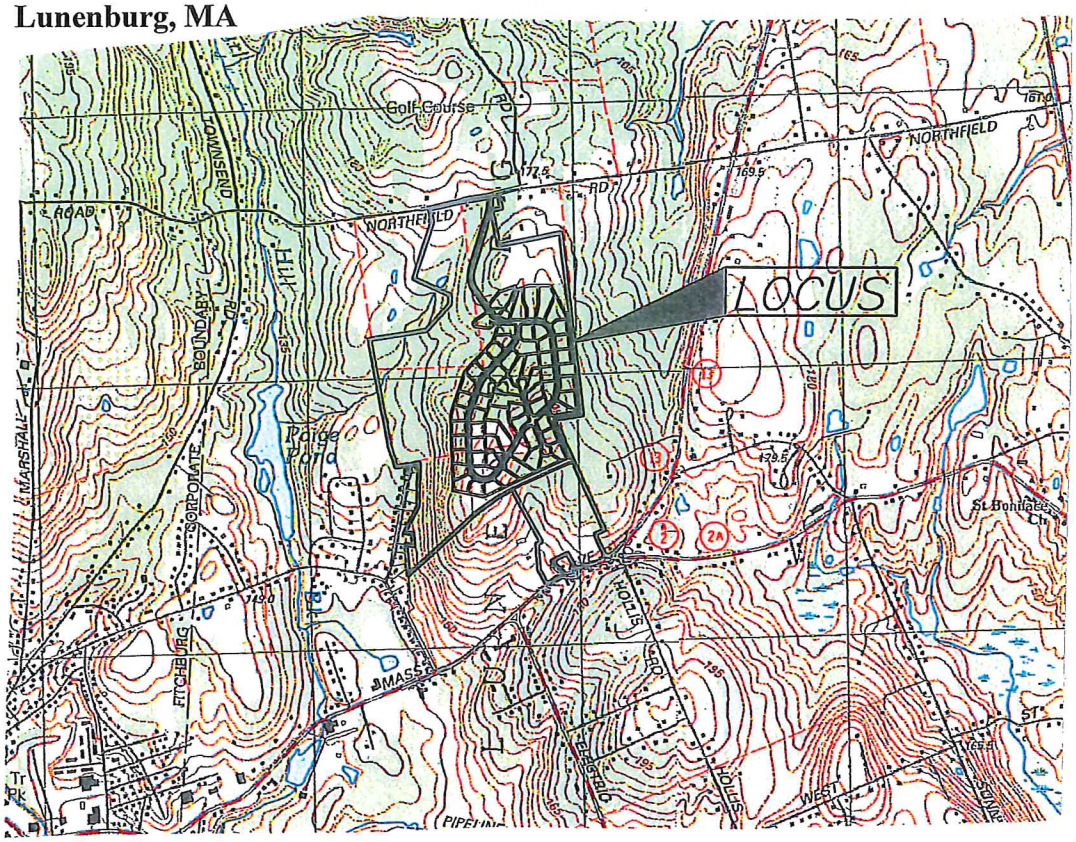
STORMWATER REPORT AND DRAINAGE CALCULATIONS

Pursuant to
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Stormwater Rules and Regulations

Highfield Village Definitive Subdivision
Off Northfield Road
Lunenburg, MA



September 17, 2015
Revised: February 3, 2016

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REGISTERED ENGINEERS & LAND SURVEYORS

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

COMMONWEALTH OF MASSACHUSETTS
MARK F. PIERMARINI
CIVIL
No. 40738
REGISTERED PROFESSIONAL ENGINEER

9-18-15

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 (2 LOCATIONS)
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☒ Grass Channel
- ☐ Green Roof
- ☒ Other (describe): RETENTION BASINS

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 (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

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.

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

☐ 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.

N/A **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 (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 (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.

☐ 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

WHITMAN & BINGHAM
ASSOCIATES

510 Mechanic Street
Leominster, Massachusetts 01453
(978) 537-5296
FAX (978) 537-1423

STORMWATER REPORT

HIGHFIELD VILLAGE DEFINITIVE SUBDIVISION OFF NORTHFIELD ROAD

Lunenburg, MA

September 17, 2015

Stormwater Report –
Highfield Village Definitive Subdivision, Off Northfield Road, Lunenburg, MA

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.

Project Type

The project consists of the construction of 63 single family homes off of three roadways with associated grading, storm drainage, erosion controls and utilities off Northfield Road in Lunenburg, MA and is owned by JEG Holdings, LLC. The project will be designed as a new development.

LID Measures

The LID measures considered are minimizing disturbance to existing trees along the perimeter of the property, minimal disturbance to wetland resource areas, LID measures such as "country" drainage and grass channels.

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 of the Commonwealth of Massachusetts. The new site drainage system will include catch basins, grass channels, forebays and retention basins.

Standard 2: Peak Rate Attenuation:

The project drainage system was designed to attenuate the peak discharge rates of runoff from the site. As stated in the "Drainage Calculations", through the use of the retention basins the runoff rates for the post-development conditions can be effectively maintained at or below pre-development rates at the design point utilized in the calculations. 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 Woodbridge, Ridgebury, Charlton-Hollis and Paxton Soils, which are C soil types and Canton Soils which are B soil type. The proposed retention basins will provide approximately 22,680 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

Through the use of the proposed street sweeping, grass channels, forebays and retention basins the stormwater management system is expected to remove approximately 80-90% of total suspended solids (TSS) from runoff collected by the system (as shown in the attached TSS Removal Worksheet within the drainage calculations). 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 within a Zone II or Interim Wellhead Protection Area of a public water supply.

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 residential project indicate the proposed locations of erosion control barriers 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 installed stormwater management system can be found in the attached document "Stormwater Management System Inspection and Maintenance Plan – Highfield Village Definitive Subdivision, Off Northfield Road, Lunenburg, MA" dated September 17, 2015.

The construction on and off-site will result in the disturbance of more than one acre of land therefore an NPDES Permit including a SWPPP will be required for the project and will be submitted prior to the start of construction.

Standard 9: Operation and Maintenance Plan

Items required under Standard 9 are provided in the attached document "Stormwater Management System Inspection and Maintenance Plan – Highfield Village Definitive Subdivision, Off Northfield Road, Lunenburg, MA" dated September 17, 2015. 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 Highfield Village Definitive Subdivision 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.

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 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.

COMMONWEALTH OF MASSACHUSETTS
MARK F. PIERMARINI
CIVIL
No. 40759
REGISTERED PROFESSIONAL ENGINEER

Signature

9-18-15

Date

DRAINAGE CALCULATIONS

DRAINAGE DATA

PROJECT:	PROJECT NO.:	DATE:
Highfield Village Definitive Subdivision	13510	9/17/15

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 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:

Ridgebury (70B, 71B)	(Soil Type C)
Woodbridge - (311B)	(Soil Type C)
Paxton – (305B, 306C)	(Soil Type C)
Chatfield-Hollis Rock Outcrop - (102C)	(Soil Type B,C,D – Will use C for design)
Canton (421C)	(Soil Type B)

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 site is approximately 180.93 acres located off Northfield Road in Lunenburg, MA. The existing site consists of primarily woodland with some non-grazed meadow areas. The subdivision will consist of 63 house lots off three roadways with associated grading, storm drainage, erosion controls and utilities. The overall project area consists of moderate to steep slopes which drain primarily to the east and west of the high point of the site. Please refer to the subcatchment maps attached to the back of the report.

The drainage system for the site will consist of a catch basins, grass channels, forebays and retention basins. The proposed retention basins have been designed with a sump which will retain 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 Quality Standards. The following Best Management Practices (BMP) have been used on the site: catch basin with deep sump, stormwater treatment unit, grass channels, forebays and retention basins.

OBJECTIVE

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

DRAINAGE SUMMARY:

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

Subcatchment 7 – There is a small isolated wetland within this subcatchment which has minimal storage therefore the area of this wetland was incorporated in the overland runoff toward the west. The design point for subcatchment 7 is the eastern edge of the main portion of the wetland area as indicated on the subcatchment maps.

TABLE I

PRE-DEVELOPMENT CONDITIONS				
WATERSHED	*FLOW (CFS)*			
	2 year	10 year	25 year	100 year
1S	4.82	14.89	22.40	36.02
2S	3.30	7.71	10.80	16.21
3S	4.84	10.61	14.63	21.54
4S	4.46	9.81	13.57	20.00
5S	6.69	14.68	20.20	29.85
6S	20.76	45.62	62.78	92.95
7S	16.28	39.23	55.47	84.05

TABLE II

POST-DEVELOPMENT CONDITIONS					
WATERSHED	*COMPARED TO PRE-DEVELOPMENT WATERSHED*	*FLOW (CFS)*			
		2 year	10 year	25 year	100 year
DP1	(1S)	4.73 (4.82)	11.94 (14.89)	17.36 (22.40)	27.60 (36.02)
DP2	(2S)	3.30 (3.30)	7.71 (7.71)	10.80 (10.80)	16.21 (16.21)
DP3	(3S)	4.22 (4.84)	10.10 (10.61)	14.09 (14.63)	20.77 (21.54)
DP4	(4S)	3.51 (4.46)	7.04 (9.81)	9.31 (13.57)	13.03 (20.00)
DP5	(5S)	5.37 (6.69)	13.80 (14.68)	20.14 (20.20)	29.80 (29.85)
DP6	(6S)	19.16 (20.76)	41.90 (45.62)	60.09 (62.78)	90.20 (92.95)
DP7	(7S)	16.23 (16.28)	37.79 (39.23)	52.29 (55.47)	78.11 (84.05)

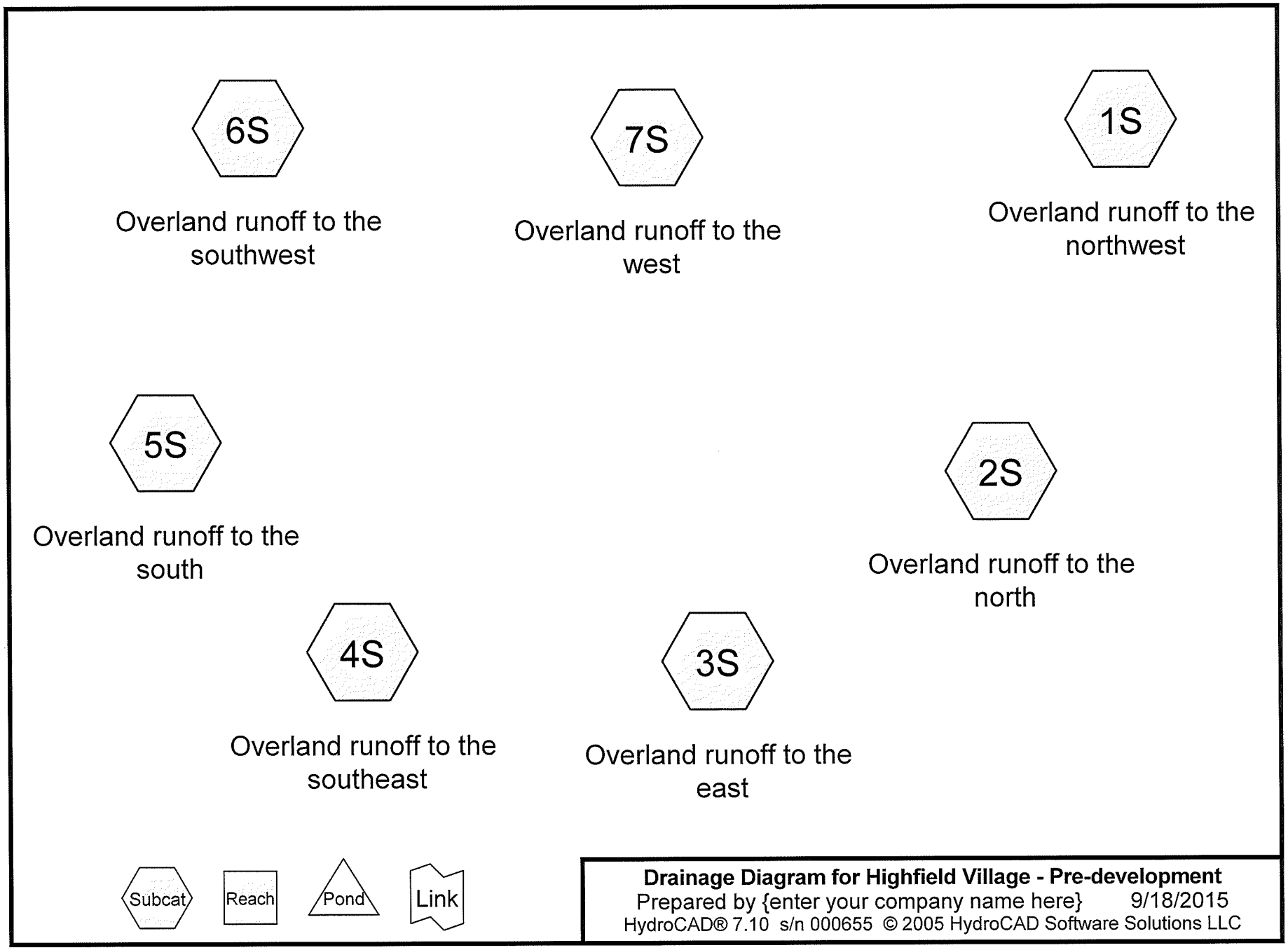
(CFS) - CUBIC FEET PER SECOND

CONCLUSION

Through the use of the proposed retention basins the runoff rates for the post-development condition can be effectively maintained at or below the pre-development runoff rates.

EXISTING CONDITIONS

2 YEAR STORM



Drainage Diagram for Highfield Village - Pre-development
Prepared by {enter your company name here} 9/18/2015
HydroCAD® 7.10 s/n 000655 © 2005 HydroCAD Software Solutions LLC

Highfield Village - Pre-development
Prepared by {enter your company name here}
HydroCAD® 7.10 s/n 000655 © 2005 HydroCAD Software Solutions LLC

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

Subcatchment 1S: Overland runoff to the northwest Runoff Area=17.100 ac Runoff Depth>0.42"
Flow Length=650' Tc=15.6 min CN=62 Runoff=4.82 cfs 0.598 af

Subcatchment 2S: Overland runoff to the north Runoff Area=6.280 ac Runoff Depth>0.65"
Flow Length=355' Tc=16.9 min CN=68 Runoff=3.30 cfs 0.342 af

Subcatchment 3S: Overland runoff to the east Runoff Area=8.740 ac Runoff Depth>0.74"
Flow Length=597' Tc=22.4 min CN=70 Runoff=4.84 cfs 0.540 af

Subcatchment 4S: Overland runoff to the southeast Runoff Area=7.010 ac Runoff Depth>0.74"
Flow Length=490' Tc=15.6 min CN=70 Runoff=4.46 cfs 0.435 af

Subcatchment 5S: Overland runoff to the south Runoff Area=11.430 ac Runoff Depth>0.74"
Flow Length=778' Tc=19.5 min CN=70 Runoff=6.69 cfs 0.707 af

Subcatchment 6S: Overland runoff to the southwest Runoff Area=32.750 ac Runoff Depth>0.74"
Flow Length=960' Tc=15.8 min CN=70 Runoff=20.76 cfs 2.030 af

Subcatchment 7S: Overland runoff to the west Runoff Area=38.170 ac Runoff Depth>0.61"
Flow Length=1,162' Tc=22.9 min CN=67 Runoff=16.28 cfs 1.938 af

Total Runoff Area = 121.480 ac Runoff Volume = 6.591 af Average Runoff Depth = 0.65"

Highfield Village - Pre-development
Prepared by {enter your company name here}
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Subcatchment 1S: Overland runoff to the northwest

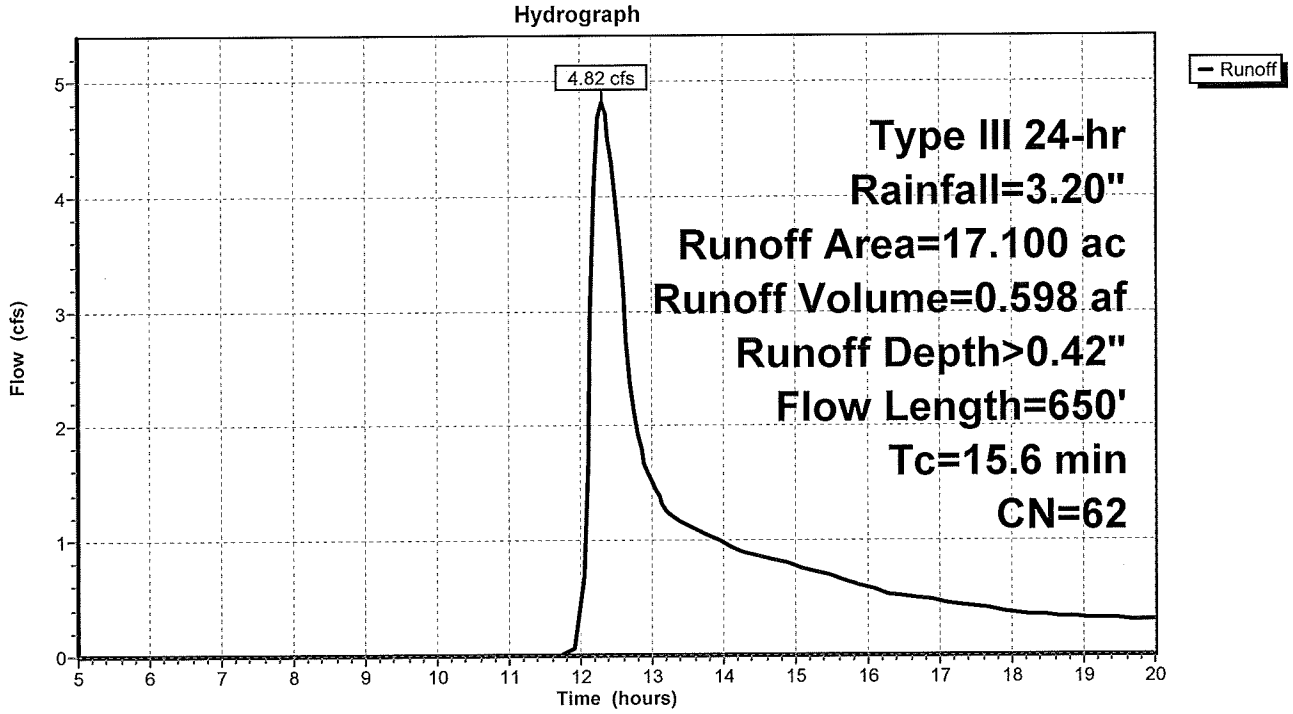
Runoff = 4.82 cfs @ 12.30 hrs, Volume= 0.598 af, Depth> 0.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.20"

Area (ac)	CN	Description
7.740	70	Woods, Good, HSG C
9.360	55	Woods, Good, HSG B
17.100	62	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
6.3	600	0.1000	1.6		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
15.6	650	Total			

Subcatchment 1S: Overland runoff to the northwest



Hydrograph for Subcatchment 1S: Overland runoff to the northwest

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	0.00	0.00
5.25	0.19	0.00	0.00
5.50	0.21	0.00	0.00
5.75	0.22	0.00	0.00
6.00	0.23	0.00	0.00
6.25	0.24	0.00	0.00
6.50	0.26	0.00	0.00
6.75	0.27	0.00	0.00
7.00	0.29	0.00	0.00
7.25	0.31	0.00	0.00
7.50	0.33	0.00	0.00
7.75	0.34	0.00	0.00
8.00	0.36	0.00	0.00
8.25	0.39	0.00	0.00
8.50	0.41	0.00	0.00
8.75	0.44	0.00	0.00
9.00	0.47	0.00	0.00
9.25	0.50	0.00	0.00
9.50	0.53	0.00	0.00
9.75	0.57	0.00	0.00
10.00	0.60	0.00	0.00
10.25	0.65	0.00	0.00
10.50	0.69	0.00	0.00
10.75	0.74	0.00	0.00
11.00	0.80	0.00	0.00
11.25	0.87	0.00	0.00
11.50	0.95	0.00	0.00
11.75	1.14	0.00	0.00
12.00	1.60	0.02	0.21
12.25	2.06	0.10	**4.69**
12.50	2.25	0.15	**3.97**
12.75	2.33	0.17	2.12
13.00	2.40	0.19	1.51
13.25	2.46	0.21	1.23
13.50	2.51	0.22	1.13
13.75	2.55	0.24	1.06
14.00	2.60	0.25	0.98
14.25	2.63	0.26	0.90
14.50	2.67	0.28	0.86
14.75	2.70	0.29	0.82
15.00	2.73	0.30	0.78
15.25	2.76	0.31	0.73
15.50	2.79	0.32	0.69
15.75	2.81	0.33	0.64
16.00	2.84	0.33	0.59
16.25	2.86	0.34	0.54
16.50	2.87	0.35	0.51
16.75	2.89	0.36	0.49
17.00	2.91	0.36	0.47
17.25	2.93	0.37	0.44
17.50	2.94	0.38	0.42
17.75	2.96	0.38	0.40
18.00	2.97	0.39	0.37
18.25	2.98	0.39	0.35
18.50	2.99	0.40	0.34
18.75	3.01	0.40	0.33
19.00	3.02	0.41	0.33
19.25	3.03	0.41	0.32
19.50	3.04	0.41	0.31
19.75	3.05	0.42	0.31
20.00	**3.06**	**0.42**	0.30

Subcatchment 2S: Overland runoff to the north

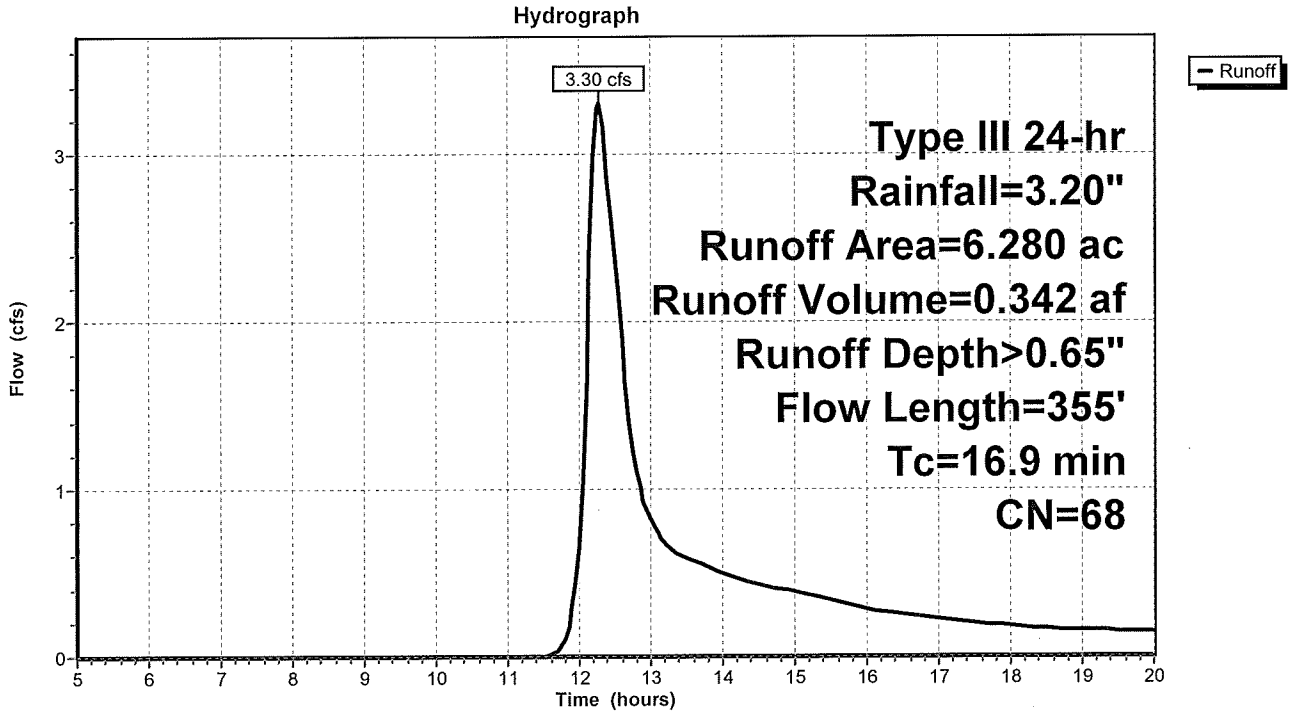
Runoff = 3.30 cfs @ 12.27 hrs, Volume= 0.342 af, Depth> 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.20"

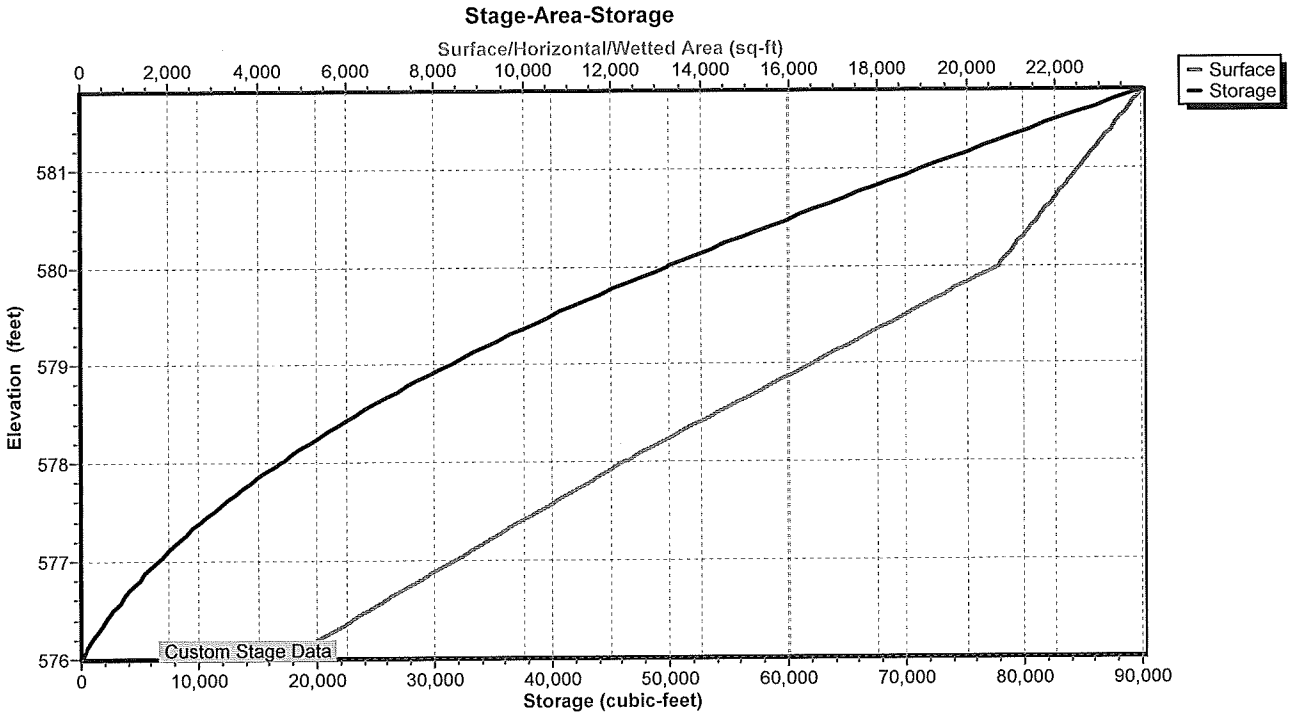
Area (ac)	CN	Description
5.490	70	Woods, Good, HSG C
0.790	55	Woods, Good, HSG B
6.280	68	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
4.6	305	0.0490	1.1		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
16.9	355	Total			

Subcatchment 2S: Overland runoff to the north



Pond 50P: Retention Basin 50



Hydrograph for Pond 50P: Retention Basin 50

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
5.00	0.00	0	576.00	0.00	0.00	0.00
5.50	0.00	0	576.00	0.00	0.00	0.00
6.00	0.00	0	576.00	0.00	0.00	0.00
6.50	0.00	0	576.00	0.00	0.00	0.00
7.00	0.00	0	576.00	0.00	0.00	0.00
7.50	0.00	0	576.00	0.00	0.00	0.00
8.00	0.00	0	576.00	0.00	0.00	0.00
8.50	0.00	0	576.00	0.00	0.00	0.00
9.00	0.00	0	576.00	0.00	0.00	0.00
9.50	0.00	0	576.00	0.00	0.00	0.00
10.00	0.00	0	576.00	0.00	0.00	0.00
10.50	0.00	0	576.00	0.00	0.00	0.00
11.00	0.14	105	576.02	0.01	0.01	0.00
11.50	0.48	559	576.12	0.03	0.03	0.00
12.00	**4.48**	3,473	576.60	0.07	0.04	0.03
12.50	**5.51**	17,449	578.05	1.09	0.08	1.01
13.00	1.91	20,715	578.30	1.19	0.08	1.10
13.50	1.44	21,448	578.35	1.21	0.09	1.12
14.00	1.21	**21,654**	**578.37**	**1.21**	**0.09**	**1.13**
14.50	1.05	21,476	578.35	1.21	0.09	1.12
15.00	0.93	21,087	578.33	1.20	0.09	1.11
15.50	0.80	20,505	578.28	1.18	0.08	1.10
16.00	0.67	19,729	578.23	1.16	0.08	1.08
16.50	0.59	18,794	578.15	1.13	0.08	1.05
17.00	0.53	17,800	578.08	1.10	0.08	1.02
17.50	0.48	16,764	577.99	1.06	0.08	0.99
18.00	0.42	15,688	577.90	1.03	0.07	0.95
18.50	0.39	14,594	577.81	0.98	0.07	0.91
19.00	0.37	13,539	577.72	0.94	0.07	0.87
19.50	0.35	12,533	577.63	0.90	0.07	0.83
20.00	0.33	11,577	577.54	0.85	0.07	0.79

Stage-Discharge for Pond 50P: Retention Basin 50

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
576.00	0.00	0.00	0.00
576.10	0.03	0.03	0.00
576.20	0.03	0.03	0.00
576.30	0.04	0.04	0.00
576.40	0.04	0.04	0.00
576.50	0.04	0.04	0.00
576.60	0.07	0.04	0.03
576.70	0.15	0.05	0.10
576.80	0.25	0.05	0.21
576.90	0.38	0.05	0.32
577.00	0.50	0.05	0.44
577.10	0.58	0.06	0.52
577.20	0.64	0.06	0.58
577.30	0.71	0.06	0.65
577.40	0.77	0.06	0.71
577.50	0.83	0.06	0.77
577.60	0.88	0.07	0.82
577.70	0.93	0.07	0.86
577.80	0.98	0.07	0.91
577.90	1.02	0.07	0.95
578.00	1.07	0.08	0.99
578.10	1.11	0.08	1.03
578.20	1.15	0.08	1.07
578.30	1.19	0.08	1.10
578.40	1.23	0.09	1.14
578.50	1.26	0.09	1.17
578.60	1.35	0.09	1.26
578.70	1.53	0.10	1.43
578.80	1.79	0.10	1.69
578.90	2.11	0.10	2.01
579.00	2.49	0.10	2.39
579.10	2.92	0.11	2.81
579.20	3.39	0.11	3.28
579.30	3.91	0.11	3.79
579.40	4.45	0.11	4.34
579.50	5.03	0.12	4.91
579.60	5.62	0.12	5.50
579.70	6.24	0.12	6.11
579.80	6.86	0.12	6.73
579.90	7.48	0.13	7.36
580.00	8.10	0.13	7.97
580.10	8.70	0.13	8.57
580.20	9.26	0.13	9.13
580.30	9.78	0.13	9.65
580.40	10.21	0.13	10.08
580.50	10.43	0.14	10.30
580.60	11.05	0.14	10.91
580.70	11.50	0.14	11.37
580.80	11.85	0.14	11.71
580.90	12.19	0.14	12.05
581.00	12.52	0.14	12.38
581.10	12.84	0.14	12.70
581.20	13.15	0.14	13.01
581.30	13.46	0.14	13.31
581.40	13.75	0.15	13.61
581.50	14.04	0.15	13.90
581.60	14.33	0.15	14.18
581.70	14.61	0.15	14.46
581.80	**14.88**	**0.15**	**14.73**

Stage-Area-Storage for Pond 50P: Retention Basin 50

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
576.00	4,604	0
576.10	4,987	480
576.20	5,369	997
576.30	5,752	1,553
576.40	6,134	2,148
576.50	6,517	2,780
576.60	6,900	3,451
576.70	7,282	4,160
576.80	7,665	4,908
576.90	8,047	5,693
577.00	8,430	6,517
577.10	8,813	7,379
577.20	9,195	8,280
577.30	9,578	9,218
577.40	9,960	10,195
577.50	10,343	11,210
577.60	10,726	12,264
577.70	11,108	13,355
577.80	11,491	14,485
577.90	11,873	15,654
578.00	12,256	16,860
578.10	12,680	18,107
578.20	13,105	19,396
578.30	13,529	20,728
578.40	13,953	22,102
578.50	14,378	23,518
578.60	14,802	24,977
578.70	15,226	26,479
578.80	15,650	28,023
578.90	16,075	29,609
579.00	16,499	31,238
579.10	16,923	32,909
579.20	17,348	34,622
579.30	17,772	36,378
579.40	18,196	38,177
579.50	18,621	40,017
579.60	19,045	41,901
579.70	19,469	43,826
579.80	19,893	45,794
579.90	20,318	47,805
580.00	20,742	49,858
580.10	20,922	51,941
580.20	21,103	54,042
580.30	21,283	56,162
580.40	21,463	58,299
580.50	21,643	60,454
580.60	21,824	62,628
580.70	22,004	64,819
580.80	22,184	67,028
580.90	22,365	69,256
581.00	22,545	71,501
581.10	22,725	73,765
581.20	22,905	76,046
581.30	23,086	78,346
581.40	23,266	80,664
581.50	23,446	82,999
581.60	23,626	85,353
581.70	23,807	87,724
581.80	**23,987**	**90,114**

Pond 60P: Retention Basin 60

Inflow Area =	7.080 ac,	Inflow Depth >	1.17"		
Inflow =	11.92 cfs @	12.01 hrs,	Volume=	0.693 af	
Outflow =	2.34 cfs @	12.44 hrs,	Volume=	0.650 af,	Atten= 80%, Lag= 26.2 min
Discarded =	0.04 cfs @	12.44 hrs,	Volume=	0.016 af	
Primary =	2.30 cfs @	12.44 hrs,	Volume=	0.634 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 578.46' @ 12.44 hrs Surf.Area= 6,224 sf Storage= 11,080 cf
Plug-Flow detention time= 68.3 min calculated for 0.648 af (93% of inflow)
Center-of-Mass det. time= 46.8 min (850.8 - 804.0)

Volume	Invert	Avail.Storage	Storage Description
#1	575.00'	33,400 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

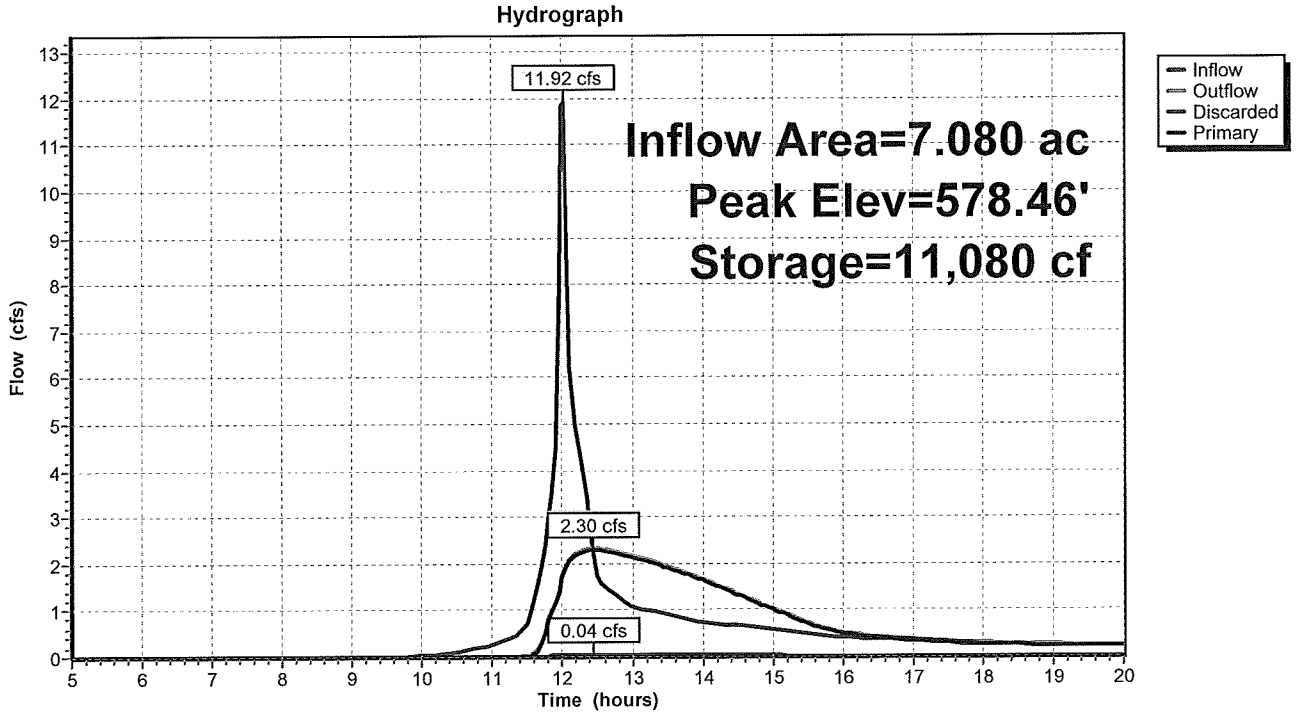
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
575.00	680	0	0
576.00	1,934	1,307	1,307
578.00	5,219	7,153	8,460
580.00	9,609	14,828	23,288
581.00	10,615	10,112	33,400

