: Subsurface System - Lot 2



Pond 32P: Subsurface System - Lot 2



Pond 32P: Subsurface System - Lot 2



Hydrograph for Pond 32P: Subsurface System - Lot 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	224.80	0.00
5.50	0.00	0	224.80	0.00
6.00	0.00	0	224.80	0.00
6.50	0.00	0	224.80	0.00
7.00	0.00	0	224.80	0.00
7.50	0.00	0	224.80	0.00
8.00	0.00	0	224.80	0.00
8.50	0.00	0	224.80	0.00
9.00	0.00	0	224.80	0.00
9.50	0.00	0	224.80	0.00
10.00	0.00	0	224.80	0.00
10.50	0.01	1	224.80	0.01
11.00	0.01	2	224.80	0.01
11.50	0.03	4	224.81	0.03
12.00	**0.34**	92	225.01	0.08
12.50	**0.13**	**519**	**226.07**	0.07
13.00	0.06	**537**	**226.11**	0.07
13.50	0.05	504	226.02	0.07
14.00	0.04	450	225.89	0.07
14.50	0.04	381	225.71	0.08
15.00	0.03	303	225.52	0.08
15.50	0.03	213	225.30	0.08
16.00	0.02	111	225.06	**0.08**
16.50	0.02	4	224.81	**0.03**
17.00	0.02	2	224.81	0.02
17.50	0.02	2	224.80	0.02
18.00	0.01	2	224.80	0.01
18.50	0.01	2	224.80	0.01
19.00	0.01	2	224.80	0.01
19.50	0.01	2	224.80	0.01
20.00	0.01	1	224.80	0.01

Stage-Discharge for Pond 32P: Subsurface System - Lot 2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
224.80	**0.00**	225.86	0.08	226.92	0.04
224.82	**0.08**	225.88	0.07	226.94	0.04
224.84	0.08	225.90	0.07	226.96	0.03
224.86	0.08	225.92	0.07	226.98	0.03
224.88	0.08	225.94	0.07	227.00	0.03
224.90	0.08	225.96	0.07	227.02	0.03
224.92	0.08	225.98	0.07	227.04	0.03
224.94	0.08	226.00	0.07	227.06	0.03
224.96	0.08	226.02	0.07	227.08	0.02
224.98	0.08	226.04	0.07	227.10	0.02
225.00	0.08	226.06	0.07	227.12	0.02
225.02	0.08	226.08	0.07	227.14	0.02
225.04	0.08	226.10	0.07	227.16	0.01
225.06	0.08	226.12	0.07	227.18	0.01
225.08	0.08	226.14	0.07	227.20	0.01
225.10	0.08	226.16	0.07	227.22	0.01
225.12	0.08	226.18	0.07	227.24	0.01
225.14	0.08	226.20	0.07	227.26	0.00
225.16	0.08	226.22	0.07	227.28	0.00
225.18	0.08	226.24	0.07	227.30	0.00
225.20	0.08	226.26	0.07		
225.22	0.08	226.28	0.07		
225.24	0.08	226.30	0.07		
225.26	0.08	226.32	0.06		
225.28	0.08	226.34	0.06		
225.30	0.08	226.36	0.06		
225.32	0.08	226.38	0.06		
225.34	0.08	226.40	0.06		
225.36	0.08	226.42	0.06		
225.38	0.08	226.44	0.06		
225.40	0.08	226.46	0.06		
225.42	0.08	226.48	0.06		
225.44	0.08	226.50	0.06		
225.46	0.08	226.52	0.06		
225.48	0.08	226.54	0.06		
225.50	0.08	226.56	0.06		
225.52	0.08	226.58	0.06		
225.54	0.08	226.60	0.06		
225.56	0.08	226.62	0.05		
225.58	0.08	226.64	0.05		
225.60	0.08	226.66	0.05		
225.62	0.08	226.68	0.05		
225.64	0.08	226.70	0.05		
225.66	0.08	226.72	0.05		
225.68	0.08	226.74	0.05		
225.70	0.08	226.76	0.05		
225.72	0.08	226.78	0.05		
225.74	0.08	226.80	0.05		
225.76	0.08	226.82	0.04		
225.78	0.08	226.84	0.04		
225.80	0.08	226.86	0.04		
225.82	0.08	226.88	0.04		
225.84	0.08	226.90	0.04		

Stage-Area-Storage for Pond 32P: Subsurface System - Lot 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
224.80	**436**	0
224.85	434	22
224.90	432	43
224.95	429	65
225.00	428	86
225.05	426	108
225.10	426	129
225.15	425	150
225.20	424	172
225.25	423	193
225.30	422	214
225.35	419	235
225.40	415	256
225.45	409	276
225.50	404	297
225.55	401	317
225.60	400	337
225.65	398	357
225.70	397	377
225.75	396	396
225.80	394	416
225.85	392	436
225.90	390	455
225.95	388	475
226.00	384	494
226.05	379	513
226.10	370	532
226.15	361	550
226.20	354	568
226.25	347	586
226.30	340	603
226.35	332	620
226.40	324	636
226.45	316	652
226.50	307	668
226.55	298	683
226.60	288	697
226.65	277	712
226.70	265	725
226.75	253	738
226.80	239	750
226.85	223	762
226.90	206	773
226.95	186	783
227.00	163	791
227.05	137	799
227.10	108	805
227.15	80	810
227.20	55	813
227.25	29	815
227.30	4	**816**

Summary for Pond 42P: Subsurface System - Lot 3

Inflow Area = 0.100 ac, 50.00% Impervious, Inflow Depth > 2.81"
Inflow = 0.35 cfs @ 12.08 hrs, Volume= 0.023 af
Outflow = 0.07 cfs @ 14.95 hrs, Volume= 0.023 af, Atten= 80%, Lag= 172.2 min
Primary = 0.07 cfs @ 14.95 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 225.39' @ 12.59 hrs Surf.Area= 300 sf Storage= 299 cf

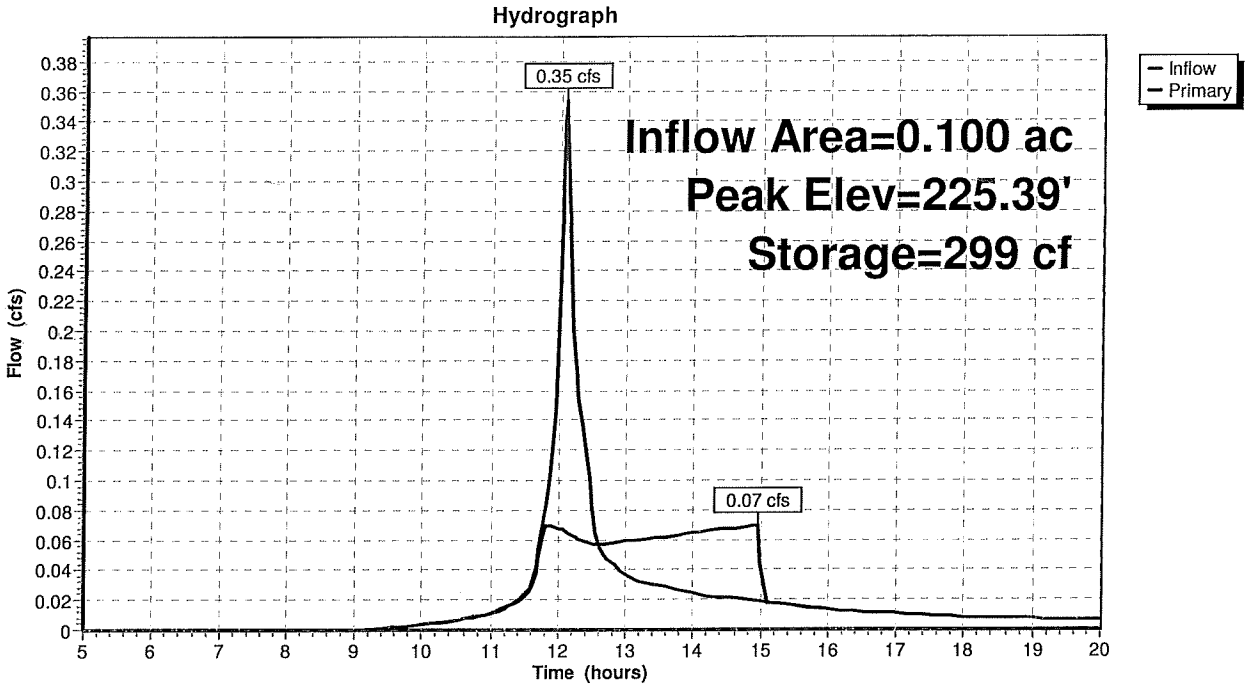
Plug-Flow detention time= 33.7 min calculated for 0.023 af (100% of inflow)
Center-of-Mass det. time= 33.5 min (832.2 - 798.7)

Volume	Invert	Avail.Storage	Storage Description
#1	224.50'	453 cf	**Cultec R-180** x 20 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 5 rows

