HALEY & ALDRICH, INC.
6500 Rockside Road
Suite 200
Cleveland, OH 44131
216.739.0555

MEMORANDUM

12 October 2016
File No. 40373-342

SUBJECT: Run-on and Run-off Control Plan
Landfill 9
Dayton Power & Light Company
J.M. Stuart Electric Generating Station
Aberdeen, Ohio

Haley & Aldrich, Inc. has assisted Dayton Power & Light Company (DP&L) with creating the Run-on and Run-off Control Plan for Landfill 9 at the J.M. Stuart Station (JMSS) to satisfy requirements of the Environmental Protection Agency (EPA) 40 CFR Parts 257 and 261 "Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities" (CCR Rule) section §257.81. Landfill 9 run-on and run-off control system existing conditions documentation has been reviewed and associated stormwater modeling and analysis performed as part of the evaluation to satisfy the Run-on and Run-off Control System Plan requirement of CCR Rule Section §257.81 as described below.

§257.81(a): The owner or operator of an existing or new CCR landfill or any lateral expansion of a CCR landfill must design, construct, operate, and maintain:

§257.81(a)(1): A run-on control system to prevent flow onto the active portion of the CCR unit during the peak discharge from a 24-hour, 25-year storm

Landfill 9 included an original designed geometry as well as a subsequently designed and approved lateral and vertical expansion. The landfill is actively being filled within the lateral expansion area along the southwestern cell of the unit. The vertical expansion is not planned to begin until the lateral expansion area has been filled.

The existing run-on control system for Landfill 9 includes raised perimeter dikes/berms, a diversion ditch to capture runoff along US Route 52 to the north, and a perimeter drainage channel that extends around the entire perimeter of the unit which together form the run-on control system to capture potential run-on and prevent flow onto the active portion of the landfill during the 25-year storm.

The perimeter channel is graded from a high point in the northwest corner of the unit around the landfill in both directions to the retention basin on the south side of the landfill which provides for water

management before release into the Ohio River. In general, the perimeter channel represents the outer limit of the landfill drainage area. A section of the landfill perimeter channel along US Route 52 immediately north of the unit, is an exception which does collect runoff from an approximate 5-acre off-site area between the highway and the landfill. This section of highway right-of-way is situated at a higher elevation than the perimeter channel. Surface water from this area is collected and conveyed clockwise around and away from the landfill by the perimeter channel to a retention basin located south of the unit to prevent the water from draining onto the active portion of the landfill. This off-site area has been included in the stormwater modeling evaluation for the perimeter channel. The landfill perimeter channel also receives contact water from the Carter Hollow Landfill through a 24-inch HDPE pipe that ties into the channel at the northeast corner of the landfill.

Off-site stormwater drainage diversion ditches (East and West) also provide run-on control. Both of the diversion ditches convey surface water through culvert crossings under US Route 52 along the north of the landfill perimeter channel. The west diversion ditch conveys off-site runoff across the north side of the landfill to the west while the east diversion ditch flows east along the north side of the landfill perimeter channel and discharges into the ravine east of the landfill. The east diversion ditch and north landfill perimeter channel exist within close proximity in some locations along this north east side of the landfill.

The west diversion ditch is relatively deep and, by visual inspection alone, easily conveys the 25-year storm event. The east diversion ditch was only designed to convey stormwater runoff from the 10-year storm and may overtop and discharge water into the landfill perimeter channel during the 25-year storm. A conservative approximated hydrologic and hydraulic drainage area analysis was performed to establish approximate 10-year and 25-year peak runoff conditions for the area tributary to the east diversion ditch. Then approximated overflow conditions were modeled as a pond with a primary outlet to drain up to the 10-year peak flow. A long weir was added to convey secondary flow (above the 10-year discharge) into the perimeter channel.

Peak discharge rates were provided by DP&L for the 24-inch pipe receiving contact water from the Carter Hollow landfill. The highest 100-year peak flow rate was conservatively used as a base flow in the model to simulate that inflow to the east perimeter channel.

The resulting stormwater model confirmed that the landfill perimeter channel has sufficient additional capacity to receive and safely convey the additional run-on volume from the diversion ditch during the 25-year storm event without overtopping.

§257.81(a)(2): A run-off control system from the active portion of the CCR unit to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

The perimeter channel around Landfill 9 that provides run-on control described above, also provides run-off control from the landfill to collect and control runoff from the 24-hour, 25-year storm.

The landfill also includes terraced benches constructed around its currently filled/graded perimeter. The benches in section are graded "saw-tooth style" (negatively sloped) to capture and convey stormwater to grated inlets at designated low points along each bench. Subsurface pipes connect the grated inlets and discharge into the perimeter channel described above.

Haley & Aldrich analyzed the existing stormwater run-on and run-off controls for Landfill 9 for the 24-hour, 25-year storm event using existing landfill topographic survey information provided by DP&L, visual observations gained during site visits in August and October 2016, DP&L staff historical knowledge of the unit and HydroCAD Stormwater Modeling System, version 10.00-12 (HydroCAD). The rainfall data for the analysis was obtained from NOAA Atlas 14 for Manchester, Ohio. Modeling was performed using a Soil Conservation Service Type-II rainfall distribution for the 24-hour 25-year storm event (4.99 inches). **Appendix 1** includes rainfall data used in the hydrologic model. The existing conditions and drainage area map used to generate the run-on/runoff control model for the landfill was prepared using the most recent topographic field survey prepared in 2013 is included as **Figure 1**. Similarly, the drainage areas map used to model peak flow rates to the east diversion ditch is included as **Figure 2**.

The HydroCAD model results included as **Appendix 2**, demonstrate that the perimeter channel provides is sufficient capacity to collect, control and convey landfill runoff resulting from the 24 hour, 25-year storm event to the retention pond without overtopping the channel.

§257.81(b): Run-off from the active portion of the CCR unit must be handled in accordance with the surface water requirement under §257.3-3.

> *§257.3-3(a): For purposes of section 4004(a) of the Act, a facility shall not cause a discharge of pollutants into waters of the United States that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES) under section 402 of the Clean Water Act, as amended.*
>
> *§257.3-3(b): For purposes of section 4004(a) of the Act, a facility shall not cause a discharge of dredged material or fill material to waters of the United States that is in violation of the requirements under section 404 of the Clean Water Act, as amended.*
>
> *§257.3-3(c): A facility or practice shall not cause non-point source pollution of waters of the United States that violates applicable legal requirements implementing an areawide or Statewide water quality management plan that has been approved by the Administrator under section 208 of the Clean Water Act, as amended.*

Discharge from Landfill 9 is conveyed to a retention pond south of the landfill. The retention pond includes forebays. The water from the retention pond is subsequently conveyed into the Ohio River via NPDES Outfall 19. Discharge from site is subject to the Authorization to Discharge under the National Pollution Discharge Elimination System dated 1 February 2013 and prepared by the Ohio Environmental Protection Agency.

<u>§257.81(c)(1)</u>: Contents of plan. The owner or operator must prepare initial and periodic run-on and run-off control system plans for the CCR unit according to the timeframes specified in paragraphs (c)(3) and (4) of this section. These plans must document how the run-on and run-off control systems have been designed and constructed to meet the applicable requirements of this section. Each plan must be supported by appropriate engineering calculations. The owner or operator has completed the initial run-on and run-off control system plan when the plan has been placed in the facility's operating record as required by §257.105(g)(3).

This document and all attachments serve as the initial Run-on Run-off control plan. Periodic Run-on and Run-off control plans will be prepared at 5-year increments or whenever there is a change in conditions that would affect the plan.

<u>§257.81(c)(2)</u>: Amendment of the plan. The owner or operator may amend the written run-on and run-off control system plan at any time provided the revised plan is placed in the facility's operating record as required by §257.105 (g) (3). The owner or operator must amend the written run-on and run-off control system plan whenever there is a change in conditions that would substantially affect the written plan in effect.

The written run-on and run-off control plan will be amended at least 60 days prior to a planned change in the operation of the facility or the CCR impoundment, or no later than 60 days after an unanticipated event requires the need to revise the plan. If the written run-on and run-off control plan needs to be revised after closure activities have commenced, the plan will be revised no later than 30 days following the triggering event.

Any amendments to the plan will include written certification from a qualified professional engineer that the initial and any amendments to the run-on and run-off control plan meet the requirements of the CCR Rule.

A record of amendments to the plan will be tracked below. The latest version of the run-on and run-off control plan will be noted on the front cover of the plan.

Version	**Date**	**Description of Changes Made**
1	12 October 2016	Initial Issue

<u>§257.81(c)(3)</u>: Timeframes for preparing the initial plan

(i) Existing CCR landfills. The owner or operator of the CCR unit must prepare an initial run-on and run-off control system plan no later than October 17, 2016

The Run-on and Run-off Control Plan has been prepared within the specified time.

(ii) New CCR landfills and any lateral expansion of a CCR landfill. The owner or operator must prepare the initial run-on and run-off control system plan no later than the date of initial receipt of CCR in the CCR unit.

N/A- Landfill 9 is an existing landfill.

<u>§257.81(c)(4)</u>: Frequency of revising the plan. The owner or operator of the CCR unit must prepare periodic run-on and run-off control system plans required by paragraph (c)(1) of this section every five years. The date of completing the initial plan is the basis for establishing the deadline to complete the first subsequent plan. The owner or operator may complete any required plan prior to the required deadline provided the owner or operator places the completed plan into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing a subsequent plan is based on the date of completing the previous plan. For purposes of this paragraph (c)(4), the owner or operator has completed a periodic run-on and run-off control system plan when the plan has been placed in the facility's operating record as required by §257.105(g)(3).

The Run-on and Run-off control system plan or any subsequent Run-on and Run-off control system plan will be assessed and amended whenever there is a change in operation of the CCR landfill that would substantially affect the Run-on and Run-off Control System Plan or when unanticipated events necessitate a revision of the plan either before or after closure activities have commenced.

Professional Engineer Certification

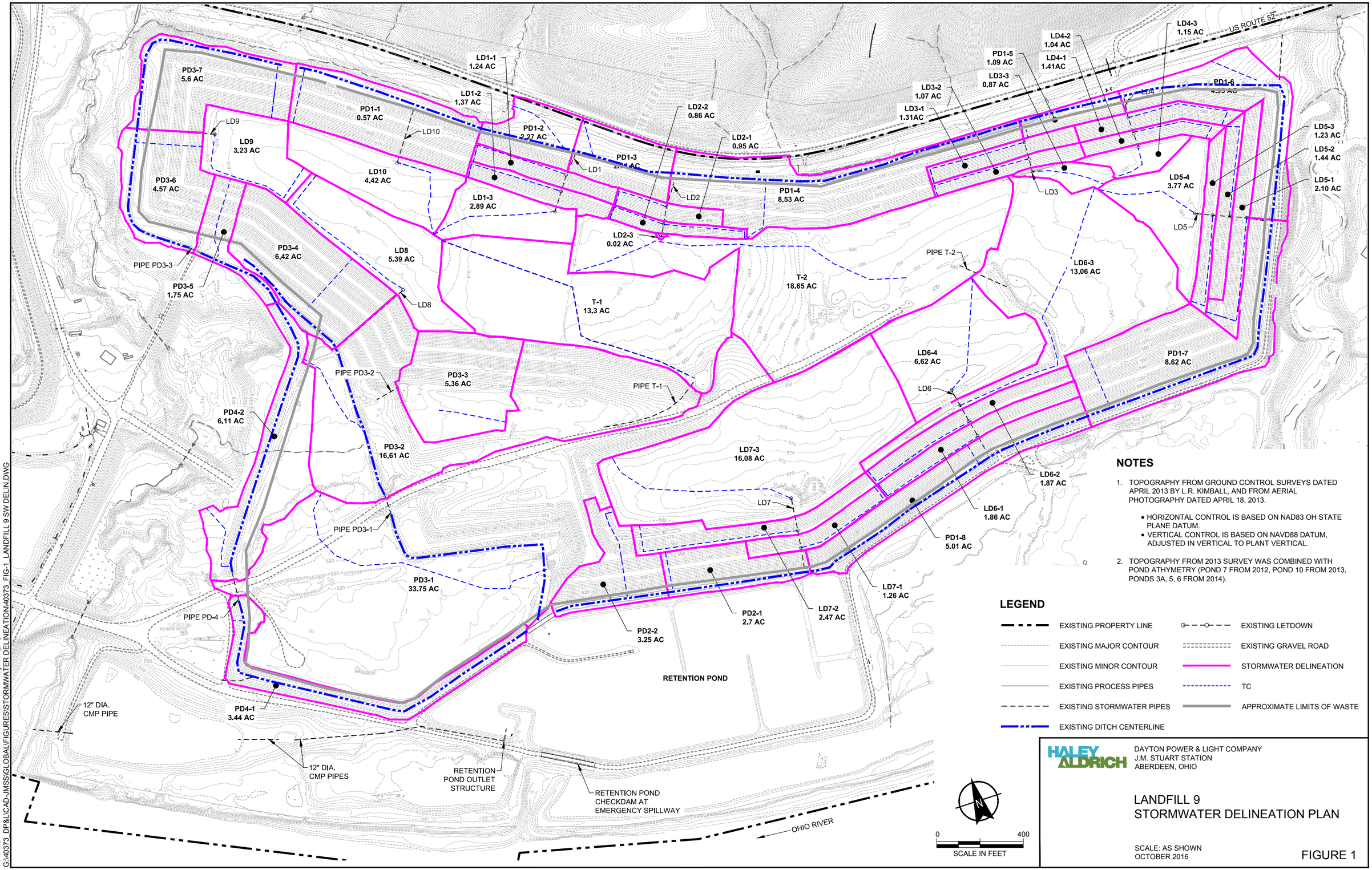
<u>§257.81(c)(5)</u>: The owner or operator must obtain a certification from a qualified professional engineer stating that the initial and periodic run-on and run-off control system plans meet the requirements of this section.

I certify that the above-referenced run-on and run-on control system for DP&L's Landfill 9 at J.M. Stuart Electric Generating Station meet the USEPA's Final CCR Rule requirements of §257.81.

Signed: _____
Consulting Engineer

Print Name: Steven F. Putrich
Ohio License No.: 67329
Title: Vice President
Company: Haley & Aldrich, Inc.

Professional Engineer's Seal and date:



NOTES

1. TOPOGRAPHY FROM GROUND CONTROL SURVEYS DATED APRIL 2013 BY L.R. KIMBALL, AND FROM AERIAL PHOTOGRAPHY DATED APRIL 18, 2013.
   - HORIZONTAL CONTROL IS BASED ON NAD83 OH STATE PLANE DATUM.
   - VERTICAL CONTROL IS BASED ON NAVD88 DATUM, ADJUSTED IN VERTICAL TO PLANT VERTICAL.
2. TOPOGRAPHY FROM 2013 SURVEY WAS COMBINED WITH POND ATHYMETRY (POND 7 FROM 2012, POND 10 FROM 2013, PONDS 3A, 5, 6 FROM 2014).

LEGEND

- EXISTING PROPERTY LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING PROCESS PIPES
- EXISTING STORMWATER PIPES
- EXISTING DITCH CENTERLINE
- EXISTING LETDOWN
- EXISTING GRAVEL ROAD
- STORMWATER DELINEATION
- TC
- APPROXIMATE LIMITS OF WASTE

HALEY ALDRICH

DAYTON POWER & LIGHT COMPANY
J.M. STUART STATION
ABERDEEN, OHIO

LANDFILL 9
STORMWATER DELINEATION PLAN

SCALE: AS SHOWN
OCTOBER 2016

FIGURE 1

LUCAS, ANDY
G:\40373_DP&L\CAD-JMSS\GLOBAL\FIGURES\STORMWATER DELINEATION\40373_FIG-1_LANDFILL 9 SW DELIN.DWG
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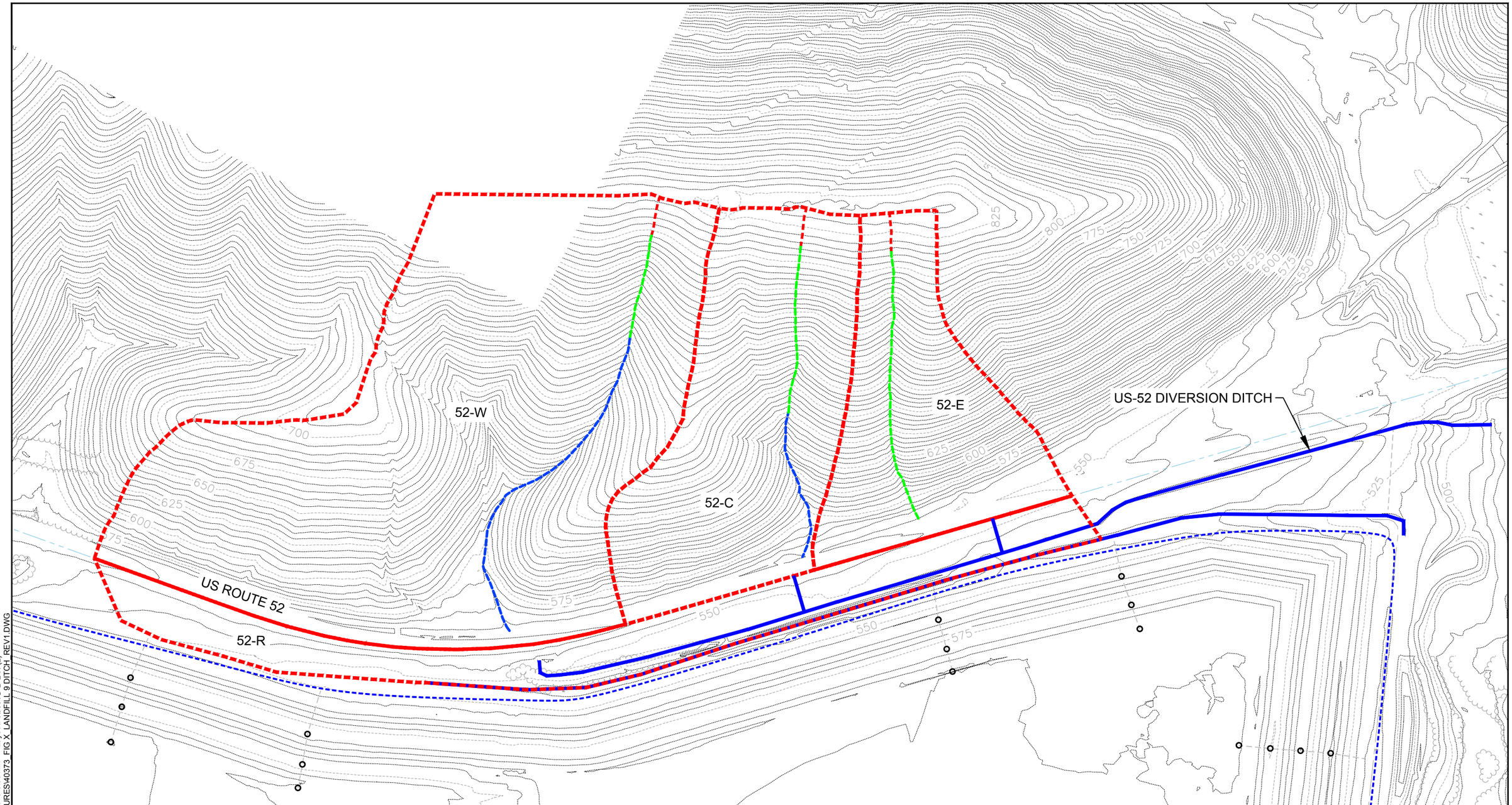

LEGEND

- 575 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- DRAINAGE AREA BOUNDARY
- SHEET FLOW
- SHALLOW CONCENTRATED FLOW
- CONCENTRATED FLOW

NOTES

1. TOPOGRAPHY FROM GROUND CONTROL SURVEYS DATED APRIL 2013 BY L.R. KIMBALL, AND FROM AERIAL PHOTOGRAPHY DATED APRIL 18, 2013.
   - HORIZONTAL CONTROL IS BASED ON NAD83 OH STATE PLANE DATUM.
   - VERTICAL CONTROL IS BASED ON NAVD88 DATUM, ADJUSTED IN VERTICAL TO PLANT VERTICAL.
2. DRAINAGE AREAS AND US-52 CROSSING CULVERT HYDRAULIC CONDITIONS HAVE BEEN APPROXIMATED BASED ON CULVERT SIZES, US-52 CUT-OFF DITCH GEOMETRY AND LIMITED TOPO DATA AS SHOWN HEREIN.

N

0 250 500
SCALE IN FEET

HALEY ALDRICH

DAYTON POWER AND LIGHT CO.
J.M. STUART STATION
ABERDEEN, OHIO

US-52 EAST DIVERSION DITCH
DRAINAGE AREA MAP

SCALE: AS SHOWN
OCTOBER 2016

FIGURE 2

LUCAS, ANDY Printed: 10/12/2016 6:50 AM Layout: HA-FIG-B-L-H (2)
G:\40373_DP&LCAD-JMSS\GLOBAL\FIGURES\40373_FIG X_LANDFILL 9 DITCH_REV1.DWG

Appendix 1

NOAA Atlas 14, Volume 2, Version 3
Location name: Manchester, Ohio, US*
Latitude: 38.6375°, Longitude: -83.6749°
Elevation: 567 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	100
5-min	0.378 (0.344–0.415)	0.449 (0.409–0.495)	0.536 (0.488–0.590)	0.605 (0.549–0.665)	0.692 (0.626–0.759)	0.760 (0.686–0.833)	0.827 (0.741–0.905)	0.895 (0.799–0.980)	0.987 (0.875–1.08)	1.0 (0.930–
10-min	0.587 (0.534–0.645)	0.702 (0.639–0.773)	0.834 (0.759–0.917)	0.934 (0.848–1.03)	1.06 (0.958–1.16)	1.15 (1.04–1.26)	1.24 (1.12–1.36)	1.34 (1.19–1.46)	1.45 (1.29–1.59)	1.5 (1.35–
15-min	0.719 (0.654–0.791)	0.858 (0.781–0.945)	1.02 (0.932–1.13)	1.15 (1.04–1.26)	1.31 (1.18–1.43)	1.43 (1.29–1.56)	1.55 (1.39–1.69)	1.66 (1.48–1.82)	1.81 (1.61–1.98)	1.9 (1.69–
30-min	0.952 (0.866–1.05)	1.15 (1.05–1.27)	1.40 (1.28–1.54)	1.60 (1.45–1.75)	1.85 (1.67–2.03)	2.04 (1.84–2.24)	2.23 (2.00–2.44)	2.43 (2.16–2.66)	2.68 (2.38–2.94)	2.8 (2.54–
60-min	1.16 (1.06–1.28)	1.41 (1.28–1.55)	1.76 (1.60–1.93)	2.03 (1.84–2.23)	2.39 (2.17–2.63)	2.69 (2.42–2.95)	2.98 (2.68–3.27)	3.29 (2.94–3.60)	3.71 (3.29–4.06)	4.0 (3.56–
2-hr	1.36 (1.23–1.52)	1.65 (1.49–1.84)	2.06 (1.86–2.29)	2.39 (2.16–2.66)	2.85 (2.56–3.16)	3.23 (2.89–3.58)	3.63 (3.23–4.01)	4.05 (3.58–4.47)	4.64 (4.07–5.12)	5.1 (4.47–
3-hr	1.46 (1.32–1.63)	1.76 (1.59–1.96)	2.20 (1.99–2.46)	2.56 (2.31–2.85)	3.08 (2.76–3.42)	3.50 (3.12–3.88)	3.95 (3.51–4.37)	4.42 (3.91–4.88)	5.10 (4.47–5.63)	5.6 (4.93–
6-hr	1.76 (1.60–1.94)	2.11 (1.93–2.34)	2.63 (2.39–2.91)	3.06 (2.77–3.37)	3.67 (3.31–4.03)	4.18 (3.75–4.58)	4.72 (4.21–5.17)	5.30 (4.71–5.80)	6.14 (5.39–6.70)	6.8 (5.96–
12-hr	2.08 (1.90–2.28)	2.50 (2.28–2.75)	3.08 (2.82–3.39)	3.57 (3.26–3.92)	4.27 (3.88–4.67)	4.85 (4.38–5.29)	5.47 (4.91–5.95)	6.13 (5.48–6.66)	7.08 (6.27–7.68)	7.8 (6.91–
24-hr	2.44 (2.27–2.64)	2.92 (2.71–3.15)	3.60 (3.35–3.89)	4.17 (3.87–4.49)	4.99 (4.60–5.37)	5.67 (5.20–6.10)	6.39 (5.83–6.88)	7.17 (6.50–7.72)	8.29 (7.44–8.93)	9.2 (8.20–
2-day	2.90 (2.69–3.14)	3.46 (3.22–3.76)	4.25 (3.94–4.60)	4.89 (4.52–5.29)	5.79 (5.34–6.26)	6.53 (6.00–7.06)	7.30 (6.68–7.90)	8.12 (7.38–8.79)	9.28 (8.35–10.1)	10. (9.13–
3-day	3.10 (2.90–3.35)	3.70 (3.46–4.00)	4.52 (4.21–4.88)	5.18 (4.82–5.58)	6.10 (5.66–6.57)	6.85 (6.33–7.37)	7.63 (7.01–8.21)	8.44 (7.71–9.10)	9.58 (8.67–10.3)	10. (9.43–
4-day	3.31 (3.10–3.55)	3.95 (3.70–4.24)	4.80 (4.49–5.15)	5.48 (5.12–5.88)	6.42 (5.98–6.88)	7.17 (6.66–7.69)	7.95 (7.35–8.53)	8.76 (8.05–9.40)	9.88 (8.99–10.6)	10. (9.73–
7-day	3.93 (3.68–4.21)	4.67 (4.37–5.01)	5.64 (5.27–6.04)	6.42 (5.99–6.89)	7.53 (7.00–8.07)	8.42 (7.80–9.03)	9.36 (8.62–10.0)	10.3 (9.46–11.1)	11.7 (10.6–12.6)	12. (11.5–
10-day	4.47 (4.20–4.78)	5.31 (4.98–5.67)	6.37 (5.98–6.81)	7.24 (6.78–7.73)	8.44 (7.87–9.01)	9.41 (8.74–10.0)	10.4 (9.63–11.1)	11.4 (10.5–12.2)	12.9 (11.8–13.9)	14. (12.7–
20-day	6.14 (5.80–6.50)	7.26 (6.86–7.69)	8.56 (8.08–9.06)	9.59 (9.04–10.1)	11.0 (10.3–11.6)	12.0 (11.3–12.7)	13.1 (12.2–13.8)	14.1 (13.2–15.0)	15.5 (14.4–16.5)	16. (15.3–
30-day	7.74 (7.36–8.14)	9.11 (8.66–9.58)	10.6 (10.1–11.1)	11.7 (11.1–12.3)	13.3 (12.5–13.9)	14.4 (13.6–15.1)	15.5 (14.6–16.3)	16.6 (15.6–17.5)	18.0 (16.8–19.0)	19. (17.7–
45-day	9.85 (9.41–10.3)	11.6 (11.0–12.1)	13.2 (12.6–13.9)	14.5 (13.8–15.2)	16.0 (15.3–16.8)	17.2 (16.3–18.0)	18.2 (17.3–19.1)	19.2 (18.2–20.2)	20.5 (19.3–21.5)	21. (20.1–
60-day	11.8 (11.3–12.3)	13.8 (13.2–14.4)	15.7 (15.0–16.4)	17.1 (16.3–17.8)	18.8 (17.9–19.6)	20.0 (19.1–20.9)	21.2 (20.2–22.2)	22.2 (21.2–23.3)	23.5 (22.3–24.7)	24. (23.1–

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (
given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are n
checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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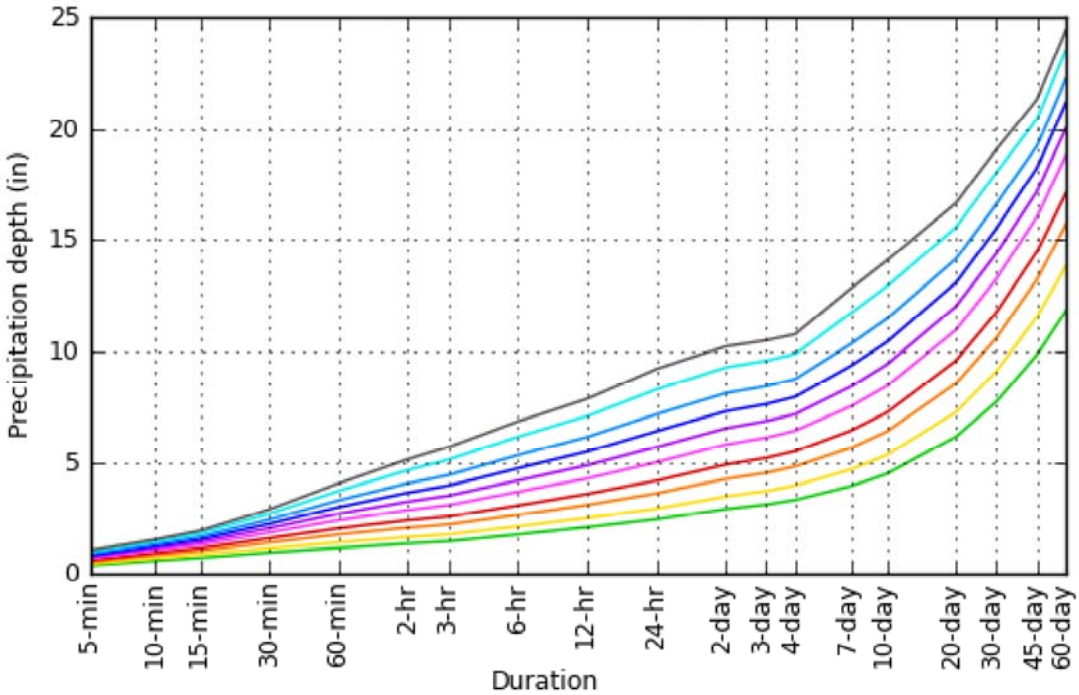
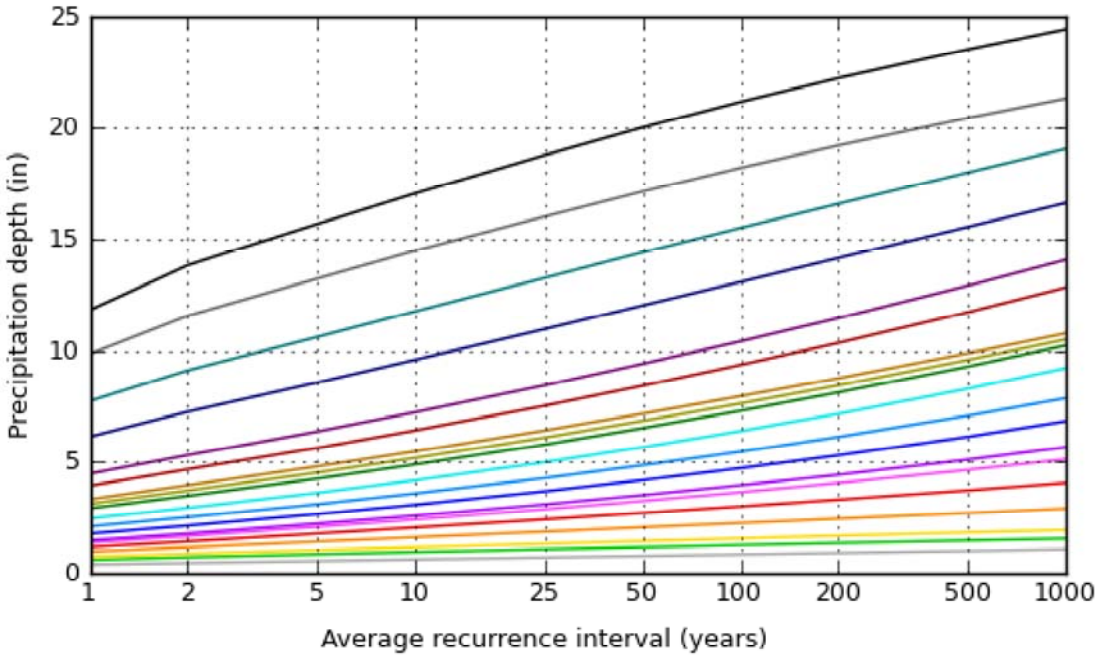
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 38.6375°, Longitude: -83.6749°





