EXHIBIT J

Stormwater Management Report
Somers Solar Center
Somers, CT

HelioSage, LLC.
Charlottesville, VA

September 2012
Revised October 2012

FUSS & O'NEILL

146 Hartford Road
Manchester, CT 06040

Project No. 20120085.A20

FUSS & O'NEILL

Table of Contents

Stormwater Management Report
Somers Solar Center

Figures

End of Report

Appendices

End of Report

1 Executive Summary

HelioSage, LLC proposes to construct a 6.1 Megawatt (MW) ground-mounted photovoltaic renewable energy facility on approximately 95 acres of open farm land at 488 South Road in Somers, Connecticut (*Figure 1*). The project includes installing approximately 31,000 solar panels which will cover approximately 14.8 acres. The solar panels will be divided into four separate arrays, labeled as "A", "B", "C", and "D" as shown in *Figure 2*. The array fields are spread across the site with open fields, wooded areas and wetlands between the arrays and along the perimeter of the property. Four maintenance roads are proposed to provide maintenance access to the solar arrays.

Only minimal surface grading will be required to achieve positive drainage on the site. The proposed conditions will mimic existing drainage patterns.

Existing and proposed hydrologic conditions for the project area were evaluated to determine if the development would result in significant changes to stormwater discharge. Our evaluation demonstrates that only modest changes in peak stormwater discharge result from the development during in the 2-, 25- and 100-year storm events as compared to existing conditions.

2 Existing Conditions

The site is located on the western side of South Road at the Somers/Ellington town line in an area of open farm land. The site is surrounded by farm land and residential neighborhoods to the south, undeveloped land and a landfill to the west, and farm land and a golf course to the north. Wetlands are located offsite to the west of the property. There are ridges running north to south between Array C and Array D perpendicular to the tree line at the golf course and along the eastern edge of Array A, parallel to South Road. Array A slopes from the northeast to the southwest. Array B includes a high point near the center of the area and slopes toward the northwest, south, and east. A high point is located between Array C and Array D where Array C slopes from the northeast to southwest while Array D slopes from the northwest to southeast.

There are no existing storm sewer networks or retention basins on site. An unnamed watercourse, flowing from north to south, is situated between Array A and B and to the east of Array D. This watercourse receives runoff from the southern and eastern portions of the subject property as well as the surrounding agricultural land and conveys it to Abbey Brook. A second unnamed watercourse captures the runoff from Array C, the northwest corner of Array B and the adjacent landfill south toward Abbey Brook.

Approximately half a mile downstream of the site, Abbey Brook passes under Fields Road and discharges into an approximately 173 acre, undeveloped wetland area.

2.1 Stormwater Modeling

As depicted on sheet *DRA-01* in *Appendix A*, the project area is divided into two watersheds for the purpose of this stormwater evaluation. Watershed 3S captures the southern and north eastern drainage

area and Watershed 4S captures the northwestern portion of the project. The stormwater discharge from each watershed is analyzed at the point where it leaves the subject property. These locations are referred to in the stormwater analysis model as "Design Points". Design Point 1P represents the point of analysis for Watershed 3S. Design Point 2P is located on the western side of the property and represents the runoff from Watershed 4S.

Calculating stormwater flows at a design point through the duration of a given storm event requires understanding the flow of runoff within the watershed. The time required for runoff to travel from the most distant point in the watershed to the design point is referred to as the "Time of Concentration". Time of Concentration (T.O.C.) is a function of distance and surface characteristics (e.g., gravel, turf, woodland, etc.). *DRA-01* depicts the T.O.C. flow path for each watershed.

The watershed analysis for existing and proposed conditions was completed using the HydroCAD Software Solutions computer program. The HydroCAD program is based on NRCS TR-20 methods. The methods described in the NRCS TR-55 manual were followed to calculate the curve number and time of concentration input data for this model.

2.2 Existing Hydrologic Characteristics

Hydrologic characteristics of the site include the following:

- The site is located within the Connecticut Drainage Basin of the Connecticut Major Basin, specifically within the Scantic Regional Basin (4204) sub-basin area as indicated within *Figure 3*.

- The site lies outside of the special flood hazard area, denoted as "Zone A". A portion of the relevant Flood Insurance Rate Maps (Panel Number 0901120017D, Effective Date: August 16, 2006) has been included as *Figure 4*.

- The site is characterized by Natural Resources Conservation Service (NRCS, formerly SCS) as mostly Manchester gravelly sandy loam, Haven and Enfield soils, and Hartford sandy loam. On the northwestern edge of the site there is also an area of Udorthents-Pits complex, a gravelly soil, present. In addition, running parallel with the unnamed watercourse is soil type Scarboro muck. Manchester gravely sandy loam soils are classified as Hydrologic Soil Group A. Hartford sandy loam, Haven and Enfield soils and Udorthents-Pits gravely soils are classified as Hydrological Soil Group B. Scarboro muck is classified as Hydrological Soil Group D. Type A and B soils were used for the watershed analysis for the majority of the site. Near the watercourse area Type D soils were used. A curve number of 86 was used for very poorly drained soils running parallel with the unnamed watercourse to Design Point 1P. Pervious surfaces were modeled using curve numbers ranging from 39 to 61, depending on the soil type. These values are acceptable for surfaces over Hydrological Group-'A', Hydrological Group- 'B', and Group-'D' soils per the NRCS TR-55 Drainage Manual. A map of the soils within the site can be found in *Figure 5a – 5c*.

3 Proposed Conditions

The proposed project includes the installation of approximately 31,000 solar panels. The solar panels will be divided into four separate arrays, labeled as "A", "B", "C" and "D" on *Figure 2*. The Solar panels will occupy approximately 14.8 acres. The solar panels will be mounted on solar tracking racks, which will allow the solar panels to track the sun's movement through the sky.

Only minimal surface grading will be required to achieve positive drainage on the site. The proposed conditions will mimic existing drainage patterns. However, gravel maintenance access roads will be provided, thus creating a modest increase in site imperviousness.

3.1 Stormwater Modeling

For the hydrologic modeling, only proposed impervious ground surfaces have been considered to have an impact on the curve number and time of concentration. This includes access roads, inverter pads, etc. While the panels themselves are impervious, the installed panels will not alter the hydrologic performance of the underlying impervious ground surface. For example, stormwater dripping off the edges of the solar panels will infiltrate into the ground underneath the panels.

In addition, the time of concentration is not altered by the construction of solar panels because there is no interruption of land cover in the panel area to divert the existing time of concentration flow path. Where the existing time of concentration path will be altered by an access road or other improvement, the model reflects these changes.

The addition of the gravel maintenance access roads will affect the hydrologic characteristics of the property slightly. Approximately 2.5 acres of gravel access road will be constructed. A curve number of either 76 or 85 (depending on the underlying mapped soil type), was used for the gravel roads. The same curve numbers were used for the poorly drained soils (86) and the pervious surfaces (between 39 and 61) as were used in the existing conditions model. These values are acceptable for surfaces over Hydrological Group-'A', Group- 'B', and Group-'D' soils per the NRCS TR-55 Drainage Manual.

3.2 Comparison of Pre- and Post-Development Discharges

The pre-development peak discharges are taken from the HydroCAD Model of existing conditions, provided in *Appendix A*. The post-development peak discharges are taken from the HydroCAD Model of proposed conditions in *Appendix B*.

Pre- and post-development flow rates for the eastern Design Point, 1P, will be:

Storm Frequency (yrs)	Existing Peak Discharge (cfs)	Proposed Peak Discharge (cfs)	Change (cfs)
2	5.04	5.37	0.33
25	45.99	46.61	0.62
100	82.98	83.69	0.71

Pre and post-development flow rates for the western Design Point, 2P, will be:

Storm Frequency (yrs)	Existing Peak Discharge (cfs)	Proposed Peak Discharge (cfs)	Change (cfs)
2	1.06	1.50	0.44
25	16.98	19.13	2.15
100	33.86	36.43	2.57

The results provided in the table above show a modest increase in the proposed peak discharge rates for all storm events. The increase in runoff for the proposed conditions when compared to the existing conditions is a result of the addition of gravel for the gravel access roads around the perimeter of the arrays.

4 Construction Stormwater Management and Soil Erosion and Sediment Control

A detailed E&S control plan will be prepared for the site during final design. During construction, measures will be taken to reduce erosion and manage sedimentation from disturbed surfaces. Minimal grading will be required to construct the solar panels and the following Best Management Practices (BMPs) will be employed:

- Silt fence will be installed at clearing limits and the down-gradient perimeter of the disturbed portion of the site.

- Construction Entrances will be installed at the entrance from South Road to prevent tracking of sediment into local roads.

Erosion and sedimentation control (E&S) details and narratives for construction periods will be included in the project construction documents. E&S details and procedures will be consistent with the 2002 Guidelines for Soil Erosion and Sedimentation Control (CTDEEP Bulletin 34), and town requirements.

5 Post-Construction Water Quality

After construction of the project, disturbed surfaces will be restored with vegetative cover (i.e., turf) to maintain soil stability. The existing and restored vegetation will act as a vegetated buffer between the development and the receiving watercourses. This buffer will improve water quality by promoting infiltration and reducing flow velocity.

Due to the extremely modest changes to existing site conditions, no stormwater management features (e.g., detention basins, etc.) are proposed.

6 Summary

The proposed development will increase peak stormwater flows due to the addition of the gravel maintenance roads in the proposed plan as compared to existing conditions. The increase is insignificant relative to the size of the receiving water body (i.e., the 173 acre wetland west of Fields Road). Therefore, the slight increase in peak runoff rates will have no adverse effects.

Erosion and sediment controls will be installed in accordance with the 2002 Guidelines for Soil Erosion and Sedimentation Control.

The project design will incorporate vegetative buffers consistent with the 2004 Connecticut Stormwater Quality Manual.

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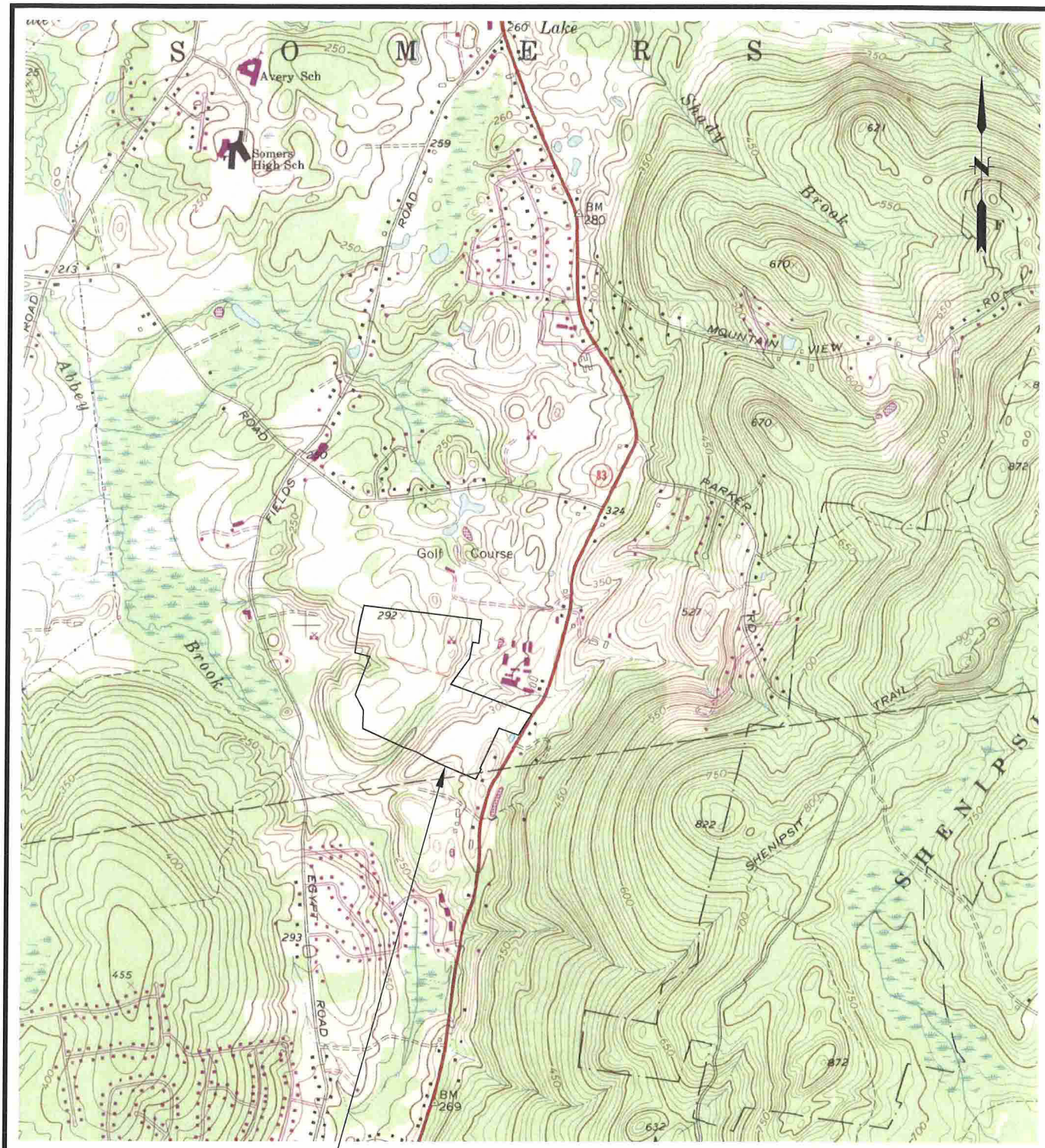
Figures



APPROXIMATE SITE LOCATION

MAP REFERENCE

THIS MAP WAS PREPARED FROM THE FOLLOWING 7.5 MINUTE SERIES TOPOGRAPHICAL MAP: ELLINGTON QUADRANGLE CONNECTICUT, 1967 PHOTOREVISED 1984.

File Path: J:\DWG\P2012\0085A20\Civil\Plan\20120085A20_LOC01.dwg Layout: FIG 1 Plotted: Wed, October 03, 2012 - 12:13 PM User: STEPHANIE BERMAN
Plotter: DWG TO PDF.PC3 CTB File: FO 2008 COLOR (HALF).CTB
LAYER STATE:
MS VIEW:

SCALE:	
HORZ.: 1" = 2000'	
VERT.:	
DATUM:	
HORZ.:	
VERT.:	

0 1000 2000
GRAPHIC SCALE

FUSS & O'NEILL
146 HARTFORD ROAD
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HELIOSAGE, LLC

PROJECT LOCATION MAP

SOMERS SOLAR CENTER

SOMERS CONNECTICUT

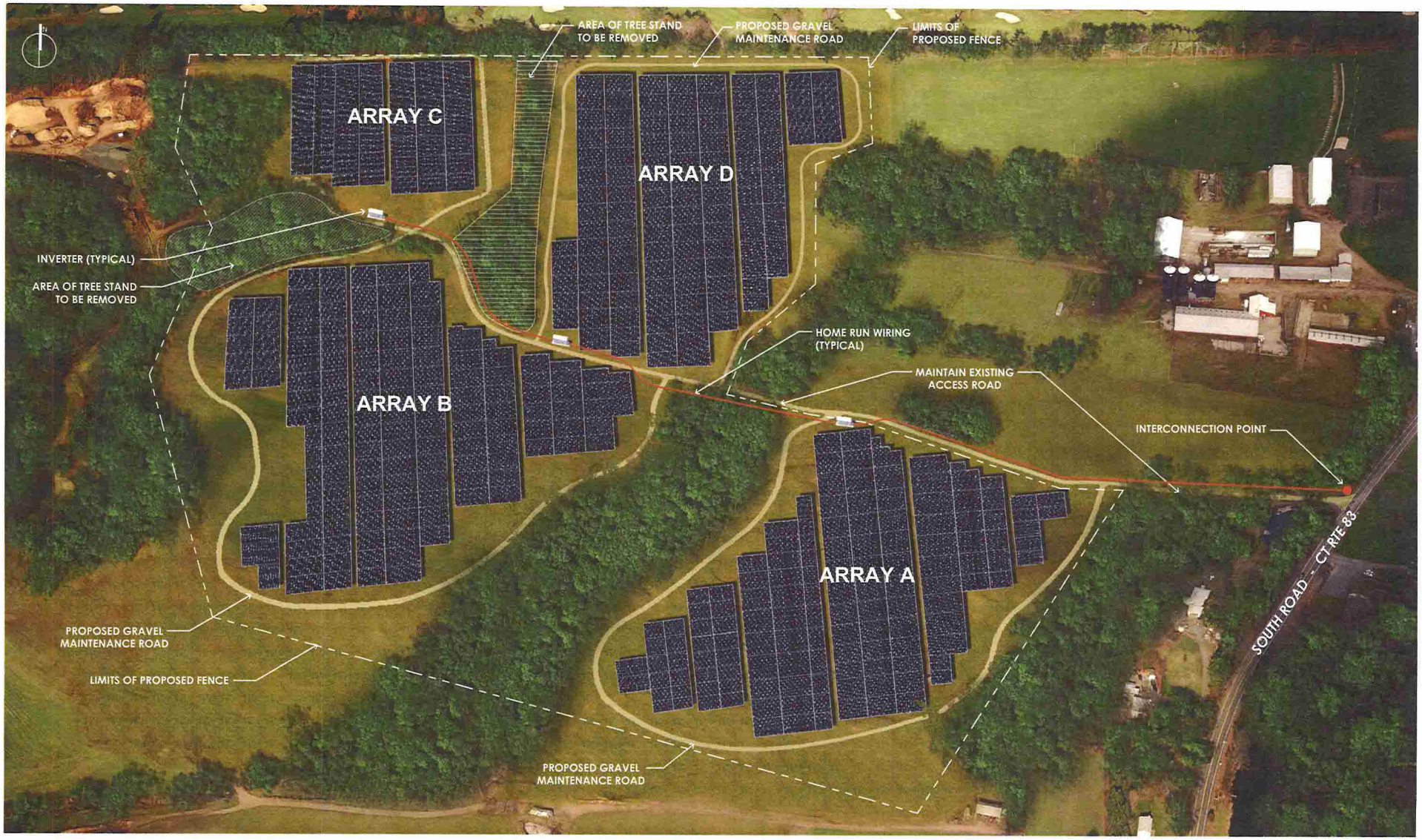
PROJ. No.: 20120085.A20
DATE: 10/03/12

FIGURE 1

FUSS & O'NEILL HELIOSAGE

Somers Solar Center

Somers, CT



Proposed Site Rendering

FIGURE 2 September 28, 2012

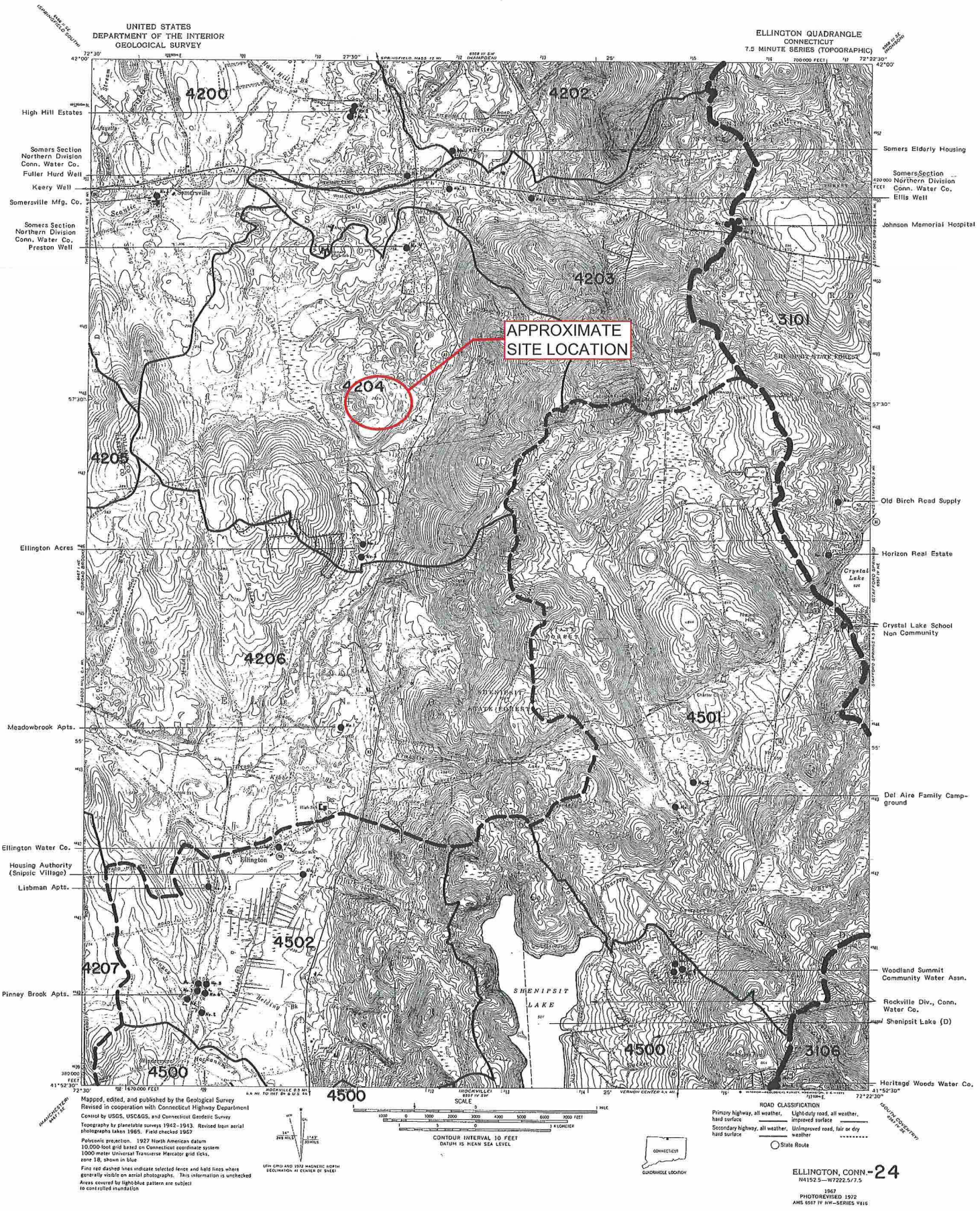
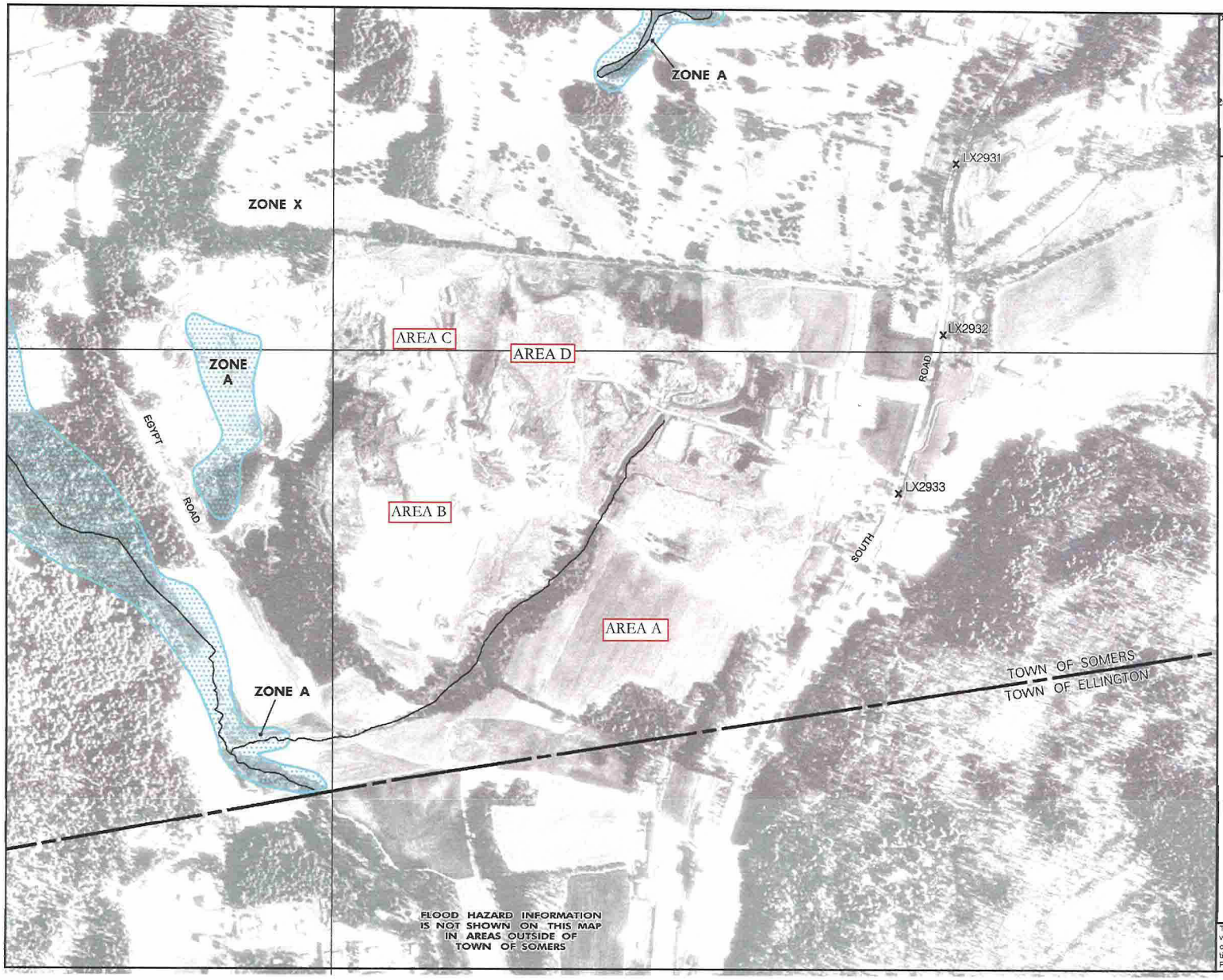

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ELLINGTON QUADRANGLE
CONNECTICUT
7.5 MINUTE SERIES (TOPOGRAPHIC)
APPROXIMATE SITE LOCATION
High Hill Estates
Somers Section Northern Division Conn. Water Co.
Fuller Hurd Well
Keery Well
Somersville Mfg. Co.
Somers Section Northern Division Conn. Water Co. Preston Well
Somers Elderly Housing
Somers Section Northern Division Conn. Water Co. Ellis Well
Johnson Memorial Hospital
Old Birch Road Supply
Horizon Real Estate
Crystal Lake School Non Community
Ellington Acres
Meadowbrook Apts.
Del Aire Family Campground
Ellington Water Co.
Housing Authority (Snipsic Village)
Lisbman Apts.
Pinney Brook Apts.
Woodland Summit Community Water Assn.
Rockville Div., Conn. Water Co.
Shenipsit Lake (D)
Heritage Woods Water Co.
4200
4202
4203
4204
4205
4206
4207
4500
4501
4502
3101
3106
SHENIPSIT LAKE
Somersville
Ellington
Crystal Lake
SCALE
CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
Primary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Secondary highway, all weather, hard surface
Unimproved road, fair or dry weather
State Route
CONNECTICUT
QUADRANGLE LOCATION
Mapped, edited, and published by the Geological Survey
Revised in cooperation with Connecticut Highway Department
Control by USGS, USC&GS, and Connecticut Geodetic Survey
Topography by planetable surveys 1942-1943. Revised from aerial photographs taken 1965. Field checked 1967
Polyconic projection. 1927 North American datum
10,000-foot grid based on Connecticut coordinate system
1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked
Areas covered by light-blue pattern are subject to controlled inundation
UTM GRID AND 1972 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
ELLINGTON, CONN.-24
N4152.5—W7222.5/7.5
1967
PHOTOREVISED 1972
AMS 6567 IV NW—SERIES V816

FIGURE 3



...nal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0017D

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF
SOMERS,
CONNECTICUT
TOLLAND COUNTY

PANEL 17 OF 19

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SOMERS, TOWN OF	090112	0017	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0901120017D

MAP REVISED
AUGUST 16, 2006

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FIGURE 4

Drainage Class—State of Connecticut
(20120085.A20 - Somers Solar Center)