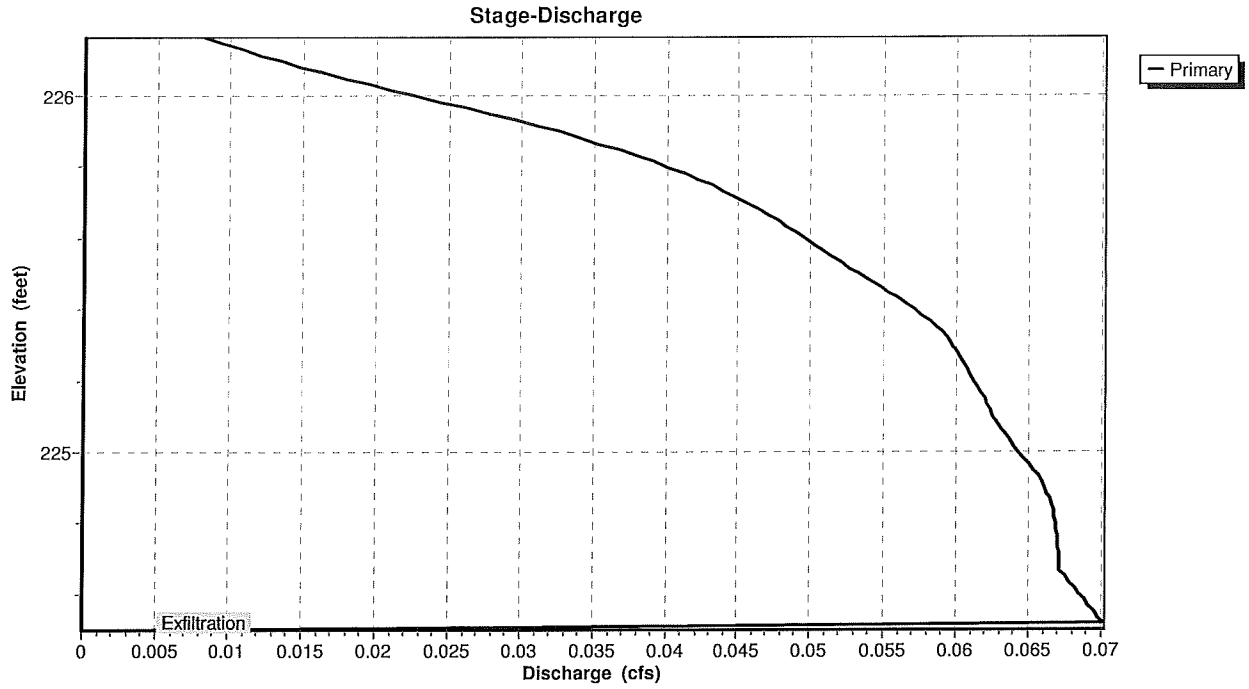
Device	Routing	Invert	Outlet Devices
#1	Primary	224.50'	**8.270 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.07 cfs @ 14.95 hrs HW=224.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.07 cfs)

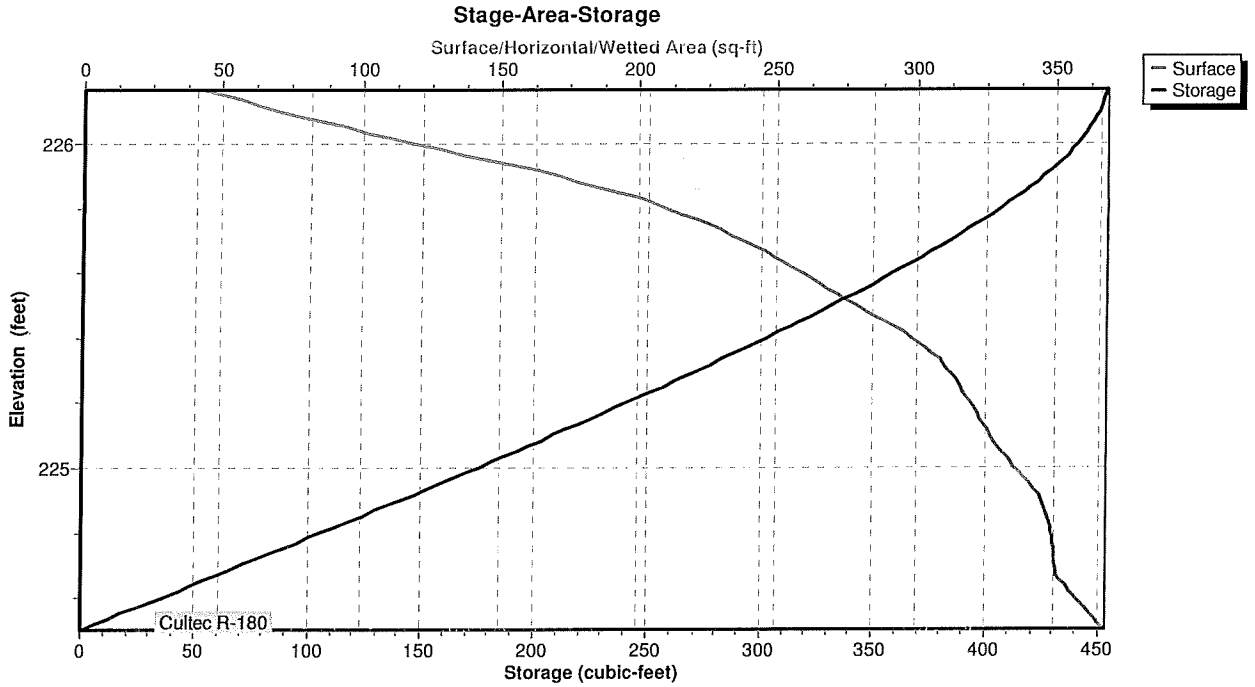
Pond 42P: Subsurface System - Lot 3



Pond 42P: Subsurface System - Lot 3



Pond 42P: Subsurface System - Lot 3



Hydrograph for Pond 42P: Subsurface System - Lot 3

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	224.50	0.00
5.50	0.00	0	224.50	0.00
6.00	0.00	0	224.50	0.00
6.50	0.00	0	224.50	0.00
7.00	0.00	0	224.50	0.00
7.50	0.00	0	224.50	0.00
8.00	0.00	0	224.50	0.00
8.50	0.00	0	224.50	0.00
9.00	0.00	0	224.50	0.00
9.50	0.00	0	224.50	0.00
10.00	0.00	0	224.50	0.00
10.50	0.01	1	224.50	0.01
11.00	0.01	1	224.50	0.01
11.50	0.02	2	224.51	0.02
12.00	**0.23**	50	224.64	0.07
12.50	**0.08**	**295**	**225.37**	0.06
13.00	0.04	**279**	**225.32**	0.06
13.50	0.03	228	225.16	0.06
14.00	0.02	163	224.96	0.06
14.50	0.02	84	224.74	**0.07**
15.00	0.02	2	224.50	**0.02**
15.50	0.02	1	224.50	0.02
16.00	0.01	1	224.50	0.01
16.50	0.01	1	224.50	0.01
17.00	0.01	1	224.50	0.01
17.50	0.01	1	224.50	0.01
18.00	0.01	1	224.50	0.01
18.50	0.01	1	224.50	0.01
19.00	0.01	1	224.50	0.01
19.50	0.01	1	224.50	0.01
20.00	0.01	1	224.50	0.01