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	576.00'	**8.0" x 30.0' long Culvert** Ke= 0.600 Outlet Invert= 575.70' S= 0.0100 '/' Cc= 0.900 n= 0.012
#3	Primary	578.50'	**18.0" x 20.0' long Culvert X 2.00** Ke= 0.600 Outlet Invert= 578.30' S= 0.0100 '/' Cc= 0.900 n= 0.012

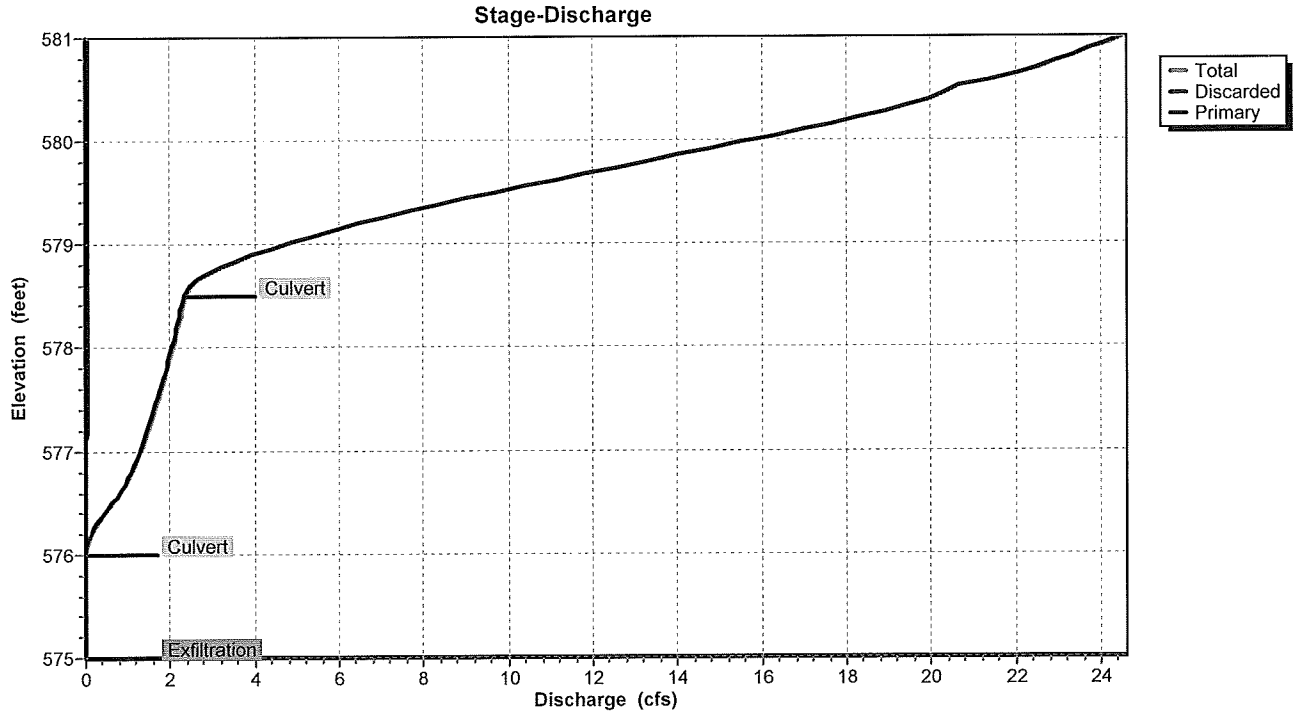
Discarded OutFlow Max=0.04 cfs @ 12.44 hrs HW=578.46' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=2.30 cfs @ 12.44 hrs HW=578.46' (Free Discharge)
├─**2=Culvert** (Inlet Controls 2.30 cfs @ 6.6 fps)
└─**3=Culvert** (Controls 0.00 cfs)

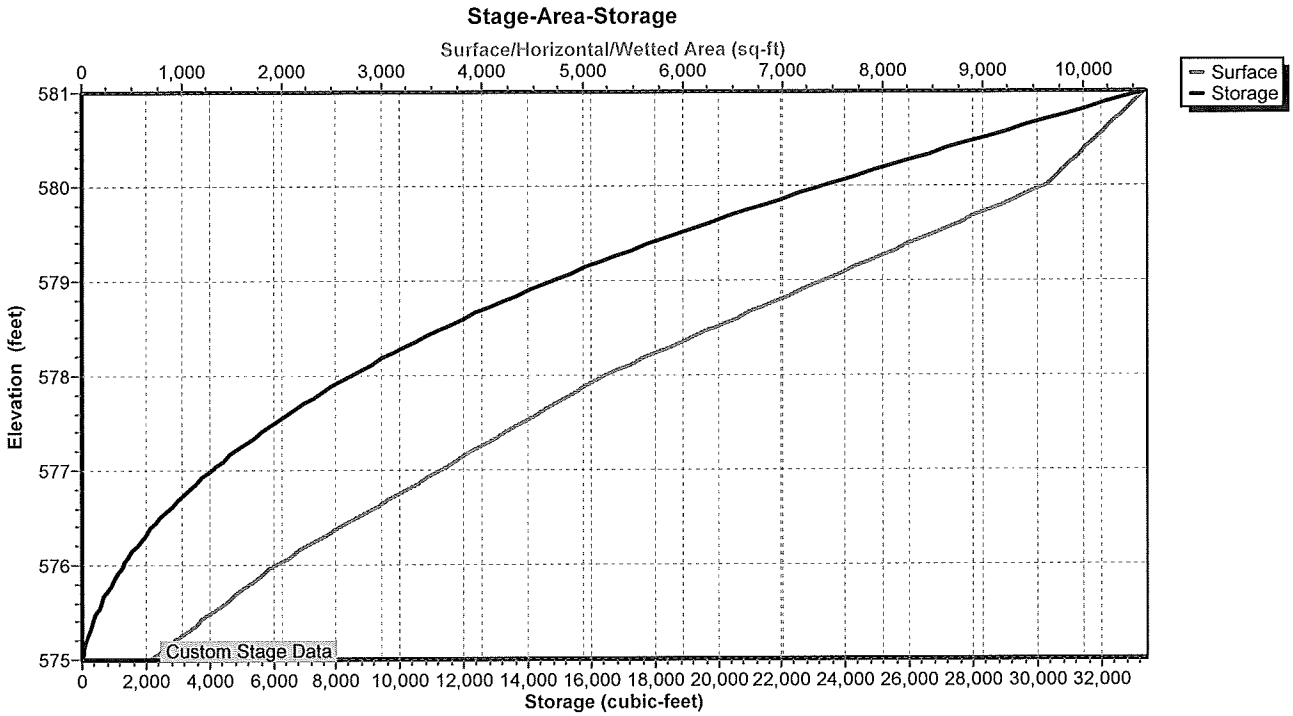
Pond 60P: Retention Basin 60



Pond 60P: Retention Basin 60



Pond 60P: Retention Basin 60



Hydrograph for Pond 60P: Retention Basin 60

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
5.00	0.00	0	575.00	0.00	0.00	0.00
5.50	0.00	0	575.00	0.00	0.00	0.00
6.00	0.00	0	575.00	0.00	0.00	0.00
6.50	0.00	0	575.00	0.00	0.00	0.00
7.00	0.00	0	575.00	0.00	0.00	0.00
7.50	0.00	0	575.00	0.00	0.00	0.00
8.00	0.00	0	575.00	0.00	0.00	0.00
8.50	0.00	0	575.00	0.00	0.00	0.00
9.00	0.00	0	575.00	0.00	0.00	0.00
9.50	0.00	0	575.00	0.00	0.00	0.00
10.00	0.03	14	575.02	0.00	0.00	0.00
10.50	0.12	136	575.17	0.01	0.01	0.00
11.00	0.25	448	575.46	0.01	0.01	0.00
11.50	0.65	1,181	575.93	0.01	0.01	0.00
12.00	**11.86**	**6,015**	**577.49**	**1.72**	**0.03**	**1.69**
12.50	1.72	**11,017**	**578.45**	**2.33**	**0.04**	**2.29**
13.00	1.06	9,405	578.17	2.17	0.04	2.14
13.50	0.90	7,464	577.80	1.94	0.03	1.91
14.00	0.74	5,694	577.42	1.67	0.03	1.64
14.50	0.66	4,237	577.05	1.36	0.02	1.33
15.00	0.58	3,211	576.75	1.03	0.02	1.01
15.50	0.50	2,601	576.54	0.73	0.02	0.71
16.00	0.41	2,313	576.44	0.53	0.02	0.51
16.50	0.37	2,174	576.39	0.43	0.02	0.41
17.00	0.34	2,096	576.35	0.37	0.02	0.36
17.50	0.30	2,034	576.33	0.33	0.02	0.32
18.00	0.26	1,975	576.31	0.29	0.02	0.28
18.50	0.25	1,934	576.29	0.26	0.02	0.25
19.00	0.24	1,909	576.28	0.25	0.01	0.23
19.50	0.23	1,889	576.27	0.24	0.01	0.22
20.00	0.21	1,871	576.26	0.22	0.01	0.21

Stage-Discharge for Pond 60P: Retention Basin 60

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
575.00	0.00	0.00	0.00
575.10	0.01	0.01	0.00
575.20	0.01	0.01	0.00
575.30	0.01	0.01	0.00
575.40	0.01	0.01	0.00
575.50	0.01	0.01	0.00
575.60	0.01	0.01	0.00
575.70	0.01	0.01	0.00
575.80	0.01	0.01	0.00
575.90	0.01	0.01	0.00
576.00	0.01	0.01	0.00
576.10	0.05	0.01	0.03
576.20	0.14	0.01	0.13
576.30	0.28	0.02	0.27
576.40	0.45	0.02	0.44
576.50	0.64	0.02	0.63
576.60	0.84	0.02	0.82
576.70	0.97	0.02	0.95
576.80	1.10	0.02	1.08
576.90	1.21	0.02	1.19
577.00	1.31	0.02	1.29
577.10	1.40	0.02	1.38
577.20	1.49	0.02	1.47
577.30	1.57	0.03	1.55
577.40	1.65	0.03	1.63
577.50	1.73	0.03	1.70
577.60	1.80	0.03	1.77
577.70	1.87	0.03	1.84
577.80	1.94	0.03	1.91
577.90	2.00	0.03	1.97
578.00	2.07	0.03	2.03
578.10	2.13	0.03	2.09
578.20	2.19	0.04	2.15
578.30	2.25	0.04	2.21
578.40	2.30	0.04	2.27
578.50	2.36	0.04	2.32
578.60	2.51	0.04	2.47
578.70	2.86	0.04	2.82
578.80	3.36	0.04	3.32
578.90	3.99	0.04	3.95
579.00	4.73	0.05	4.69
579.10	5.58	0.05	5.53
579.20	6.51	0.05	6.46
579.30	7.52	0.05	7.47
579.40	8.60	0.05	8.55
579.50	9.74	0.05	9.68
579.60	10.92	0.05	10.86
579.70	12.13	0.06	12.08
579.80	13.37	0.06	13.31
579.90	14.60	0.06	14.54
580.00	15.82	0.06	15.76
580.10	17.01	0.06	16.95
580.20	18.13	0.06	18.07
580.30	19.15	0.06	19.09
580.40	20.01	0.06	19.94
580.50	20.44	0.06	20.38
580.60	21.67	0.06	21.60
580.70	22.57	0.06	22.50
580.80	23.26	0.07	23.19
580.90	23.93	0.07	23.86
581.00	**24.58**	**0.07**	**24.51**

Stage-Area-Storage for Pond 60P: Retention Basin 60

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
575.00	680	0
575.10	805	74
575.20	931	161
575.30	1,056	260
575.40	1,182	372
575.50	1,307	497
575.60	1,432	634
575.70	1,558	783
575.80	1,683	945
575.90	1,809	1,120
576.00	1,934	1,307
576.10	2,098	1,509
576.20	2,263	1,727
576.30	2,427	1,961
576.40	2,591	2,212
576.50	2,755	2,479
576.60	2,920	2,763
576.70	3,084	3,063
576.80	3,248	3,380
576.90	3,412	3,713
577.00	3,577	4,062
577.10	3,741	4,428
577.20	3,905	4,810
577.30	4,069	5,209
577.40	4,233	5,624
577.50	4,398	6,056
577.60	4,562	6,504
577.70	4,726	6,968
577.80	4,890	7,449
577.90	5,055	7,946
578.00	5,219	8,460
578.10	5,439	8,993
578.20	5,658	9,548
578.30	5,877	10,124
578.40	6,097	10,723
578.50	6,317	11,344
578.60	6,536	11,987
578.70	6,756	12,651
578.80	6,975	13,338
578.90	7,194	14,046
579.00	7,414	14,777
579.10	7,634	15,529
579.20	7,853	16,303
579.30	8,072	17,099
579.40	8,292	17,918
579.50	8,512	18,758
579.60	8,731	19,620
579.70	8,951	20,504
579.80	9,170	21,410
579.90	9,389	22,338
580.00	9,609	23,288
580.10	9,710	24,254
580.20	9,810	25,230
580.30	9,911	26,216
580.40	10,011	27,212
580.50	10,112	28,218
580.60	10,213	29,234
580.70	10,313	30,261
580.80	10,414	31,297
580.90	10,514	32,344
581.00	**10,615**	**33,400**

Pond 70P: Retention Basin 70

Inflow Area =	7.900 ac,	Inflow Depth >	1.05"		
Inflow =	7.68 cfs @	12.22 hrs,	Volume=	0.692 af	
Outflow =	3.34 cfs @	12.60 hrs,	Volume=	0.615 af,	Atten= 57%, Lag= 22.7 min
Discarded =	0.06 cfs @	12.60 hrs,	Volume=	0.033 af	
Primary =	3.27 cfs @	12.60 hrs,	Volume=	0.582 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 603.56' @ 12.60 hrs Surf.Area= 10,231 sf Storage= 10,136 cf
Plug-Flow detention time= 80.2 min calculated for 0.613 af (89% of inflow)
Center-of-Mass det. time= 46.0 min (866.5 - 820.5)

Volume	Invert	Avail.Storage	Storage Description
#1	602.00'	28,588 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

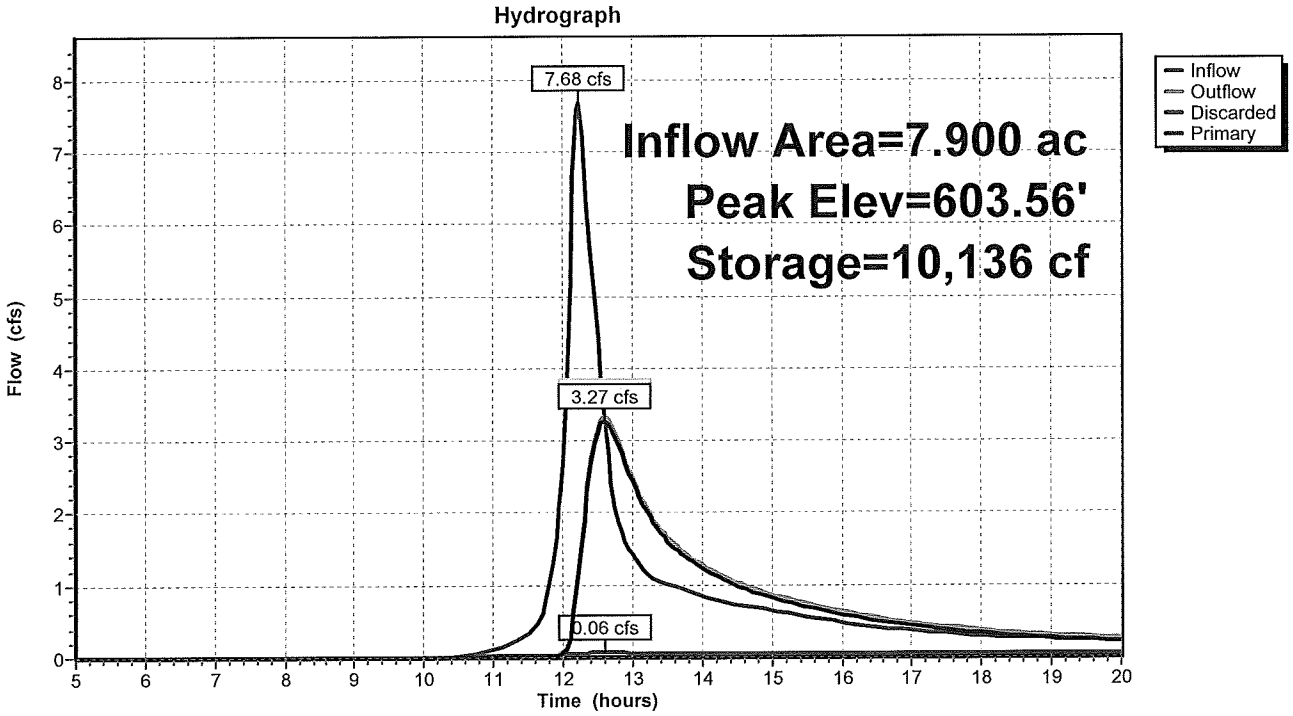
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
602.00	2,767	0	0
604.00	12,339	15,106	15,106
605.00	14,625	13,482	28,588

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	602.50'	**12.0" x 20.0' long Culvert** Ke= 0.600
			Outlet Invert= 602.30' S= 0.0100 '/' Cc= 0.900 n= 0.012
#3	Primary	603.20'	**24.0" x 20.0' long Culvert** Ke= 0.600
			Outlet Invert= 603.00' S= 0.0100 '/' Cc= 0.900 n= 0.012

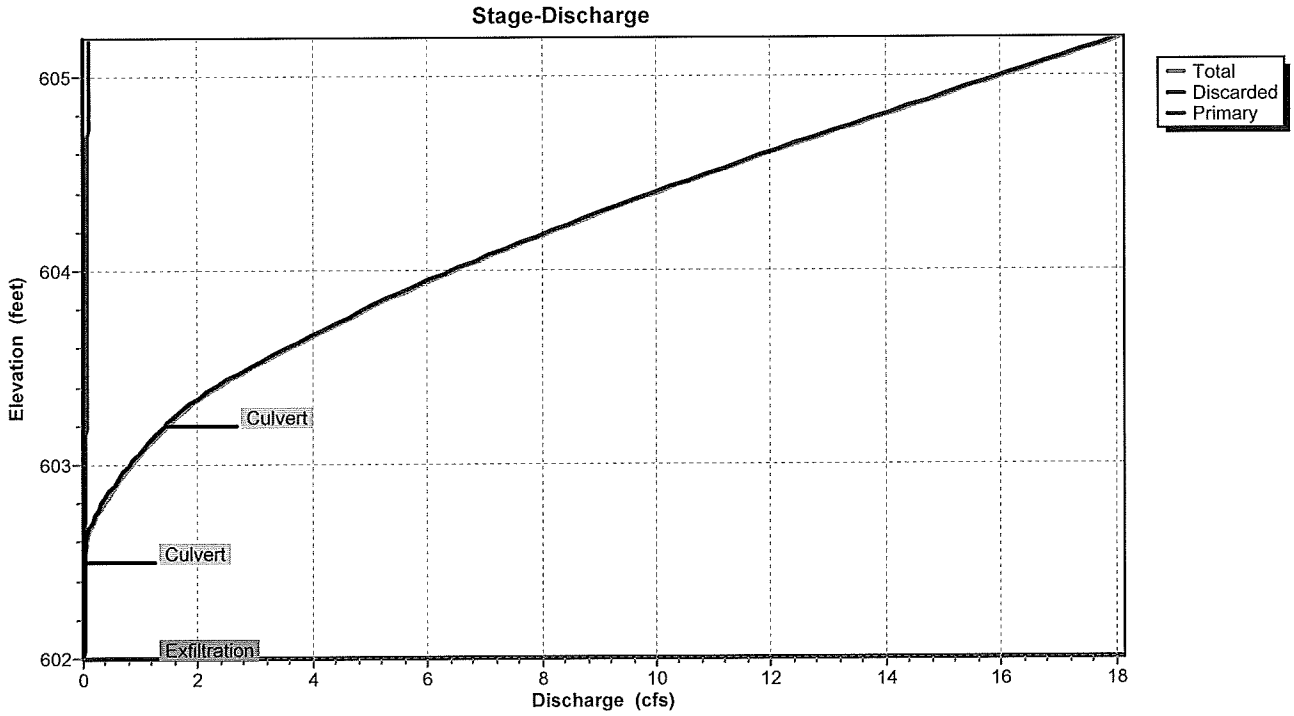
Discarded OutFlow Max=0.06 cfs @ 12.60 hrs HW=603.56' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=3.27 cfs @ 12.60 hrs HW=603.56' (Free Discharge)
├─**2=Culvert** (Barrel Controls 2.58 cfs @ 3.9 fps)
└─**3=Culvert** (Barrel Controls 0.69 cfs @ 2.7 fps)

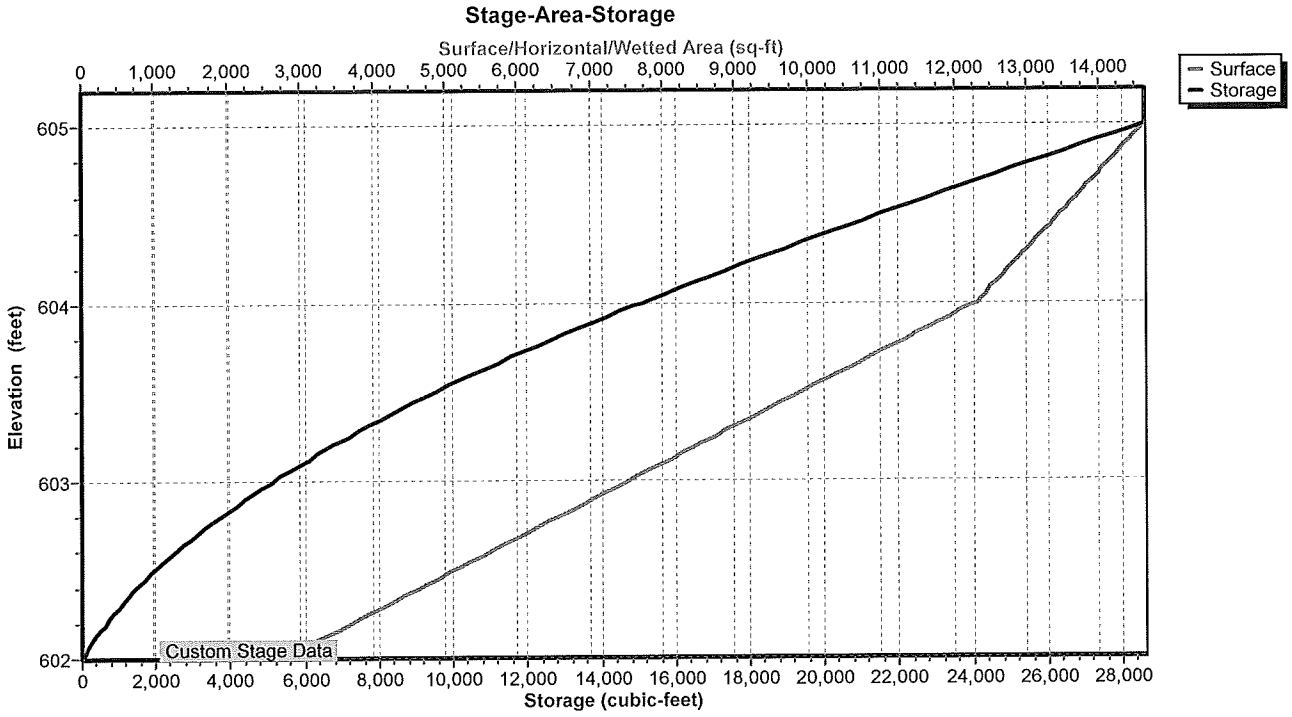
Pond 70P: Retention Basin 70



Pond 70P: Retention Basin 70



Pond 70P: Retention Basin 70



Hydrograph for Pond 70P: Retention Basin 70

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
5.00	0.00	0	602.00	0.00	0.00	0.00
5.50	0.00	0	602.00	0.00	0.00	0.00
6.00	0.00	0	602.00	0.00	0.00	0.00
6.50	0.00	0	602.00	0.00	0.00	0.00
7.00	0.00	0	602.00	0.00	0.00	0.00
7.50	0.00	0	602.00	0.00	0.00	0.00
8.00	0.00	0	602.00	0.00	0.00	0.00
8.50	0.00	0	602.00	0.00	0.00	0.00
9.00	0.00	0	602.00	0.00	0.00	0.00
9.50	0.00	0	602.00	0.00	0.00	0.00
10.00	0.00	0	602.00	0.00	0.00	0.00
10.50	0.02	5	602.00	0.00	0.00	0.00
11.00	0.12	107	602.04	0.02	0.02	0.00
11.50	0.35	453	602.15	0.02	0.02	0.00
12.00	**2.64**	2,247	602.55	0.04	0.03	0.01
12.50	**4.45**	**9,922**	**603.54**	**3.20**	**0.06**	**3.14**
13.00	1.42	**8,799**	**603.42**	**2.50**	**0.06**	**2.44**
13.50	1.02	7,245	603.26	1.66	0.05	1.61
14.00	0.85	6,305	603.14	1.29	0.05	1.24
14.50	0.73	5,638	603.06	1.04	0.05	0.99
15.00	0.65	5,181	603.00	0.87	0.05	0.82
15.50	0.57	4,835	602.96	0.74	0.05	0.69
16.00	0.48	4,537	602.92	0.63	0.04	0.59
16.50	0.41	4,271	602.88	0.54	0.04	0.50
17.00	0.37	4,066	602.85	0.47	0.04	0.43
17.50	0.33	3,899	602.82	0.42	0.04	0.38
18.00	0.29	3,748	602.80	0.37	0.04	0.33
18.50	0.27	3,613	602.78	0.33	0.04	0.29
19.00	0.26	3,513	602.76	0.30	0.04	0.26
19.50	0.24	3,436	602.75	0.28	0.04	0.24
20.00	0.23	3,373	602.74	0.26	0.04	0.22

Stage-Discharge for Pond 70P: Retention Basin 70

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
602.00	0.00	0.00	0.00
602.05	0.02	0.02	0.00
602.10	0.02	0.02	0.00
602.15	0.02	0.02	0.00
602.20	0.02	0.02	0.00
602.25	0.02	0.02	0.00
602.30	0.03	0.03	0.00
602.35	0.03	0.03	0.00
602.40	0.03	0.03	0.00
602.45	0.03	0.03	0.00
602.50	0.03	0.03	0.00
602.55	0.04	0.03	0.01
602.60	0.08	0.04	0.04
602.65	0.13	0.04	0.09
602.70	0.19	0.04	0.16
602.75	0.28	0.04	0.24
602.80	0.37	0.04	0.33
602.85	0.48	0.04	0.44
602.90	0.60	0.04	0.55
602.95	0.72	0.05	0.68
603.00	0.86	0.05	0.81
603.05	1.00	0.05	0.95
603.10	1.15	0.05	1.10
603.15	1.31	0.05	1.25
603.20	1.46	0.05	1.41
603.25	1.64	0.05	1.59
603.30	1.85	0.06	1.80
603.35	2.09	0.06	2.03
603.40	2.36	0.06	2.30
603.45	2.65	0.06	2.58
603.50	2.95	0.06	2.89
603.55	3.27	0.06	3.21
603.60	3.61	0.07	3.54
603.65	3.95	0.07	3.88
603.70	4.29	0.07	4.22
603.75	4.63	0.07	4.56
603.80	4.96	0.07	4.89
603.85	5.27	0.07	5.20
603.90	5.70	0.07	5.62
603.95	6.10	0.08	6.03
604.00	6.50	0.08	6.42
604.05	6.91	0.08	6.83
604.10	7.33	0.08	7.25
604.15	7.75	0.08	7.67
604.20	8.19	0.08	8.11
604.25	8.64	0.08	8.56
604.30	9.09	0.08	9.01
604.35	9.55	0.08	9.47
604.40	10.02	0.08	9.94
604.45	10.50	0.08	10.42
604.50	10.99	0.08	10.90
604.55	11.48	0.08	11.39
604.60	11.97	0.09	11.89
604.65	12.47	0.09	12.39
604.70	12.98	0.09	12.89
604.75	13.49	0.09	13.40
604.80	14.00	0.09	13.91
604.85	14.52	0.09	14.43
604.90	15.03	0.09	14.94
604.95	15.55	0.09	15.46
605.00	16.07	**0.09**	15.98
605.05	16.59	0.09	16.50
605.10	17.10	0.09	17.01
605.15	17.61	0.09	17.52
605.20	**18.12**	0.09	**18.03**

Stage-Area-Storage for Pond 70P: Retention Basin 70

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
602.00	2,767	0
602.05	3,006	144
602.10	3,246	301
602.15	3,485	469
602.20	3,724	649
602.25	3,964	841
602.30	4,203	1,045
602.35	4,442	1,262
602.40	4,681	1,490
602.45	4,921	1,730
602.50	5,160	1,982
602.55	5,399	2,246
602.60	5,639	2,522
602.65	5,878	2,810
602.70	6,117	3,109
602.75	6,357	3,421
602.80	6,596	3,745
602.85	6,835	4,081
602.90	7,074	4,429
602.95	7,314	4,788
603.00	7,553	5,160
603.05	7,792	5,544
603.10	8,032	5,939
603.15	8,271	6,347
603.20	8,510	6,766
603.25	8,750	7,198
603.30	8,989	7,641
603.35	9,228	8,097
603.40	9,467	8,564
603.45	9,707	9,043
603.50	9,946	9,535
603.55	10,185	10,038
603.60	10,425	10,553
603.65	10,664	11,080
603.70	10,903	11,620
603.75	11,143	12,171
603.80	11,382	12,734
603.85	11,621	13,309
603.90	11,860	13,896
603.95	12,100	14,495
604.00	12,339	15,106
604.05	12,453	15,726
604.10	12,568	16,351
604.15	12,682	16,983
604.20	12,796	17,620
604.25	12,911	18,262
604.30	13,025	18,911
604.35	13,139	19,565
604.40	13,253	20,224
604.45	13,368	20,890
604.50	13,482	21,561
604.55	13,596	22,238
604.60	13,711	22,921
604.65	13,825	23,609
604.70	13,939	24,303
604.75	14,054	25,003
604.80	14,168	25,709
604.85	14,282	26,420
604.90	14,396	27,137
604.95	14,511	27,860
605.00	**14,625**	**28,588**
605.05	14,625	28,588
605.10	14,625	28,588
605.15	14,625	28,588
605.20	14,625	28,588

Pond 80P: Retention Basin 80

Inflow Area =	3.120 ac,	Inflow Depth >	1.11"		
Inflow =	3.03 cfs @	12.26 hrs,	Volume=	0.288 af	
Outflow =	2.43 cfs @	12.41 hrs,	Volume=	0.273 af,	Atten= 20%, Lag= 9.1 min
Discarded =	0.02 cfs @	12.41 hrs,	Volume=	0.008 af	
Primary =	2.42 cfs @	12.41 hrs,	Volume=	0.265 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 613.33' @ 12.41 hrs Surf.Area= 2,753 sf Storage= 2,146 cf
Plug-Flow detention time= 34.4 min calculated for 0.272 af (95% of inflow)
Center-of-Mass det. time= 16.8 min (836.8 - 820.0)

Volume	Invert	Avail.Storage	Storage Description
#1	612.00'	8,759 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

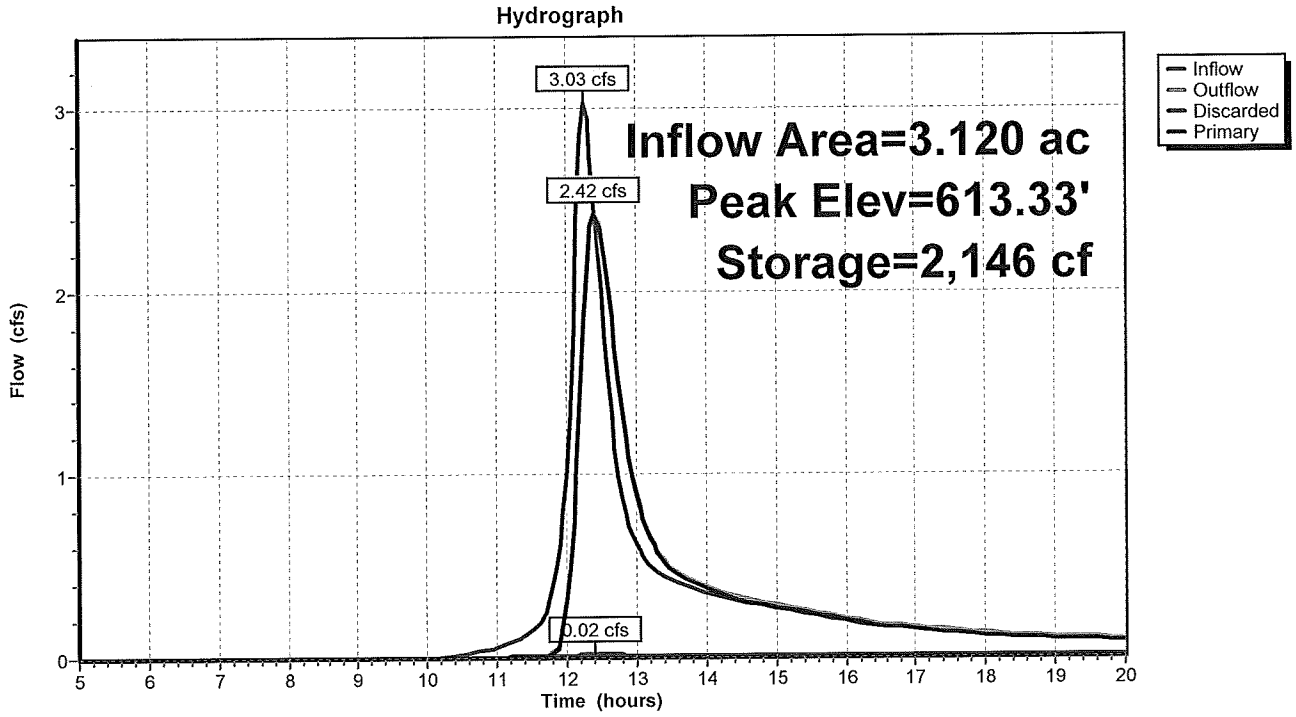
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
612.00	480	0	0
614.00	3,904	4,384	4,384
615.00	4,845	4,375	8,759

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	612.50'	**18.0" x 15.0' long Culvert** Ke= 0.600
			Outlet Invert= 612.35' S= 0.0100 '/' Cc= 0.900 n= 0.012

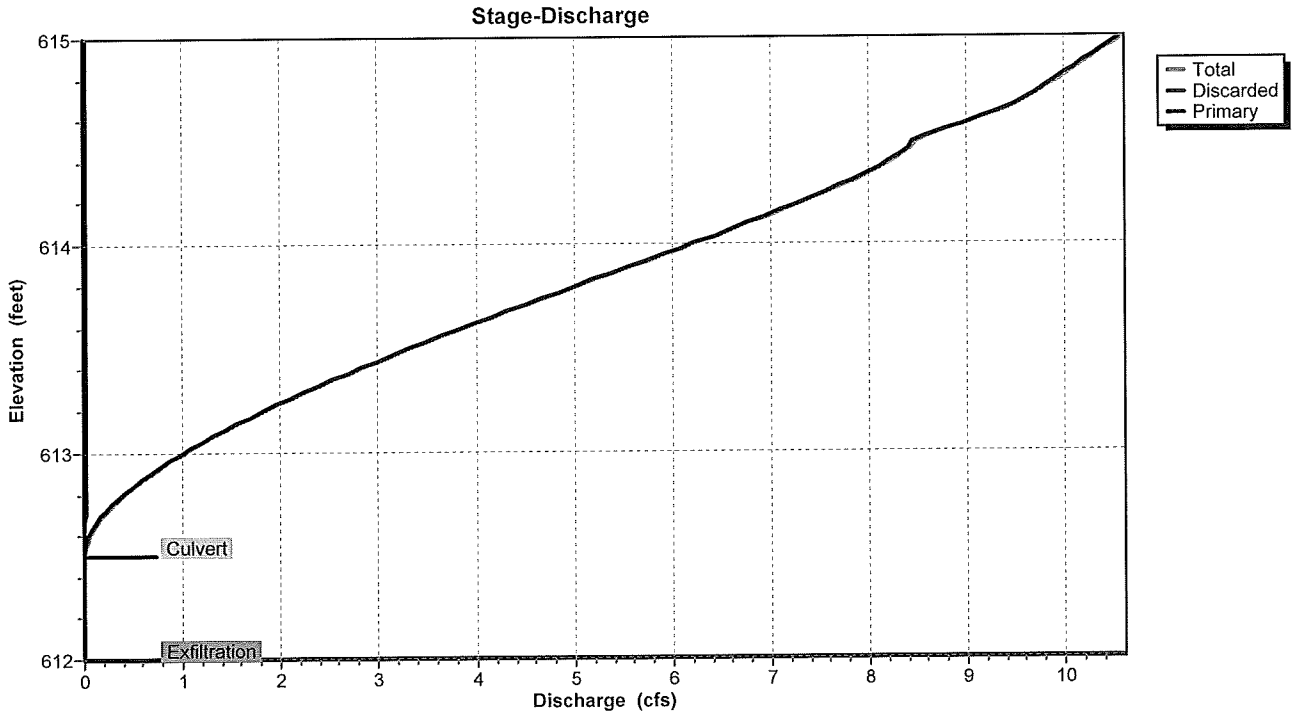
Discarded OutFlow Max=0.02 cfs @ 12.41 hrs HW=613.33' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=2.41 cfs @ 12.41 hrs HW=613.33' (Free Discharge)
└─**2=Culvert** (Barrel Controls 2.41 cfs @ 3.5 fps)