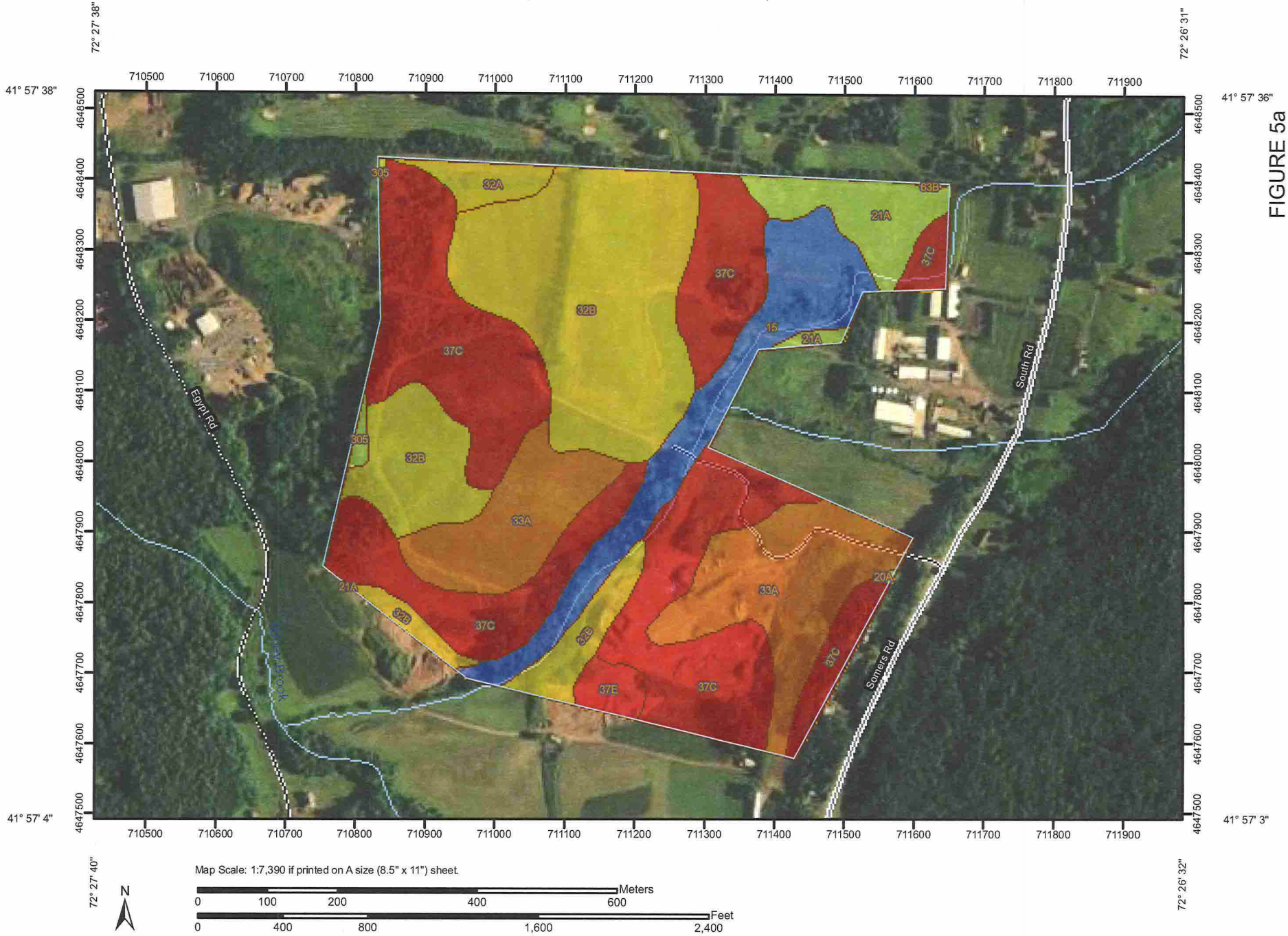


FIGURE 5a

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

10/2/2012
Page 1 of 3

FIGURE 5b

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

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

MAP INFORMATION

Map Scale: 1:7,390 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011

Date(s) aerial images were photographed: 8/16/2006

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

Drainage Class

Drainage Class— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
15	Scarboro muck	Very poorly drained	12.5	9.6%
20A	Ellington silt loam, 0 to 5 percent slopes	Moderately well drained	0.1	0.1%
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	Moderately well drained	6.1	4.7%
32A	Haven and Enfield soils, 0 to 3 percent slopes	Well drained	2.3	1.8%
32B	Haven and Enfield soils, 3 to 8 percent slopes	Well drained	37.1	28.5%
33A	Hartford sandy loam, 0 to 3 percent slopes	Somewhat excessively drained	21.7	16.6%
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	Excessively drained	48.3	37.1%
37E	Manchester gravelly sandy loam, 15 to 45 percent slopes	Excessively drained	1.7	1.3%
63B	Cheshire fine sandy loam, 3 to 8 percent slopes	Well drained	0.1	0.0%
305	Udorthents-Pits complex, gravelly	Moderately well drained	0.5	0.4%
Totals for Area of Interest			**130.3**	**100.0%**

Description

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Rating Options

Aggregation Method: Dominant Condition

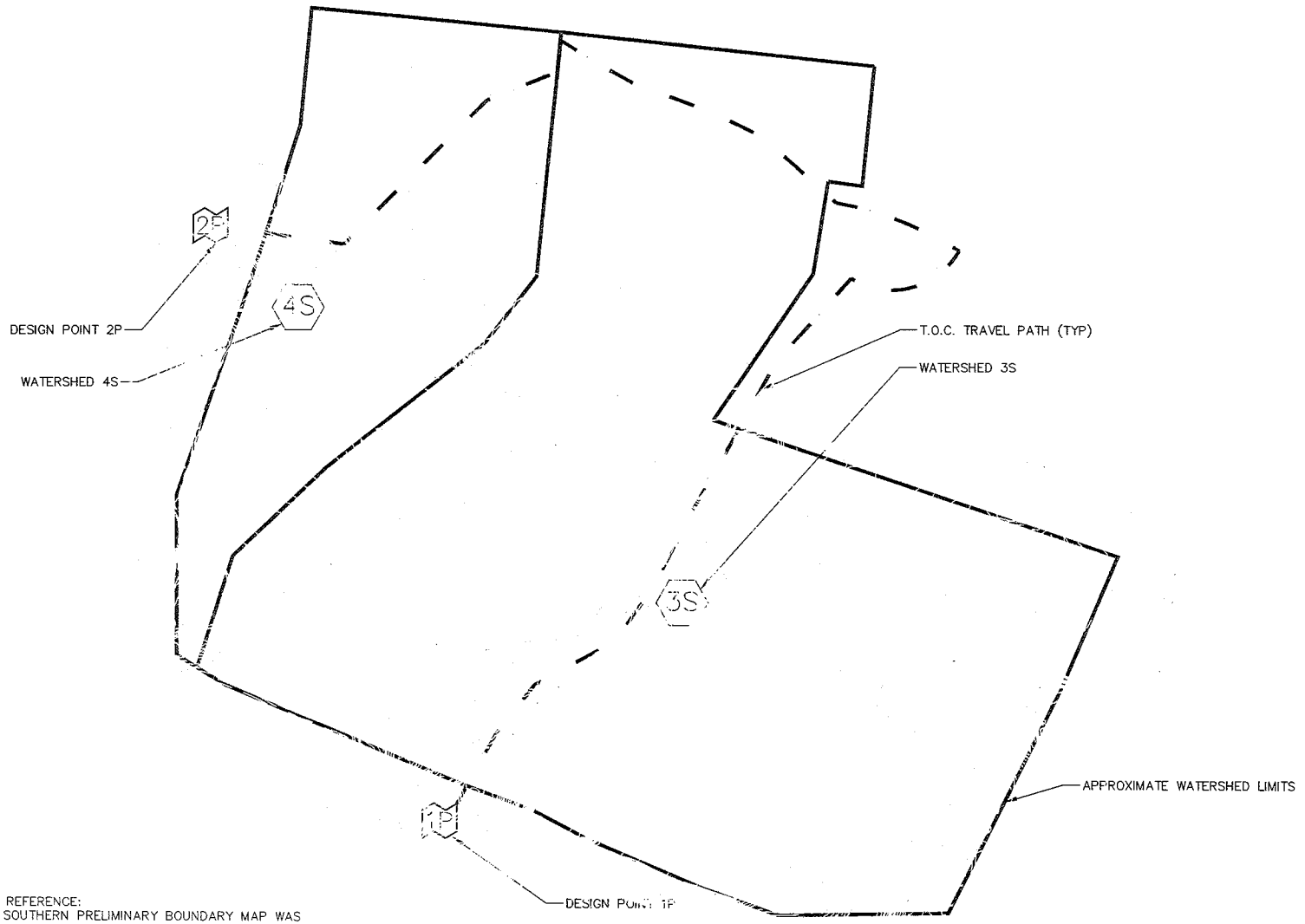
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

FUSS & O'NEILL

Appendix A

Existing Watershed Analysis



MAP REFERENCE:
THE SOUTHERN PRELIMINARY BOUNDARY MAP WAS PREPARED BY AESCHLIMAN LAND SURVEYING, PC ON JANUARY 10, 2012. THE NORTHERN TOPOGRAPHY WAS PREPARED FROM FIELD SURVEY BY FUSS & O'NEILL ON SEPTEMBER 28, 2012.

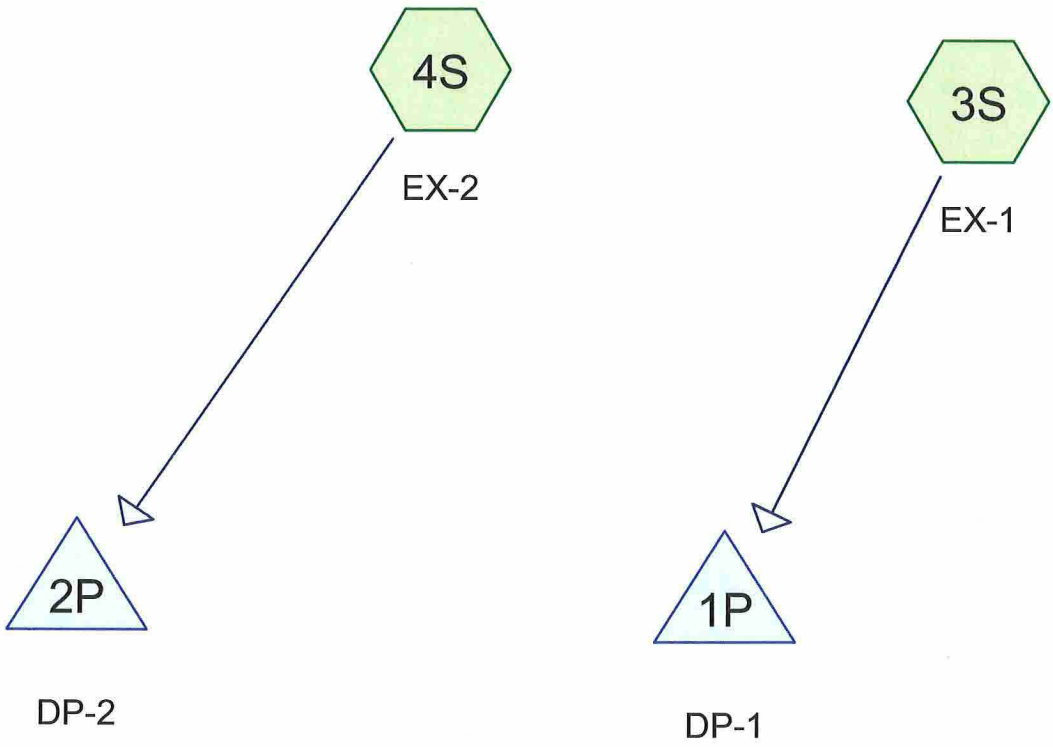
SCALE: HORZ. 1" = 200'
VERT.
DATUM: HORZ.
VERT.
0 100 200
GRAPHIC SCALE

FUSS & O'NEILL
146 HARTFORD ROAD
MANCHESTER, CONNECTICUT 06040
860-646-2469
www.fando.com

HELIOSAGE, LLC
EXISTING CONDITIONS
SOMERS SOLAR CENTER
488 SOUTH ROAD
SOMERS CONNECTICUT

PROJ. No. 20120086.A26
DATE: 05/01/2012

DRA-01



Subcat Reach Pond Link

Drainage Diagram for Existing Watersheds
Prepared by Fuss & O'Neill, Printed 10/4/2012

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
37.780	39	Pasture/grassland/range, Good, HSG A (3S, 4S)
60.220	61	Pasture/grassland/range, Good, HSG B (3S, 4S)
5.000	86	Woods/grass comb., Poor, HSG D (3S)
103.000	54	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
37.780	HSG A	3S, 4S
60.220	HSG B	3S, 4S
0.000	HSG C	
5.000	HSG D	3S
0.000	Other	
103.000		**TOTAL AREA**

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 3S: EX-1 Runoff Area=79.800 ac 0.00% Impervious Runoff Depth>0.08"
Flow Length=3,588' Tc=44.7 min CN=55 Runoff=1.15 cfs 0.506 af

Subcatchment 4S: EX-2 Runoff Area=23.200 ac 0.00% Impervious Runoff Depth>0.04"
Flow Length=1,026' Tc=13.4 min CN=52 Runoff=0.18 cfs 0.079 af

Pond 1P: DP-1 Inflow=1.15 cfs 0.506 af
Primary=1.15 cfs 0.506 af

Pond 2P: DP-2 Inflow=0.18 cfs 0.079 af
Primary=0.18 cfs 0.079 af

Total Runoff Area = 103.000 ac Runoff Volume = 0.586 af Average Runoff Depth = 0.07"
100.00% Pervious = 103.000 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: EX-1

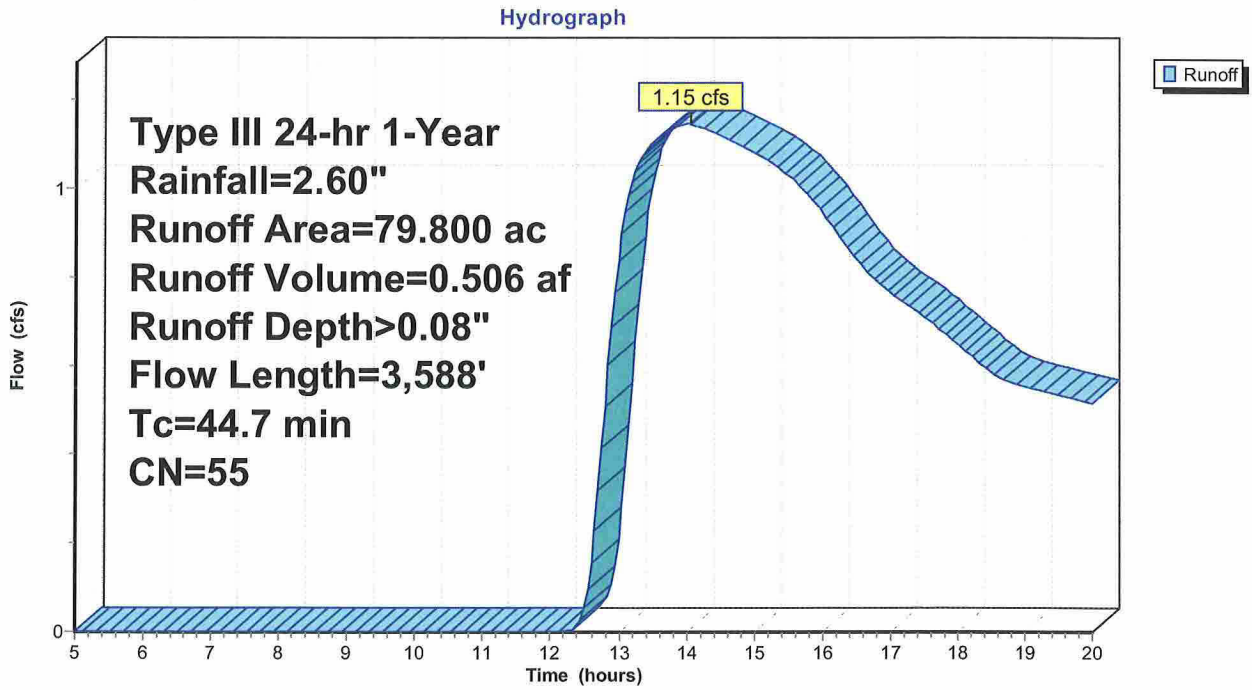
Runoff = 1.15 cfs @ 14.06 hrs, Volume= 0.506 af, Depth> 0.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

Area (ac)	CN	Description
28.500	39	Pasture/grassland/range, Good, HSG A
46.300	61	Pasture/grassland/range, Good, HSG B
5.000	86	Woods/grass comb., Poor, HSG D
79.800	55	Weighted Average
79.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: EX-1



Summary for Subcatchment 4S: EX-2

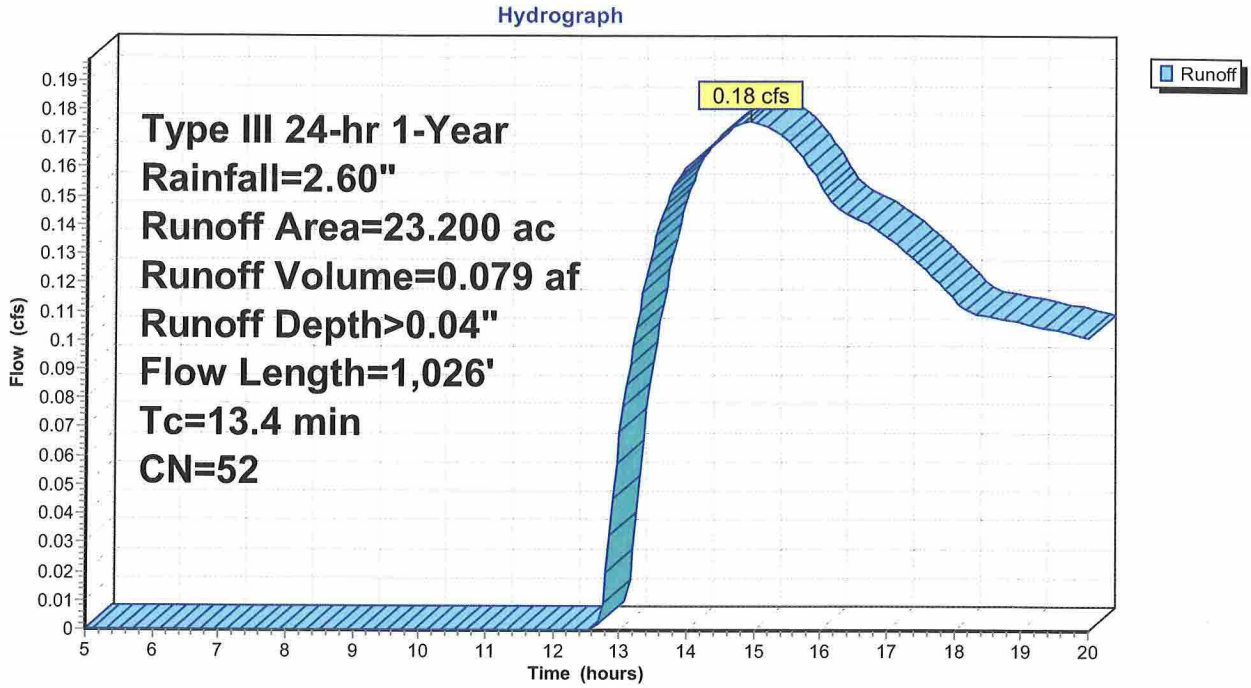
Runoff = 0.18 cfs @ 14.96 hrs, Volume= 0.079 af, Depth> 0.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

Area (ac)	CN	Description
9.280	39	Pasture/grassland/range, Good, HSG A
13.920	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
23.200	52	Weighted Average
23.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: EX-2



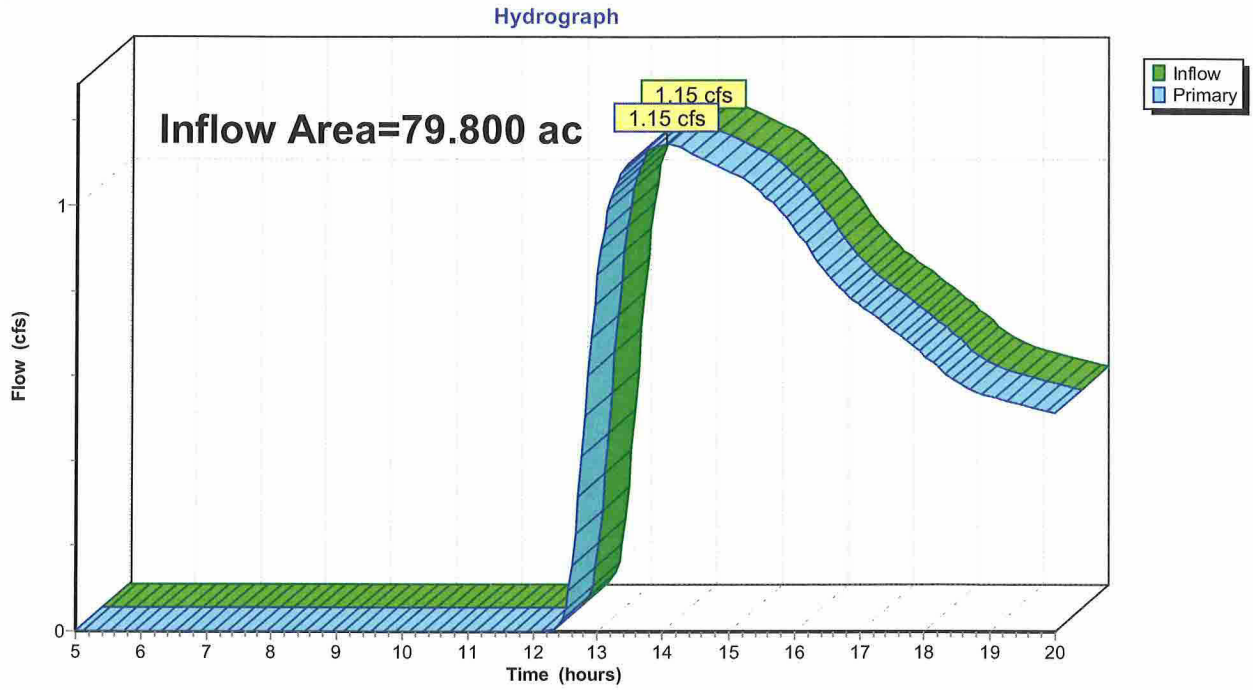
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.00% Impervious, Inflow Depth > 0.08" for 1-Year event
Inflow = 1.15 cfs @ 14.06 hrs, Volume= 0.506 af
Primary = 1.15 cfs @ 14.06 hrs, Volume= 0.506 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



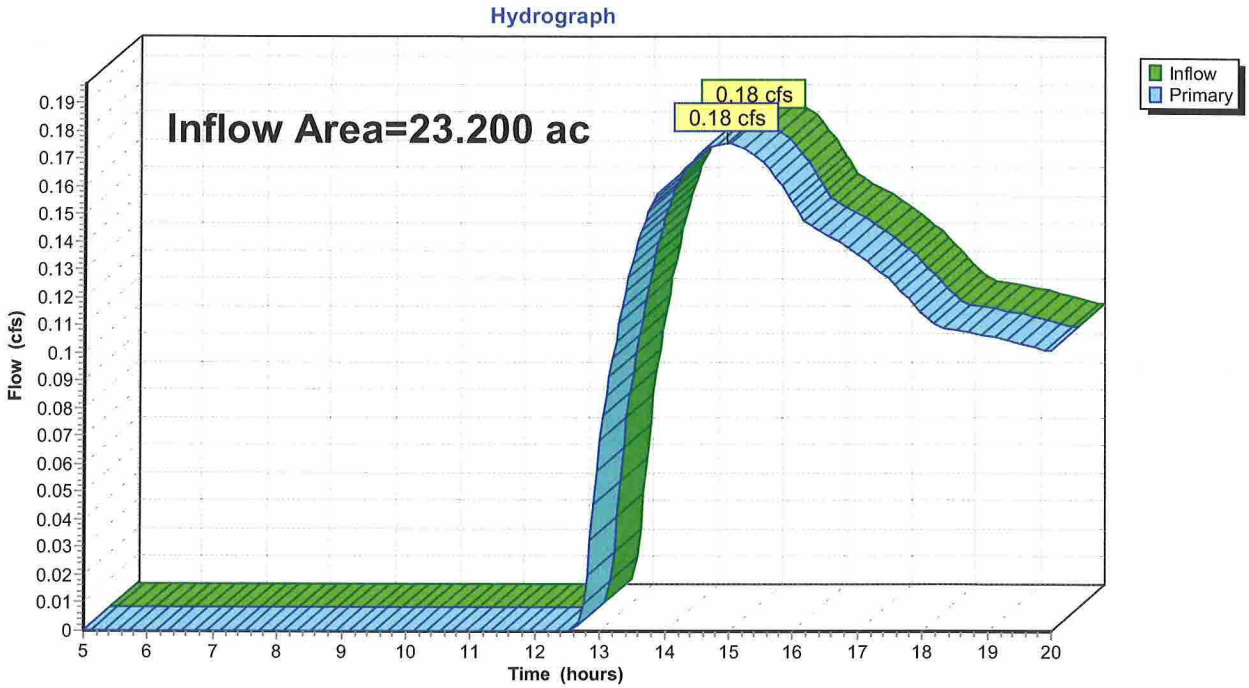
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.00% Impervious, Inflow Depth > 0.04" for 1-Year event
Inflow = 0.18 cfs @ 14.96 hrs, Volume= 0.079 af
Primary = 0.18 cfs @ 14.96 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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 3S: EX-1 Runoff Area=79.800 ac 0.00% Impervious Runoff Depth>0.20"
Flow Length=3,588' Tc=44.7 min CN=55 Runoff=5.04 cfs 1.355 af

Subcatchment 4S: EX-2 Runoff Area=23.200 ac 0.00% Impervious Runoff Depth>0.14"
Flow Length=1,026' Tc=13.4 min CN=52 Runoff=1.06 cfs 0.271 af

Pond 1P: DP-1 Inflow=5.04 cfs 1.355 af
Primary=5.04 cfs 1.355 af

Pond 2P: DP-2 Inflow=1.06 cfs 0.271 af
Primary=1.06 cfs 0.271 af

Total Runoff Area = 103.000 ac Runoff Volume = 1.626 af Average Runoff Depth = 0.19"
100.00% Pervious = 103.000 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: EX-1

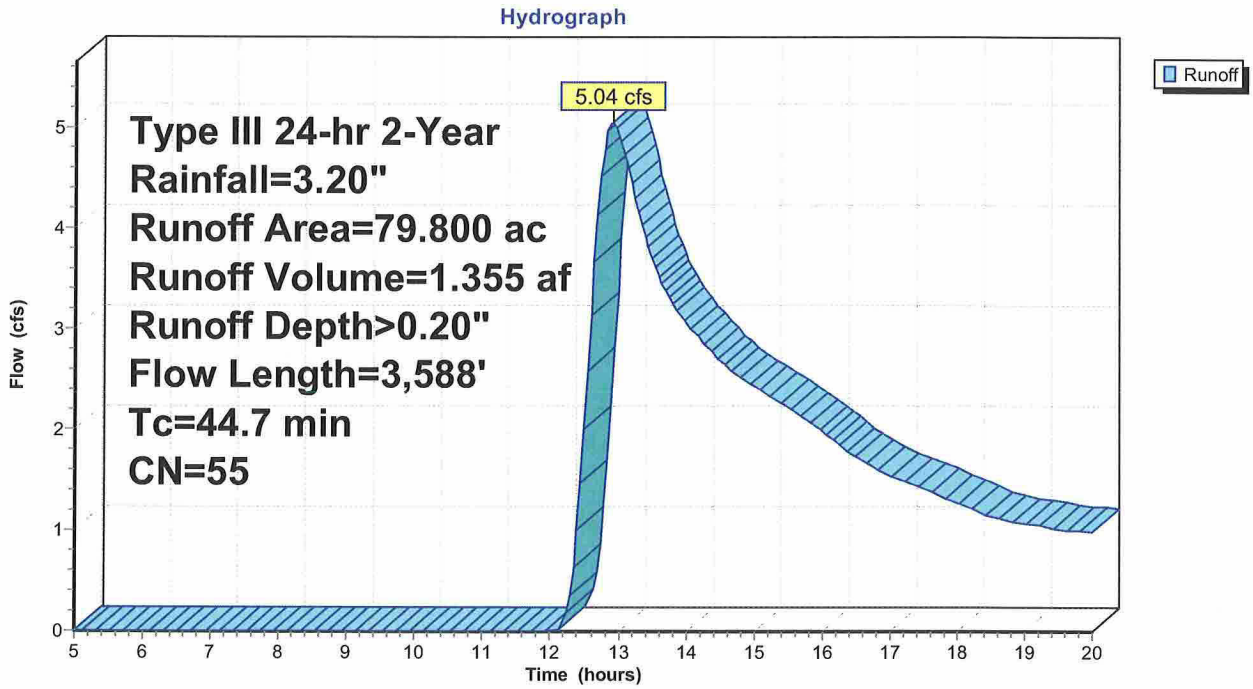
Runoff = 5.04 cfs @ 12.92 hrs, Volume= 1.355 af, Depth> 0.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
28.500	39	Pasture/grassland/range, Good, HSG A
46.300	61	Pasture/grassland/range, Good, HSG B
5.000	86	Woods/grass comb., Poor, HSG D
79.800	55	Weighted Average
79.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: EX-1