Stage-Discharge for Pond 42P: Subsurface System - Lot 3

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
224.50	0.00	225.03	0.06	225.56	0.05	226.09	0.01
224.51	**0.07**	225.04	0.06	225.57	0.05	226.10	0.01
224.52	0.07	225.05	0.06	225.58	0.05	226.11	0.01
224.53	0.07	225.06	0.06	225.59	0.05	226.12	0.01
224.54	0.07	225.07	0.06	225.60	0.05	226.13	0.01
224.55	0.07	225.08	0.06	225.61	0.05	226.14	0.01
224.56	0.07	225.09	0.06	225.62	0.05	226.15	0.01
224.57	0.07	225.10	0.06	225.63	0.05	226.16	0.01
224.58	0.07	225.11	0.06	225.64	0.05	226.17	0.01
224.59	0.07	225.12	0.06	225.65	0.05		
224.60	0.07	225.13	0.06	225.66	0.05		
224.61	0.07	225.14	0.06	225.67	0.05		
224.62	0.07	225.15	0.06	225.68	0.05		
224.63	0.07	225.16	0.06	225.69	0.05		
224.64	0.07	225.17	0.06	225.70	0.05		
224.65	0.07	225.18	0.06	225.71	0.04		
224.66	0.07	225.19	0.06	225.72	0.04		
224.67	0.07	225.20	0.06	225.73	0.04		
224.68	0.07	225.21	0.06	225.74	0.04		
224.69	0.07	225.22	0.06	225.75	0.04		
224.70	0.07	225.23	0.06	225.76	0.04		
224.71	0.07	225.24	0.06	225.77	0.04		
224.72	0.07	225.25	0.06	225.78	0.04		
224.73	0.07	225.26	0.06	225.79	0.04		
224.74	0.07	225.27	0.06	225.80	0.04		
224.75	0.07	225.28	0.06	225.81	0.04		
224.76	0.07	225.29	0.06	225.82	0.04		
224.77	0.07	225.30	0.06	225.83	0.04		
224.78	0.07	225.31	0.06	225.84	0.04		
224.79	0.07	225.32	0.06	225.85	0.04		
224.80	0.07	225.33	0.06	225.86	0.04		
224.81	0.07	225.34	0.06	225.87	0.04		
224.82	0.07	225.35	0.06	225.88	0.03		
224.83	0.07	225.36	0.06	225.89	0.03		
224.84	0.07	225.37	0.06	225.90	0.03		
224.85	0.07	225.38	0.06	225.91	0.03		
224.86	0.07	225.39	0.06	225.92	0.03		
224.87	0.07	225.40	0.06	225.93	0.03		
224.88	0.07	225.41	0.06	225.94	0.03		
224.89	0.07	225.42	0.06	225.95	0.03		
224.90	0.07	225.43	0.06	225.96	0.03		
224.91	0.07	225.44	0.06	225.97	0.03		
224.92	0.07	225.45	0.06	225.98	0.02		
224.93	0.07	225.46	0.05	225.99	0.02		
224.94	0.07	225.47	0.05	226.00	0.02		
224.95	0.07	225.48	0.05	226.01	0.02		
224.96	0.07	225.49	0.05	226.02	0.02		
224.97	0.06	225.50	0.05	226.03	0.02		
224.98	0.06	225.51	0.05	226.04	0.02		
224.99	0.06	225.52	0.05	226.05	0.02		
225.00	0.06	225.53	0.05	226.06	0.02		
225.01	0.06	225.54	0.05	226.07	0.02		
225.02	0.06	225.55	0.05	226.08	0.02		

Stage-Area-Storage for Pond 42P: Subsurface System - Lot 3

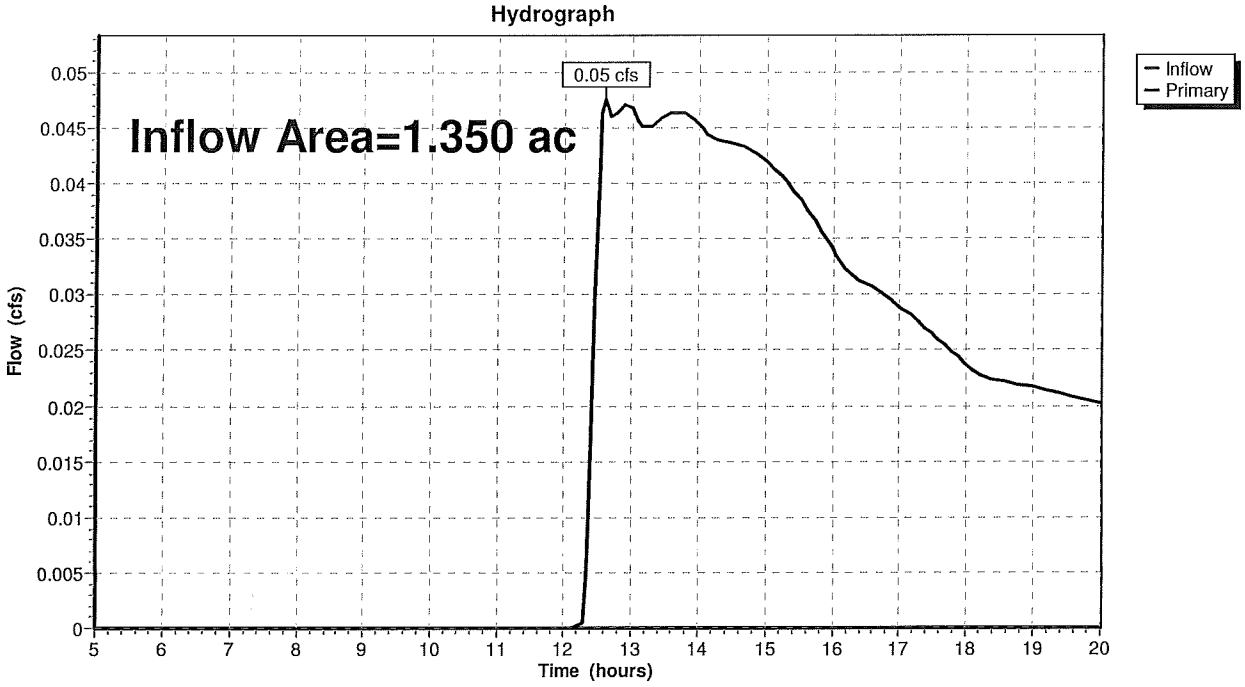
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
224.50	**368**	0
224.52	366	7
224.54	364	15
224.56	362	22
224.58	360	29
224.60	358	36
224.62	355	43
224.64	353	50
224.66	351	58
224.68	350	65
224.70	350	72
224.72	350	79
224.74	350	86
224.76	350	93
224.78	349	100
224.80	349	107
224.82	348	113
224.84	348	120
224.86	347	127
224.88	346	134
224.90	345	141
224.92	344	148
224.94	342	155
224.96	340	162
224.98	338	169
225.00	336	175
225.02	334	182
225.04	332	189
225.06	330	195
225.08	328	202
225.10	327	208
225.12	325	215
225.14	324	221
225.16	323	228
225.18	321	234
225.20	320	241
225.22	318	247
225.24	317	253
225.26	315	260
225.28	313	266
225.30	312	272
225.32	310	279
225.34	308	285
225.36	304	291
225.38	301	297
225.40	298	303
225.42	295	309
225.44	290	315
225.46	286	320
225.48	282	326
225.50	278	332
225.52	274	337
225.54	270	343
225.56	267	348
225.58	263	353
225.60	259	359
225.62	255	364
225.64	251	369
225.66	247	374
225.68	242	379
225.70	237	383
225.72	232	388
225.74	227	393
225.76	222	397
225.78	216	402
225.80	209	406
225.82	203	410
225.84	196	414
225.86	188	418
225.88	179	421
225.90	171	425
225.92	162	428
225.94	151	431
225.96	140	434
225.98	129	437
226.00	118	439
226.02	109	442
226.04	99	444
226.06	89	446
226.08	79	447
226.10	70	449
226.12	62	450
226.14	54	451
226.16	45	**452**

Summary for Link DP: Design Point

Inflow Area = 1.350 ac, 0.74% Impervious, Inflow Depth > 0.19"
Inflow = 0.05 cfs @ 12.60 hrs, Volume= 0.021 af
Primary = 0.05 cfs @ 12.60 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