NOAA Atlas 14, Volume 2, Version 3 Created (GMT): Thu Feb 25 19:24:47 2016

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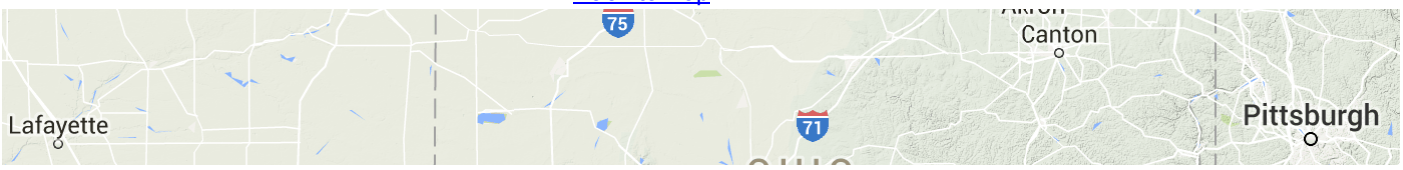
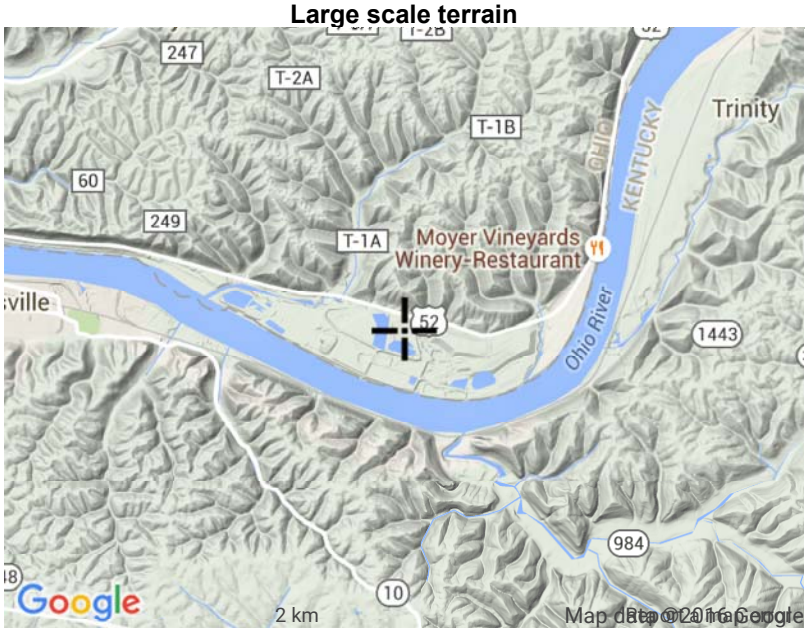


Large scale terrain



Large scale map

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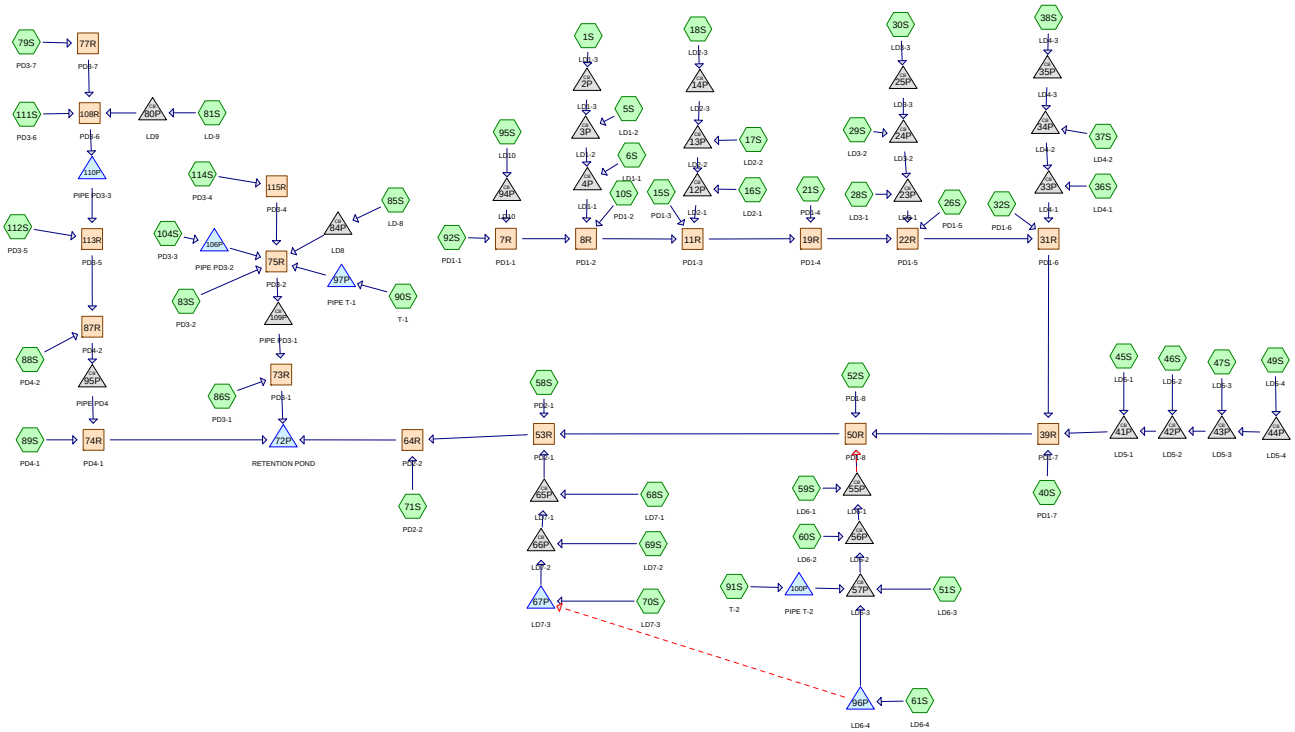
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Appendix 2



Subcat Reach Pond Link

Routing Diagram for LF 9 HydroCAD_rev7

Prepared by {enter your company name here}, Printed 10/12/2016

HydroCAD® 10.00 s/n 08262 © 2013 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.000	88	(83S)
57.910	61	>75% Grass cover, Good, HSG B (32S, 36S, 37S, 38S, 45S, 46S, 47S, 49S, 83S, 88S, 89S, 90S, 104S)
33.750	77	>75% Grass cover, Good, HSG B (86S)
143.780	74	>75% Grass cover, Good, HSG C (1S, 5S, 6S, 10S, 15S, 16S, 17S, 18S, 21S, 26S, 28S, 29S, 30S, 40S, 51S, 52S, 58S, 59S, 60S, 61S, 68S, 69S, 70S, 71S, 79S, 81S, 85S, 91S, 92S, 95S, 111S, 112S, 114S)
239.440	**72**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
91.660	HSG B	32S, 36S, 37S, 38S, 45S, 46S, 47S, 49S, 83S, 86S, 88S, 89S, 90S, 104S
143.780	HSG C	1S, 5S, 6S, 10S, 15S, 16S, 17S, 18S, 21S, 26S, 28S, 29S, 30S, 40S, 51S, 52S, 58S, 59S, 60S, 61S, 68S, 69S, 70S, 71S, 79S, 81S, 85S, 91S, 92S, 95S, 111S, 112S, 114S
0.000	HSG D	
4.000	Other	83S
239.440		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	4.000	4.000		83S
0.000	91.660	143.780	0.000	0.000	235.440	>75% Grass cover, Good	1S, 5S, 6S, 10S, 15S, 16S, 17S, 18S, 21S, 26S, 28S, 29S, 30S, 32S, 36S, 37S, 38S, 40S, 45S, 46S, 47S, 49S, 51S, 52S, 58S, 59S, 60S, 61S, 68S, 69S, 70S, 71S, 79S, 81S, 83S, 85S, 86S, 88S, 89S, 90S, 91S, 92S, 95S, 104S, 111S, 112S, 114S

Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	**91.660**	**143.780**	**0.000**	**4.000**	**239.440**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	2P	614.31	590.56	97.0	0.2448	0.013	18.0	0.0	0.0
2	3P	590.56	570.71	80.0	0.2481	0.013	18.0	0.0	0.0
3	4P	570.71	550.79	114.0	0.1747	0.013	18.0	0.0	0.0
4	12P	570.99	549.37	120.0	0.1802	0.013	18.0	0.0	0.0
5	13P	589.60	570.99	81.0	0.2298	0.013	18.0	0.0	0.0
6	14P	607.60	589.60	63.0	0.2857	0.013	18.0	0.0	0.0
7	23P	551.24	540.85	88.0	0.1181	0.013	18.0	0.0	0.0
8	24P	570.70	551.24	80.0	0.2433	0.013	18.0	0.0	0.0
9	25P	582.19	570.70	61.0	0.1884	0.013	18.0	0.0	0.0
10	33P	550.45	536.39	95.0	0.1480	0.013	18.0	0.0	0.0
11	34P	570.26	550.45	79.0	0.2508	0.013	18.0	0.0	0.0
12	35P	584.15	570.26	67.0	0.2073	0.013	18.0	0.0	0.0
13	41P	529.95	513.12	93.0	0.1810	0.013	18.0	0.0	0.0
14	42P	550.15	529.95	93.0	0.2172	0.013	18.0	0.0	0.0
15	43P	569.97	550.15	80.0	0.2478	0.013	18.0	0.0	0.0
16	44P	582.48	569.97	83.0	0.1507	0.013	18.0	0.0	0.0
17	55P	526.59	507.15	98.0	0.1984	0.013	24.0	0.0	0.0
18	56P	542.44	526.59	80.0	0.1981	0.013	24.0	0.0	0.0
19	57P	558.50	542.43	81.0	0.1984	0.013	24.0	0.0	0.0
20	65P	524.50	505.87	99.0	0.1882	0.013	24.0	0.0	0.0
21	66P	539.65	524.50	81.0	0.1870	0.013	24.0	0.0	0.0
22	67P	568.15	539.65	152.0	0.1875	0.013	24.0	0.0	0.0
23	72P	495.00	490.00	240.0	0.0208	0.010	16.0	0.0	0.0
24	72P	497.00	495.00	300.0	0.0067	0.010	14.0	0.0	0.0
25	72P	497.50	497.25	50.0	0.0050	0.025	8.0	0.0	0.0
26	80P	613.00	545.06	320.0	0.2123	0.025	24.0	0.0	0.0
27	84P	613.57	528.06	367.0	0.2330	0.025	24.0	0.0	0.0
28	94P	612.39	555.73	261.0	0.2171	0.025	24.0	0.0	0.0
29	95P	513.10	513.17	140.6	-0.0005	0.025	84.0	0.0	0.0
30	96P	574.57	558.50	81.0	0.1984	0.013	24.0	0.0	0.0
31	97P	590.43	558.35	482.0	0.0666	0.013	14.0	0.0	0.0
32	100P	576.77	577.09	242.0	-0.0013	0.013	14.0	0.0	0.0
33	106P	550.62	533.38	117.0	0.1474	0.013	14.0	0.0	0.0
34	109P	520.52	518.76	100.0	0.0176	0.025	37.0	56.0	0.0
35	110P	539.45	539.23	37.5	0.0059	0.013	36.0	0.0	0.0

Time span=5.00-48.00 hrs, dt=0.03 hrs, 1434 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: LD1-3 Runoff Area=2.890 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=581' Tc=33.0 min CN=74 Runoff=5.50 cfs 0.569 af

Subcatchment5S: LD1-2 Runoff Area=1.370 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=487' Tc=5.7 min CN=74 Runoff=5.81 cfs 0.270 af

Subcatchment6S: LD1-1 Runoff Area=1.240 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=503' Tc=7.5 min CN=74 Runoff=4.94 cfs 0.244 af

Subcatchment10S: PD1-2 Runoff Area=2.270 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=320' Slope=0.0300 '/' Tc=15.7 min CN=74 Runoff=6.77 cfs 0.447 af

Subcatchment15S: PD1-3 Runoff Area=2.740 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=184' Slope=0.0800 '/' Tc=9.3 min CN=74 Runoff=10.21 cfs 0.540 af

Subcatchment16S: LD2-1 Runoff Area=0.950 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=296' Tc=5.0 min CN=74 Runoff=4.14 cfs 0.187 af

Subcatchment17S: LD2-2 Runoff Area=0.860 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=298' Tc=5.0 min CN=74 Runoff=3.75 cfs 0.169 af

Subcatchment18S: LD2-3 Runoff Area=0.020 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=23' Slope=0.0190 '/' Tc=5.0 min CN=74 Runoff=0.09 cfs 0.004 af

Subcatchment21S: PD1-4 Runoff Area=8.530 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=308' Tc=5.0 min CN=74 Runoff=37.19 cfs 1.681 af

Subcatchment26S: PD1-5 Runoff Area=1.090 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=38' Slope=0.3000 '/' Tc=5.0 min CN=74 Runoff=4.75 cfs 0.215 af

Subcatchment28S: LD3-1 Runoff Area=1.310 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=525' Tc=8.0 min CN=74 Runoff=5.12 cfs 0.258 af

Subcatchment29S: LD3-2 Runoff Area=1.070 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=503' Tc=6.9 min CN=74 Runoff=4.36 cfs 0.211 af

Subcatchment30S: LD3-3 Runoff Area=0.870 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=342' Slope=0.0110 '/' Tc=24.5 min CN=74 Runoff=2.01 cfs 0.171 af

Subcatchment32S: PD1-6 Runoff Area=4.950 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=229' Slope=0.0760 '/' Tc=9.9 min CN=61 Runoff=9.95 cfs 0.565 af

Subcatchment36S: LD4-1 Runoff Area=1.410 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=544' Tc=11.6 min CN=61 Runoff=2.65 cfs 0.161 af

Subcatchment37S: LD4-2 Runoff Area=1.040 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=429' Tc=5.4 min CN=61 Runoff=2.52 cfs 0.119 af

Subcatchment38S: LD4-3 Runoff Area=1.150 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=226' Slope=0.0030 '/' Tc=37.4 min CN=61 Runoff=1.04 cfs 0.131 af

Subcatchment40S: PD1-7 Runoff Area=8.620 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=290' Tc=5.9 min CN=74 Runoff=36.27 cfs 1.698 af

Subcatchment45S: LD5-1 Runoff Area=2.100 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=624' Tc=10.1 min CN=61 Runoff=4.19 cfs 0.240 af

Subcatchment46S: LD5-2 Runoff Area=1.440 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=478' Tc=6.9 min CN=61 Runoff=3.28 cfs 0.164 af

Subcatchment47S: LD5-3 Runoff Area=1.230 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=487' Tc=5.1 min CN=61 Runoff=3.02 cfs 0.140 af

Subcatchment49S: LD5-4 Runoff Area=3.770 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=485' Slope=0.0060 '/' Tc=36.0 min CN=61 Runoff=3.50 cfs 0.430 af

Subcatchment51S: LD6-3 Runoff Area=13.060 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=1,371' Tc=40.3 min CN=74 Runoff=21.61 cfs 2.573 af

Subcatchment52S: PD1-8 Runoff Area=5.010 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=88' Slope=0.3000 '/' Tc=5.0 min CN=74 Runoff=21.85 cfs 0.987 af

Subcatchment58S: PD2-1 Runoff Area=2.700 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=172' Tc=6.2 min CN=74 Runoff=11.27 cfs 0.532 af

Subcatchment59S: LD6-1 Runoff Area=1.860 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=574' Tc=8.8 min CN=74 Runoff=7.06 cfs 0.366 af

Subcatchment60S: LD6-2 Runoff Area=1.870 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=588' Tc=7.8 min CN=74 Runoff=7.36 cfs 0.368 af

Subcatchment61S: LD6-4 Runoff Area=6.620 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=546' Tc=27.2 min CN=74 Runoff=14.31 cfs 1.304 af

Subcatchment68S: LD7-1 Runoff Area=1.260 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=537' Tc=6.6 min CN=74 Runoff=5.19 cfs 0.248 af

Subcatchment69S: LD7-2 Runoff Area=2.470 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=841' Tc=13.1 min CN=74 Runoff=8.04 cfs 0.487 af

Subcatchment70S: LD7-3 Runoff Area=16.080 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=899' Tc=32.6 min CN=74 Runoff=30.83 cfs 3.168 af

Subcatchment71S: PD2-2 Runoff Area=3.250 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=426' Tc=5.0 min CN=74 Runoff=14.17 cfs 0.640 af

Subcatchment79S: PD3-7 Runoff Area=5.600 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=219' Tc=7.1 min CN=74 Runoff=22.63 cfs 1.103 af

Subcatchment81S: LD-9 Runoff Area=3.230 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=692' Tc=20.7 min CN=74 Runoff=8.27 cfs 0.636 af

Subcatchment 83S: PD3-2 Runoff Area=16.610 ac 0.00% Impervious Runoff Depth=1.88"
Flow Length=439' Tc=6.6 min CN=68 Runoff=54.23 cfs 2.602 af

Subcatchment 85S: LD-8 Runoff Area=5.390 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=812' Tc=22.9 min CN=74 Runoff=12.98 cfs 1.062 af

Subcatchment 86S: PD3-1 Runoff Area=33.750 ac 0.00% Impervious Runoff Depth=2.62"
Flow Length=1,371' Tc=24.2 min CN=77 Runoff=87.86 cfs 7.377 af

Subcatchment 88S: PD4-2 Runoff Area=6.110 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=309' Tc=12.3 min CN=61 Runoff=11.15 cfs 0.697 af

Subcatchment 89S: PD4-1 Runoff Area=3.440 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=37' Slope=0.3000 '/' Tc=5.0 min CN=61 Runoff=8.47 cfs 0.392 af

Subcatchment 90S: T-1 Runoff Area=13.300 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=1,397' Tc=42.6 min CN=61 Runoff=10.92 cfs 1.517 af

Subcatchment 91S: T-2 Runoff Area=18.650 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=1,636' Tc=50.1 min CN=74 Runoff=26.44 cfs 3.674 af

Subcatchment 92S: PD1-1 Runoff Area=5.740 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=257' Tc=5.2 min CN=74 Runoff=24.83 cfs 1.131 af

Subcatchment 95S: LD10 Runoff Area=4.420 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=452' Tc=22.0 min CN=74 Runoff=10.92 cfs 0.871 af

Subcatchment 104S: PD3-3 Runoff Area=5.360 ac 0.00% Impervious Runoff Depth=1.37"
Flow Length=317' Tc=23.4 min CN=61 Runoff=6.70 cfs 0.612 af

Subcatchment 111S: PD3-6 Runoff Area=4.570 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=289' Tc=5.1 min CN=74 Runoff=19.85 cfs 0.900 af

Subcatchment 112S: PD3-5 Runoff Area=1.747 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=309' Tc=5.3 min CN=74 Runoff=7.53 cfs 0.344 af

Subcatchment 114S: PD3-4 Runoff Area=6.423 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=309' Tc=5.3 min CN=74 Runoff=27.68 cfs 1.265 af

Reach 7R: PD1-1 Avg. Flow Depth=0.86' Max Vel=2.25 fps Inflow=30.09 cfs 2.002 af
n=0.030 L=900.0' S=0.0033 '/' Capacity=744.10 cfs Outflow=24.26 cfs 2.002 af

Reach 8R: PD1-2 Avg. Flow Depth=0.87' Max Vel=3.73 fps Inflow=41.65 cfs 3.533 af
n=0.030 L=444.0' S=0.0090 '/' Capacity=1,223.30 cfs Outflow=40.71 cfs 3.533 af

Reach 11R: PD1-3 Avg. Flow Depth=1.03' Max Vel=4.02 fps Inflow=55.64 cfs 4.433 af
n=0.030 L=466.0' S=0.0086 '/' Capacity=1,194.07 cfs Outflow=54.36 cfs 4.433 af

Reach 19R: PD1-4 Avg. Flow Depth=1.33' Max Vel=3.48 fps Inflow=82.08 cfs 6.114 af
n=0.030 L=1,641.0' S=0.0049 '/' Capacity=899.88 cfs Outflow=64.90 cfs 6.114 af

Reach 22R: PD1-5 Avg. Flow Depth=1.41' Max Vel=3.65 fps Inflow=74.84 cfs 6.969 af
n=0.030 L=482.0' S=0.0050 '/' Capacity=911.34 cfs Outflow=73.40 cfs 6.969 af

Reach 31R: PD1-6 Avg. Flow Depth=1.05' Max Vel=5.92 fps Inflow=86.24 cfs 7.944 af
n=0.030 L=1,358.0' S=0.0184 '/' Capacity=1,748.69 cfs Outflow=81.33 cfs 7.944 af

Reach 39R: PD1-7 Avg. Flow Depth=1.78' Max Vel=3.29 fps Inflow=102.37 cfs 10.617 af
n=0.030 L=1,484.0' S=0.0032 '/' Capacity=725.31 cfs Outflow=89.81 cfs 10.617 af

Reach 50R: PD1-8 Avg. Flow Depth=1.99' Max Vel=3.66 fps Inflow=119.88 cfs 19.807 af
n=0.030 L=1,414.0' S=0.0035 '/' Capacity=758.69 cfs Outflow=116.29 cfs 19.807 af

Reach 53R: PD2-1 Avg. Flow Depth=2.01' Max Vel=3.72 fps Inflow=120.99 cfs 23.317 af
n=0.030 L=987.0' S=0.0035 '/' Capacity=767.48 cfs Outflow=119.68 cfs 23.317 af

Reach 64R: PD2-2 Avg. Flow Depth=2.55' Max Vel=2.61 fps Inflow=121.32 cfs 23.957 af
n=0.030 L=1,195.0' S=0.0013 '/' Capacity=471.60 cfs Outflow=117.51 cfs 23.957 af

Reach 73R: PD3-1 Avg. Flow Depth=1.54' Max Vel=6.06 fps Inflow=142.04 cfs 14.434 af
n=0.030 L=1,172.0' S=0.0126 '/' Capacity=1,446.35 cfs Outflow=136.41 cfs 14.434 af

Reach 74R: PD4-1 Avg. Flow Depth=0.92' Max Vel=3.05 fps Inflow=40.95 cfs 4.074 af
n=0.030 L=1,790.0' S=0.0057 '/' Capacity=971.47 cfs Outflow=35.68 cfs 4.074 af

Reach 75R: PD3-2 Avg. Flow Depth=1.20' Max Vel=5.13 fps Inflow=87.94 cfs 7.057 af
n=0.030 L=713.0' S=0.0119 '/' Capacity=1,405.55 cfs Outflow=83.69 cfs 7.057 af

Reach 77R: PD3-7 Avg. Flow Depth=0.53' Max Vel=3.07 fps Inflow=22.63 cfs 1.103 af
n=0.030 L=1,090.0' S=0.0110 '/' Capacity=1,352.29 cfs Outflow=18.78 cfs 1.103 af

Reach 87R: PD4-2 Avg. Flow Depth=0.71' Max Vel=4.54 fps Inflow=41.86 cfs 3.681 af
n=0.030 L=1,314.0' S=0.0167 '/' Capacity=1,663.86 cfs Outflow=39.34 cfs 3.681 af

Reach 108R: PD3-6 Avg. Flow Depth=0.87' Max Vel=3.41 fps Inflow=40.24 cfs 2.640 af
n=0.030 L=734.0' S=0.0076 '/' Capacity=1,120.71 cfs Outflow=37.34 cfs 2.640 af

Reach 113R: PD3-5 Avg. Flow Depth=0.73' Max Vel=3.53 fps Inflow=31.57 cfs 2.984 af
n=0.030 L=429.5' S=0.0098 '/' Capacity=1,279.03 cfs Outflow=31.45 cfs 2.984 af

Reach 115R: PD3-4 Avg. Flow Depth=0.54' Max Vel=4.16 fps Inflow=27.68 cfs 1.265 af
n=0.030 L=591.9' S=0.0193 '/' Capacity=1,788.64 cfs Outflow=26.22 cfs 1.265 af

Pond 2P: LD1-3 Peak Elev=615.49' Inflow=5.50 cfs 0.569 af
18.0" Round Culvert n=0.013 L=97.0' S=0.2448 '/' Outflow=5.50 cfs 0.569 af

Pond 3P: LD1-2 Peak Elev=592.10' Inflow=7.56 cfs 0.839 af
18.0" Round Culvert n=0.013 L=80.0' S=0.2481 '/' Outflow=7.56 cfs 0.839 af

Pond 4P: LD1-1 Peak Elev=573.61' Inflow=12.48 cfs 1.084 af
18.0" Round Culvert n=0.013 L=114.0' S=0.1747 '/' Outflow=12.48 cfs 1.084 af

Pond 12P: LD2-1 Peak Elev=572.62' Inflow=7.98 cfs 0.361 af
18.0" Round Culvert n=0.013 L=120.0' S=0.1802 '/' Outflow=7.98 cfs 0.361 af

Pond 13P: LD2-2 Peak Elev=590.54' Inflow=3.84 cfs 0.173 af
18.0" Round Culvert n=0.013 L=81.0' S=0.2298 '/' Outflow=3.84 cfs 0.173 af

Pond 14P: LD2-3 Peak Elev=607.73' Inflow=0.09 cfs 0.004 af
18.0" Round Culvert n=0.013 L=63.0' S=0.2857 '/' Outflow=0.09 cfs 0.004 af

Pond 23P: LD3-1 Peak Elev=553.50' Inflow=10.47 cfs 0.640 af
18.0" Round Culvert n=0.013 L=88.0' S=0.1181 '/' Outflow=10.47 cfs 0.640 af

Pond 24P: LD3-2 Peak Elev=571.86' Inflow=5.36 cfs 0.382 af
18.0" Round Culvert n=0.013 L=80.0' S=0.2433 '/' Outflow=5.36 cfs 0.382 af

Pond 25P: LD3-3 Peak Elev=582.84' Inflow=2.01 cfs 0.171 af
18.0" Round Culvert n=0.013 L=61.0' S=0.1884 '/' Outflow=2.01 cfs 0.171 af

Pond 33P: LD4-1 Peak Elev=551.64' Inflow=4.90 cfs 0.411 af
18.0" Round Culvert n=0.013 L=95.0' S=0.1480 '/' Outflow=4.90 cfs 0.411 af

Pond 34P: LD4-2 Peak Elev=571.02' Inflow=2.68 cfs 0.250 af
18.0" Round Culvert n=0.013 L=79.0' S=0.2508 '/' Outflow=2.68 cfs 0.250 af

Pond 35P: LD4-3 Peak Elev=584.60' Inflow=1.04 cfs 0.131 af
18.0" Round Culvert n=0.013 L=67.0' S=0.2073 '/' Outflow=1.04 cfs 0.131 af

Pond 41P: LD5-1 Peak Elev=532.29' Inflow=10.72 cfs 0.974 af
18.0" Round Culvert n=0.013 L=93.0' S=0.1810 '/' Outflow=10.72 cfs 0.974 af

Pond 42P: LD5-2 Peak Elev=551.54' Inflow=6.86 cfs 0.735 af
18.0" Round Culvert n=0.013 L=93.0' S=0.2172 '/' Outflow=6.86 cfs 0.735 af

Pond 43P: LD5-3 Peak Elev=570.92' Inflow=3.89 cfs 0.570 af
18.0" Round Culvert n=0.013 L=80.0' S=0.2478 '/' Outflow=3.89 cfs 0.570 af

Pond 44P: LD5-4 Peak Elev=583.37' Inflow=3.50 cfs 0.430 af
18.0" Round Culvert n=0.013 L=83.0' S=0.1507 '/' Outflow=3.50 cfs 0.430 af

Pond 55P: LD6-1 Peak Elev=532.88' Inflow=34.79 cfs 8.203 af
Primary=34.79 cfs 8.203 af Secondary=0.00 cfs 0.000 af Outflow=34.79 cfs 8.203 af

Pond 56P: LD6-2 Peak Elev=548.45' Inflow=33.87 cfs 7.837 af
Outflow=33.87 cfs 7.837 af

Pond 57P: LD6-3 Peak Elev=564.25' Inflow=32.98 cfs 7.468 af
Outflow=32.98 cfs 7.468 af

Pond 65P: LD7-1 Peak Elev=526.16' Inflow=12.25 cfs 2.978 af
24.0" Round Culvert n=0.013 L=99.0' S=0.1882 '/' Outflow=12.25 cfs 2.978 af

Pond 66P: LD7-2 Peak Elev=541.14' Inflow=10.46 cfs 2.730 af
24.0" Round Culvert n=0.013 L=81.0' S=0.1870 '/' Outflow=10.46 cfs 2.730 af

Pond 67P: LD7-3 Peak Elev=569.58' Storage=60,702 cf Inflow=30.83 cfs 3.168 af
24.0" Round Culvert n=0.013 L=152.0' S=0.1875 '/' Outflow=9.73 cfs 2.243 af

Pond 72P: RETENTION POND Peak Elev=503.55' Storage=36.561 af Inflow=256.57 cfs 42.465 af
Outflow=4.55 cfs 13.898 af

Pond 80P: LD9 Peak Elev=614.29' Inflow=8.27 cfs 0.636 af
24.0" Round Culvert n=0.025 L=320.0' S=0.2123 '/' Outflow=8.27 cfs 0.636 af

Pond 84P: LD8 Peak Elev=615.30' Inflow=12.98 cfs 1.062 af
24.0" Round Culvert n=0.025 L=367.0' S=0.2330 '/' Outflow=12.98 cfs 1.062 af

Pond 94P: LD10 Peak Elev=613.93' Inflow=10.92 cfs 0.871 af
24.0" Round Culvert n=0.025 L=261.0' S=0.2171 '/' Outflow=10.92 cfs 0.871 af

Pond 95P: PIPE PD4 Peak Elev=516.14' Inflow=39.34 cfs 3.681 af
84.0" Round Culvert n=0.025 L=140.6' S=-0.0005 '/' Outflow=39.34 cfs 3.681 af

Pond 96P: LD6-4 Peak Elev=575.80' Storage=0.444 af Inflow=14.31 cfs 1.304 af
Primary=6.00 cfs 1.221 af Secondary=0.00 cfs 0.000 af Outflow=6.00 cfs 1.221 af

Pond 97P: PIPE T-1 Peak Elev=592.25' Storage=14,253 cf Inflow=10.92 cfs 1.517 af
14.0" Round Culvert n=0.013 L=482.0' S=0.0666 '/' Outflow=5.71 cfs 1.517 af

Pond 100P: PIPE T-2 Peak Elev=582.16' Storage=41,574 cf Inflow=26.44 cfs 3.674 af
Outflow=15.40 cfs 3.674 af

Pond 106P: PIPE PD3-2 Peak Elev=551.71' Storage=4,917 cf Inflow=6.70 cfs 0.612 af
Outflow=3.68 cfs 0.611 af

Pond 109P: PIPE PD3-1 Peak Elev=526.01' Inflow=83.69 cfs 7.057 af
37.0" x 56.0" Ellipse Culvert n=0.025 L=100.0' S=0.0176 '/' Outflow=83.69 cfs 7.057 af

Pond 110P: PIPE PD3-3 Peak Elev=542.18' Storage=8,842 cf Inflow=37.34 cfs 2.640 af
36.0" Round Culvert n=0.013 L=37.5' S=0.0059 '/' Outflow=29.96 cfs 2.640 af

Total Runoff Area = 239.440 ac Runoff Volume = 43.475 af Average Runoff Depth = 2.18"
100.00% Pervious = 239.440 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: LD1-3