Summary for Subcatchment 4S: EX-2

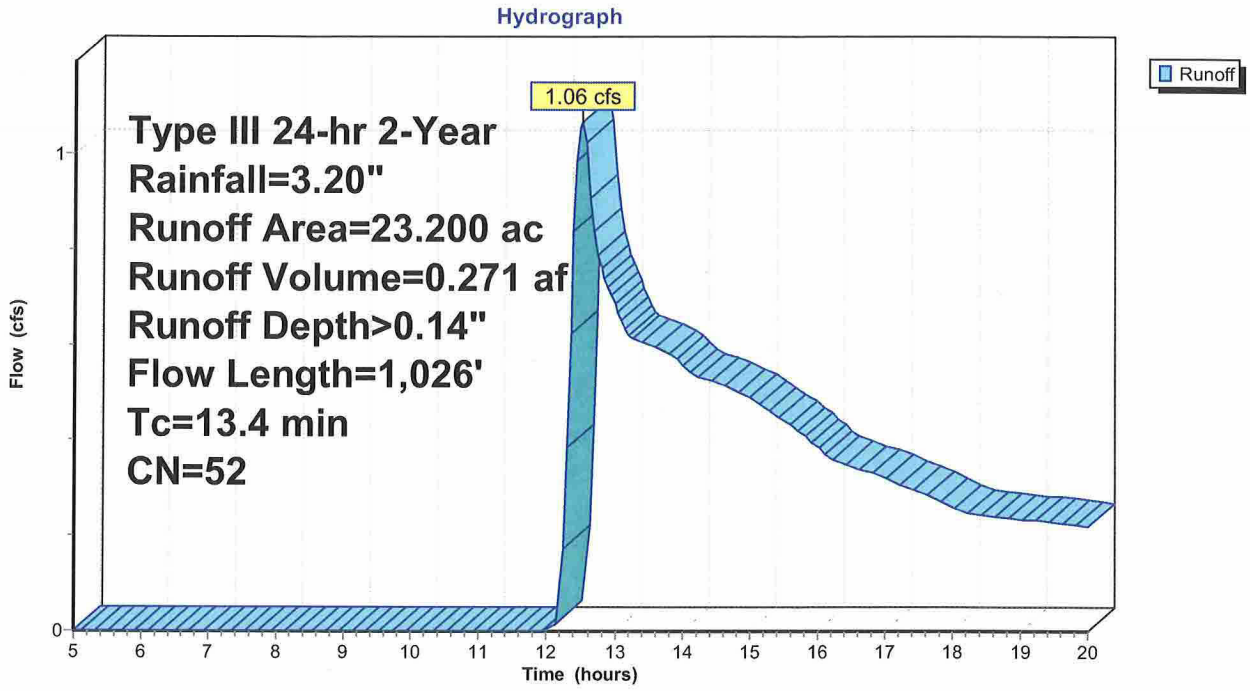
Runoff = 1.06 cfs @ 12.52 hrs, Volume= 0.271 af, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
9.280	39	Pasture/grassland/range, Good, HSG A
13.920	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
23.200	52	Weighted Average
23.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: EX-2



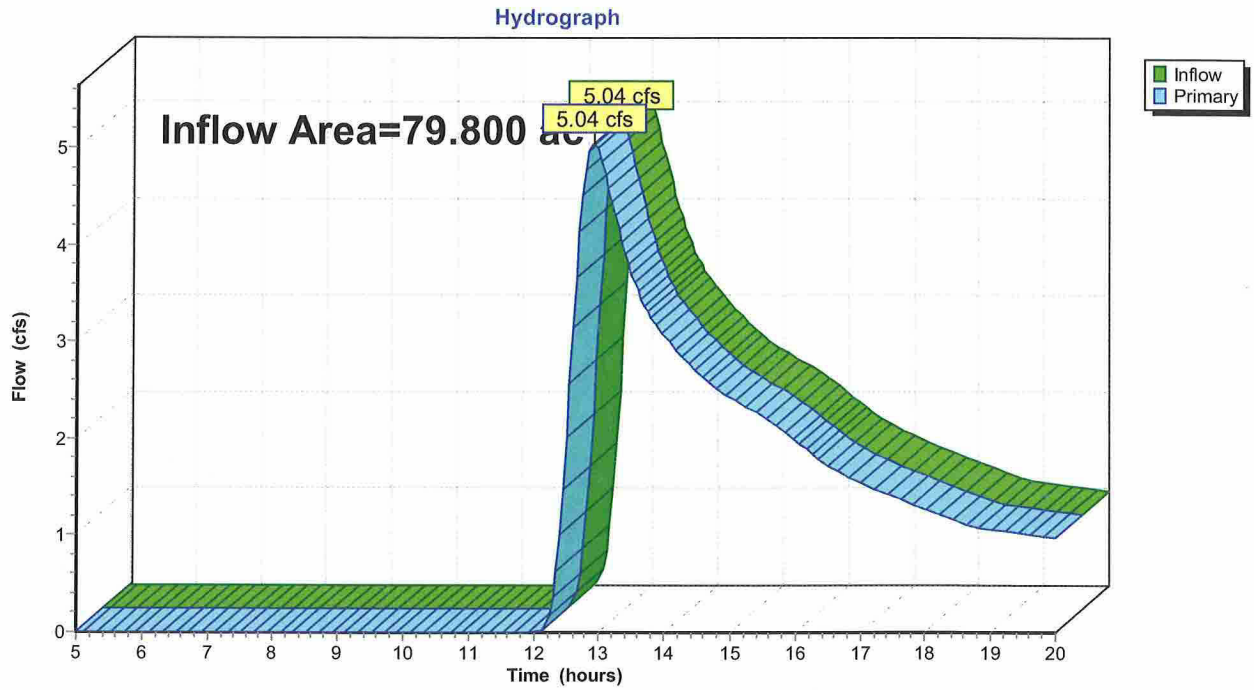
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.00% Impervious, Inflow Depth > 0.20" for 2-Year event
Inflow = 5.04 cfs @ 12.92 hrs, Volume= 1.355 af
Primary = 5.04 cfs @ 12.92 hrs, Volume= 1.355 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



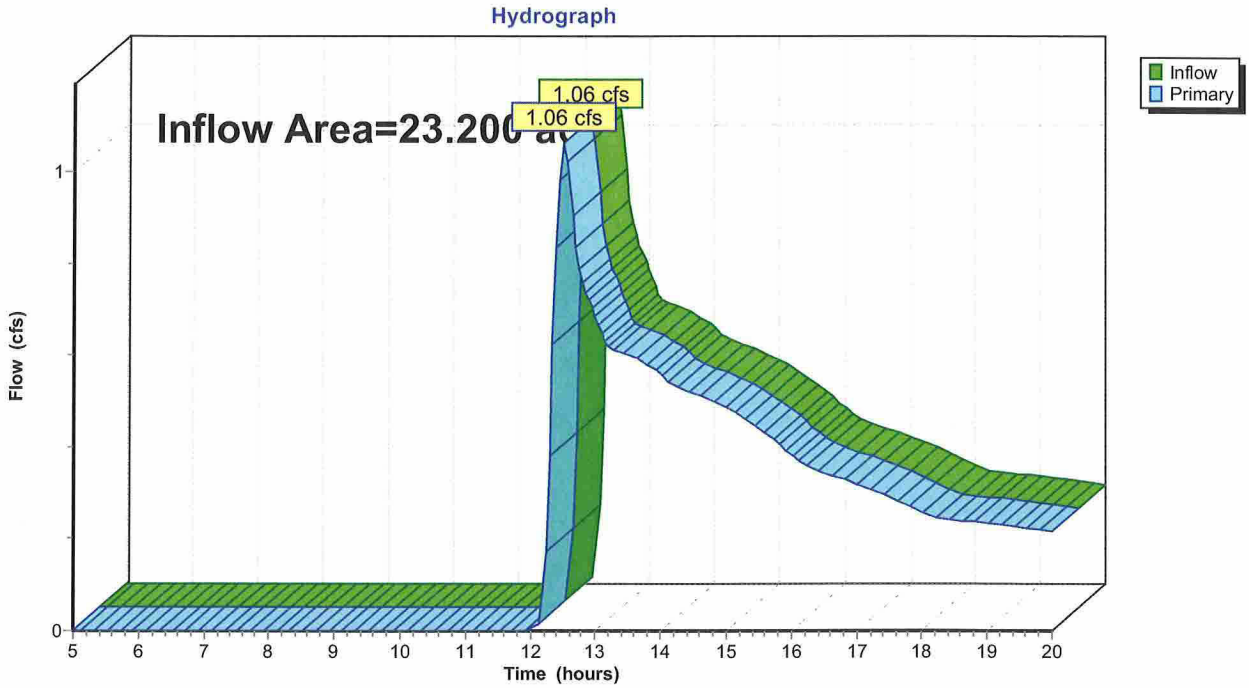
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.00% Impervious, Inflow Depth > 0.14" for 2-Year event
Inflow = 1.06 cfs @ 12.52 hrs, Volume= 0.271 af
Primary = 1.06 cfs @ 12.52 hrs, Volume= 0.271 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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 3S: EX-1 Runoff Area=79.800 ac 0.00% Impervious Runoff Depth>0.49"
Flow Length=3,588' Tc=44.7 min CN=55 Runoff=16.96 cfs 3.228 af

Subcatchment 4S: EX-2 Runoff Area=23.200 ac 0.00% Impervious Runoff Depth>0.38"
Flow Length=1,026' Tc=13.4 min CN=52 Runoff=4.90 cfs 0.732 af

Pond 1P: DP-1 Inflow=16.96 cfs 3.228 af
Primary=16.96 cfs 3.228 af

Pond 2P: DP-2 Inflow=4.90 cfs 0.732 af
Primary=4.90 cfs 0.732 af

Total Runoff Area = 103.000 ac Runoff Volume = 3.959 af Average Runoff Depth = 0.46"
100.00% Pervious = 103.000 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: EX-1

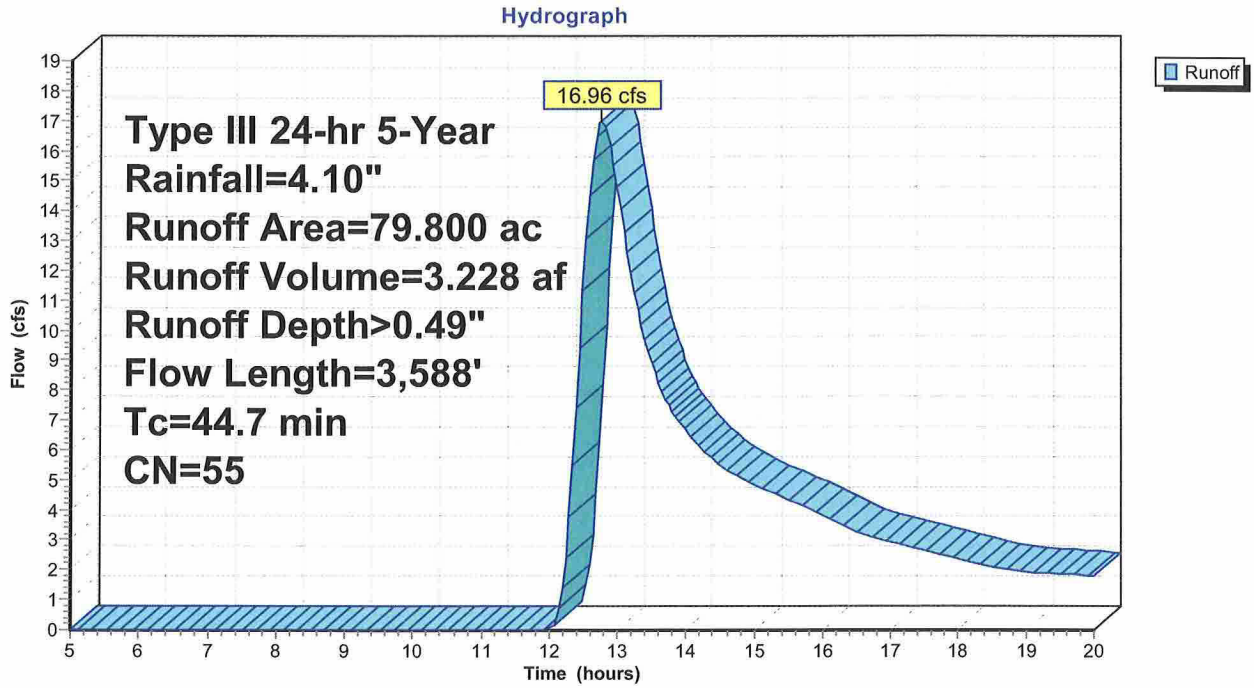
Runoff = 16.96 cfs @ 12.78 hrs, Volume= 3.228 af, Depth> 0.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.10"

Area (ac)	CN	Description
28.500	39	Pasture/grassland/range, Good, HSG A
46.300	61	Pasture/grassland/range, Good, HSG B
5.000	86	Woods/grass comb., Poor, HSG D
79.800	55	Weighted Average
79.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: EX-1



Summary for Subcatchment 4S: EX-2

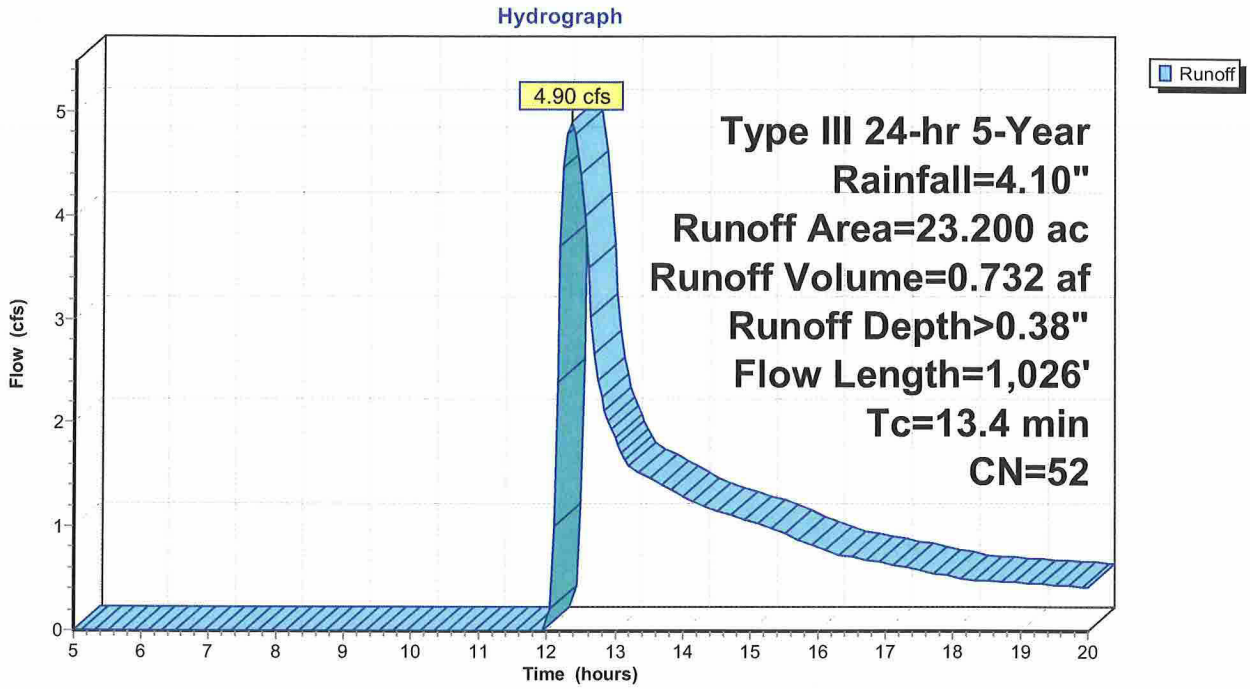
Runoff = 4.90 cfs @ 12.37 hrs, Volume= 0.732 af, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.10"

Area (ac)	CN	Description
9.280	39	Pasture/grassland/range, Good, HSG A
13.920	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
23.200	52	Weighted Average
23.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: EX-2



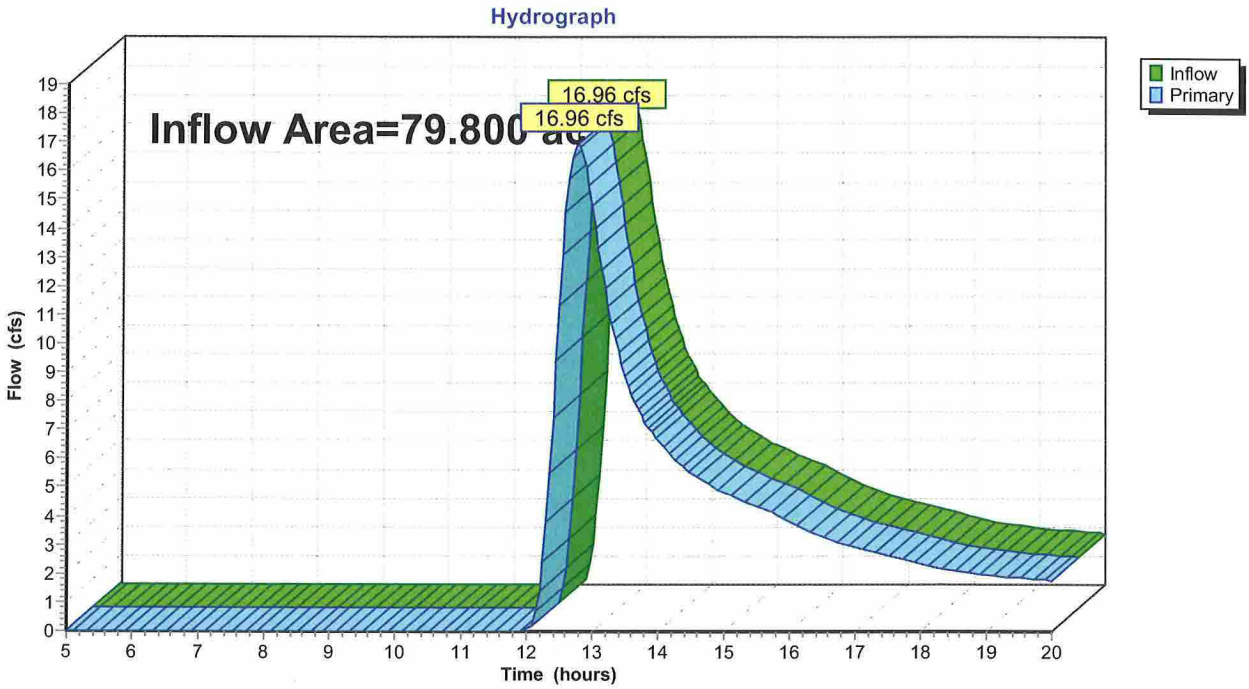
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.00% Impervious, Inflow Depth > 0.49" for 5-Year event
Inflow = 16.96 cfs @ 12.78 hrs, Volume= 3.228 af
Primary = 16.96 cfs @ 12.78 hrs, Volume= 3.228 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



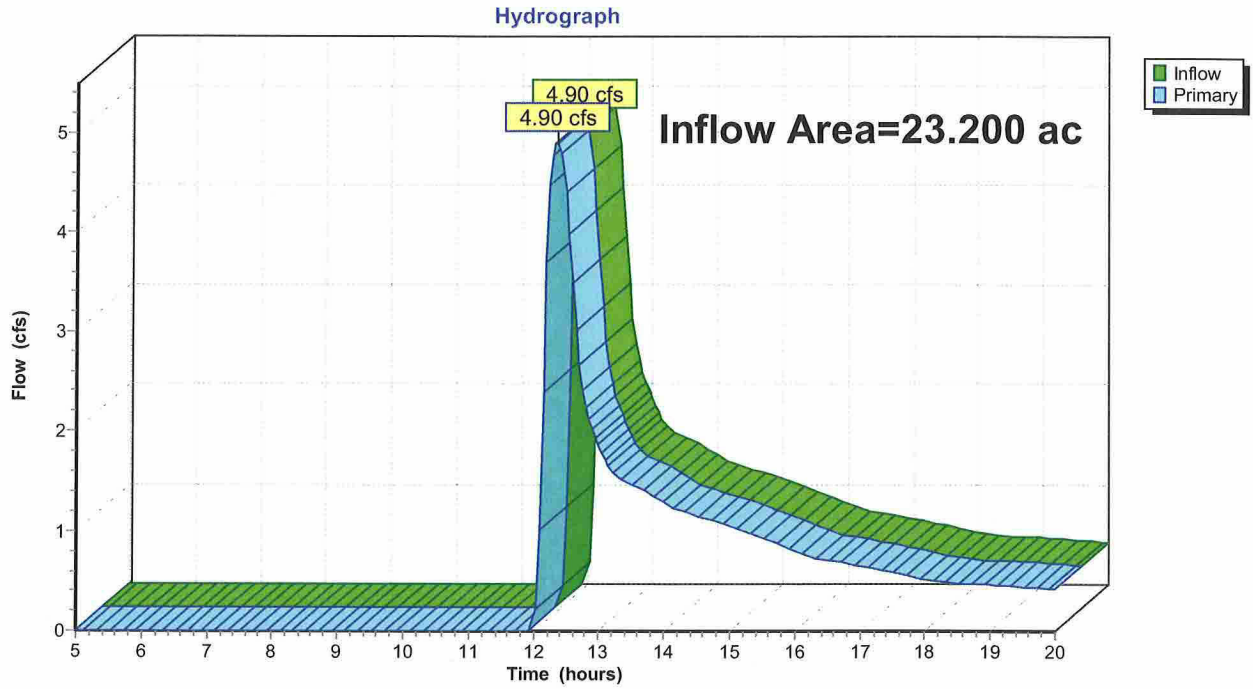
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.00% Impervious, Inflow Depth > 0.38" for 5-Year event
Inflow = 4.90 cfs @ 12.37 hrs, Volume= 0.732 af
Primary = 4.90 cfs @ 12.37 hrs, Volume= 0.732 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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 3S: EX-1 Runoff Area=79.800 ac 0.00% Impervious Runoff Depth>0.77"
Flow Length=3,588' Tc=44.7 min CN=55 Runoff=30.22 cfs 5.088 af

Subcatchment 4S: EX-2 Runoff Area=23.200 ac 0.00% Impervious Runoff Depth>0.63"
Flow Length=1,026' Tc=13.4 min CN=52 Runoff=10.15 cfs 1.209 af

Pond 1P: DP-1 Inflow=30.22 cfs 5.088 af
Primary=30.22 cfs 5.088 af

Pond 2P: DP-2 Inflow=10.15 cfs 1.209 af
Primary=10.15 cfs 1.209 af

Total Runoff Area = 103.000 ac Runoff Volume = 6.298 af Average Runoff Depth = 0.73"
100.00% Pervious = 103.000 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: EX-1

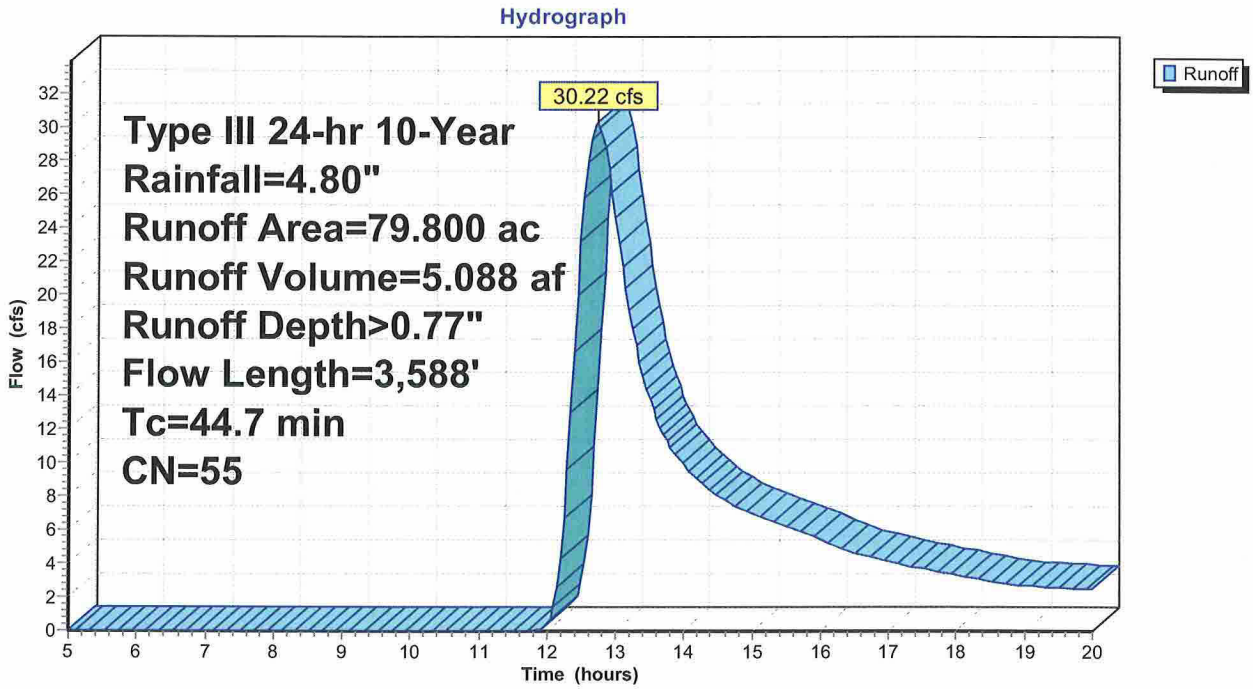
Runoff = 30.22 cfs @ 12.74 hrs, Volume= 5.088 af, Depth> 0.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
28.500	39	Pasture/grassland/range, Good, HSG A
46.300	61	Pasture/grassland/range, Good, HSG B
5.000	86	Woods/grass comb., Poor, HSG D
79.800	55	Weighted Average
79.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: EX-1



Summary for Subcatchment 4S: EX-2

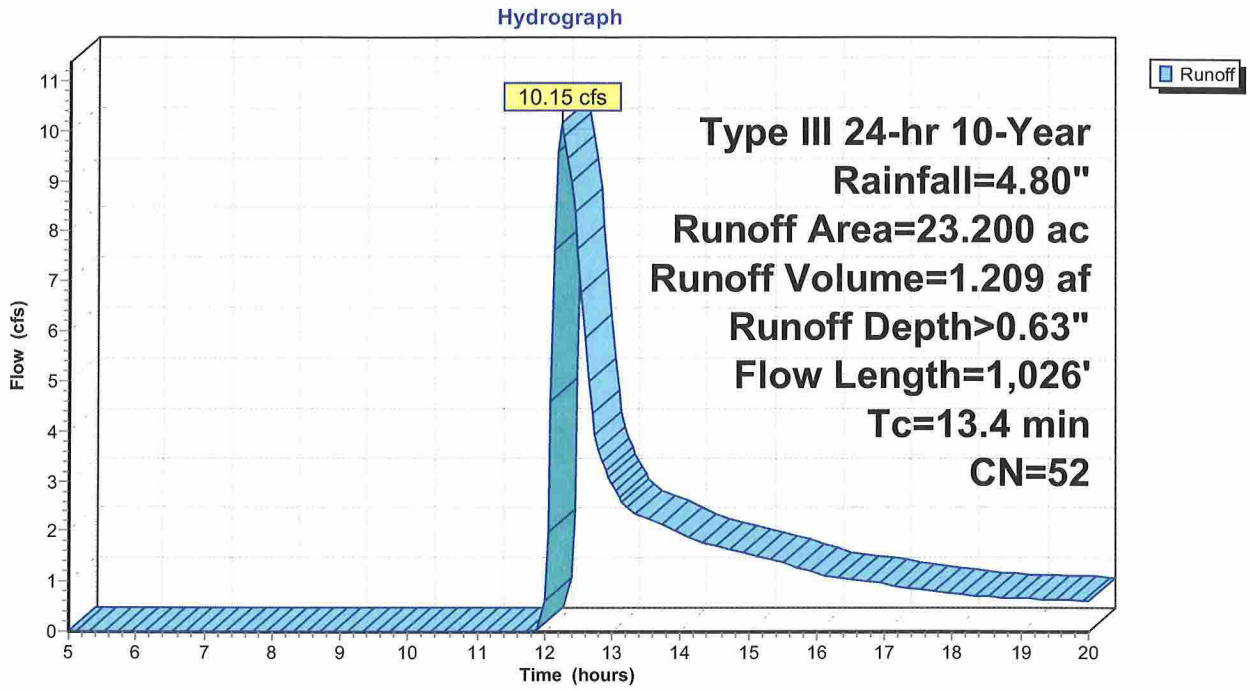
Runoff = 10.15 cfs @ 12.26 hrs, Volume= 1.209 af, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
9.280	39	Pasture/grassland/range, Good, HSG A
13.920	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
23.200	52	Weighted Average
23.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: EX-2