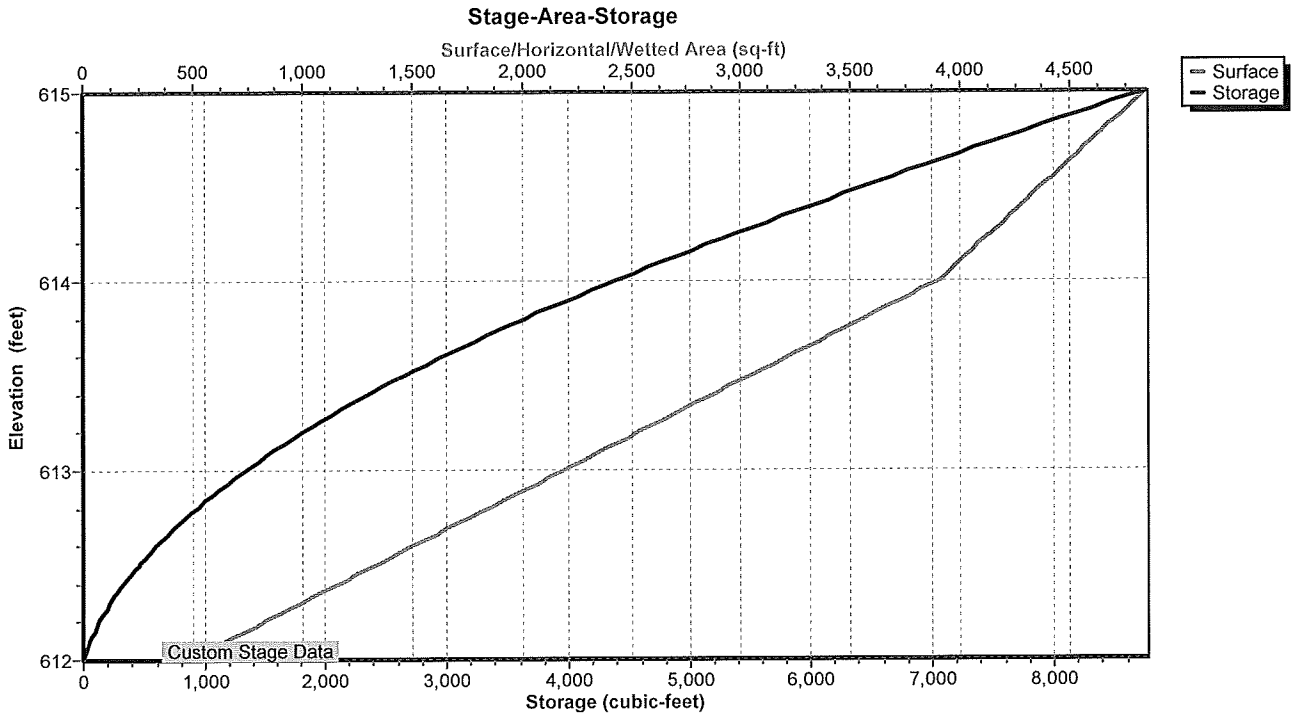
Pond 80P: Retention Basin 80



Pond 80P: Retention Basin 80



Pond 80P: Retention Basin 80



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Hydrograph for Pond 80P: Retention Basin 80

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
5.00	0.00	0	612.00	0.00	0.00	0.00
5.50	0.00	0	612.00	0.00	0.00	0.00
6.00	0.00	0	612.00	0.00	0.00	0.00
6.50	0.00	0	612.00	0.00	0.00	0.00
7.00	0.00	0	612.00	0.00	0.00	0.00
7.50	0.00	0	612.00	0.00	0.00	0.00
8.00	0.00	0	612.00	0.00	0.00	0.00
8.50	0.00	0	612.00	0.00	0.00	0.00
9.00	0.00	0	612.00	0.00	0.00	0.00
9.50	0.00	0	612.00	0.00	0.00	0.00
10.00	0.00	0	612.00	0.00	0.00	0.00
10.50	0.02	9	612.02	0.00	0.00	0.00
11.00	0.06	69	612.12	0.00	0.00	0.00
11.50	0.15	233	612.31	0.01	0.01	0.00
12.00	**0.99**	**855**	**612.76**	**0.32**	**0.01**	**0.30**
12.50	**2.00**	**2,087**	**613.31**	**2.33**	**0.02**	**2.31**
13.00	0.62	1,263	612.97	0.91	0.01	0.89
13.50	0.42	988	612.83	0.49	0.01	0.48
14.00	0.35	911	612.79	0.39	0.01	0.38
14.50	0.30	861	612.76	0.32	0.01	0.31
15.00	0.27	830	612.74	0.28	0.01	0.27
15.50	0.23	800	612.73	0.25	0.01	0.24
16.00	0.20	769	612.71	0.21	0.01	0.20
16.50	0.17	739	612.69	0.18	0.01	0.17
17.00	0.15	720	612.68	0.16	0.01	0.15
17.50	0.14	703	612.67	0.15	0.01	0.14
18.00	0.12	686	612.66	0.13	0.01	0.12
18.50	0.11	670	612.65	0.12	0.01	0.11
19.00	0.10	660	612.64	0.11	0.01	0.10
19.50	0.10	654	612.64	0.10	0.01	0.09
20.00	0.09	648	612.63	0.10	0.01	0.09

Stage-Discharge for Pond 80P: Retention Basin 80

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
612.00	0.00	0.00	0.00
612.05	0.00	0.00	0.00
612.10	0.00	0.00	0.00
612.15	0.00	0.00	0.00
612.20	0.01	0.01	0.00
612.25	0.01	0.01	0.00
612.30	0.01	0.01	0.00
612.35	0.01	0.01	0.00
612.40	0.01	0.01	0.00
612.45	0.01	0.01	0.00
612.50	0.01	0.01	0.00
612.55	0.02	0.01	0.01
612.60	0.06	0.01	0.05
612.65	0.12	0.01	0.11
612.70	0.20	0.01	0.19
612.75	0.30	0.01	0.29
612.80	0.41	0.01	0.40
612.85	0.54	0.01	0.53
612.90	0.69	0.01	0.68
612.95	0.85	0.01	0.84
613.00	1.02	0.01	1.01
613.05	1.21	0.01	1.19
613.10	1.40	0.01	1.39
613.15	1.61	0.02	1.60
613.20	1.83	0.02	1.82
613.25	2.06	0.02	2.04
613.30	2.30	0.02	2.28
613.35	2.54	0.02	2.53
613.40	2.80	0.02	2.78
613.45	3.06	0.02	3.04
613.50	3.33	0.02	3.31
613.55	3.61	0.02	3.59
613.60	3.89	0.02	3.87
613.65	4.17	0.02	4.15
613.70	4.46	0.02	4.44
613.75	4.75	0.02	4.73
613.80	5.04	0.02	5.02
613.85	5.34	0.02	5.32
613.90	5.63	0.02	5.61
613.95	5.93	0.02	5.90
614.00	6.22	0.02	6.19
614.05	6.50	0.02	6.48
614.10	6.79	0.02	6.76
614.15	7.06	0.03	7.04
614.20	7.33	0.03	7.30
614.25	7.58	0.03	7.55
614.30	7.82	0.03	7.79
614.35	8.04	0.03	8.02
614.40	8.24	0.03	8.21
614.45	8.40	0.03	8.37
614.50	8.47	0.03	8.44
614.55	8.79	0.03	8.76
614.60	9.10	0.03	9.07
614.65	9.40	0.03	9.37
614.70	9.63	0.03	9.61
614.75	9.80	0.03	9.77
614.80	9.96	0.03	9.93
614.85	10.12	0.03	10.09
614.90	10.28	0.03	10.25
614.95	10.43	0.03	10.40
615.00	**10.58**	**0.03**	**10.55**

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Stage-Area-Storage for Pond 80P: Retention Basin 80

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
612.00	480	0
612.05	566	26
612.10	651	57
612.15	737	91
612.20	822	130
612.25	908	174
612.30	994	221
612.35	1,079	273
612.40	1,165	329
612.45	1,250	389
612.50	1,336	454
612.55	1,422	523
612.60	1,507	596
612.65	1,593	674
612.70	1,678	755
612.75	1,764	842
612.80	1,850	932
612.85	1,935	1,026
612.90	2,021	1,125
612.95	2,106	1,229
613.00	2,192	1,336
613.05	2,278	1,448
613.10	2,363	1,564
613.15	2,449	1,684
613.20	2,534	1,809
613.25	2,620	1,938
613.30	2,706	2,071
613.35	2,791	2,208
613.40	2,877	2,350
613.45	2,962	2,496
613.50	3,048	2,646
613.55	3,134	2,801
613.60	3,219	2,959
613.65	3,305	3,122
613.70	3,390	3,290
613.75	3,476	3,462
613.80	3,562	3,637
613.85	3,647	3,818
613.90	3,733	4,002
613.95	3,818	4,191
614.00	3,904	4,384
614.05	3,951	4,580
614.10	3,998	4,779
614.15	4,045	4,980
614.20	4,092	5,184
614.25	4,139	5,389
614.30	4,186	5,598
614.35	4,233	5,808
614.40	4,280	6,021
614.45	4,327	6,236
614.50	4,375	6,454
614.55	4,422	6,674
614.60	4,469	6,896
614.65	4,516	7,120
614.70	4,563	7,347
614.75	4,610	7,577
614.80	4,657	7,808
614.85	4,704	8,042
614.90	4,751	8,279
614.95	4,798	8,517
615.00	**4,845**	**8,759**

Pond 90P: Retention Basin 90

Inflow Area =	4.180 ac,	Inflow Depth >	1.05"		
Inflow =	4.24 cfs @	12.20 hrs,	Volume=	0.366 af	
Outflow =	2.07 cfs @	12.52 hrs,	Volume=	0.325 af,	Atten= 51%, Lag= 19.3 min
Discarded =	0.02 cfs @	12.52 hrs,	Volume=	0.011 af	
Primary =	2.04 cfs @	12.52 hrs,	Volume=	0.314 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 618.30' @ 12.52 hrs Surf.Area= 3,566 sf Storage= 4,930 cf
Plug-Flow detention time= 69.3 min calculated for 0.325 af (89% of inflow)
Center-of-Mass det. time= 34.5 min (853.7 - 819.2)

Volume	Invert	Avail.Storage	Storage Description
#1	616.00'	19,711 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

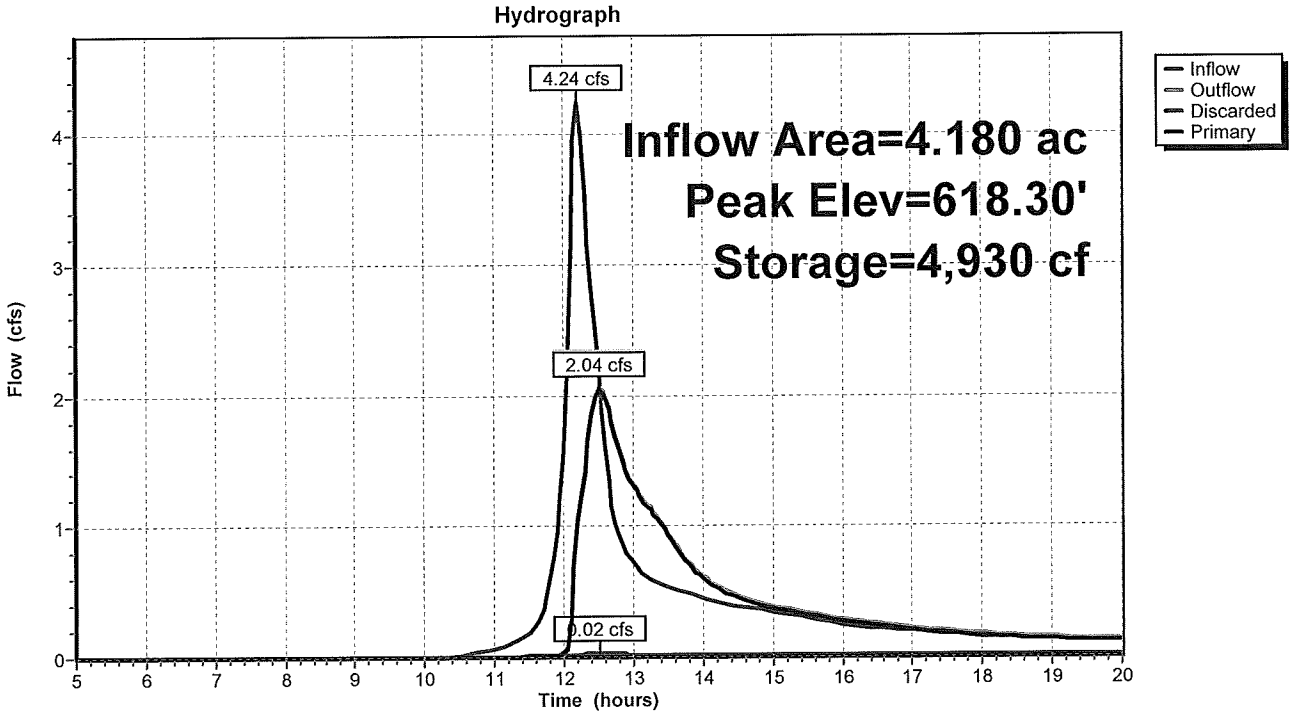
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
616.00	815	0	0
618.00	3,112	3,927	3,927
620.00	6,139	9,251	13,178
621.00	6,926	6,533	19,711

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	617.00'	**8.0" x 20.0' long Culvert** Ke= 0.600
			Outlet Invert= 616.80' S= 0.0100 '/' Cc= 0.900 n= 0.012
#3	Primary	618.00'	**24.0" x 20.0' long Culvert** Ke= 0.600
			Outlet Invert= 617.80' S= 0.0100 '/' Cc= 0.900 n= 0.012

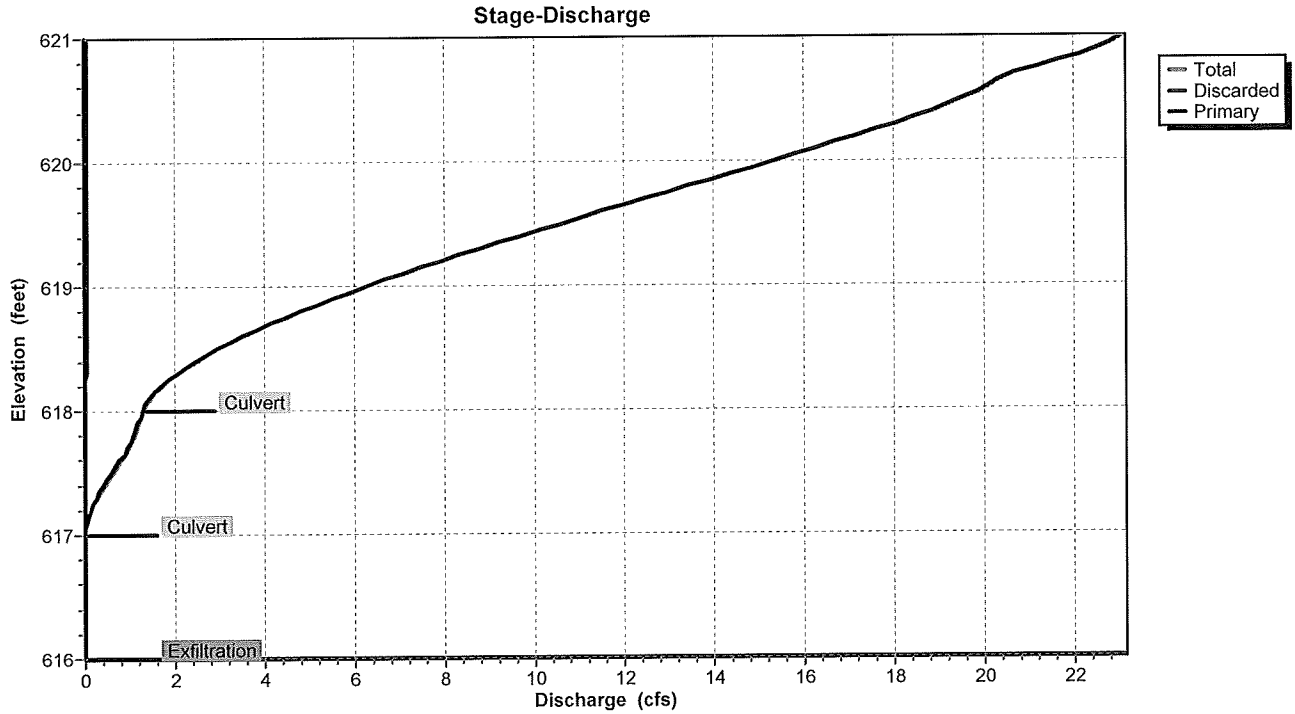
Discarded OutFlow Max=0.02 cfs @ 12.52 hrs HW=618.30' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=2.04 cfs @ 12.52 hrs HW=618.30' (Free Discharge)
├─**2=Culvert** (Inlet Controls 1.55 cfs @ 4.4 fps)
└─**3=Culvert** (Barrel Controls 0.49 cfs @ 2.5 fps)

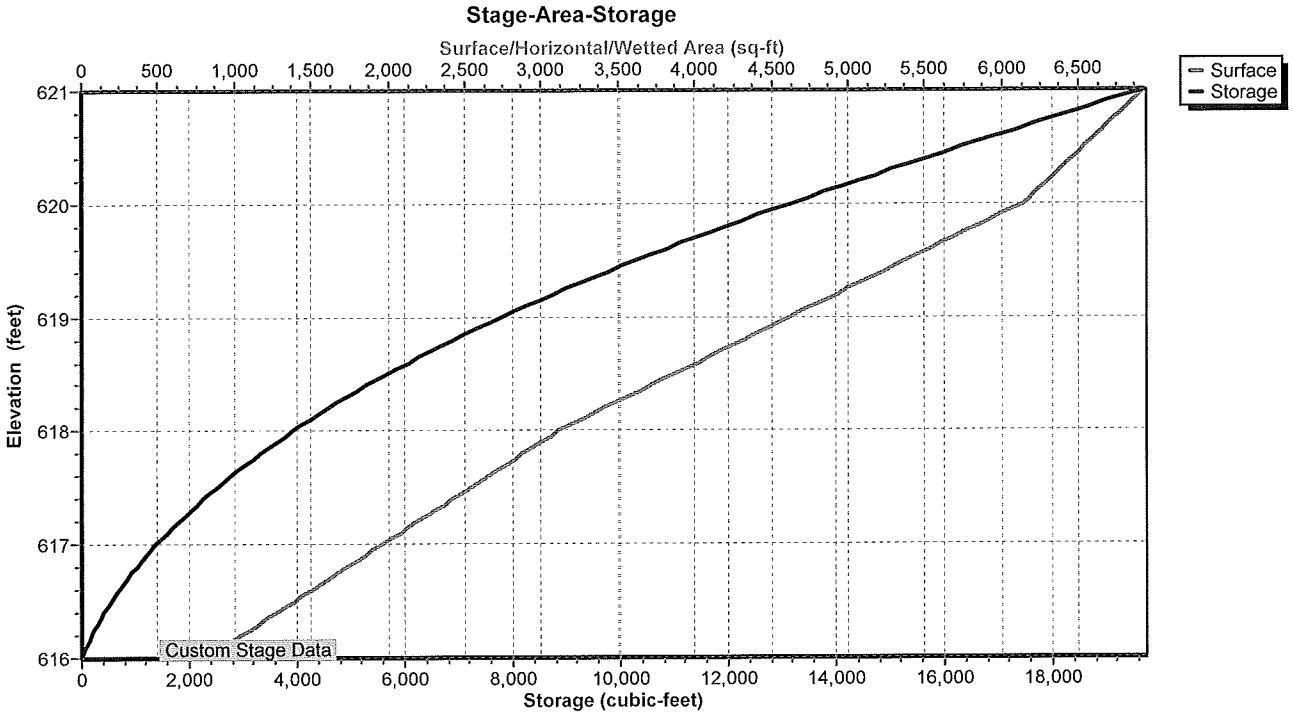
Pond 90P: Retention Basin 90



Pond 90P: Retention Basin 90



Pond 90P: Retention Basin 90



Hydrograph for Pond 90P: Retention Basin 90

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
5.00	0.00	0	616.00	0.00	0.00	0.00
5.50	0.00	0	616.00	0.00	0.00	0.00
6.00	0.00	0	616.00	0.00	0.00	0.00
6.50	0.00	0	616.00	0.00	0.00	0.00
7.00	0.00	0	616.00	0.00	0.00	0.00
7.50	0.00	0	616.00	0.00	0.00	0.00
8.00	0.00	0	616.00	0.00	0.00	0.00
8.50	0.00	0	616.00	0.00	0.00	0.00
9.00	0.00	0	616.00	0.00	0.00	0.00
9.50	0.00	0	616.00	0.00	0.00	0.00
10.00	0.00	0	616.00	0.00	0.00	0.00
10.50	0.01	4	616.00	0.00	0.00	0.00
11.00	0.07	65	616.08	0.01	0.01	0.00
11.50	0.19	266	616.27	0.01	0.01	0.00
12.00	**1.55**	1,322	616.97	0.01	0.01	0.00
12.50	**2.20**	**4,923**	**618.30**	**2.06**	**0.02**	**2.04**
13.00	0.73	3,980	618.02	1.33	0.02	1.31
13.50	0.53	3,016	617.69	0.95	0.02	0.94
14.00	0.45	2,526	617.50	0.62	0.02	0.60
14.50	0.39	2,313	617.42	0.46	0.02	0.45
15.00	0.34	2,208	617.38	0.39	0.01	0.37
15.50	0.30	2,132	617.34	0.34	0.01	0.32
16.00	0.25	2,061	617.31	0.29	0.01	0.27
16.50	0.22	1,995	617.28	0.25	0.01	0.23
17.00	0.20	1,950	617.26	0.22	0.01	0.20
17.50	0.18	1,912	617.25	0.20	0.01	0.18
18.00	0.15	1,874	617.23	0.17	0.01	0.16
18.50	0.14	1,840	617.22	0.16	0.01	0.14
19.00	0.13	1,819	617.21	0.14	0.01	0.13
19.50	0.13	1,804	617.20	0.14	0.01	0.12
20.00	0.12	1,791	617.19	0.13	0.01	0.12

Stage-Discharge for Pond 90P: Retention Basin 90

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
616.00	0.00	0.00	0.00
616.05	0.01	0.01	0.00
616.10	0.01	0.01	0.00
616.15	0.01	0.01	0.00
616.20	0.01	0.01	0.00
616.25	0.01	0.01	0.00
616.30	0.01	0.01	0.00
616.35	0.01	0.01	0.00
616.40	0.01	0.01	0.00
616.45	0.01	0.01	0.00
616.50	0.01	0.01	0.00
616.55	0.01	0.01	0.00
616.60	0.01	0.01	0.00
616.65	0.01	0.01	0.00
616.70	0.01	0.01	0.00
616.75	0.01	0.01	0.00
616.80	0.01	0.01	0.00
616.85	0.01	0.01	0.00
616.90	0.01	0.01	0.00
616.95	0.01	0.01	0.00
617.00	0.01	0.01	0.00
617.05	0.02	0.01	0.01
617.10	0.05	0.01	0.03
617.15	0.08	0.01	0.07
617.20	0.14	0.01	0.12
617.25	0.20	0.01	0.18
617.30	0.27	0.01	0.25
617.35	0.35	0.01	0.33
617.40	0.43	0.02	0.41
617.45	0.52	0.02	0.50
617.50	0.61	0.02	0.59
617.55	0.70	0.02	0.68
617.60	0.79	0.02	0.78
617.65	0.88	0.02	0.87
617.70	0.97	0.02	0.95
617.75	1.03	0.02	1.02
617.80	1.09	0.02	1.08
617.85	1.15	0.02	1.13
617.90	1.18	0.02	1.16
617.95	1.25	0.02	1.23
618.00	1.31	0.02	1.29
618.05	1.37	0.02	1.35
618.10	1.46	0.02	1.44
618.15	1.58	0.02	1.55
618.20	1.72	0.02	1.70
618.25	1.88	0.02	1.86
618.30	2.07	0.02	2.04
618.35	2.27	0.02	2.25
618.40	2.49	0.02	2.47
618.45	2.73	0.02	2.70
618.50	2.98	0.02	2.96
618.55	3.25	0.02	3.23
618.60	3.54	0.03	3.51
618.65	3.84	0.03	3.81
618.70	4.15	0.03	4.12
618.75	4.48	0.03	4.45
618.80	4.81	0.03	4.79
618.85	5.17	0.03	5.14
618.90	5.53	0.03	5.50
618.95	5.90	0.03	5.88
619.00	6.29	0.03	6.26
619.05	6.69	0.03	6.66
619.10	7.09	0.03	7.06
619.15	7.51	0.03	7.48
619.20	7.93	0.03	7.90
619.25	8.36	0.03	8.33
619.30	8.80	0.03	8.77
619.35	9.25	0.03	9.22
619.40	9.70	0.03	9.67
619.45	10.16	0.03	10.13
619.50	10.62	0.03	10.59
619.55	11.09	0.03	11.06
619.60	11.56	0.03	11.53
619.65	12.04	0.04	12.00
619.70	12.52	0.04	12.48
619.75	13.00	0.04	12.96
619.80	13.48	0.04	13.44
619.85	13.96	0.04	13.92
619.90	14.43	0.04	14.40
619.95	14.91	0.04	14.87
620.00	15.38	0.04	15.34
620.05	15.85	0.04	15.81
620.10	16.31	0.04	16.28
620.15	16.77	0.04	16.73
620.20	17.22	0.04	17.18
620.25	17.65	0.04	17.61
620.30	18.08	0.04	18.04
620.35	18.48	0.04	18.44
620.40	18.88	0.04	18.84
620.45	19.25	0.04	19.21
620.50	19.59	0.04	19.55
620.55	19.90	0.04	19.86
620.60	20.17	0.04	20.12
620.65	20.36	0.04	20.31
620.70	20.70	0.04	20.66
620.75	21.21	0.04	21.17
620.80	21.70	0.04	21.66
620.85	22.19	0.04	22.14
620.90	22.57	0.04	22.52
620.95	22.84	0.04	22.80
621.00	**23.12**	**0.04**	**23.07**

Stage-Area-Storage for Pond 90P: Retention Basin 90

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
616.00	815	0
616.05	872	42
616.10	930	87
616.15	987	135
616.20	1,045	186
616.25	1,102	240
616.30	1,160	296
616.35	1,217	356
616.40	1,274	418
616.45	1,332	483
616.50	1,389	551
616.55	1,447	622
616.60	1,504	696
616.65	1,562	772
616.70	1,619	852
616.75	1,676	934
616.80	1,734	1,020
616.85	1,791	1,108
616.90	1,849	1,199
616.95	1,906	1,293
617.00	1,964	1,389
617.05	2,021	1,489
617.10	2,078	1,591
617.15	2,136	1,697
617.20	2,193	1,805
617.25	2,251	1,916
617.30	2,308	2,030
617.35	2,365	2,147
617.40	2,423	2,267
617.45	2,480	2,389
617.50	2,538	2,515
617.55	2,595	2,643
617.60	2,653	2,774
617.65	2,710	2,908
617.70	2,767	3,045
617.75	2,825	3,185
617.80	2,882	3,328
617.85	2,940	3,473
617.90	2,997	3,622
617.95	3,055	3,773
618.00	3,112	3,927
618.05	3,188	4,084
618.10	3,263	4,246
618.15	3,339	4,411
618.20	3,415	4,580
618.25	3,490	4,752
618.30	3,566	4,929
618.35	3,642	5,109
618.40	3,717	5,293
618.45	3,793	5,481
618.50	3,869	5,672
618.55	3,944	5,868
618.60	4,020	6,067
618.65	4,096	6,270
618.70	4,171	6,476
618.75	4,247	6,687
618.80	4,323	6,901
618.85	4,398	7,119
618.90	4,474	7,341
618.95	4,550	7,566
619.00	4,626	7,796
619.05	4,701	8,029
619.10	4,777	8,266
619.15	4,853	8,507
619.20	4,928	8,751
619.25	5,004	8,999
619.30	5,080	9,252
619.35	5,155	9,507
619.40	5,231	9,767
619.45	5,307	10,030
619.50	5,382	10,298
619.55	5,458	10,569
619.60	5,534	10,843
619.65	5,609	11,122
619.70	5,685	11,404
619.75	5,761	11,691
619.80	5,836	11,980
619.85	5,912	12,274
619.90	5,988	12,572
619.95	6,063	12,873
620.00	6,139	13,178
620.05	6,178	13,486
620.10	6,218	13,796
620.15	6,257	14,108
620.20	6,296	14,422
620.25	6,336	14,737
620.30	6,375	15,055
620.35	6,414	15,375
620.40	6,454	15,697
620.45	6,493	16,020
620.50	6,533	16,346
620.55	6,572	16,673
620.60	6,611	17,003
620.65	6,651	17,335
620.70	6,690	17,668
620.75	6,729	18,004
620.80	6,769	18,341
620.85	6,808	18,680
620.90	6,847	19,022
620.95	6,887	19,365
621.00	**6,926**	**19,711**

Pond 100P: Retenion Basin 100

Inflow Area =	1.670 ac,	Inflow Depth >	1.11"		
Inflow =	2.32 cfs @	12.08 hrs,	Volume=	0.155 af	
Outflow =	0.88 cfs @	12.38 hrs,	Volume=	0.120 af,	Atten= 62%, Lag= 17.9 min
Discarded =	0.01 cfs @	12.38 hrs,	Volume=	0.009 af	
Primary =	0.86 cfs @	12.38 hrs,	Volume=	0.111 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 615.52' @ 12.38 hrs Surf.Area= 2,226 sf Storage= 2,375 cf
Plug-Flow detention time= 103.3 min calculated for 0.120 af (77% of inflow)
Center-of-Mass det. time= 45.2 min (855.5 - 810.3)

Volume	Invert	Avail.Storage	Storage Description
#1	614.00'	6,575 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

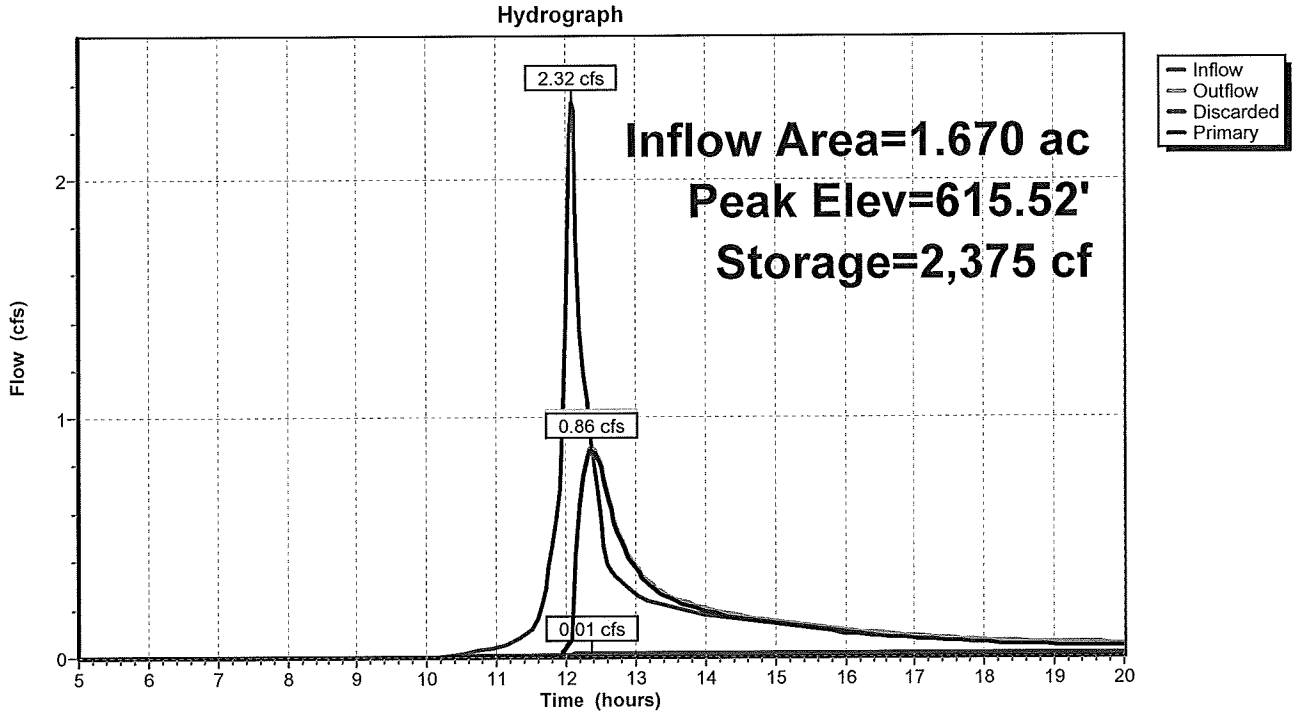
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
614.00	901	0	0
616.00	2,645	3,546	3,546
617.00	3,412	3,029	6,575

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	615.00'	**12.0" x 20.0' long Culvert** Ke= 0.600
			Outlet Invert= 614.80' S= 0.0100 '/' Cc= 0.900 n= 0.012

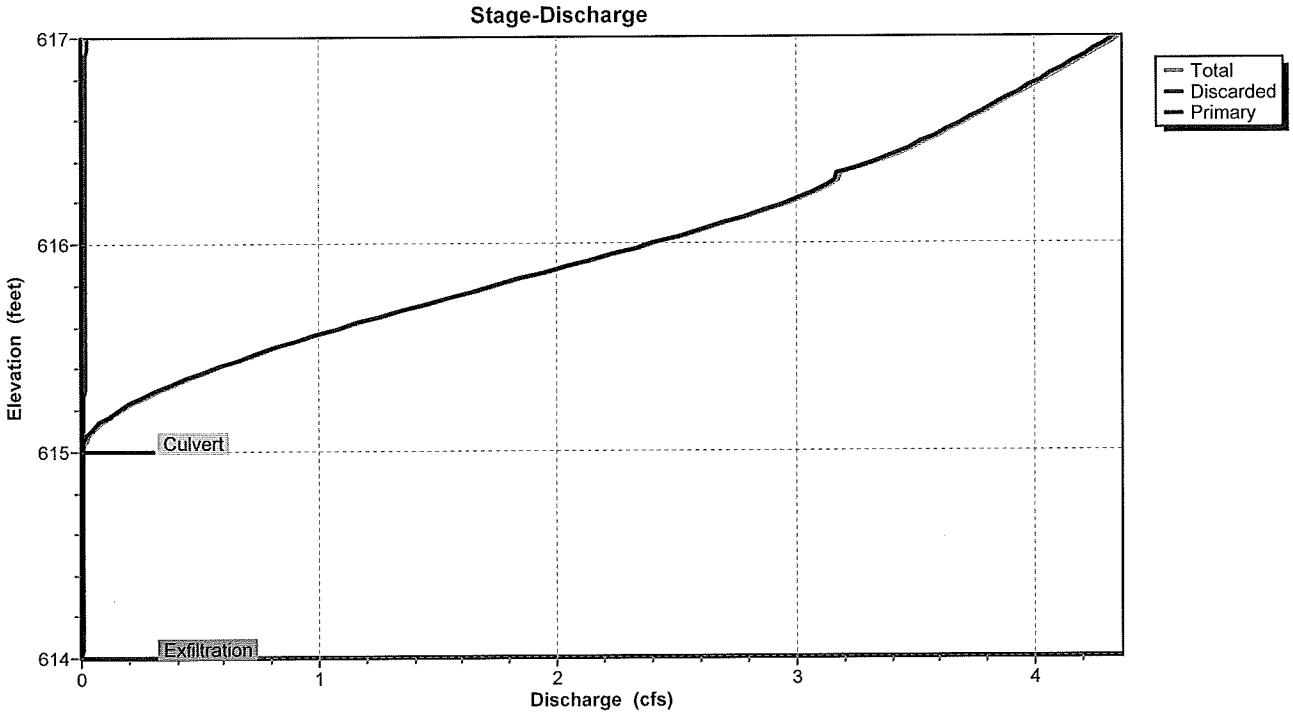
Discarded OutFlow Max=0.01 cfs @ 12.38 hrs HW=615.52' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.86 cfs @ 12.38 hrs HW=615.52' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.86 cfs @ 3.1 fps)