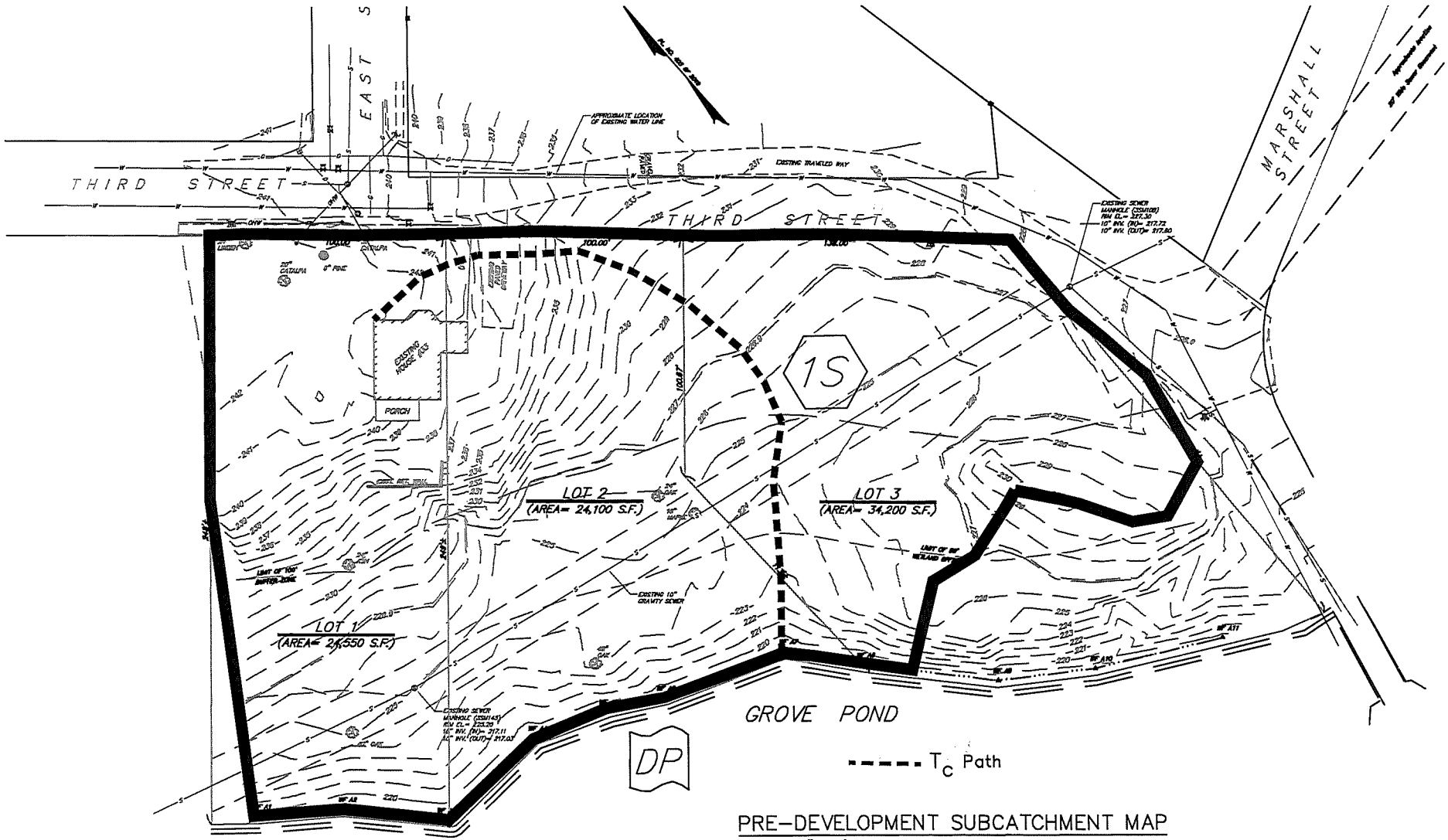
Link DP: Design Point



Hydrograph for Link DP: Design Point

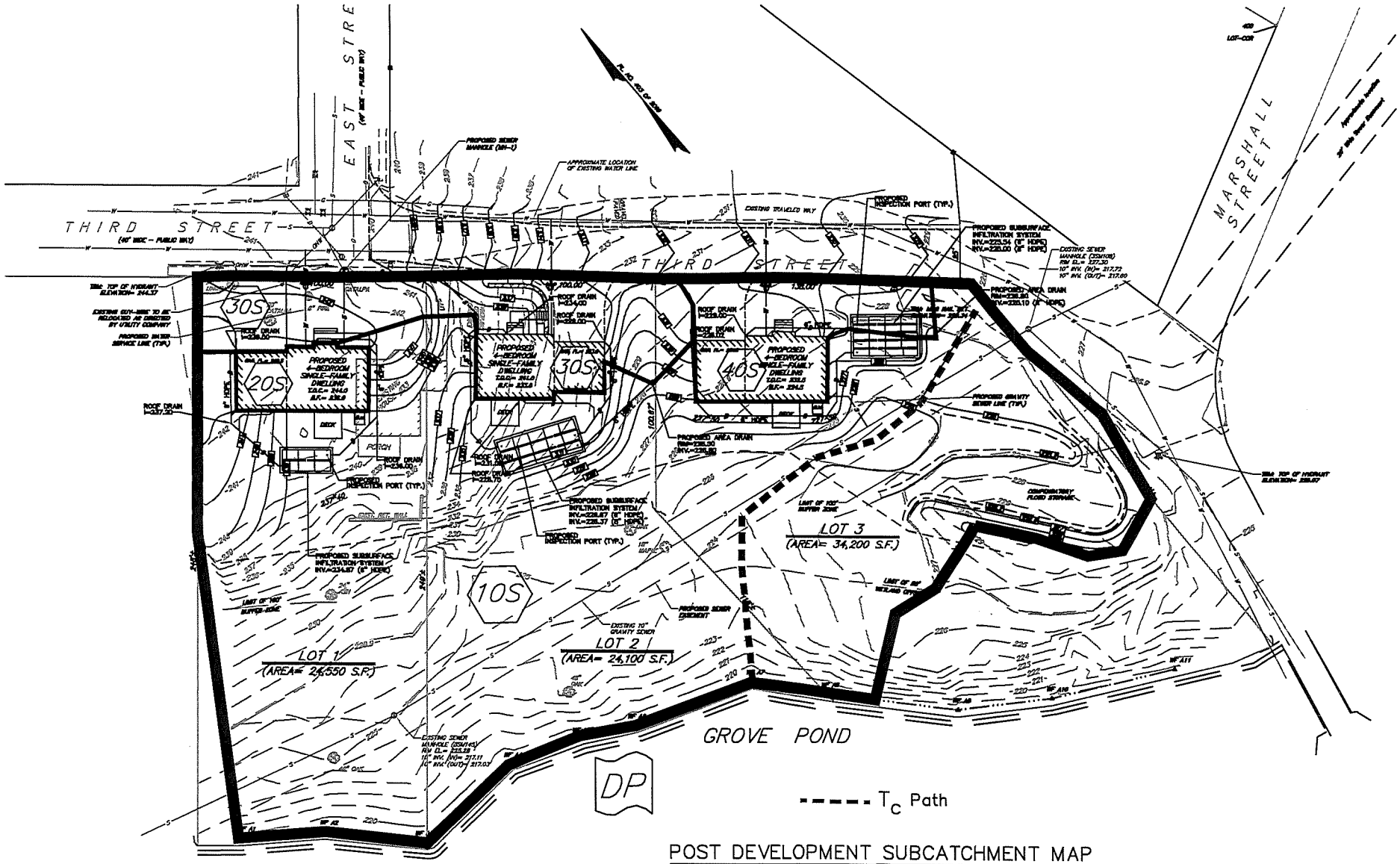
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.25	0.00	0.00	0.00
9.50	0.00	0.00	0.00
9.75	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.25	0.00	0.00	0.00
10.50	0.00	0.00	0.00
10.75	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.25	0.00	0.00	0.00
11.50	0.00	0.00	0.00
11.75	0.00	0.00	0.00
12.00	0.00	0.00	0.00
12.25	0.00	0.00	0.00
12.50	**0.04**	0.00	**0.04**
12.75	**0.05**	0.00	**0.05**
13.00	0.05	0.00	0.05
13.25	0.05	0.00	0.05
13.50	0.05	0.00	0.05
13.75	0.05	0.00	0.05
14.00	0.05	0.00	0.05
14.25	0.04	0.00	0.04
14.50	0.04	0.00	0.04
14.75	0.04	0.00	0.04
15.00	0.04	0.00	0.04
15.25	0.04	0.00	0.04
15.50	0.04	0.00	0.04
15.75	0.04	0.00	0.04
16.00	0.03	0.00	0.03
16.25	0.03	0.00	0.03
16.50	0.03	0.00	0.03
16.75	0.03	0.00	0.03
17.00	0.03	0.00	0.03
17.25	0.03	0.00	0.03
17.50	0.03	0.00	0.03
17.75	0.03	0.00	0.03
18.00	0.02	0.00	0.02
18.25	0.02	0.00	0.02
18.50	0.02	0.00	0.02
18.75	0.02	0.00	0.02
19.00	0.02	0.00	0.02
19.25	0.02	0.00	0.02
19.50	0.02	0.00	0.02
19.75	0.02	0.00	0.02
20.00	0.02	0.00	0.02

SUBCATCHMENT MAPS



PRE-DEVELOPMENT SUBCATCHMENT MAP

SCALE: 1"=60'



POST DEVELOPMENT SUBCATCHMENT MAP

SCALE: 1"=60'

CLOSED DRAINAGE SYSTEM

CALCULATIONS

DESIGN OF STORM SEWERS

PROJECT NAME THIRD STREET AYER MA
PROJECT NO. 24001 SHEET 1 OF 1
CALCULATED BY MFP DATE 7-20-24

A		B		C	D	E	F	G	H	I	J	K	L	M	N	O	P	REMARKS
FLOW PATH		AREA (Ac)		COEFF. OF RUNOFF (c)	TIME TO INLET (min.)	DESIGN STORM (year)	INTENSITY (I)	DESIGN FLOW (Q) (cfs) (CxFxB)	PIPE SIZE (in.)	PIPE SLOPE (ft./ft.)	ROUGH. COEFF. (n)	FULL CAPACITY (cfs)	FULL VELOCITY (fps)	DESIGN VELOCITY (fps)	LENGTH OF PIPE (ft.)	TIME IN CHANNEL (min.) (N/M)	TIME TO NEXT NODE (min.) (D+O)	
FROM	TO	SUB-AREA	TOTAL															
ROOF DRAIN	SYSTEM	0.04	0.04	0.90	10	100	8.0	0.29	6	0.005	0.012	0.50	2.7	2.8	100	0.60	10.6	MINIMUM SLOPE OF ROOF DRAIN HAS CAPACITY OF ENTIRE ROOF
AREA DRAIN A	SYSTEM	0.14	0.14	0.54	10	100	8.0	0.60	8	0.010	0.012	1.40	3.8	3.6	42	0.20	10.2	FLOW TO AREA DRAIN A
AREA DRAIN B	SYSTEM	0.07	0.07	0.54	10	100	8.0	0.30	8	0.010	0.012	1.40	3.8	3.0	7	0.10	10.1	FLOW TO AREA DRAIN B

RECHARGE VOLUME CALCULATIONS

RECHARGE VOLUME CALCULATION

February 20, 2024

Lot 1 - Subsurface System

Calculate recharge volume lost to newly developed impervious areas.