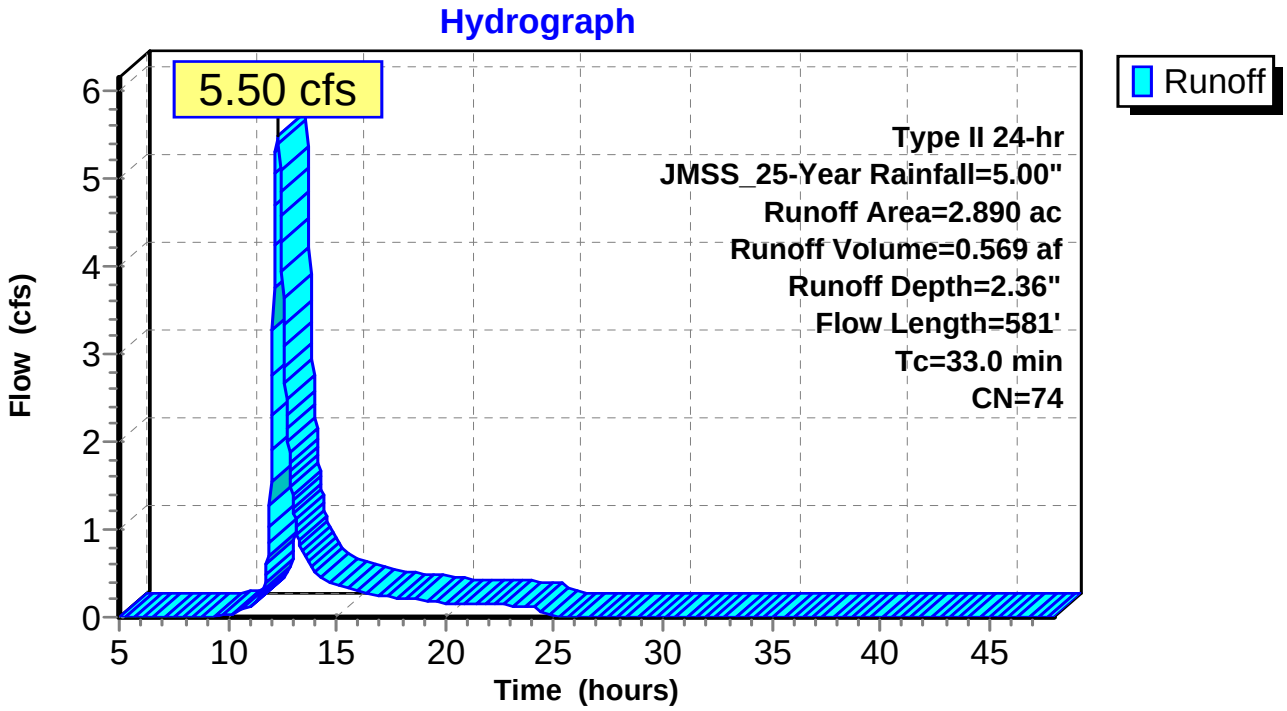
Runoff = 5.50 cfs @ 12.29 hrs, Volume= 0.569 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
2.890	74	>75% Grass cover, Good, HSG C
2.890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0500	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.8	71	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.8	410	0.0020	0.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.0	581	Total			

Subcatchment 1S: LD1-3



Summary for Subcatchment 5S: LD1-2

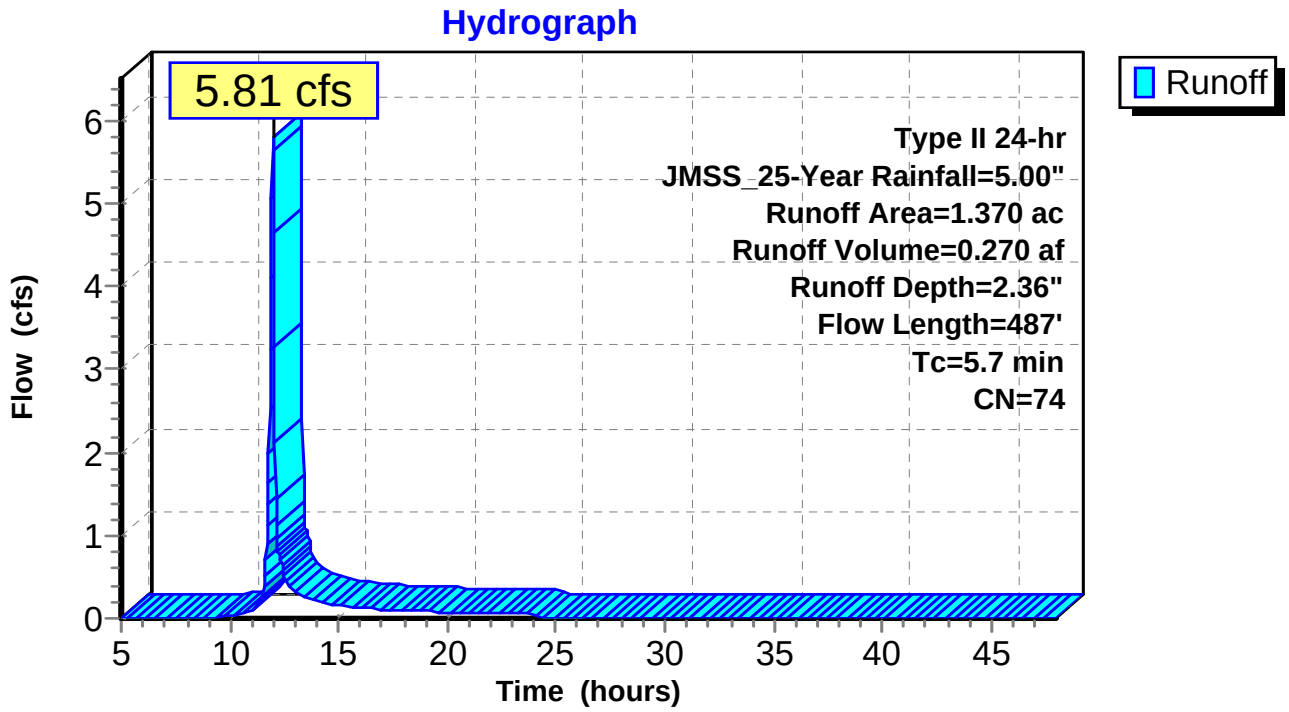
Runoff = 5.81 cfs @ 11.97 hrs, Volume= 0.270 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.370	74	>75% Grass cover, Good, HSG C
1.370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	63	0.3300	0.31		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
2.3	424	0.0050	3.05	32.01	**Channel Flow,** Area= 10.5 sf Perim= 17.0' r= 0.62' n= 0.025 Earth, grassed & winding
5.7	487	Total			

Subcatchment 5S: LD1-2



Summary for Subcatchment 6S: LD1-1

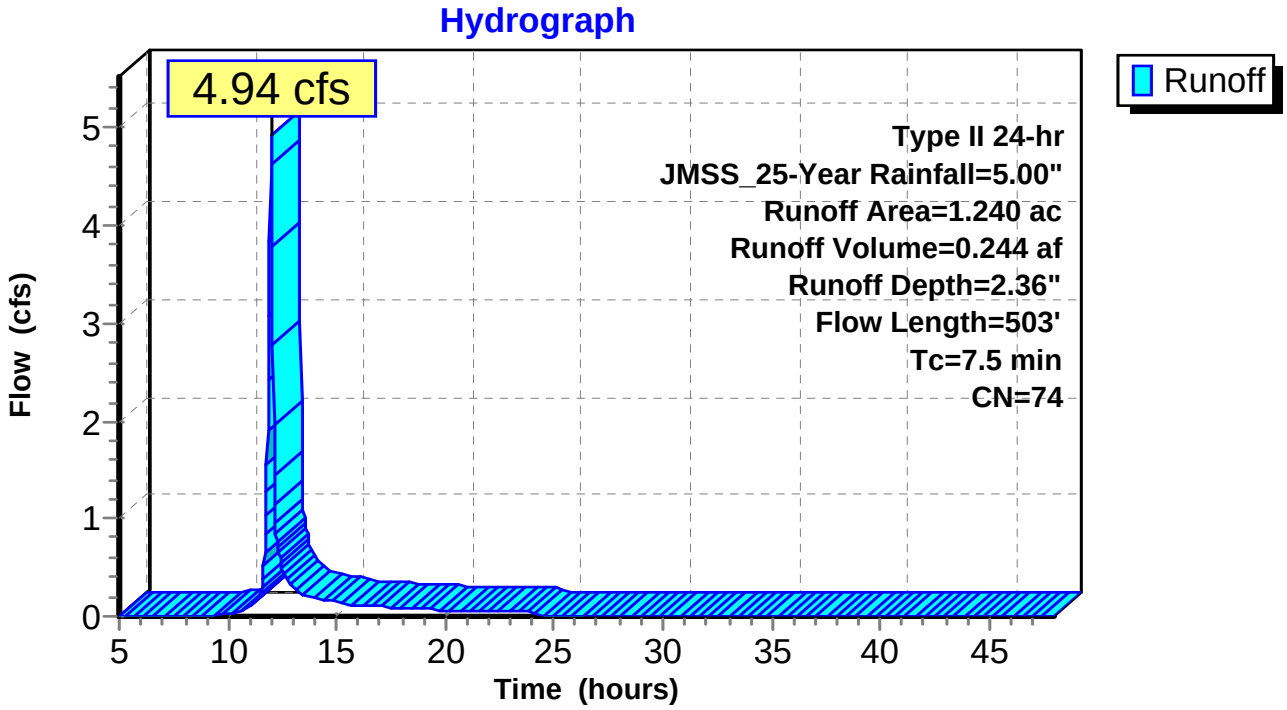
Runoff = 4.94 cfs @ 11.99 hrs, Volume= 0.244 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.240	74	>75% Grass cover, Good, HSG C
1.240		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	79	0.3300	0.33		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
3.5	424	0.0050	2.00	11.23	**Channel Flow,** Area= 5.6 sf Perim= 17.0' r= 0.33' n= 0.025 Earth, clean & straight
7.5	503	Total			

Subcatchment 6S: LD1-1



Summary for Subcatchment 10S: PD1-2

Runoff = 6.77 cfs @ 12.08 hrs, Volume= 0.447 af, Depth= 2.36"

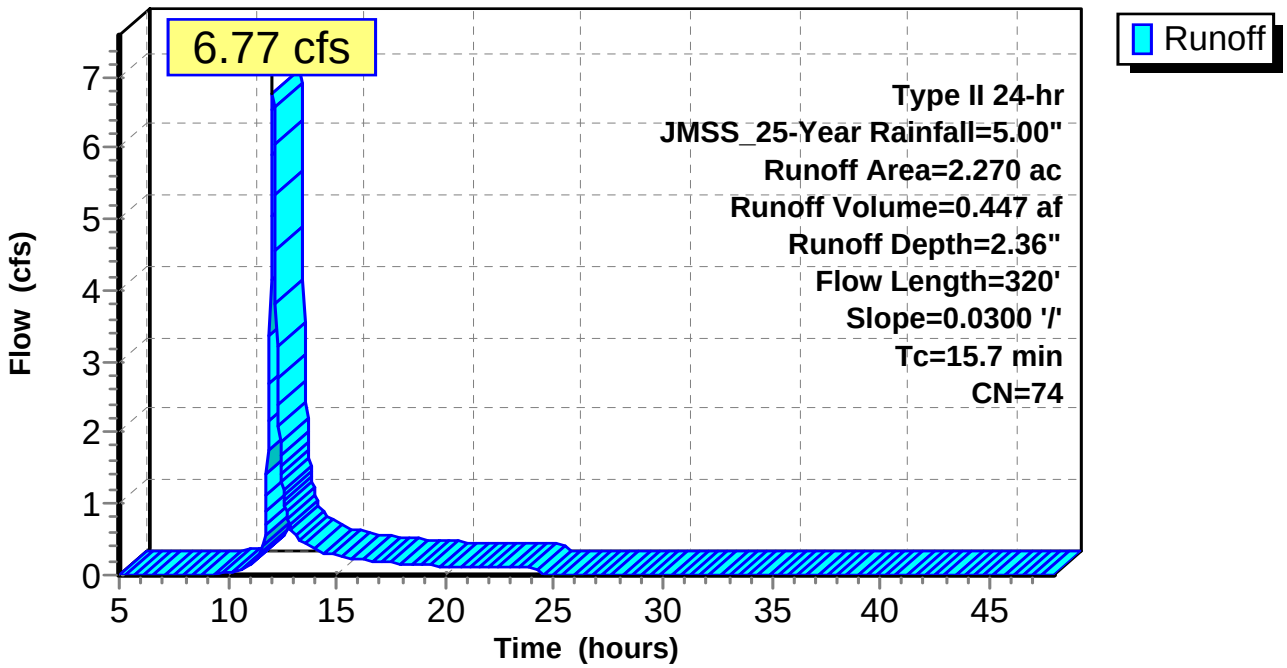
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
2.270	74	>75% Grass cover, Good, HSG C
2.270		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0300	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
3.0	220	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.7	320	Total			

Subcatchment 10S: PD1-2

Hydrograph



Summary for Subcatchment 15S: PD1-3

Runoff = 10.21 cfs @ 12.01 hrs, Volume= 0.540 af, Depth= 2.36"

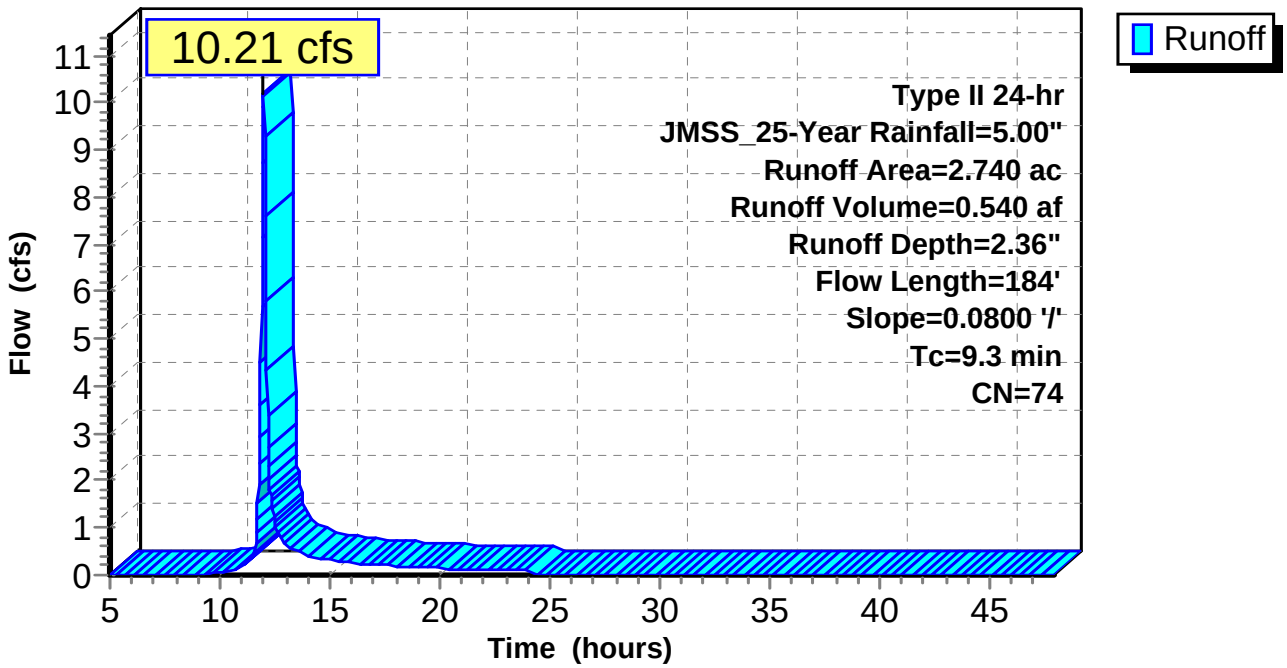
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
2.740	74	>75% Grass cover, Good, HSG C
2.740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	100	0.0800	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.7	84	0.0800	1.98		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.3	184	Total			

Subcatchment 15S: PD1-3

Hydrograph



Summary for Subcatchment 16S: LD2-1

Runoff = 4.14 cfs @ 11.96 hrs, Volume= 0.187 af, Depth= 2.36"

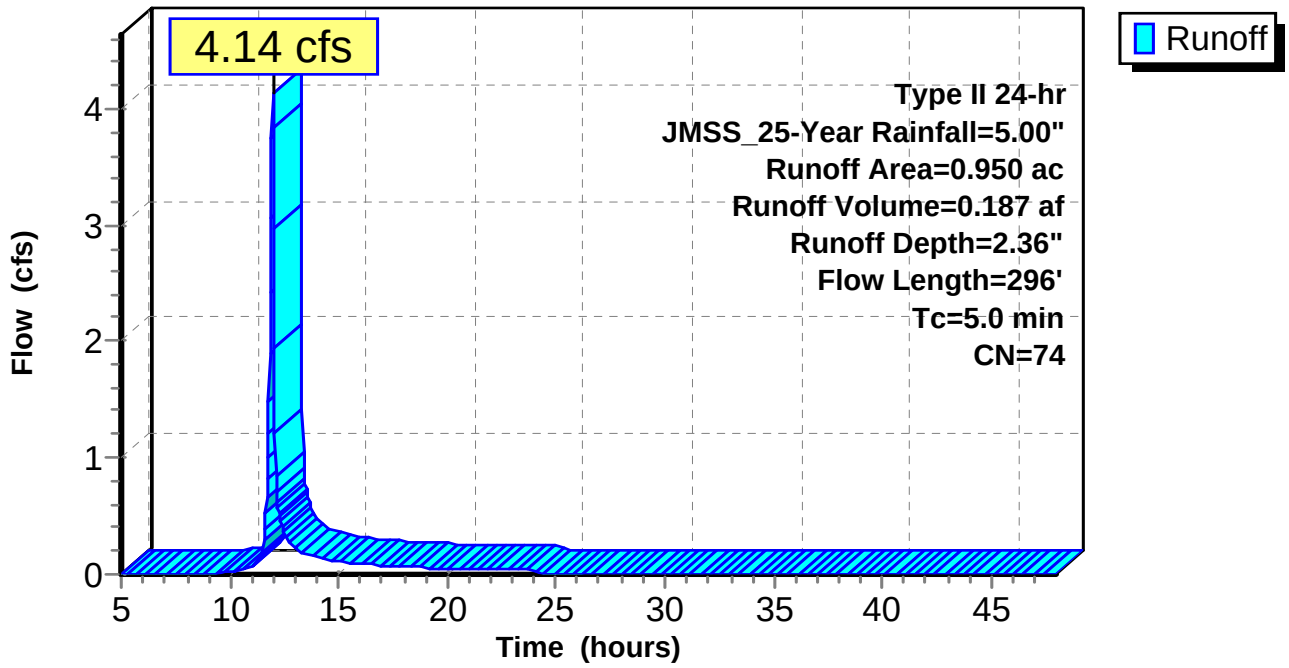
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
0.950	74	>75% Grass cover, Good, HSG C
0.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	66	0.3000	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
1.4	230	0.0090	2.69	15.06	**Channel Flow,** Area= 5.6 sf Perim= 17.0' r= 0.33' n= 0.025 Earth, clean & straight
5.0	296	Total			

Subcatchment 16S: LD2-1

Hydrograph



Summary for Subcatchment 17S: LD2-2

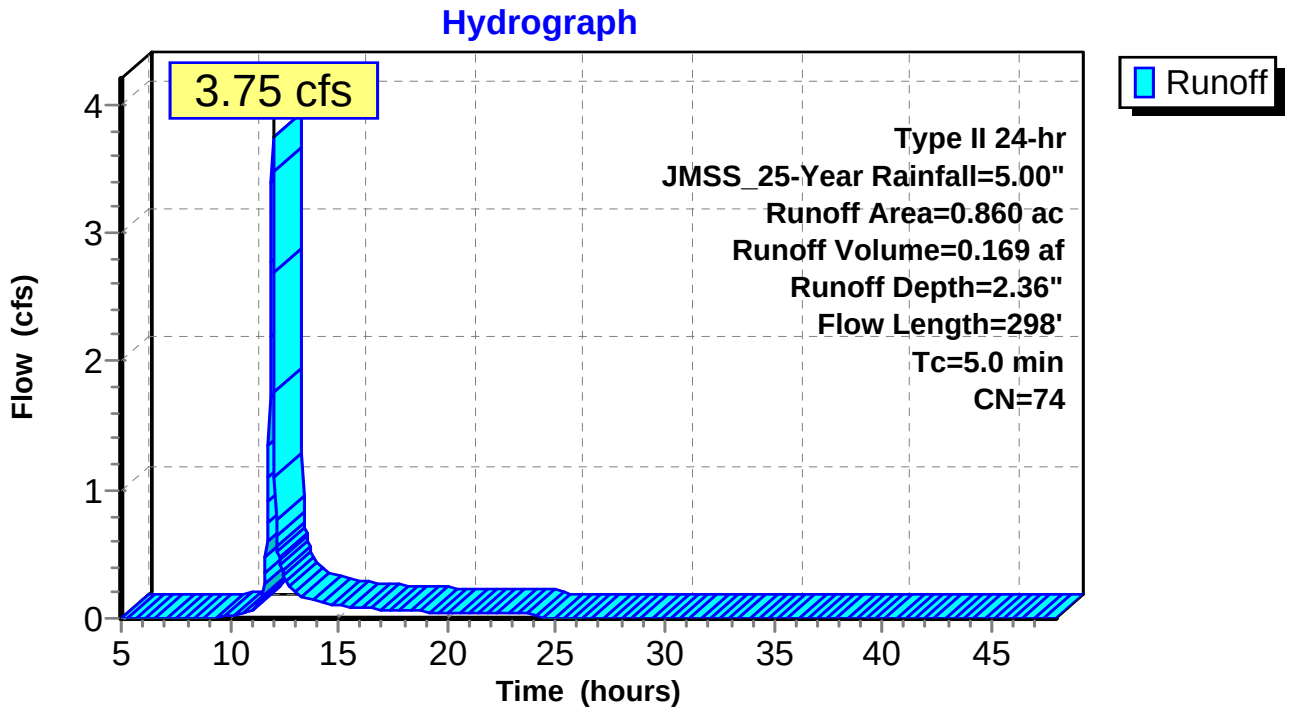
Runoff = 3.75 cfs @ 11.96 hrs, Volume= 0.169 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
0.860	74	>75% Grass cover, Good, HSG C
0.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	60	0.3000	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
1.0	238	0.0080	3.86	40.49	**Channel Flow,** Area= 10.5 sf Perim= 17.0' r= 0.62' n= 0.025 Earth, clean & straight
4.4	298	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 17S: LD2-2



Summary for Subcatchment 18S: LD2-3

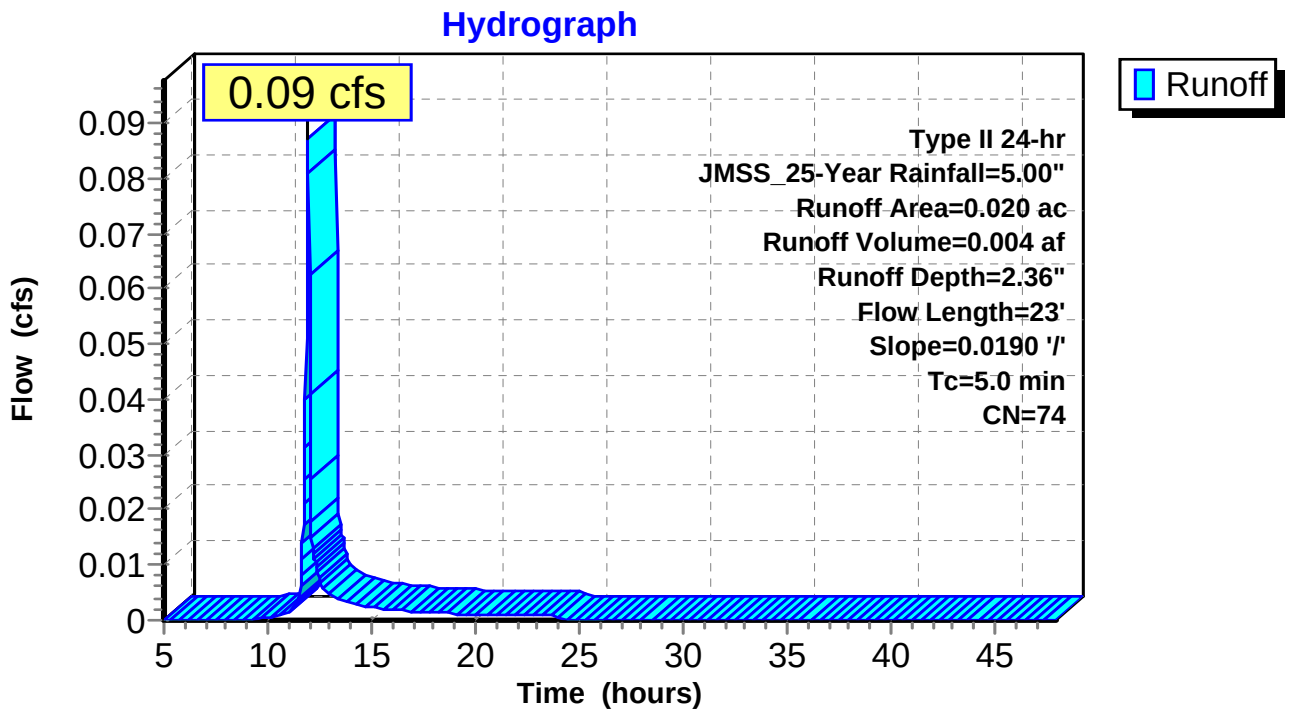
Runoff = 0.09 cfs @ 11.96 hrs, Volume= 0.004 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
0.020	74	>75% Grass cover, Good, HSG C
0.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	23	0.0190	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
4.7	23	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 18S: LD2-3



Summary for Subcatchment 21S: PD1-4

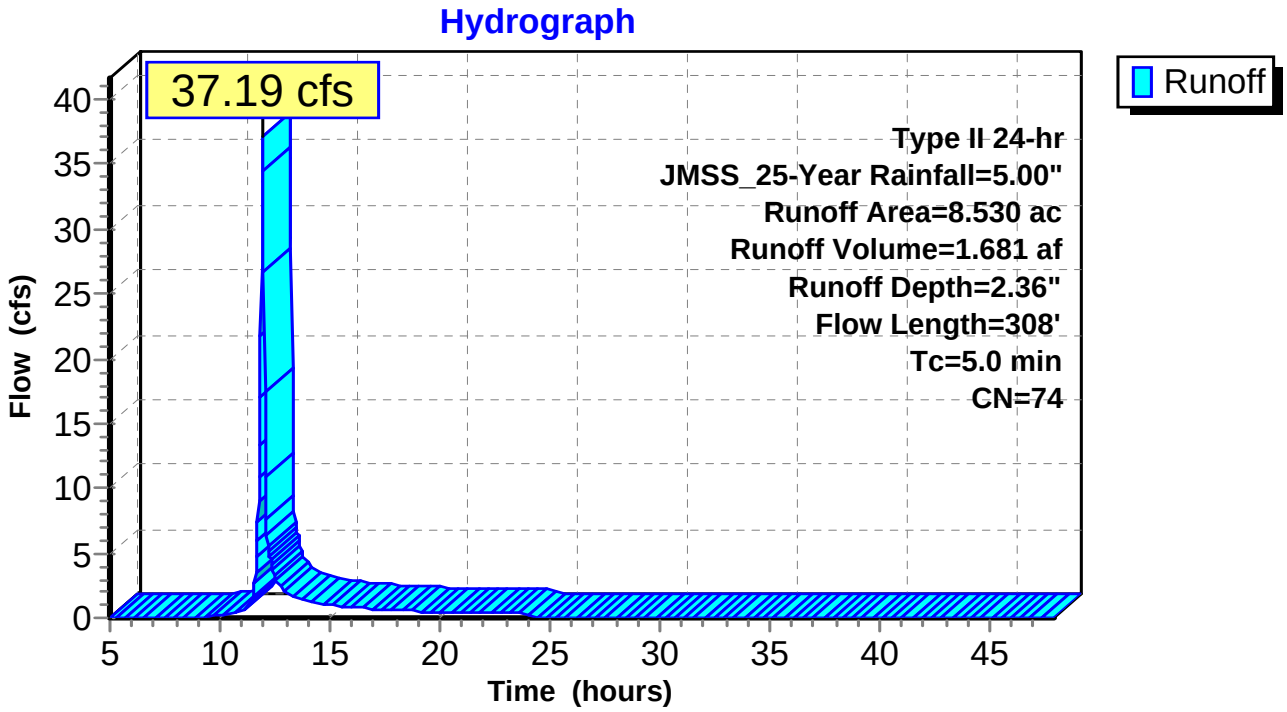
Runoff = 37.19 cfs @ 11.96 hrs, Volume= 1.681 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
8.530	74	>75% Grass cover, Good, HSG C
8.530		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	41	0.2100	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.3	53	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	115	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	44	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	55	0.1600	2.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.5	308	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 21S: PD1-4



Summary for Subcatchment 26S: PD1-5

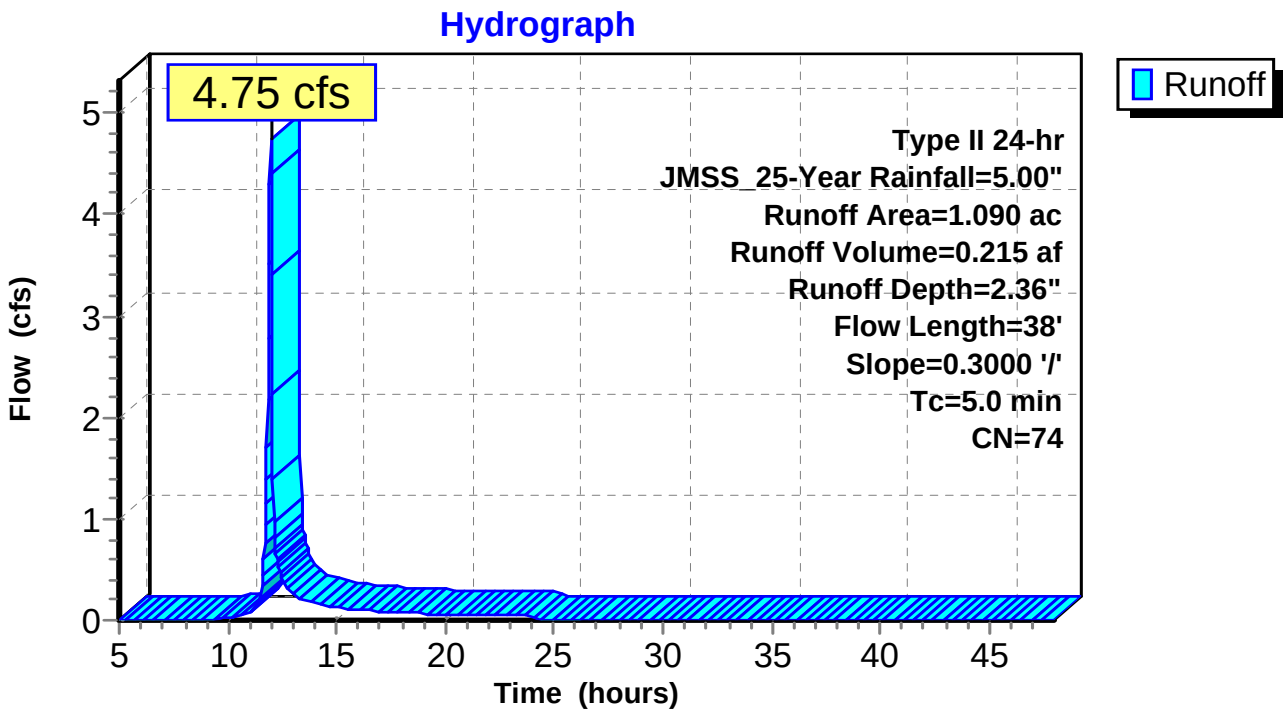
Runoff = 4.75 cfs @ 11.96 hrs, Volume= 0.215 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.090	74	>75% Grass cover, Good, HSG C
1.090		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	38	0.3000	0.27		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
2.3	38	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 26S: PD1-5



Summary for Subcatchment 28S: LD3-1

Runoff = 5.12 cfs @ 12.00 hrs, Volume= 0.258 af, Depth= 2.36"

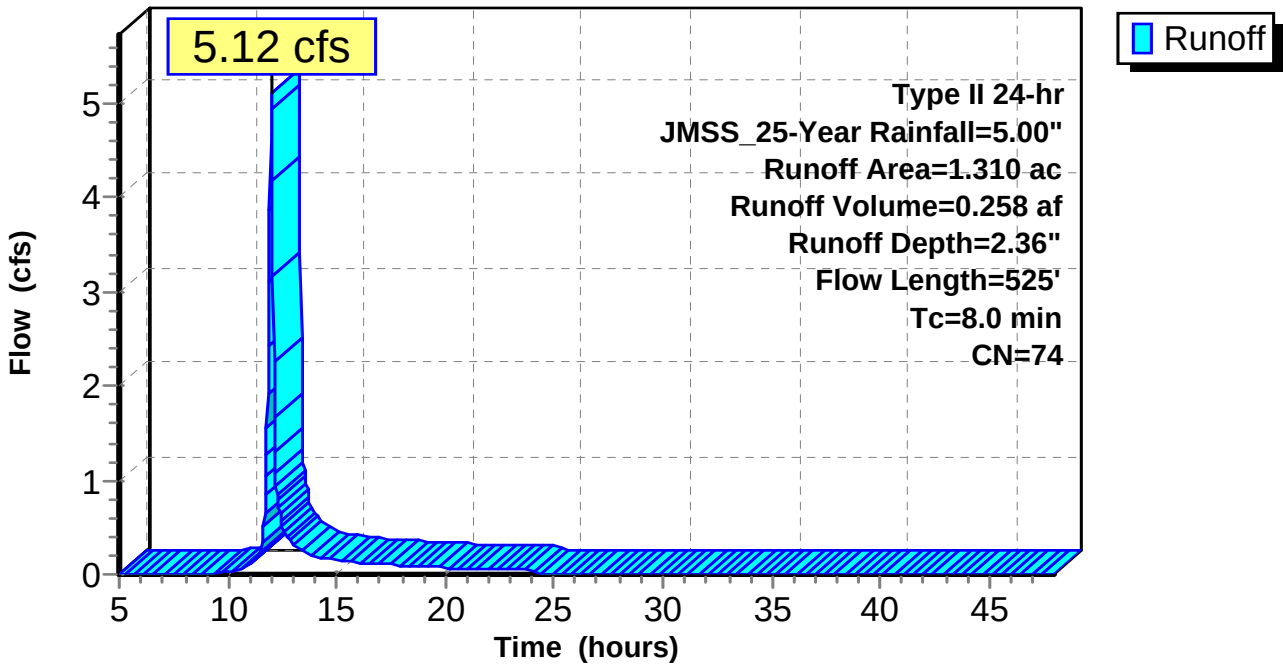
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.310	74	>75% Grass cover, Good, HSG C
1.310		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	70	0.3000	0.31		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
4.2	455	0.0040	1.79	10.04	**Channel Flow,** Area= 5.6 sf Perim= 17.0' r= 0.33' n= 0.025 Earth, clean & straight
8.0	525	Total			