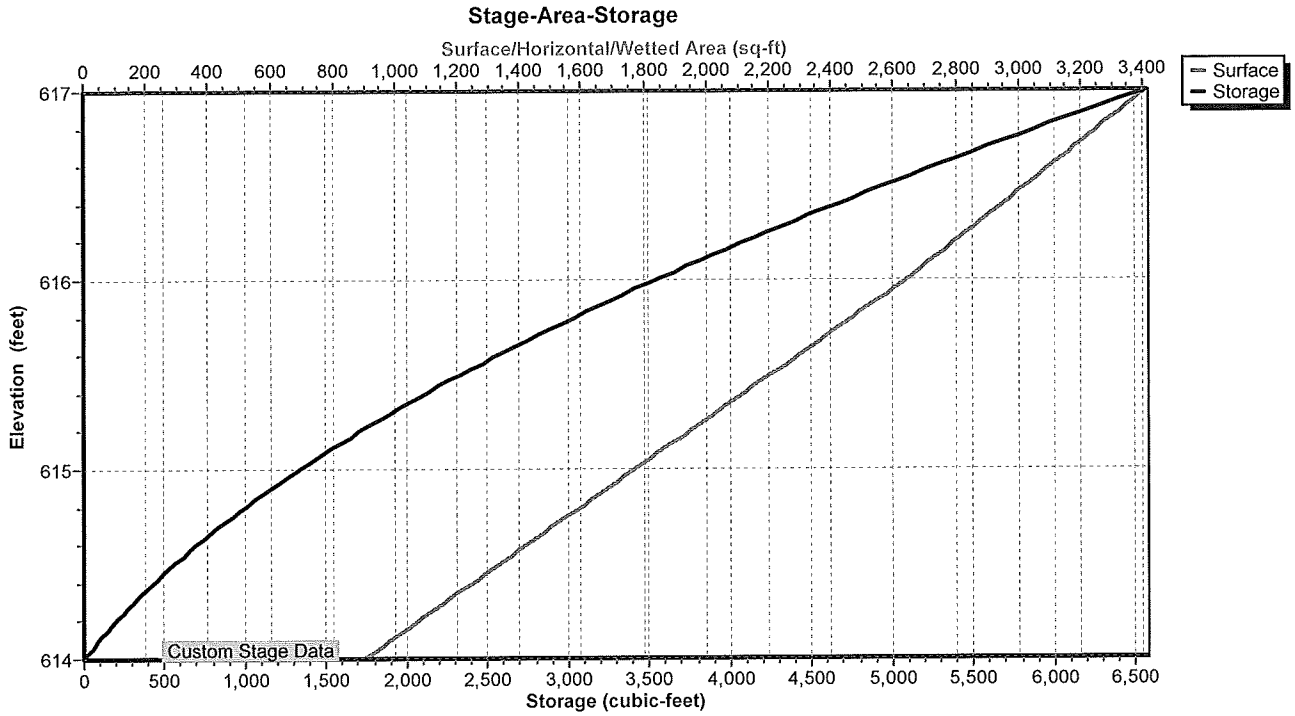
Pond 100P: Retenion Basin 100



Pond 100P: Retenion Basin 100



Pond 100P: Retenion Basin 100



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Hydrograph for Pond 100P: Retenion Basin 100

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
5.00	0.00	0	614.00	0.00	0.00	0.00
5.50	0.00	0	614.00	0.00	0.00	0.00
6.00	0.00	0	614.00	0.00	0.00	0.00
6.50	0.00	0	614.00	0.00	0.00	0.00
7.00	0.00	0	614.00	0.00	0.00	0.00
7.50	0.00	0	614.00	0.00	0.00	0.00
8.00	0.00	0	614.00	0.00	0.00	0.00
8.50	0.00	0	614.00	0.00	0.00	0.00
9.00	0.00	0	614.00	0.00	0.00	0.00
9.50	0.00	0	614.00	0.00	0.00	0.00
10.00	0.00	0	614.00	0.00	0.00	0.00
10.50	0.02	12	614.01	0.00	0.00	0.00
11.00	0.04	55	614.06	0.01	0.01	0.00
11.50	0.11	176	614.18	0.01	0.01	0.00
12.00	**1.41**	**978**	**614.79**	**0.01**	**0.01**	**0.00**
12.50	**0.58**	**2,323**	**615.50**	**0.81**	**0.01**	**0.80**
13.00	0.26	1,948	615.32	0.38	0.01	0.37
13.50	0.21	1,813	615.25	0.25	0.01	0.24
14.00	0.18	1,753	615.22	0.20	0.01	0.19
14.50	0.15	1,713	615.20	0.17	0.01	0.16
15.00	0.14	1,685	615.19	0.15	0.01	0.14
15.50	0.12	1,659	615.17	0.13	0.01	0.12
16.00	0.10	1,631	615.16	0.11	0.01	0.10
16.50	0.09	1,606	615.15	0.10	0.01	0.09
17.00	0.08	1,589	615.14	0.09	0.01	0.08
17.50	0.07	1,572	615.13	0.08	0.01	0.07
18.00	0.06	1,556	615.12	0.07	0.01	0.06
18.50	0.06	1,542	615.11	0.06	0.01	0.05
19.00	0.05	1,534	615.11	0.06	0.01	0.05
19.50	0.05	1,526	615.10	0.06	0.01	0.04
20.00	0.05	1,520	615.10	0.05	0.01	0.04

Stage-Discharge for Pond 100P: Retenion Basin 100

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
614.00	0.00	0.00	0.00
614.05	0.01	0.01	0.00
614.10	0.01	0.01	0.00
614.15	0.01	0.01	0.00
614.20	0.01	0.01	0.00
614.25	0.01	0.01	0.00
614.30	0.01	0.01	0.00
614.35	0.01	0.01	0.00
614.40	0.01	0.01	0.00
614.45	0.01	0.01	0.00
614.50	0.01	0.01	0.00
614.55	0.01	0.01	0.00
614.60	0.01	0.01	0.00
614.65	0.01	0.01	0.00
614.70	0.01	0.01	0.00
614.75	0.01	0.01	0.00
614.80	0.01	0.01	0.00
614.85	0.01	0.01	0.00
614.90	0.01	0.01	0.00
614.95	0.01	0.01	0.00
615.00	0.01	0.01	0.00
615.05	0.02	0.01	0.01
615.10	0.05	0.01	0.04
615.15	0.10	0.01	0.09
615.20	0.17	0.01	0.16
615.25	0.25	0.01	0.24
615.30	0.34	0.01	0.33
615.35	0.45	0.01	0.44
615.40	0.57	0.01	0.55
615.45	0.69	0.01	0.68
615.50	0.83	0.01	0.81
615.55	0.97	0.01	0.95
615.60	1.11	0.01	1.10
615.65	1.27	0.01	1.25
615.70	1.43	0.01	1.41
615.75	1.59	0.02	1.57
615.80	1.75	0.02	1.74
615.85	1.92	0.02	1.90
615.90	2.09	0.02	2.07
615.95	2.25	0.02	2.23
616.00	2.41	0.02	2.40
616.05	2.57	0.02	2.55
616.10	2.72	0.02	2.70
616.15	2.86	0.02	2.84
616.20	2.98	0.02	2.97
616.25	3.09	0.02	3.07
616.30	3.17	0.02	3.15
616.35	3.22	0.02	3.20
616.40	3.36	0.02	3.34
616.45	3.47	0.02	3.46
616.50	3.56	0.02	3.55
616.55	3.65	0.02	3.63
616.60	3.74	0.02	3.72
616.65	3.82	0.02	3.80
616.70	3.90	0.02	3.88
616.75	3.98	0.02	3.96
616.80	4.06	0.02	4.04
616.85	4.14	0.02	4.12
616.90	4.22	0.02	4.19
616.95	4.29	0.02	4.27
617.00	**4.36**	**0.02**	**4.34**

Stage-Area-Storage for Pond 100P: Retenion Basin 100

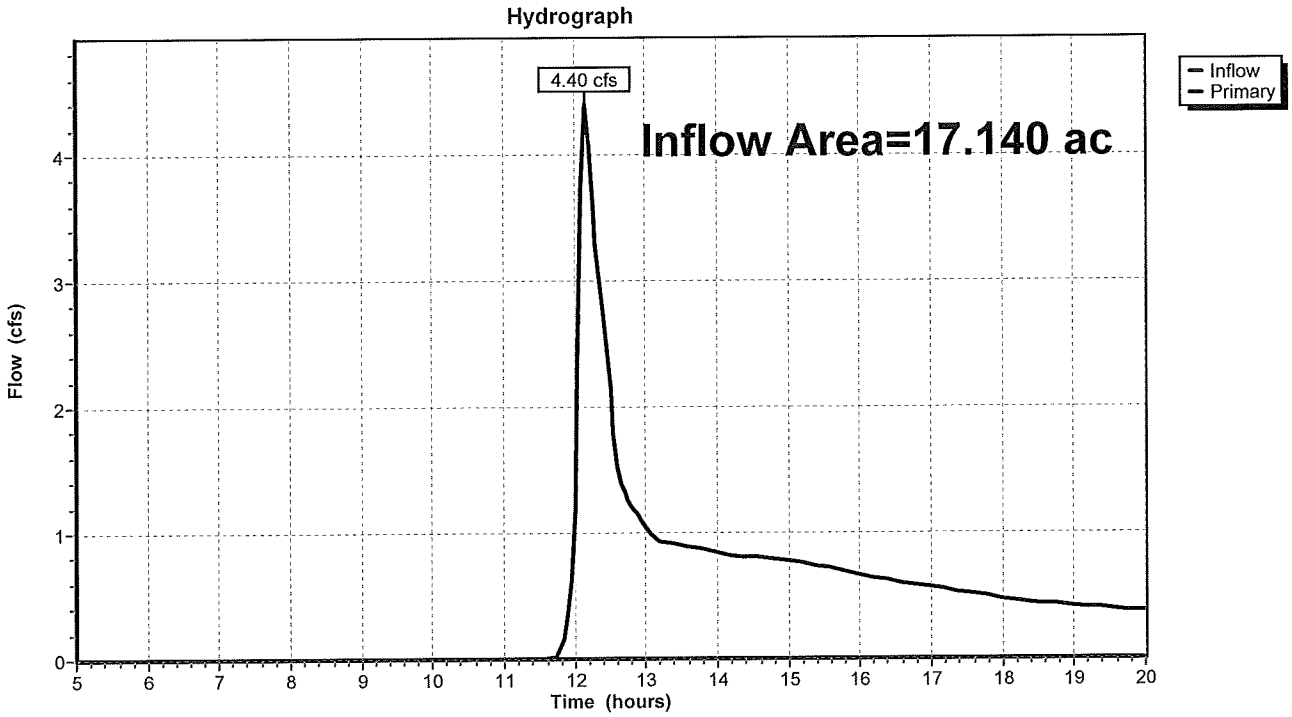
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
614.00	901	0
614.05	945	46
614.10	988	94
614.15	1,032	145
614.20	1,075	198
614.25	1,119	253
614.30	1,163	310
614.35	1,206	369
614.40	1,250	430
614.45	1,293	494
614.50	1,337	560
614.55	1,381	627
614.60	1,424	698
614.65	1,468	770
614.70	1,511	844
614.75	1,555	921
614.80	1,599	1,000
614.85	1,642	1,081
614.90	1,686	1,164
614.95	1,729	1,249
615.00	1,773	1,337
615.05	1,817	1,427
615.10	1,860	1,519
615.15	1,904	1,613
615.20	1,947	1,709
615.25	1,991	1,808
615.30	2,035	1,908
615.35	2,078	2,011
615.40	2,122	2,116
615.45	2,165	2,223
615.50	2,209	2,333
615.55	2,253	2,444
615.60	2,296	2,558
615.65	2,340	2,674
615.70	2,383	2,792
615.75	2,427	2,912
615.80	2,471	3,034
615.85	2,514	3,159
615.90	2,558	3,286
615.95	2,601	3,415
616.00	2,645	3,546
616.05	2,683	3,679
616.10	2,722	3,814
616.15	2,760	3,951
616.20	2,798	4,090
616.25	2,837	4,231
616.30	2,875	4,374
616.35	2,913	4,519
616.40	2,952	4,665
616.45	2,990	4,814
616.50	3,029	4,964
616.55	3,067	5,117
616.60	3,105	5,271
616.65	3,144	5,427
616.70	3,182	5,585
616.75	3,220	5,745
616.80	3,259	5,907
616.85	3,297	6,071
616.90	3,335	6,237
616.95	3,374	6,405
617.00	**3,412**	**6,575**

Link DP1: Design Point 1

Inflow Area =	17.140 ac,	Inflow Depth >	0.39"	
Inflow =	4.40 cfs @	12.16 hrs, Volume=	0.557 af	
Primary =	4.40 cfs @	12.16 hrs, Volume=	0.557 af,	Atten= 0%, Lag= 0.0 min

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

Link DP1: Design Point 1



Hydrograph for Link DP1: Design Point 1

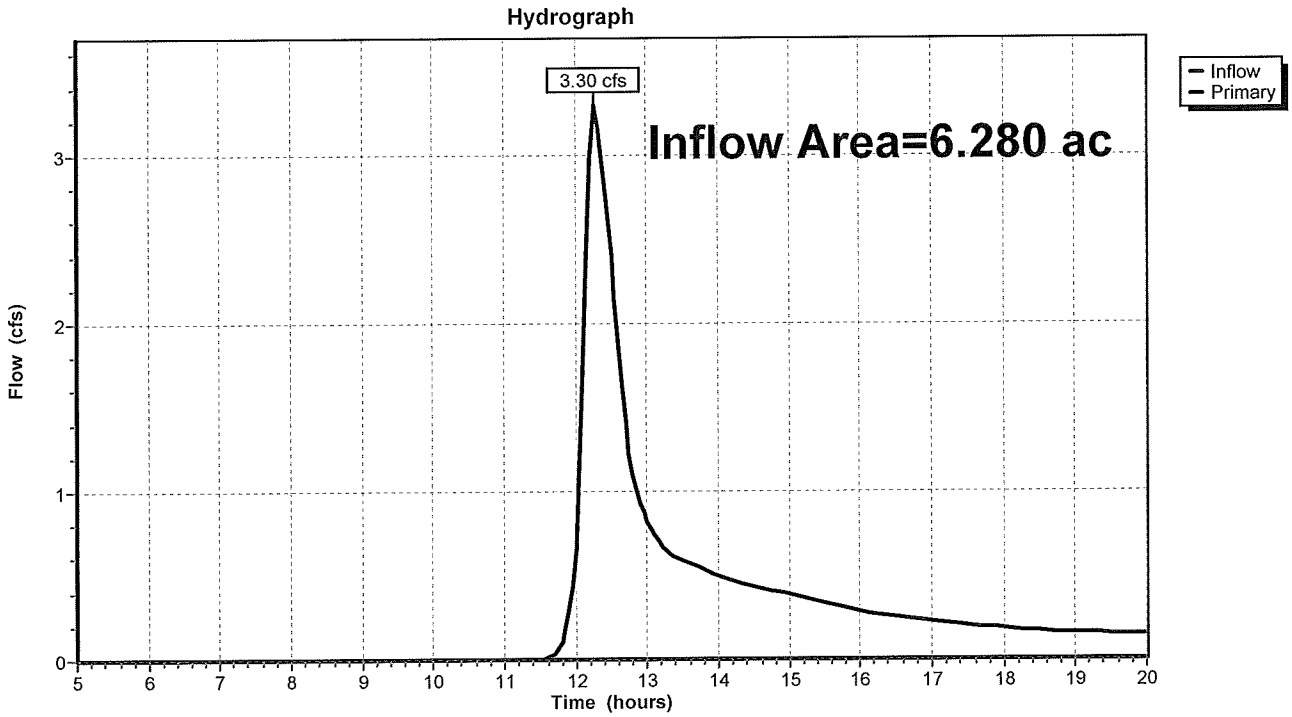
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
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	**1.16**	0.00	**1.16**
12.25	**3.62**	0.00	**3.62**
12.50	2.14	0.00	2.14
12.75	1.26	0.00	1.26
13.00	1.05	0.00	1.05
13.25	0.93	0.00	0.93
13.50	0.90	0.00	0.90
13.75	0.88	0.00	0.88
14.00	0.84	0.00	0.84
14.25	0.82	0.00	0.82
14.50	0.81	0.00	0.81
14.75	0.79	0.00	0.79
15.00	0.77	0.00	0.77
15.25	0.75	0.00	0.75
15.50	0.73	0.00	0.73
15.75	0.69	0.00	0.69
16.00	0.66	0.00	0.66
16.25	0.63	0.00	0.63
16.50	0.61	0.00	0.61
16.75	0.59	0.00	0.59
17.00	0.57	0.00	0.57
17.25	0.55	0.00	0.55
17.50	0.52	0.00	0.52
17.75	0.50	0.00	0.50
18.00	0.47	0.00	0.47
18.25	0.45	0.00	0.45
18.50	0.44	0.00	0.44
18.75	0.43	0.00	0.43
19.00	0.42	0.00	0.42
19.25	0.40	0.00	0.40
19.50	0.39	0.00	0.39
19.75	0.38	0.00	0.38
20.00	0.37	0.00	0.37

Link DP2: Design Point 2

Inflow Area =	6.280 ac,	Inflow Depth >	0.65"	
Inflow =	3.30 cfs @	12.27 hrs, Volume=	0.342 af	
Primary =	3.30 cfs @	12.27 hrs, Volume=	0.342 af,	Atten= 0%, Lag= 0.0 min

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

Link DP2: Design Point 2



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Hydrograph for Link DP2: Design Point 2

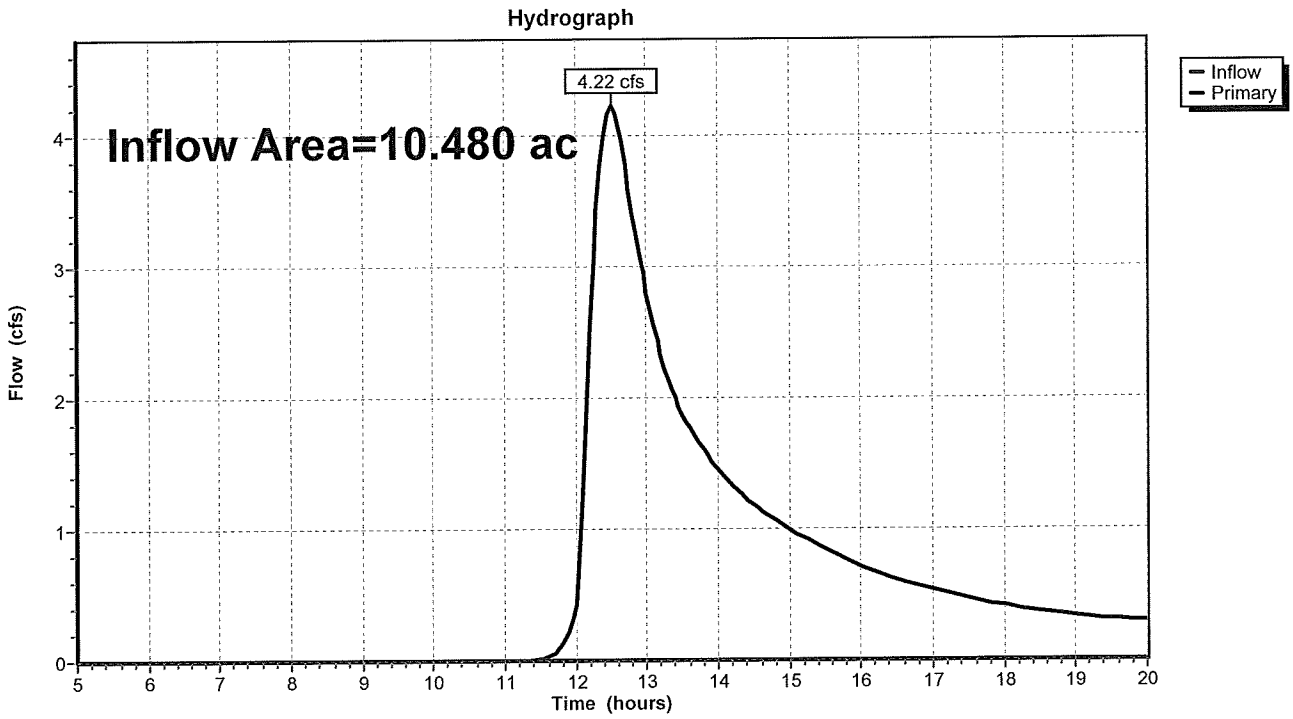
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
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	0.05	0.00	0.05
12.00	0.66	0.00	0.66
12.25	**3.27**	0.00	**3.27**
12.50	2.40	0.00	2.40
12.75	1.23	0.00	1.23
13.00	0.82	0.00	0.82
13.25	0.65	0.00	0.65
13.50	0.58	0.00	0.58
13.75	0.54	0.00	0.54
14.00	0.50	0.00	0.50
14.25	0.46	0.00	0.46
14.50	0.43	0.00	0.43
14.75	0.41	0.00	0.41
15.00	0.39	0.00	0.39
15.25	0.36	0.00	0.36
15.50	0.34	0.00	0.34
15.75	0.31	0.00	0.31
16.00	0.29	0.00	0.29
16.25	0.26	0.00	0.26
16.50	0.25	0.00	0.25
16.75	0.24	0.00	0.24
17.00	0.23	0.00	0.23
17.25	0.21	0.00	0.21
17.50	0.20	0.00	0.20
17.75	0.19	0.00	0.19
18.00	0.18	0.00	0.18
18.25	0.17	0.00	0.17
18.50	0.16	0.00	0.16
18.75	0.16	0.00	0.16
19.00	0.16	0.00	0.16
19.25	0.15	0.00	0.15
19.50	0.15	0.00	0.15
19.75	0.15	0.00	0.15
20.00	0.14	0.00	0.14

Link DP3: Design Point 3

Inflow Area =	10.480 ac,	Inflow Depth >	0.85"	
Inflow =	4.22 cfs @	12.51 hrs,	Volume=	0.741 af
Primary =	4.22 cfs @	12.51 hrs,	Volume=	0.741 af, Atten= 0%, Lag= 0.0 min

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

Link DP3: Design Point 3



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Hydrograph for Link DP3: Design Point 3

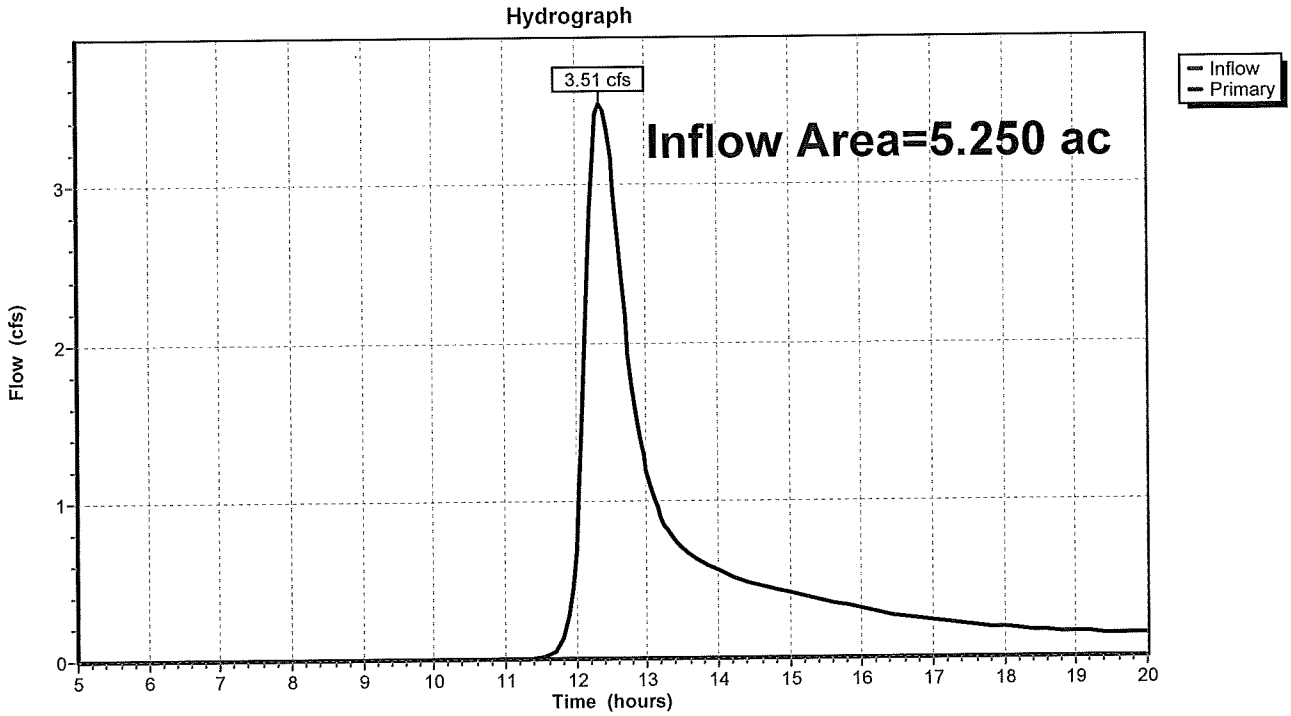
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
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	0.01	0.00	0.01
11.75	0.07	0.00	0.07
12.00	0.43	0.00	0.43
12.25	3.06	0.00	3.06
12.50	**4.22**	0.00	**4.22**
12.75	3.59	0.00	3.59
13.00	2.80	0.00	2.80
13.25	2.23	0.00	2.23
13.50	1.87	0.00	1.87
13.75	1.64	0.00	1.64
14.00	1.46	0.00	1.46
14.25	1.30	0.00	1.30
14.50	1.18	0.00	1.18
14.75	1.08	0.00	1.08
15.00	0.99	0.00	0.99
15.25	0.91	0.00	0.91
15.50	0.84	0.00	0.84
15.75	0.78	0.00	0.78
16.00	0.72	0.00	0.72
16.25	0.66	0.00	0.66
16.50	0.61	0.00	0.61
16.75	0.57	0.00	0.57
17.00	0.53	0.00	0.53
17.25	0.50	0.00	0.50
17.50	0.47	0.00	0.47
17.75	0.44	0.00	0.44
18.00	0.41	0.00	0.41
18.25	0.38	0.00	0.38
18.50	0.36	0.00	0.36
18.75	0.35	0.00	0.35
19.00	0.33	0.00	0.33
19.25	0.32	0.00	0.32
19.50	0.31	0.00	0.31
19.75	0.30	0.00	0.30
20.00	0.29	0.00	0.29

Link DP4: Design Point 4

Inflow Area =	5.250 ac,	Inflow Depth >	0.91"	
Inflow =	3.51 cfs @	12.36 hrs, Volume=	0.397 af	
Primary =	3.51 cfs @	12.36 hrs, Volume=	0.397 af,	Atten= 0%, Lag= 0.0 min

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

Link DP4: Design Point 4



Hydrograph for Link DP4: Design Point 4

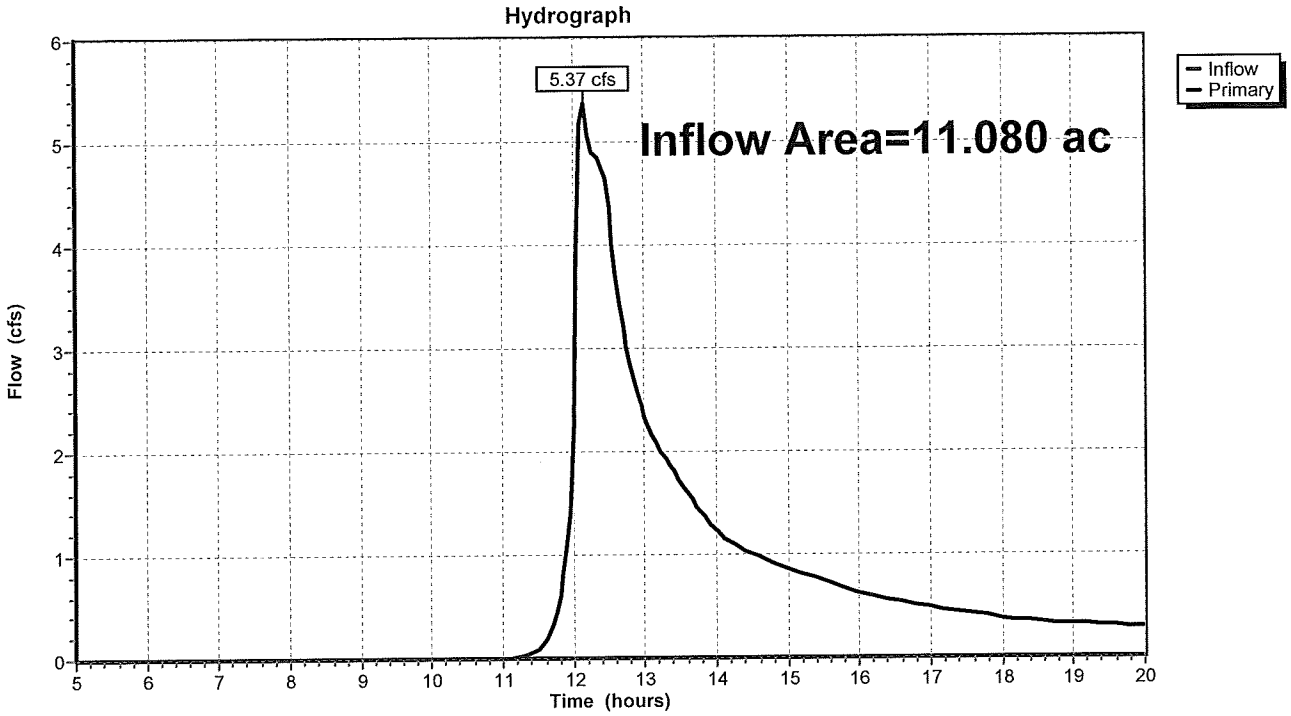
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
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	0.01	0.00	0.01
11.75	0.07	0.00	0.07
12.00	0.68	0.00	0.68
12.25	**3.24**	0.00	**3.24**
12.50	**3.17**	0.00	**3.17**
12.75	1.93	0.00	1.93
13.00	1.18	0.00	1.18
13.25	0.84	0.00	0.84
13.50	0.69	0.00	0.69
13.75	0.62	0.00	0.62
14.00	0.56	0.00	0.56
14.25	0.51	0.00	0.51
14.50	0.47	0.00	0.47
14.75	0.44	0.00	0.44
15.00	0.41	0.00	0.41
15.25	0.39	0.00	0.39
15.50	0.36	0.00	0.36
15.75	0.34	0.00	0.34
16.00	0.31	0.00	0.31
16.25	0.28	0.00	0.28
16.50	0.26	0.00	0.26
16.75	0.25	0.00	0.25
17.00	0.23	0.00	0.23
17.25	0.22	0.00	0.22
17.50	0.21	0.00	0.21
17.75	0.20	0.00	0.20
18.00	0.18	0.00	0.18
18.25	0.17	0.00	0.17
18.50	0.17	0.00	0.17
18.75	0.16	0.00	0.16
19.00	0.15	0.00	0.15
19.25	0.15	0.00	0.15
19.50	0.15	0.00	0.15
19.75	0.14	0.00	0.14
20.00	0.14	0.00	0.14

Link DP5: Design Point 5

Inflow Area =	11.080 ac,	Inflow Depth >	0.84"	
Inflow =	5.37 cfs @	12.15 hrs,	Volume=	0.772 af
Primary =	5.37 cfs @	12.15 hrs,	Volume=	0.772 af, Atten= 0%, Lag= 0.0 min

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

Link DP5: Design Point 5



Hydrograph for Link DP5: Design Point 5

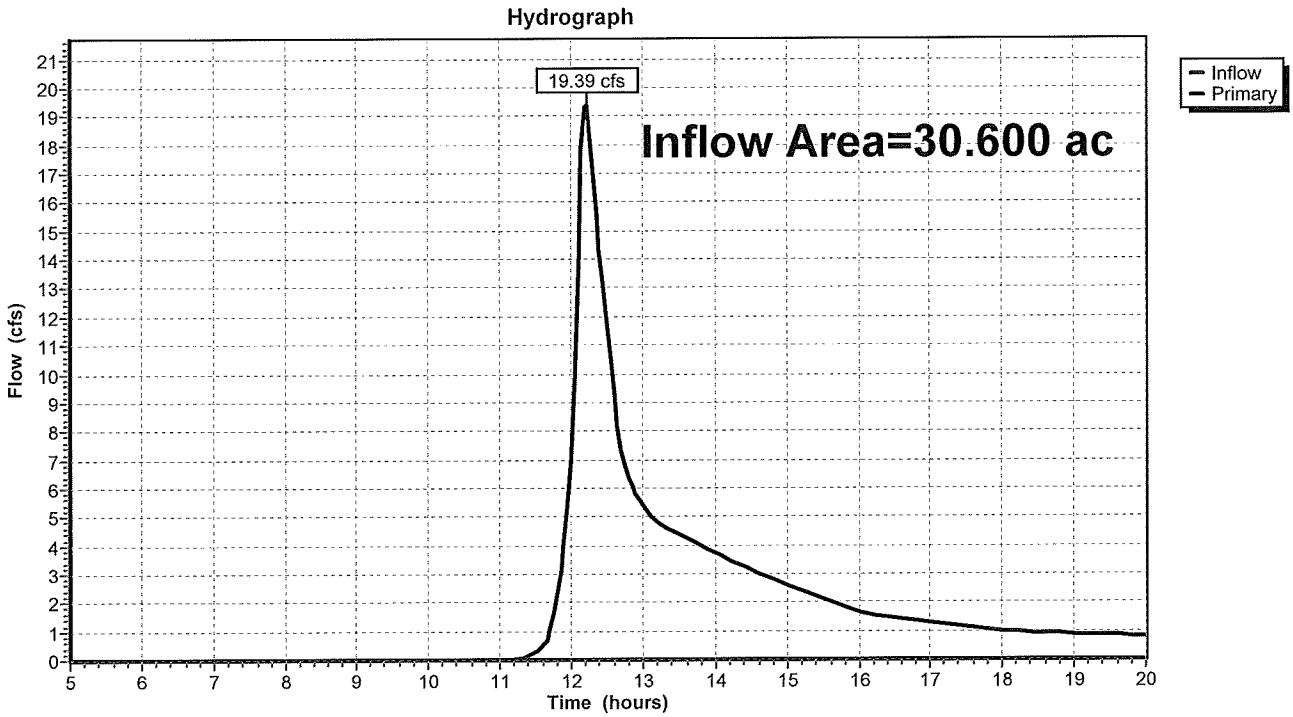
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
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	0.02	0.00	0.02
11.50	0.09	0.00	0.09
11.75	0.45	0.00	0.45
12.00	**2.23**	0.00	**2.23**
12.25	**4.89**	0.00	**4.89**
12.50	4.37	0.00	4.37
12.75	3.02	0.00	3.02
13.00	2.34	0.00	2.34
13.25	1.98	0.00	1.98
13.50	1.71	0.00	1.71
13.75	1.44	0.00	1.44
14.00	1.24	0.00	1.24
14.25	1.10	0.00	1.10
14.50	1.00	0.00	1.00
14.75	0.93	0.00	0.93
15.00	0.86	0.00	0.86
15.25	0.80	0.00	0.80
15.50	0.74	0.00	0.74
15.75	0.69	0.00	0.69
16.00	0.63	0.00	0.63
16.25	0.58	0.00	0.58
16.50	0.54	0.00	0.54
16.75	0.51	0.00	0.51
17.00	0.48	0.00	0.48
17.25	0.46	0.00	0.46
17.50	0.43	0.00	0.43
17.75	0.40	0.00	0.40
18.00	0.38	0.00	0.38
18.25	0.36	0.00	0.36
18.50	0.34	0.00	0.34
18.75	0.33	0.00	0.33
19.00	0.32	0.00	0.32
19.25	0.31	0.00	0.31
19.50	0.30	0.00	0.30
19.75	0.29	0.00	0.29
20.00	0.29	0.00	0.29

Link DP6: Design Point 6

Inflow Area =	30.600 ac,	Inflow Depth >	0.86"	
Inflow =	19.39 cfs @	12.21 hrs,	Volume=	2.187 af
Primary =	19.39 cfs @	12.21 hrs,	Volume=	2.187 af, Atten= 0%, Lag= 0.0 min

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

Link DP6: Design Point 6



Hydrograph for Link DP6: Design Point 6

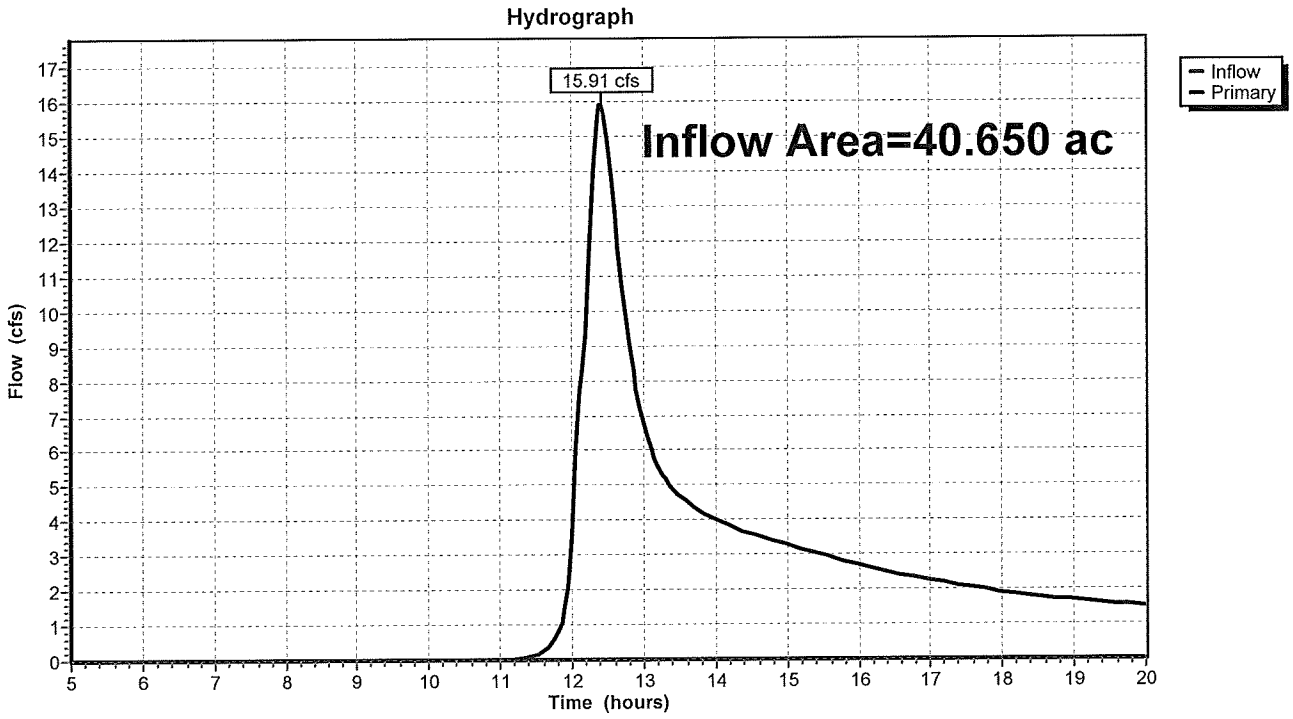
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
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	0.02	0.00	0.02
11.50	0.25	0.00	0.25
11.75	1.61	0.00	1.61
12.00	**6.98**	0.00	**6.98**
12.25	**18.61**	0.00	**18.61**
12.50	11.89	0.00	11.89
12.75	6.76	0.00	6.76
13.00	5.44	0.00	5.44
13.25	4.72	0.00	4.72
13.50	4.38	0.00	4.38
13.75	4.06	0.00	4.06
14.00	3.72	0.00	3.72
14.25	3.40	0.00	3.40
14.50	3.14	0.00	3.14
14.75	2.88	0.00	2.88
15.00	2.63	0.00	2.63
15.25	2.37	0.00	2.37
15.50	2.11	0.00	2.11
15.75	1.89	0.00	1.89
16.00	1.69	0.00	1.69
16.25	1.54	0.00	1.54
16.50	1.45	0.00	1.45
16.75	1.37	0.00	1.37
17.00	1.30	0.00	1.30
17.25	1.22	0.00	1.22
17.50	1.15	0.00	1.15
17.75	1.08	0.00	1.08
18.00	1.01	0.00	1.01
18.25	0.96	0.00	0.96
18.50	0.93	0.00	0.93
18.75	0.90	0.00	0.90
19.00	0.88	0.00	0.88
19.25	0.86	0.00	0.86
19.50	0.84	0.00	0.84
19.75	0.82	0.00	0.82
20.00	0.80	0.00	0.80