- Merrimac – Urban Land (A Soils) and Birchwood (A soils) –

  Total of 0.04 acres (AC) of impervious area in the A soil groups

  Recharge volume =

  (0.04 AC)(0.60"/12"/ft)(43,560 SF/AC) = 87.12 *Cubic Feet (CF)*

TOTAL RECHARGE VOLUME REQUIRED = 88 CF

Calculate the recharge volume provided.

Calculate Subsurface Chamber volume from HydroCAD:

Subsurface Infiltration System

Storage in Recharge units is 346 Cubic Feet (CF)

TOTAL RECHARGE VOLUME PROVIDED = 346 CF

Recharge volume provided exceeds the recharge volume required.

DRAWDOWN CALCULATION February 20, 2024

Lot 1 – Subsurface System

Time (drawdown) = Rv (storage volume) / [K x(Bottom Area)]

Use 8.27 inches/hour (A soil type - Sand)

K - Saturated Hydraulic Conductivity 8.27 Inches / Hour = 0.689 Feet / Hour

Infiltration within the subsurface system

Time = 346 C.F. / [(0.689 Feet / Hour) x 257 S.F.]

Time = 1.95 Hours

The subsurface system will drawdown in less than 72 hours.

RECHARGE VOLUME CALCULATION February 20, 2024

Lot 2 - Subsurface System

Calculate recharge volume lost to newly developed impervious areas.

- Merrimac – Urban Land (A Soils) and Birchwood (A soils) –

  Total of 0.08 acres (AC) of impervious area in the A soil groups

  Recharge volume =

  (0.08 AC)(0.60"/12"/ft)(43,560 SF/AC) = 174.24 *Cubic Feet (CF)*

TOTAL RECHARGE VOLUME REQUIRED = 175 CF

Calculate the recharge volume provided.

Calculate Subsurface Chamber volume from HydroCAD:

Subsurface Infiltration System

Storage in Recharge units is 816 Cubic Feet (CF)

TOTAL RECHARGE VOLUME PROVIDED = 816 CF

Recharge volume provided exceeds the recharge volume required.

DRAWDOWN CALCULATION

February 20, 2024

Lot 2 – Subsurface System

Time (drawdown) = Rv (storage volume) / [K x(Bottom Area)]

Use 8.27 inches/hour (A soil type - Sand)

K - Saturated Hydraulic Conductivity 8.27 Inches / Hour = 0.689 Feet / Hour

Infiltration within the subsurface system

Time = 816 C.F. / [(0.689 Feet / Hour) x 592 S.F.]

Time = 2.00 Hours

The subsurface system will drawdown in less than 72 hours.

RECHARGE VOLUME CALCULATION February 20, 2024

Lot 3 - Subsurface System

Calculate recharge volume lost to newly developed impervious areas.

- Merrimac – Urban Land (A Soils) and Birchwood (A soils) –

  Total of 0.05 acres (AC) of impervious area in the A soil groups

  Recharge volume =

  (0.05 AC)(0.60"/12"/ft)(43,560 SF/AC) = 108.90 *Cubic Feet (CF)*

TOTAL RECHARGE VOLUME REQUIRED = 109 CF

Calculate the recharge volume provided.

Calculate Subsurface Chamber volume from HydroCAD:

Subsurface Roof System

Storage in Recharge units is 346 Cubic Feet (CF)

TOTAL RECHARGE VOLUME PROVIDED = 453 CF

Recharge volume provided exceeds the recharge volume required.

DRAWDOWN CALCULATION February 20, 2024

Lot 3 – Subsurface System

Time (drawdown) = Rv (storage volume) / [K x(Bottom Area)]

Use 8.27 inches/hour (A soil type - Sand)

K - Saturated Hydraulic Conductivity 8.27 Inches / Hour = 0.689 Feet / Hour

Infiltration within the subsurface system

Time = 453 C.F. / [(0.689 Feet / Hour) x 570 S.F.]

Time = 1.15 Hours

The subsurface system will drawdown in less than 72 hours.

OPERATION AND MAINTEANANCE PLAN

STORMWATER MANAGEMENT SYSTEM INSPECTION AND MAINTENANCE PLAN

Third Street
Ayer, Massachusetts

Prepared for:

Aho Development Corporation
P.O. Box 54
Rindge, NH 03461

Date: February 20, 2024

The proposed Third Street (three lots) roof infiltration systems have been designed to function properly provided that routine maintenance is performed. Maintenance of the roof drains, subsurface drainage systems and area drains is required to ensure that sedimentation and pollution is controlled and storm water infiltration capacity is sustained. To ensure the proper functioning of these facilities the following maintenance practices will be used:

Owner and Party Responsible for Maintenance (Landowner):

Mr. Dan Aho
Aho Development Corporation
P.O. Box 54
Rindge, NH 03461

_____ _____

Owner's Signature Date

The owner shall develop a chart with a list of the following Best Management Practices (BMP's) with the chart listing the maintenance requirement, frequency of maintenance and the date the maintenance was performed.

PART 1 - INSPECTION AND MAINTENANCE (DURING CONSTRUCTION)

A. It shall be the responsibility of the General Contractor to ensure that the inspection, maintenance and protection of the stormwater management system (defined in Section 2a below) is performed during the construction phase of the project and up to final stabilization of the site (refer to attached plan).

B. The on-site stormwater management system shall be protected from the introduction of sediments and debris both during installation and throughout the duration of site construction in order to provide a fully functioning and long lasting system upon completion of construction.

C. The following steps shall be implemented, at a minimum, to protect the stormwater management system during construction:

1. During construction of the subsurface drainage systems, the open excavation shall be protected from on-site sediments from storm runoff and snow melt by providing a line of erosion controls consisting of haybales or silt fence or a combination of both. In the event that the excavation is compromised by sediment, the sediments shall be removed and the bottom of the excavation restored.

2. An inspection of the stormwater management system shall be conducted by the General Contractor weekly as well as during and after all rainstorms until the completion of construction. In case of any noted introduction of sediments into the system, the General Contractor shall immediately remove said sediments and take any necessary steps to limit further introduction of sediments and notify the engineer of any problems involving storm water management systems.

    a) The stormwater management system shall be defined as the roof drains, subsurface drainage systems and area drains.

    b) A rainstorm shall be defined by all or one of the following thresholds:

        i. Any storm in which rain is predicted to last for twelve consecutive hours or more.

        ii. Any storm for which a flash flood watch or warning is issued.

        iii. Any single storm predicted to have a cumulative rainfall of greater than one-half inch.

        iv. Any storm not meeting the previous three thresholds but which would mark a third consecutive day of measurable rainfall.

3. The General Contractor shall also inspect the stormwater management systems at times of significant increase in surface water runoff due to rapid thawing when the risk of sediment migration is significant.

4. All collected/removed sediments shall be removed from the site and disposed of in a legal manner.

PART 2 - INSPECTION AND MAINTENANCE (POST-CONSTRUCTION)

A. It shall be the responsibility of the Owner to ensure that the long-term inspection and maintenance of the stormwater management system on-site is performed. The on-site system shall include the following individual components of the stormwater management system: roof drains, subsurface drainage systems and area drains as shown on the approved plans. The Owner shall obtain the services of a qualified Contractor to perform the required inspections and maintenance of the individual components of the stormwater management system on-site, as listed above. All inspections and maintenance of the components of the stormwater management system.

B. It shall be the responsibility of the Owner to maintain adequate records to demonstrate conformance with this inspection and maintenance plan.

C. The inspection and maintenance plan for the on-site stormwater management system (as listed in Section A above) shall be carried out by the current owner (project applicant) and by any and all future owners of the site in perpetuity.

D. The inspection and maintenance plan shall be carried out as outlined below upon completion and final stabilization of the project site:

E. During the first six months of operation of the facility the stormwater management system shall be inspected a minimum of once per month and after every rainstorm (defined in Part 1 above). A portion of this time period must be in the growing season. As warranted by these inspections maintenance of the system shall be performed including, but not limited to the following:

1. Visual inspection of the roof drains, subsurface drainage systems and area drains to ensure that the system is not backed up and is emptying properly.