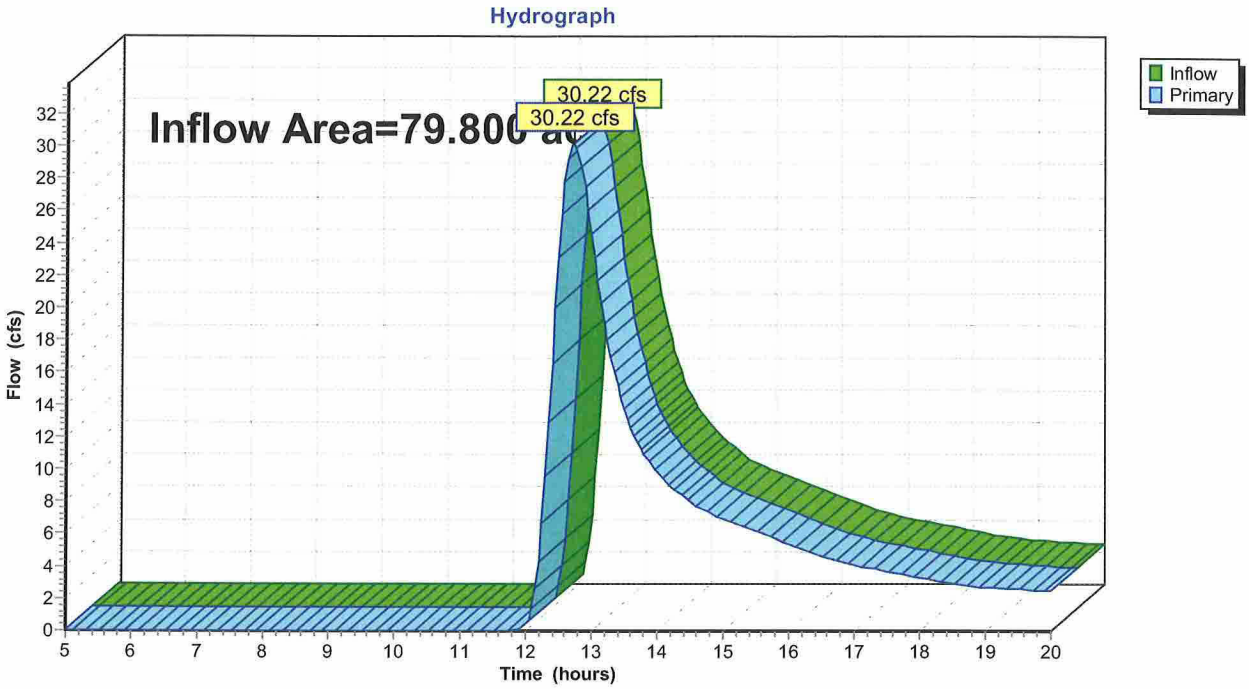
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.00% Impervious, Inflow Depth > 0.77" for 10-Year event
Inflow = 30.22 cfs @ 12.74 hrs, Volume= 5.088 af
Primary = 30.22 cfs @ 12.74 hrs, Volume= 5.088 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



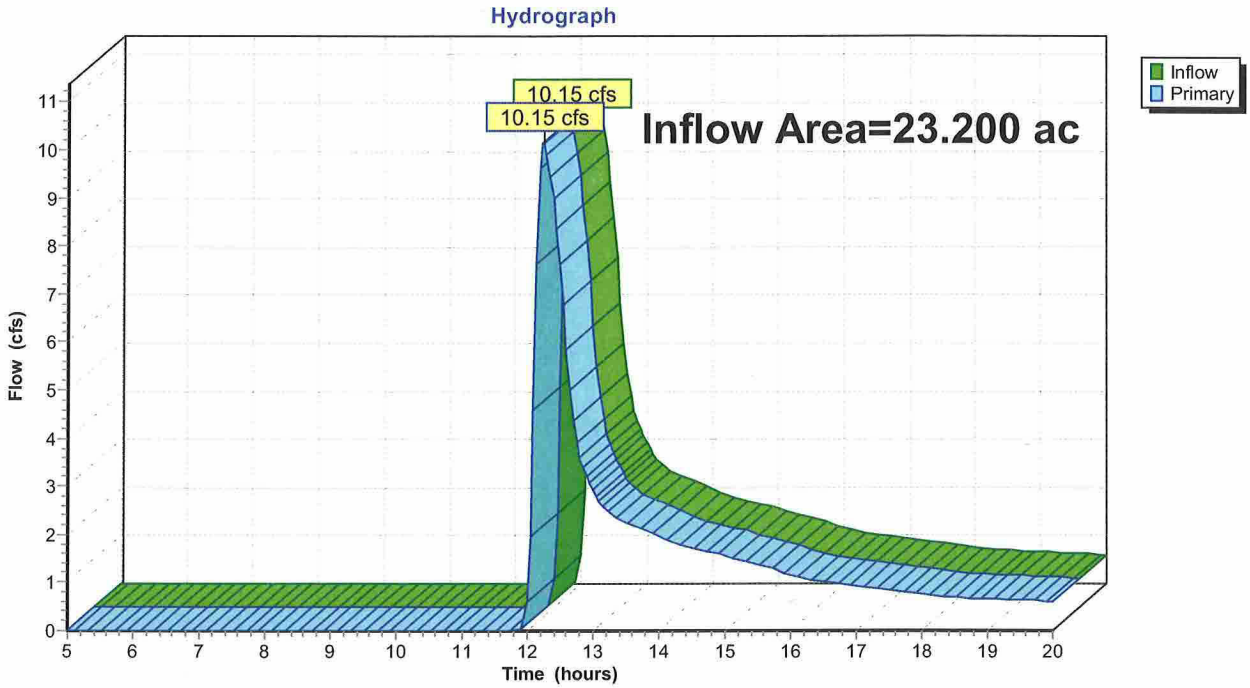
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.00% Impervious, Inflow Depth > 0.63" for 10-Year event
Inflow = 10.15 cfs @ 12.26 hrs, Volume= 1.209 af
Primary = 10.15 cfs @ 12.26 hrs, Volume= 1.209 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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 3S: EX-1 Runoff Area=79.800 ac 0.00% Impervious Runoff Depth>1.09"
Flow Length=3,588' Tc=44.7 min CN=55 Runoff=45.99 cfs 7.237 af

Subcatchment 4S: EX-2 Runoff Area=23.200 ac 0.00% Impervious Runoff Depth>0.92"
Flow Length=1,026' Tc=13.4 min CN=52 Runoff=16.98 cfs 1.773 af

Pond 1P: DP-1 Inflow=45.99 cfs 7.237 af
Primary=45.99 cfs 7.237 af

Pond 2P: DP-2 Inflow=16.98 cfs 1.773 af
Primary=16.98 cfs 1.773 af

Total Runoff Area = 103.000 ac Runoff Volume = 9.010 af Average Runoff Depth = 1.05"
100.00% Pervious = 103.000 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: EX-1

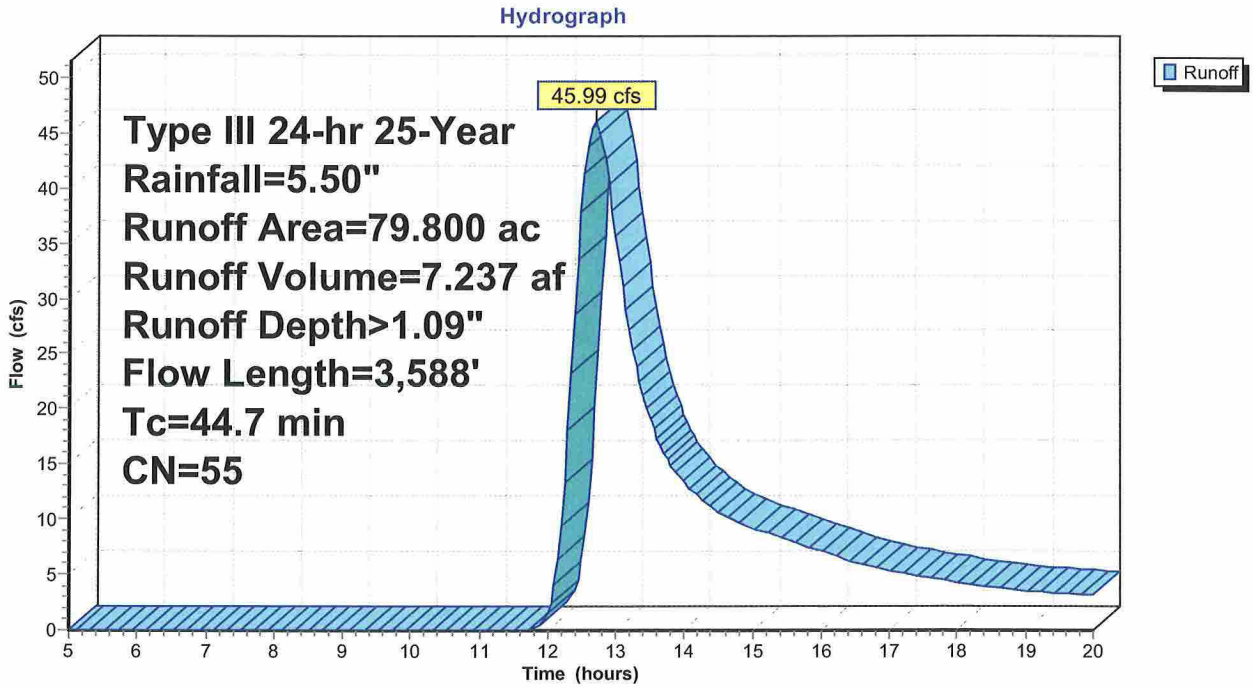
Runoff = 45.99 cfs @ 12.71 hrs, Volume= 7.237 af, Depth> 1.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
28.500	39	Pasture/grassland/range, Good, HSG A
46.300	61	Pasture/grassland/range, Good, HSG B
5.000	86	Woods/grass comb., Poor, HSG D
79.800	55	Weighted Average
79.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: EX-1



Summary for Subcatchment 4S: EX-2

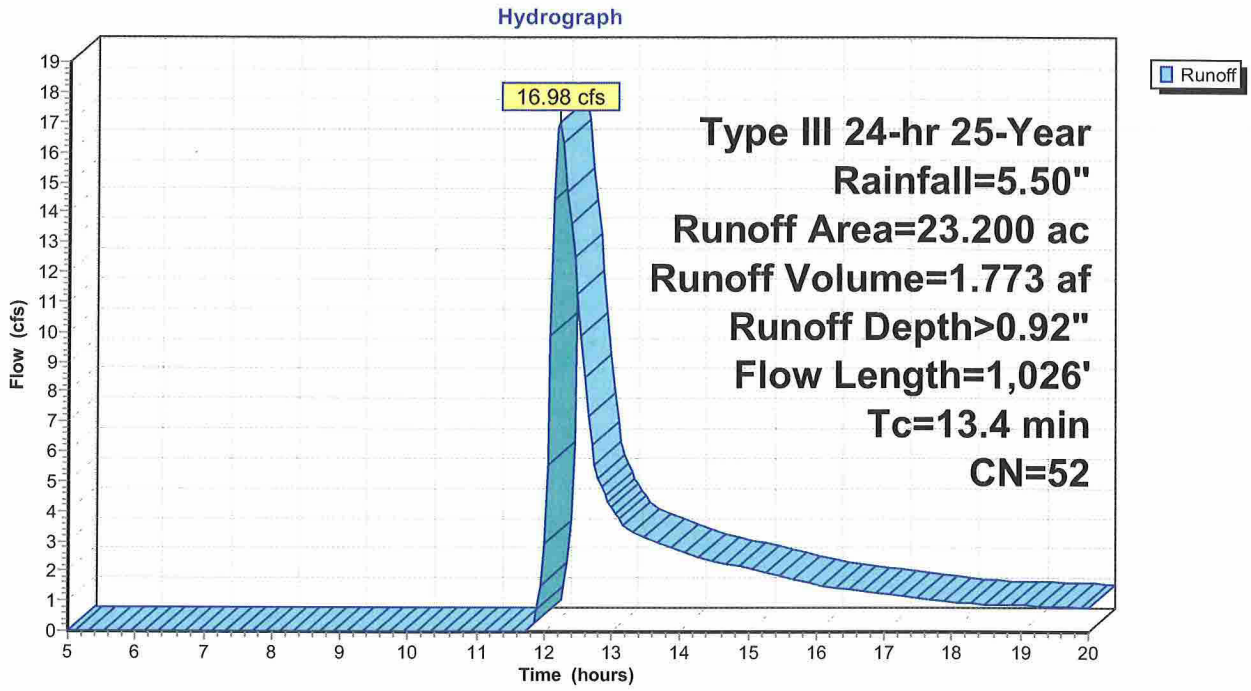
Runoff = 16.98 cfs @ 12.23 hrs, Volume= 1.773 af, Depth> 0.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
9.280	39	Pasture/grassland/range, Good, HSG A
13.920	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
23.200	52	Weighted Average
23.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: EX-2



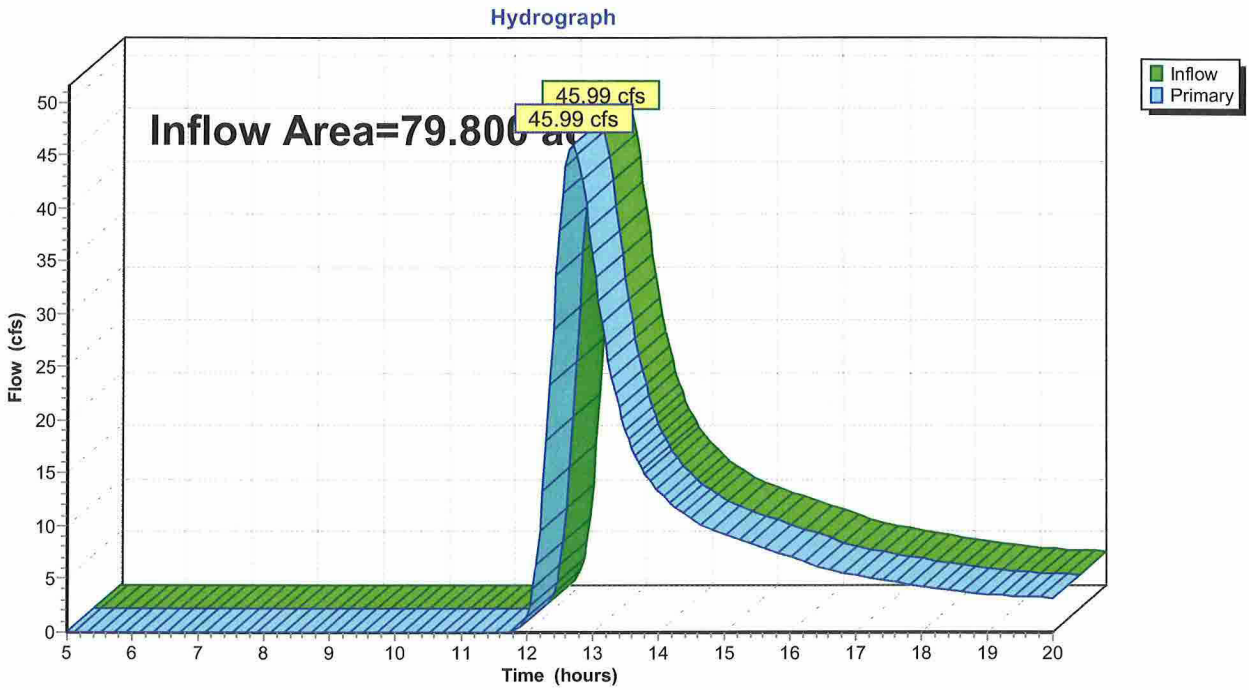
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.00% Impervious, Inflow Depth > 1.09" for 25-Year event
Inflow = 45.99 cfs @ 12.71 hrs, Volume= 7.237 af
Primary = 45.99 cfs @ 12.71 hrs, Volume= 7.237 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



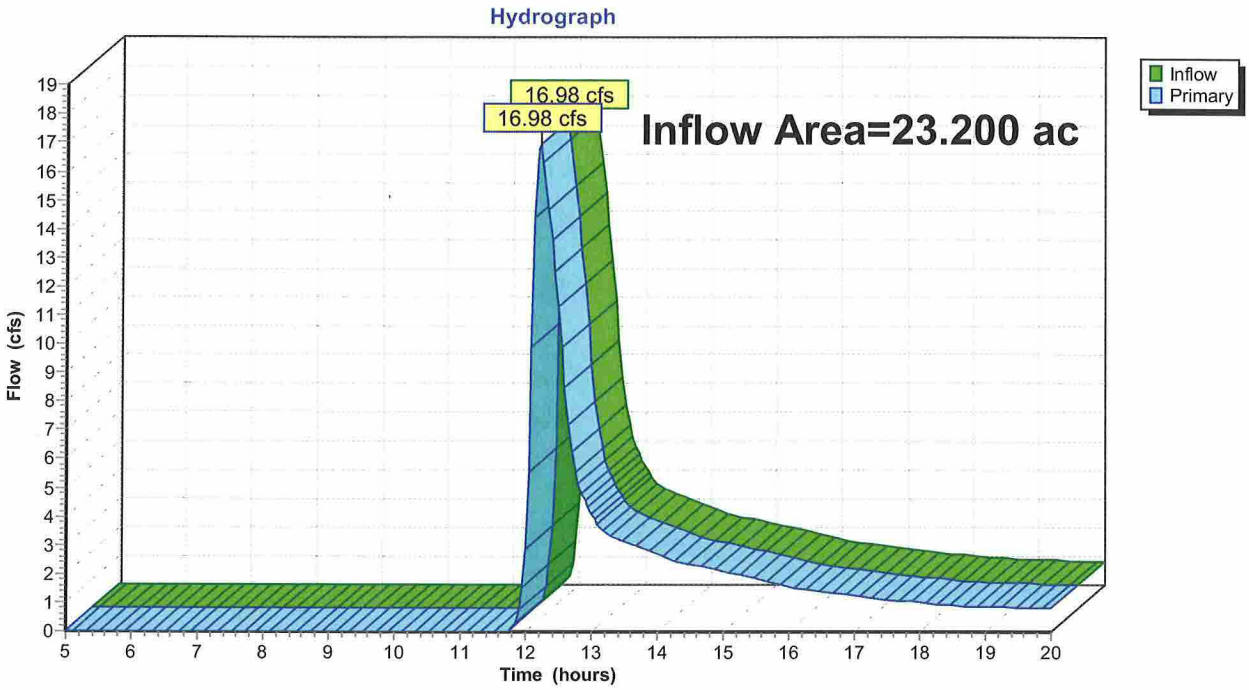
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.00% Impervious, Inflow Depth > 0.92" for 25-Year event
Inflow = 16.98 cfs @ 12.23 hrs, Volume= 1.773 af
Primary = 16.98 cfs @ 12.23 hrs, Volume= 1.773 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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 3S: EX-1 Runoff Area=79.800 ac 0.00% Impervious Runoff Depth>1.45"
Flow Length=3,588' Tc=44.7 min CN=55 Runoff=63.71 cfs 9.627 af

Subcatchment 4S: EX-2 Runoff Area=23.200 ac 0.00% Impervious Runoff Depth>1.25"
Flow Length=1,026' Tc=13.4 min CN=52 Runoff=25.12 cfs 2.410 af

Pond 1P: DP-1 Inflow=63.71 cfs 9.627 af
Primary=63.71 cfs 9.627 af

Pond 2P: DP-2 Inflow=25.12 cfs 2.410 af
Primary=25.12 cfs 2.410 af

Total Runoff Area = 103.000 ac Runoff Volume = 12.038 af Average Runoff Depth = 1.40"
100.00% Pervious = 103.000 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: EX-1

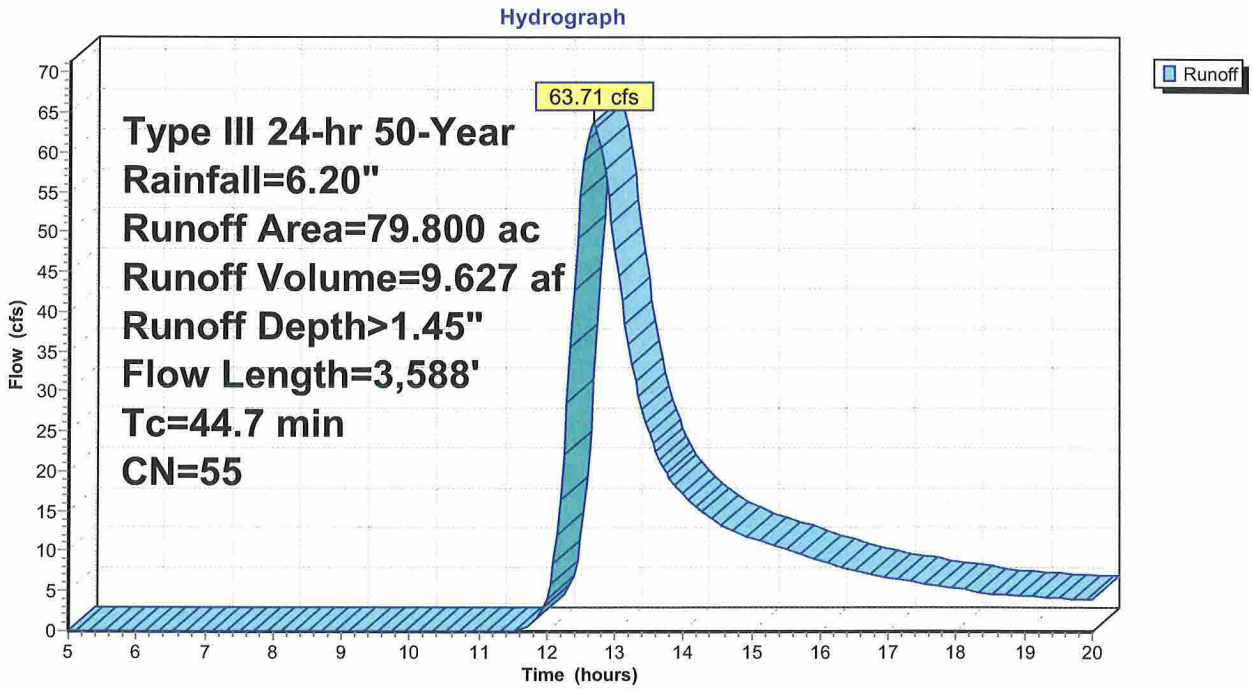
Runoff = 63.71 cfs @ 12.69 hrs, Volume= 9.627 af, Depth> 1.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
28.500	39	Pasture/grassland/range, Good, HSG A
46.300	61	Pasture/grassland/range, Good, HSG B
5.000	86	Woods/grass comb., Poor, HSG D
79.800	55	Weighted Average
79.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: EX-1



Summary for Subcatchment 4S: EX-2

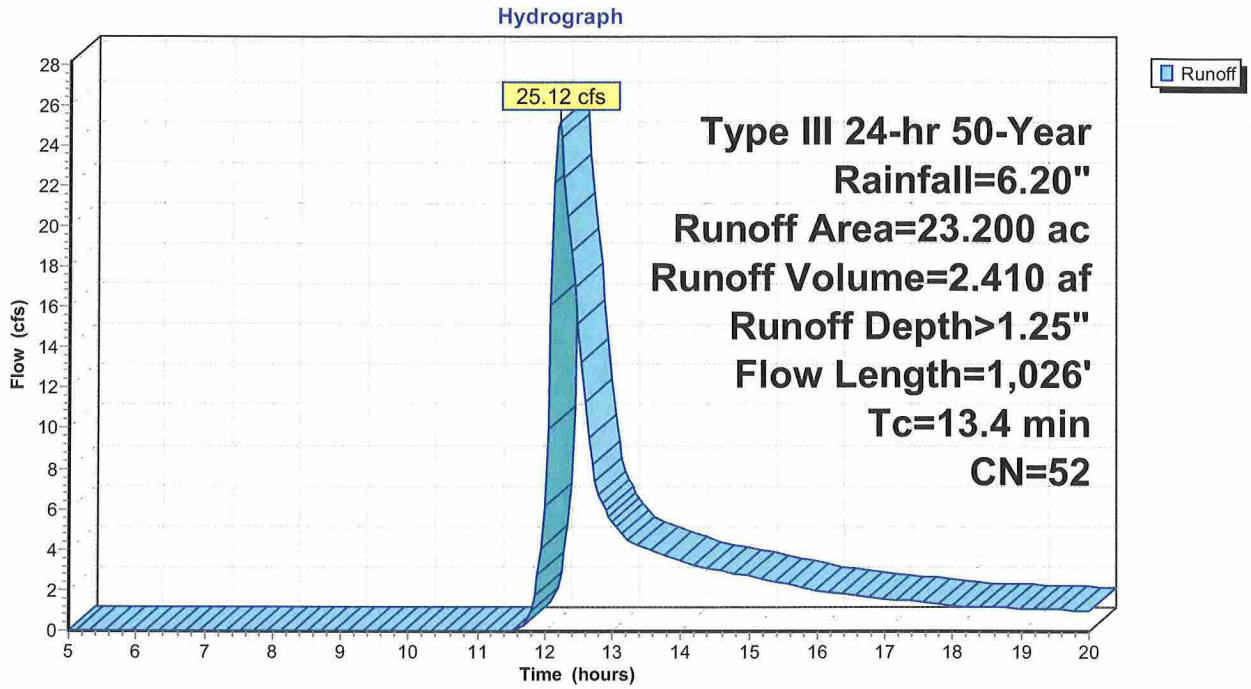
Runoff = 25.12 cfs @ 12.22 hrs, Volume= 2.410 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
9.280	39	Pasture/grassland/range, Good, HSG A
13.920	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
23.200	52	Weighted Average
23.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: EX-2



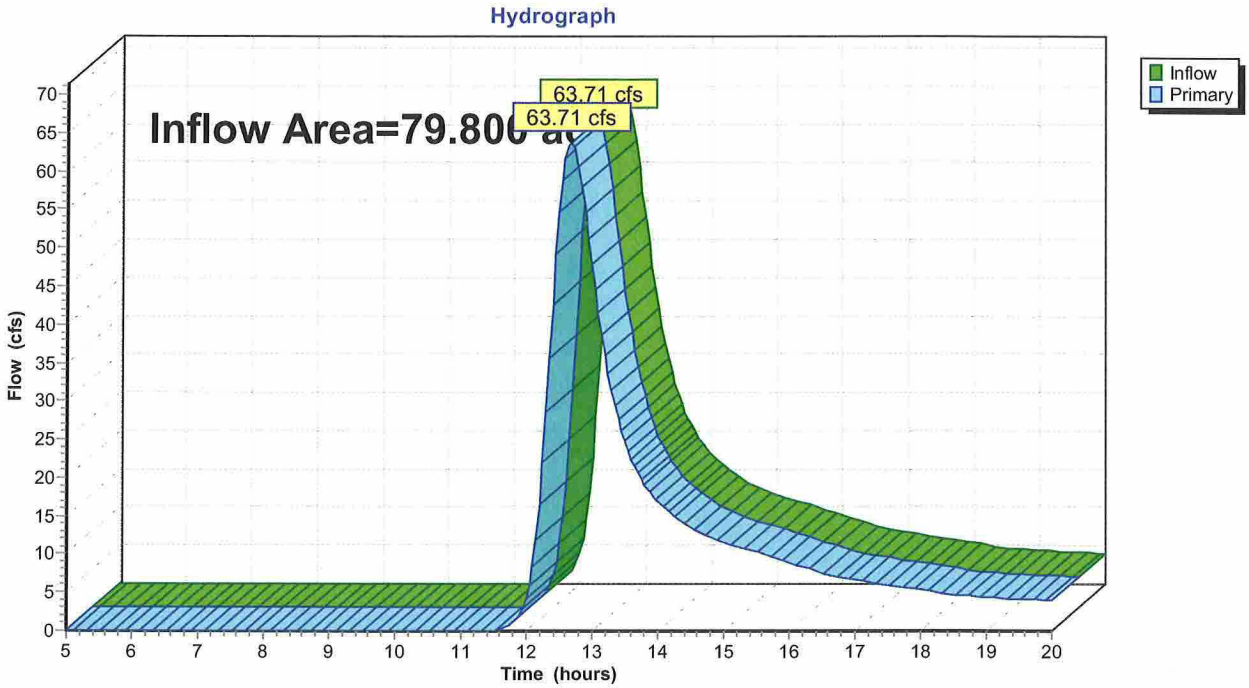
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.00% Impervious, Inflow Depth > 1.45" for 50-Year event
Inflow = 63.71 cfs @ 12.69 hrs, Volume= 9.627 af
Primary = 63.71 cfs @ 12.69 hrs, Volume= 9.627 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