Link DP7: Design Point 7

Inflow Area =	40.650 ac,	Inflow Depth >	0.75"	
Inflow =	15.91 cfs @	12.41 hrs, Volume=	2.536 af	
Primary =	15.91 cfs @	12.41 hrs, Volume=	2.536 af,	Atten= 0%, Lag= 0.0 min

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

Link DP7: Design Point 7



Hydrograph for Link DP7: Design Point 7

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	0.02	0.00	0.02
11.50	0.11	0.00	0.11
11.75	0.58	0.00	0.58
12.00	3.56	0.00	3.56
12.25	**11.73**	0.00	**11.73**
12.50	**14.94**	0.00	**14.94**
12.75	9.87	0.00	9.87
13.00	6.76	0.00	6.76
13.25	5.34	0.00	5.34
13.50	4.68	0.00	4.68
13.75	4.30	0.00	4.30
14.00	4.02	0.00	4.02
14.25	3.78	0.00	3.78
14.50	3.59	0.00	3.59
14.75	3.43	0.00	3.43
15.00	3.28	0.00	3.28
15.25	3.13	0.00	3.13
15.50	2.99	0.00	2.99
15.75	2.84	0.00	2.84
16.00	2.69	0.00	2.69
16.25	2.56	0.00	2.56
16.50	2.44	0.00	2.44
16.75	2.34	0.00	2.34
17.00	2.25	0.00	2.25
17.25	2.17	0.00	2.17
17.50	2.09	0.00	2.09
17.75	2.01	0.00	2.01
18.00	1.92	0.00	1.92
18.25	1.85	0.00	1.85
18.50	1.78	0.00	1.78
18.75	1.73	0.00	1.73
19.00	1.68	0.00	1.68
19.25	1.63	0.00	1.63
19.50	1.59	0.00	1.59
19.75	1.55	0.00	1.55
20.00	1.51	0.00	1.51

Hydrograph for Subcatchment 2S: Overland runoff to the north

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	0.00	0.00
5.25	0.19	0.00	0.00
5.50	0.21	0.00	0.00
5.75	0.22	0.00	0.00
6.00	0.23	0.00	0.00
6.25	0.24	0.00	0.00
6.50	0.26	0.00	0.00
6.75	0.27	0.00	0.00
7.00	0.29	0.00	0.00
7.25	0.31	0.00	0.00
7.50	0.33	0.00	0.00
7.75	0.34	0.00	0.00
8.00	0.36	0.00	0.00
8.25	0.39	0.00	0.00
8.50	0.41	0.00	0.00
8.75	0.44	0.00	0.00
9.00	0.47	0.00	0.00
9.25	0.50	0.00	0.00
9.50	0.53	0.00	0.00
9.75	0.57	0.00	0.00
10.00	0.60	0.00	0.00
10.25	0.65	0.00	0.00
10.50	0.69	0.00	0.00
10.75	0.74	0.00	0.00
11.00	0.80	0.00	0.00
11.25	0.87	0.00	0.00
11.50	0.95	0.00	0.00
11.75	1.14	0.01	0.05
12.00	1.60	0.08	0.66
12.25	2.06	0.22	**3.27**
12.50	2.25	0.28	2.40
12.75	2.33	0.32	1.23
13.00	2.40	0.35	0.82
13.25	2.46	0.37	0.65
13.50	2.51	0.39	0.58
13.75	2.55	0.41	0.54
14.00	2.60	0.43	0.50
14.25	2.63	0.45	0.46
14.50	2.67	0.46	0.43
14.75	2.70	0.48	0.41
15.00	2.73	0.49	0.39
15.25	2.76	0.51	0.36
15.50	2.79	0.52	0.34
15.75	2.81	0.53	0.31
16.00	2.84	0.54	0.29
16.25	2.86	0.55	0.26
16.50	2.87	0.56	0.25
16.75	2.89	0.57	0.24
17.00	2.91	0.58	0.23
17.25	2.93	0.59	0.21
17.50	2.94	0.60	0.20
17.75	2.96	0.60	0.19
18.00	2.97	0.61	0.18
18.25	2.98	0.62	0.17
18.50	2.99	0.62	0.16
18.75	3.01	0.63	0.16
19.00	3.02	0.64	0.16
19.25	3.03	0.64	0.15
19.50	3.04	0.65	0.15
19.75	3.05	0.65	0.15
20.00	**3.06**	**0.66**	0.14

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Subcatchment 3S: Overland runoff to the east

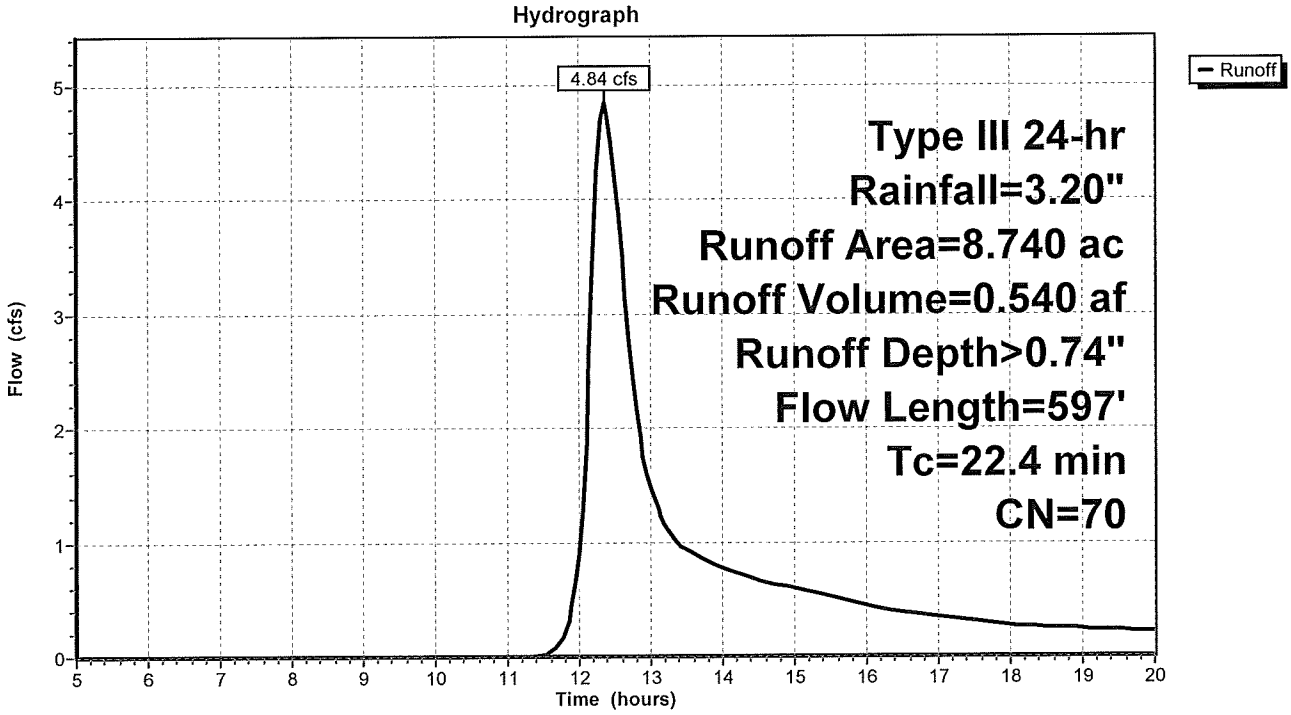
Runoff = 4.84 cfs @ 12.36 hrs, Volume= 0.540 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.20"

Area (ac)	CN	Description
8.740	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
10.1	547	0.0329	0.9		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
22.4	597	Total			

Subcatchment 3S: Overland runoff to the east



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Hydrograph for Subcatchment 3S: Overland runoff to the east

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	0.00	0.00
5.25	0.19	0.00	0.00
5.50	0.21	0.00	0.00
5.75	0.22	0.00	0.00
6.00	0.23	0.00	0.00
6.25	0.24	0.00	0.00
6.50	0.26	0.00	0.00
6.75	0.27	0.00	0.00
7.00	0.29	0.00	0.00
7.25	0.31	0.00	0.00
7.50	0.33	0.00	0.00
7.75	0.34	0.00	0.00
8.00	0.36	0.00	0.00
8.25	0.39	0.00	0.00
8.50	0.41	0.00	0.00
8.75	0.44	0.00	0.00
9.00	0.47	0.00	0.00
9.25	0.50	0.00	0.00
9.50	0.53	0.00	0.00
9.75	0.57	0.00	0.00
10.00	0.60	0.00	0.00
10.25	0.65	0.00	0.00
10.50	0.69	0.00	0.00
10.75	0.74	0.00	0.00
11.00	0.80	0.00	0.00
11.25	0.87	0.00	0.00
11.50	0.95	0.00	0.01
11.75	1.14	0.02	0.14
12.00	1.60	0.11	0.88
12.25	2.06	0.26	**4.26**
12.50	2.25	0.34	**4.20**
12.75	2.33	0.38	2.45
13.00	2.40	0.41	1.48
13.25	2.46	0.43	1.10
13.50	2.51	0.46	0.93
13.75	2.55	0.48	0.85
14.00	2.60	0.50	0.78
14.25	2.63	0.52	0.71
14.50	2.67	0.54	0.67
14.75	2.70	0.56	0.63
15.00	2.73	0.57	0.60
15.25	2.76	0.59	0.56
15.50	2.79	0.60	0.52
15.75	2.81	0.61	0.48
16.00	2.84	0.62	0.45
16.25	2.86	0.64	0.41
16.50	2.87	0.65	0.38
16.75	2.89	0.66	0.36
17.00	2.91	0.67	0.35
17.25	2.93	0.67	0.33
17.50	2.94	0.68	0.31
17.75	2.96	0.69	0.29
18.00	2.97	0.70	0.27
18.25	2.98	0.70	0.26
18.50	2.99	0.71	0.25
18.75	3.01	0.72	0.24
19.00	3.02	0.72	0.24
19.25	3.03	0.73	0.23
19.50	3.04	0.74	0.22
19.75	3.05	0.74	0.22
20.00	**3.06**	**0.75**	0.21

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Subcatchment 4S: Overland runoff to the southeast

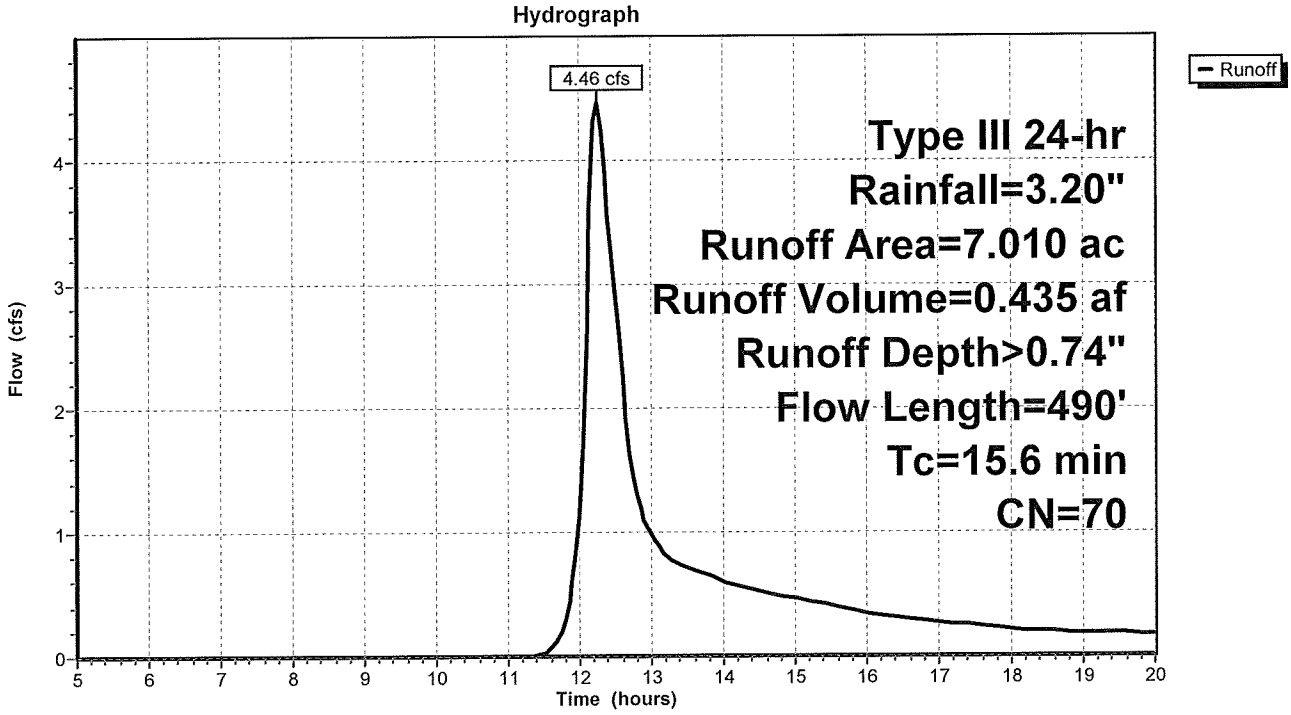
Runoff = 4.46 cfs @ 12.25 hrs, Volume= 0.435 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.20"

Area (ac)	CN	Description
7.010	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
6.3	440	0.0545	1.2		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
15.6	490	Total			

Subcatchment 4S: Overland runoff to the southeast



Hydrograph for Subcatchment 4S: Overland runoff to the southeast

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	0.00	0.00
5.25	0.19	0.00	0.00
5.50	0.21	0.00	0.00
5.75	0.22	0.00	0.00
6.00	0.23	0.00	0.00
6.25	0.24	0.00	0.00
6.50	0.26	0.00	0.00
6.75	0.27	0.00	0.00
7.00	0.29	0.00	0.00
7.25	0.31	0.00	0.00
7.50	0.33	0.00	0.00
7.75	0.34	0.00	0.00
8.00	0.36	0.00	0.00
8.25	0.39	0.00	0.00
8.50	0.41	0.00	0.00
8.75	0.44	0.00	0.00
9.00	0.47	0.00	0.00
9.25	0.50	0.00	0.00
9.50	0.53	0.00	0.00
9.75	0.57	0.00	0.00
10.00	0.60	0.00	0.00
10.25	0.65	0.00	0.00
10.50	0.69	0.00	0.00
10.75	0.74	0.00	0.00
11.00	0.80	0.00	0.00
11.25	0.87	0.00	0.00
11.50	0.95	0.00	0.03
11.75	1.14	0.02	0.20
12.00	1.60	0.11	1.16
12.25	2.06	0.26	**4.46**
12.50	2.25	0.34	2.93
12.75	2.33	0.38	1.44
13.00	2.40	0.41	0.98
13.25	2.46	0.43	0.78
13.50	2.51	0.46	0.71
13.75	2.55	0.48	0.66
14.00	2.60	0.50	0.60
14.25	2.63	0.52	0.55
14.50	2.67	0.54	0.52
14.75	2.70	0.56	0.49
15.00	2.73	0.57	0.47
15.25	2.76	0.59	0.44
15.50	2.79	0.60	0.41
15.75	2.81	0.61	0.38
16.00	2.84	0.62	0.34
16.25	2.86	0.64	0.32
16.50	2.87	0.65	0.30
16.75	2.89	0.66	0.29
17.00	2.91	0.67	0.27
17.25	2.93	0.67	0.26
17.50	2.94	0.68	0.24
17.75	2.96	0.69	0.23
18.00	2.97	0.70	0.21
18.25	2.98	0.70	0.20
18.50	2.99	0.71	0.20
18.75	3.01	0.72	0.19
19.00	3.02	0.72	0.19
19.25	3.03	0.73	0.18
19.50	3.04	0.74	0.18
19.75	3.05	0.74	0.17
20.00	**3.06**	**0.75**	0.17

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Subcatchment 5S: Overland runoff to the south

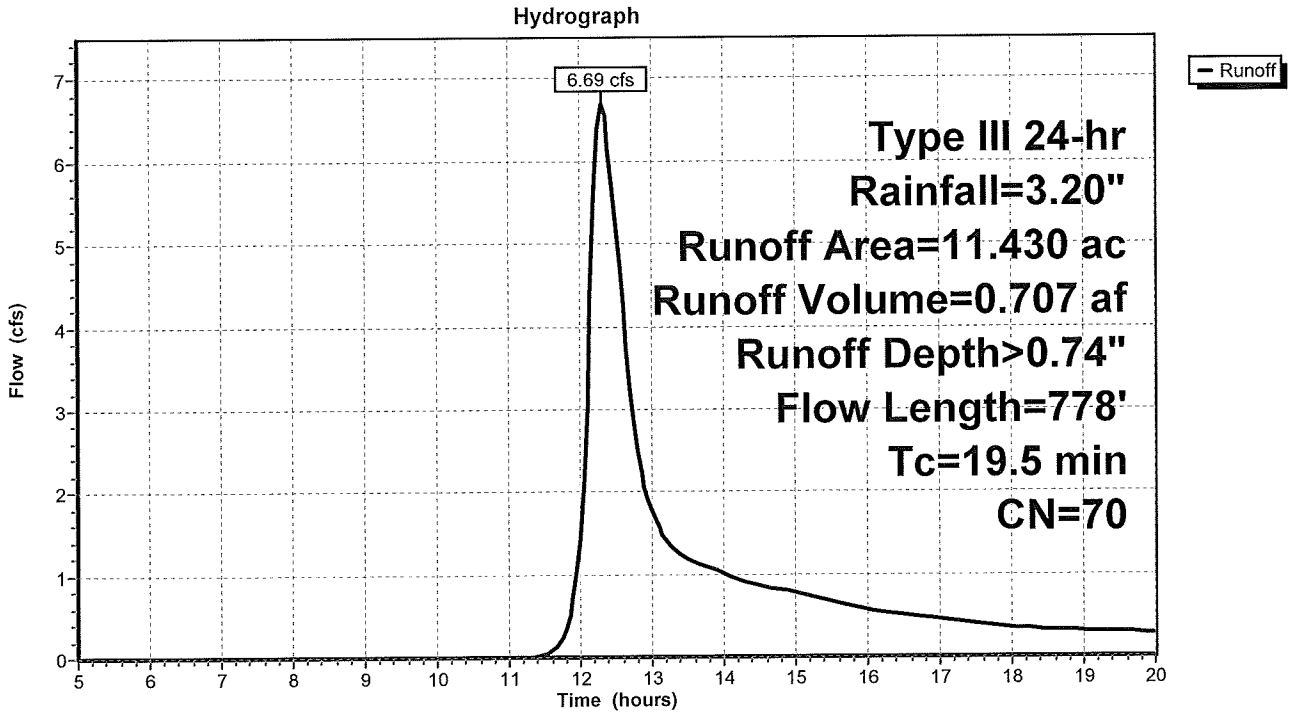
Runoff = 6.69 cfs @ 12.31 hrs, Volume= 0.707 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.20"

Area (ac)	CN	Description
10.760	70	Woods, Good, HSG C
0.670	71	Meadow, non-grazed, HSG C
11.430	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
4.9	220	0.0227	0.8		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
6.7	508	0.0630	1.3		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
19.5	778	Total			

Subcatchment 5S: Overland runoff to the south



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Hydrograph for Subcatchment 5S: Overland runoff to the south

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	0.00	0.00
5.25	0.19	0.00	0.00
5.50	0.21	0.00	0.00
5.75	0.22	0.00	0.00
6.00	0.23	0.00	0.00
6.25	0.24	0.00	0.00
6.50	0.26	0.00	0.00
6.75	0.27	0.00	0.00
7.00	0.29	0.00	0.00
7.25	0.31	0.00	0.00
7.50	0.33	0.00	0.00
7.75	0.34	0.00	0.00
8.00	0.36	0.00	0.00
8.25	0.39	0.00	0.00
8.50	0.41	0.00	0.00
8.75	0.44	0.00	0.00
9.00	0.47	0.00	0.00
9.25	0.50	0.00	0.00
9.50	0.53	0.00	0.00
9.75	0.57	0.00	0.00
10.00	0.60	0.00	0.00
10.25	0.65	0.00	0.00
10.50	0.69	0.00	0.00
10.75	0.74	0.00	0.00
11.00	0.80	0.00	0.00
11.25	0.87	0.00	0.00
11.50	0.95	0.00	0.03
11.75	1.14	0.02	0.23
12.00	1.60	0.11	1.41
12.25	2.06	0.26	**6.41**
12.50	2.25	0.34	**5.26**
12.75	2.33	0.38	2.83
13.00	2.40	0.41	1.78
13.25	2.46	0.43	1.35
13.50	2.51	0.46	1.19
13.75	2.55	0.48	1.09
14.00	2.60	0.50	1.01
14.25	2.63	0.52	0.92
14.50	2.67	0.54	0.86
14.75	2.70	0.56	0.82
15.00	2.73	0.57	0.77
15.25	2.76	0.59	0.72
15.50	2.79	0.60	0.67
15.75	2.81	0.61	0.62
16.00	2.84	0.62	0.57
16.25	2.86	0.64	0.52
16.50	2.87	0.65	0.49
16.75	2.89	0.66	0.47
17.00	2.91	0.67	0.45
17.25	2.93	0.67	0.43
17.50	2.94	0.68	0.40
17.75	2.96	0.69	0.38
18.00	2.97	0.70	0.35
18.25	2.98	0.70	0.33
18.50	2.99	0.71	0.32
18.75	3.01	0.72	0.31
19.00	3.02	0.72	0.31
19.25	3.03	0.73	0.30
19.50	3.04	0.74	0.29
19.75	3.05	0.74	0.29
20.00	**3.06**	**0.75**	0.28

Highfield Village - Pre-development
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Subcatchment 6S: Overland runoff to the southwest

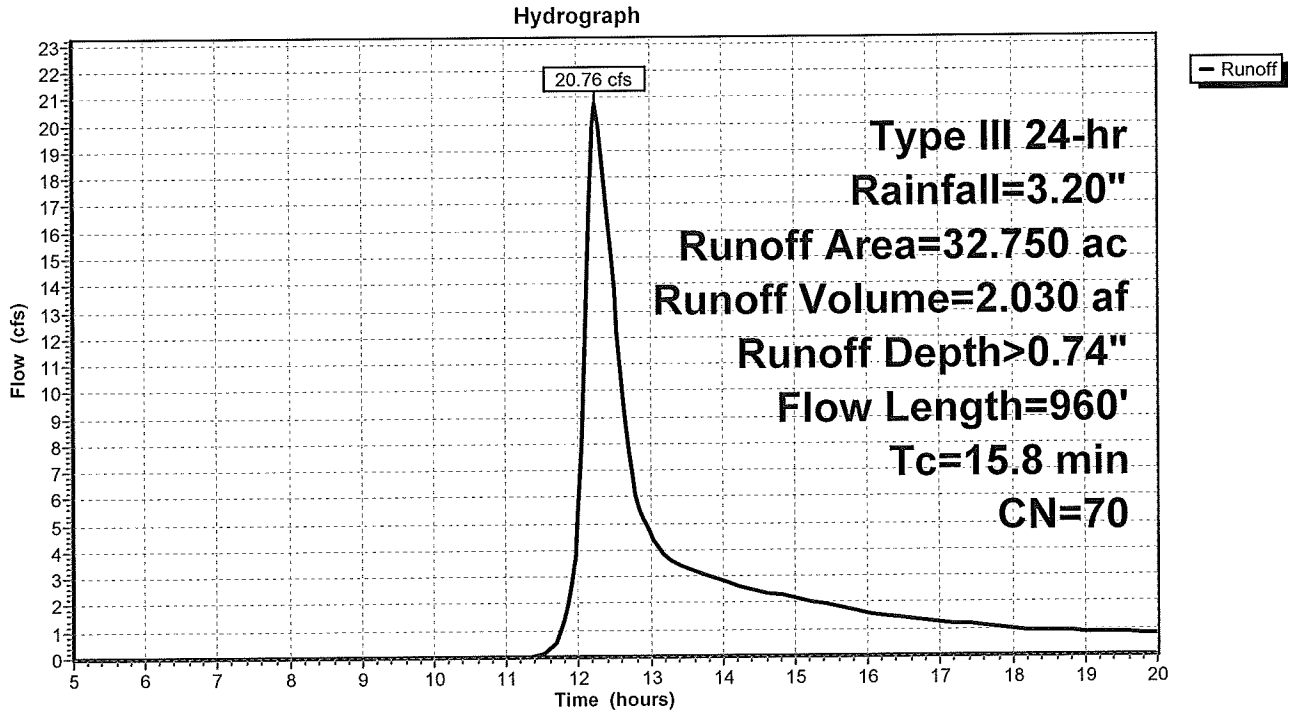
Runoff = 20.76 cfs @ 12.25 hrs, Volume= 2.030 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.20"

Area (ac)	CN	Description
22.930	70	Woods, Good, HSG C
9.820	71	Meadow, non-grazed, HSG C
32.750	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.1		**Sheet Flow, Path 1** Grass: Dense n= 0.240 P2= 3.20"
4.3	500	0.0760	1.9		**Shallow Concentrated Flow, Path 2** Short Grass Pasture Kv= 7.0 fps
3.3	410	0.1707	2.1		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
15.8	960	Total			

Subcatchment 6S: Overland runoff to the southwest



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Hydrograph for Subcatchment 6S: Overland runoff to the southwest

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	0.00	0.00
5.25	0.19	0.00	0.00
5.50	0.21	0.00	0.00
5.75	0.22	0.00	0.00
6.00	0.23	0.00	0.00
6.25	0.24	0.00	0.00
6.50	0.26	0.00	0.00
6.75	0.27	0.00	0.00
7.00	0.29	0.00	0.00
7.25	0.31	0.00	0.00
7.50	0.33	0.00	0.00
7.75	0.34	0.00	0.00
8.00	0.36	0.00	0.00
8.25	0.39	0.00	0.00
8.50	0.41	0.00	0.00
8.75	0.44	0.00	0.00
9.00	0.47	0.00	0.00
9.25	0.50	0.00	0.00
9.50	0.53	0.00	0.00
9.75	0.57	0.00	0.00
10.00	0.60	0.00	0.00
10.25	0.65	0.00	0.00
10.50	0.69	0.00	0.00
10.75	0.74	0.00	0.00
11.00	0.80	0.00	0.00
11.25	0.87	0.00	0.00
11.50	0.95	0.00	0.11
11.75	1.14	0.02	0.91
12.00	1.60	0.11	5.32
12.25	2.06	0.26	**20.76**
12.50	2.25	0.34	13.76
12.75	2.33	0.38	6.78
13.00	2.40	0.41	4.62
13.25	2.46	0.43	3.67
13.50	2.51	0.46	3.33
13.75	2.55	0.48	3.08
14.00	2.60	0.50	2.82
14.25	2.63	0.52	2.58
14.50	2.67	0.54	2.44
14.75	2.70	0.56	2.31
15.00	2.73	0.57	2.18
15.25	2.76	0.59	2.04
15.50	2.79	0.60	1.90
15.75	2.81	0.61	1.76
16.00	2.84	0.62	1.61
16.25	2.86	0.64	1.48
16.50	2.87	0.65	1.40
16.75	2.89	0.66	1.33
17.00	2.91	0.67	1.27
17.25	2.93	0.67	1.20
17.50	2.94	0.68	1.14
17.75	2.96	0.69	1.07
18.00	2.97	0.70	1.00
18.25	2.98	0.70	0.94
18.50	2.99	0.71	0.91
18.75	3.01	0.72	0.89
19.00	3.02	0.72	0.87
19.25	3.03	0.73	0.85
19.50	3.04	0.74	0.83
19.75	3.05	0.74	0.81
20.00	**3.06**	**0.75**	0.79

Subcatchment 7S: Overland runoff to the west

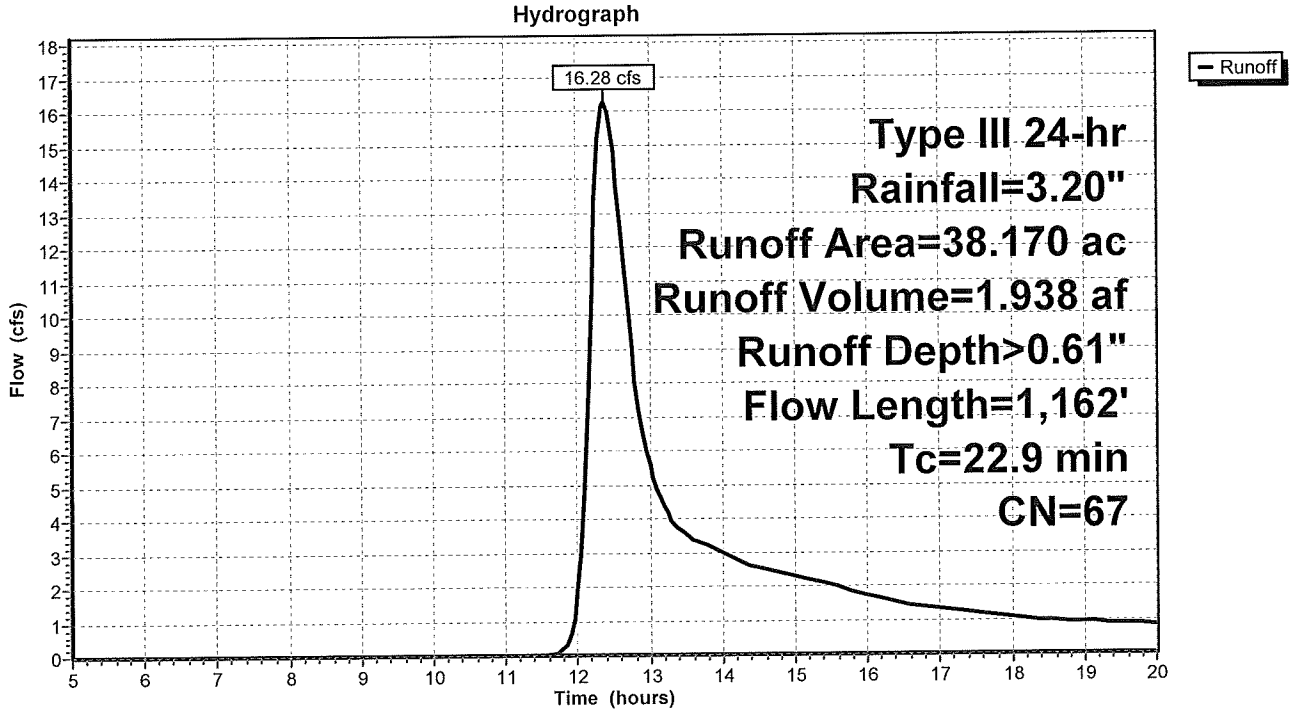
Runoff = 16.28 cfs @ 12.38 hrs, Volume= 1.938 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.20"

Area (ac)	CN	Description
31.680	70	Woods, Good, HSG C
6.490	55	Woods, Good, HSG B
38.170	67	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
5.8	340	0.0382	1.0		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
9.2	772	0.0777	1.4		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
22.9	1,162	Total			

Subcatchment 7S: Overland runoff to the west



Hydrograph for Subcatchment 7S: Overland runoff to the west

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.18	0.00	0.00
5.25	0.19	0.00	0.00
5.50	0.21	0.00	0.00
5.75	0.22	0.00	0.00
6.00	0.23	0.00	0.00
6.25	0.24	0.00	0.00
6.50	0.26	0.00	0.00
6.75	0.27	0.00	0.00
7.00	0.29	0.00	0.00
7.25	0.31	0.00	0.00
7.50	0.33	0.00	0.00
7.75	0.34	0.00	0.00
8.00	0.36	0.00	0.00
8.25	0.39	0.00	0.00
8.50	0.41	0.00	0.00
8.75	0.44	0.00	0.00
9.00	0.47	0.00	0.00
9.25	0.50	0.00	0.00
9.50	0.53	0.00	0.00
9.75	0.57	0.00	0.00
10.00	0.60	0.00	0.00
10.25	0.65	0.00	0.00
10.50	0.69	0.00	0.00
10.75	0.74	0.00	0.00
11.00	0.80	0.00	0.00
11.25	0.87	0.00	0.00
11.50	0.95	0.00	0.00
11.75	1.14	0.00	0.04
12.00	1.60	0.07	1.80
12.25	2.06	0.19	**13.38**
12.50	2.25	0.26	**14.86**
12.75	2.33	0.29	9.09
13.00	2.40	0.32	5.59
13.25	2.46	0.34	4.16
13.50	2.51	0.36	3.54
13.75	2.55	0.38	3.24
14.00	2.60	0.40	2.98
14.25	2.63	0.41	2.73
14.50	2.67	0.43	2.55
14.75	2.70	0.44	2.42
15.00	2.73	0.46	2.29
15.25	2.76	0.47	2.16
15.50	2.79	0.48	2.02
15.75	2.81	0.49	1.88
16.00	2.84	0.51	1.73
16.25	2.86	0.51	1.58
16.50	2.87	0.52	1.48
16.75	2.89	0.53	1.41
17.00	2.91	0.54	1.34
17.25	2.93	0.55	1.28
17.50	2.94	0.56	1.21
17.75	2.96	0.56	1.14
18.00	2.97	0.57	1.07
18.25	2.98	0.58	1.00
18.50	2.99	0.58	0.96
18.75	3.01	0.59	0.94
19.00	3.02	0.59	0.92
19.25	3.03	0.60	0.90
19.50	3.04	0.61	0.88
19.75	3.05	0.61	0.86
20.00	**3.06**	**0.62**	0.84

EXISTING CONDITIONS

10 YEAR STORM

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

Subcatchment 1S: Overland runoff to the northwest Runoff Area=17.100 ac Runoff Depth>1.02"
Flow Length=650' Tc=15.6 min CN=62 Runoff=14.89 cfs 1.458 af

Subcatchment 2S: Overland runoff to the north Runoff Area=6.280 ac Runoff Depth>1.39"
Flow Length=355' Tc=16.9 min CN=68 Runoff=7.71 cfs 0.729 af

Subcatchment 3S: Overland runoff to the east Runoff Area=8.740 ac Runoff Depth>1.52"
Flow Length=597' Tc=22.4 min CN=70 Runoff=10.61 cfs 1.111 af

Subcatchment 4S: Overland runoff to the southeast Runoff Area=7.010 ac Runoff Depth>1.53"
Flow Length=490' Tc=15.6 min CN=70 Runoff=9.81 cfs 0.893 af

Subcatchment 5S: Overland runoff to the south Runoff Area=11.430 ac Runoff Depth>1.53"
Flow Length=778' Tc=19.5 min CN=70 Runoff=14.68 cfs 1.454 af

Subcatchment 6S: Overland runoff to the southwest Runoff Area=32.750 ac Runoff Depth>1.53"
Flow Length=960' Tc=15.8 min CN=70 Runoff=45.62 cfs 4.173 af

Subcatchment 7S: Overland runoff to the west Runoff Area=38.170 ac Runoff Depth>1.33"
Flow Length=1,162' Tc=22.9 min CN=67 Runoff=39.23 cfs 4.215 af

Total Runoff Area = 121.480 ac Runoff Volume = 14.034 af Average Runoff Depth = 1.39"