F. After the six month time period above has elapsed, thorough investigations shall be conducted two times a year. Maintenance requirements may be adjusted based upon the results obtained from the first year of operation. As warranted by these inspections maintenance of the system shall be performed including, but not limited to the following:

1. The roof drains, subsurface drainage systems and area drains require a bi-annual inspection for necessary maintenance (refer to attached plan). This consists of visually inspecting for the accumulation of sediment; obstructions within the pipes. Remove sediments from the area drains and subsurface drainage systems, if necessary. Sediment, which is removed, shall be legally disposed of. The subsurface drainage systems and area drains shall be monitored at several intervals during and after a small and large rainfall event to ensure they are functional.

MAINTENANCE LOGS

Maintain a log of all operation and maintenance activities including without limitation inspections, repairs, replacement and disposal (for disposal, the log shall indicate the type of material and disposal location). A copy of the yearly maintenance logs shall be made accessible to the following agencies:

Conservation Commission
1 Main Street
Ayer, MA 01432

Department of Environmental Protection
Central Regional Office
627 Main Street
Worcester, MA 01608

MAINTENANCE SCHEDULE

Structure Type	Inspection	Maintenance	Task	Cost Estimate (per Year)	Owner
Roof Drain System	Twice per year Spring and Fall	Twice per year, clean gutters and inspect piping	Inspect and Clean/Remove debris	$200	Land Owner
Subsurface Drainage System	Twice per year Spring and Fall	Twice per year, or whenever the depth of the deposits is greater than or equal to half the depth from the bottom of the system to the inlet pipe	Inspect and Clean/Remove debris and sediment	$500	Land Owner
Area Drain	Twice per year Spring and Fall	Twice per year, or whenever the trench appears to be clogged with sediment and debris	Inspect and Clean/Remove debris and sediment	$300	Land Owner
			Total Annual Estimated Cost =	$1,000	Land Owner

(Cost is per each roof drain system, subsurface drainage system and area drain)

ROOF DRAIN SYSTEM INSPECTION FORM

Aho Development Corporation
P.O. Box 54
Rindge, NH 03461

Owner:_____

Property Manager:_____

Inspected By:_____

Date of Inspection:_____

Roof Drain System inspected (circle): Lot 1 Lot 2 Lot 3

Acceptable ☐ Needs Work ☐

Add notes below if structures need work:

Date of cleaning:_____ By Whom:_____

Date of repair: _____ By Whom:_____

Below note any further actions that need to be taken as necessary:

SUBSURFACE DRAINAGE SYSTEM INSPECTION FORM

Aho Development Corporation
P.O. Box 54
Rindge, NH 03461

Owner:_____

Property Manager:_____

Inspected By:_____

Date of Inspection:_____

Subsurface Drainage System inspected (circle): Lot 1 Lot 2 Lot 3

Acceptable ☐ Needs Work ☐

Add notes below if structures need work:

Date of cleaning:_____ By Whom:_____

Date of repair: _____ By Whom:_____

Below note any further actions that need to be taken as necessary:

AREA DRAIN INSPECTION FORM

Aho Development Corporation
P.O. Box 54
Rindge, NH 03461

Owner:_____

Property Manager:_____

Inspected By:_____

Date of Inspection:_____

Area Drain inspected (circle): Lot 2 Lot 3

Acceptable ☐ Needs Work ☐

Add notes below if structures need work:

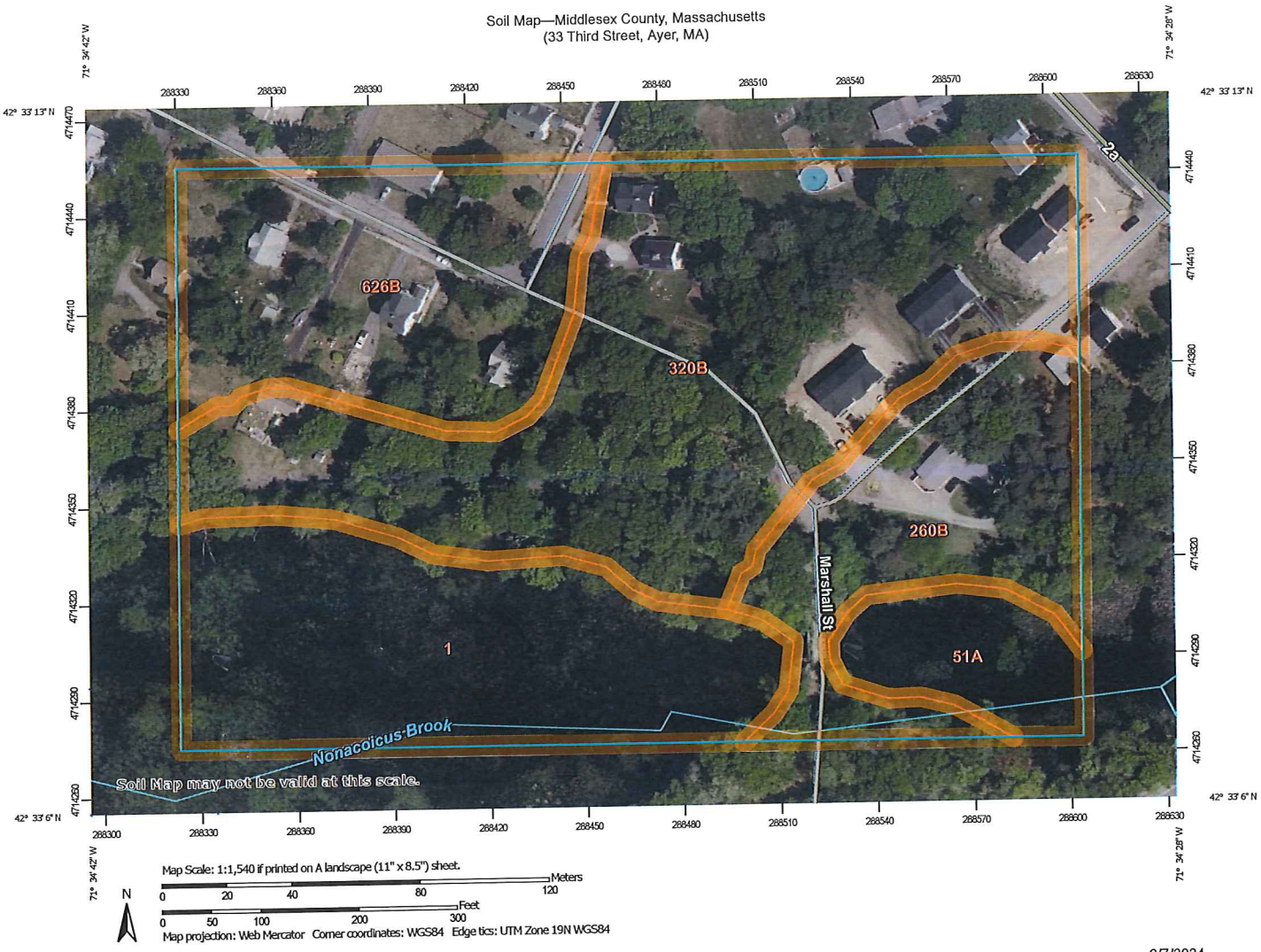
Date of cleaning:_____ By Whom:_____

Date of repair: _____ By Whom:_____

Below note any further actions that need to be taken as necessary:

NRCS SOIL MAP

Soil Map—Middlesex County, Massachusetts
(33 Third Street, Ayer, MA)



Map Scale: 1:1,540 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 23, Sep 12, 2023

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	2.7	21.6%
51A	Swansea muck, 0 to 1 percent slopes	0.7	5.4%
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	1.9	14.9%
320B	Birchwood fine sandy loam, 3 to 8 percent slopes	5.0	39.5%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	2.3	18.6%
Totals for Area of Interest		**12.5**	**100.0%**

TABLES AND CHARTS

Table 2-2a.—Runoff curve numbers for urban areas[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1]Average runoff condition, and $I_a = 0.2S$.

[2]The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3]CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4]Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5]Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4, based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2c.—Runoff curve numbers for other agricultural lands[1]

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing.[2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element.[3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	430	48	65	73
Woods—grass combination (orchard or tree farm).[5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods.[6]	Poor	45	66	77	83
	Fair	436	60	73	79
	Good	430	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

[1]Average runoff condition, and $I_a = 0.2S$.

[2]*Poor:* <50% ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: >75% ground cover and lightly or only occasionally grazed.

[3]*Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

[4]Actual curve number is less than 30; use CN = 30 for runoff computations.

[5]CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

[6]*Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Sheet flow

Sheet flow is flow over plane surfaces. It usually occurs in the headwater of streams. With sheet flow, the friction value (Manning's n) is an effective roughness coefficient that includes the effect of raindrop impact; drag over the plane surface; obstacles such as litter, crop ridges, and rocks; and erosion and transportation of sediment. These n values are for very shallow flow depths of about 0.1 foot or so. Table 3-1 gives Manning's n values for sheet flow for various surface conditions.