Subcatchment 28S: LD3-1

Hydrograph



Summary for Subcatchment 29S: LD3-2

Runoff = 4.36 cfs @ 11.98 hrs, Volume= 0.211 af, Depth= 2.36"

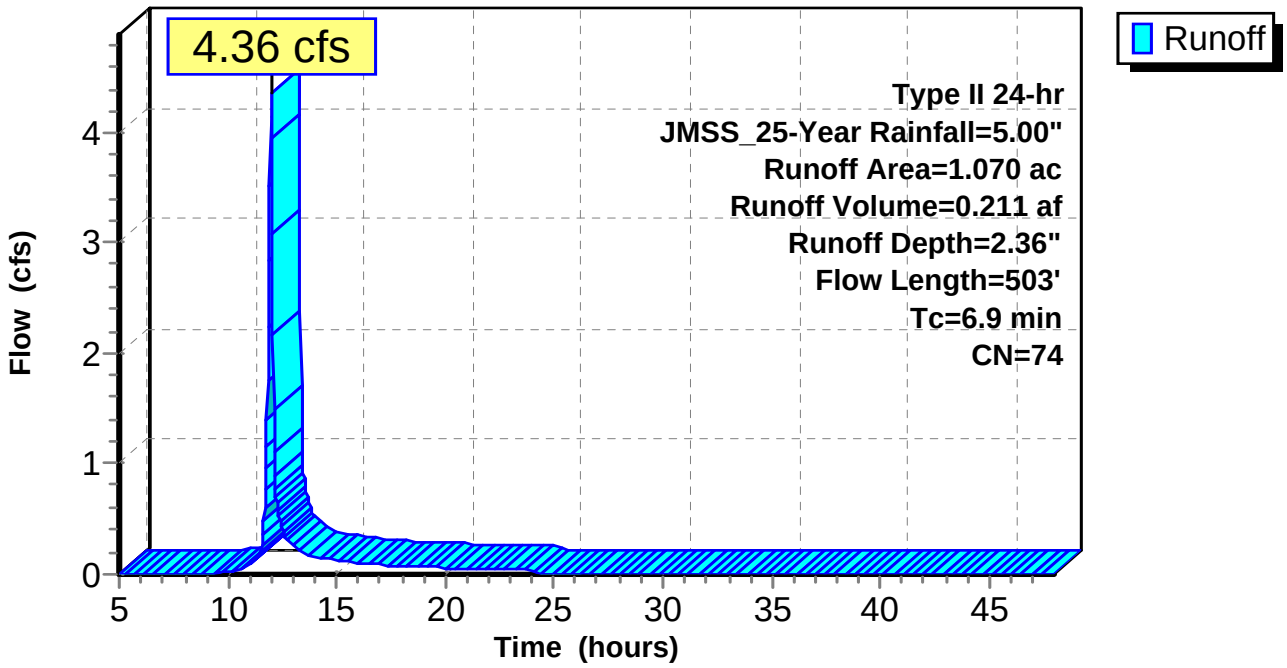
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.070	74	>75% Grass cover, Good, HSG C
1.070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	51	0.3000	0.29		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
3.9	452	0.0020	1.93	20.24	**Channel Flow,** Area= 10.5 sf Perim= 17.0' r= 0.62' n= 0.025 Earth, clean & straight
6.9	503	Total			

Subcatchment 29S: LD3-2

Hydrograph



Summary for Subcatchment 30S: LD3-3

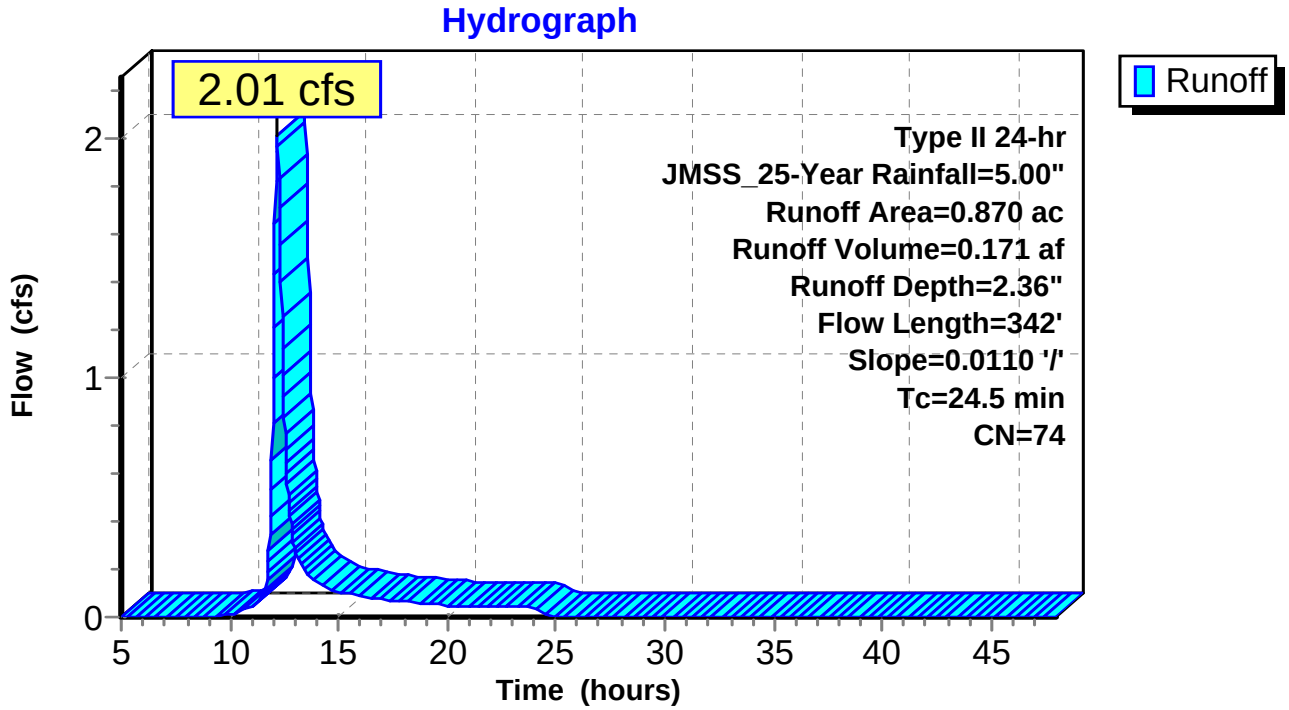
Runoff = 2.01 cfs @ 12.18 hrs, Volume= 0.171 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
0.870	74	>75% Grass cover, Good, HSG C
0.870		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.0	100	0.0110	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
5.5	242	0.0110	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.5	342	Total			

Subcatchment 30S: LD3-3



Summary for Subcatchment 32S: PD1-6

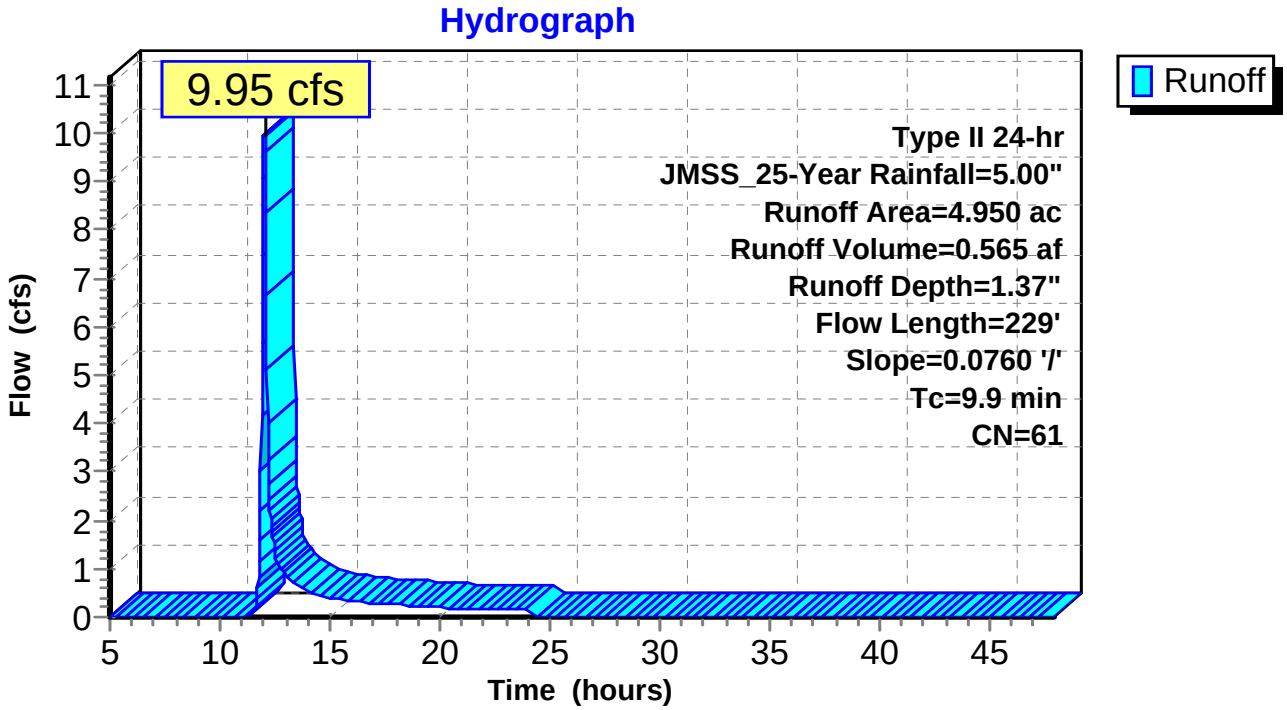
Runoff = 9.95 cfs @ 12.03 hrs, Volume= 0.565 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
4.950	61	>75% Grass cover, Good, HSG B
4.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0760	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
1.1	129	0.0760	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.9	229	Total			

Subcatchment 32S: PD1-6



Summary for Subcatchment 36S: LD4-1

Runoff = 2.65 cfs @ 12.05 hrs, Volume= 0.161 af, Depth= 1.37"

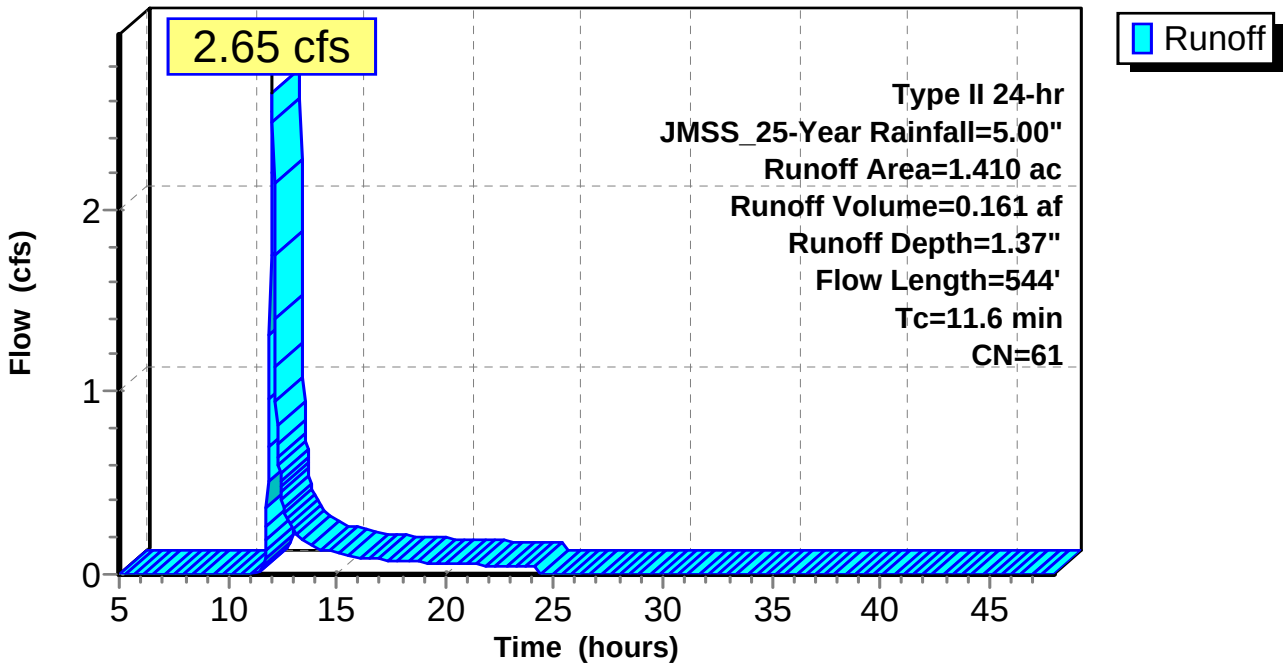
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.410	61	>75% Grass cover, Good, HSG B
1.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	62	0.3000	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
8.2	482	0.0012	0.98	5.50	**Channel Flow,** Area= 5.6 sf Perim= 17.0' r= 0.33' n= 0.025 Earth, clean & straight
11.6	544	Total			

Subcatchment 36S: LD4-1

Hydrograph



Summary for Subcatchment 37S: LD4-2

Runoff = 2.52 cfs @ 11.97 hrs, Volume= 0.119 af, Depth= 1.37"

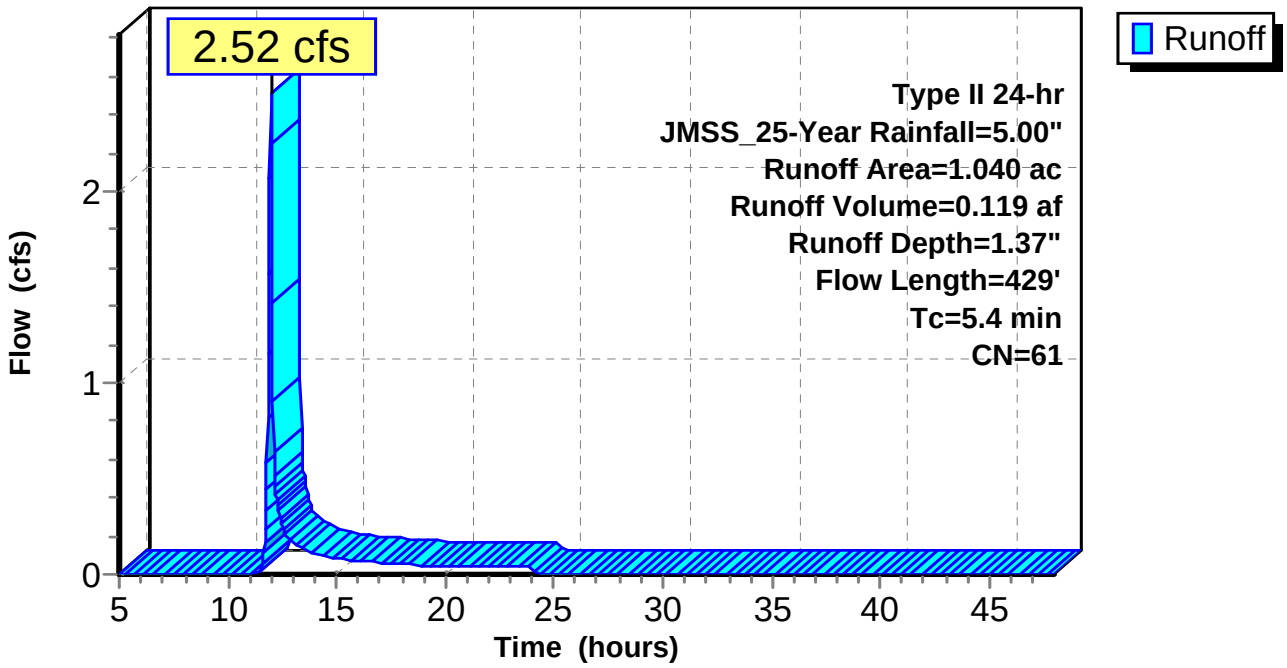
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.040	61	>75% Grass cover, Good, HSG B
1.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	60	0.3000	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
2.0	369	0.0050	3.05	32.01	**Channel Flow,** Area= 10.5 sf Perim= 17.0' r= 0.62' n= 0.025 Earth, clean & straight
5.4	429	Total			

Subcatchment 37S: LD4-2

Hydrograph



Summary for Subcatchment 38S: LD4-3

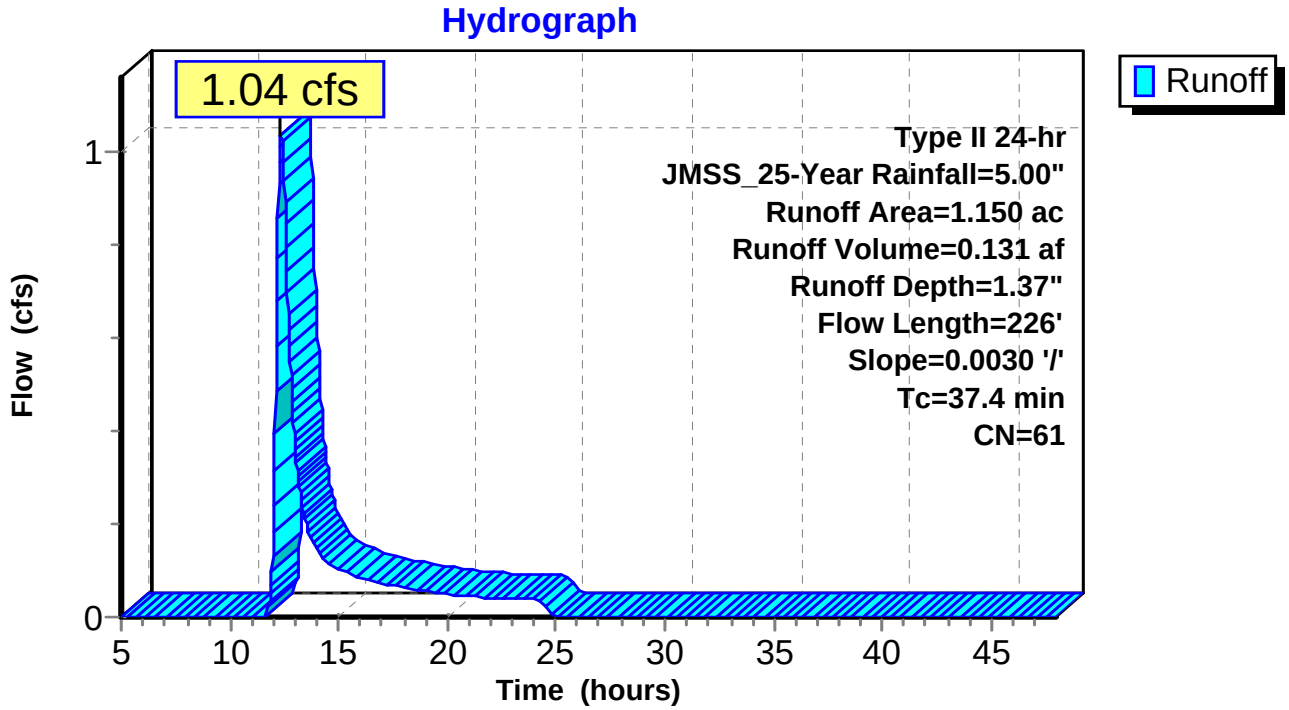
Runoff = 1.04 cfs @ 12.37 hrs, Volume= 0.131 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.150	61	>75% Grass cover, Good, HSG B
1.150		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.9	100	0.0030	0.05		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
5.5	126	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.4	226	Total			

Subcatchment 38S: LD4-3



Summary for Subcatchment 40S: PD1-7

Runoff = 36.27 cfs @ 11.97 hrs, Volume= 1.698 af, Depth= 2.36"

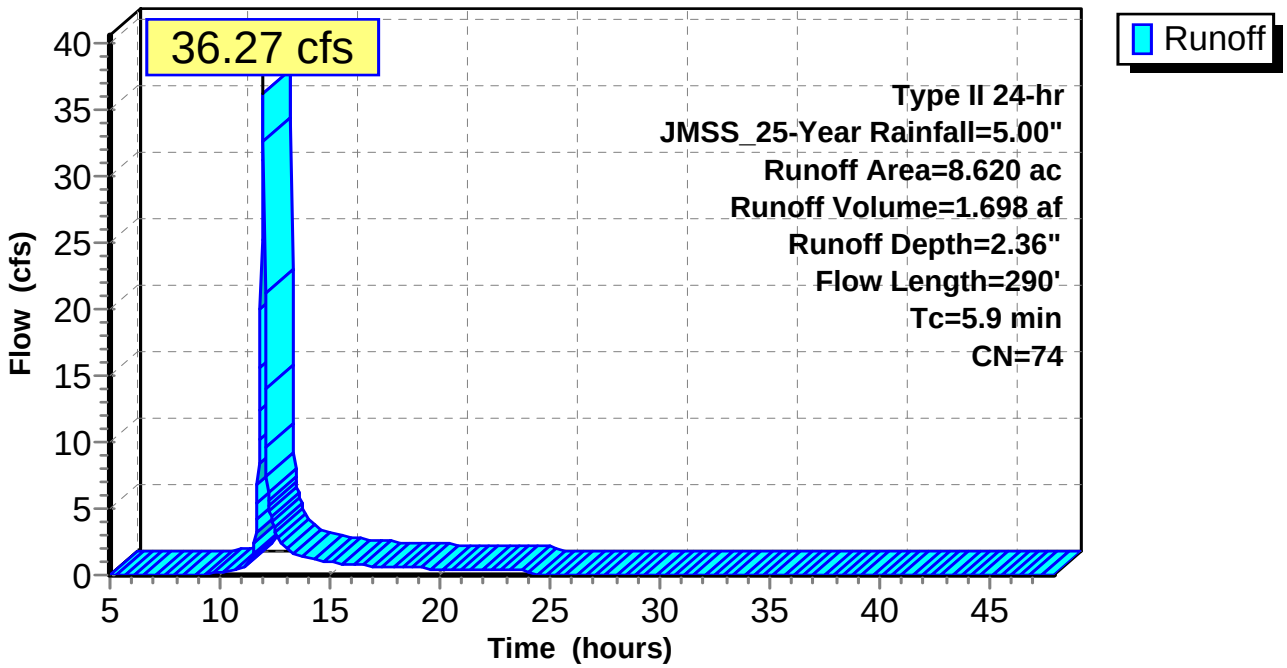
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
8.620	74	>75% Grass cover, Good, HSG C
8.620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	33	0.3000	0.26		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
2.5	17	0.0500	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.9	202	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	38	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.9	290	Total			

Subcatchment 40S: PD1-7

Hydrograph



Summary for Subcatchment 45S: LD5-1

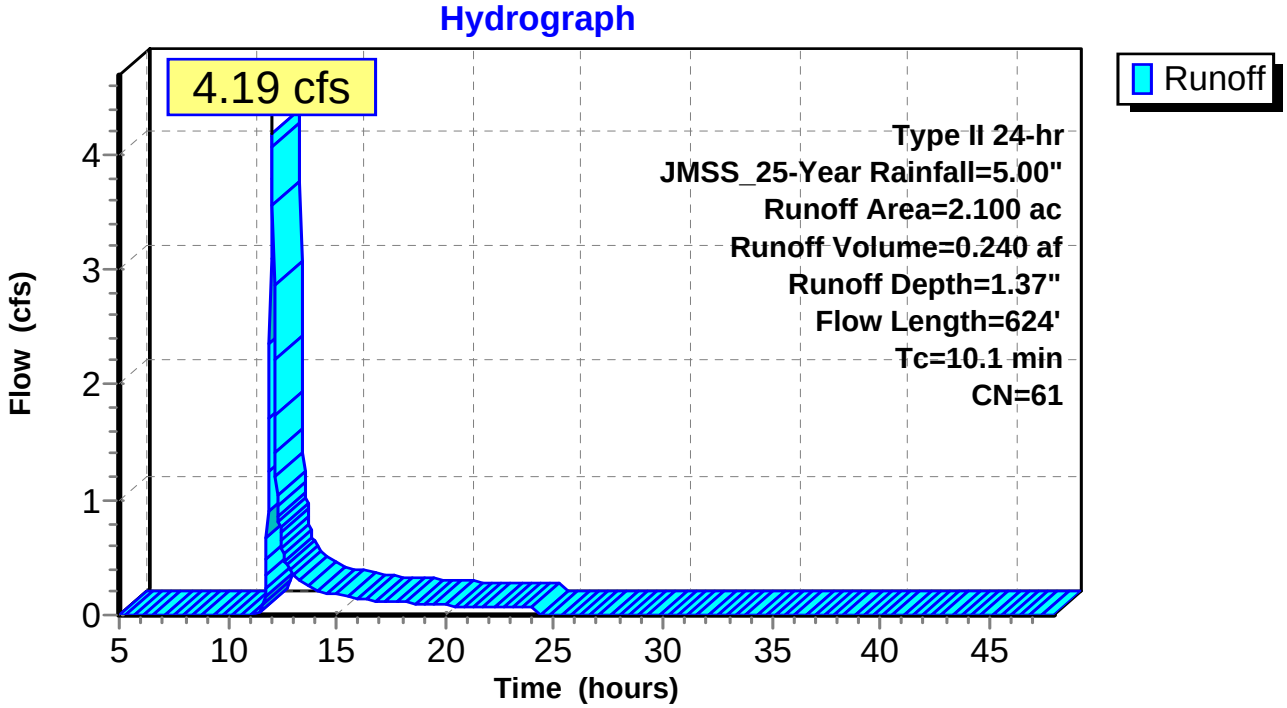
Runoff = 4.19 cfs @ 12.03 hrs, Volume= 0.240 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
2.100	61	>75% Grass cover, Good, HSG B
2.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	69	0.3000	0.31		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.3	59	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	18	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.8	478	0.0020	1.37	7.97	**Channel Flow,** Area= 5.8 sf Perim= 15.6' r= 0.37' n= 0.025 Earth, clean & straight
10.1	624	Total			

Subcatchment 45S: LD5-1



Summary for Subcatchment 46S: LD5-2

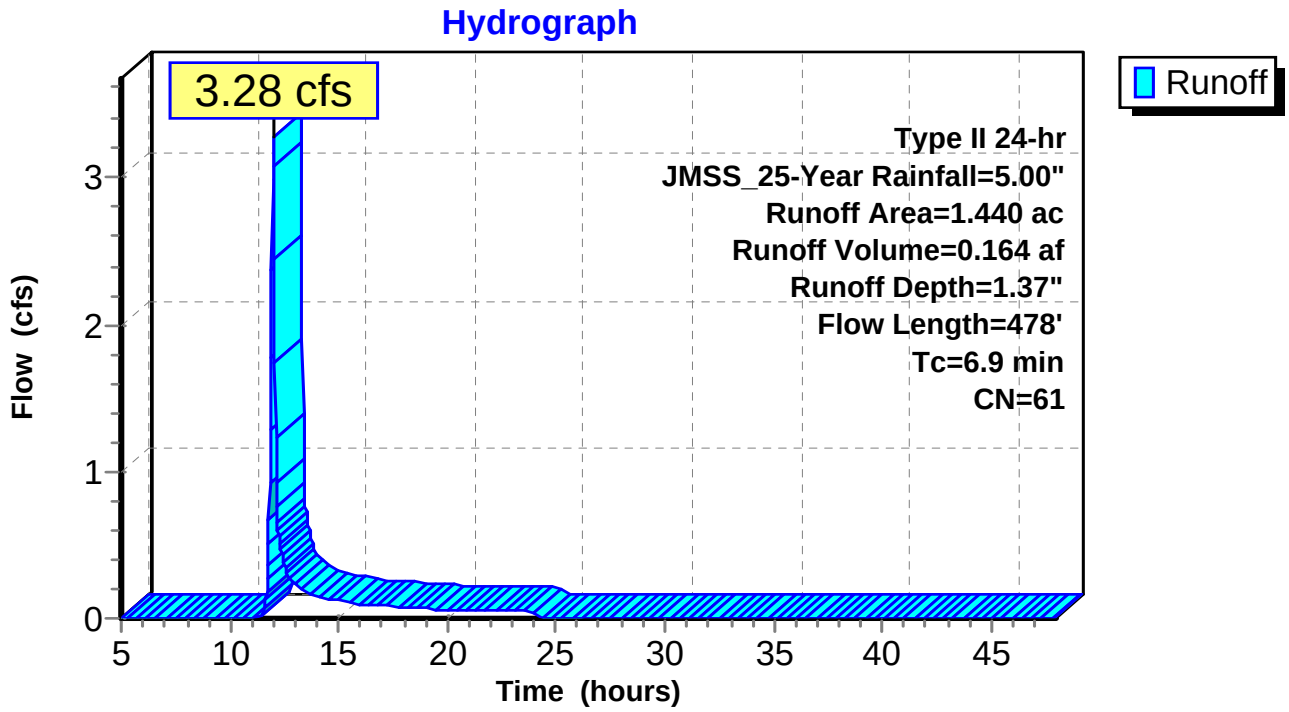
Runoff = 3.28 cfs @ 11.99 hrs, Volume= 0.164 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.440	61	>75% Grass cover, Good, HSG B
1.440		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	60	0.3000	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
3.5	418	0.0040	2.00	12.21	**Channel Flow,** Area= 6.1 sf Perim= 15.7' r= 0.39' n= 0.025 Earth, clean & straight
6.9	478	Total			

Subcatchment 46S: LD5-2



Summary for Subcatchment 47S: LD5-3

Runoff = 3.02 cfs @ 11.97 hrs, Volume= 0.140 af, Depth= 1.37"

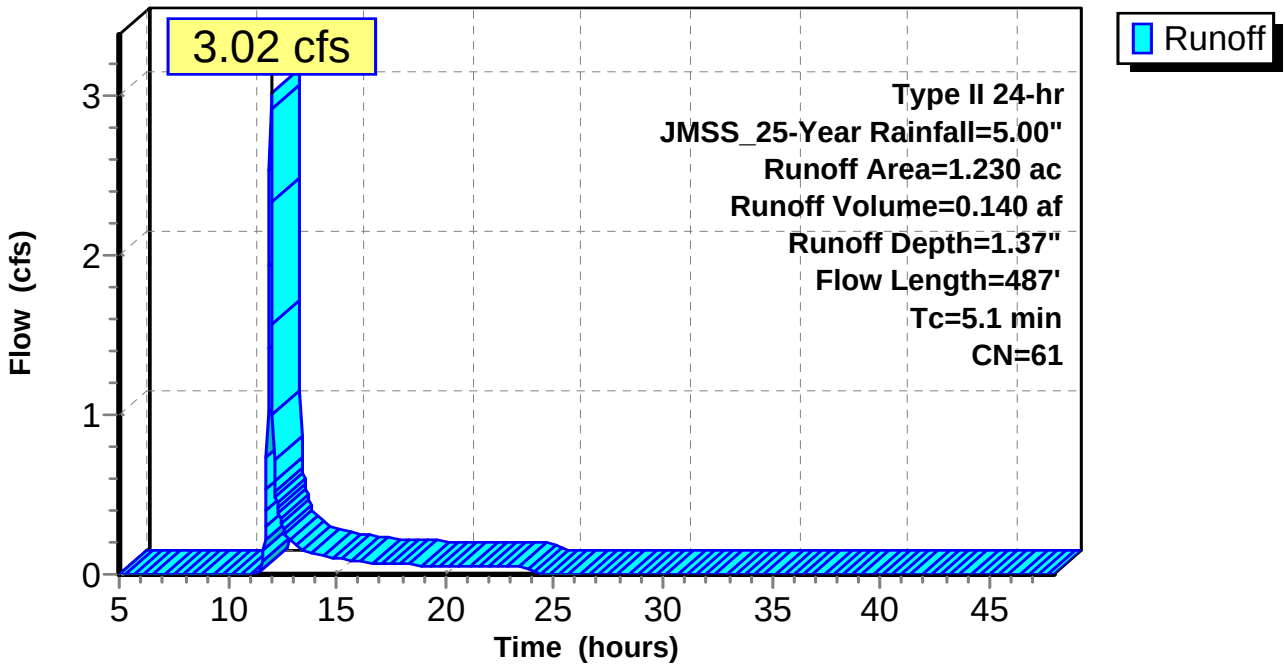
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.230	61	>75% Grass cover, Good, HSG B
1.230		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	67	0.3000	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
1.4	420	0.0030	5.14	187.61	**Channel Flow,** Area= 36.5 sf Perim= 18.4' r= 1.98' n= 0.025 Earth, clean & straight
5.1	487	Total			