Subcatchment 1S: Overland runoff to the northwest

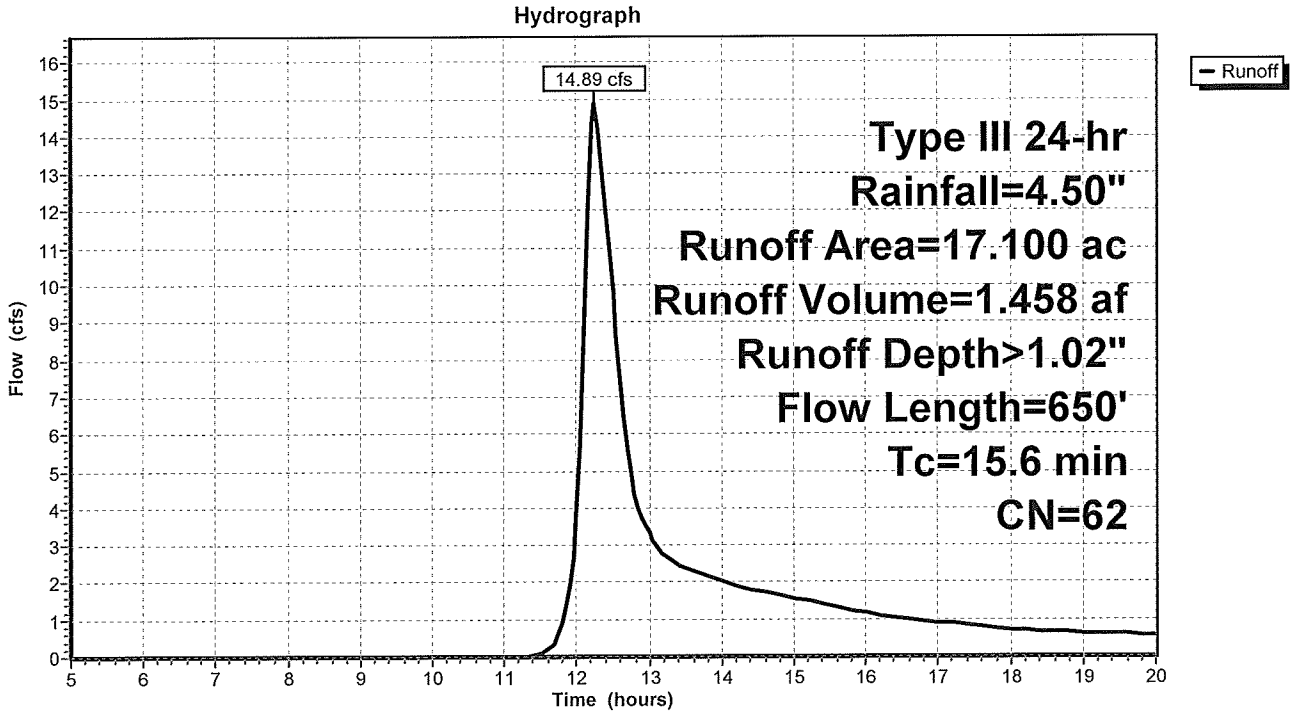
Runoff = 14.89 cfs @ 12.25 hrs, Volume= 1.458 af, Depth> 1.02"

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

Area (ac)	CN	Description
7.740	70	Woods, Good, HSG C
9.360	55	Woods, Good, HSG B
17.100	62	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
6.3	600	0.1000	1.6		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
15.6	650	Total			

Subcatchment 1S: Overland runoff to the northwest



Hydrograph for Subcatchment 1S: Overland runoff to the northwest

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	0.05
11.75	1.60	0.02	0.60
12.00	2.25	0.15	3.76
12.25	2.90	0.36	**14.88**
12.50	3.16	0.46	9.83
12.75	3.28	0.52	4.84
13.00	3.37	0.56	3.32
13.25	3.45	0.59	2.65
13.50	3.53	0.63	2.40
13.75	3.59	0.66	2.22
14.00	3.65	0.69	2.04
14.25	3.70	0.71	1.86
14.50	3.75	0.74	1.76
14.75	3.80	0.76	1.67
15.00	3.84	0.78	1.58
15.25	3.88	0.80	1.48
15.50	3.92	0.82	1.38
15.75	3.96	0.84	1.27
16.00	3.99	0.86	1.16
16.25	4.02	0.87	1.07
16.50	4.04	0.89	1.01
16.75	4.07	0.90	0.97
17.00	4.09	0.91	0.92
17.25	4.12	0.93	0.87
17.50	4.14	0.94	0.82
17.75	4.16	0.95	0.77
18.00	4.18	0.96	0.72
18.25	4.19	0.97	0.68
18.50	4.21	0.98	0.66
18.75	4.23	0.99	0.65
19.00	4.24	1.00	0.63
19.25	4.26	1.01	0.62
19.50	4.28	1.01	0.61
19.75	4.29	1.02	0.59
20.00	**4.31**	**1.03**	0.58

Subcatchment 2S: Overland runoff to the north

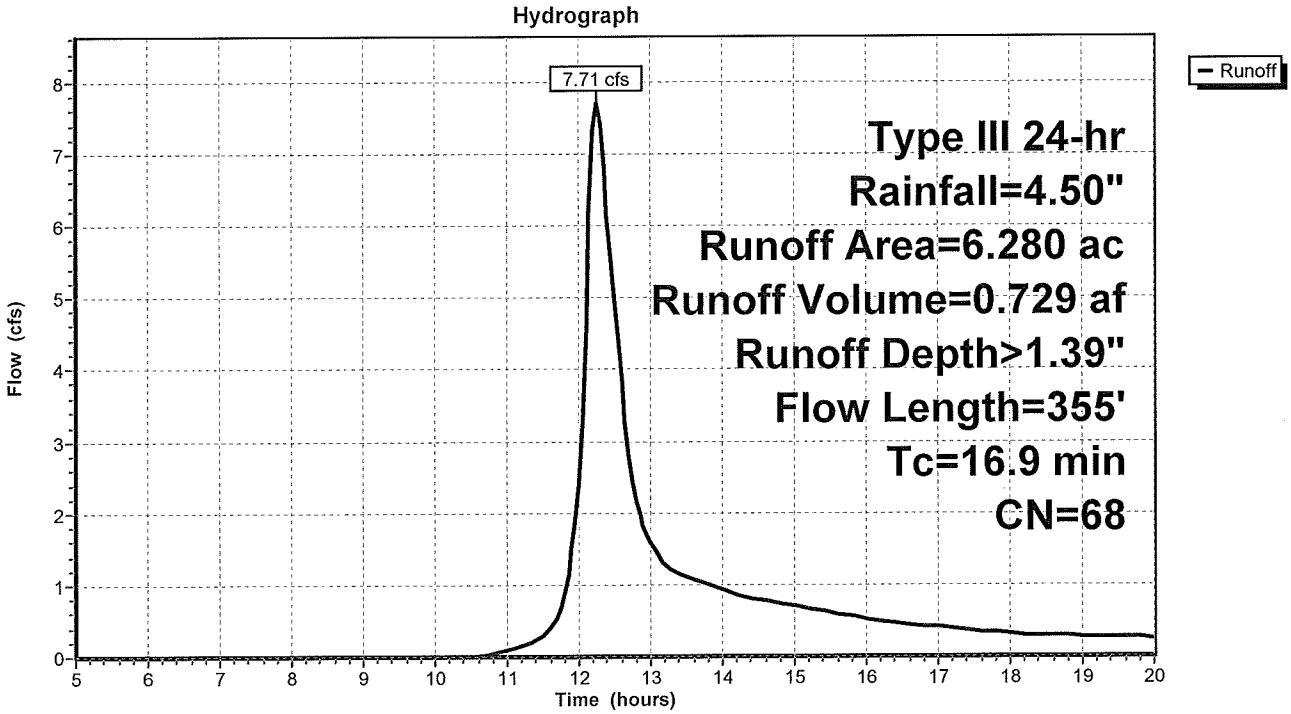
Runoff = 7.71 cfs @ 12.25 hrs, Volume= 0.729 af, Depth> 1.39"

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

Area (ac)	CN	Description
5.490	70	Woods, Good, HSG C
0.790	55	Woods, Good, HSG B
6.280	68	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
4.6	305	0.0490	1.1		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
16.9	355	Total			

Subcatchment 2S: Overland runoff to the north



Highfield Village - Pre-development
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Hydrograph for Subcatchment 2S: Overland runoff to the north

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	0.03
11.00	1.13	0.01	0.08
11.25	1.22	0.02	0.16
11.50	1.34	0.03	0.30
11.75	1.60	0.08	0.68
12.00	2.25	0.28	2.41
12.25	2.90	0.58	**7.71**
12.50	3.16	0.71	5.01
12.75	3.28	0.78	2.44
13.00	3.37	0.83	1.59
13.25	3.45	0.87	1.24
13.50	3.53	0.92	1.11
13.75	3.59	0.95	1.02
14.00	3.65	0.99	0.93
14.25	3.70	1.02	0.85
14.50	3.75	1.05	0.80
14.75	3.80	1.08	0.75
15.00	3.84	1.11	0.71
15.25	3.88	1.13	0.66
15.50	3.92	1.16	0.62
15.75	3.96	1.18	0.57
16.00	3.99	1.20	0.52
16.25	4.02	1.21	0.47
16.50	4.04	1.23	0.45
16.75	4.07	1.25	0.43
17.00	4.09	1.26	0.41
17.25	4.12	1.28	0.38
17.50	4.14	1.29	0.36
17.75	4.16	1.31	0.34
18.00	4.18	1.32	0.32
18.25	4.19	1.33	0.30
18.50	4.21	1.34	0.29
18.75	4.23	1.35	0.28
19.00	4.24	1.36	0.28
19.25	4.26	1.37	0.27
19.50	4.28	1.38	0.26
19.75	4.29	1.39	0.26
20.00	**4.31**	**1.40**	0.25

Subcatchment 3S: Overland runoff to the east

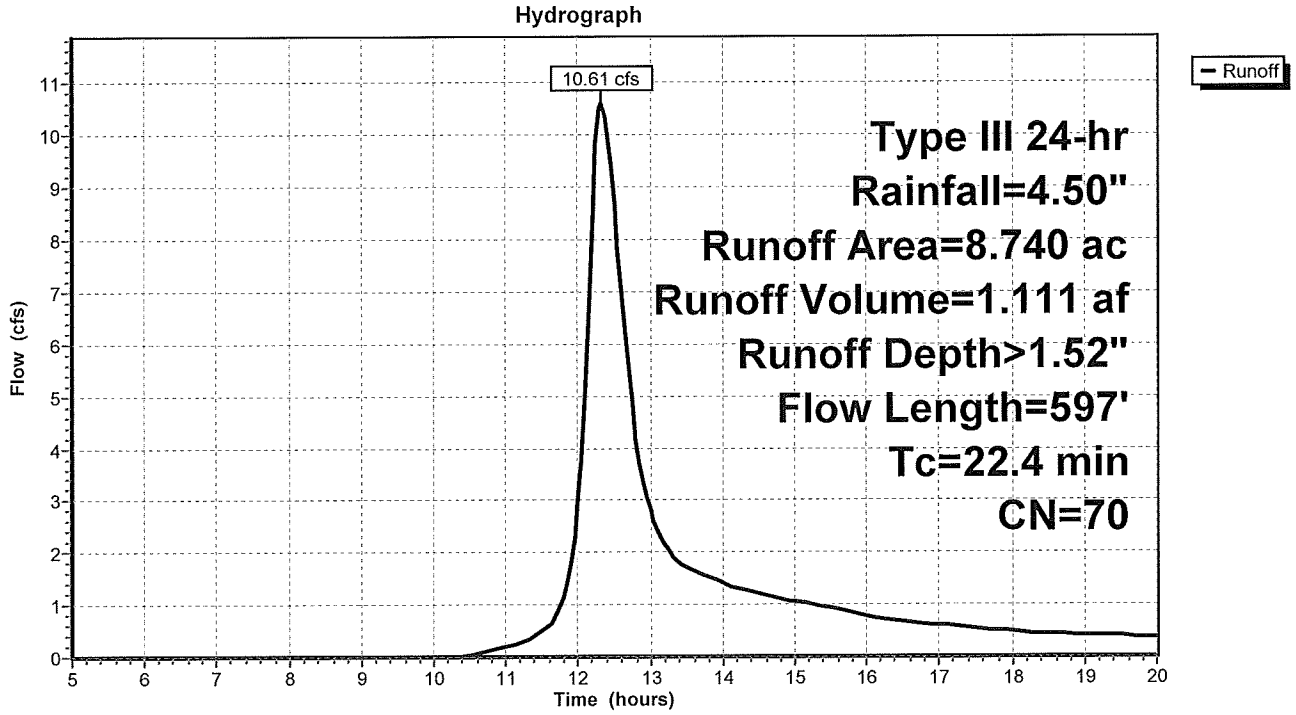
Runoff = 10.61 cfs @ 12.33 hrs, Volume= 1.111 af, Depth> 1.52"

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

Area (ac)	CN	Description
8.740	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
10.1	547	0.0329	0.9		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
22.4	597	Total			

Subcatchment 3S: Overland runoff to the east



Hydrograph for Subcatchment 3S: Overland runoff to the east

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	0.04
10.75	1.05	0.01	0.10
11.00	1.13	0.02	0.19
11.25	1.22	0.03	0.30
11.50	1.34	0.05	0.49
11.75	1.60	0.11	0.93
12.00	2.25	0.34	2.91
12.25	2.90	0.66	**9.83**
12.50	3.16	0.80	**8.66**
12.75	3.28	0.87	4.79
13.00	3.37	0.93	2.81
13.25	3.45	0.98	2.04
13.50	3.53	1.02	1.71
13.75	3.59	1.06	1.55
14.00	3.65	1.10	1.42
14.25	3.70	1.14	1.29
14.50	3.75	1.17	1.20
14.75	3.80	1.20	1.13
15.00	3.84	1.23	1.06
15.25	3.88	1.25	1.00
15.50	3.92	1.28	0.93
15.75	3.96	1.30	0.86
16.00	3.99	1.32	0.79
16.25	4.02	1.34	0.72
16.50	4.04	1.36	0.67
16.75	4.07	1.38	0.64
17.00	4.09	1.39	0.61
17.25	4.12	1.41	0.57
17.50	4.14	1.42	0.54
17.75	4.16	1.44	0.51
18.00	4.18	1.45	0.48
18.25	4.19	1.46	0.45
18.50	4.21	1.47	0.43
18.75	4.23	1.48	0.42
19.00	4.24	1.50	0.41
19.25	4.26	1.51	0.40
19.50	4.28	1.52	0.39
19.75	4.29	1.53	0.38
20.00	**4.31**	**1.54**	0.37

Subcatchment 4S: Overland runoff to the southeast

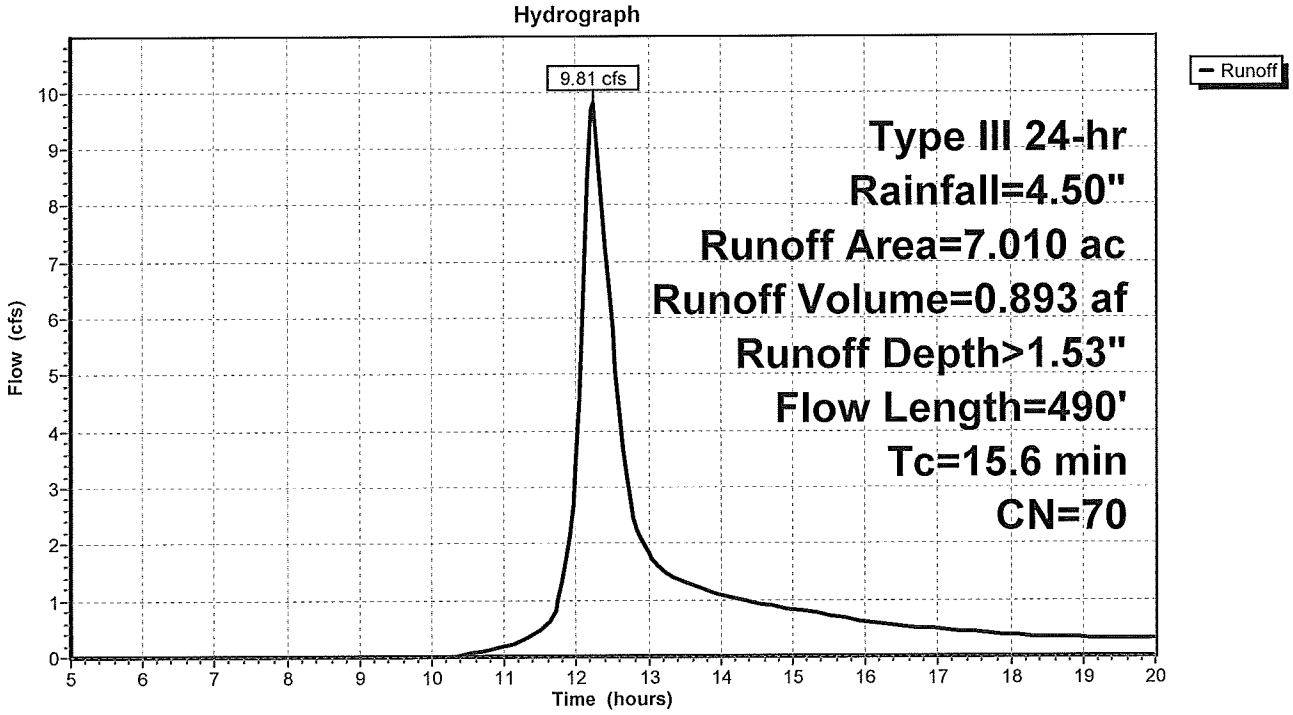
Runoff = 9.81 cfs @ 12.23 hrs, Volume= 0.893 af, Depth> 1.53"

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

Area (ac)	CN	Description
7.010	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
6.3	440	0.0545	1.2		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
15.6	490	Total			

Subcatchment 4S: Overland runoff to the southeast



Hydrograph for Subcatchment 4S: Overland runoff to the southeast

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	0.01
10.50	0.97	0.00	0.05
10.75	1.05	0.01	0.11
11.00	1.13	0.02	0.18
11.25	1.22	0.03	0.28
11.50	1.34	0.05	0.48
11.75	1.60	0.11	1.04
12.00	2.25	0.34	3.40
12.25	2.90	0.66	**9.74**
12.50	3.16	0.80	5.80
12.75	3.28	0.87	2.74
13.00	3.37	0.93	1.84
13.25	3.45	0.98	1.45
13.50	3.53	1.02	1.30
13.75	3.59	1.06	1.20
14.00	3.65	1.10	1.09
14.25	3.70	1.14	1.00
14.50	3.75	1.17	0.94
14.75	3.80	1.20	0.88
15.00	3.84	1.23	0.83
15.25	3.88	1.25	0.78
15.50	3.92	1.28	0.72
15.75	3.96	1.30	0.66
16.00	3.99	1.32	0.61
16.25	4.02	1.34	0.56
16.50	4.04	1.36	0.53
16.75	4.07	1.38	0.50
17.00	4.09	1.39	0.48
17.25	4.12	1.41	0.45
17.50	4.14	1.42	0.42
17.75	4.16	1.44	0.40
18.00	4.18	1.45	0.37
18.25	4.19	1.46	0.35
18.50	4.21	1.47	0.34
18.75	4.23	1.48	0.33
19.00	4.24	1.50	0.32
19.25	4.26	1.51	0.32
19.50	4.28	1.52	0.31
19.75	4.29	1.53	0.30
20.00	**4.31**	**1.54**	0.29

Highfield Village - Pre-development
Prepared by {enter your company name here}
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Subcatchment 5S: Overland runoff to the south

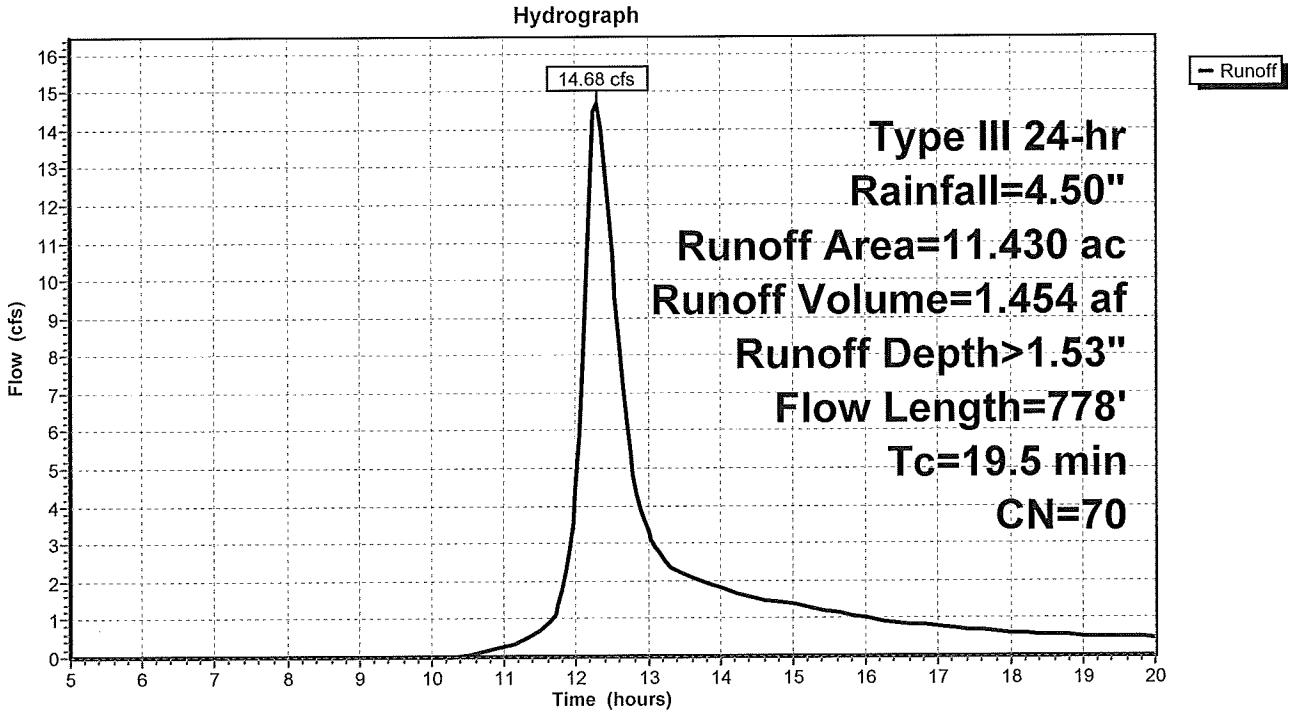
Runoff = 14.68 cfs @ 12.29 hrs, Volume= 1.454 af, Depth> 1.53"

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

Area (ac)	CN	Description
10.760	70	Woods, Good, HSG C
0.670	71	Meadow, non-grazed, HSG C
11.430	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
4.9	220	0.0227	0.8		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
6.7	508	0.0630	1.3		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
19.5	778	Total			

Subcatchment 5S: Overland runoff to the south



Hydrograph for Subcatchment 5S: Overland runoff to the 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	0.01
10.50	0.97	0.00	0.06
10.75	1.05	0.01	0.15
11.00	1.13	0.02	0.26
11.25	1.22	0.03	0.42
11.50	1.34	0.05	0.70
11.75	1.60	0.11	1.38
12.00	2.25	0.34	4.45
12.25	2.90	0.66	**14.44**
12.50	3.16	0.80	**10.65**
12.75	3.28	0.87	5.46
13.00	3.37	0.93	3.34
13.25	3.45	0.98	2.51
13.50	3.53	1.02	2.18
13.75	3.59	1.06	2.00
14.00	3.65	1.10	1.82
14.25	3.70	1.14	1.66
14.50	3.75	1.17	1.55
14.75	3.80	1.20	1.46
15.00	3.84	1.23	1.38
15.25	3.88	1.25	1.29
15.50	3.92	1.28	1.20
15.75	3.96	1.30	1.11
16.00	3.99	1.32	1.01
16.25	4.02	1.34	0.92
16.50	4.04	1.36	0.87
16.75	4.07	1.38	0.83
17.00	4.09	1.39	0.79
17.25	4.12	1.41	0.74
17.50	4.14	1.42	0.70
17.75	4.16	1.44	0.66
18.00	4.18	1.45	0.62
18.25	4.19	1.46	0.58
18.50	4.21	1.47	0.56
18.75	4.23	1.48	0.54
19.00	4.24	1.50	0.53
19.25	4.26	1.51	0.52
19.50	4.28	1.52	0.51
19.75	4.29	1.53	0.50
20.00	**4.31**	**1.54**	0.48

Subcatchment 6S: Overland runoff to the southwest

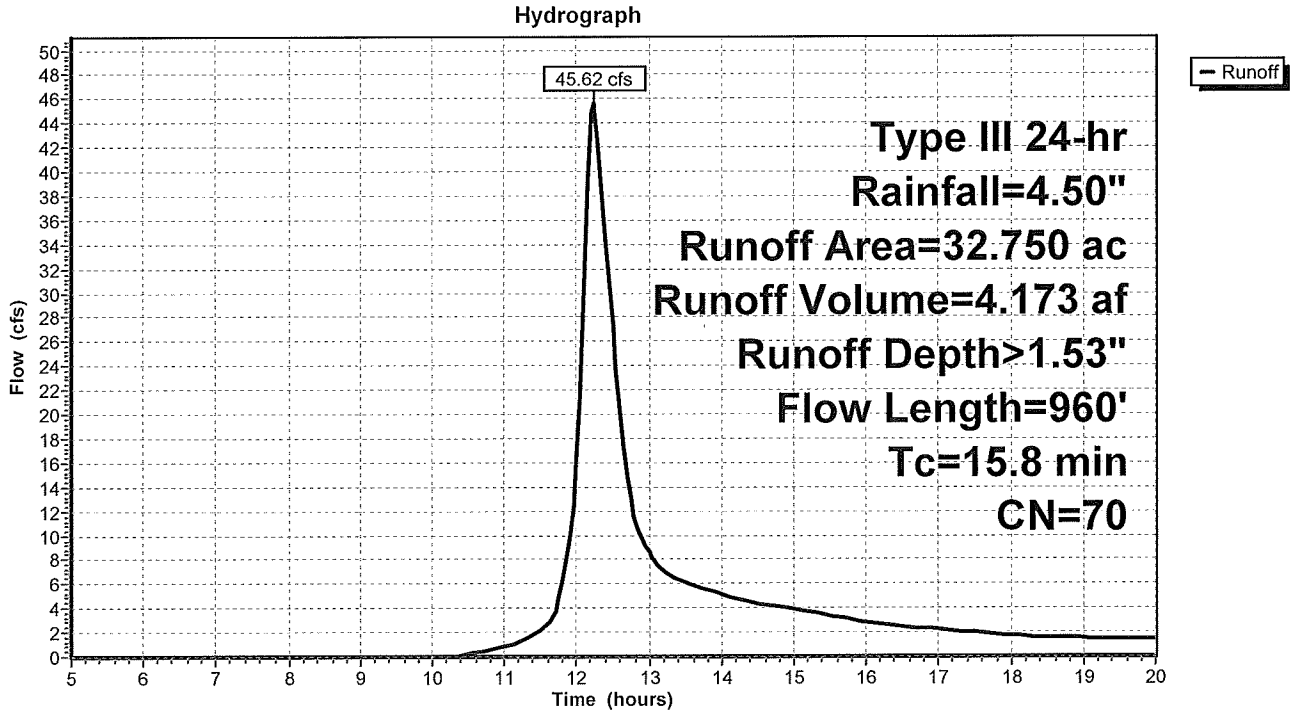
Runoff = 45.62 cfs @ 12.23 hrs, Volume= 4.173 af, Depth> 1.53"

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

Area (ac)	CN	Description
22.930	70	Woods, Good, HSG C
9.820	71	Meadow, non-grazed, HSG C
32.750	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.1		**Sheet Flow, Path 1** Grass: Dense n= 0.240 P2= 3.20"
4.3	500	0.0760	1.9		**Shallow Concentrated Flow, Path 2** Short Grass Pasture Kv= 7.0 fps
3.3	410	0.1707	2.1		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
15.8	960	Total			

Subcatchment 6S: Overland runoff to the southwest



Hydrograph for Subcatchment 6S: Overland runoff to the southwest

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	0.03
10.50	0.97	0.00	0.21
10.75	1.05	0.01	0.49
11.00	1.13	0.02	0.84
11.25	1.22	0.03	1.32
11.50	1.34	0.05	2.21
11.75	1.60	0.11	4.79
12.00	2.25	0.34	15.70
12.25	2.90	0.66	**45.38**
12.50	3.16	0.80	27.30
12.75	3.28	0.87	12.92
13.00	3.37	0.93	8.62
13.25	3.45	0.98	6.79
13.50	3.53	1.02	6.10
13.75	3.59	1.06	5.61
14.00	3.65	1.10	5.11
14.25	3.70	1.14	4.66
14.50	3.75	1.17	4.38
14.75	3.80	1.20	4.13
15.00	3.84	1.23	3.88
15.25	3.88	1.25	3.63
15.50	3.92	1.28	3.37
15.75	3.96	1.30	3.11
16.00	3.99	1.32	2.84
16.25	4.02	1.34	2.60
16.50	4.04	1.36	2.46
16.75	4.07	1.38	2.34
17.00	4.09	1.39	2.22
17.25	4.12	1.41	2.10
17.50	4.14	1.42	1.98
17.75	4.16	1.44	1.86
18.00	4.18	1.45	1.74
18.25	4.19	1.46	1.64
18.50	4.21	1.47	1.59
18.75	4.23	1.48	1.55
19.00	4.24	1.50	1.52
19.25	4.26	1.51	1.48
19.50	4.28	1.52	1.45
19.75	4.29	1.53	1.41
20.00	**4.31**	**1.54**	1.37

Highfield Village - Pre-development
Prepared by {enter your company name here}
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Subcatchment 7S: Overland runoff to the west

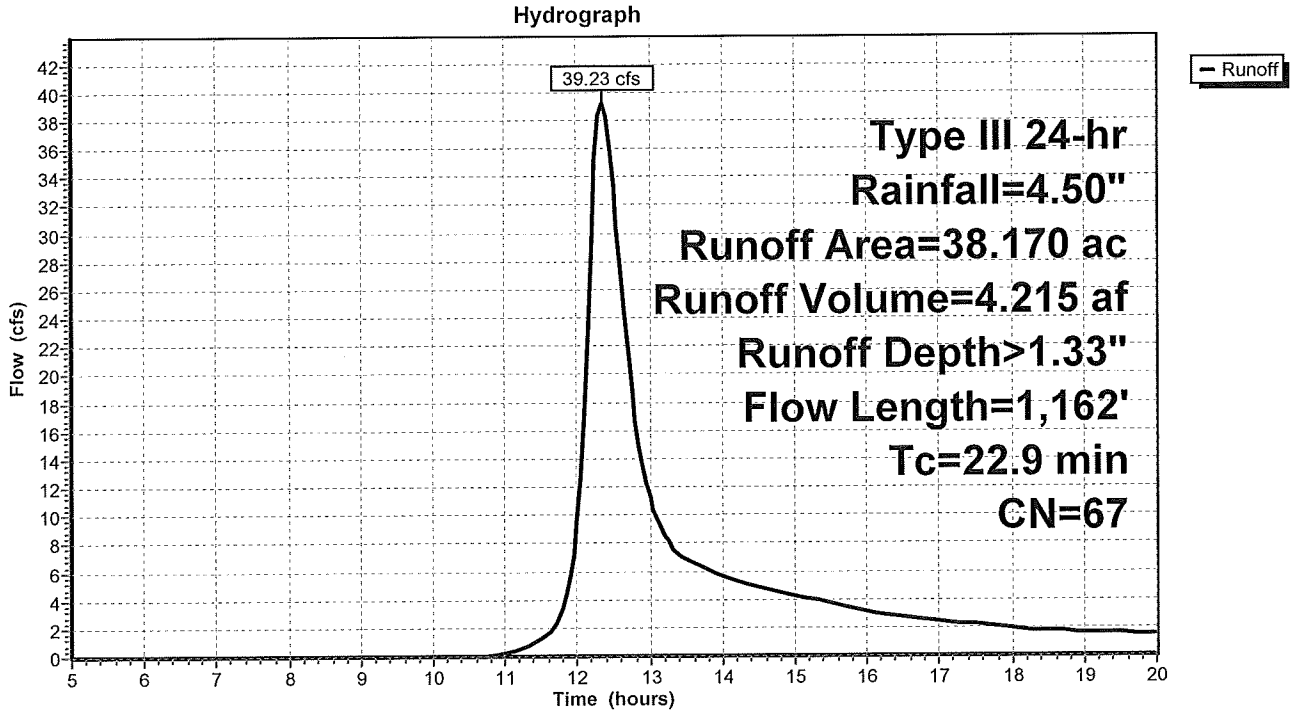
Runoff = 39.23 cfs @ 12.35 hrs, Volume= 4.215 af, Depth> 1.33"

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

Area (ac)	CN	Description
31.680	70	Woods, Good, HSG C
6.490	55	Woods, Good, HSG B
38.170	67	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
5.8	340	0.0382	1.0		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
9.2	772	0.0777	1.4		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
22.9	1,162	Total			

Subcatchment 7S: Overland runoff to the west



Hydrograph for Subcatchment 7S: Overland runoff to the west

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	0.01
11.00	1.13	0.00	0.19
11.25	1.22	0.01	0.55
11.50	1.34	0.02	1.19
11.75	1.60	0.07	2.65
12.00	2.25	0.26	9.41
12.25	2.90	0.54	**35.28**
12.50	3.16	0.67	**33.26**
12.75	3.28	0.73	18.98
13.00	3.37	0.78	11.21
13.25	3.45	0.82	8.14
13.50	3.53	0.86	6.83
13.75	3.59	0.90	6.19
14.00	3.65	0.94	5.67
14.25	3.70	0.97	5.16
14.50	3.75	1.00	4.80
14.75	3.80	1.02	4.53
15.00	3.84	1.05	4.27
15.25	3.88	1.07	4.00
15.50	3.92	1.10	3.73
15.75	3.96	1.12	3.46
16.00	3.99	1.14	3.17
16.25	4.02	1.15	2.90
16.50	4.04	1.17	2.71
16.75	4.07	1.19	2.57
17.00	4.09	1.20	2.45
17.25	4.12	1.22	2.32
17.50	4.14	1.23	2.19
17.75	4.16	1.24	2.07
18.00	4.18	1.25	1.94
18.25	4.19	1.27	1.81
18.50	4.21	1.28	1.74
18.75	4.23	1.29	1.69
19.00	4.24	1.30	1.66
19.25	4.26	1.31	1.62
19.50	4.28	1.32	1.58
19.75	4.29	1.33	1.54
20.00	**4.31**	**1.34**	1.50

EXISTING CONDITIONS

25 YEAR STORM

Highfield Village - Pre-development
Prepared by {enter your company name here}
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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Overland runoff to the northwest Runoff Area=17.100 ac Runoff Depth>1.47"
Flow Length=650' Tc=15.6 min CN=62 Runoff=22.40 cfs 2.100 af

Subcatchment 2S: Overland runoff to the north Runoff Area=6.280 ac Runoff Depth>1.92"
Flow Length=355' Tc=16.9 min CN=68 Runoff=10.80 cfs 1.004 af

Subcatchment 3S: Overland runoff to the east Runoff Area=8.740 ac Runoff Depth>2.07"
Flow Length=597' Tc=22.4 min CN=70 Runoff=14.63 cfs 1.510 af

Subcatchment 4S: Overland runoff to the southeast Runoff Area=7.010 ac Runoff Depth>2.08"
Flow Length=490' Tc=15.6 min CN=70 Runoff=13.57 cfs 1.214 af

Subcatchment 5S: Overland runoff to the south Runoff Area=11.430 ac Runoff Depth>2.08"
Flow Length=778' Tc=19.5 min CN=70 Runoff=20.20 cfs 1.977 af

Subcatchment 6S: Overland runoff to the southwest Runoff Area=32.750 ac Runoff Depth>2.08"
Flow Length=960' Tc=15.8 min CN=70 Runoff=62.78 cfs 5.673 af

Subcatchment 7S: Overland runoff to the west Runoff Area=38.170 ac Runoff Depth>1.84"
Flow Length=1,162' Tc=22.9 min CN=67 Runoff=55.47 cfs 5.844 af

Total Runoff Area = 121.480 ac Runoff Volume = 19.322 af Average Runoff Depth = 1.91"

Subcatchment 1S: Overland runoff to the northwest

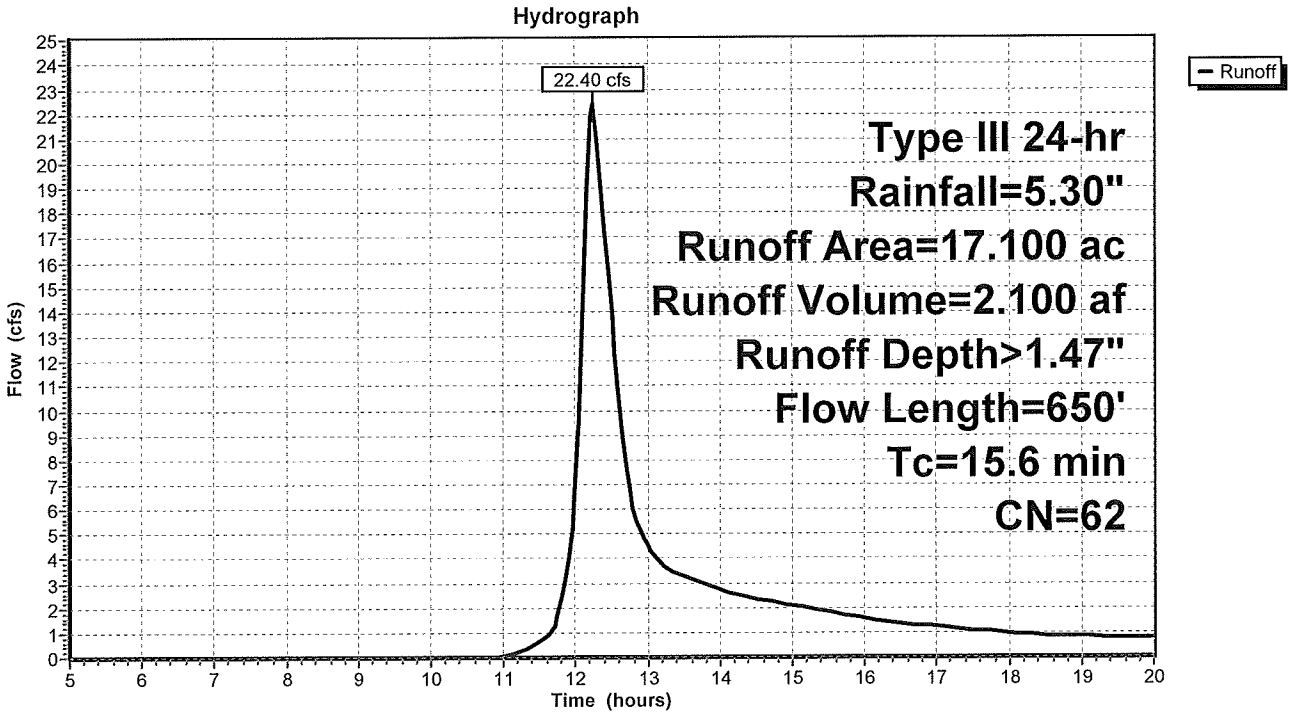
Runoff = 22.40 cfs @ 12.24 hrs, Volume= 2.100 af, Depth> 1.47"