For sheet flow of less than 300 feet, use Manning's kinematic solution (Overton and Meadows 1976) to compute T_t:

$$T_t = \frac{0.007\,(nL)^{0.8}}{(P_2)^{0.5}\,s^{0.4}} \qquad \text{[Eq. 3-3]}$$

Table 3-1.—Roughness coefficients (Manning's n) for sheet flow

Surface description	n[1]
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover ≤20%	0.06
Residue cover >20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses[2]	0.24
Bermudagrass	0.41
Range (natural)	0.13
Woods:[3]	
Light underbrush	0.40
Dense underbrush	0.80

[1]The n values are a composite of information compiled by Engman (1986).
[2]Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
[3]When selecting n, consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

where

T_t = travel time (hr),
n = Manning's roughness coefficient (table 3-1),
L = flow length (ft),
P_2 = 2-year, 24-hour rainfall (in), and
s = slope of hydraulic grade line (land slope, ft/ft).

This simplified form of the Manning's kinematic solution is based on the following: (1) shallow steady uniform flow, (2) constant intensity of rainfall excess (that part of a rain available for runoff), (3) rainfall duration of 24 hours, and (4) minor effect of infiltration on travel time. Rainfall depth can be obtained from appendix B.

Shallow concentrated flow

After a maximum of 300 feet, sheet flow usually becomes shallow concentrated flow. The average velocity for this flow can be determined from figure 3-1, in which average velocity is a function of watercourse slope and type of channel. For slopes less than 0.005 ft/ft, use equations given in appendix F for figure 3-1. Tillage can affect the direction of shallow concentrated flow. Flow may not always be directly down the watershed slope if tillage runs across the slope.

After determining average velocity in figure 3-1, use equation 3-1 to estimate travel time for the shallow concentrated flow segment.

Open channels

Open channels are assumed to begin where surveyed cross section information has been obtained, where channels are visible on aerial photographs, or where blue lines (indicating streams) appear on United States Geological Survey (USGS) quadrangle sheets. Manning's equation or water surface profile information can be used to estimate average flow velocity. Average flow velocity is usually determined for bank-full elevation.

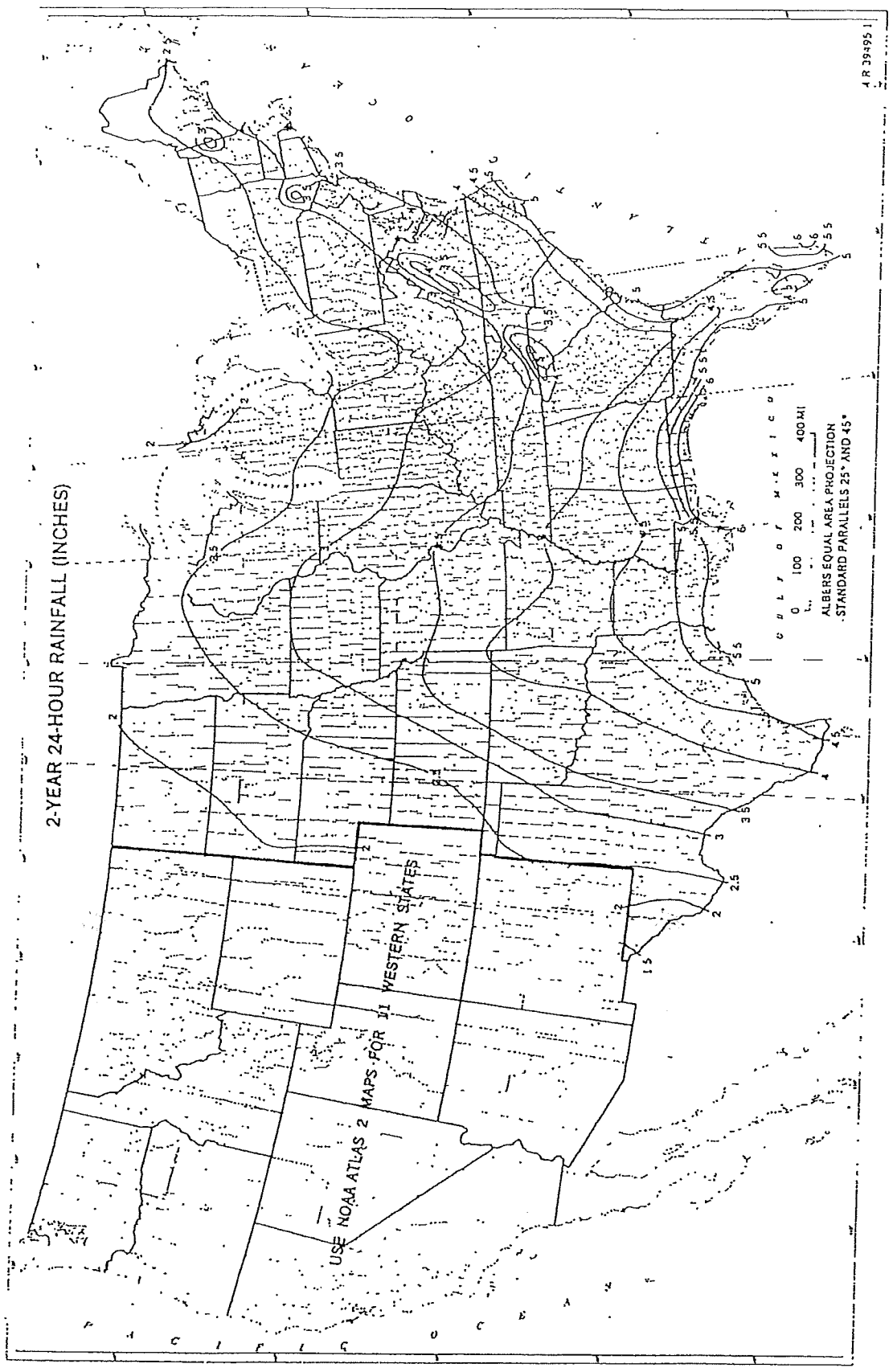


Figure B-3.—Two-year, 24-hour rainfall.

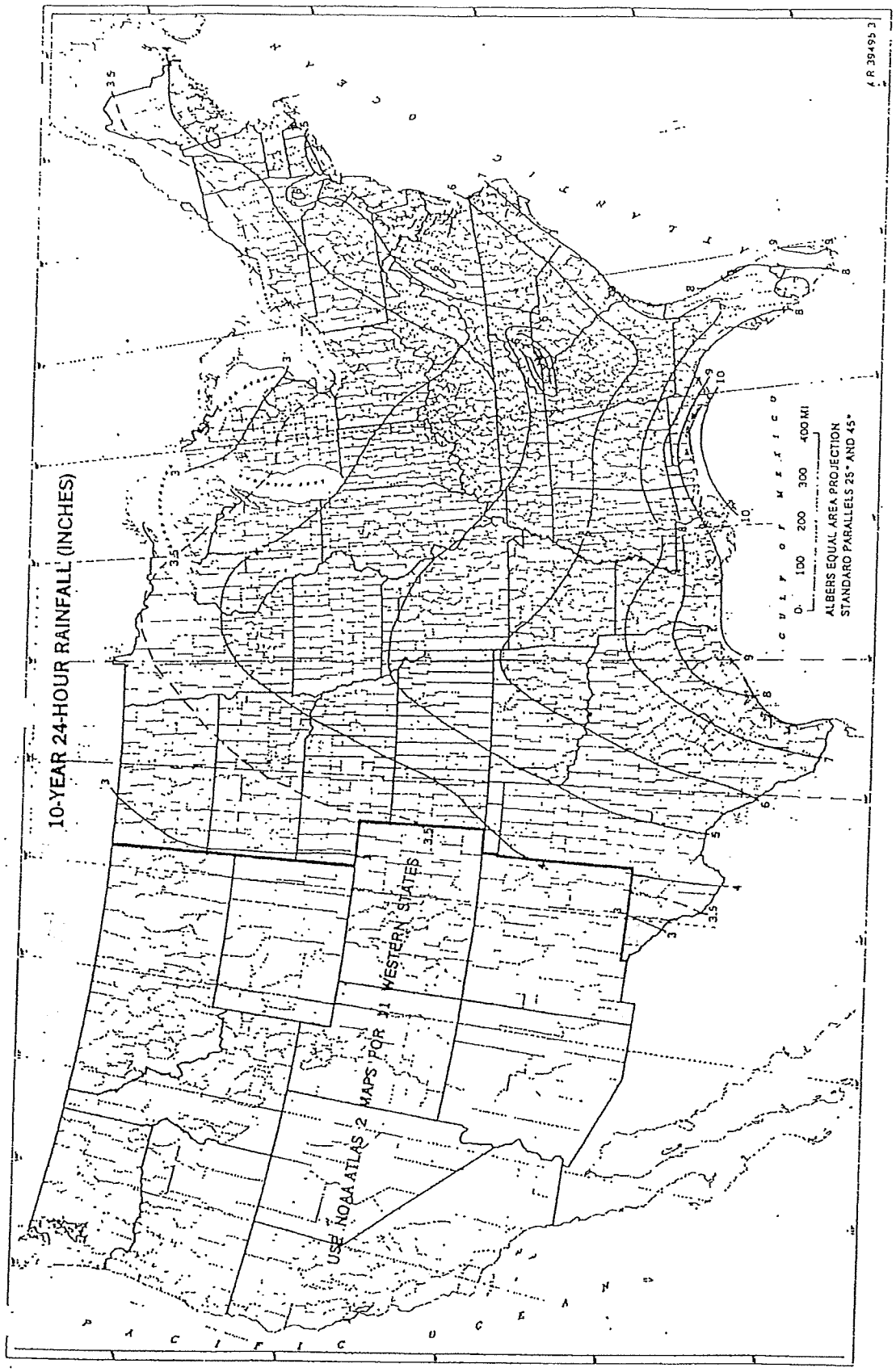


Figure B-5.—Ten-year, 24-hour rainfall.