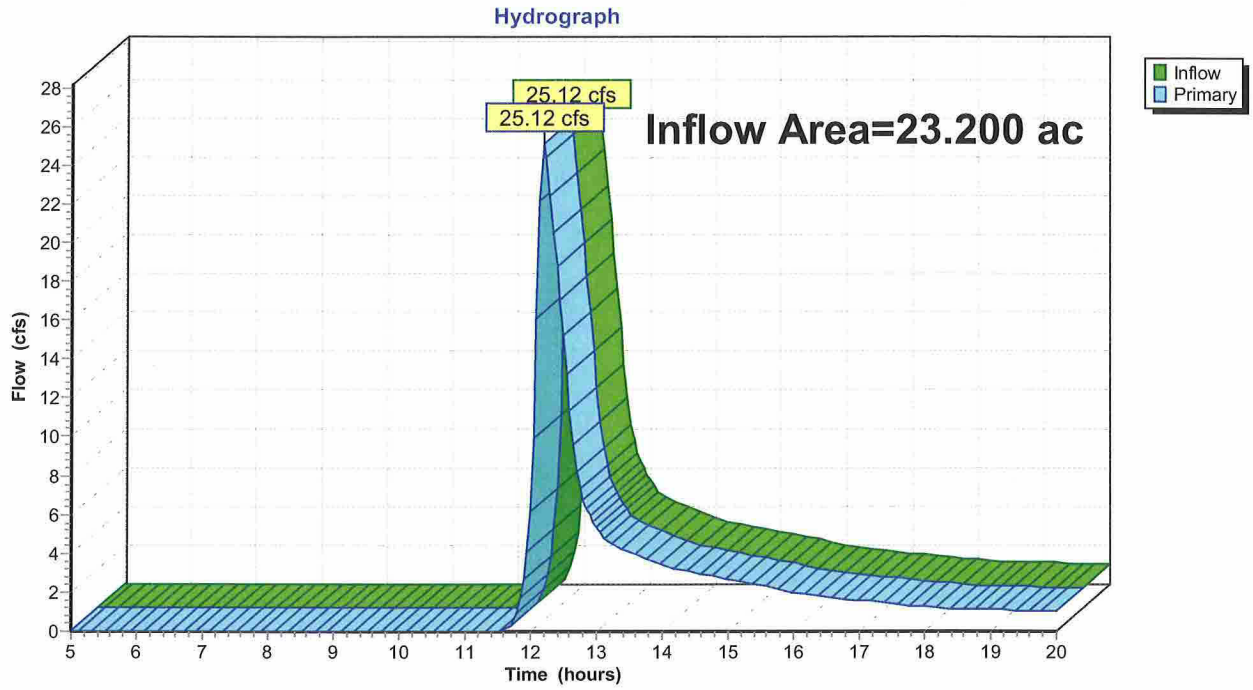
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.00% Impervious, Inflow Depth > 1.25" for 50-Year event
Inflow = 25.12 cfs @ 12.22 hrs, Volume= 2.410 af
Primary = 25.12 cfs @ 12.22 hrs, Volume= 2.410 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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 3S: EX-1 Runoff Area=79.800 ac 0.00% Impervious Runoff Depth>1.84"
Flow Length=3,588' Tc=44.7 min CN=55 Runoff=82.98 cfs 12.223 af

Subcatchment 4S: EX-2 Runoff Area=23.200 ac 0.00% Impervious Runoff Depth>1.61"
Flow Length=1,026' Tc=13.4 min CN=52 Runoff=33.86 cfs 3.110 af

Pond 1P: DP-1 Inflow=82.98 cfs 12.223 af
Primary=82.98 cfs 12.223 af

Pond 2P: DP-2 Inflow=33.86 cfs 3.110 af
Primary=33.86 cfs 3.110 af

Total Runoff Area = 103.000 ac Runoff Volume = 15.333 af Average Runoff Depth = 1.79"
100.00% Pervious = 103.000 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: EX-1

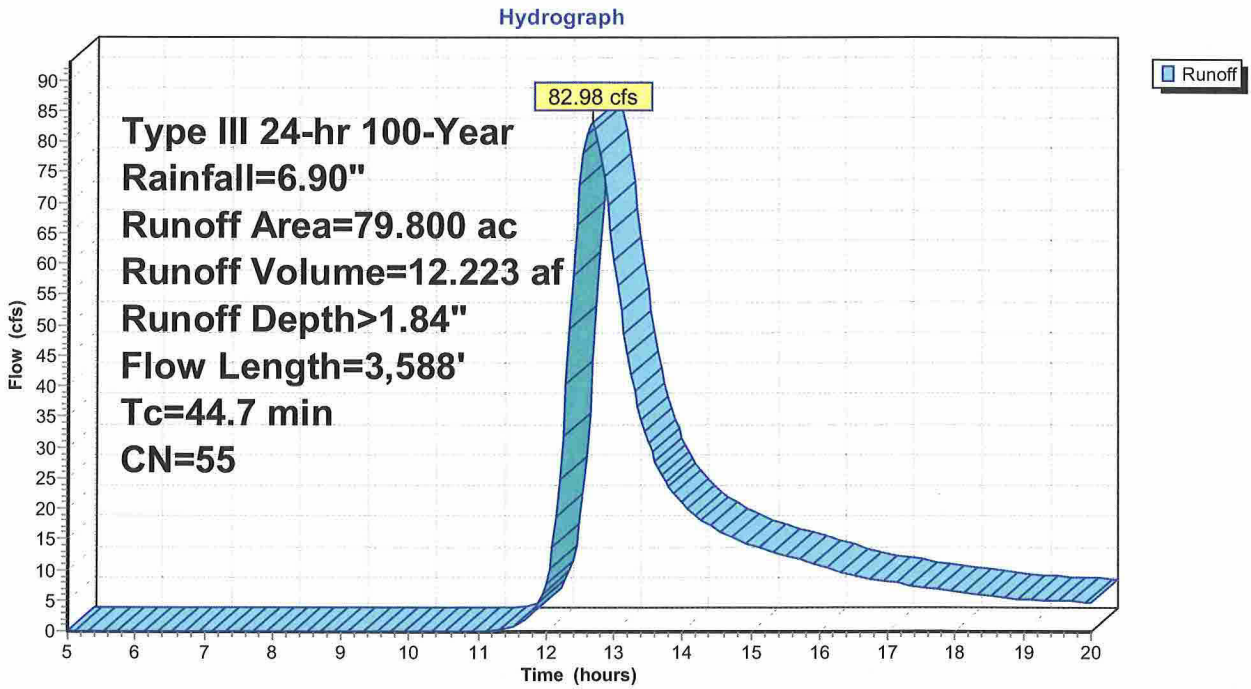
Runoff = 82.98 cfs @ 12.67 hrs, Volume= 12.223 af, Depth> 1.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
28.500	39	Pasture/grassland/range, Good, HSG A
46.300	61	Pasture/grassland/range, Good, HSG B
5.000	86	Woods/grass comb., Poor, HSG D
79.800	55	Weighted Average
79.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: EX-1



Summary for Subcatchment 4S: EX-2

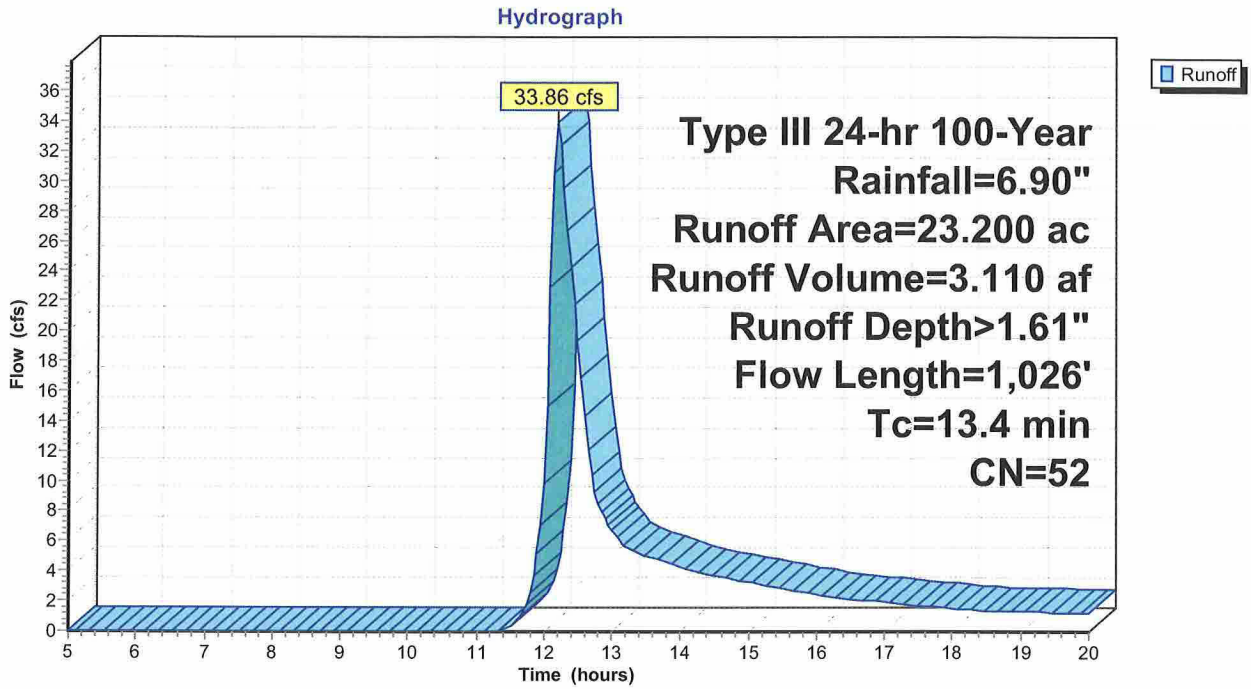
Runoff = 33.86 cfs @ 12.21 hrs, Volume= 3.110 af, Depth> 1.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
9.280	39	Pasture/grassland/range, Good, HSG A
13.920	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
23.200	52	Weighted Average
23.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: EX-2



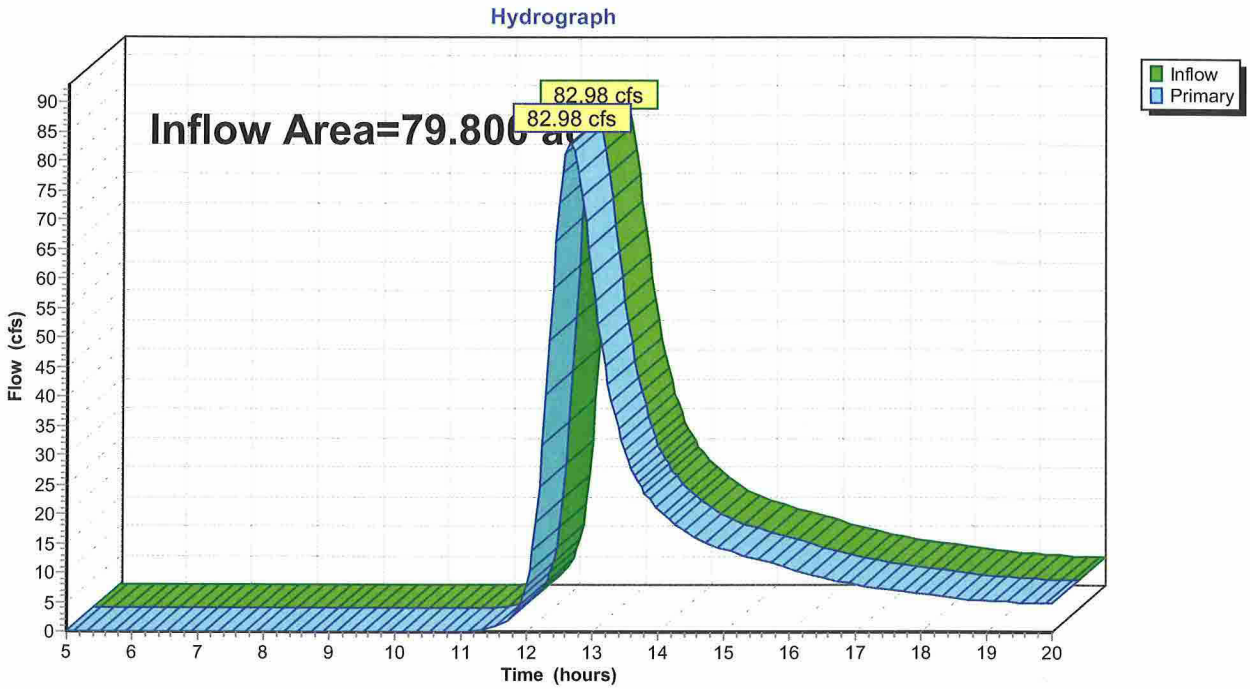
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.00% Impervious, Inflow Depth > 1.84" for 100-Year event
Inflow = 82.98 cfs @ 12.67 hrs, Volume= 12.223 af
Primary = 82.98 cfs @ 12.67 hrs, Volume= 12.223 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



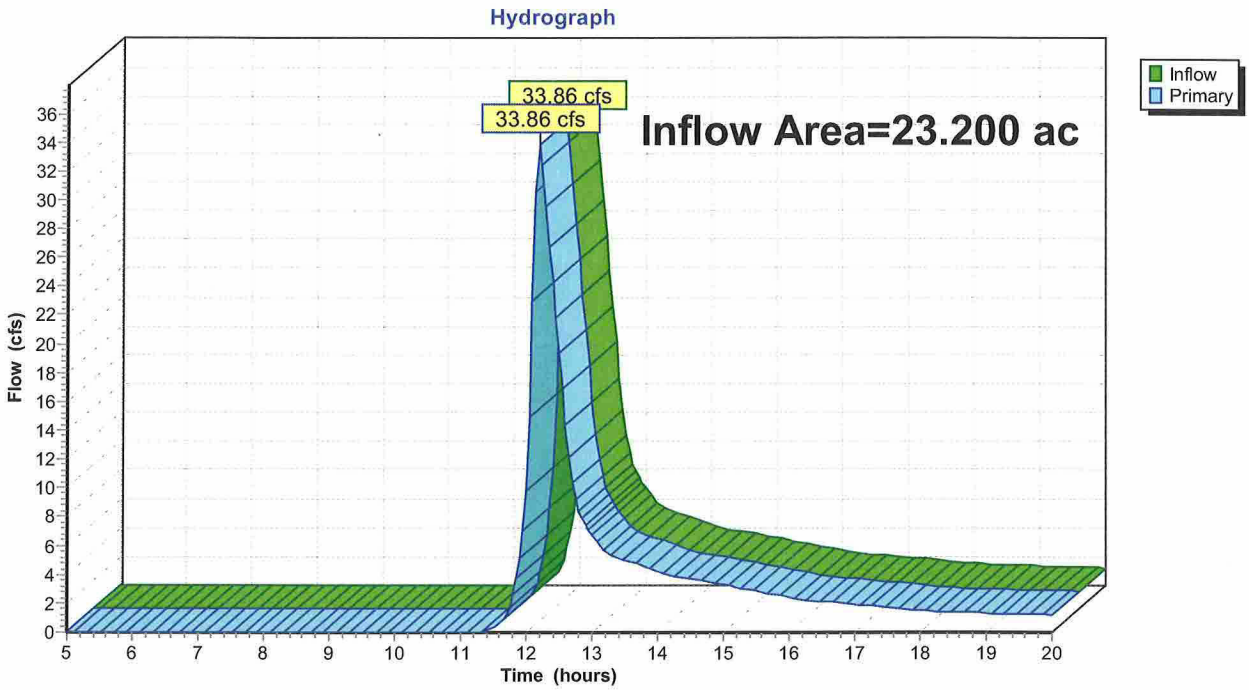
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.00% Impervious, Inflow Depth > 1.61" for 100-Year event
Inflow = 33.86 cfs @ 12.21 hrs, Volume= 3.110 af
Primary = 33.86 cfs @ 12.21 hrs, Volume= 3.110 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

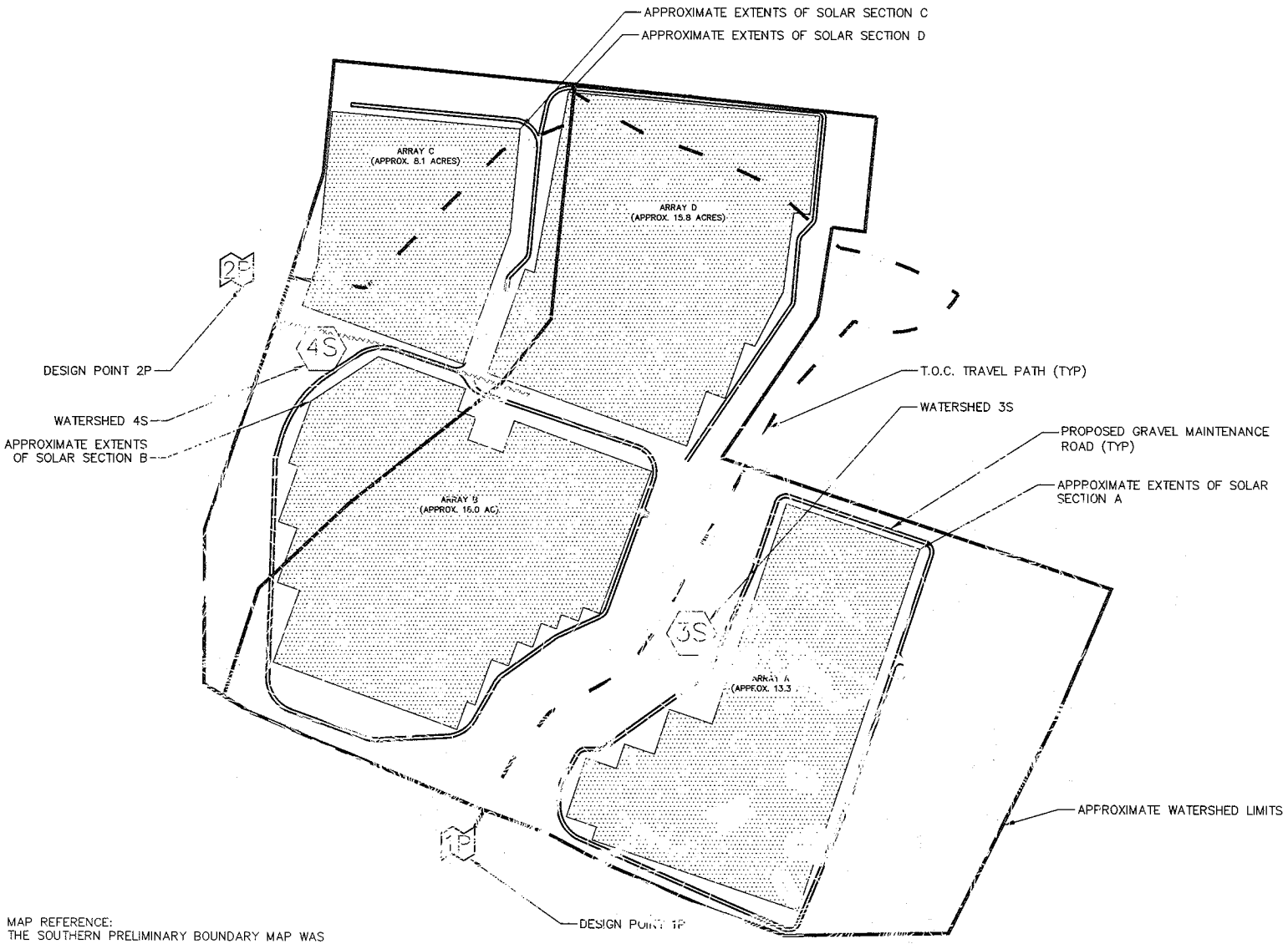
Pond 2P: DP-2



FUSS & O'NEILL

Appendix B

Proposed Watershed Analysis



MAP REFERENCE:
THE SOUTHERN PRELIMINARY BOUNDARY MAP WAS PREPARED BY AESCHLIMAN LAND SURVEYING, PC ON JANUARY 10, 2012. THE NORTHERN TOPOGRAPHY WAS PREPARED FROM FIELD SURVEY BY FUSS & O'NEILL ON SEPTEMBER 28, 2012.

NOTE: THE SOLAR ARRAY PANEL LAYOUT IS PRELIMINARY AND MAY BE MODIFIED DURING FINAL DESIGN.

SCALE: HORZ. 1" = 300'
VERT.
DATUM: HORZ.
VERT.
0 150 300
GRAPHIC SCALE

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146 HARTFORD ROAD
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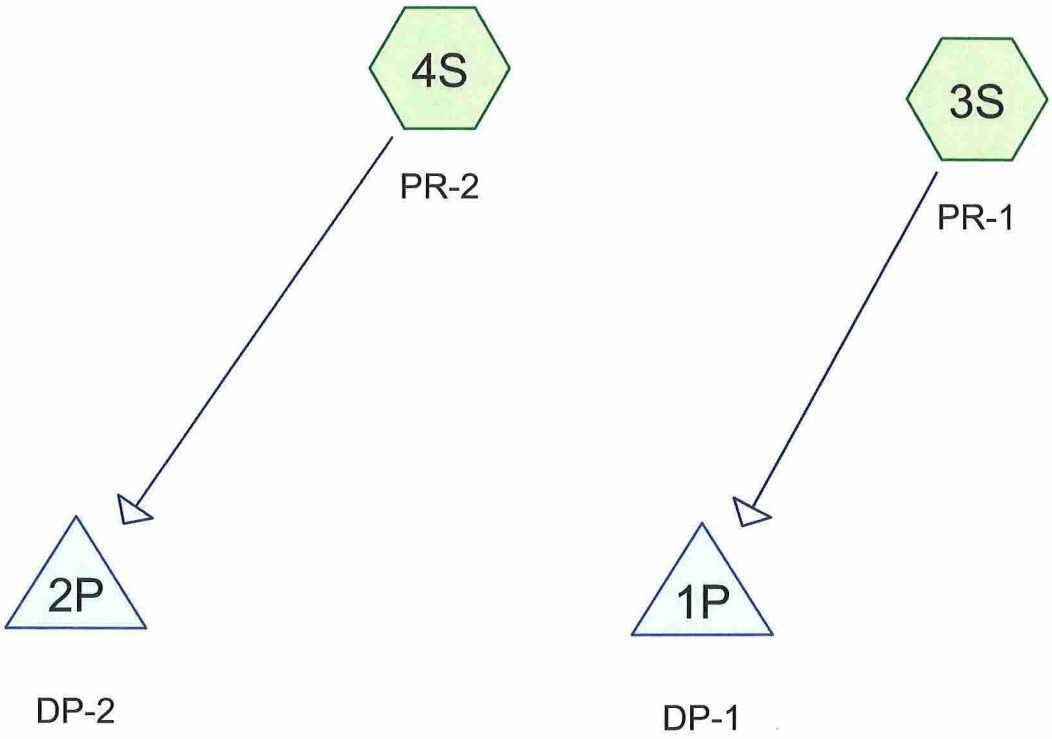
SOMERS SOLAR CENTER
488 SOUTH ROAD
SOMERS
CONNECTICUT

PROJ. No. 20120035.A20
DATE: 05/01/2012

DRA-02



Subcat Reach Pond Link

Drainage Diagram for Proposed Watersheds_withposts
Prepared by Fuss & O'Neill, Printed 10/4/2012

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
36.372	39	Pasture/grassland/range, Good, HSG A (3S, 4S)
59.025	61	Pasture/grassland/range, Good, HSG B (3S, 4S)
1.175	76	Gravel roads, HSG A (3S, 4S)
1.015	85	Gravel roads, HSG B (3S, 4S)
4.683	86	Woods/grass comb., Poor, HSG D (3S)
0.300	91	Gravel roads, HSG D (3S)
0.168	98	Unconnected pavement, HSG A (3S, 4S)
0.255	98	Unconnected pavement, HSG B (3S, 4S)
0.007	98	Unconnected pavement, HSG D (3S)
103.000	55	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
37.715	HSG A	3S, 4S
60.295	HSG B	3S, 4S
0.000	HSG C	
4.990	HSG D	3S
0.000	Other	
103.000		**TOTAL AREA**

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

Subcatchment 3S: PR-1 Runoff Area=79.800 ac 0.43% Impervious Runoff Depth>0.09"
Flow Length=3,588' Tc=44.7 min CN=55/98 Runoff=1.21 cfs 0.567 af

Subcatchment 4S: PR-2 Runoff Area=23.200 ac 0.39% Impervious Runoff Depth>0.06"
Flow Length=1,026' Tc=13.4 min CN=53/98 Runoff=0.23 cfs 0.118 af

Pond 1P: DP-1 Inflow=1.21 cfs 0.567 af
Primary=1.21 cfs 0.567 af

Pond 2P: DP-2 Inflow=0.23 cfs 0.118 af
Primary=0.23 cfs 0.118 af

Total Runoff Area = 103.000 ac Runoff Volume = 0.685 af Average Runoff Depth = 0.08"
99.58% Pervious = 102.570 ac 0.42% Impervious = 0.430 ac

Summary for Subcatchment 3S: PR-1

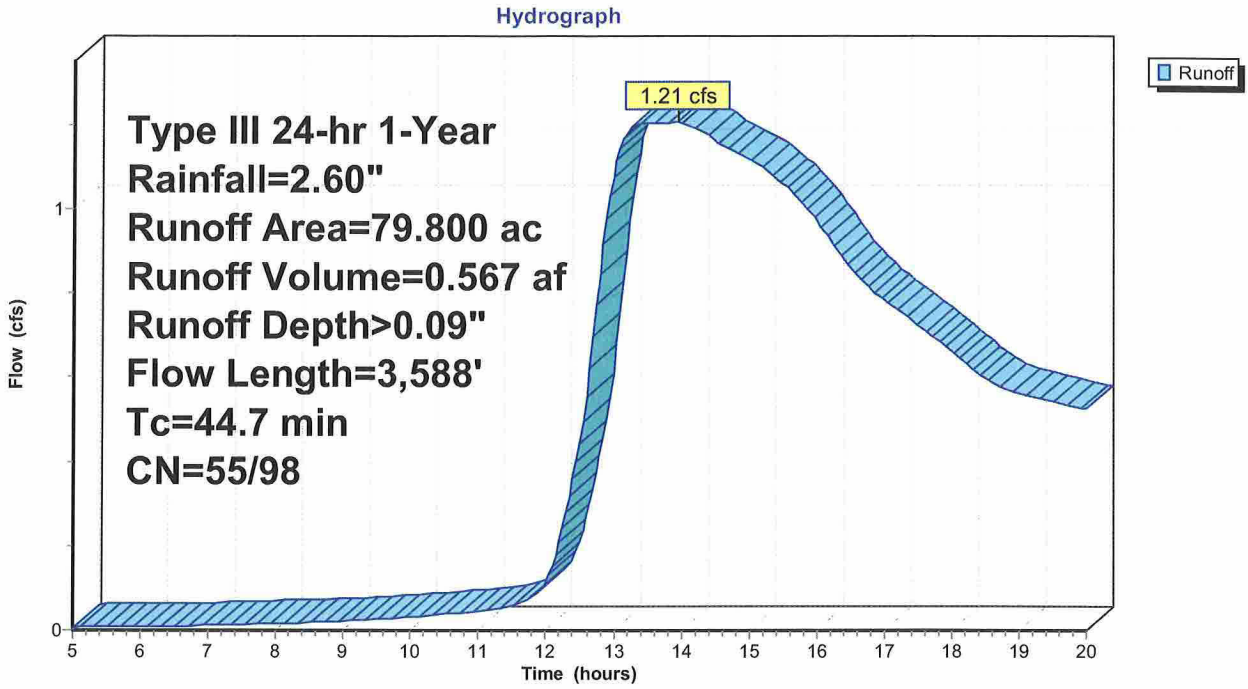
Runoff = 1.21 cfs @ 13.95 hrs, Volume= 0.567 af, Depth> 0.09"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

Area (ac)	CN	Description
27.442	39	Pasture/grassland/range, Good, HSG A
45.445	61	Pasture/grassland/range, Good, HSG B
4.683	86	Woods/grass comb., Poor, HSG D
0.655	85	Gravel roads, HSG B
0.935	76	Gravel roads, HSG A
0.300	91	Gravel roads, HSG D
0.123	98	Unconnected pavement, HSG A
0.210	98	Unconnected pavement, HSG B
0.007	98	Unconnected pavement, HSG D
79.800	56	Weighted Average
79.460	55	99.57% Pervious Area
0.340	98	0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: PR-1



Summary for Subcatchment 4S: PR-2

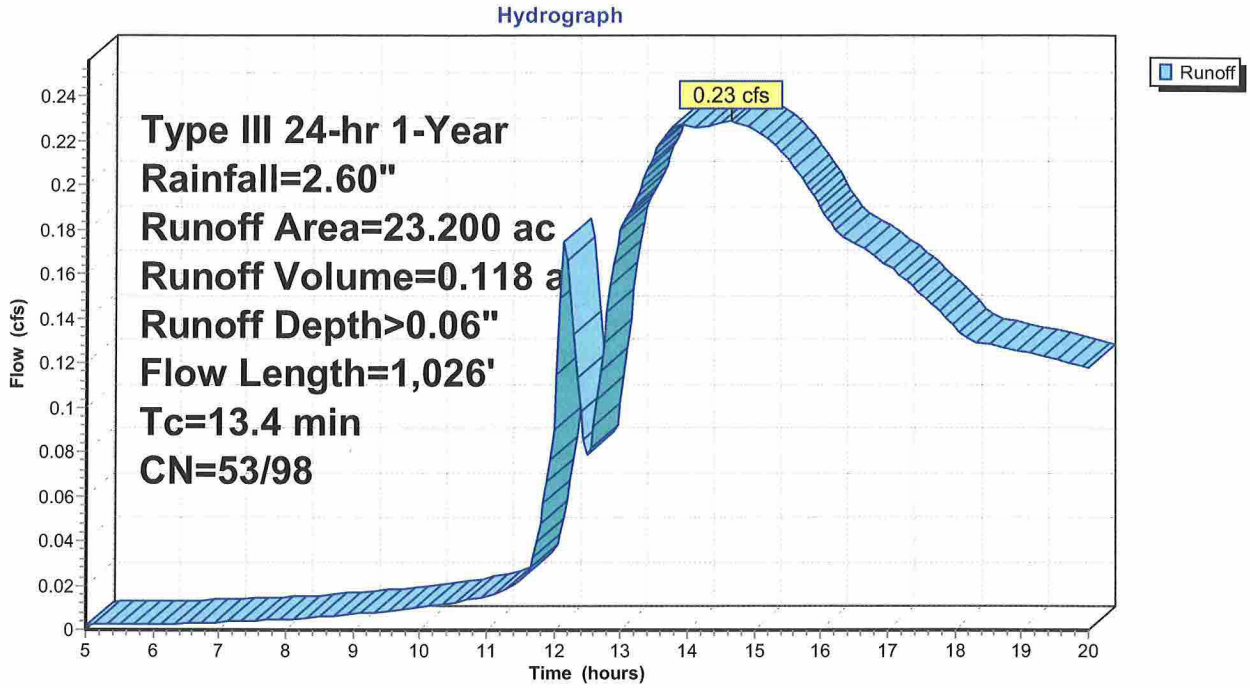
Runoff = 0.23 cfs @ 14.65 hrs, Volume= 0.118 af, Depth> 0.06"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