Subcatchment 47S: LD5-3

Hydrograph



Summary for Subcatchment 49S: LD5-4

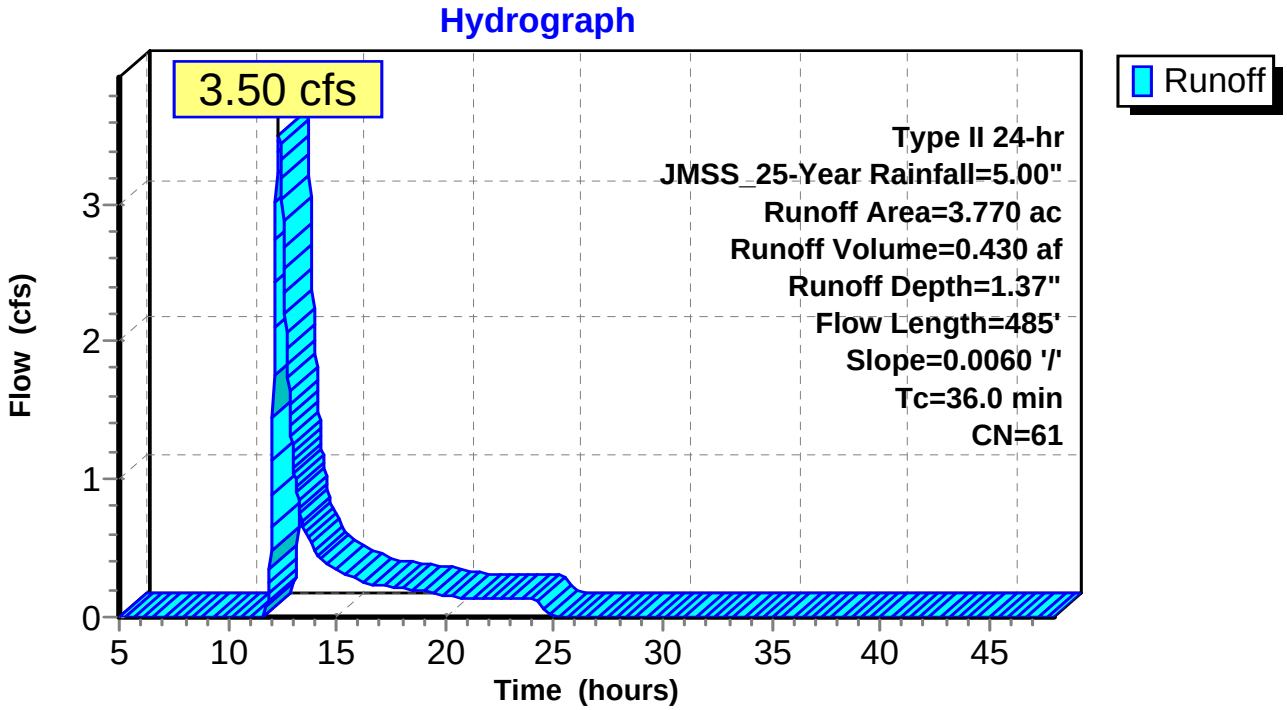
Runoff = 3.50 cfs @ 12.35 hrs, Volume= 0.430 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
3.770	61	>75% Grass cover, Good, HSG B
3.770		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.2	100	0.0060	0.07		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
11.8	385	0.0060	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
36.0	485	Total			

Subcatchment 49S: LD5-4



Summary for Subcatchment 51S: LD6-3

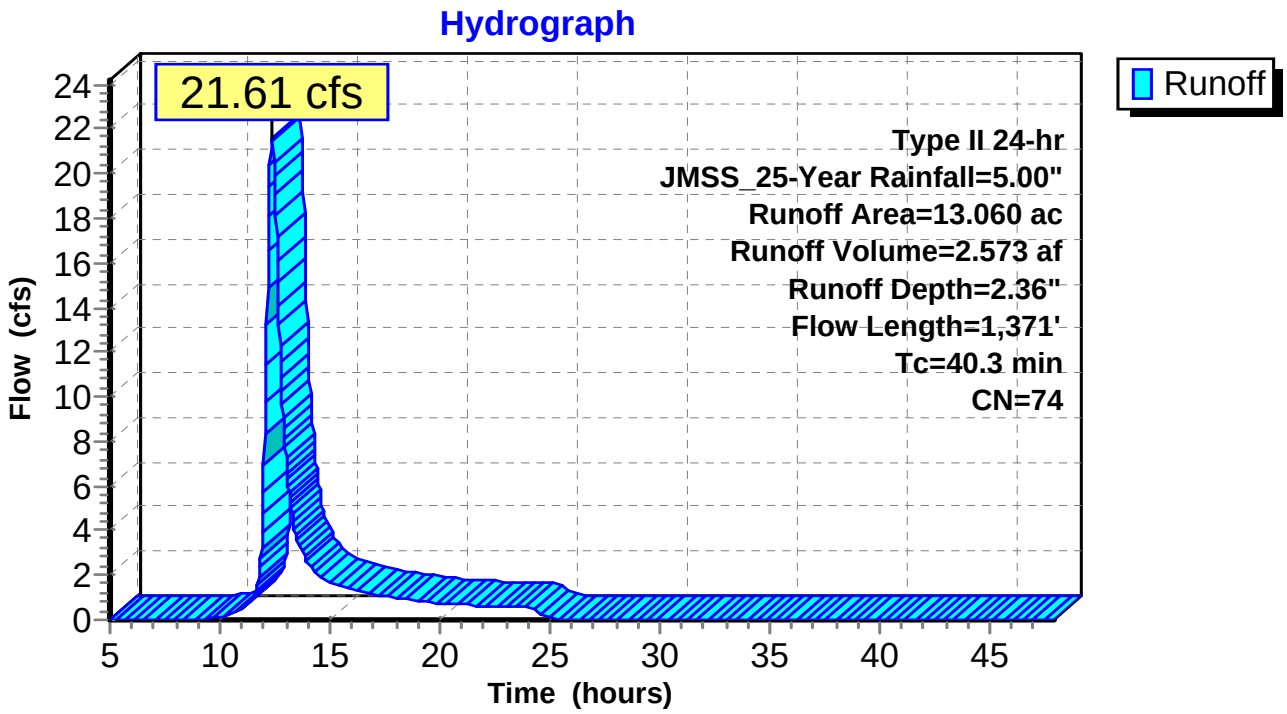
Runoff = 21.61 cfs @ 12.38 hrs, Volume= 2.573 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
13.060	74	>75% Grass cover, Good, HSG C
13.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.2	100	0.0060	0.07		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
12.0	551	0.0120	0.77		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	208	0.0098	7.65	363.14	**Channel Flow,** Area= 47.5 sf Perim= 24.4' r= 1.95' n= 0.030 Earth, grassed & winding
3.6	512	0.0050	2.38	15.96	**Channel Flow,** Area= 6.7 sf Perim= 15.7' r= 0.43' n= 0.025 Earth, grassed & winding
40.3	1,371	Total			

Subcatchment 51S: LD6-3



Summary for Subcatchment 52S: PD1-8

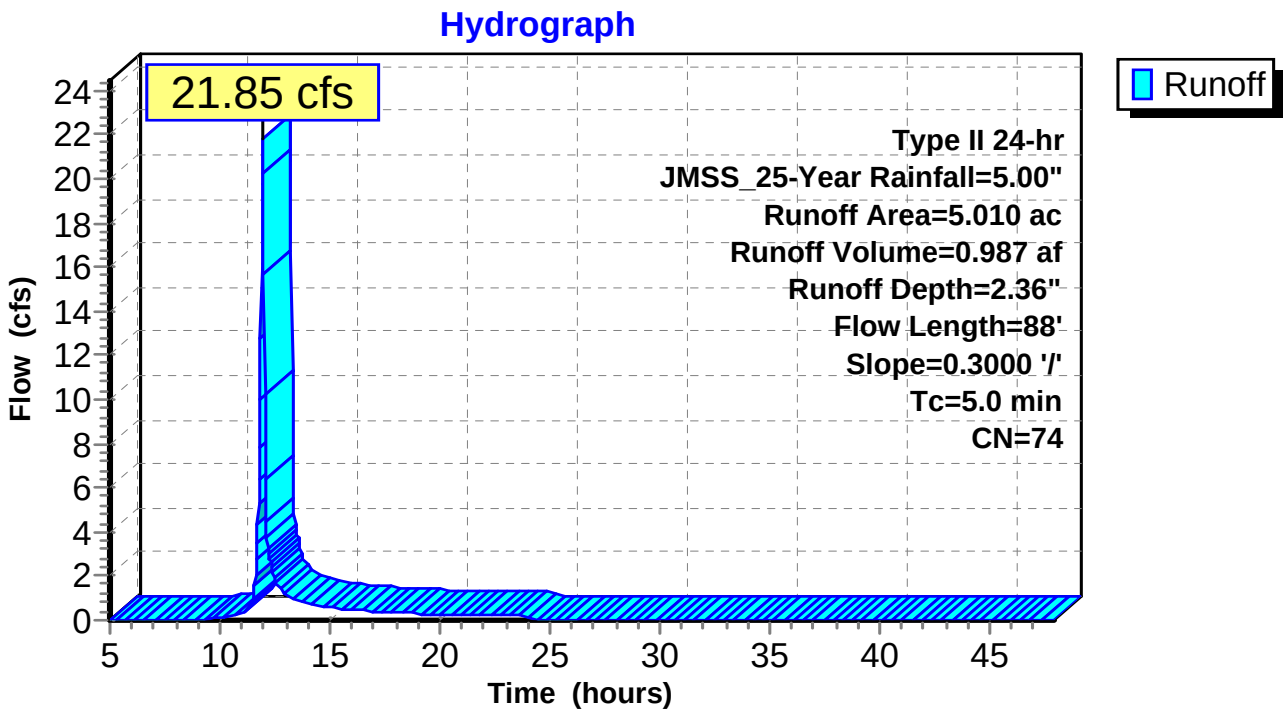
Runoff = 21.85 cfs @ 11.96 hrs, Volume= 0.987 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
5.010	74	>75% Grass cover, Good, HSG C
5.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	88	0.3000	0.32		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
4.6	88	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 52S: PD1-8



Summary for Subcatchment 58S: PD2-1

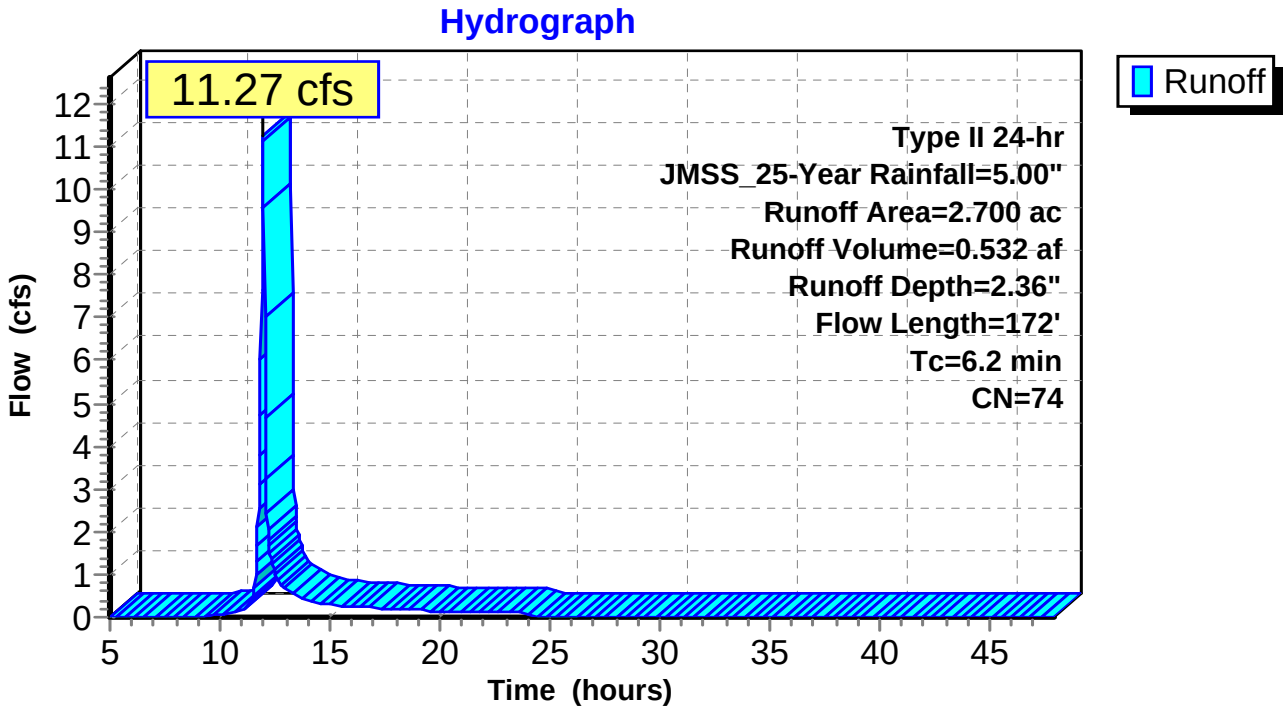
Runoff = 11.27 cfs @ 11.98 hrs, Volume= 0.532 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
2.700	74	>75% Grass cover, Good, HSG C
2.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	66	0.3000	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
2.2	16	0.0600	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.4	90	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	172	Total			

Subcatchment 58S: PD2-1



Summary for Subcatchment 59S: LD6-1

Runoff = 7.06 cfs @ 12.01 hrs, Volume= 0.366 af, Depth= 2.36"

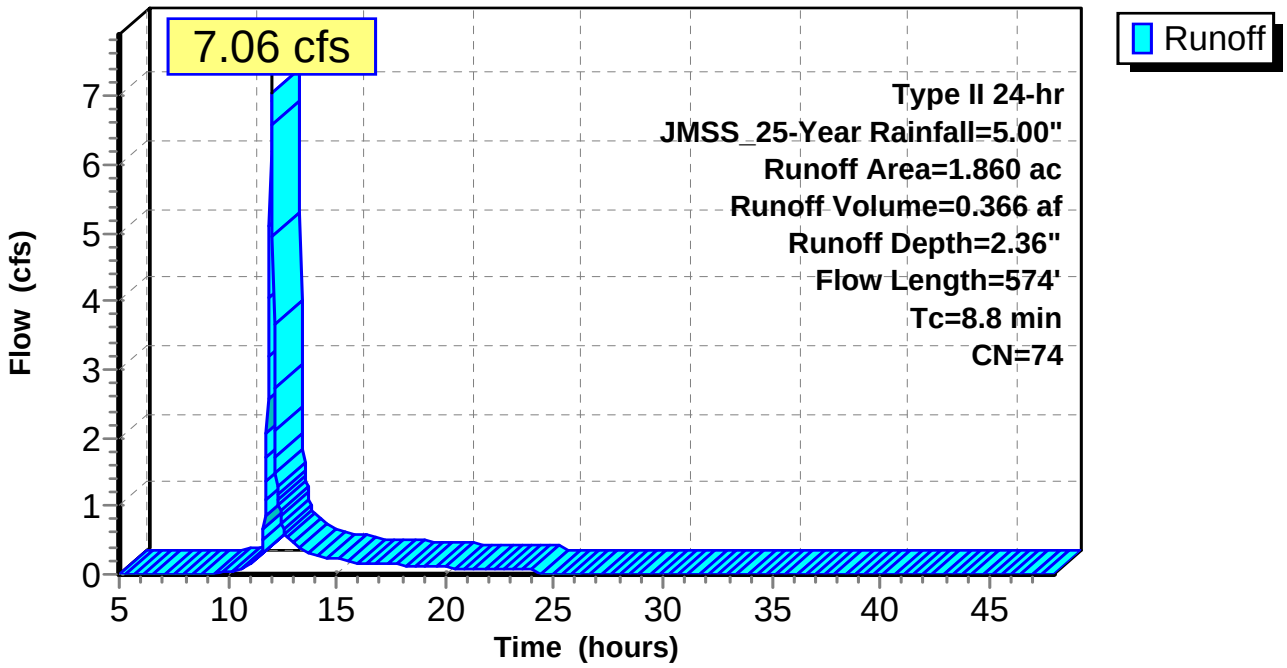
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.860	74	>75% Grass cover, Good, HSG C
1.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	68	0.3000	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
6.2	506	0.0020	1.37	7.94	**Channel Flow,** Area= 5.8 sf Perim= 15.7' r= 0.37' n= 0.025 Earth, clean & straight
8.8	574	Total			

Subcatchment 59S: LD6-1

Hydrograph



Summary for Subcatchment 60S: LD6-2

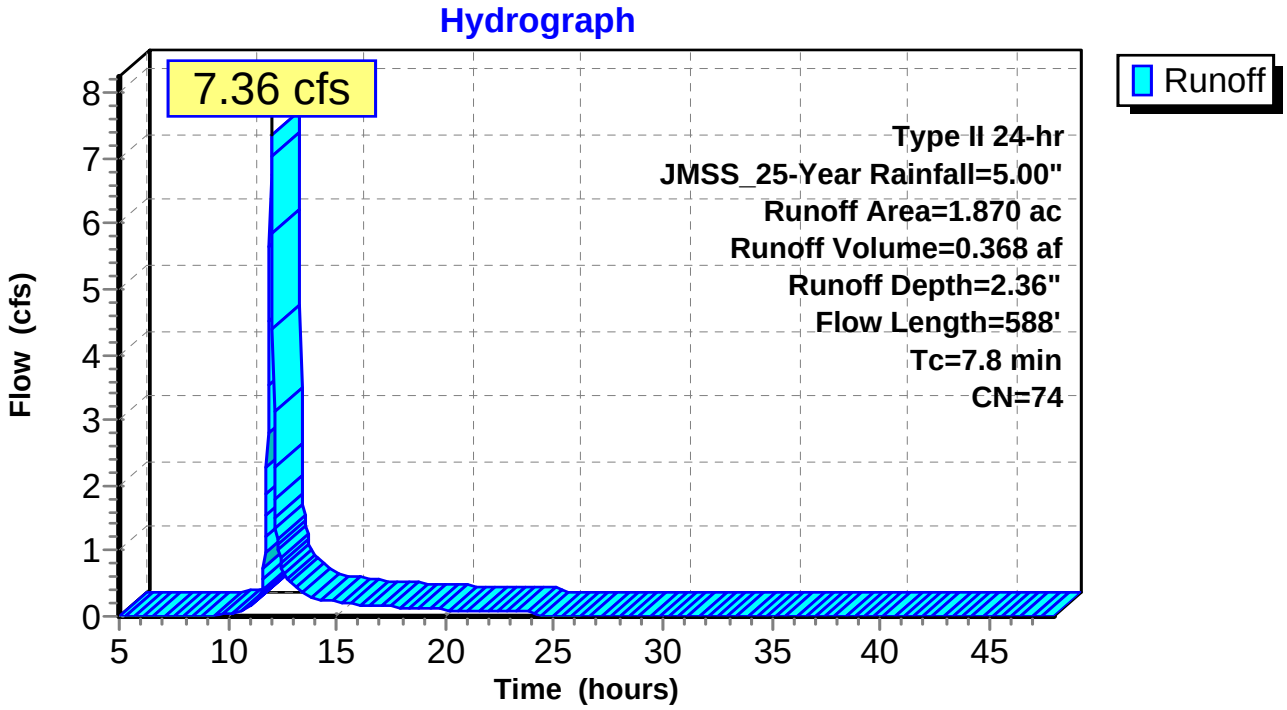
Runoff = 7.36 cfs @ 11.99 hrs, Volume= 0.368 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.870	74	>75% Grass cover, Good, HSG C
1.870		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	61	0.3000	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
4.4	527	0.0040	2.00	12.21	**Channel Flow,** Area= 6.1 sf Perim= 15.7' r= 0.39' n= 0.025 Earth, clean & straight
7.8	588	Total			

Subcatchment 60S: LD6-2



Summary for Subcatchment 61S: LD6-4

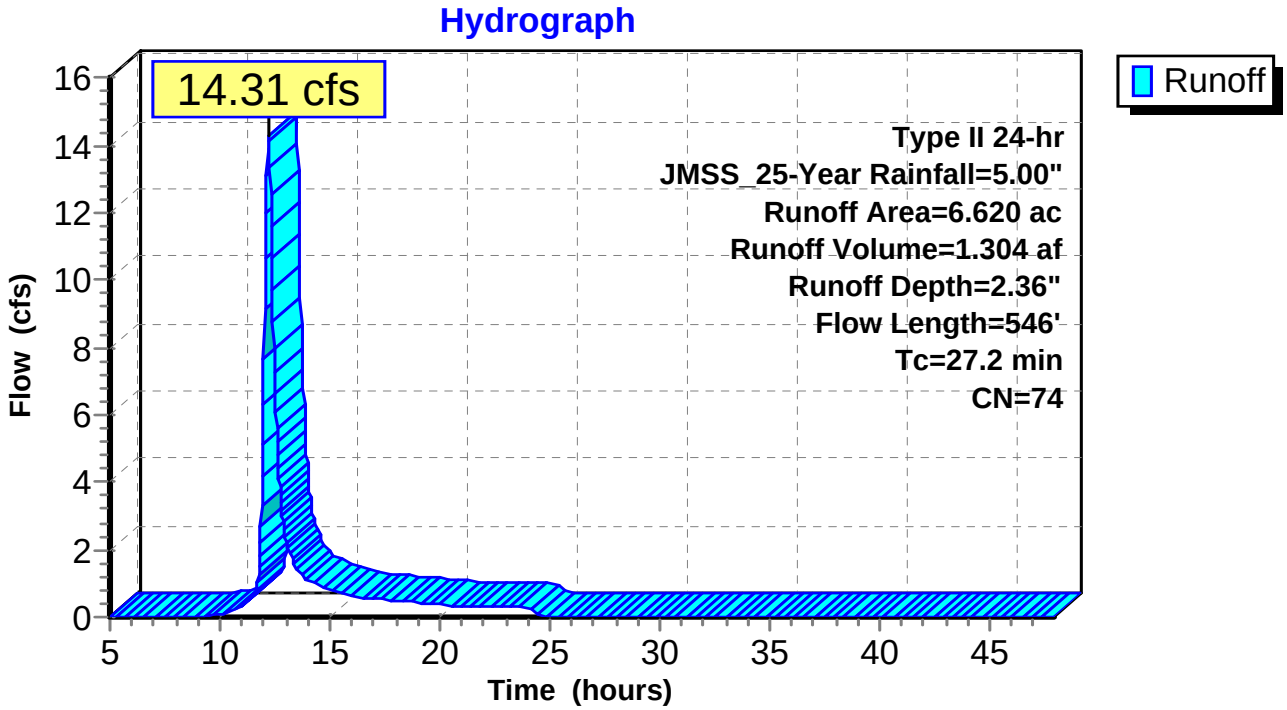
Runoff = 14.31 cfs @ 12.22 hrs, Volume= 1.304 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
6.620	74	>75% Grass cover, Good, HSG C
6.620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	100	0.0100	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
7.5	446	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.2	546	Total			

Subcatchment 61S: LD6-4



Summary for Subcatchment 68S: LD7-1

Runoff = 5.19 cfs @ 11.98 hrs, Volume= 0.248 af, Depth= 2.36"

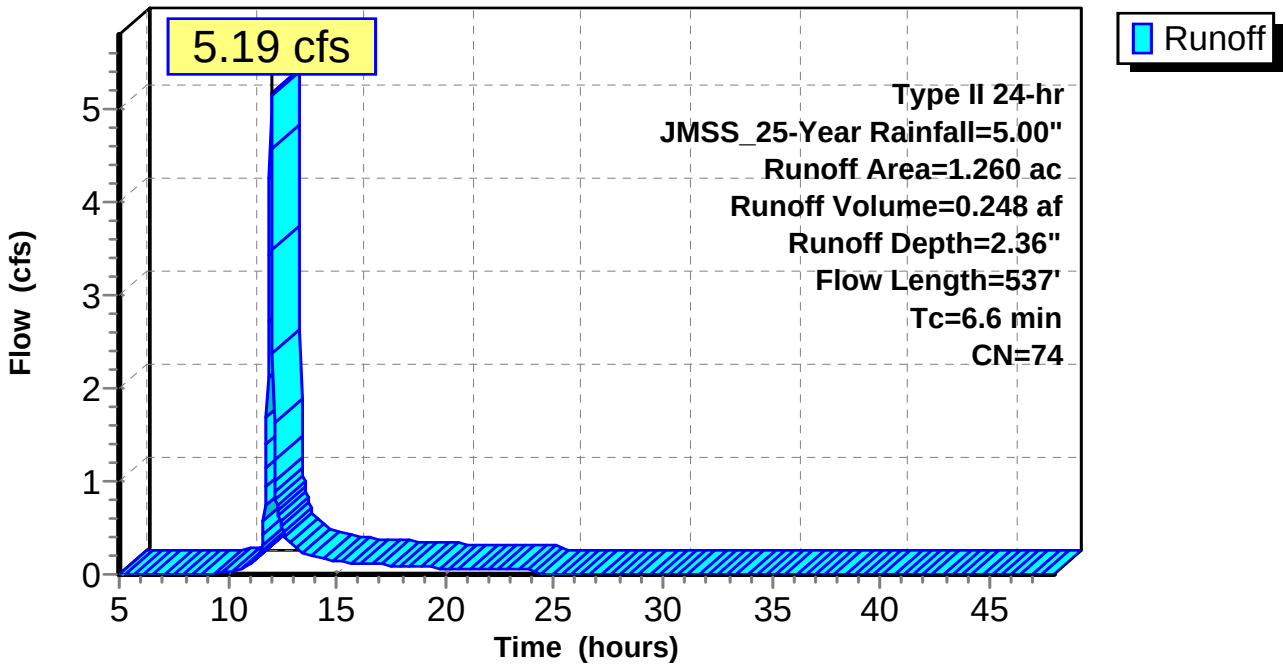
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.260	74	>75% Grass cover, Good, HSG C
1.260		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	67	0.3000	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
2.9	470	0.0080	2.74	15.88	**Channel Flow,** Area= 5.8 sf Perim= 15.7' r= 0.37' n= 0.025 Earth, clean & straight
6.6	537	Total			

Subcatchment 68S: LD7-1

Hydrograph



Summary for Subcatchment 69S: LD7-2

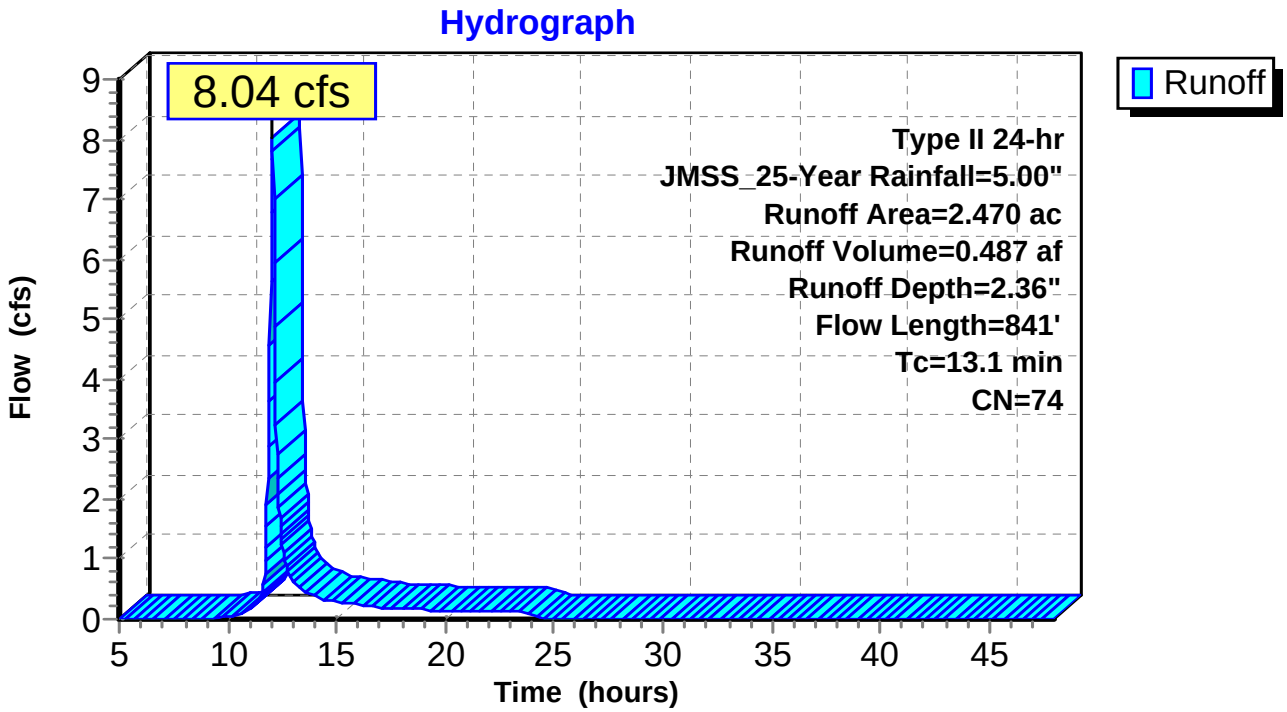
Runoff = 8.04 cfs @ 12.05 hrs, Volume= 0.487 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
2.470	74	>75% Grass cover, Good, HSG C
2.470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	64	0.1600	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
3.1	55	0.3000	0.29		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
5.4	722	0.0050	2.24	13.65	**Channel Flow,** Area= 6.1 sf Perim= 15.7' r= 0.39' n= 0.025 Earth, clean & straight
13.1	841	Total			

Subcatchment 69S: LD7-2



Summary for Subcatchment 70S: LD7-3

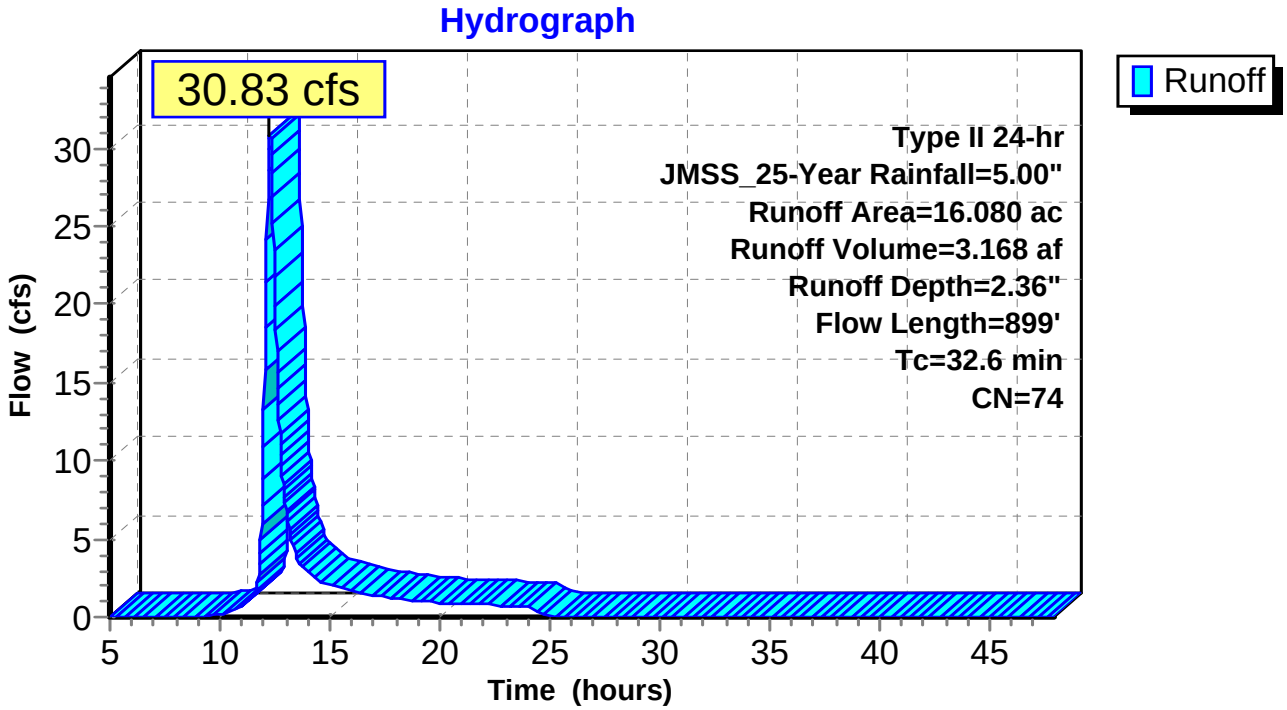
Runoff = 30.83 cfs @ 12.28 hrs, Volume= 3.168 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
16.080	74	>75% Grass cover, Good, HSG C
16.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.0190	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
17.4	799	0.0120	0.77		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.6	899	Total			