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

Area (ac)	CN	Description
7.740	70	Woods, Good, HSG C
9.360	55	Woods, Good, HSG B
17.100	62	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
6.3	600	0.1000	1.6		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
15.6	650	Total			

Subcatchment 1S: Overland runoff to the northwest



Hydrograph for Subcatchment 1S: Overland runoff to the northwest

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	0.05
11.25	1.44	0.01	0.24
11.50	1.58	0.02	0.61
11.75	1.88	0.06	1.72
12.00	2.65	0.27	6.84
12.25	3.42	0.58	**22.34**
12.50	3.72	0.72	13.95
12.75	3.86	0.79	6.71
13.00	3.97	0.85	4.55
13.25	4.07	0.90	3.61
13.50	4.15	0.95	3.26
13.75	4.23	0.99	3.01
14.00	4.30	1.03	2.75
14.25	4.36	1.06	2.51
14.50	4.42	1.09	2.37
14.75	4.48	1.13	2.24
15.00	4.53	1.16	2.11
15.25	4.58	1.18	1.97
15.50	4.62	1.21	1.84
15.75	4.66	1.23	1.69
16.00	4.70	1.25	1.55
16.25	4.73	1.27	1.42
16.50	4.76	1.29	1.35
16.75	4.79	1.31	1.28
17.00	4.82	1.33	1.22
17.25	4.85	1.35	1.15
17.50	4.87	1.36	1.09
17.75	4.90	1.37	1.02
18.00	4.92	1.39	0.96
18.25	4.94	1.40	0.90
18.50	4.96	1.41	0.87
18.75	4.98	1.43	0.85
19.00	5.00	1.44	0.84
19.25	5.02	1.45	0.82
19.50	5.04	1.46	0.80
19.75	5.05	1.47	0.78
20.00	**5.07**	**1.48**	0.76

Subcatchment 2S: Overland runoff to the north

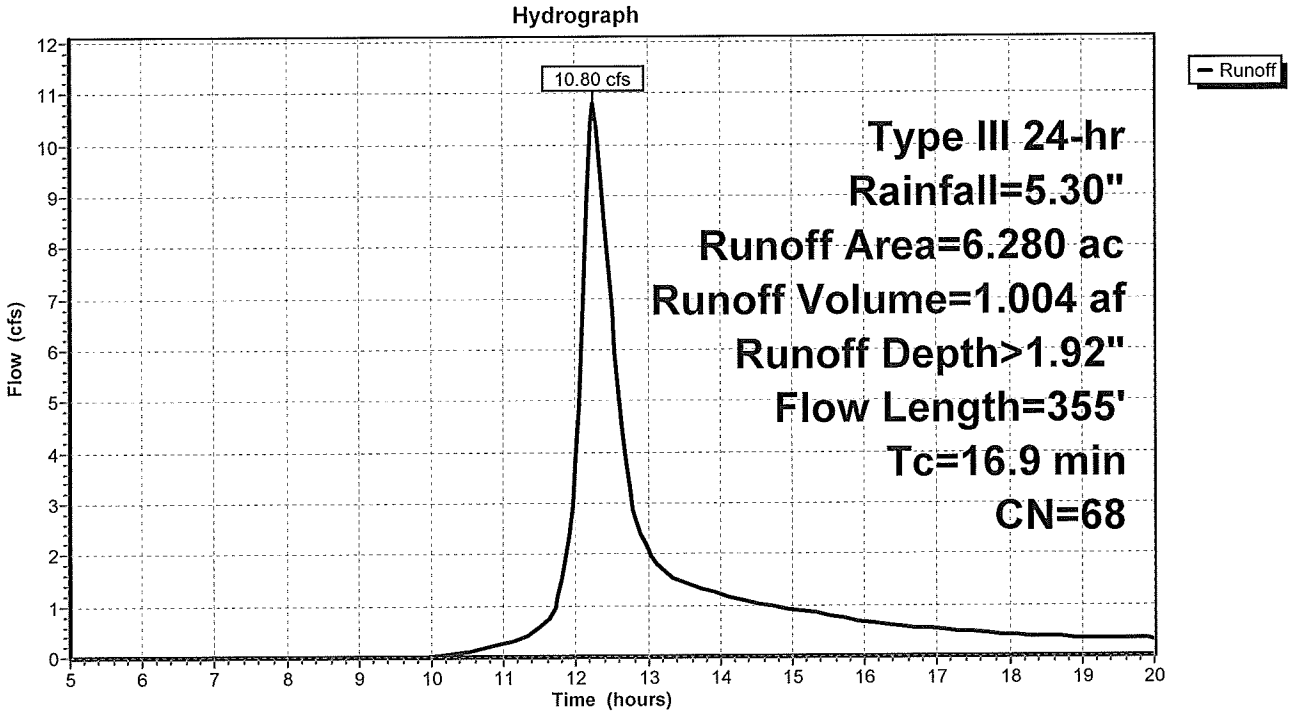
Runoff = 10.80 cfs @ 12.25 hrs, Volume= 1.004 af, Depth> 1.92"

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

Area (ac)	CN	Description
5.490	70	Woods, Good, HSG C
0.790	55	Woods, Good, HSG B
6.280	68	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
4.6	305	0.0490	1.1		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
16.9	355	Total			

Subcatchment 2S: Overland runoff to the north



Hydrograph for Subcatchment 2S: Overland runoff to the north

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	0.01
10.25	1.07	0.00	0.04
10.50	1.15	0.01	0.10
10.75	1.23	0.02	0.17
11.00	1.32	0.03	0.25
11.25	1.44	0.05	0.37
11.50	1.58	0.08	0.58
11.75	1.88	0.16	1.18
12.00	2.65	0.46	3.70
12.25	3.42	0.85	**10.80**
12.50	3.72	1.03	6.77
12.75	3.86	1.12	3.25
13.00	3.97	1.19	2.09
13.25	4.07	1.25	1.63
13.50	4.15	1.30	1.45
13.75	4.23	1.35	1.33
14.00	4.30	1.40	1.21
14.25	4.36	1.44	1.10
14.50	4.42	1.48	1.03
14.75	4.48	1.52	0.97
15.00	4.53	1.55	0.92
15.25	4.58	1.58	0.86
15.50	4.62	1.61	0.79
15.75	4.66	1.64	0.73
16.00	4.70	1.67	0.67
16.25	4.73	1.69	0.61
16.50	4.76	1.71	0.58
16.75	4.79	1.73	0.55
17.00	4.82	1.75	0.52
17.25	4.85	1.77	0.49
17.50	4.87	1.79	0.47
17.75	4.90	1.81	0.44
18.00	4.92	1.82	0.41
18.25	4.94	1.84	0.38
18.50	4.96	1.85	0.37
18.75	4.98	1.87	0.36
19.00	5.00	1.88	0.36
19.25	5.02	1.89	0.35
19.50	5.04	1.91	0.34
19.75	5.05	1.92	0.33
20.00	**5.07**	**1.93**	0.32

Subcatchment 3S: Overland runoff to the east

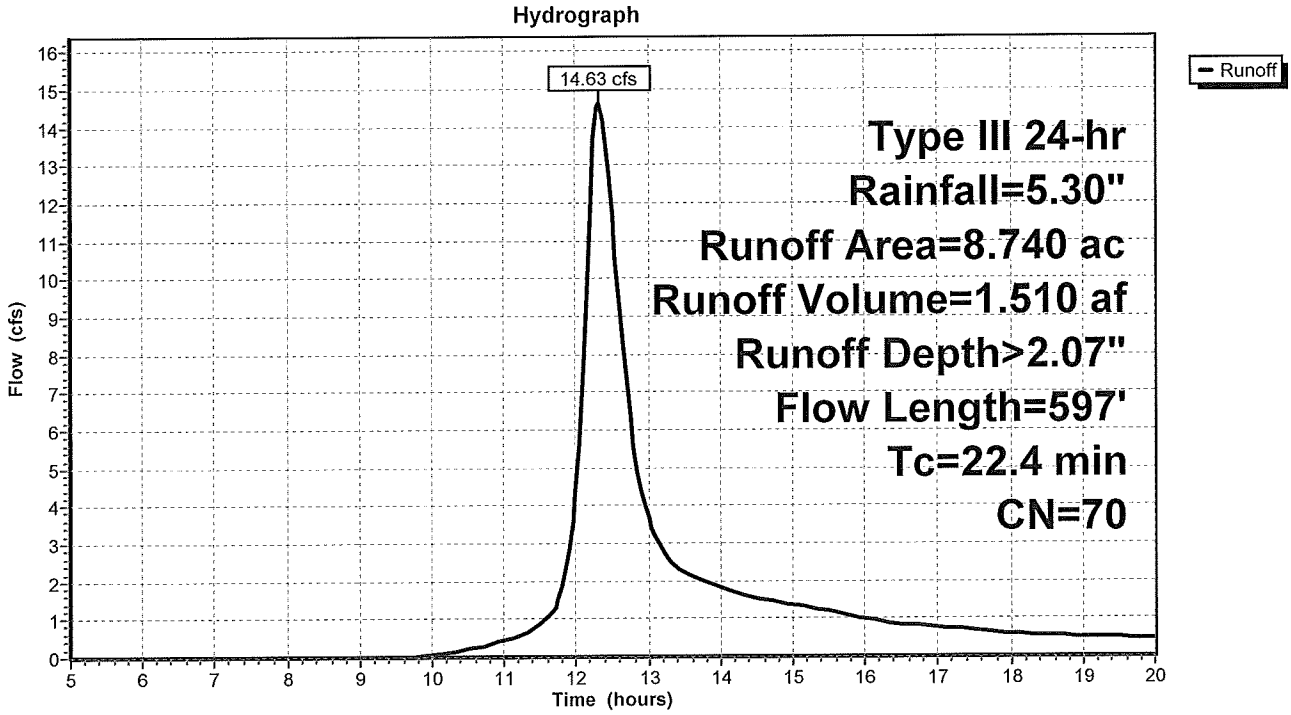
Runoff = 14.63 cfs @ 12.32 hrs, Volume= 1.510 af, Depth> 2.07"

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

Area (ac)	CN	Description
8.740	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
10.1	547	0.0329	0.9		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
22.4	597	Total			

Subcatchment 3S: Overland runoff to the east



Hydrograph for Subcatchment 3S: Overland runoff to the east

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	0.01
10.00	1.00	0.00	0.06
10.25	1.07	0.01	0.12
10.50	1.15	0.02	0.21
10.75	1.23	0.03	0.31
11.00	1.32	0.05	0.43
11.25	1.44	0.07	0.59
11.50	1.58	0.10	0.88
11.75	1.88	0.20	1.54
12.00	2.65	0.53	4.40
12.25	3.42	0.96	**13.70**
12.50	3.72	1.15	**11.67**
12.75	3.86	1.24	6.34
13.00	3.97	1.31	3.68
13.25	4.07	1.38	2.65
13.50	4.15	1.43	2.22
13.75	4.23	1.49	2.01
14.00	4.30	1.53	1.83
14.25	4.36	1.58	1.66
14.50	4.42	1.62	1.54
14.75	4.48	1.66	1.45
15.00	4.53	1.69	1.36
15.25	4.58	1.73	1.28
15.50	4.62	1.76	1.19
15.75	4.66	1.79	1.10
16.00	4.70	1.81	1.01
16.25	4.73	1.84	0.92
16.50	4.76	1.86	0.86
16.75	4.79	1.88	0.81
17.00	4.82	1.90	0.77
17.25	4.85	1.92	0.73
17.50	4.87	1.94	0.69
17.75	4.90	1.96	0.65
18.00	4.92	1.98	0.61
18.25	4.94	1.99	0.57
18.50	4.96	2.01	0.55
18.75	4.98	2.02	0.53
19.00	5.00	2.04	0.52
19.25	5.02	2.05	0.51
19.50	5.04	2.06	0.49
19.75	5.05	2.08	0.48
20.00	**5.07**	**2.09**	0.47

Highfield Village - Pre-development
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Subcatchment 4S: Overland runoff to the southeast

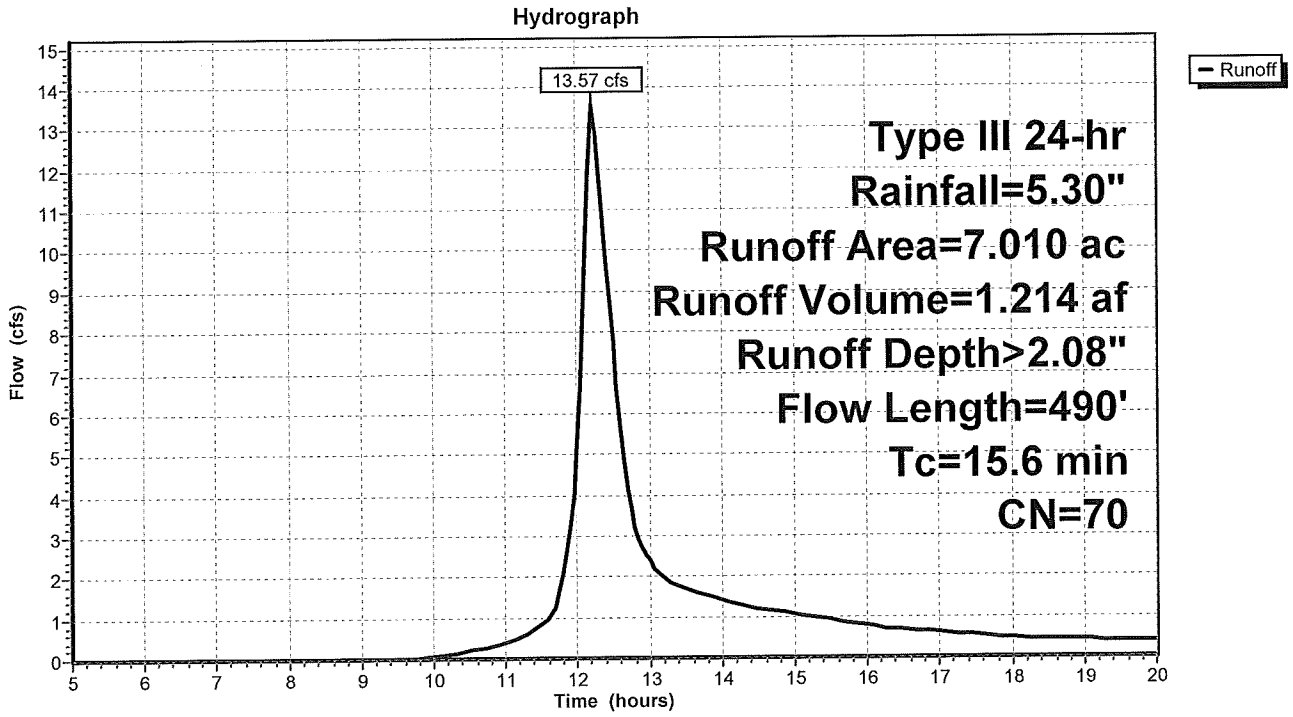
Runoff = 13.57 cfs @ 12.22 hrs, Volume= 1.214 af, Depth> 2.08"

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

Area (ac)	CN	Description
7.010	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
6.3	440	0.0545	1.2		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
15.6	490	Total			

Subcatchment 4S: Overland runoff to the southeast



Hydrograph for Subcatchment 4S: Overland runoff to the southeast

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	0.02
10.00	1.00	0.00	0.07
10.25	1.07	0.01	0.12
10.50	1.15	0.02	0.20
10.75	1.23	0.03	0.29
11.00	1.32	0.05	0.39
11.25	1.44	0.07	0.54
11.50	1.58	0.10	0.83
11.75	1.88	0.20	1.67
12.00	2.65	0.53	**5.02**
12.25	3.42	0.96	**13.35**
12.50	3.72	1.15	7.71
12.75	3.86	1.24	3.59
13.00	3.97	1.31	2.39
13.25	4.07	1.38	1.88
13.50	4.15	1.43	1.69
13.75	4.23	1.49	1.55
14.00	4.30	1.53	1.41
14.25	4.36	1.58	1.28
14.50	4.42	1.62	1.20
14.75	4.48	1.66	1.13
15.00	4.53	1.69	1.07
15.25	4.58	1.73	0.99
15.50	4.62	1.76	0.92
15.75	4.66	1.79	0.85
16.00	4.70	1.81	0.78
16.25	4.73	1.84	0.71
16.50	4.76	1.86	0.67
16.75	4.79	1.88	0.64
17.00	4.82	1.90	0.61
17.25	4.85	1.92	0.57
17.50	4.87	1.94	0.54
17.75	4.90	1.96	0.51
18.00	4.92	1.98	0.47
18.25	4.94	1.99	0.44
18.50	4.96	2.01	0.43
18.75	4.98	2.02	0.42
19.00	5.00	2.04	0.41
19.25	5.02	2.05	0.40
19.50	5.04	2.06	0.39
19.75	5.05	2.08	0.38
20.00	**5.07**	**2.09**	0.37

Highfield Village - Pre-development
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Subcatchment 5S: Overland runoff to the south

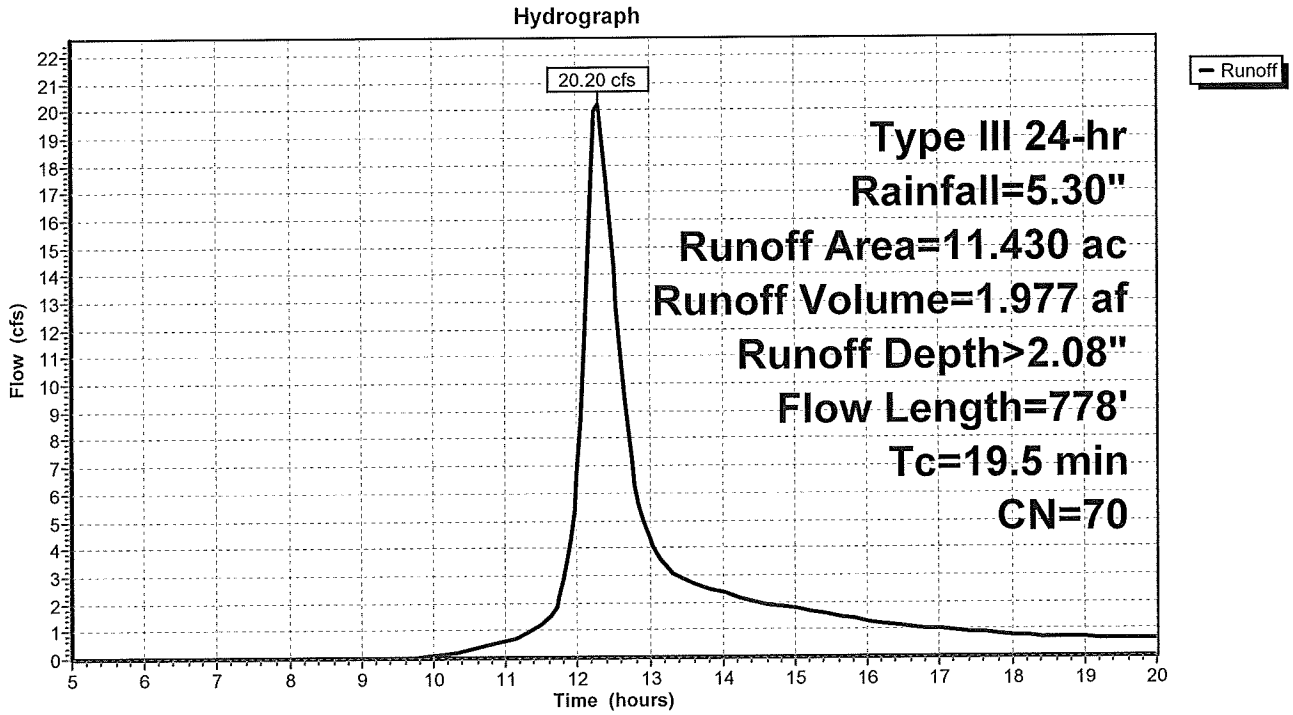
Runoff = 20.20 cfs @ 12.28 hrs, Volume= 1.977 af, Depth> 2.08"

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

Area (ac)	CN	Description
10.760	70	Woods, Good, HSG C
0.670	71	Meadow, non-grazed, HSG C
11.430	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
4.9	220	0.0227	0.8		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
6.7	508	0.0630	1.3		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
19.5	778	Total			

Subcatchment 5S: Overland runoff to the south



Hydrograph for Subcatchment 5S: Overland runoff to the 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	0.02
10.00	1.00	0.00	0.09
10.25	1.07	0.01	0.18
10.50	1.15	0.02	0.29
10.75	1.23	0.03	0.43
11.00	1.32	0.05	0.60
11.25	1.44	0.07	0.82
11.50	1.58	0.10	1.24
11.75	1.88	0.20	2.26
12.00	2.65	0.53	6.66
12.25	3.42	0.96	**19.98**
12.50	3.72	1.15	**14.27**
12.75	3.86	1.24	7.20
13.00	3.97	1.31	4.37
13.25	4.07	1.38	3.26
13.50	4.15	1.43	2.83
13.75	4.23	1.49	2.58
14.00	4.30	1.53	2.35
14.25	4.36	1.58	2.14
14.50	4.42	1.62	1.99
14.75	4.48	1.66	1.88
15.00	4.53	1.69	1.76
15.25	4.58	1.73	1.65
15.50	4.62	1.76	1.53
15.75	4.66	1.79	1.41
16.00	4.70	1.81	1.29
16.25	4.73	1.84	1.18
16.50	4.76	1.86	1.11
16.75	4.79	1.88	1.05
17.00	4.82	1.90	1.00
17.25	4.85	1.92	0.95
17.50	4.87	1.94	0.89
17.75	4.90	1.96	0.84
18.00	4.92	1.98	0.79
18.25	4.94	1.99	0.74
18.50	4.96	2.01	0.71
18.75	4.98	2.02	0.69
19.00	5.00	2.04	0.68
19.25	5.02	2.05	0.66
19.50	5.04	2.06	0.64
19.75	5.05	2.08	0.63
20.00	**5.07**	**2.09**	0.61

Subcatchment 6S: Overland runoff to the southwest

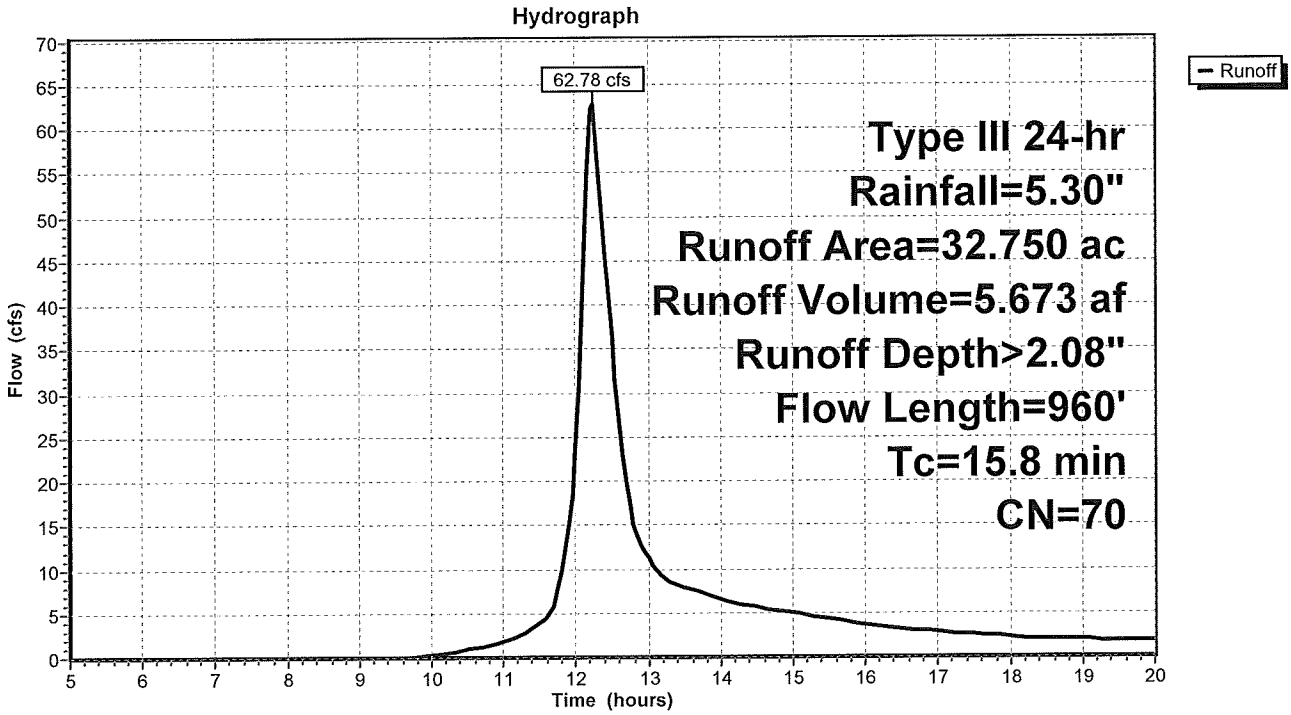
Runoff = 62.78 cfs @ 12.23 hrs, Volume= 5.673 af, Depth> 2.08"

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

Area (ac)	CN	Description
22.930	70	Woods, Good, HSG C
9.820	71	Meadow, non-grazed, HSG C
32.750	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.1		**Sheet Flow, Path 1** Grass: Dense n= 0.240 P2= 3.20"
4.3	500	0.0760	1.9		**Shallow Concentrated Flow, Path 2** Short Grass Pasture Kv= 7.0 fps
3.3	410	0.1707	2.1		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
15.8	960	Total			

Subcatchment 6S: Overland runoff to the southwest



Hydrograph for Subcatchment 6S: Overland runoff to the southwest

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	0.10
10.00	1.00	0.00	0.31
10.25	1.07	0.01	0.57
10.50	1.15	0.02	0.91
10.75	1.23	0.03	1.33
11.00	1.32	0.05	1.83
11.25	1.44	0.07	2.53
11.50	1.58	0.10	3.86
11.75	1.88	0.20	7.71
12.00	2.65	0.53	23.20
12.25	3.42	0.96	**62.24**
12.50	3.72	1.15	36.32
12.75	3.86	1.24	16.96
13.00	3.97	1.31	11.23
13.25	4.07	1.38	8.82
13.50	4.15	1.43	7.90
13.75	4.23	1.49	7.25
14.00	4.30	1.53	6.59
14.25	4.36	1.58	5.99
14.50	4.42	1.62	5.63
14.75	4.48	1.66	5.31
15.00	4.53	1.69	4.98
15.25	4.58	1.73	4.65
15.50	4.62	1.76	4.31
15.75	4.66	1.79	3.97
16.00	4.70	1.81	3.63
16.25	4.73	1.84	3.32
16.50	4.76	1.86	3.14
16.75	4.79	1.88	2.98
17.00	4.82	1.90	2.83
17.25	4.85	1.92	2.68
17.50	4.87	1.94	2.53
17.75	4.90	1.96	2.37
18.00	4.92	1.98	2.22
18.25	4.94	1.99	2.08
18.50	4.96	2.01	2.02
18.75	4.98	2.02	1.97
19.00	5.00	2.04	1.93
19.25	5.02	2.05	1.88
19.50	5.04	2.06	1.83
19.75	5.05	2.08	1.79
20.00	**5.07**	**2.09**	1.74

Subcatchment 7S: Overland runoff to the west

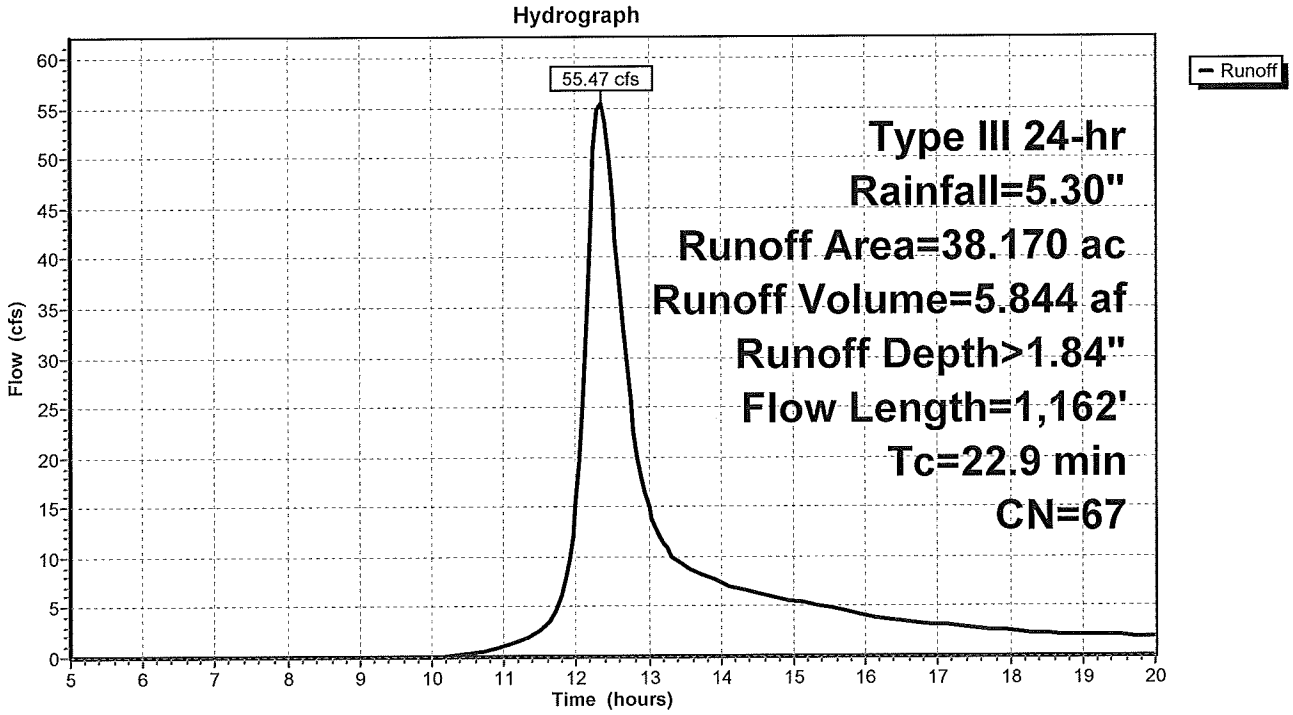
Runoff = 55.47 cfs @ 12.34 hrs, Volume= 5.844 af, Depth> 1.84"

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

Area (ac)	CN	Description
31.680	70	Woods, Good, HSG C
6.490	55	Woods, Good, HSG B
38.170	67	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
5.8	340	0.0382	1.0		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
9.2	772	0.0777	1.4		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
22.9	1,162	Total			

Subcatchment 7S: Overland runoff to the west



Hydrograph for Subcatchment 7S: Overland runoff to the west

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	0.05
10.50	1.15	0.01	0.27
10.75	1.23	0.01	0.63
11.00	1.32	0.02	1.08
11.25	1.44	0.04	1.67
11.50	1.58	0.06	2.69
11.75	1.88	0.14	4.98
12.00	2.65	0.42	15.20
12.25	3.42	0.80	**50.85**
12.50	3.72	0.98	**45.93**
12.75	3.86	1.06	25.67
13.00	3.97	1.13	14.97
13.25	4.07	1.19	10.78
13.50	4.15	1.24	9.00
13.75	4.23	1.29	8.14
14.00	4.30	1.33	7.43
14.25	4.36	1.37	6.75
14.50	4.42	1.41	6.27
14.75	4.48	1.45	5.91
15.00	4.53	1.48	5.56
15.25	4.58	1.51	5.21
15.50	4.62	1.54	4.85
15.75	4.66	1.57	4.48
16.00	4.70	1.59	4.11
16.25	4.73	1.62	3.75
16.50	4.76	1.64	3.51
16.75	4.79	1.66	3.33
17.00	4.82	1.68	3.16
17.25	4.85	1.70	3.00
17.50	4.87	1.71	2.83
17.75	4.90	1.73	2.66
18.00	4.92	1.75	2.50
18.25	4.94	1.76	2.33
18.50	4.96	1.78	2.24
18.75	4.98	1.79	2.18
19.00	5.00	1.80	2.13
19.25	5.02	1.82	2.08
19.50	5.04	1.83	2.03
19.75	5.05	1.84	1.98
20.00	**5.07**	**1.85**	1.93

EXISTING CONDITIONS

100 YEAR STORM

Highfield Village - Pre-development
Prepared by {enter your company name here}
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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Overland runoff to the northwest Runoff Area=17.100 ac Runoff Depth>2.30"
Flow Length=650' Tc=15.6 min CN=62 Runoff=36.02 cfs 3.272 af

Subcatchment 2S: Overland runoff to the north Runoff Area=6.280 ac Runoff Depth>2.85"
Flow Length=355' Tc=16.9 min CN=68 Runoff=16.21 cfs 1.491 af

Subcatchment 3S: Overland runoff to the east Runoff Area=8.740 ac Runoff Depth>3.04"
Flow Length=597' Tc=22.4 min CN=70 Runoff=21.54 cfs 2.211 af

Subcatchment 4S: Overland runoff to the southeast Runoff Area=7.010 ac Runoff Depth>3.04"
Flow Length=490' Tc=15.6 min CN=70 Runoff=20.00 cfs 1.778 af

Subcatchment 5S: Overland runoff to the south Runoff Area=11.430 ac Runoff Depth>3.04"
Flow Length=778' Tc=19.5 min CN=70 Runoff=29.85 cfs 2.894 af

Subcatchment 6S: Overland runoff to the southwest Runoff Area=32.750 ac Runoff Depth>3.04"
Flow Length=960' Tc=15.8 min CN=70 Runoff=92.95 cfs 8.304 af

Subcatchment 7S: Overland runoff to the west Runoff Area=38.170 ac Runoff Depth>2.75"
Flow Length=1,162' Tc=22.9 min CN=67 Runoff=84.05 cfs 8.743 af

Total Runoff Area = 121.480 ac Runoff Volume = 28.694 af Average Runoff Depth = 2.83"

Subcatchment 1S: Overland runoff to the northwest

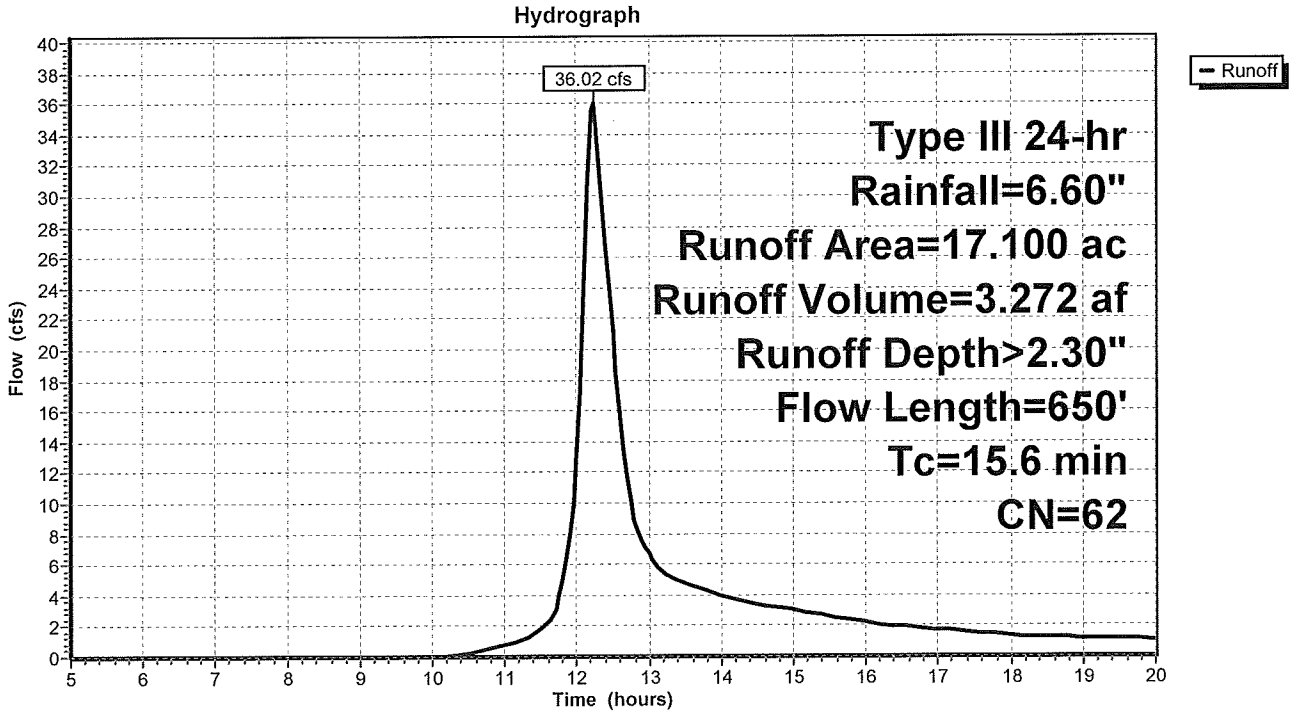
Runoff = 36.02 cfs @ 12.23 hrs, Volume= 3.272 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.60"

Area (ac)	CN	Description
7.740	70	Woods, Good, HSG C
9.360	55	Woods, Good, HSG B
17.100	62	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
6.3	600	0.1000	1.6		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
15.6	650	Total			