Area (ac)	CN	Description
8.930	39	Pasture/grassland/range, Good, HSG A
13.580	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
0.360	85	Gravel roads, HSG B
0.240	76	Gravel roads, HSG A
0.045	98	Unconnected pavement, HSG A
0.045	98	Unconnected pavement, HSG B
23.200	53	Weighted Average
23.110	53	99.61% Pervious Area
0.090	98	0.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: PR-2



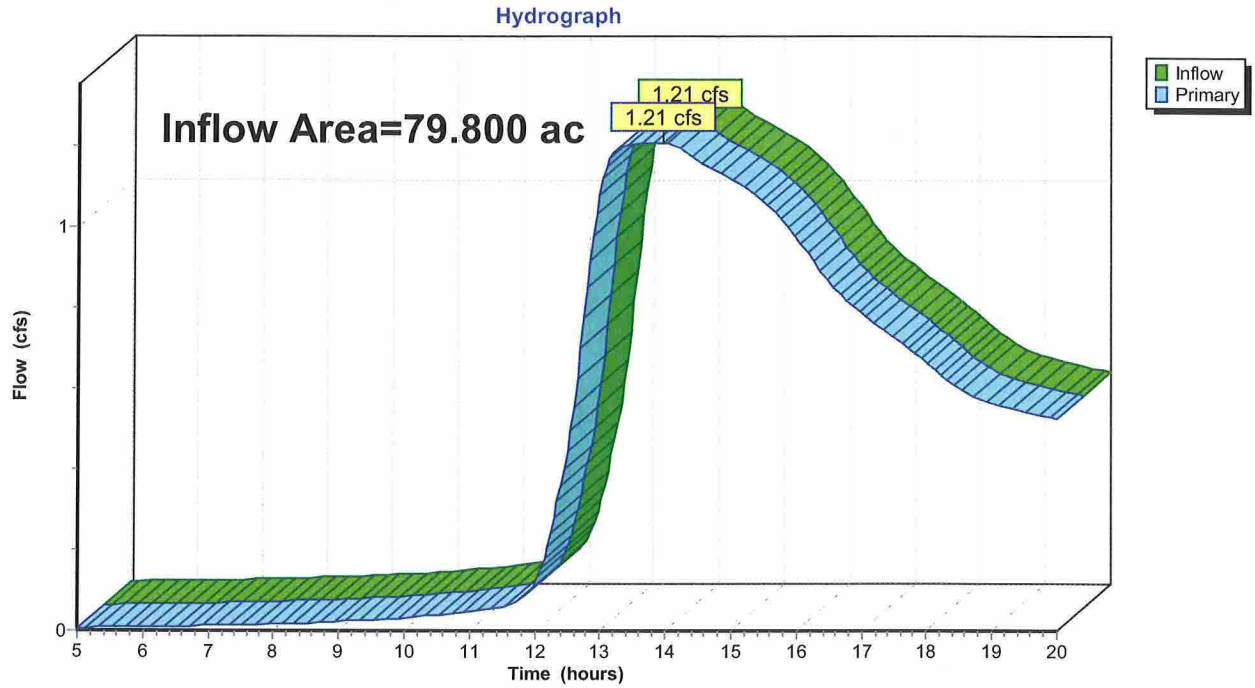
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.43% Impervious, Inflow Depth > 0.09" for 1-Year event
Inflow = 1.21 cfs @ 13.95 hrs, Volume= 0.567 af
Primary = 1.21 cfs @ 13.95 hrs, Volume= 0.567 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



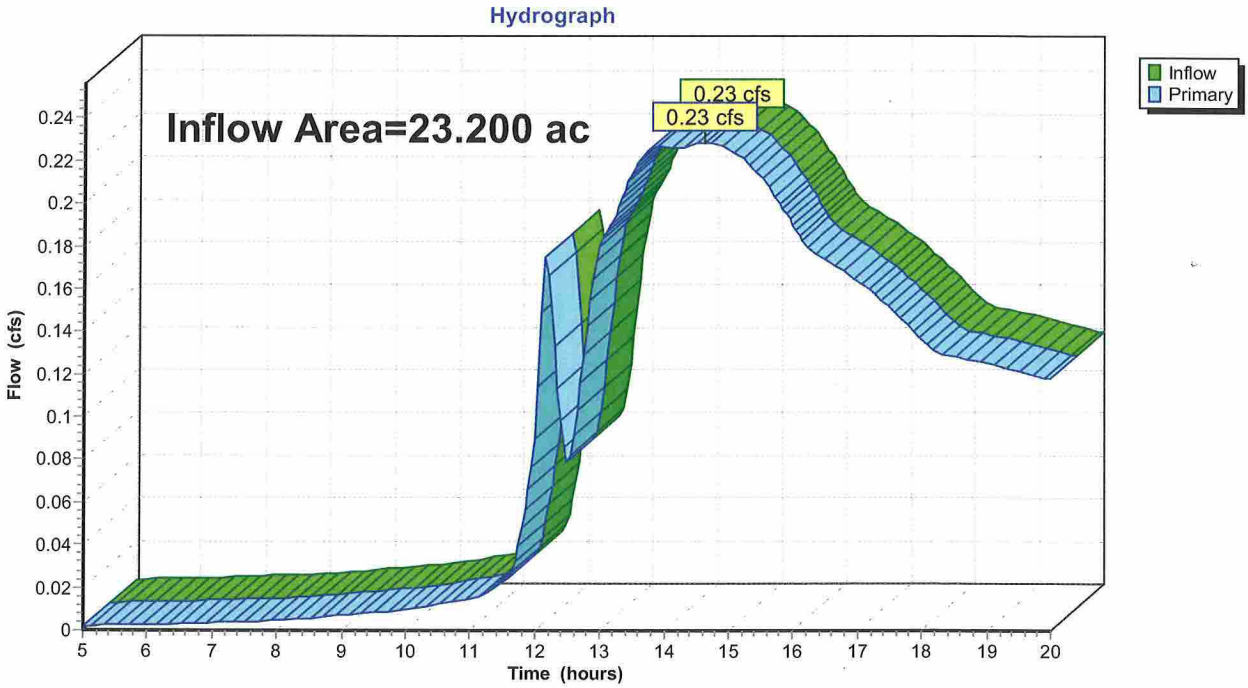
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.39% Impervious, Inflow Depth > 0.06" for 1-Year event
Inflow = 0.23 cfs @ 14.65 hrs, Volume= 0.118 af
Primary = 0.23 cfs @ 14.65 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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

Subcatchment 3S: PR-1 Runoff Area=79.800 ac 0.43% Impervious Runoff Depth>0.21"
Flow Length=3,588' Tc=44.7 min CN=55/98 Runoff=5.37 cfs 1.428 af

Subcatchment 4S: PR-2 Runoff Area=23.200 ac 0.39% Impervious Runoff Depth>0.17"
Flow Length=1,026' Tc=13.4 min CN=53/98 Runoff=1.50 cfs 0.332 af

Pond 1P: DP-1 Inflow=5.37 cfs 1.428 af
Primary=5.37 cfs 1.428 af

Pond 2P: DP-2 Inflow=1.50 cfs 0.332 af
Primary=1.50 cfs 0.332 af

Total Runoff Area = 103.000 ac Runoff Volume = 1.760 af Average Runoff Depth = 0.21"
99.58% Pervious = 102.570 ac 0.42% Impervious = 0.430 ac

Summary for Subcatchment 3S: PR-1

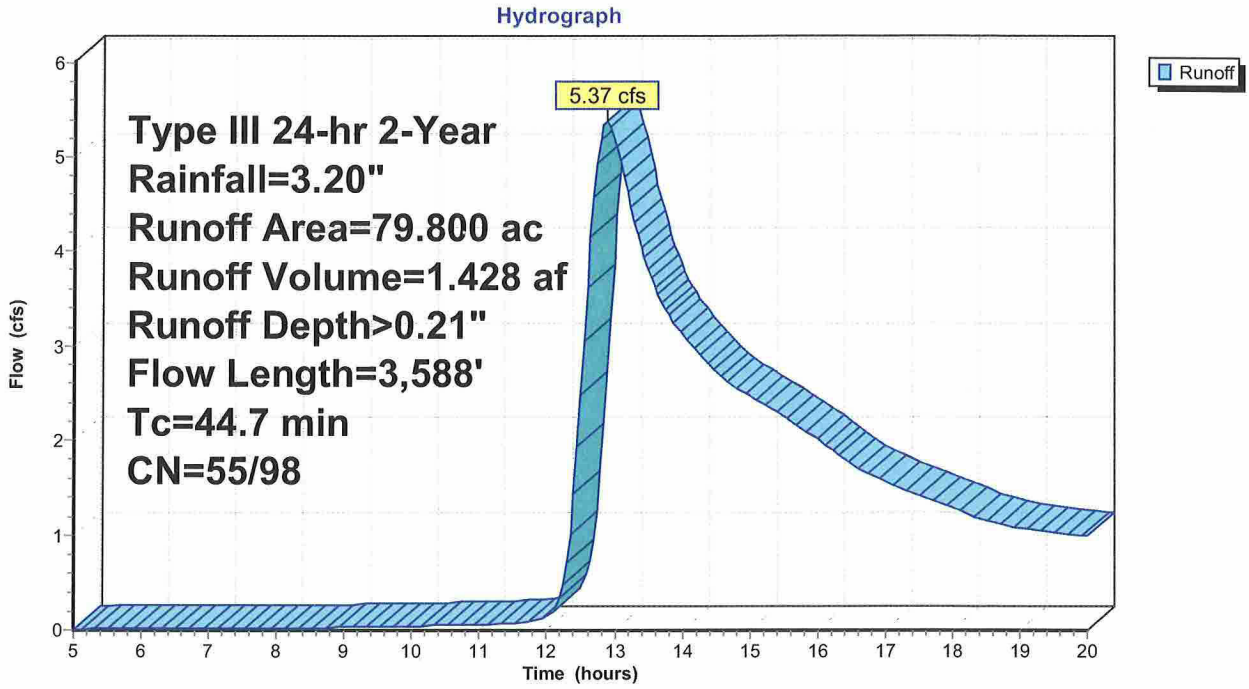
Runoff = 5.37 cfs @ 12.90 hrs, Volume= 1.428 af, Depth> 0.21"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
27.442	39	Pasture/grassland/range, Good, HSG A
45.445	61	Pasture/grassland/range, Good, HSG B
4.683	86	Woods/grass comb., Poor, HSG D
0.655	85	Gravel roads, HSG B
0.935	76	Gravel roads, HSG A
0.300	91	Gravel roads, HSG D
0.123	98	Unconnected pavement, HSG A
0.210	98	Unconnected pavement, HSG B
0.007	98	Unconnected pavement, HSG D
79.800	56	Weighted Average
79.460	55	99.57% Pervious Area
0.340	98	0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: PR-1



Summary for Subcatchment 4S: PR-2

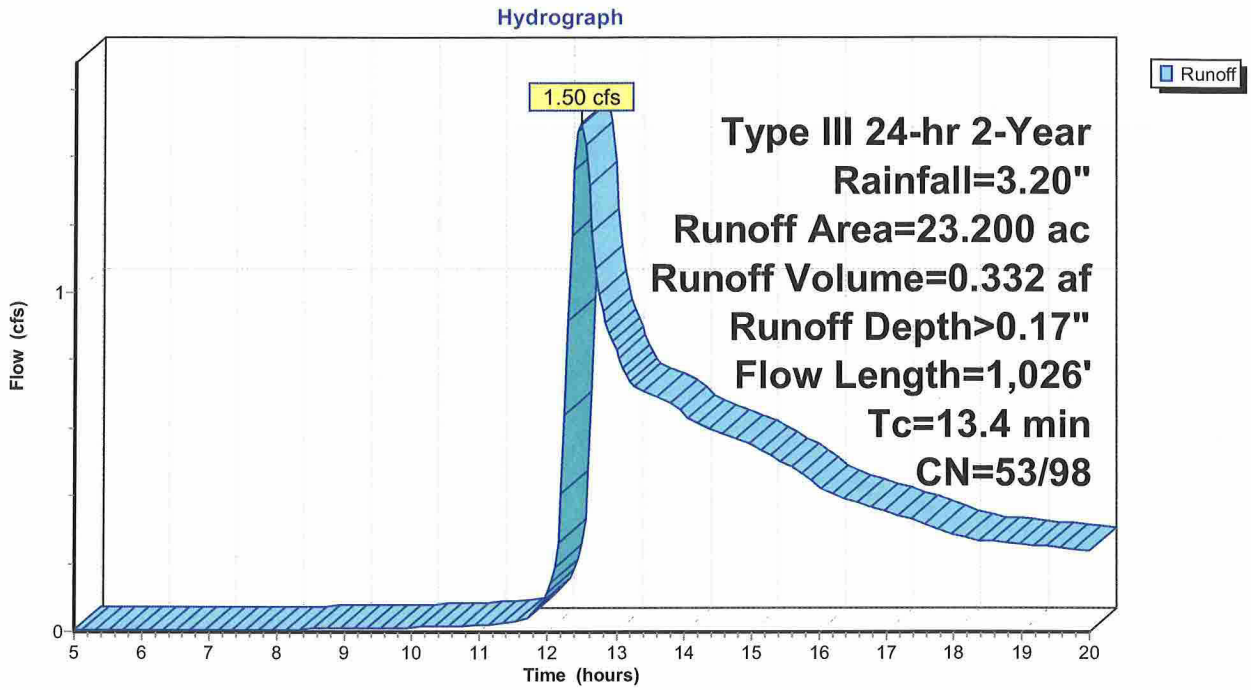
Runoff = 1.50 cfs @ 12.49 hrs, Volume= 0.332 af, Depth> 0.17"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
8.930	39	Pasture/grassland/range, Good, HSG A
13.580	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
0.360	85	Gravel roads, HSG B
0.240	76	Gravel roads, HSG A
0.045	98	Unconnected pavement, HSG A
0.045	98	Unconnected pavement, HSG B
23.200	53	Weighted Average
23.110	53	99.61% Pervious Area
0.090	98	0.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: PR-2



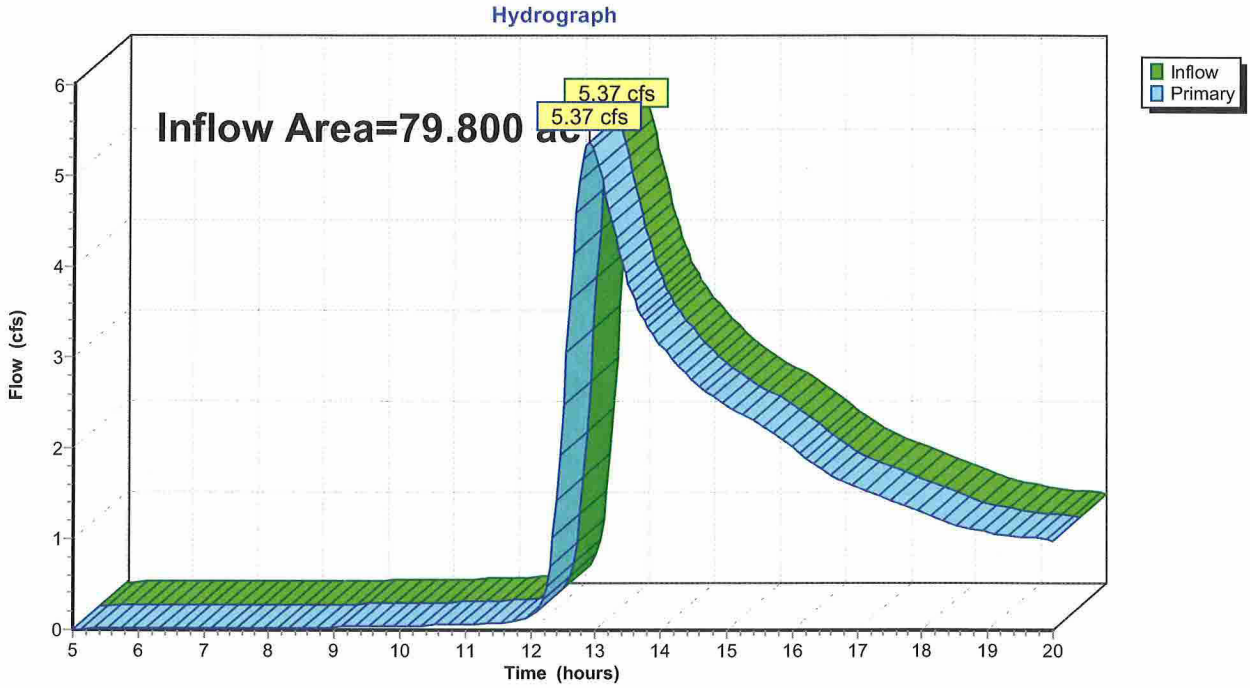
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.43% Impervious, Inflow Depth > 0.21" for 2-Year event
Inflow = 5.37 cfs @ 12.90 hrs, Volume= 1.428 af
Primary = 5.37 cfs @ 12.90 hrs, Volume= 1.428 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1

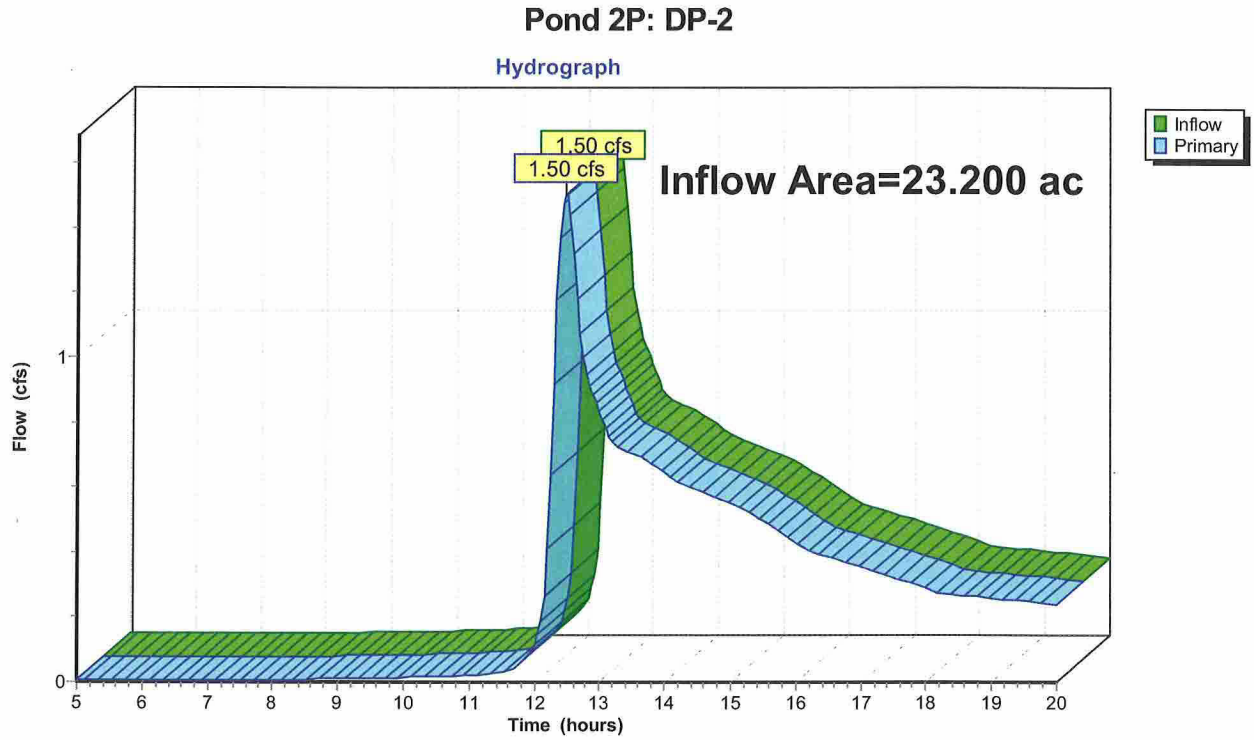


Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.39% Impervious, Inflow Depth > 0.17" for 2-Year event
Inflow = 1.50 cfs @ 12.49 hrs, Volume= 0.332 af
Primary = 1.50 cfs @ 12.49 hrs, Volume= 0.332 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



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

Subcatchment 3S: PR-1 Runoff Area=79.800 ac 0.43% Impervious Runoff Depth>0.50"
Flow Length=3,588' Tc=44.7 min CN=55/98 Runoff=17.47 cfs 3.316 af

Subcatchment 4S: PR-2 Runoff Area=23.200 ac 0.39% Impervious Runoff Depth>0.43"
Flow Length=1,026' Tc=13.4 min CN=53/98 Runoff=5.88 cfs 0.828 af

Pond 1P: DP-1 Inflow=17.47 cfs 3.316 af
Primary=17.47 cfs 3.316 af

Pond 2P: DP-2 Inflow=5.88 cfs 0.828 af
Primary=5.88 cfs 0.828 af

Total Runoff Area = 103.000 ac Runoff Volume = 4.144 af Average Runoff Depth = 0.48"
99.58% Pervious = 102.570 ac 0.42% Impervious = 0.430 ac

Summary for Subcatchment 3S: PR-1

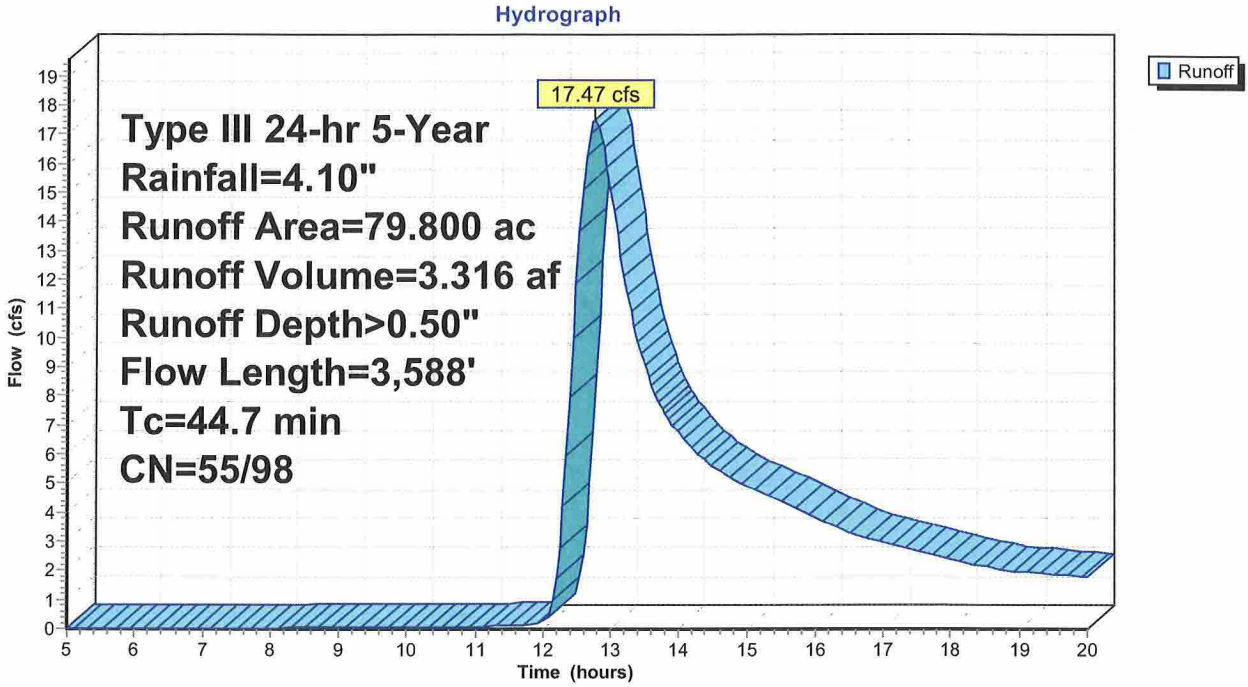
Runoff = 17.47 cfs @ 12.77 hrs, Volume= 3.316 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.10"

Area (ac)	CN	Description
27.442	39	Pasture/grassland/range, Good, HSG A
45.445	61	Pasture/grassland/range, Good, HSG B
4.683	86	Woods/grass comb., Poor, HSG D
0.655	85	Gravel roads, HSG B
0.935	76	Gravel roads, HSG A
0.300	91	Gravel roads, HSG D
0.123	98	Unconnected pavement, HSG A
0.210	98	Unconnected pavement, HSG B
0.007	98	Unconnected pavement, HSG D
79.800	56	Weighted Average
79.460	55	99.57% Pervious Area
0.340	98	0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: PR-1



Summary for Subcatchment 4S: PR-2

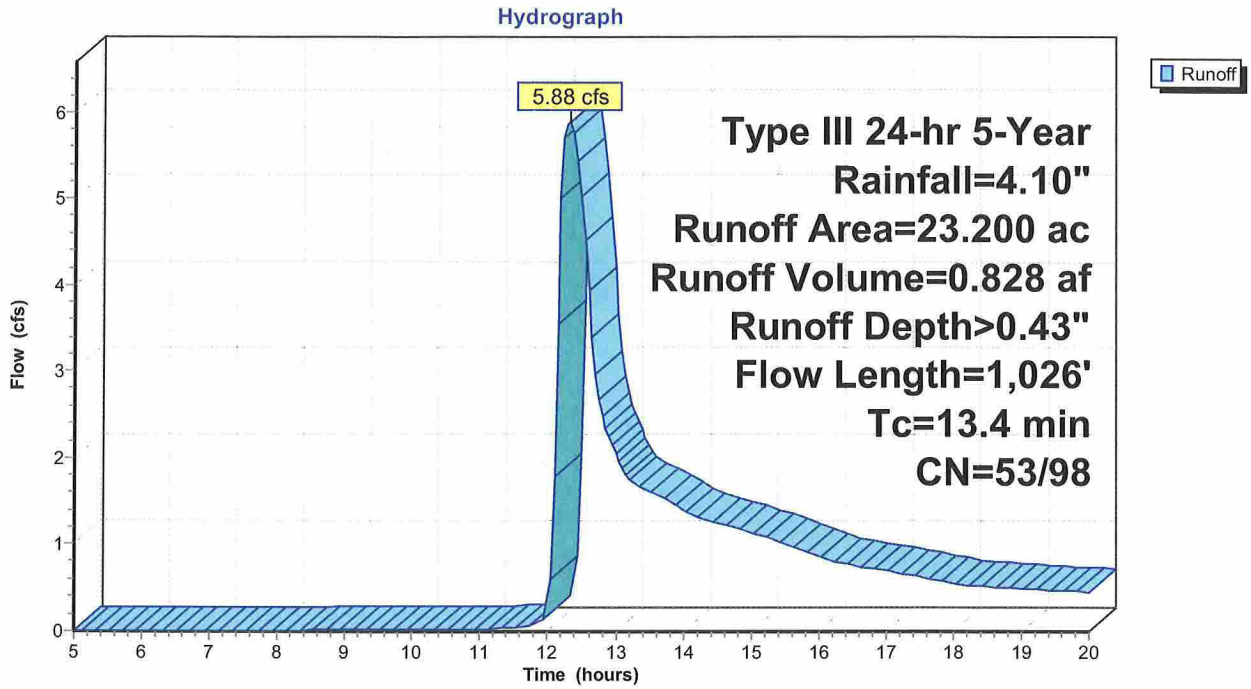
Runoff = 5.88 cfs @ 12.32 hrs, Volume= 0.828 af, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.10"

Area (ac)	CN	Description
8.930	39	Pasture/grassland/range, Good, HSG A
13.580	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
0.360	85	Gravel roads, HSG B
0.240	76	Gravel roads, HSG A
0.045	98	Unconnected pavement, HSG A
0.045	98	Unconnected pavement, HSG B
23.200	53	Weighted Average
23.110	53	99.61% Pervious Area
0.090	98	0.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: PR-2