Subcatchment 70S: LD7-3



Summary for Subcatchment 71S: PD2-2

Runoff = 14.17 cfs @ 11.96 hrs, Volume= 0.640 af, Depth= 2.36"

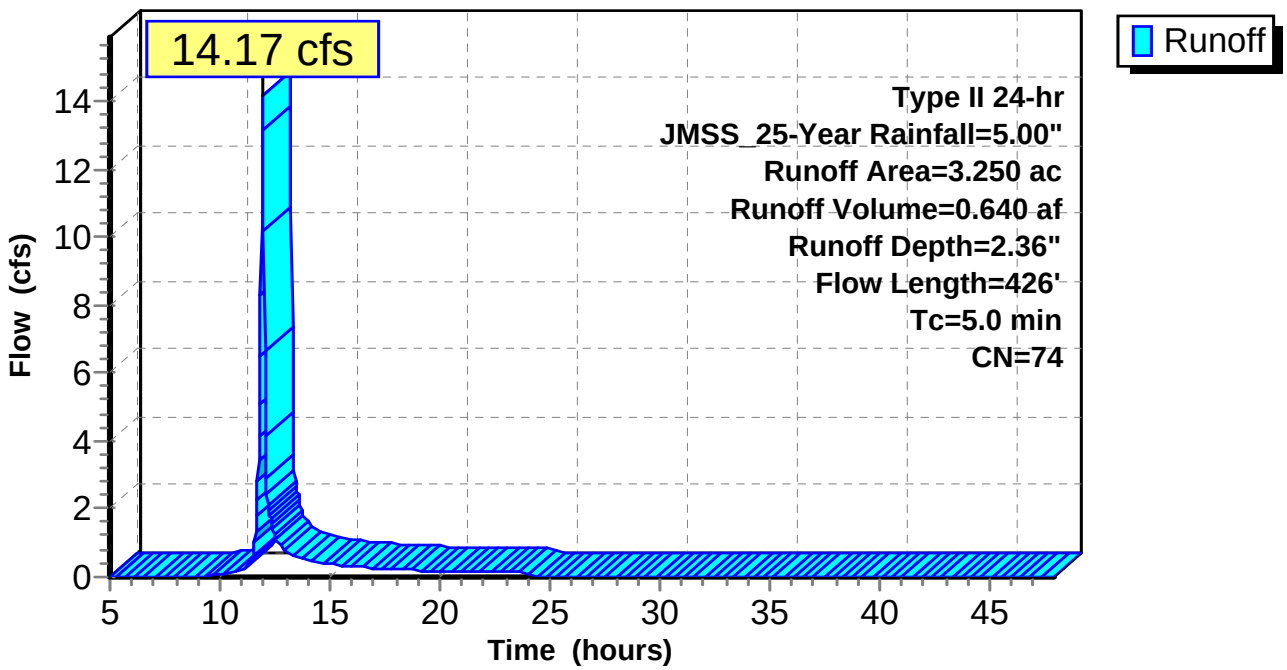
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
3.250	74	>75% Grass cover, Good, HSG C
3.250		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	32	0.2600	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.3	100	0.0250	6.23	71.66	**Channel Flow,** Area= 11.5 sf Perim= 21.3' r= 0.54' n= 0.025 Earth, clean & straight
1.0	90	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	204	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.4	426	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 71S: PD2-2

Hydrograph



Summary for Subcatchment 79S: PD3-7

Runoff = 22.63 cfs @ 11.99 hrs, Volume= 1.103 af, Depth= 2.36"

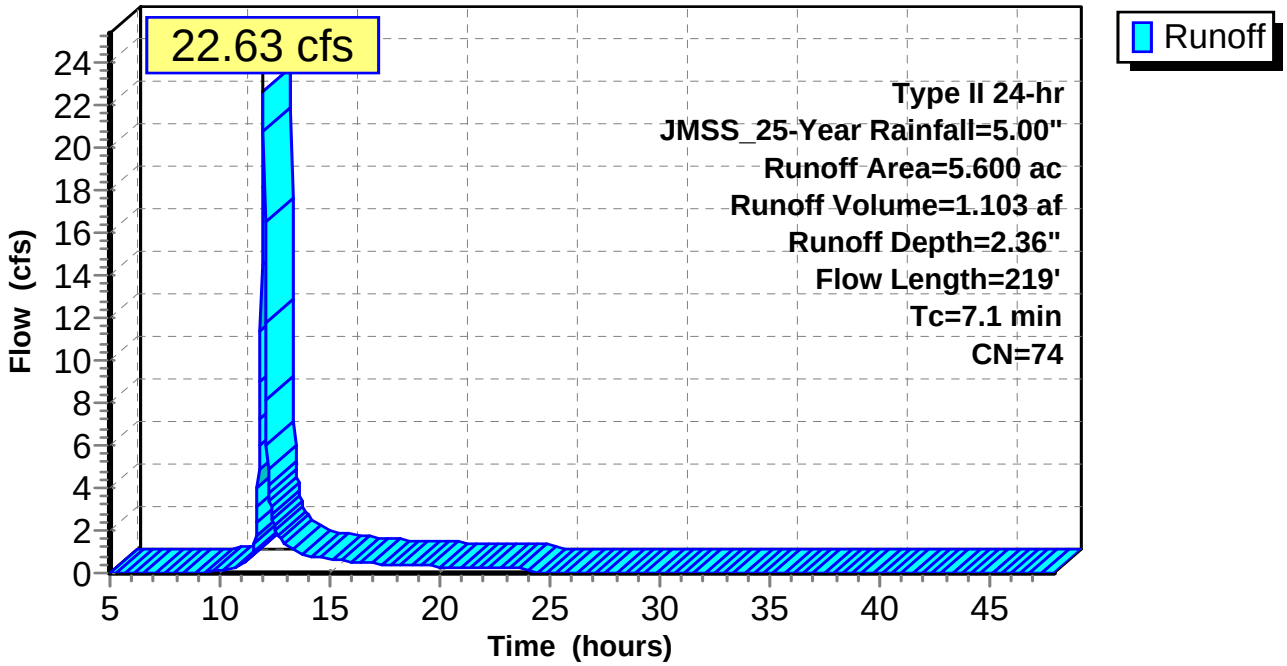
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
5.600	74	>75% Grass cover, Good, HSG C
5.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	76	0.3000	0.31		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
2.3	17	0.0600	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.5	104	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0900	2.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.1	219	Total			

Subcatchment 79S: PD3-7

Hydrograph



Summary for Subcatchment 81S: LD-9

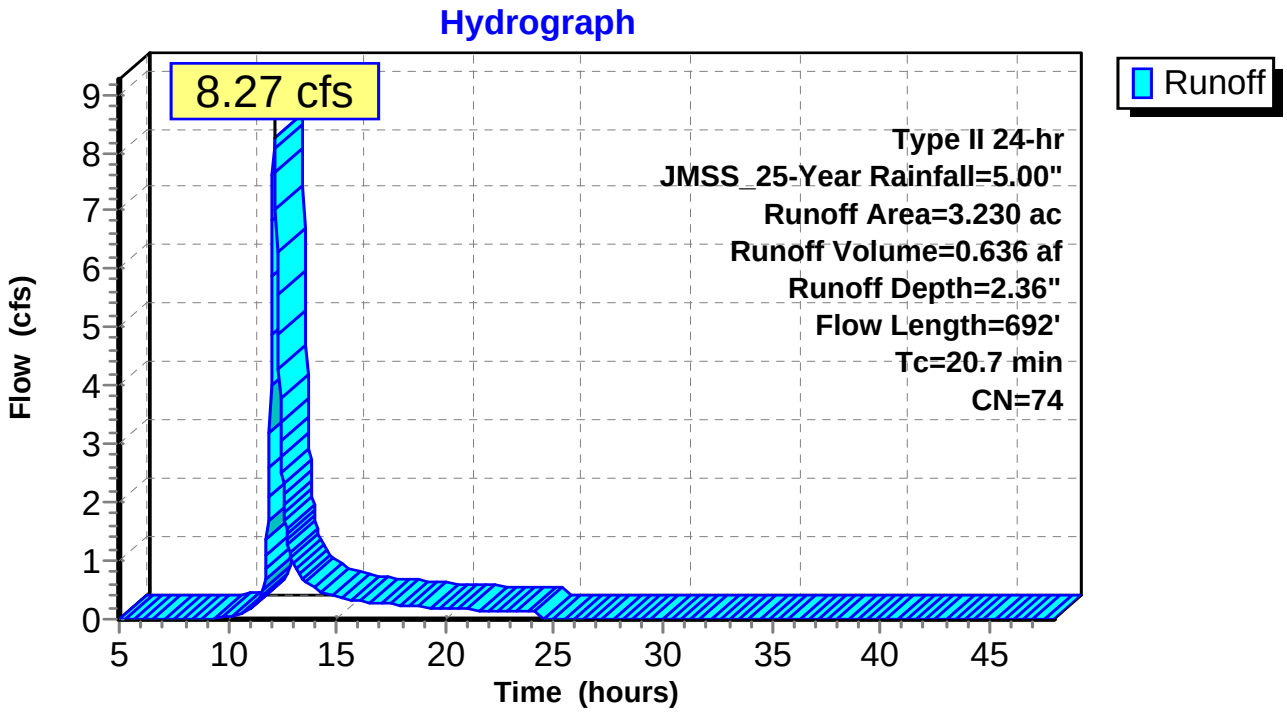
Runoff = 8.27 cfs @ 12.14 hrs, Volume= 0.636 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
3.230	74	>75% Grass cover, Good, HSG C
3.230		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	100	0.0140	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
1.3	67	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.2	525	0.0220	4.05	95.88	**Channel Flow,** Area= 23.7 sf Perim= 58.0' r= 0.41' n= 0.030 Earth, grassed & winding
20.7	692	Total			

Subcatchment 81S: LD-9



Summary for Subcatchment 83S: PD3-2

Runoff = 54.23 cfs @ 11.98 hrs, Volume= 2.602 af, Depth= 1.88"

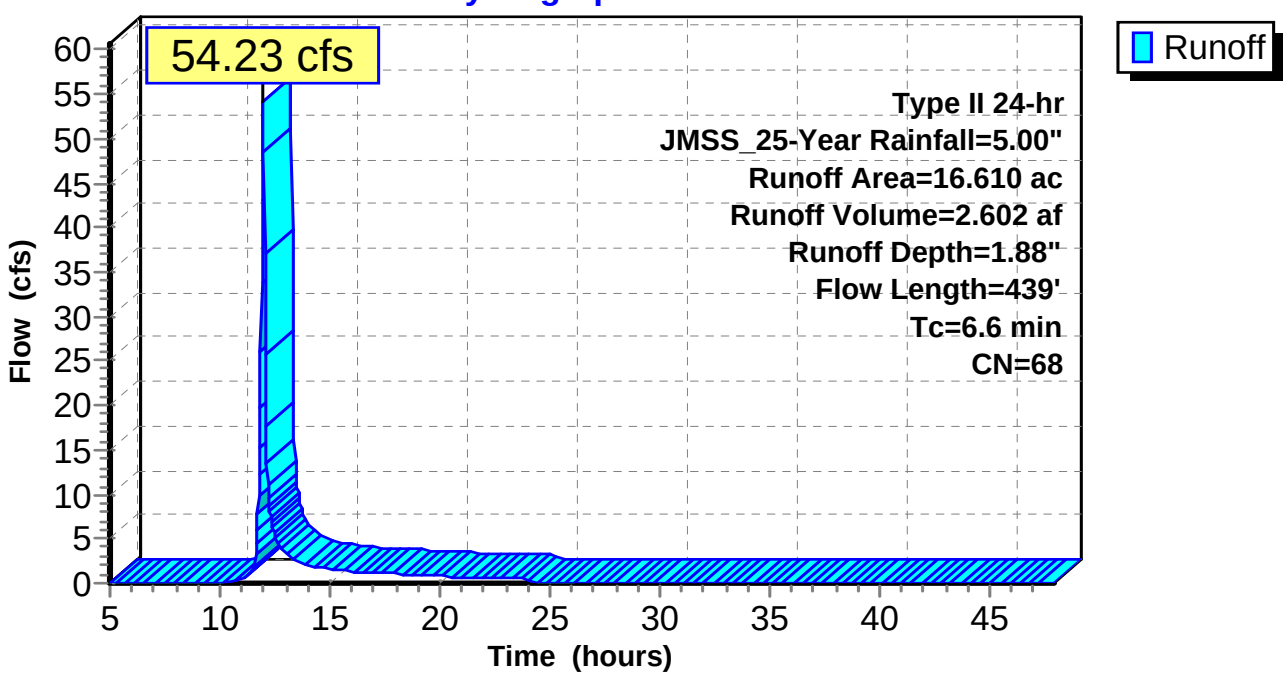
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

	Area (ac)	CN	Description
	12.610	61	>75% Grass cover, Good, HSG B
*	4.000	88	
	16.610	68	Weighted Average
	16.610		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	25	0.2400	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
4.8	414	0.0080	1.44		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.6	439	Total			

Subcatchment 83S: PD3-2

Hydrograph



Summary for Subcatchment 85S: LD-8

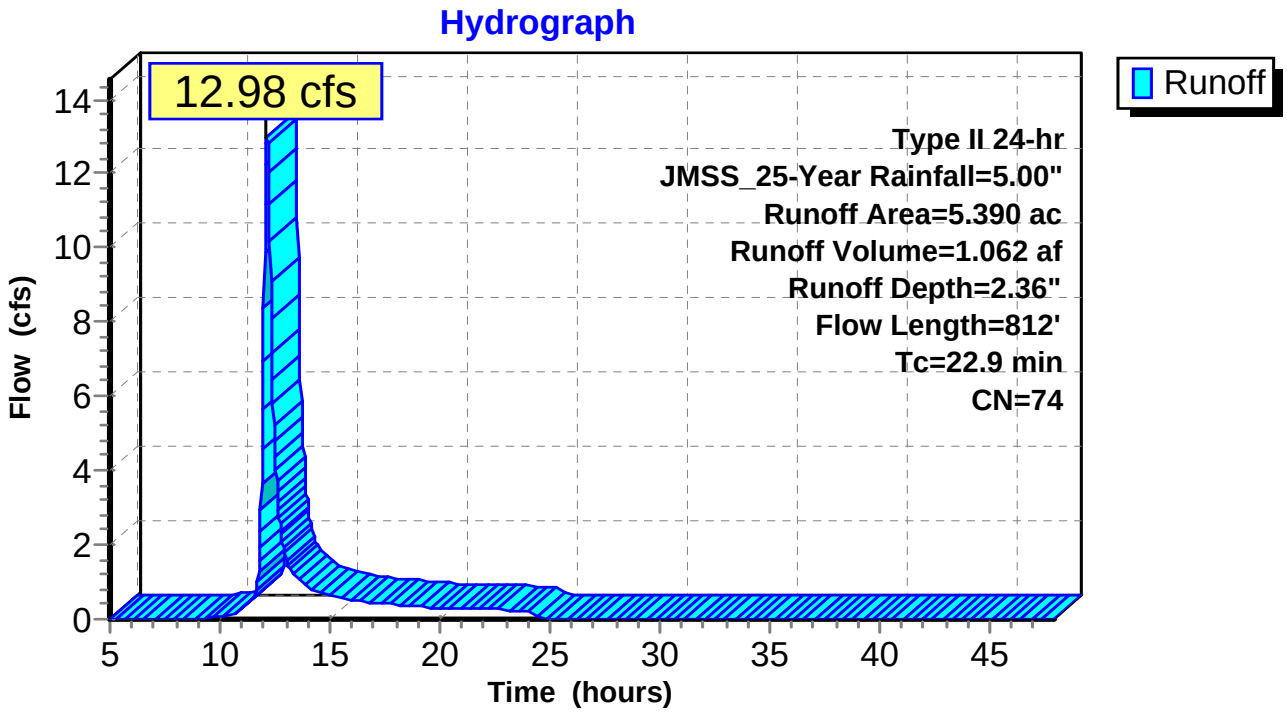
Runoff = 12.98 cfs @ 12.16 hrs, Volume= 1.062 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
5.390	74	>75% Grass cover, Good, HSG C
5.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.2	100	0.0140	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.7	71	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
5.0	641	0.0060	2.12	11.65	**Channel Flow,** Area= 5.5 sf Perim= 13.4' r= 0.41' n= 0.030 Earth, grassed & winding
22.9	812	Total			

Subcatchment 85S: LD-8



Summary for Subcatchment 86S: PD3-1

Runoff = 87.86 cfs @ 12.18 hrs, Volume= 7.377 af, Depth= 2.62"

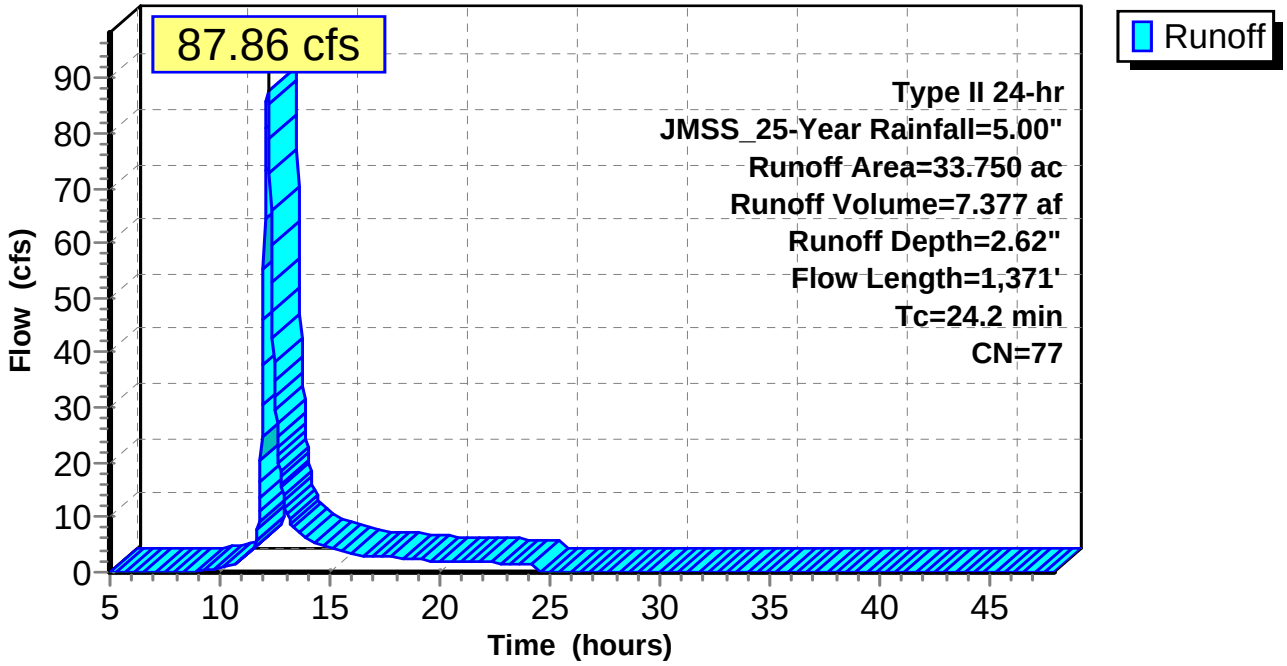
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

	Area (ac)	CN	Description
*	33.750	77	>75% Grass cover, Good, HSG B
	33.750		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	100	0.0200	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
3.1	562	0.0360	3.05		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.2	709	0.0140	1.90		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
24.2	1,371	Total			

Subcatchment 86S: PD3-1

Hydrograph



Summary for Subcatchment 88S: PD4-2

Runoff = 11.15 cfs @ 12.05 hrs, Volume= 0.697 af, Depth= 1.37"

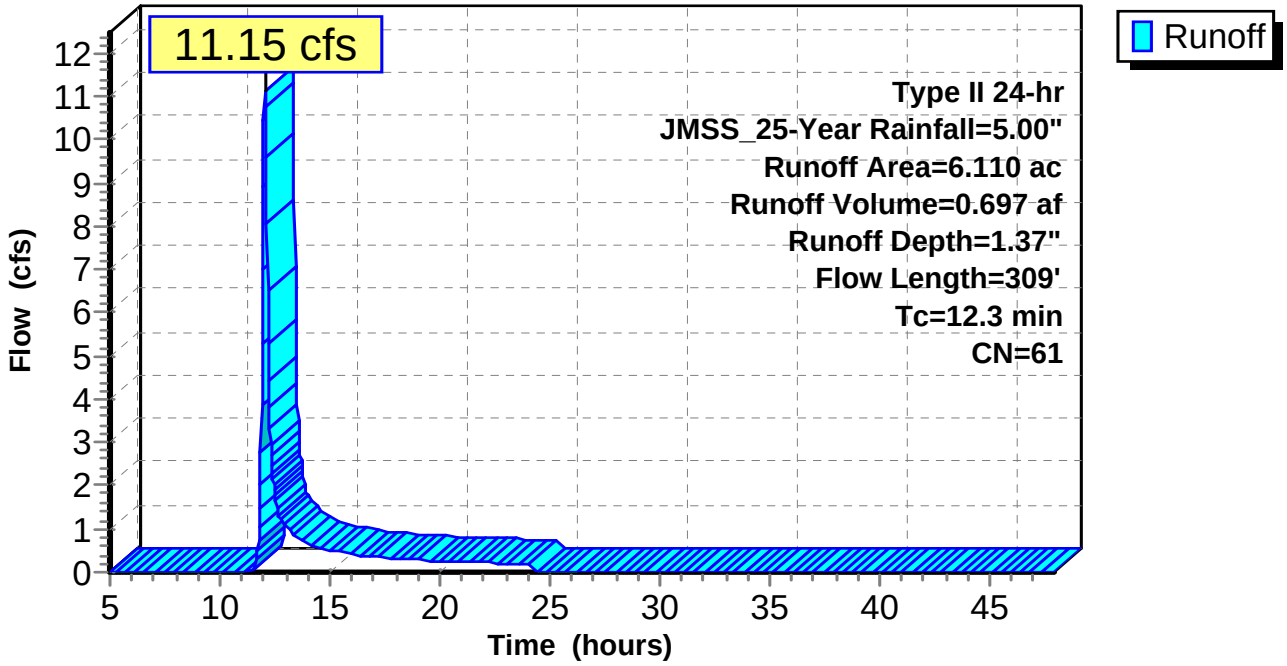
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
6.110	61	>75% Grass cover, Good, HSG B
6.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	100	0.0400	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.9	172	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	37	0.3000	8.82		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
12.3	309	Total			

Subcatchment 88S: PD4-2

Hydrograph



Summary for Subcatchment 89S: PD4-1

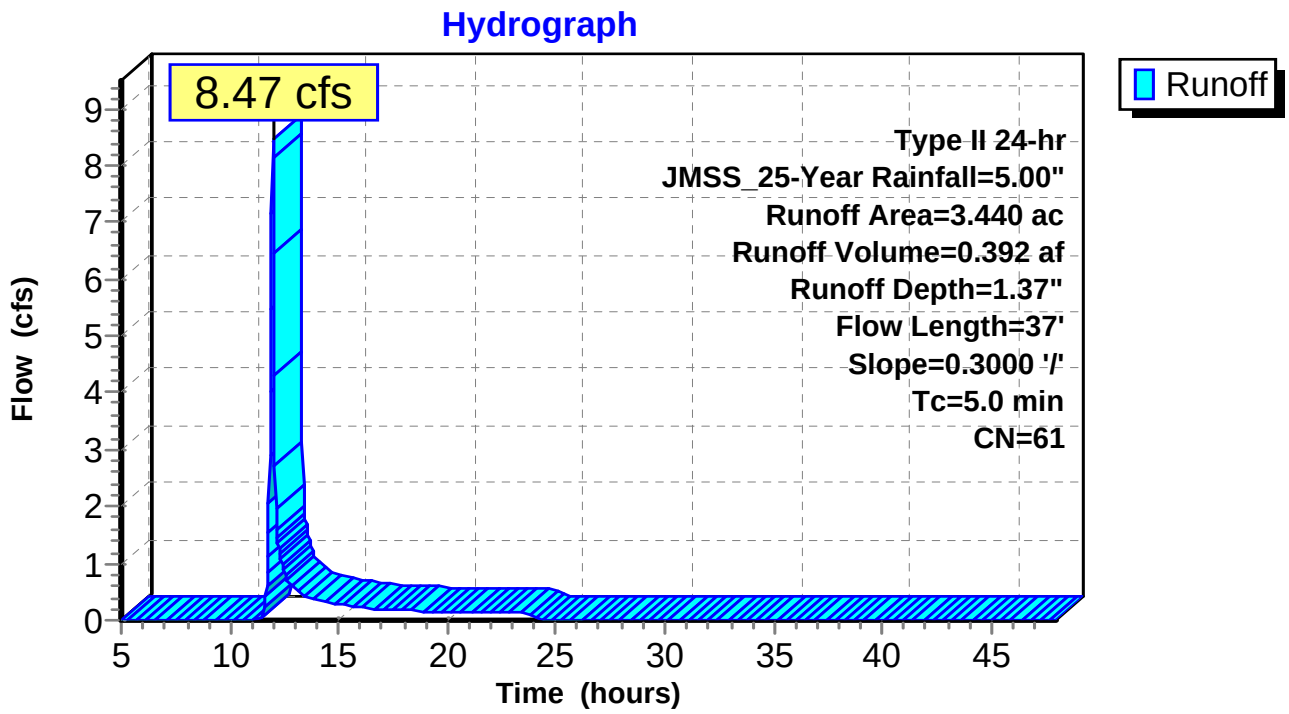
Runoff = 8.47 cfs @ 11.97 hrs, Volume= 0.392 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
3.440	61	>75% Grass cover, Good, HSG B
3.440		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	37	0.3000	0.27		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
2.3	37	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 89S: PD4-1



Summary for Subcatchment 90S: T-1

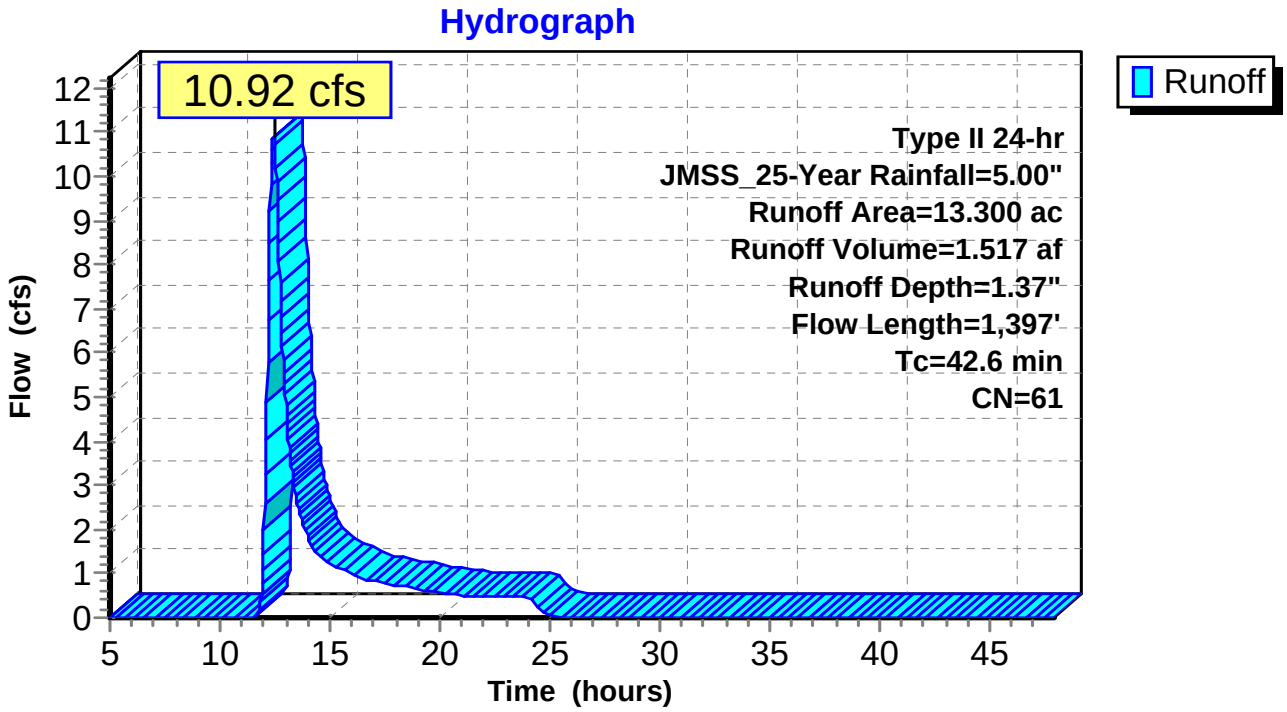
Runoff = 10.92 cfs @ 12.44 hrs, Volume= 1.517 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
13.300	61	>75% Grass cover, Good, HSG B
13.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	100	0.0400	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.92"
0.4	36	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
26.0	488	0.0020	0.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	243	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.2	530	0.0020	2.10	39.96	**Channel Flow,** Area= 19.0 sf Perim= 27.0' r= 0.70' n= 0.025 Earth, grassed & winding
42.6	1,397	Total			

Subcatchment 90S: T-1



Summary for Subcatchment 91S: T-2

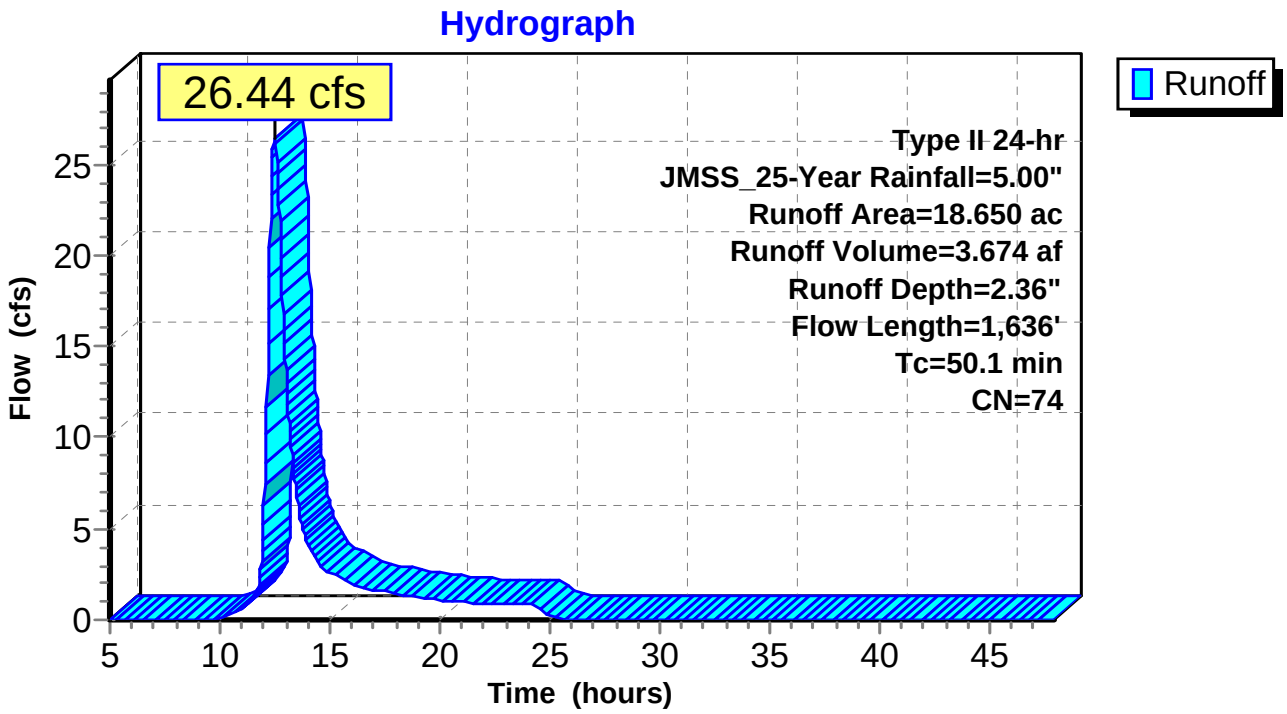
Runoff = 26.44 cfs @ 12.52 hrs, Volume= 3.674 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
18.650	74	>75% Grass cover, Good, HSG C
18.650		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	100	0.0130	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
6.4	329	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.5	375	0.0060	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.5	326	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.0	506	0.0120	0.77		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
50.1	1,636	Total			