Subcatchment 1S: Overland runoff to the northwest



Hydrograph for Subcatchment 1S: Overland runoff to the northwest

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.37	0.00	0.00
5.25	0.40	0.00	0.00
5.50	0.42	0.00	0.00
5.75	0.45	0.00	0.00
6.00	0.48	0.00	0.00
6.25	0.50	0.00	0.00
6.50	0.53	0.00	0.00
6.75	0.56	0.00	0.00
7.00	0.60	0.00	0.00
7.25	0.63	0.00	0.00
7.50	0.67	0.00	0.00
7.75	0.71	0.00	0.00
8.00	0.75	0.00	0.00
8.25	0.80	0.00	0.00
8.50	0.85	0.00	0.00
8.75	0.90	0.00	0.00
9.00	0.96	0.00	0.00
9.25	1.03	0.00	0.00
9.50	1.10	0.00	0.00
9.75	1.17	0.00	0.00
10.00	1.25	0.00	0.00
10.25	1.33	0.00	0.06
10.50	1.43	0.01	0.23
10.75	1.53	0.01	0.45
11.00	1.65	0.03	0.73
11.25	1.79	0.05	1.12
11.50	1.97	0.08	1.83
11.75	2.34	0.17	3.92
12.00	3.30	0.52	12.65
12.25	4.26	1.00	**35.73**
12.50	4.63	1.22	21.18
12.75	4.81	1.32	9.97
13.00	4.95	1.41	6.68
13.25	5.07	1.48	5.27
13.50	5.17	1.55	4.74
13.75	5.27	1.61	4.36
14.00	5.35	1.66	3.97
14.25	5.43	1.71	3.61
14.50	5.50	1.76	3.40
14.75	5.57	1.80	3.21
15.00	5.64	1.85	3.01
15.25	5.70	1.89	2.82
15.50	5.75	1.92	2.62
15.75	5.80	1.96	2.41
16.00	5.85	1.99	2.20
16.25	5.89	2.02	2.01
16.50	5.93	2.04	1.91
16.75	5.97	2.07	1.82
17.00	6.00	2.09	1.72
17.25	6.04	2.12	1.63
17.50	6.07	2.14	1.54
17.75	6.10	2.16	1.45
18.00	6.12	2.18	1.35
18.25	6.15	2.19	1.27
18.50	6.18	2.21	1.23
18.75	6.20	2.23	1.20
19.00	6.23	2.25	1.18
19.25	6.25	2.26	1.15
19.50	6.27	2.28	1.12
19.75	6.29	2.29	1.09
20.00	**6.32**	**2.31**	1.07

Highfield Village - Pre-development
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Subcatchment 2S: Overland runoff to the north

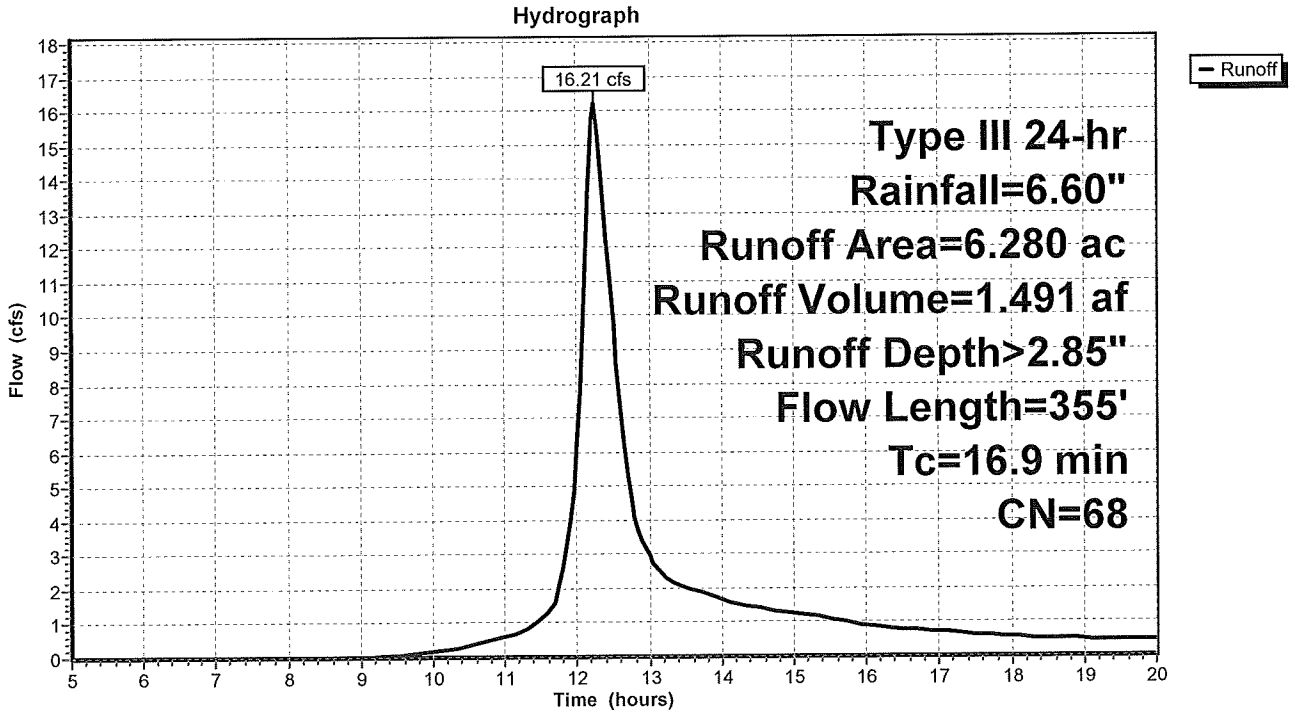
Runoff = 16.21 cfs @ 12.24 hrs, Volume= 1.491 af, Depth> 2.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.60"

Area (ac)	CN	Description
5.490	70	Woods, Good, HSG C
0.790	55	Woods, Good, HSG B
6.280	68	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
4.6	305	0.0490	1.1		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
16.9	355	Total			

Subcatchment 2S: Overland runoff to the north



Hydrograph for Subcatchment 2S: Overland runoff to the north

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.37	0.00	0.00
5.25	0.40	0.00	0.00
5.50	0.42	0.00	0.00
5.75	0.45	0.00	0.00
6.00	0.48	0.00	0.00
6.25	0.50	0.00	0.00
6.50	0.53	0.00	0.00
6.75	0.56	0.00	0.00
7.00	0.60	0.00	0.00
7.25	0.63	0.00	0.00
7.50	0.67	0.00	0.00
7.75	0.71	0.00	0.00
8.00	0.75	0.00	0.00
8.25	0.80	0.00	0.00
8.50	0.85	0.00	0.00
8.75	0.90	0.00	0.00
9.00	0.96	0.00	0.00
9.25	1.03	0.00	0.02
9.50	1.10	0.00	0.06
9.75	1.17	0.01	0.11
10.00	1.25	0.02	0.17
10.25	1.33	0.03	0.24
10.50	1.43	0.05	0.34
10.75	1.53	0.07	0.45
11.00	1.65	0.09	0.59
11.25	1.79	0.13	0.77
11.50	1.97	0.18	1.13
11.75	2.34	0.32	2.11
12.00	3.30	0.79	6.04
12.25	4.26	1.37	**16.19**
12.50	4.63	1.62	9.78
12.75	4.81	1.75	4.61
13.00	4.95	1.84	2.95
13.25	5.07	1.93	2.28
13.50	5.17	2.00	2.02
13.75	5.27	2.07	1.85
14.00	5.35	2.13	1.68
14.25	5.43	2.19	1.53
14.50	5.50	2.25	1.43
14.75	5.57	2.30	1.35
15.00	5.64	2.35	1.26
15.25	5.70	2.39	1.18
15.50	5.75	2.43	1.09
15.75	5.80	2.47	1.01
16.00	5.85	2.50	0.92
16.25	5.89	2.54	0.84
16.50	5.93	2.57	0.79
16.75	5.97	2.60	0.75
17.00	6.00	2.62	0.71
17.25	6.04	2.65	0.68
17.50	6.07	2.67	0.64
17.75	6.10	2.70	0.60
18.00	6.12	2.72	0.56
18.25	6.15	2.74	0.52
18.50	6.18	2.76	0.51
18.75	6.20	2.78	0.50
19.00	6.23	2.80	0.48
19.25	6.25	2.81	0.47
19.50	6.27	2.83	0.46
19.75	6.29	2.85	0.45
20.00	**6.32**	**2.87**	0.44

Highfield Village - Pre-development
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Subcatchment 3S: Overland runoff to the east

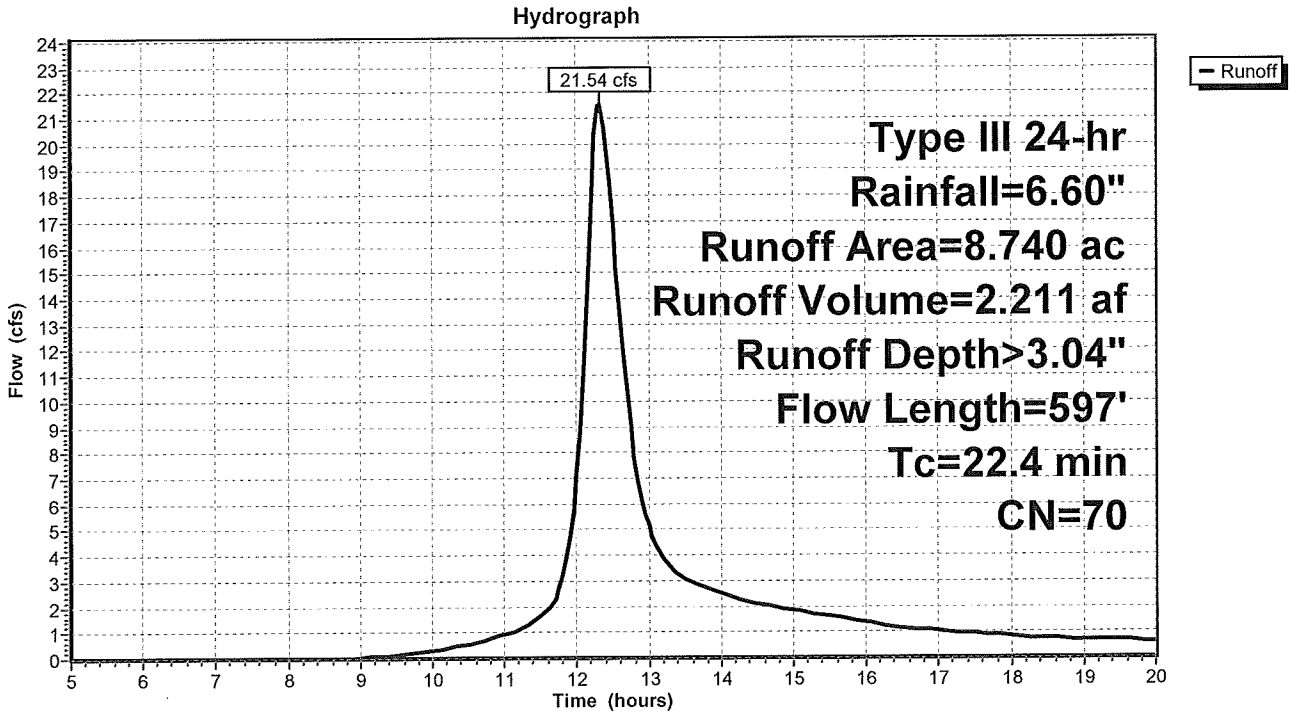
Runoff = 21.54 cfs @ 12.32 hrs, Volume= 2.211 af, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.60"

Area (ac)	CN	Description
8.740	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
10.1	547	0.0329	0.9		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
22.4	597	Total			

Subcatchment 3S: Overland runoff to the east



Hydrograph for Subcatchment 3S: Overland runoff to the east

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.37	0.00	0.00
5.25	0.40	0.00	0.00
5.50	0.42	0.00	0.00
5.75	0.45	0.00	0.00
6.00	0.48	0.00	0.00
6.25	0.50	0.00	0.00
6.50	0.53	0.00	0.00
6.75	0.56	0.00	0.00
7.00	0.60	0.00	0.00
7.25	0.63	0.00	0.00
7.50	0.67	0.00	0.00
7.75	0.71	0.00	0.00
8.00	0.75	0.00	0.00
8.25	0.80	0.00	0.00
8.50	0.85	0.00	0.00
8.75	0.90	0.00	0.00
9.00	0.96	0.00	0.03
9.25	1.03	0.01	0.08
9.50	1.10	0.01	0.15
9.75	1.17	0.02	0.23
10.00	1.25	0.03	0.32
10.25	1.33	0.05	0.42
10.50	1.43	0.07	0.55
10.75	1.53	0.09	0.72
11.00	1.65	0.12	0.92
11.25	1.79	0.17	1.16
11.50	1.97	0.23	1.62
11.75	2.34	0.38	2.66
12.00	3.30	0.89	7.08
12.25	4.26	1.50	**20.42**
12.50	4.63	1.77	**16.79**
12.75	4.81	1.90	8.96
13.00	4.95	2.00	5.14
13.25	5.07	2.09	3.68
13.50	5.17	2.16	3.07
13.75	5.27	2.24	2.77
14.00	5.35	2.30	2.52
14.25	5.43	2.36	2.28
14.50	5.50	2.42	2.11
14.75	5.57	2.47	1.98
15.00	5.64	2.52	1.86
15.25	5.70	2.57	1.74
15.50	5.75	2.61	1.62
15.75	5.80	2.65	1.49
16.00	5.85	2.68	1.37
16.25	5.89	2.72	1.24
16.50	5.93	2.75	1.16
16.75	5.97	2.78	1.10
17.00	6.00	2.81	1.05
17.25	6.04	2.83	0.99
17.50	6.07	2.86	0.93
17.75	6.10	2.88	0.88
18.00	6.12	2.90	0.82
18.25	6.15	2.93	0.77
18.50	6.18	2.95	0.74
18.75	6.20	2.97	0.72
19.00	6.23	2.99	0.70
19.25	6.25	3.00	0.68
19.50	6.27	3.02	0.67
19.75	6.29	3.04	0.65
20.00	**6.32**	**3.06**	0.63

Subcatchment 4S: Overland runoff to the southeast

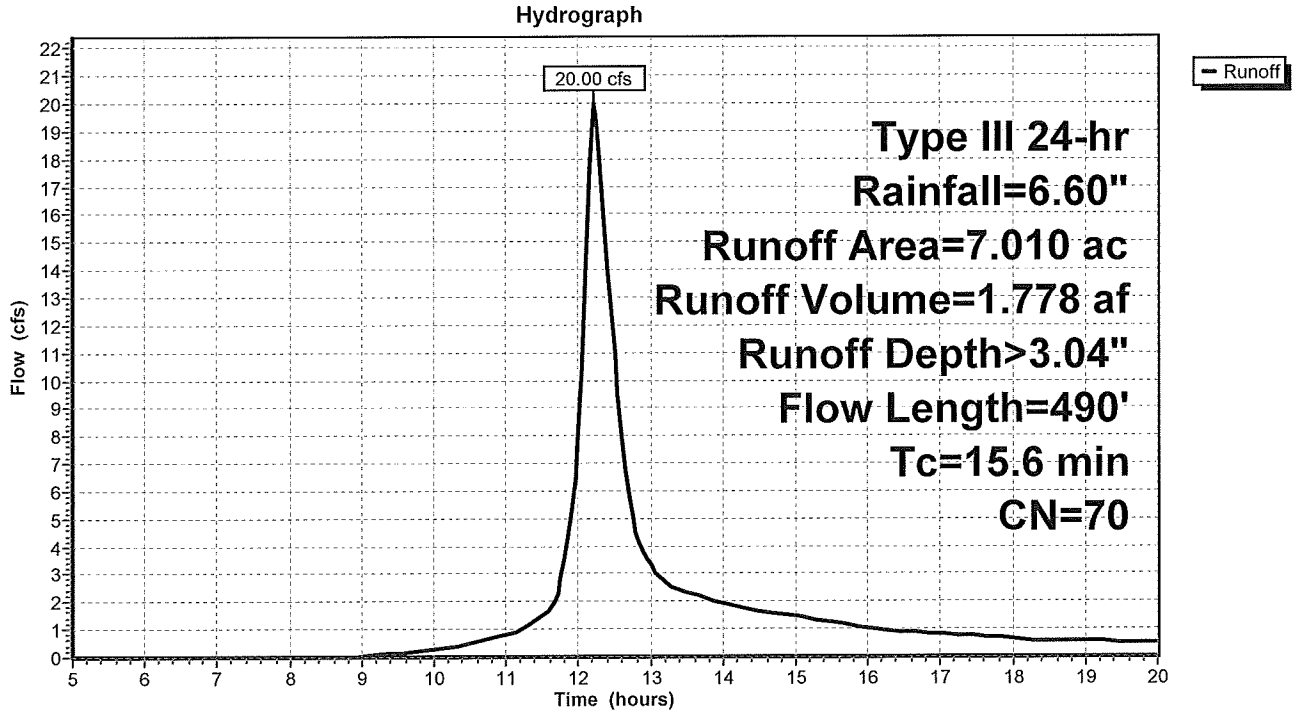
Runoff = 20.00 cfs @ 12.22 hrs, Volume= 1.778 af, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.60"

Area (ac)	CN	Description
7.010	70	Woods, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
6.3	440	0.0545	1.2		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
15.6	490	Total			

Subcatchment 4S: Overland runoff to the southeast



Hydrograph for Subcatchment 4S: Overland runoff to the southeast

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.37	0.00	0.00
5.25	0.40	0.00	0.00
5.50	0.42	0.00	0.00
5.75	0.45	0.00	0.00
6.00	0.48	0.00	0.00
6.25	0.50	0.00	0.00
6.50	0.53	0.00	0.00
6.75	0.56	0.00	0.00
7.00	0.60	0.00	0.00
7.25	0.63	0.00	0.00
7.50	0.67	0.00	0.00
7.75	0.71	0.00	0.00
8.00	0.75	0.00	0.00
8.25	0.80	0.00	0.00
8.50	0.85	0.00	0.00
8.75	0.90	0.00	0.00
9.00	0.96	0.00	0.04
9.25	1.03	0.01	0.09
9.50	1.10	0.01	0.14
9.75	1.17	0.02	0.21
10.00	1.25	0.03	0.29
10.25	1.33	0.05	0.37
10.50	1.43	0.07	0.49
10.75	1.53	0.09	0.64
11.00	1.65	0.12	0.80
11.25	1.79	0.17	1.04
11.50	1.97	0.23	1.49
11.75	2.34	0.38	2.83
12.00	3.30	0.89	**7.92**
12.25	4.26	1.50	**19.57**
12.50	4.63	1.77	10.95
12.75	4.81	1.90	5.02
13.00	4.95	2.00	3.32
13.25	5.07	2.09	2.60
13.50	5.17	2.16	2.33
13.75	5.27	2.24	2.13
14.00	5.35	2.30	1.94
14.25	5.43	2.36	1.76
14.50	5.50	2.42	1.65
14.75	5.57	2.47	1.55
15.00	5.64	2.52	1.45
15.25	5.70	2.57	1.36
15.50	5.75	2.61	1.26
15.75	5.80	2.65	1.15
16.00	5.85	2.68	1.05
16.25	5.89	2.72	0.96
16.50	5.93	2.75	0.91
16.75	5.97	2.78	0.86
17.00	6.00	2.81	0.82
17.25	6.04	2.83	0.78
17.50	6.07	2.86	0.73
17.75	6.10	2.88	0.69
18.00	6.12	2.90	0.64
18.25	6.15	2.93	0.60
18.50	6.18	2.95	0.58
18.75	6.20	2.97	0.57
19.00	6.23	2.99	0.56
19.25	6.25	3.00	0.54
19.50	6.27	3.02	0.53
19.75	6.29	3.04	0.52
20.00	**6.32**	**3.06**	0.50

Subcatchment 5S: Overland runoff to the south

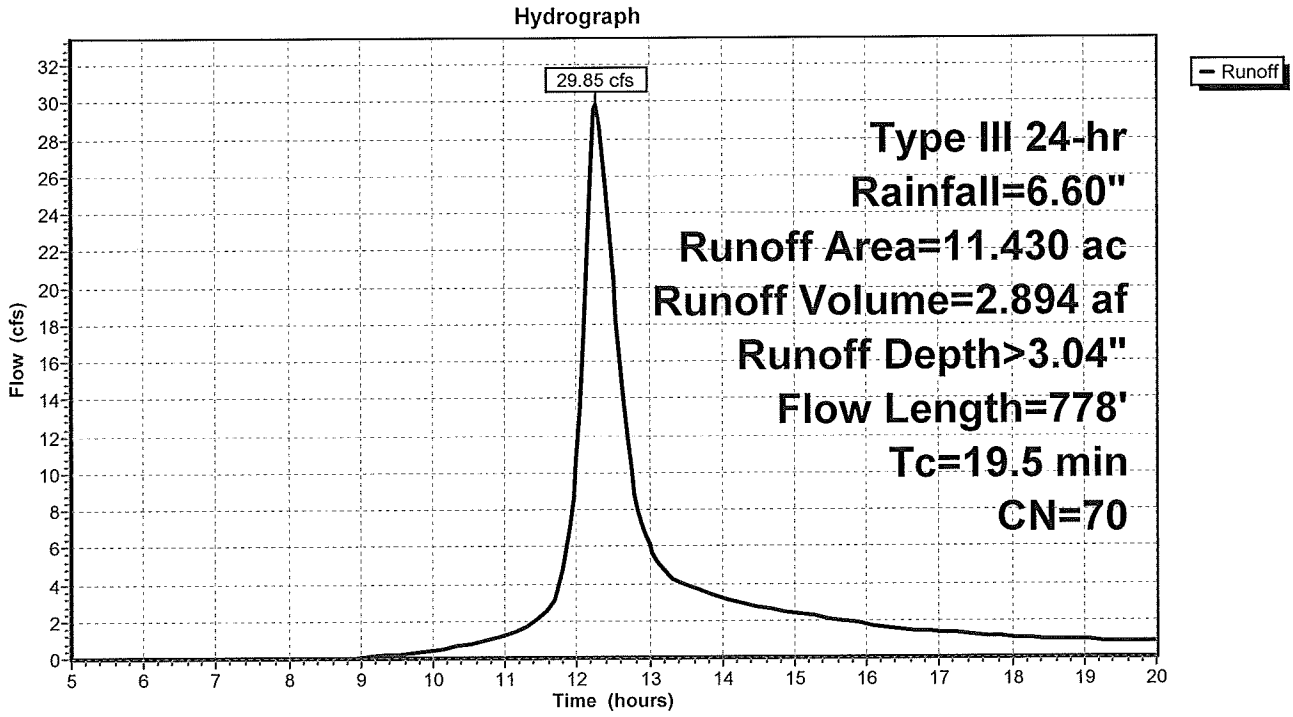
Runoff = 29.85 cfs @ 12.27 hrs, Volume= 2.894 af, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.60"

Area (ac)	CN	Description
10.760	70	Woods, Good, HSG C
0.670	71	Meadow, non-grazed, HSG C
11.430	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
4.9	220	0.0227	0.8		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
6.7	508	0.0630	1.3		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
19.5	778	Total			

Subcatchment 5S: Overland runoff to the south



Highfield Village - Pre-development
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Hydrograph for Subcatchment 5S: Overland runoff to the south

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.37	0.00	0.00
5.25	0.40	0.00	0.00
5.50	0.42	0.00	0.00
5.75	0.45	0.00	0.00
6.00	0.48	0.00	0.00
6.25	0.50	0.00	0.00
6.50	0.53	0.00	0.00
6.75	0.56	0.00	0.00
7.00	0.60	0.00	0.00
7.25	0.63	0.00	0.00
7.50	0.67	0.00	0.00
7.75	0.71	0.00	0.00
8.00	0.75	0.00	0.00
8.25	0.80	0.00	0.00
8.50	0.85	0.00	0.00
8.75	0.90	0.00	0.00
9.00	0.96	0.00	0.05
9.25	1.03	0.01	0.12
9.50	1.10	0.01	0.21
9.75	1.17	0.02	0.32
10.00	1.25	0.03	0.44
10.25	1.33	0.05	0.57
10.50	1.43	0.07	0.76
10.75	1.53	0.09	0.98
11.00	1.65	0.12	1.24
11.25	1.79	0.17	1.59
11.50	1.97	0.23	2.25
11.75	2.34	0.38	3.87
12.00	3.30	0.89	10.63
12.25	4.26	1.50	**29.58**
12.50	4.63	1.77	20.43
12.75	4.81	1.90	10.14
13.00	4.95	2.00	6.08
13.25	5.07	2.09	4.52
13.50	5.17	2.16	3.90
13.75	5.27	2.24	3.56
14.00	5.35	2.30	3.23
14.25	5.43	2.36	2.93
14.50	5.50	2.42	2.73
14.75	5.57	2.47	2.57
15.00	5.64	2.52	2.41
15.25	5.70	2.57	2.25
15.50	5.75	2.61	2.09
15.75	5.80	2.65	1.92
16.00	5.85	2.68	1.76
16.25	5.89	2.72	1.60
16.50	5.93	2.75	1.50
16.75	5.97	2.78	1.43
17.00	6.00	2.81	1.36
17.25	6.04	2.83	1.28
17.50	6.07	2.86	1.21
17.75	6.10	2.88	1.14
18.00	6.12	2.90	1.06
18.25	6.15	2.93	0.99
18.50	6.18	2.95	0.96
18.75	6.20	2.97	0.93
19.00	6.23	2.99	0.91
19.25	6.25	3.00	0.89
19.50	6.27	3.02	0.87
19.75	6.29	3.04	0.85
20.00	**6.32**	**3.06**	0.82

Subcatchment 6S: Overland runoff to the southwest

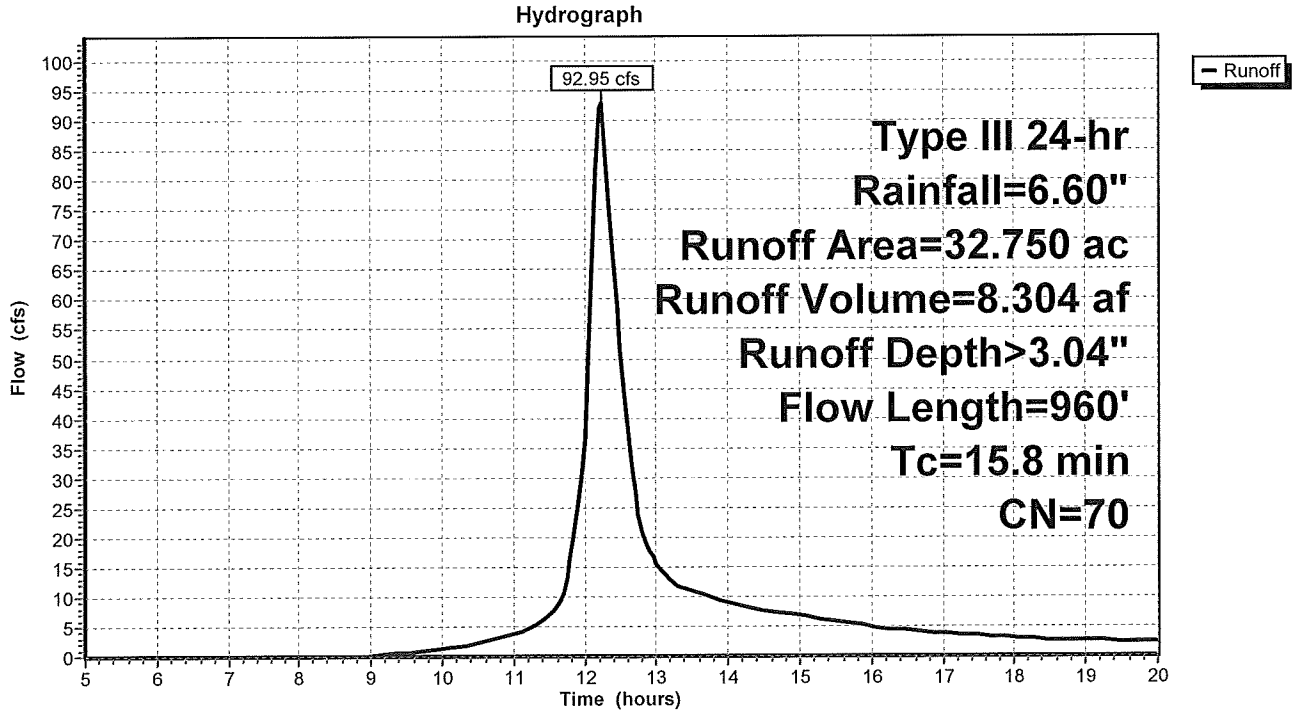
Runoff = 92.95 cfs @ 12.22 hrs, Volume= 8.304 af, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.60"

Area (ac)	CN	Description
22.930	70	Woods, Good, HSG C
9.820	71	Meadow, non-grazed, HSG C
32.750	70	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.1		**Sheet Flow, Path 1** Grass: Dense n= 0.240 P2= 3.20"
4.3	500	0.0760	1.9		**Shallow Concentrated Flow, Path 2** Short Grass Pasture Kv= 7.0 fps
3.3	410	0.1707	2.1		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
15.8	960	Total			

Subcatchment 6S: Overland runoff to the southwest



Hydrograph for Subcatchment 6S: Overland runoff to the southwest

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.37	0.00	0.00
5.25	0.40	0.00	0.00
5.50	0.42	0.00	0.00
5.75	0.45	0.00	0.00
6.00	0.48	0.00	0.00
6.25	0.50	0.00	0.00
6.50	0.53	0.00	0.00
6.75	0.56	0.00	0.00
7.00	0.60	0.00	0.00
7.25	0.63	0.00	0.00
7.50	0.67	0.00	0.00
7.75	0.71	0.00	0.00
8.00	0.75	0.00	0.00
8.25	0.80	0.00	0.00
8.50	0.85	0.00	0.00
8.75	0.90	0.00	0.02
9.00	0.96	0.00	0.17
9.25	1.03	0.01	0.40
9.50	1.10	0.01	0.67
9.75	1.17	0.02	0.98
10.00	1.25	0.03	1.33
10.25	1.33	0.05	1.75
10.50	1.43	0.07	2.30
10.75	1.53	0.09	2.97
11.00	1.65	0.12	3.74
11.25	1.79	0.17	4.83
11.50	1.97	0.23	6.94
11.75	2.34	0.38	13.07
12.00	3.30	0.89	**36.59**
12.25	4.26	1.50	**91.29**
12.50	4.63	1.77	51.60
12.75	4.81	1.90	23.73
13.00	4.95	2.00	15.59
13.25	5.07	2.09	12.19
13.50	5.17	2.16	10.90
13.75	5.27	2.24	9.97
14.00	5.35	2.30	9.05
14.25	5.43	2.36	8.21
14.50	5.50	2.42	7.70
14.75	5.57	2.47	7.25
15.00	5.64	2.52	6.79
15.25	5.70	2.57	6.34
15.50	5.75	2.61	5.87
15.75	5.80	2.65	5.40
16.00	5.85	2.68	4.92
16.25	5.89	2.72	4.50
16.50	5.93	2.75	4.25
16.75	5.97	2.78	4.04
17.00	6.00	2.81	3.84
17.25	6.04	2.83	3.63
17.50	6.07	2.86	3.42
17.75	6.10	2.88	3.21
18.00	6.12	2.90	2.99
18.25	6.15	2.93	2.81
18.50	6.18	2.95	2.72
18.75	6.20	2.97	2.66
19.00	6.23	2.99	2.60
19.25	6.25	3.00	2.54
19.50	6.27	3.02	2.47
19.75	6.29	3.04	2.41
20.00	**6.32**	**3.06**	2.35

Subcatchment 7S: Overland runoff to the west

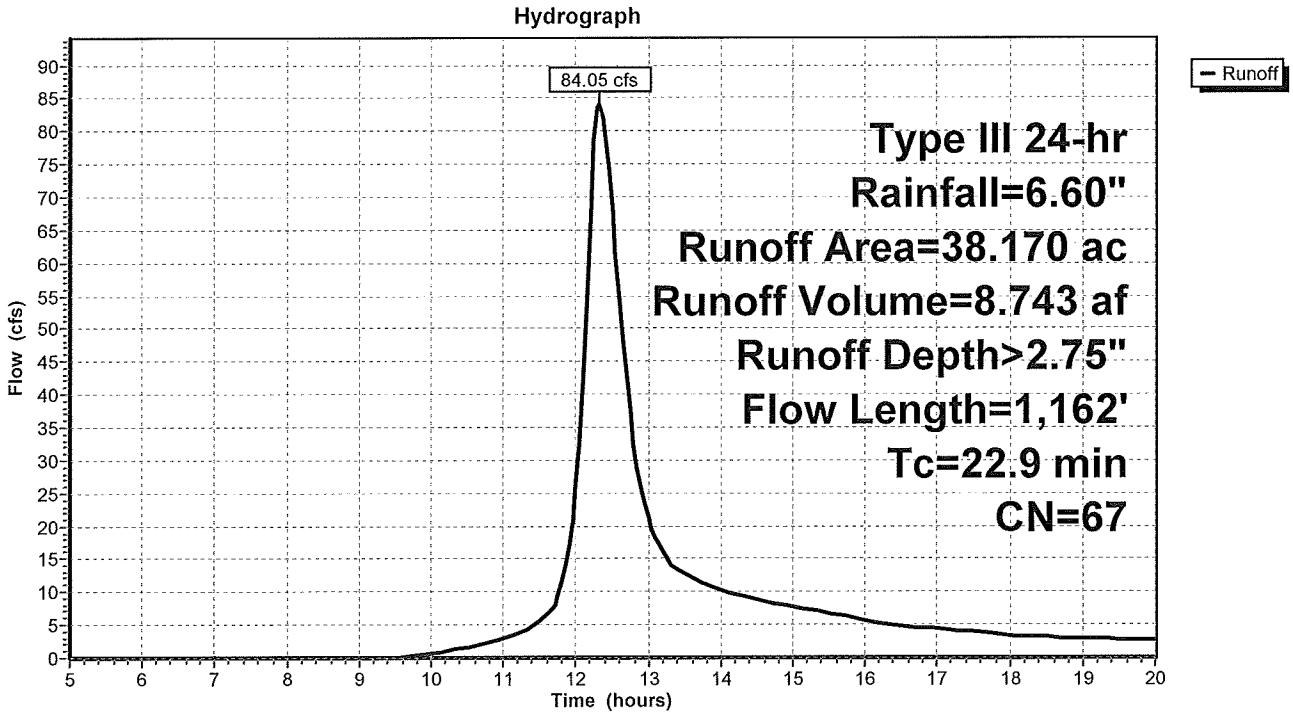
Runoff = 84.05 cfs @ 12.33 hrs, Volume= 8.743 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=6.60"

Area (ac)	CN	Description
31.680	70	Woods, Good, HSG C
6.490	55	Woods, Good, HSG B
38.170	67	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.1		**Sheet Flow, Path 1** Woods: Light underbrush n= 0.400 P2= 3.20"
5.8	340	0.0382	1.0		**Shallow Concentrated Flow, Path 2** Woodland Kv= 5.0 fps
9.2	772	0.0777	1.4		**Shallow Concentrated Flow, Path 3** Woodland Kv= 5.0 fps
22.9	1,162	Total			

Subcatchment 7S: Overland runoff to the west



Hydrograph for Subcatchment 7S: Overland runoff to the west

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.37	0.00	0.00
5.25	0.40	0.00	0.00
5.50	0.42	0.00	0.00
5.75	0.45	0.00	0.00
6.00	0.48	0.00	0.00
6.25	0.50	0.00	0.00
6.50	0.53	0.00	0.00
6.75	0.56	0.00	0.00
7.00	0.60	0.00	0.00
7.25	0.63	0.00	0.00
7.50	0.67	0.00	0.00
7.75	0.71	0.00	0.00
8.00	0.75	0.00	0.00
8.25	0.80	0.00	0.00
8.50	0.85	0.00	0.00
8.75	0.90	0.00	0.00
9.00	0.96	0.00	0.00
9.25	1.03	0.00	0.00
9.50	1.10	0.00	0.11
9.75	1.17	0.01	0.36
10.00	1.25	0.01	0.69
10.25	1.33	0.02	1.07
10.50	1.43	0.04	1.57
10.75	1.53	0.06	2.19
11.00	1.65	0.08	2.93
11.25	1.79	0.11	3.87
11.50	1.97	0.16	5.58
11.75	2.34	0.29	9.39
12.00	3.30	0.74	25.85
12.25	4.26	1.30	**78.36**
12.50	4.63	1.55	**67.85**
12.75	4.81	1.67	37.10
13.00	4.95	1.77	21.35
13.25	5.07	1.85	15.23
13.50	5.17	1.92	12.66
13.75	5.27	1.99	11.41
14.00	5.35	2.05	10.39
14.25	5.43	2.11	9.42
14.50	5.50	2.16	8.73
14.75	5.57	2.21	8.21
15.00	5.64	2.26	7.71
15.25	5.70	2.30	7.21
15.50	5.75	2.34	6.71
15.75	5.80	2.38	6.20
16.00	5.85	2.42	5.68
16.25	5.89	2.45	5.17
16.50	5.93	2.48	4.83
16.75	5.97	2.51	4.58
17.00	6.00	2.53	4.35
17.25	6.04	2.56	4.12
17.50	6.07	2.58	3.89
17.75	6.10	2.60	3.66
18.00	6.12	2.62	3.42
18.25	6.15	2.64	3.20
18.50	6.18	2.66	3.07
18.75	6.20	2.68	2.99
19.00	6.23	2.70	2.92
19.25	6.25	2.72	2.85
19.50	6.27	2.74	2.78
19.75	6.29	2.75	2.71
20.00	**6.32**	**2.77**	2.64