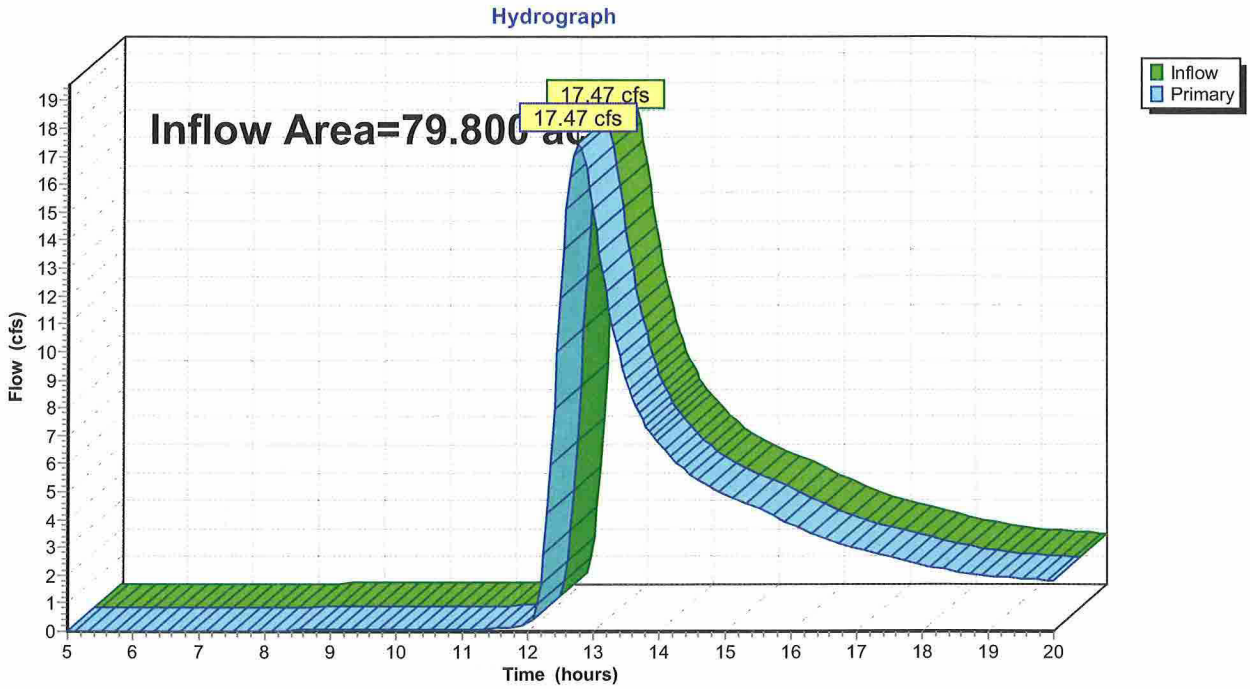
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.43% Impervious, Inflow Depth > 0.50" for 5-Year event
Inflow = 17.47 cfs @ 12.77 hrs, Volume= 3.316 af
Primary = 17.47 cfs @ 12.77 hrs, Volume= 3.316 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



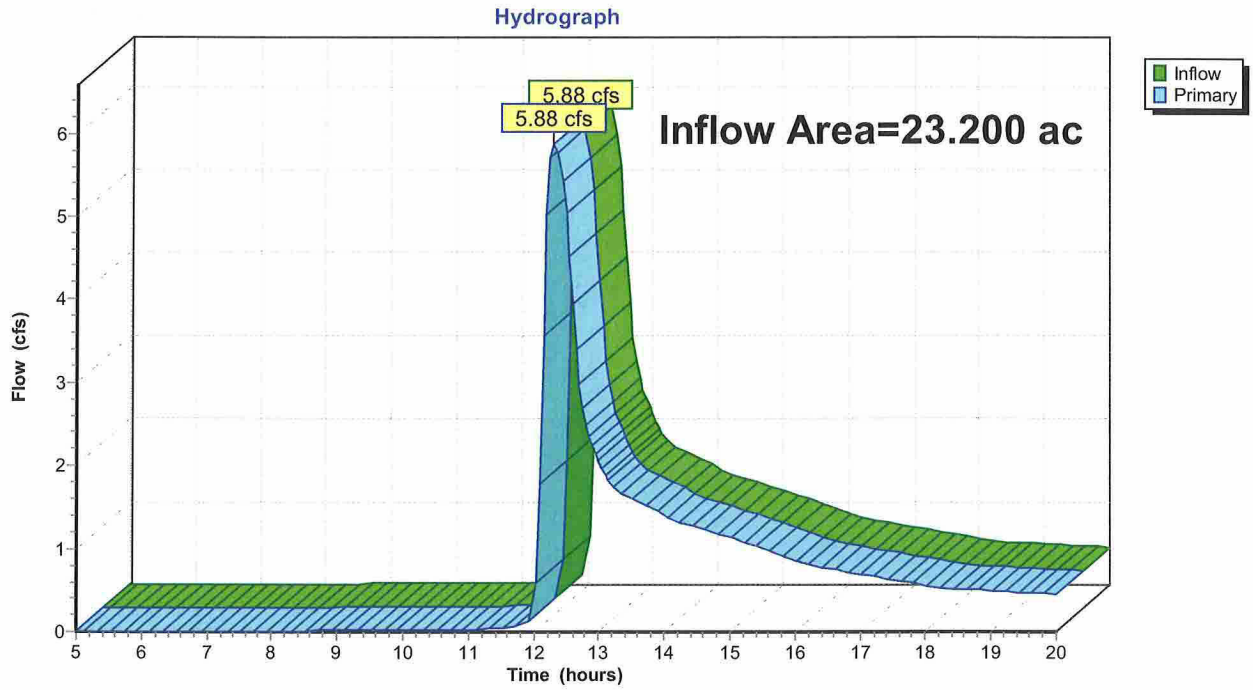
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.39% Impervious, Inflow Depth > 0.43" for 5-Year event
Inflow = 5.88 cfs @ 12.32 hrs, Volume= 0.828 af
Primary = 5.88 cfs @ 12.32 hrs, Volume= 0.828 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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

Subcatchment 3S: PR-1 Runoff Area=79.800 ac 0.43% Impervious Runoff Depth>0.78"
Flow Length=3,588' Tc=44.7 min CN=55/98 Runoff=30.79 cfs 5.186 af

Subcatchment 4S: PR-2 Runoff Area=23.200 ac 0.39% Impervious Runoff Depth>0.69"
Flow Length=1,026' Tc=13.4 min CN=53/98 Runoff=11.71 cfs 1.333 af

Pond 1P: DP-1 Inflow=30.79 cfs 5.186 af
Primary=30.79 cfs 5.186 af

Pond 2P: DP-2 Inflow=11.71 cfs 1.333 af
Primary=11.71 cfs 1.333 af

Total Runoff Area = 103.000 ac Runoff Volume = 6.519 af Average Runoff Depth = 0.76"
99.58% Pervious = 102.570 ac 0.42% Impervious = 0.430 ac

Summary for Subcatchment 3S: PR-1

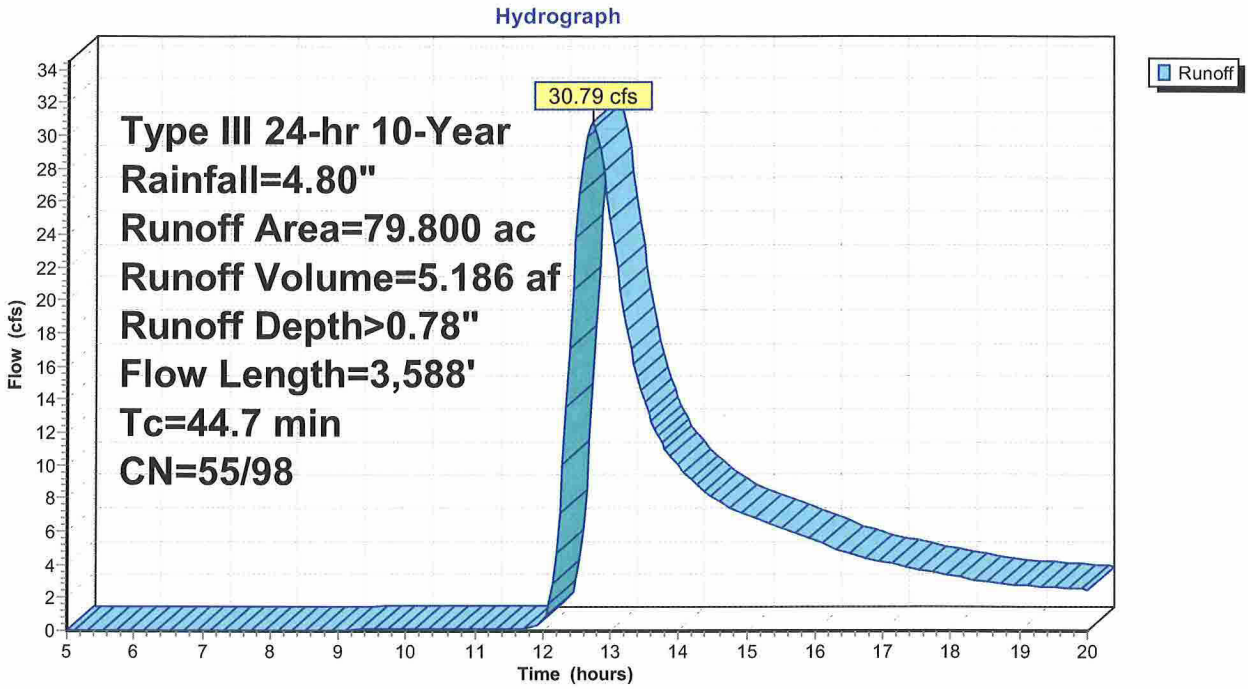
Runoff = 30.79 cfs @ 12.73 hrs, Volume= 5.186 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
27.442	39	Pasture/grassland/range, Good, HSG A
45.445	61	Pasture/grassland/range, Good, HSG B
4.683	86	Woods/grass comb., Poor, HSG D
0.655	85	Gravel roads, HSG B
0.935	76	Gravel roads, HSG A
0.300	91	Gravel roads, HSG D
0.123	98	Unconnected pavement, HSG A
0.210	98	Unconnected pavement, HSG B
0.007	98	Unconnected pavement, HSG D
79.800	56	Weighted Average
79.460	55	99.57% Pervious Area
0.340	98	0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: PR-1



Summary for Subcatchment 4S: PR-2

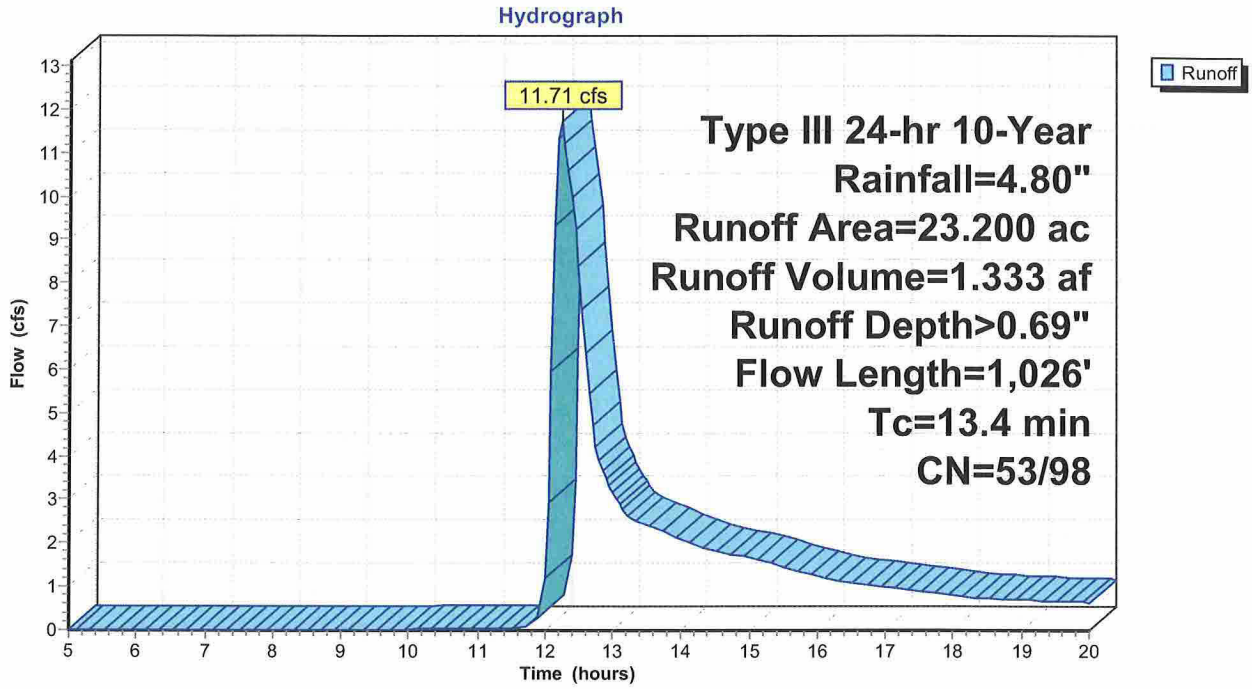
Runoff = 11.71 cfs @ 12.25 hrs, Volume= 1.333 af, Depth> 0.69"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
8.930	39	Pasture/grassland/range, Good, HSG A
13.580	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
0.360	85	Gravel roads, HSG B
0.240	76	Gravel roads, HSG A
0.045	98	Unconnected pavement, HSG A
0.045	98	Unconnected pavement, HSG B
23.200	53	Weighted Average
23.110	53	99.61% Pervious Area
0.090	98	0.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: PR-2



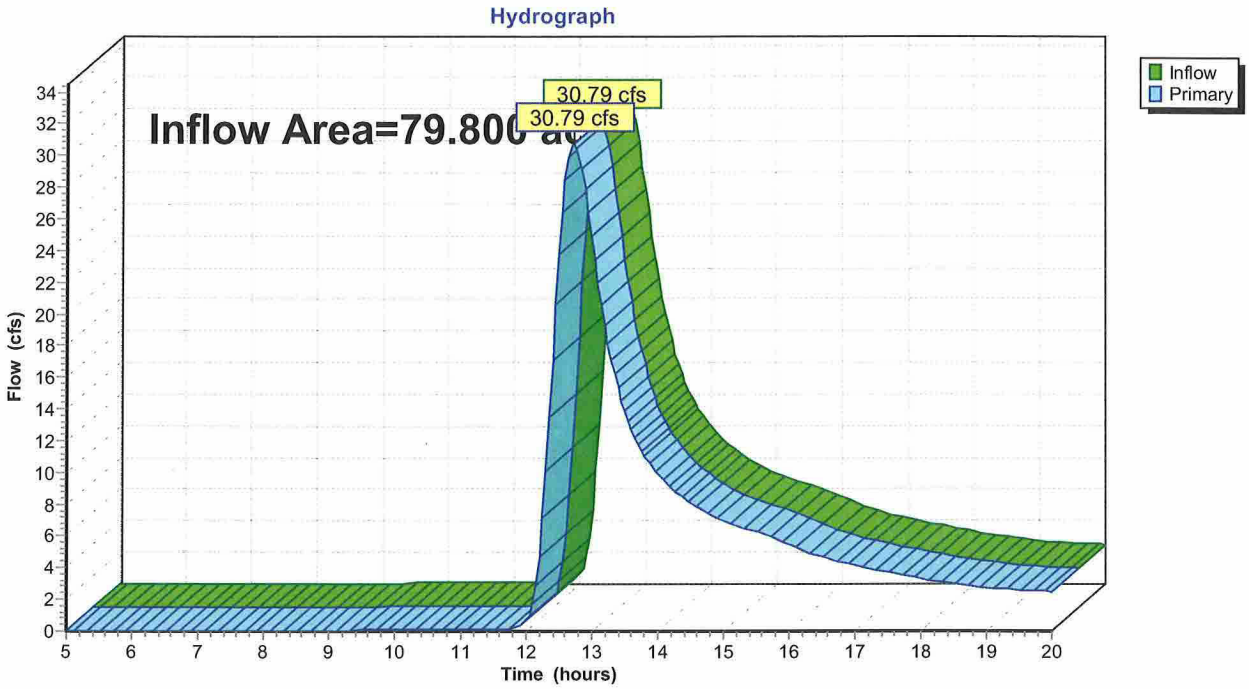
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.43% Impervious, Inflow Depth > 0.78" for 10-Year event
Inflow = 30.79 cfs @ 12.73 hrs, Volume= 5.186 af
Primary = 30.79 cfs @ 12.73 hrs, Volume= 5.186 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



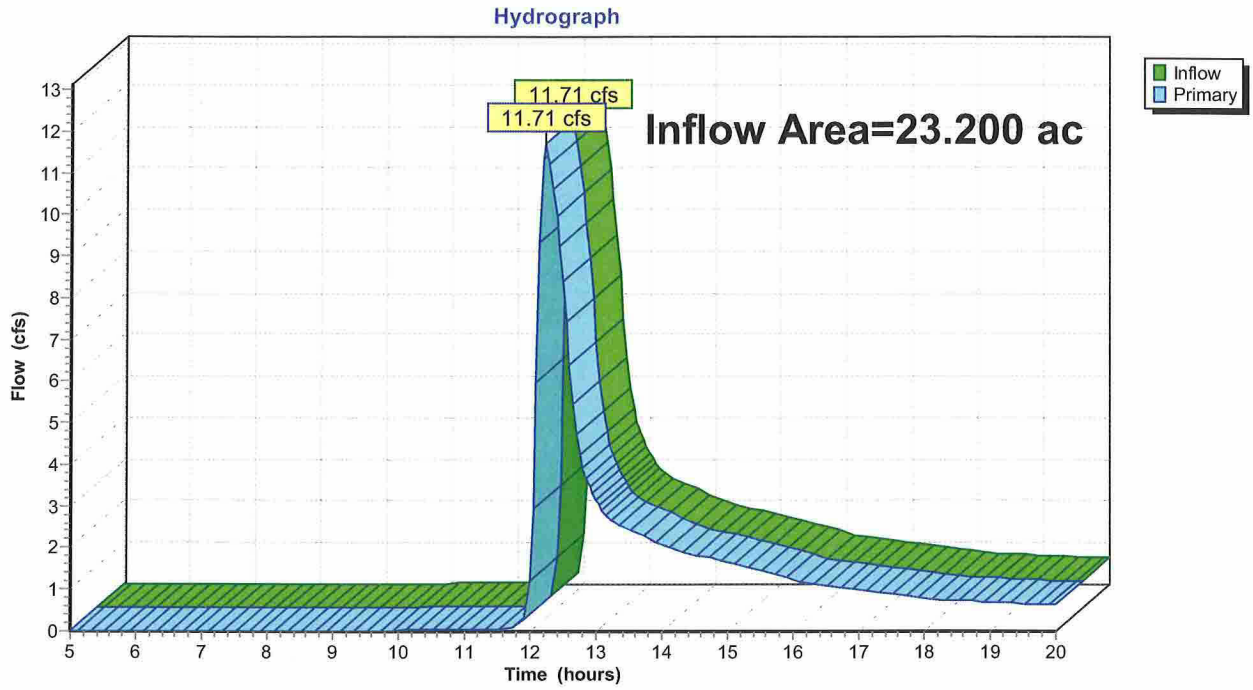
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.39% Impervious, Inflow Depth > 0.69" for 10-Year event
Inflow = 11.71 cfs @ 12.25 hrs, Volume= 1.333 af
Primary = 11.71 cfs @ 12.25 hrs, Volume= 1.333 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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

Subcatchment 3S: PR-1 Runoff Area=79.800 ac 0.43% Impervious Runoff Depth>1.10"
Flow Length=3,588' Tc=44.7 min CN=55/98 Runoff=46.61 cfs 7.344 af

Subcatchment 4S: PR-2 Runoff Area=23.200 ac 0.39% Impervious Runoff Depth>0.99"
Flow Length=1,026' Tc=13.4 min CN=53/98 Runoff=19.13 cfs 1.922 af

Pond 1P: DP-1 Inflow=46.61 cfs 7.344 af
Primary=46.61 cfs 7.344 af

Pond 2P: DP-2 Inflow=19.13 cfs 1.922 af
Primary=19.13 cfs 1.922 af

Total Runoff Area = 103.000 ac Runoff Volume = 9.266 af Average Runoff Depth = 1.08"
99.58% Pervious = 102.570 ac 0.42% Impervious = 0.430 ac

Summary for Subcatchment 3S: PR-1

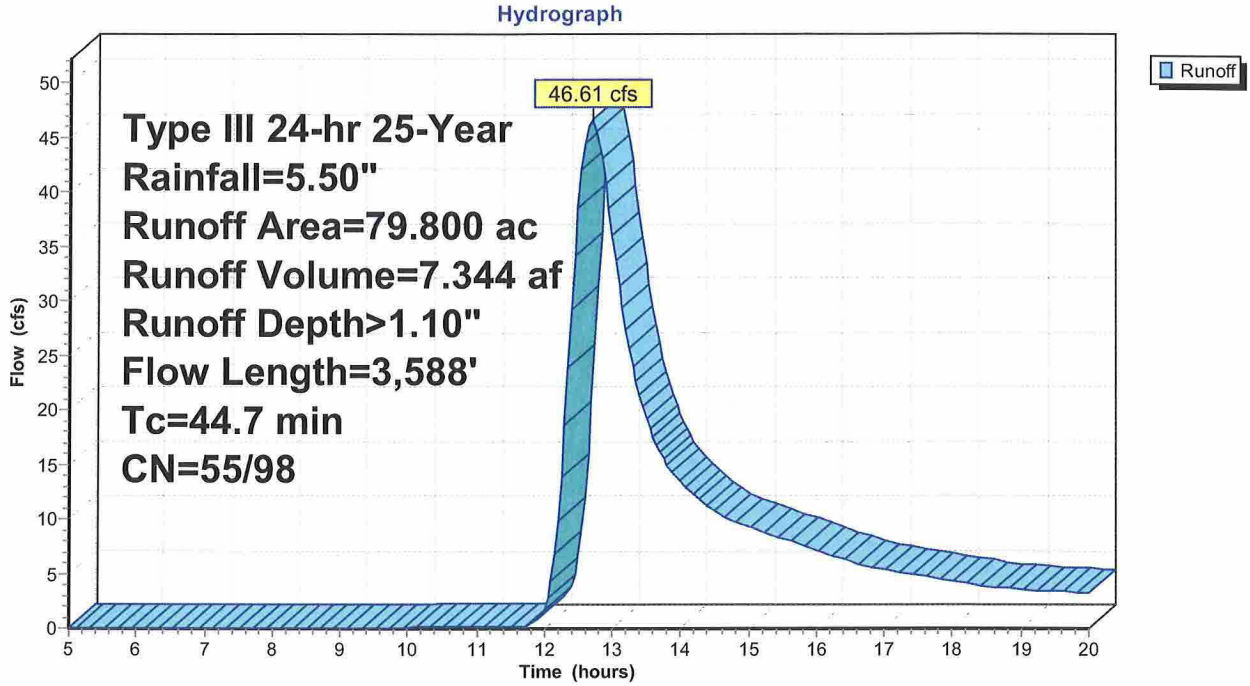
Runoff = 46.61 cfs @ 12.70 hrs, Volume= 7.344 af, Depth> 1.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
27.442	39	Pasture/grassland/range, Good, HSG A
45.445	61	Pasture/grassland/range, Good, HSG B
4.683	86	Woods/grass comb., Poor, HSG D
0.655	85	Gravel roads, HSG B
0.935	76	Gravel roads, HSG A
0.300	91	Gravel roads, HSG D
0.123	98	Unconnected pavement, HSG A
0.210	98	Unconnected pavement, HSG B
0.007	98	Unconnected pavement, HSG D
79.800	56	Weighted Average
79.460	55	99.57% Pervious Area
0.340	98	0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: PR-1



Summary for Subcatchment 4S: PR-2

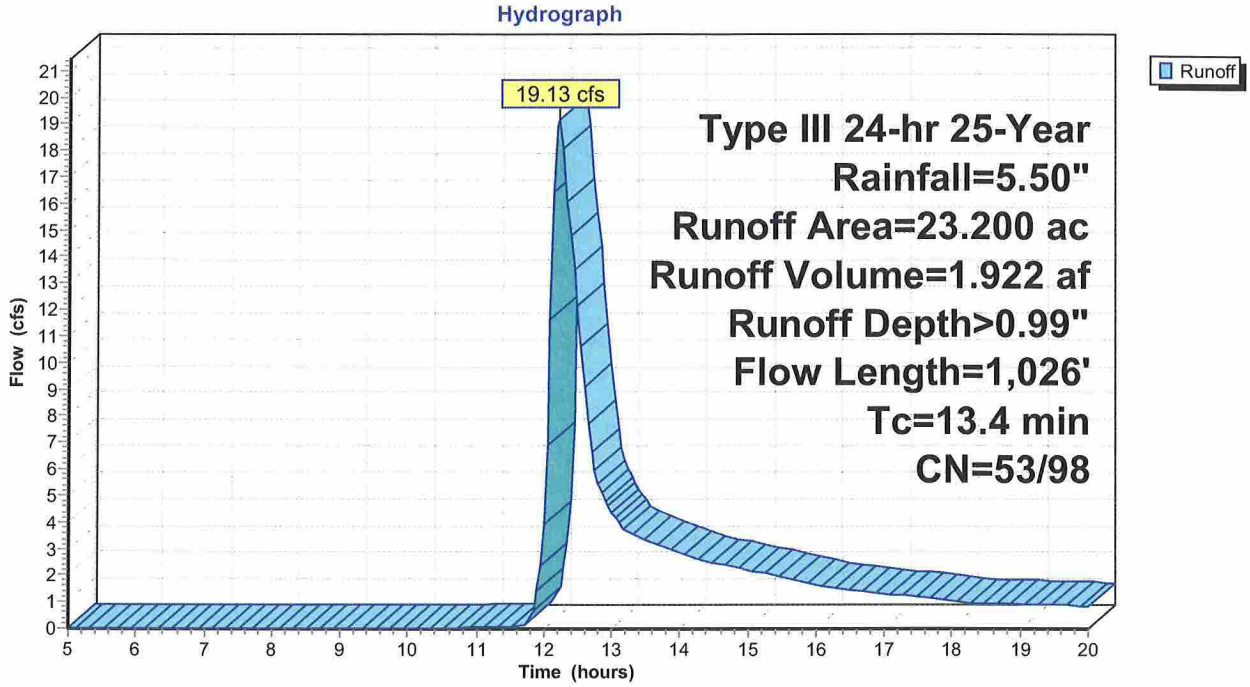
Runoff = 19.13 cfs @ 12.22 hrs, Volume= 1.922 af, Depth> 0.99"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
8.930	39	Pasture/grassland/range, Good, HSG A
13.580	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
0.360	85	Gravel roads, HSG B
0.240	76	Gravel roads, HSG A
0.045	98	Unconnected pavement, HSG A
0.045	98	Unconnected pavement, HSG B
23.200	53	Weighted Average
23.110	53	99.61% Pervious Area
0.090	98	0.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: PR-2



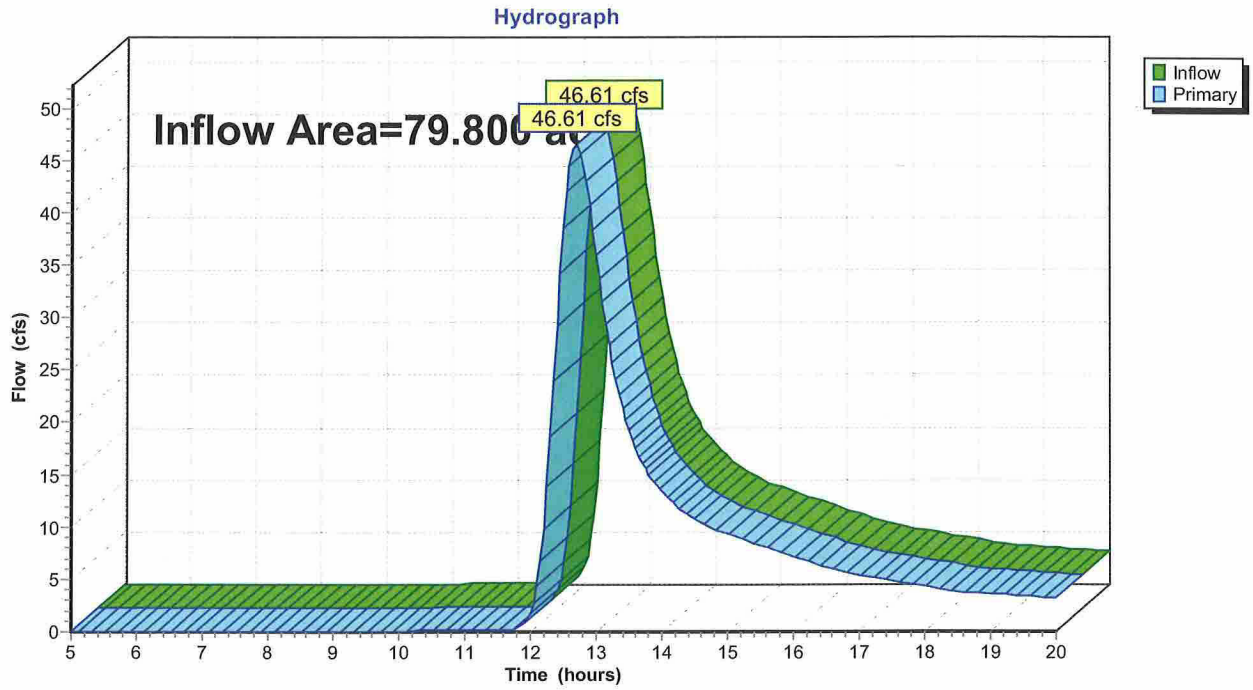
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.43% Impervious, Inflow Depth > 1.10" for 25-Year event
Inflow = 46.61 cfs @ 12.70 hrs, Volume= 7.344 af
Primary = 46.61 cfs @ 12.70 hrs, Volume= 7.344 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