Subcatchment 91S: T-2



Summary for Subcatchment 92S: PD1-1

Runoff = 24.83 cfs @ 11.96 hrs, Volume= 1.131 af, Depth= 2.36"

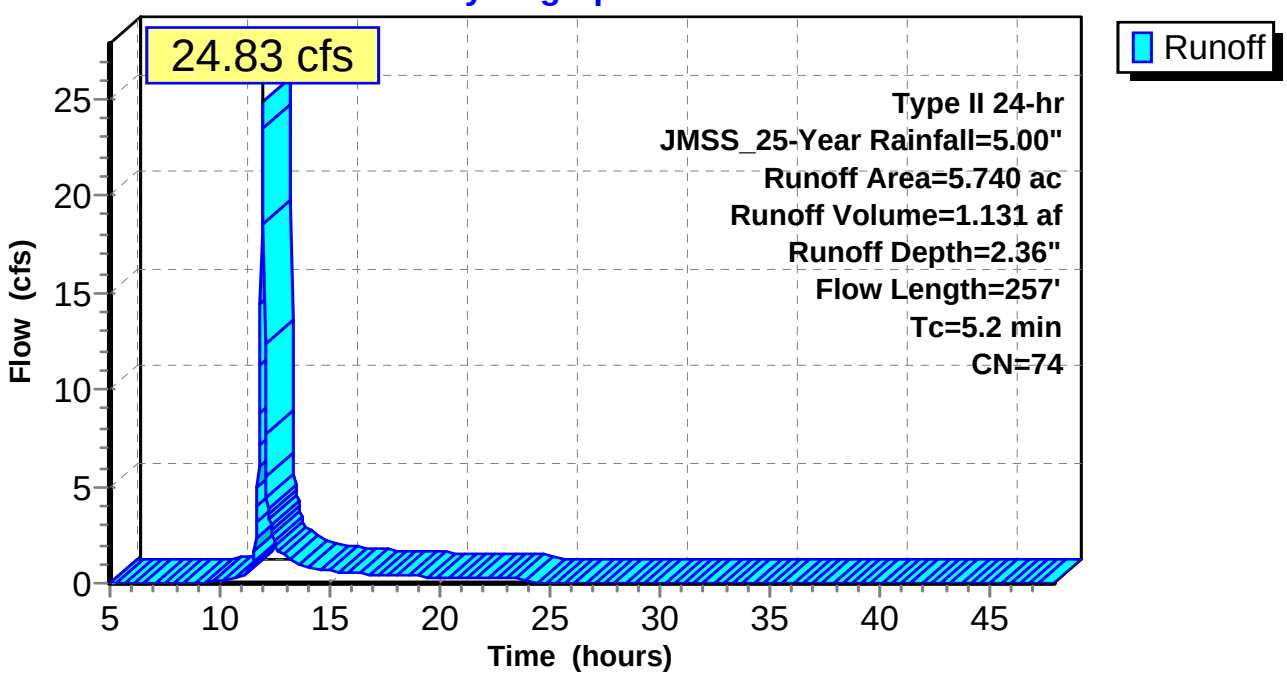
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
5.740	74	>75% Grass cover, Good, HSG C
5.740		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	77	0.3300	0.32		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.6	82	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	98	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	257	Total			

Subcatchment 92S: PD1-1

Hydrograph



Summary for Subcatchment 95S: LD10

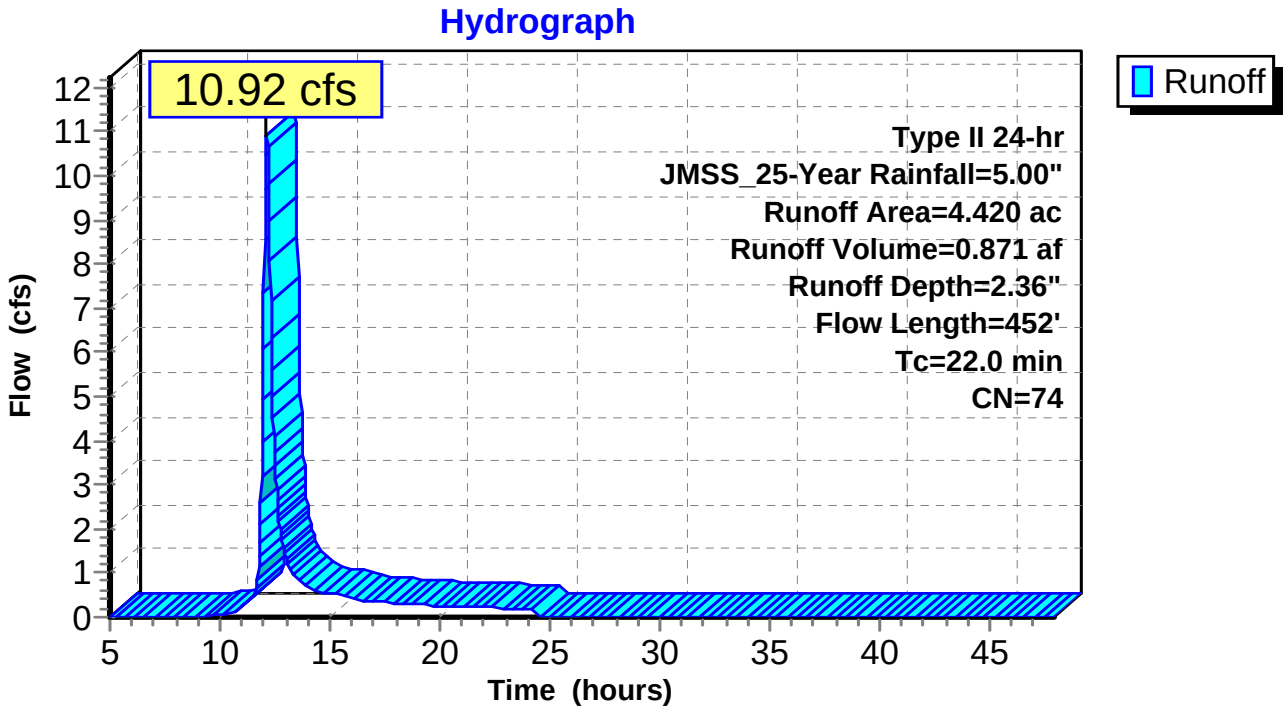
Runoff = 10.92 cfs @ 12.15 hrs, Volume= 0.871 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
4.420	74	>75% Grass cover, Good, HSG C
4.420		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0250	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
2.9	193	0.0250	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.4	159	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.0	452	Total			

Subcatchment 95S: LD10



Summary for Subcatchment 104S: PD3-3

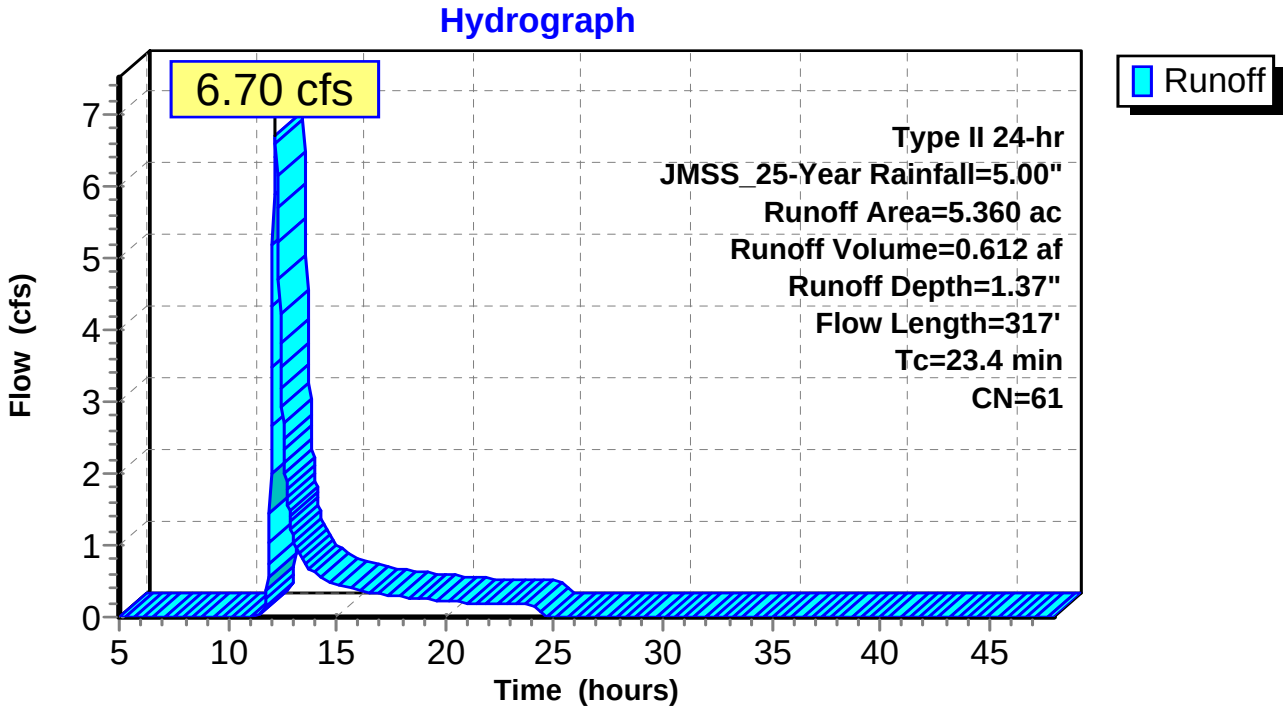
Runoff = 6.70 cfs @ 12.19 hrs, Volume= 0.612 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
5.360	61	>75% Grass cover, Good, HSG B
5.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	100	0.0100	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
3.7	217	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.4	317	Total			

Subcatchment 104S: PD3-3



Summary for Subcatchment 111S: PD3-6

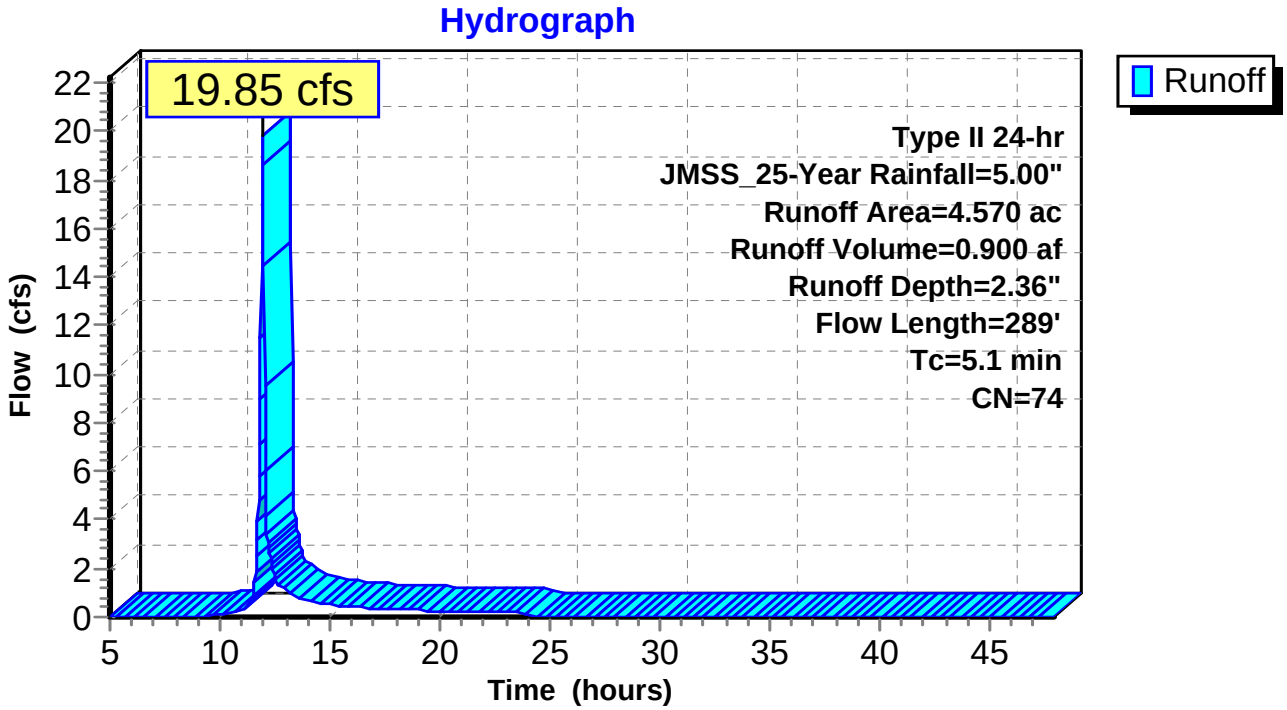
Runoff = 19.85 cfs @ 11.96 hrs, Volume= 0.900 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
4.570	74	>75% Grass cover, Good, HSG C
4.570		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	69	0.3000	0.31		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.4	39	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	117	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	64	0.1600	2.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.1	289	Total			

Subcatchment 111S: PD3-6



Summary for Subcatchment 112S: PD3-5

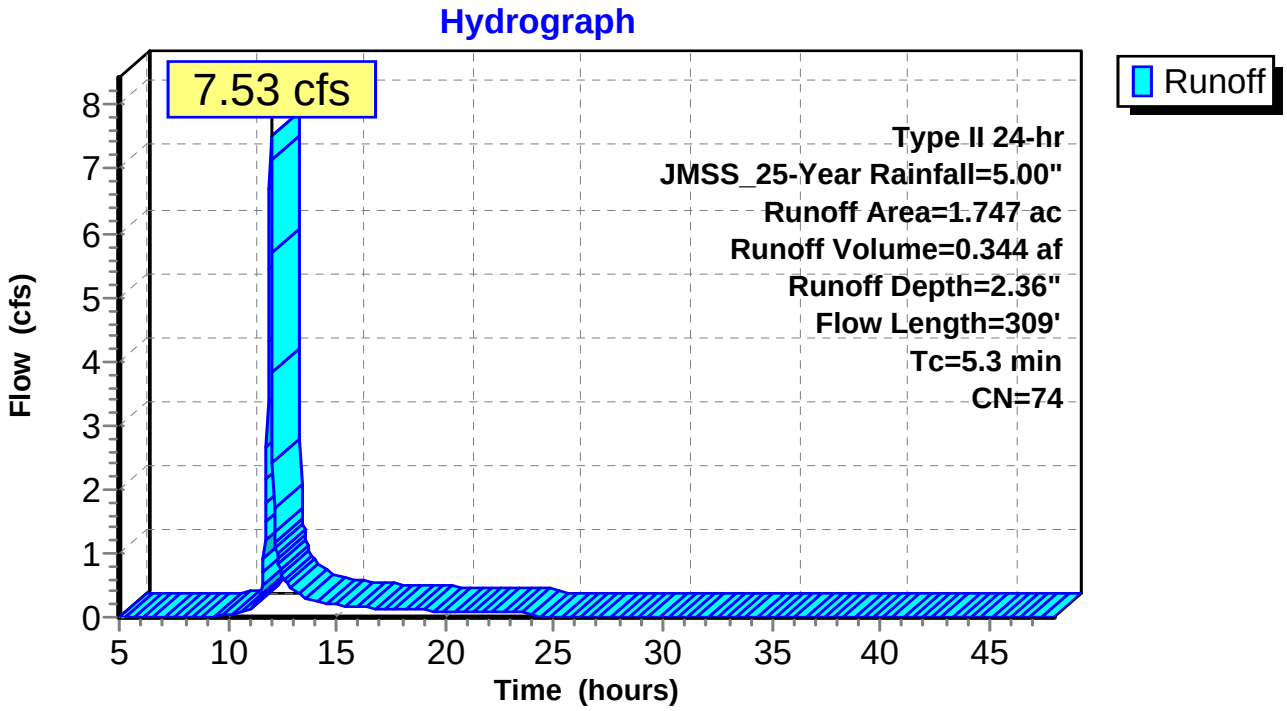
Runoff = 7.53 cfs @ 11.97 hrs, Volume= 0.344 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
1.747	74	>75% Grass cover, Good, HSG C
1.747		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	70	0.3000	0.31		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.7	64	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	175	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.3	309	Total			

Subcatchment 112S: PD3-5



Summary for Subcatchment 114S: PD3-4

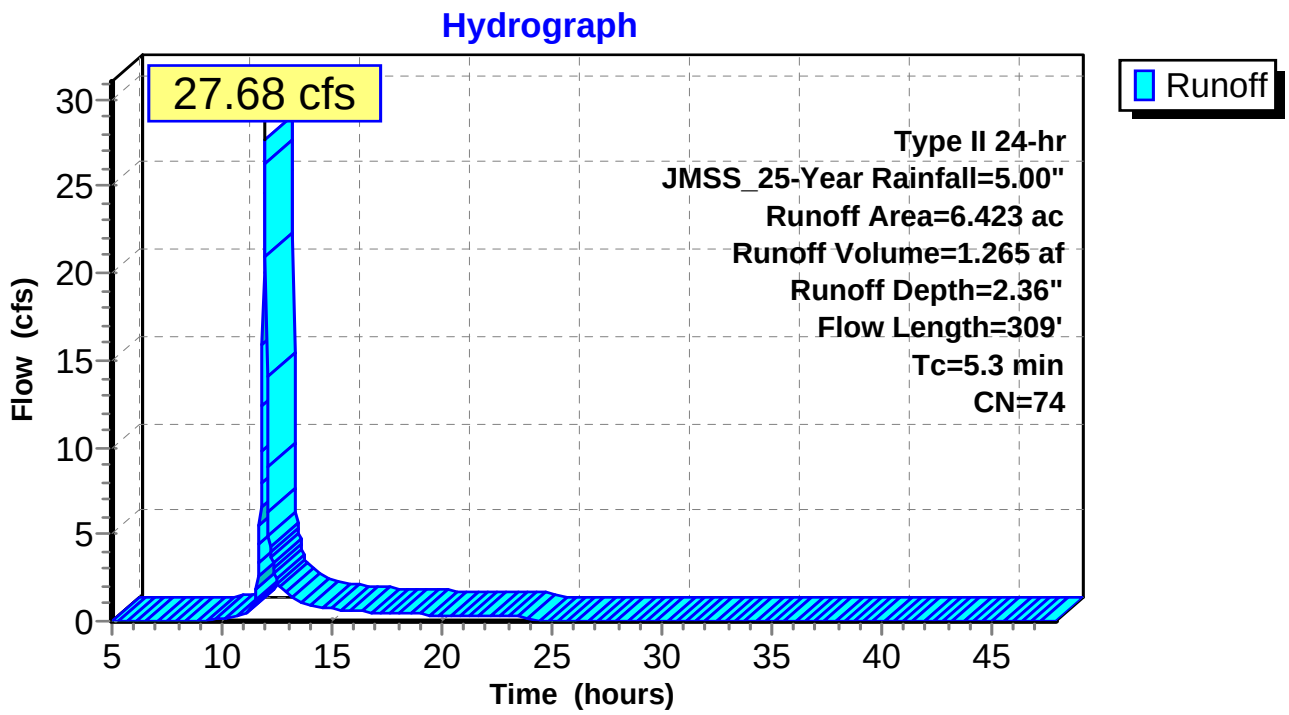
Runoff = 27.68 cfs @ 11.97 hrs, Volume= 1.265 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Type II 24-hr JMSS_25-Year Rainfall=5.00"

Area (ac)	CN	Description
6.423	74	>75% Grass cover, Good, HSG C
6.423		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	70	0.3000	0.31		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.92"
0.7	64	0.0450	1.48		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	175	0.3000	3.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.3	309	Total			

Subcatchment 114S: PD3-4



Summary for Reach 7R: PD1-1

Inflow Area = 10.160 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 30.09 cfs @ 11.97 hrs, Volume= 2.002 af
Outflow = 24.26 cfs @ 12.03 hrs, Volume= 2.002 af, Atten= 19%, Lag= 3.5 min

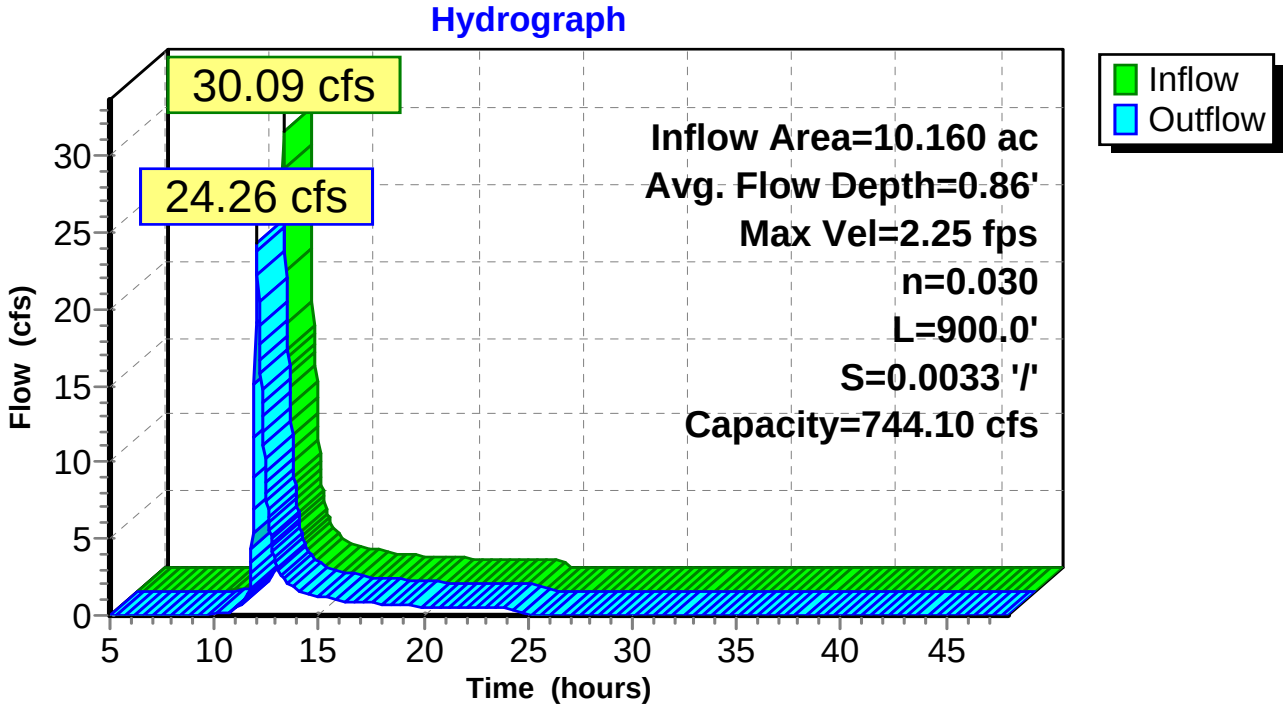
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 2.25 fps, Min. Travel Time= 6.7 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 24.0 min

Peak Storage= 9,697 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.86'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 744.10 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 900.0' Slope= 0.0033 '/'
Inlet Invert= 557.00', Outlet Invert= 554.00'

‡

Reach 7R: PD1-1



Summary for Reach 8R: PD1-2

[62] Hint: Exceeded Reach 7R OUTLET depth by 0.04' @ 12.47 hrs

Inflow Area = 17.930 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 41.65 cfs @ 12.02 hrs, Volume= 3.533 af
Outflow = 40.71 cfs @ 12.05 hrs, Volume= 3.533 af, Atten= 2%, Lag= 1.5 min

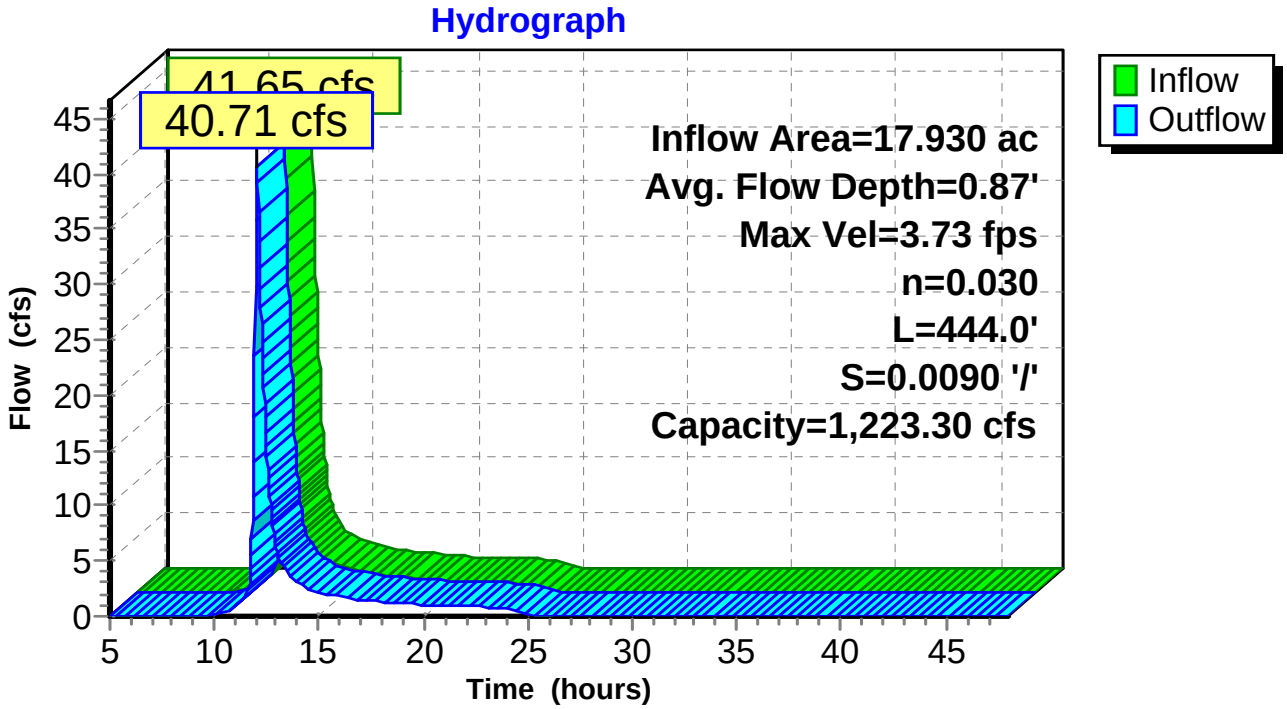
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 3.73 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.05 fps, Avg. Travel Time= 7.0 min

Peak Storage= 4,850 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 1,223.30 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 444.0' Slope= 0.0090 '/'
Inlet Invert= 554.00', Outlet Invert= 550.00'

‡

Reach 8R: PD1-2



Summary for Reach 11R: PD1-3

[62] Hint: Exceeded Reach 8R OUTLET depth by 1.17' @ 12.05 hrs

Inflow Area = 22.500 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 55.64 cfs @ 12.02 hrs, Volume= 4.433 af
Outflow = 54.36 cfs @ 12.05 hrs, Volume= 4.433 af, Atten= 2%, Lag= 1.4 min

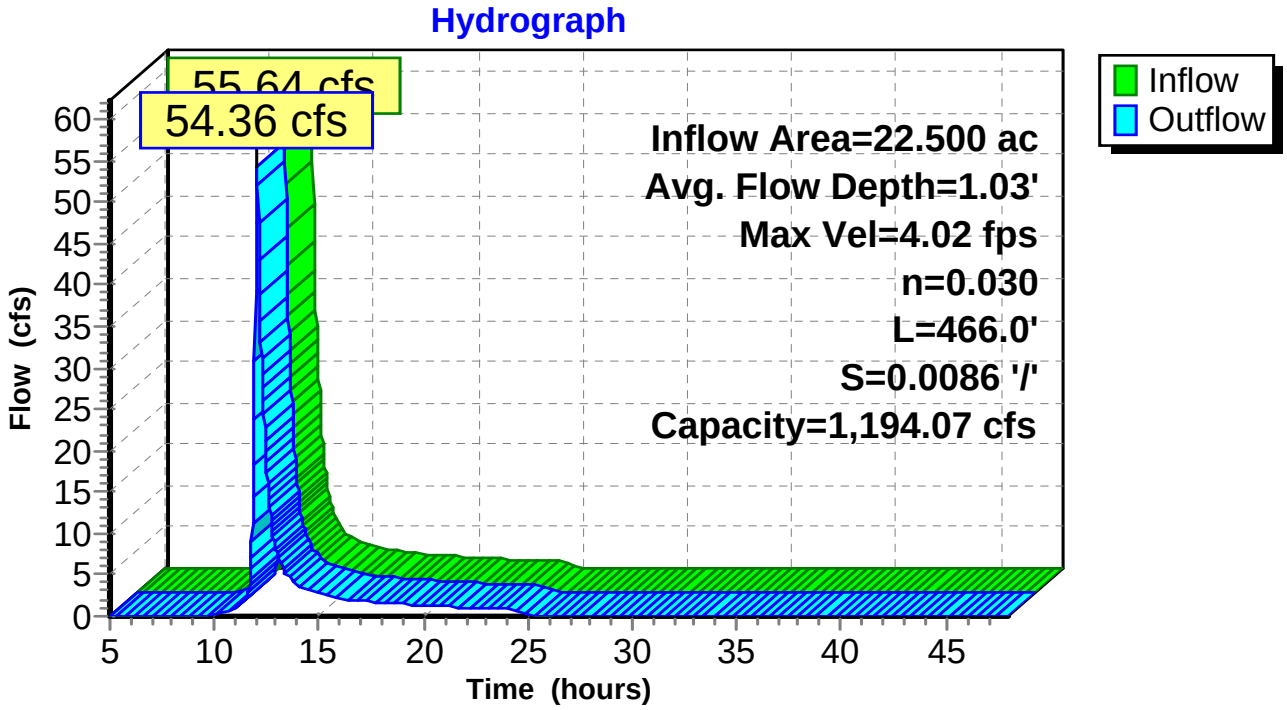
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 4.02 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 7.1 min

Peak Storage= 6,307 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.03'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 1,194.07 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 466.0' Slope= 0.0086 '/'
Inlet Invert= 551.00', Outlet Invert= 547.00'

‡

Reach 11R: PD1-3



Summary for Reach 19R: PD1-4

[62] Hint: Exceeded Reach 11R OUTLET depth by 1.38' @ 12.17 hrs

Inflow Area = 31.030 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 82.08 cfs @ 12.00 hrs, Volume= 6.114 af
Outflow = 64.90 cfs @ 12.08 hrs, Volume= 6.114 af, Atten= 21%, Lag= 4.8 min