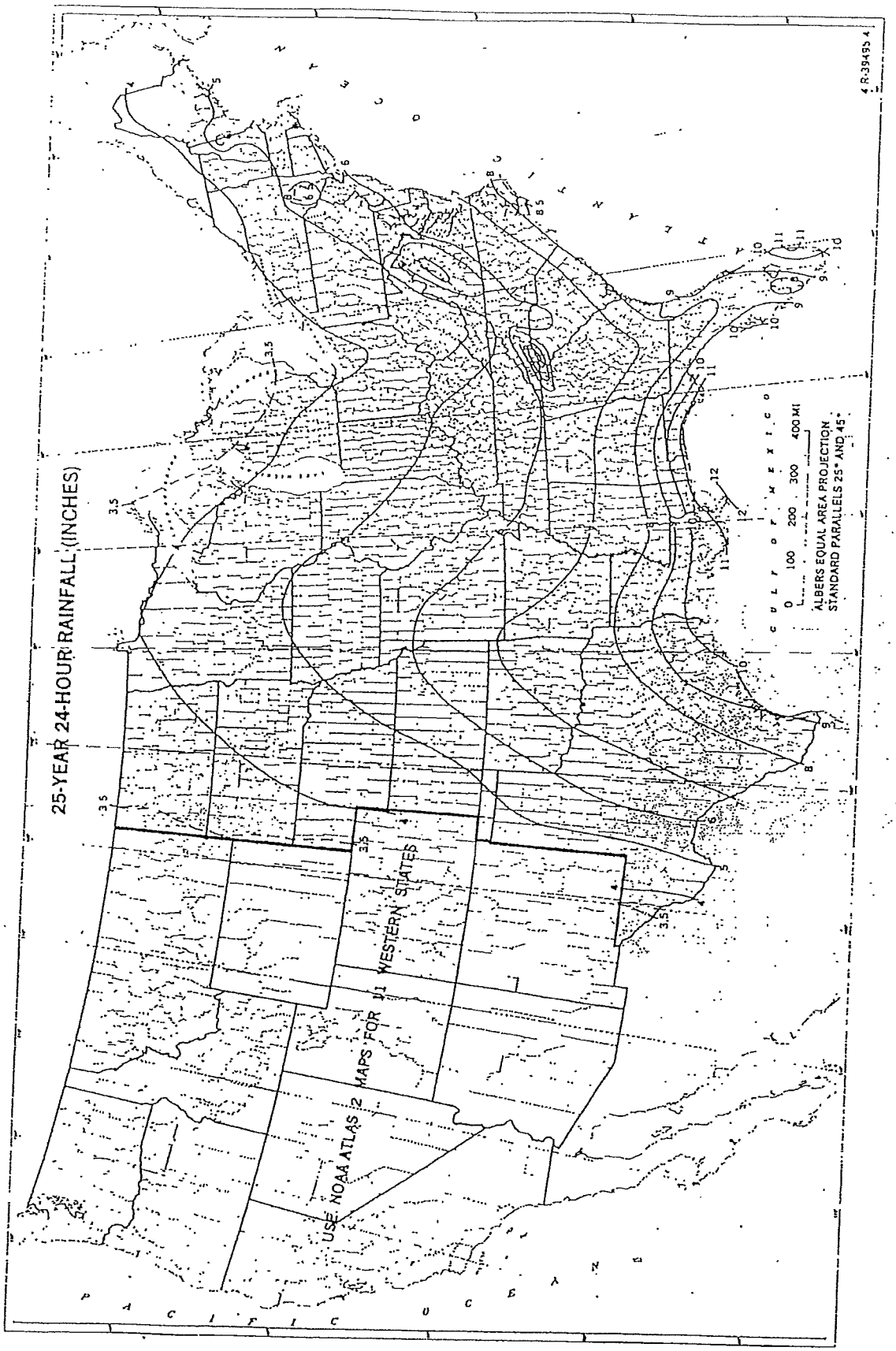


Figure B-6.—Twenty-five-year, 24-hour rainfall.

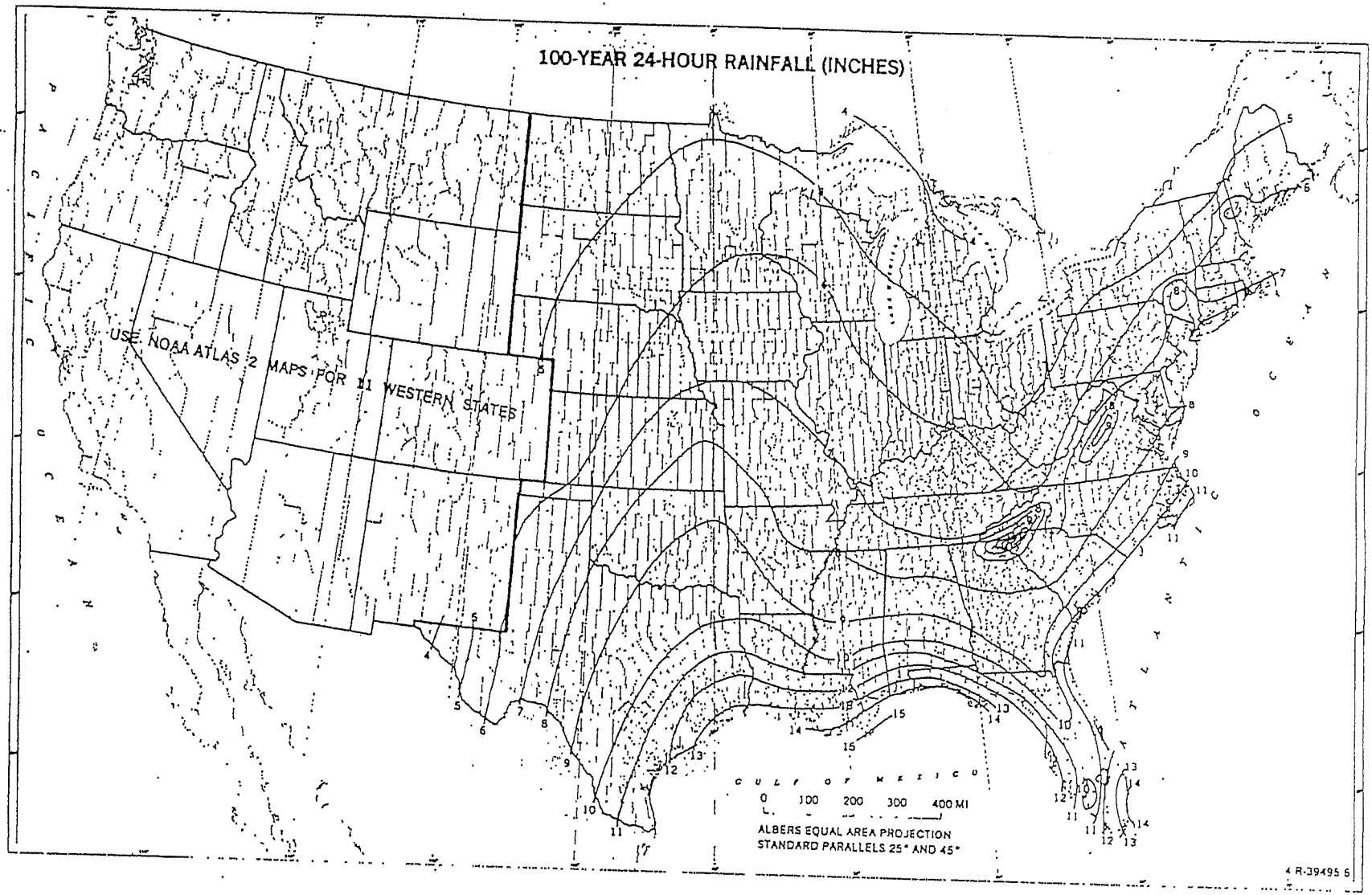


Figure B-8.—One-hundred-year, 24-hour rainfall.