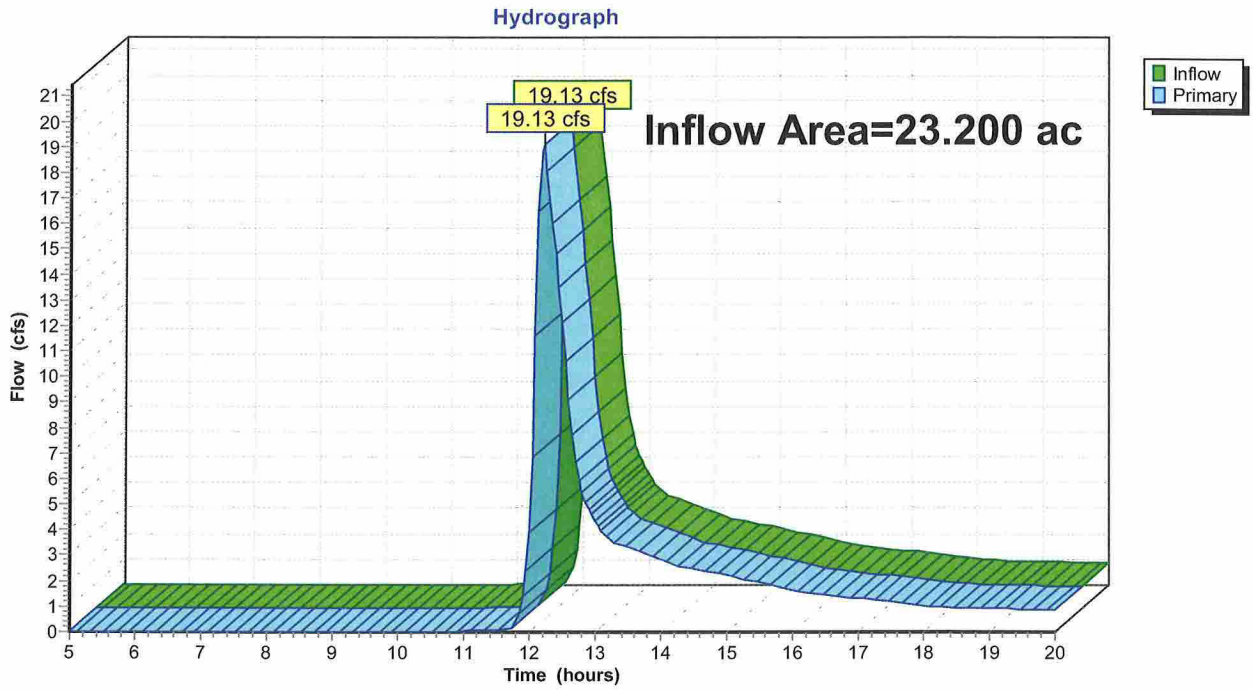
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.39% Impervious, Inflow Depth > 0.99" for 25-Year event
Inflow = 19.13 cfs @ 12.22 hrs, Volume= 1.922 af
Primary = 19.13 cfs @ 12.22 hrs, Volume= 1.922 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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

Subcatchment 3S: PR-1 Runoff Area=79.800 ac 0.43% Impervious Runoff Depth>1.47"
Flow Length=3,588' Tc=44.7 min CN=55/98 Runoff=64.38 cfs 9.742 af

Subcatchment 4S: PR-2 Runoff Area=23.200 ac 0.39% Impervious Runoff Depth>1.34"
Flow Length=1,026' Tc=13.4 min CN=53/98 Runoff=27.41 cfs 2.584 af

Pond 1P: DP-1 Inflow=64.38 cfs 9.742 af
Primary=64.38 cfs 9.742 af

Pond 2P: DP-2 Inflow=27.41 cfs 2.584 af
Primary=27.41 cfs 2.584 af

Total Runoff Area = 103.000 ac Runoff Volume = 12.326 af Average Runoff Depth = 1.44"
99.58% Pervious = 102.570 ac 0.42% Impervious = 0.430 ac

Summary for Subcatchment 3S: PR-1

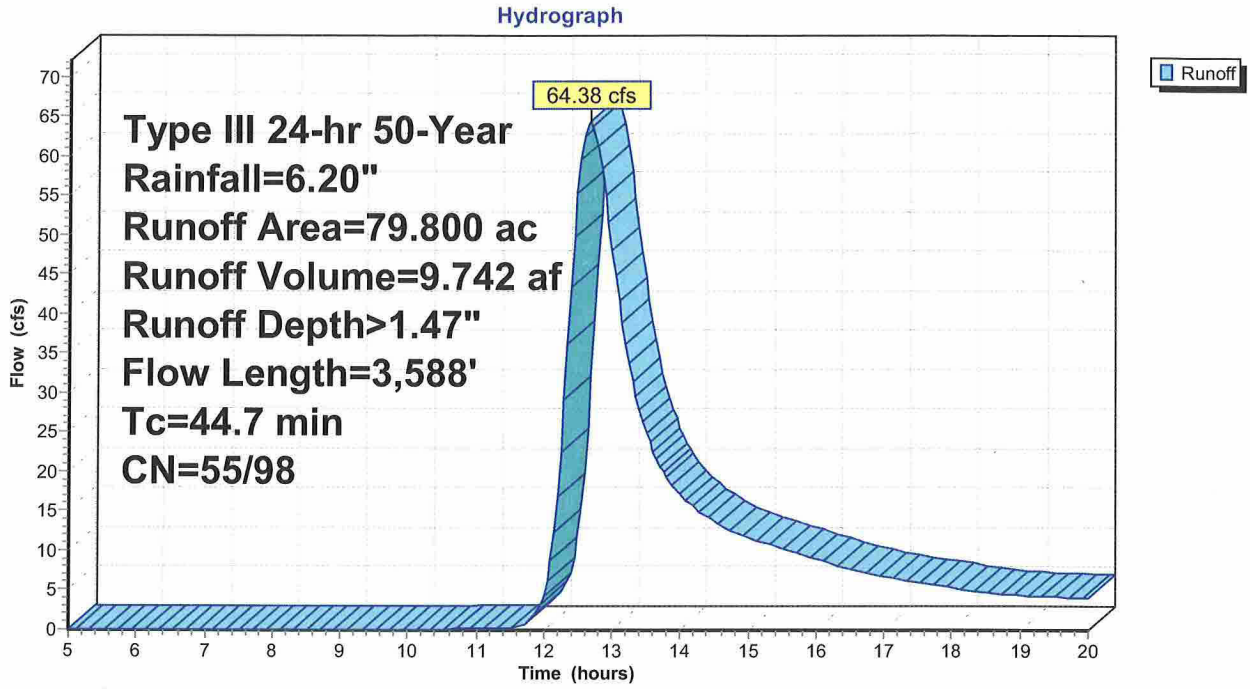
Runoff = 64.38 cfs @ 12.68 hrs, Volume= 9.742 af, Depth> 1.47"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
27.442	39	Pasture/grassland/range, Good, HSG A
45.445	61	Pasture/grassland/range, Good, HSG B
4.683	86	Woods/grass comb., Poor, HSG D
0.655	85	Gravel roads, HSG B
0.935	76	Gravel roads, HSG A
0.300	91	Gravel roads, HSG D
0.123	98	Unconnected pavement, HSG A
0.210	98	Unconnected pavement, HSG B
0.007	98	Unconnected pavement, HSG D
79.800	56	Weighted Average
79.460	55	99.57% Pervious Area
0.340	98	0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: PR-1



Summary for Subcatchment 4S: PR-2

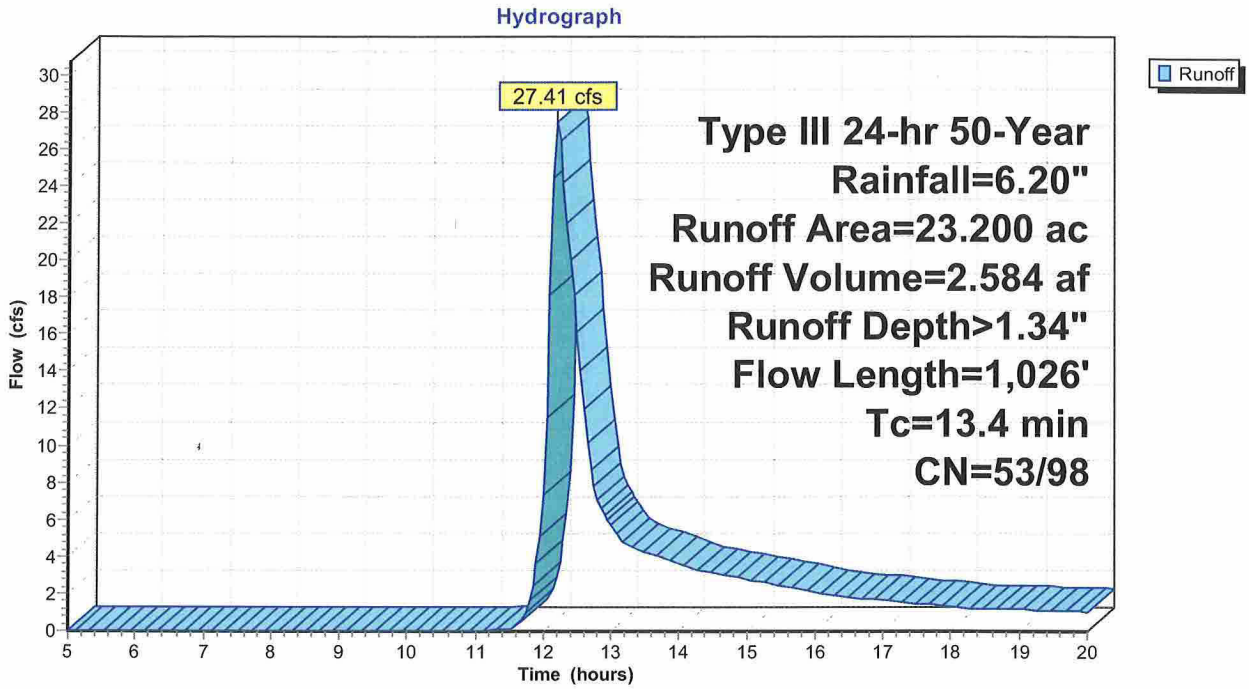
Runoff = 27.41 cfs @ 12.21 hrs, Volume= 2.584 af, Depth> 1.34"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=6.20"

Area (ac)	CN	Description
8.930	39	Pasture/grassland/range, Good, HSG A
13.580	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
0.360	85	Gravel roads, HSG B
0.240	76	Gravel roads, HSG A
0.045	98	Unconnected pavement, HSG A
0.045	98	Unconnected pavement, HSG B
23.200	53	Weighted Average
23.110	53	99.61% Pervious Area
0.090	98	0.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: PR-2



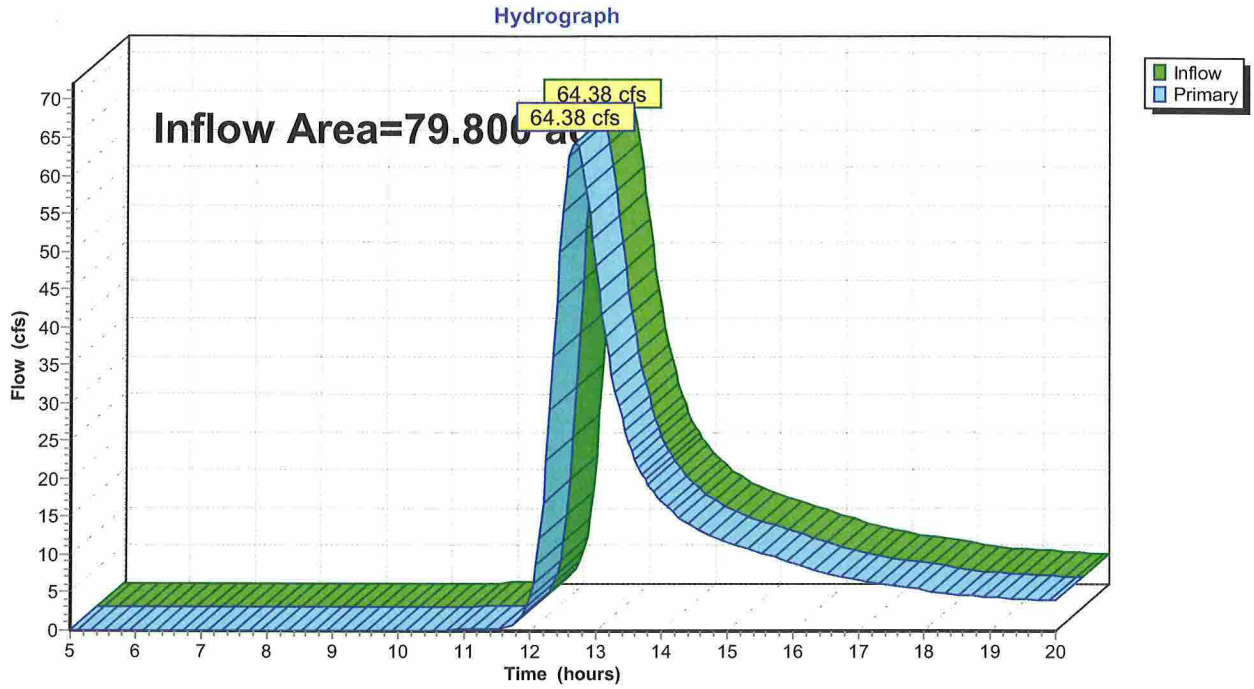
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.43% Impervious, Inflow Depth > 1.47" for 50-Year event
Inflow = 64.38 cfs @ 12.68 hrs, Volume= 9.742 af
Primary = 64.38 cfs @ 12.68 hrs, Volume= 9.742 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



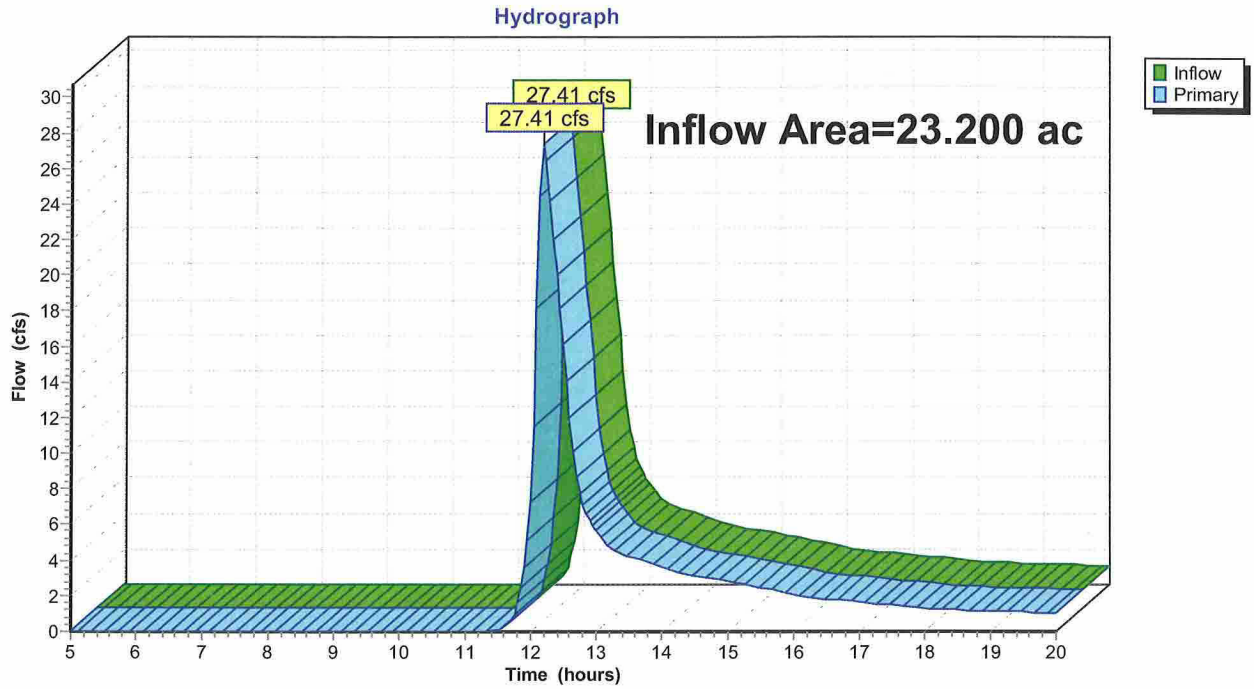
Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.39% Impervious, Inflow Depth > 1.34" for 50-Year event
Inflow = 27.41 cfs @ 12.21 hrs, Volume= 2.584 af
Primary = 27.41 cfs @ 12.21 hrs, Volume= 2.584 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2



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

Subcatchment 3S: PR-1 Runoff Area=79.800 ac 0.43% Impervious Runoff Depth>1.86"
Flow Length=3,588' Tc=44.7 min CN=55/98 Runoff=83.69 cfs 12.345 af

Subcatchment 4S: PR-2 Runoff Area=23.200 ac 0.39% Impervious Runoff Depth>1.71"
Flow Length=1,026' Tc=13.4 min CN=53/98 Runoff=36.43 cfs 3.307 af

Pond 1P: DP-1 Inflow=83.69 cfs 12.345 af
Primary=83.69 cfs 12.345 af

Pond 2P: DP-2 Inflow=36.43 cfs 3.307 af
Primary=36.43 cfs 3.307 af

Total Runoff Area = 103.000 ac Runoff Volume = 15.652 af Average Runoff Depth = 1.82"
99.58% Pervious = 102.570 ac 0.42% Impervious = 0.430 ac

Summary for Subcatchment 3S: PR-1

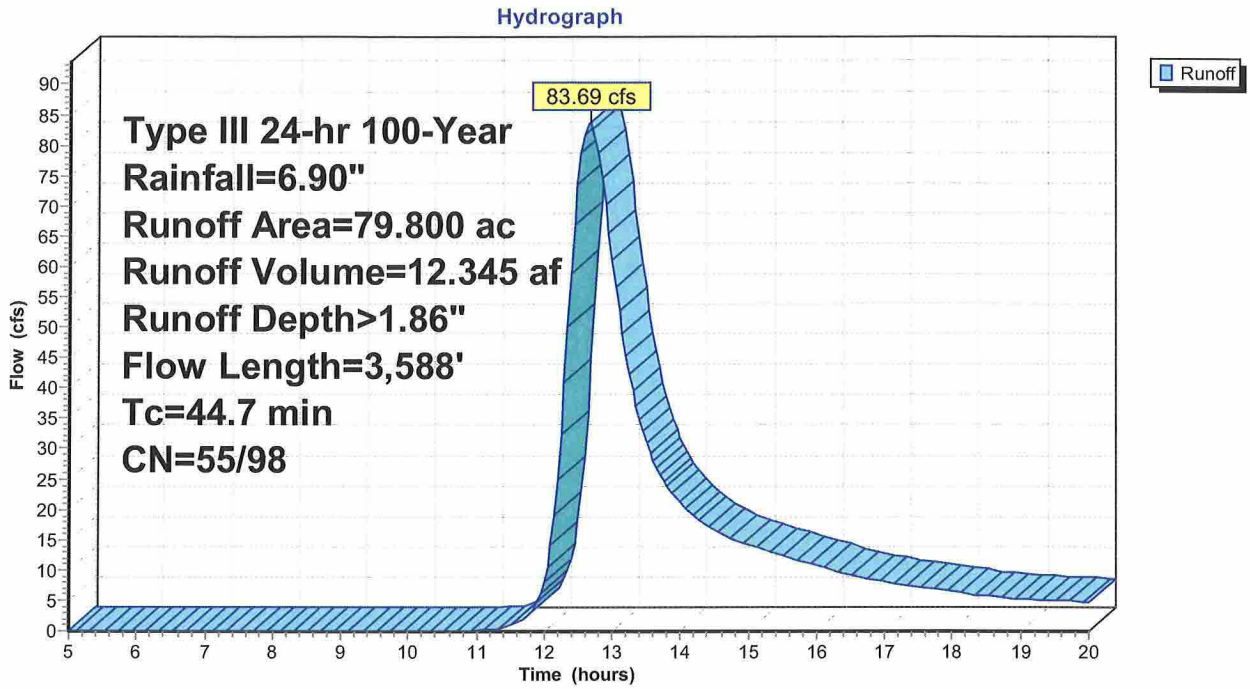
Runoff = 83.69 cfs @ 12.67 hrs, Volume= 12.345 af, Depth> 1.86"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
27.442	39	Pasture/grassland/range, Good, HSG A
45.445	61	Pasture/grassland/range, Good, HSG B
4.683	86	Woods/grass comb., Poor, HSG D
0.655	85	Gravel roads, HSG B
0.935	76	Gravel roads, HSG A
0.300	91	Gravel roads, HSG D
0.123	98	Unconnected pavement, HSG A
0.210	98	Unconnected pavement, HSG B
0.007	98	Unconnected pavement, HSG D
79.800	56	Weighted Average
79.460	55	99.57% Pervious Area
0.340	98	0.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0833	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
2.1	187	0.0468	1.51		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.0	642	0.0139	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.1	2,659	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
44.7	3,588	Total			

Subcatchment 3S: PR-1



Summary for Subcatchment 4S: PR-2

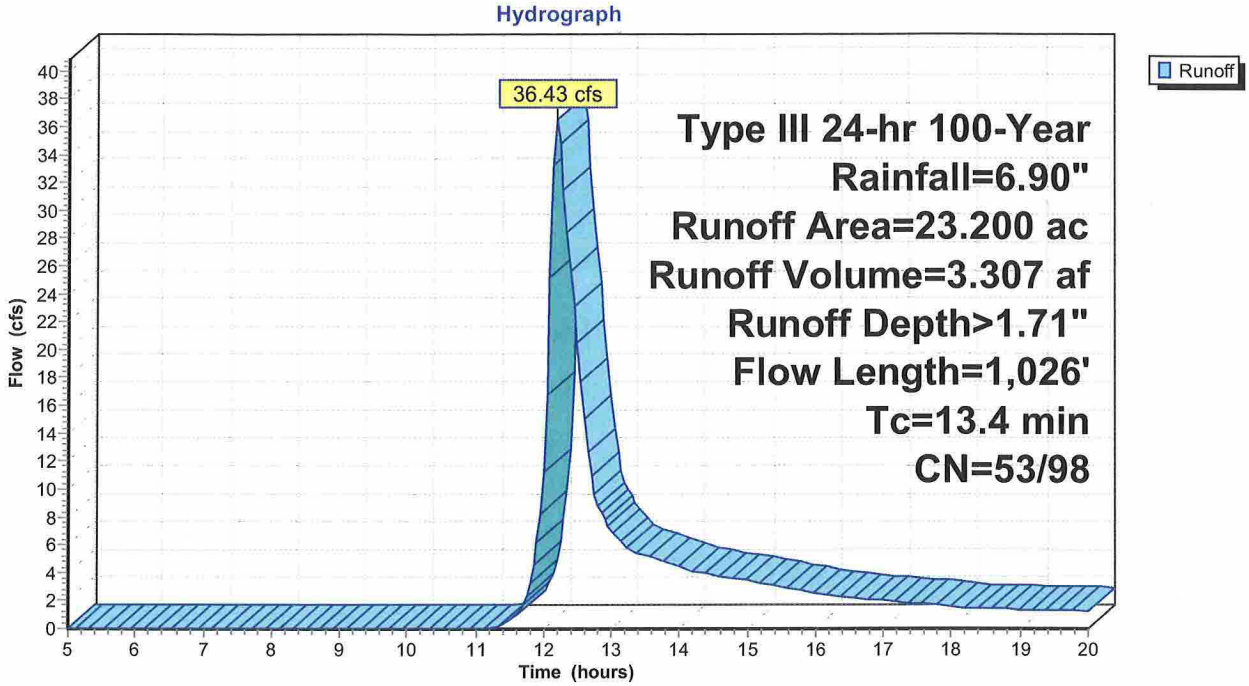
Runoff = 36.43 cfs @ 12.21 hrs, Volume= 3.307 af, Depth> 1.71"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
8.930	39	Pasture/grassland/range, Good, HSG A
13.580	61	Pasture/grassland/range, Good, HSG B
0.000	86	Woods/grass comb., Poor, HSG D
0.360	85	Gravel roads, HSG B
0.240	76	Gravel roads, HSG A
0.045	98	Unconnected pavement, HSG A
0.045	98	Unconnected pavement, HSG B
23.200	53	Weighted Average
23.110	53	99.61% Pervious Area
0.090	98	0.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	100	0.2000	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.20"
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	195	0.0950	2.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.1	527	0.0420	1.43		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	194	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	1,026	Total			

Subcatchment 4S: PR-2



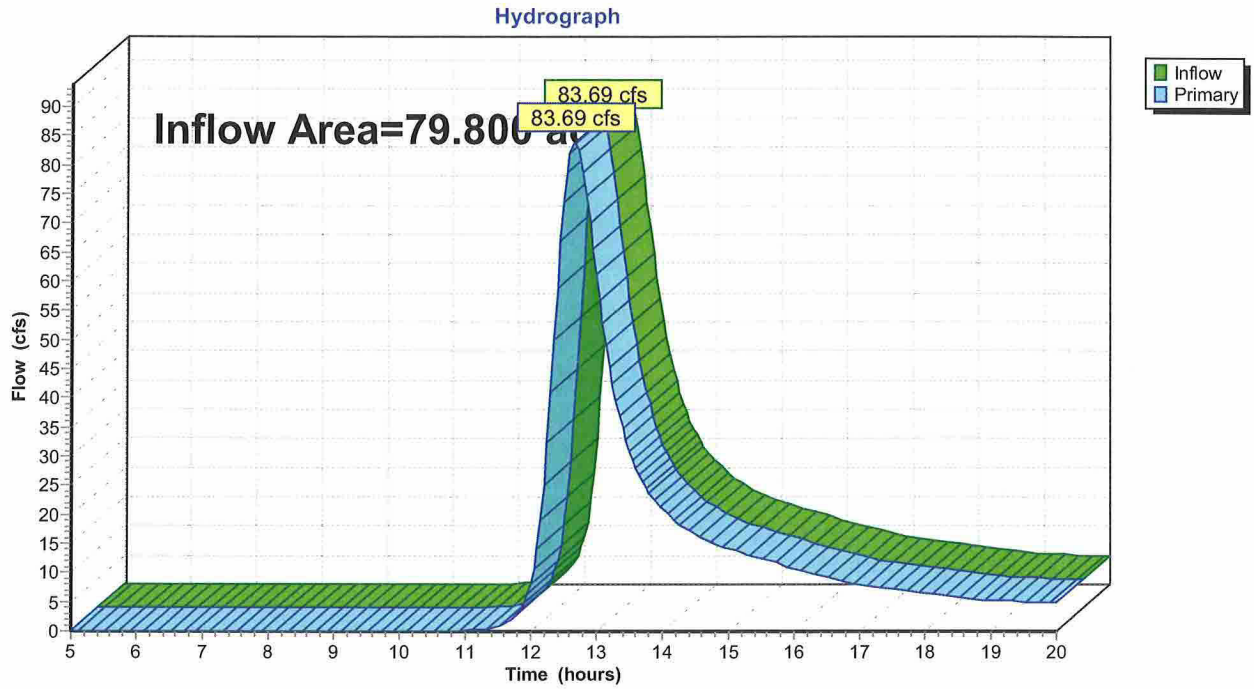
Summary for Pond 1P: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 79.800 ac, 0.43% Impervious, Inflow Depth > 1.86" for 100-Year event
Inflow = 83.69 cfs @ 12.67 hrs, Volume= 12.345 af
Primary = 83.69 cfs @ 12.67 hrs, Volume= 12.345 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 1P: DP-1



Summary for Pond 2P: DP-2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 23.200 ac, 0.39% Impervious, Inflow Depth > 1.71" for 100-Year event
Inflow = 36.43 cfs @ 12.21 hrs, Volume= 3.307 af
Primary = 36.43 cfs @ 12.21 hrs, Volume= 3.307 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 2P: DP-2