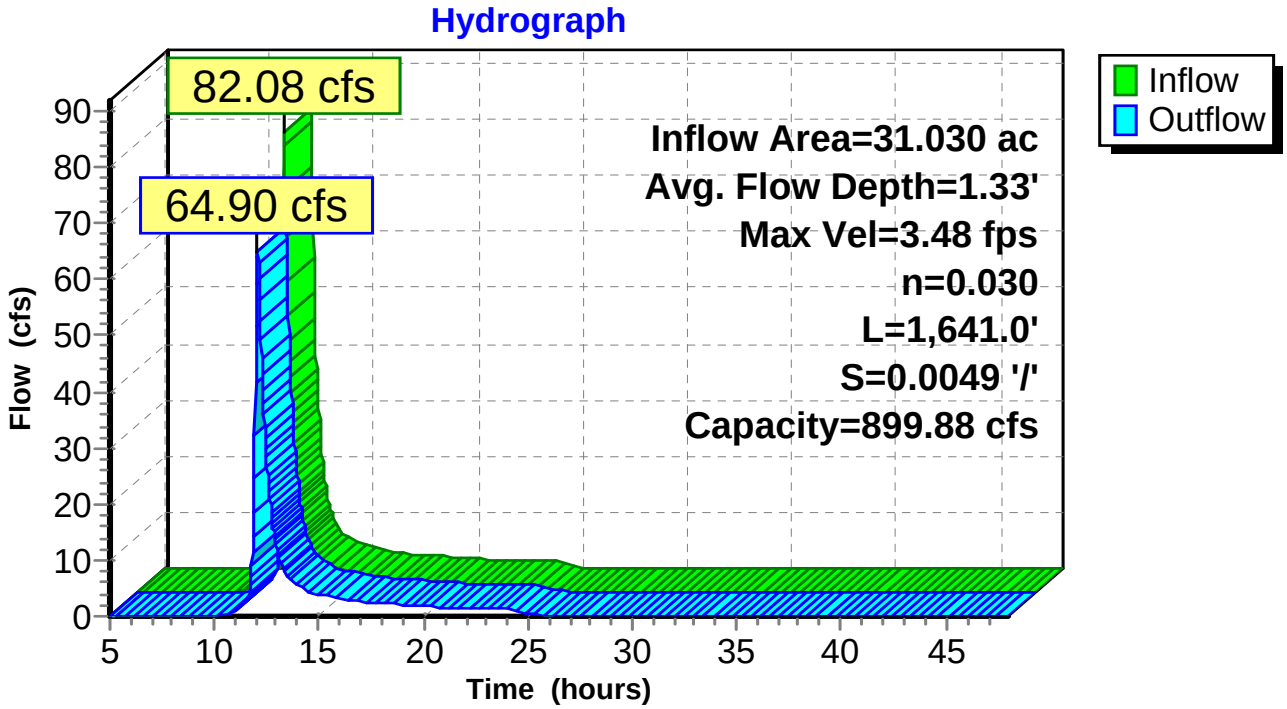
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 3.48 fps, Min. Travel Time= 7.8 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 30.0 min

Peak Storage= 30,561 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.33'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 899.88 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 1,641.0' Slope= 0.0049 '/'
Inlet Invert= 548.00', Outlet Invert= 540.00'

‡

Reach 19R: PD1-4



Summary for Reach 22R: PD1-5

[62] Hint: Exceeded Reach 19R OUTLET depth by 0.09' @ 12.17 hrs

Inflow Area = 35.370 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 74.84 cfs @ 12.05 hrs, Volume= 6.969 af
Outflow = 73.40 cfs @ 12.08 hrs, Volume= 6.969 af, Atten= 2%, Lag= 1.8 min

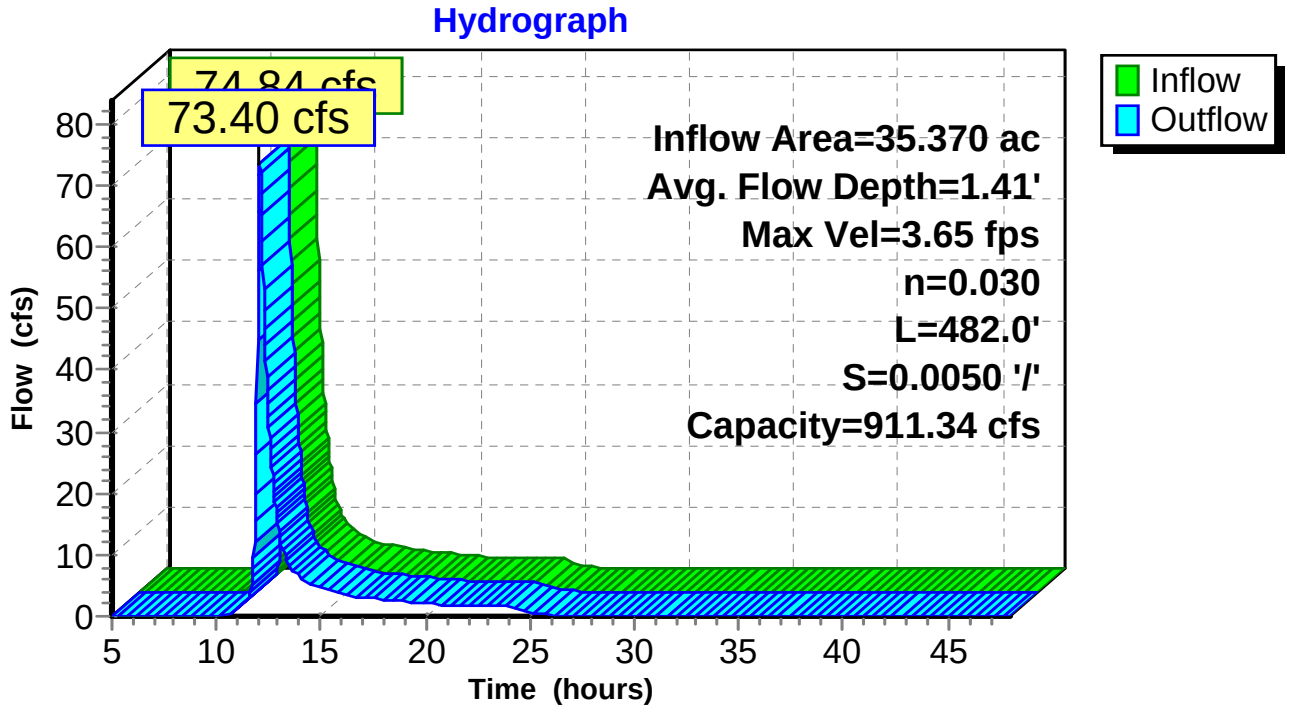
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 3.65 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 8.5 min

Peak Storage= 9,699 cf @ 12.08 hrs
Average Depth at Peak Storage= 1.41'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 911.34 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 482.0' Slope= 0.0050 '/'
Inlet Invert= 540.00', Outlet Invert= 537.59'

‡

Reach 22R: PD1-5



Summary for Reach 31R: PD1-6

[61] Hint: Exceeded Reach 22R outlet invert by 0.45' @ 12.11 hrs

Inflow Area = 43.920 ac, 0.00% Impervious, Inflow Depth = 2.17" for JMSS_25-Year event
Inflow = 86.24 cfs @ 12.06 hrs, Volume= 7.944 af
Outflow = 81.33 cfs @ 12.12 hrs, Volume= 7.944 af, Atten= 6%, Lag= 3.2 min

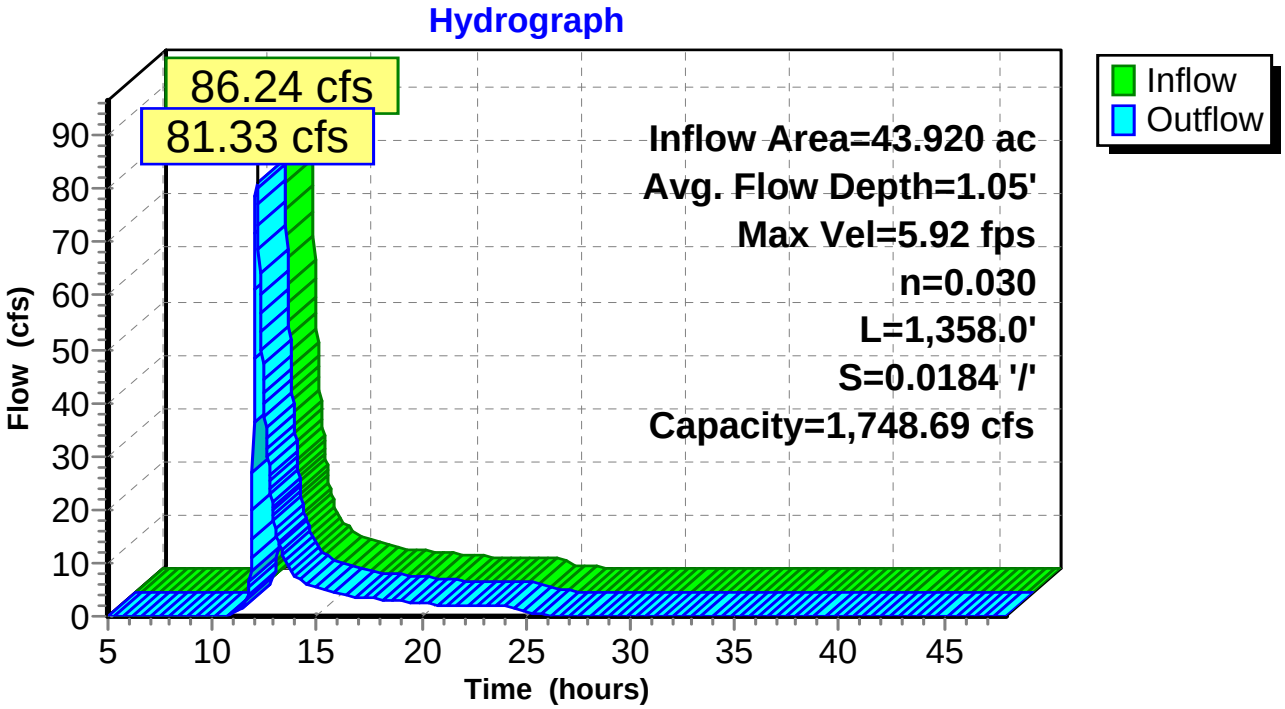
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 5.92 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 1.58 fps, Avg. Travel Time= 14.3 min

Peak Storage= 18,654 cf @ 12.12 hrs
Average Depth at Peak Storage= 1.05'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 1,748.69 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 1,358.0' Slope= 0.0184 '/'
Inlet Invert= 537.00', Outlet Invert= 512.00'

‡

Reach 31R: PD1-6



Summary for Reach 39R: PD1-7

[62] Hint: Exceeded Reach 31R OUTLET depth by 0.80' @ 12.26 hrs

Inflow Area = 61.080 ac, 0.00% Impervious, Inflow Depth = 2.09" for JMSS_25-Year event
Inflow = 102.37 cfs @ 12.05 hrs, Volume= 10.617 af
Outflow = 89.81 cfs @ 12.17 hrs, Volume= 10.617 af, Atten= 12%, Lag= 7.2 min

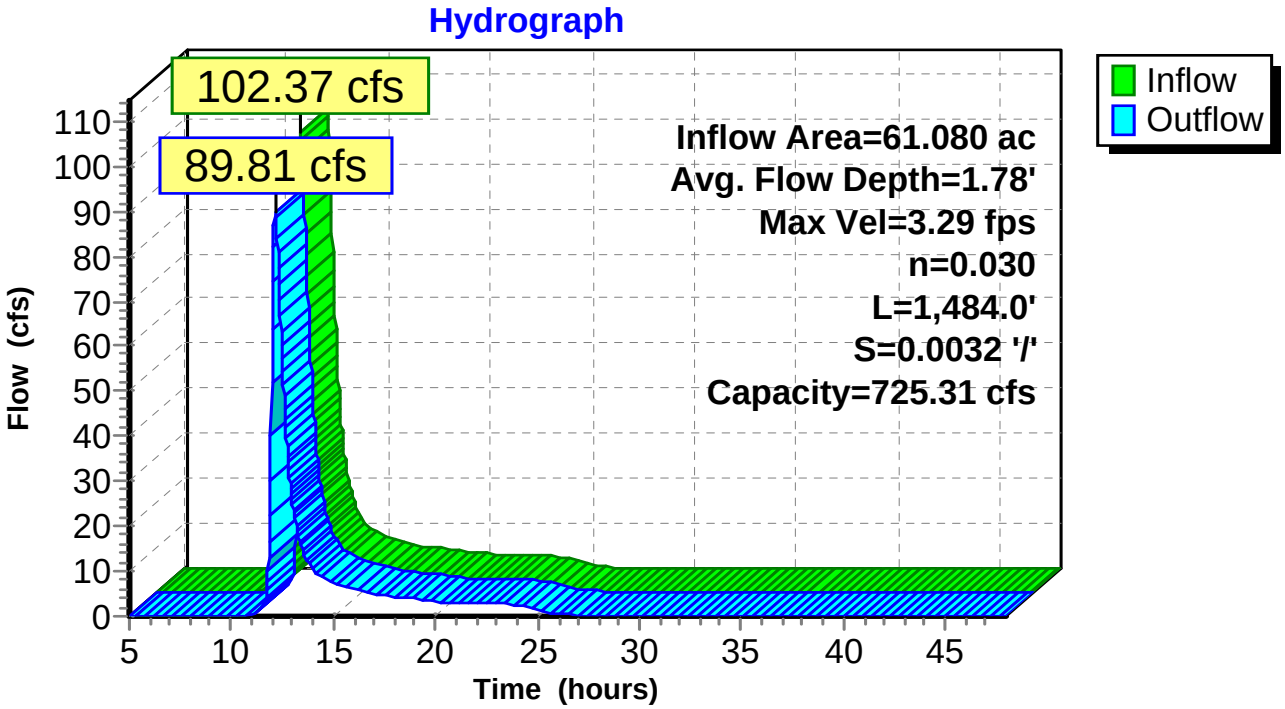
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 3.29 fps, Min. Travel Time= 7.5 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 29.1 min

Peak Storage= 40,478 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.78'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 725.31 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 1,484.0' Slope= 0.0032 '/'
Inlet Invert= 512.00', Outlet Invert= 507.30'

‡

Reach 39R: PD1-7



Summary for Reach 50R: PD1-8

[62] Hint: Exceeded Reach 39R OUTLET depth by 0.51' @ 12.98 hrs

Inflow Area = 108.150 ac, 0.00% Impervious, Inflow Depth = 2.20" for JMSS_25-Year event
Inflow = 119.88 cfs @ 12.20 hrs, Volume= 19.807 af
Outflow = 116.29 cfs @ 12.29 hrs, Volume= 19.807 af, Atten= 3%, Lag= 5.3 min

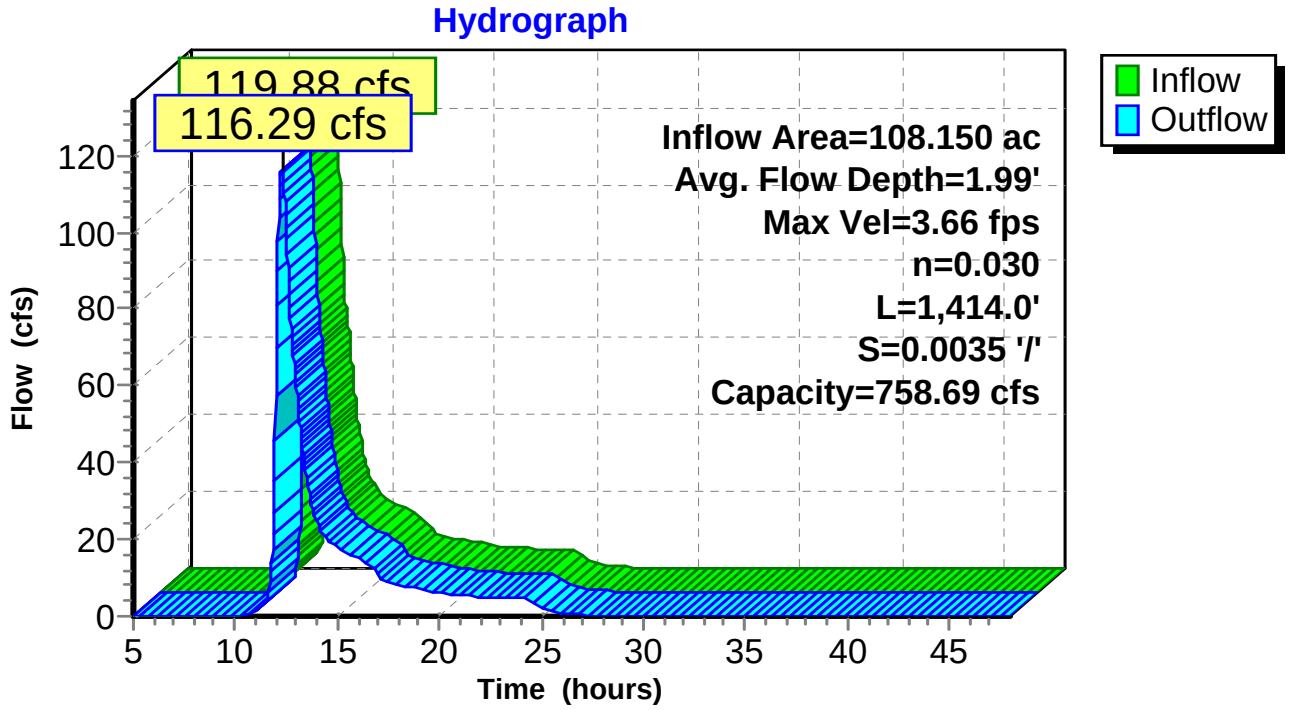
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 3.66 fps, Min. Travel Time= 6.4 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 26.0 min

Peak Storage= 44,917 cf @ 12.29 hrs
Average Depth at Peak Storage= 1.99'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 758.69 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 1,414.0' Slope= 0.0035 '/'
Inlet Invert= 507.30', Outlet Invert= 502.40'

‡

Reach 50R: PD1-8



Summary for Reach 53R: PD2-1

[62] Hint: Exceeded Reach 50R OUTLET depth by 3.27' @ 13.16 hrs

Inflow Area = 130.660 ac, 0.00% Impervious, Inflow Depth = 2.14" for JMSS_25-Year event
Inflow = 120.99 cfs @ 12.27 hrs, Volume= 23.317 af
Outflow = 119.68 cfs @ 12.33 hrs, Volume= 23.317 af, Atten= 1%, Lag= 3.4 min

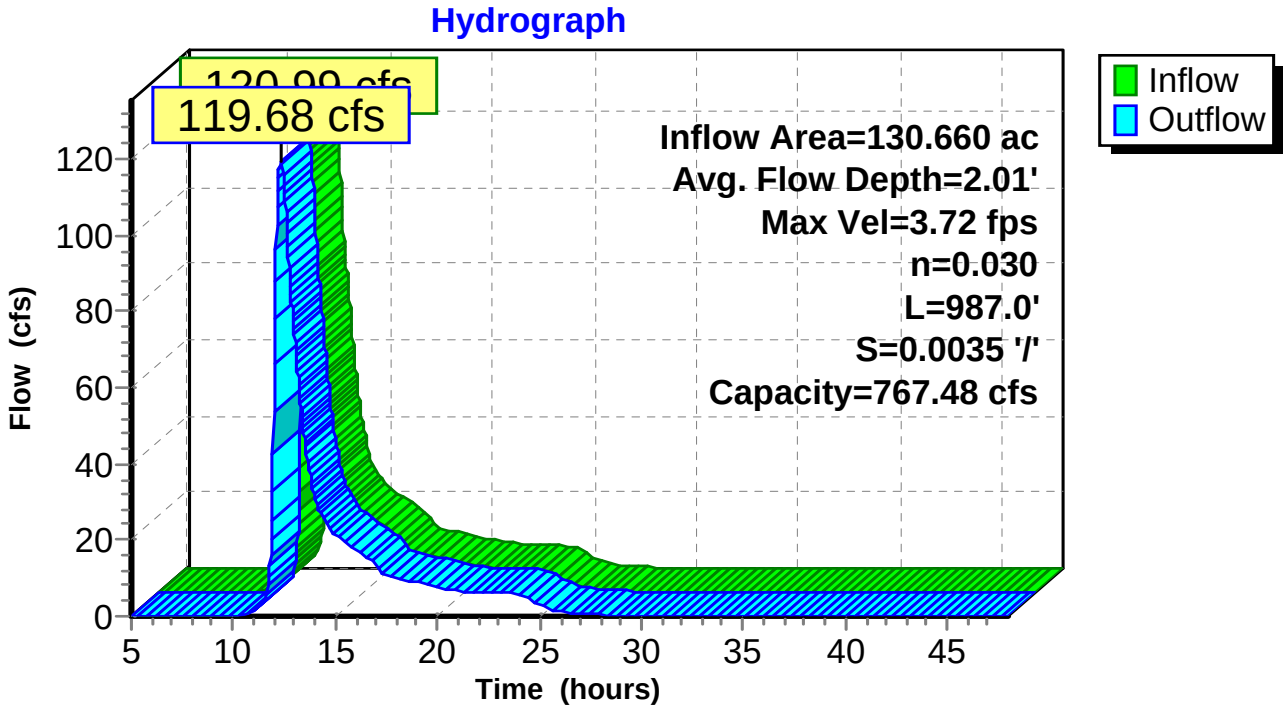
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 3.72 fps, Min. Travel Time= 4.4 min
Avg. Velocity = 0.96 fps, Avg. Travel Time= 17.1 min

Peak Storage= 31,742 cf @ 12.33 hrs
Average Depth at Peak Storage= 2.01'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 767.48 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 987.0' Slope= 0.0035 '/'
Inlet Invert= 505.50', Outlet Invert= 502.00'

‡

Reach 53R: PD2-1



Summary for Reach 64R: PD2-2

[62] Hint: Exceeded Reach 53R OUTLET depth by 2.63' @ 12.68 hrs

Inflow Area = 133.910 ac, 0.00% Impervious, Inflow Depth = 2.15" for JMSS_25-Year event
Inflow = 121.32 cfs @ 12.32 hrs, Volume= 23.957 af
Outflow = 117.51 cfs @ 12.45 hrs, Volume= 23.957 af, Atten= 3%, Lag= 7.5 min

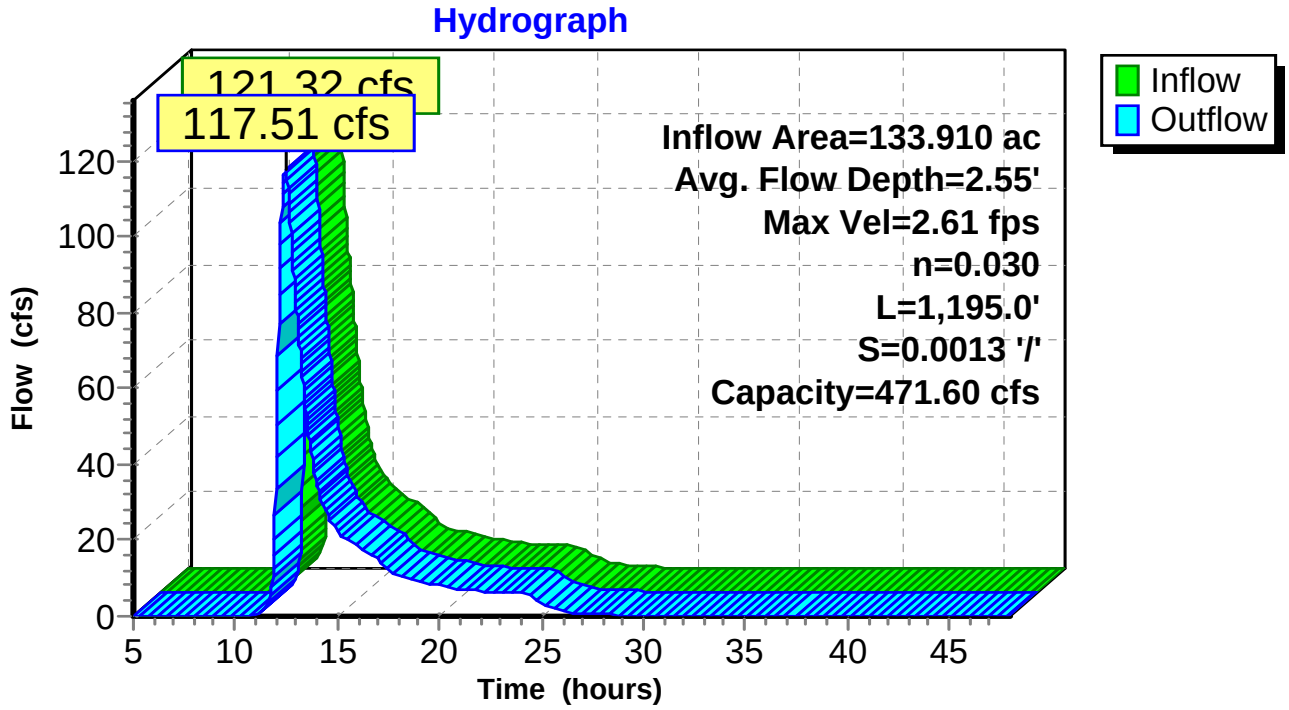
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 2.61 fps, Min. Travel Time= 7.6 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 29.1 min

Peak Storage= 53,879 cf @ 12.45 hrs
Average Depth at Peak Storage= 2.55'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 471.60 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 1,195.0' Slope= 0.0013 '/'
Inlet Invert= 504.00', Outlet Invert= 502.40'

‡

Reach 64R: PD2-2



Summary for Reach 73R: PD3-1

Inflow Area = 80.833 ac, 0.00% Impervious, Inflow Depth = 2.14" for JMSS_25-Year event
Inflow = 142.04 cfs @ 12.05 hrs, Volume= 14.434 af
Outflow = 136.41 cfs @ 12.10 hrs, Volume= 14.434 af, Atten= 4%, Lag= 3.0 min

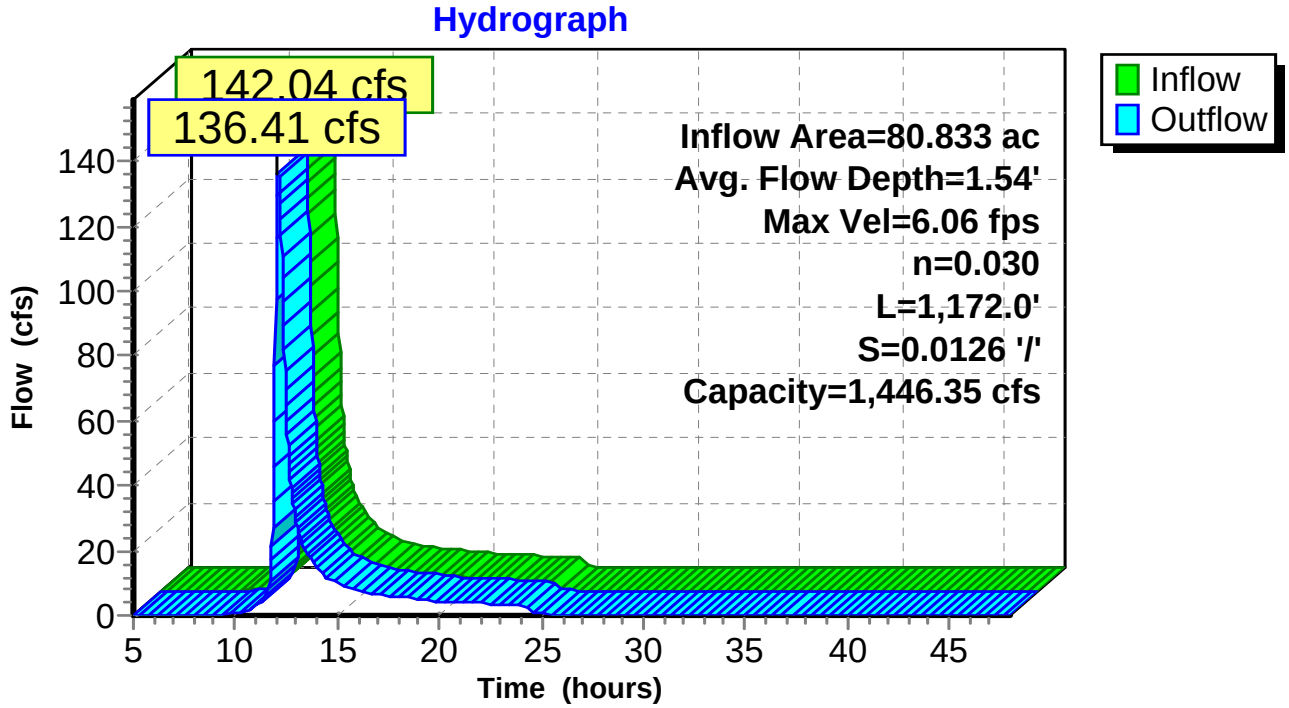
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 6.06 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 14.7 min

Peak Storage= 26,357 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.54'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 1,446.35 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 1,172.0' Slope= 0.0126 '/'
Inlet Invert= 518.76', Outlet Invert= 504.00'

‡

Reach 73R: PD3-1



Summary for Reach 74R: PD4-1

Inflow Area = 24.697 ac, 0.00% Impervious, Inflow Depth = 1.98" for JMSS_25-Year event
Inflow = 40.95 cfs @ 12.14 hrs, Volume= 4.074 af
Outflow = 35.68 cfs @ 12.26 hrs, Volume= 4.074 af, Atten= 13%, Lag= 7.6 min

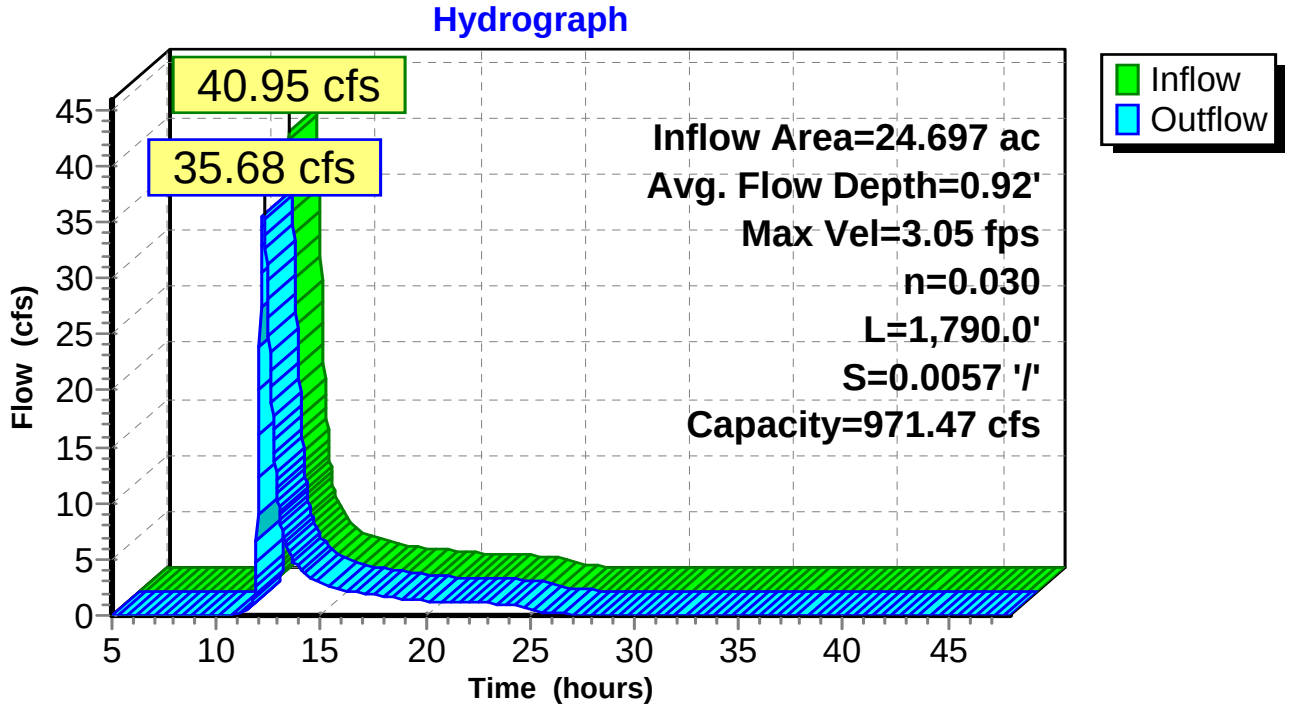
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 3.05 fps, Min. Travel Time= 9.8 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 34.4 min

Peak Storage= 20,909 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.92'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 971.47 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 1,790.0' Slope= 0.0057 '/'
Inlet Invert= 513.17', Outlet Invert= 503.00'

‡

Reach 74R: PD4-1



Summary for Reach 75R: PD3-2

[62] Hint: Exceeded Reach 115R OUTLET depth by 1.09' @ 12.05 hrs

Inflow Area = 47.083 ac, 0.00% Impervious, Inflow Depth = 1.80" for JMSS_25-Year event
Inflow = 87.94 cfs @ 11.99 hrs, Volume= 7.057 af
Outflow = 83.69 cfs @ 12.02 hrs, Volume= 7.057 af, Atten= 5%, Lag= 1.6 min

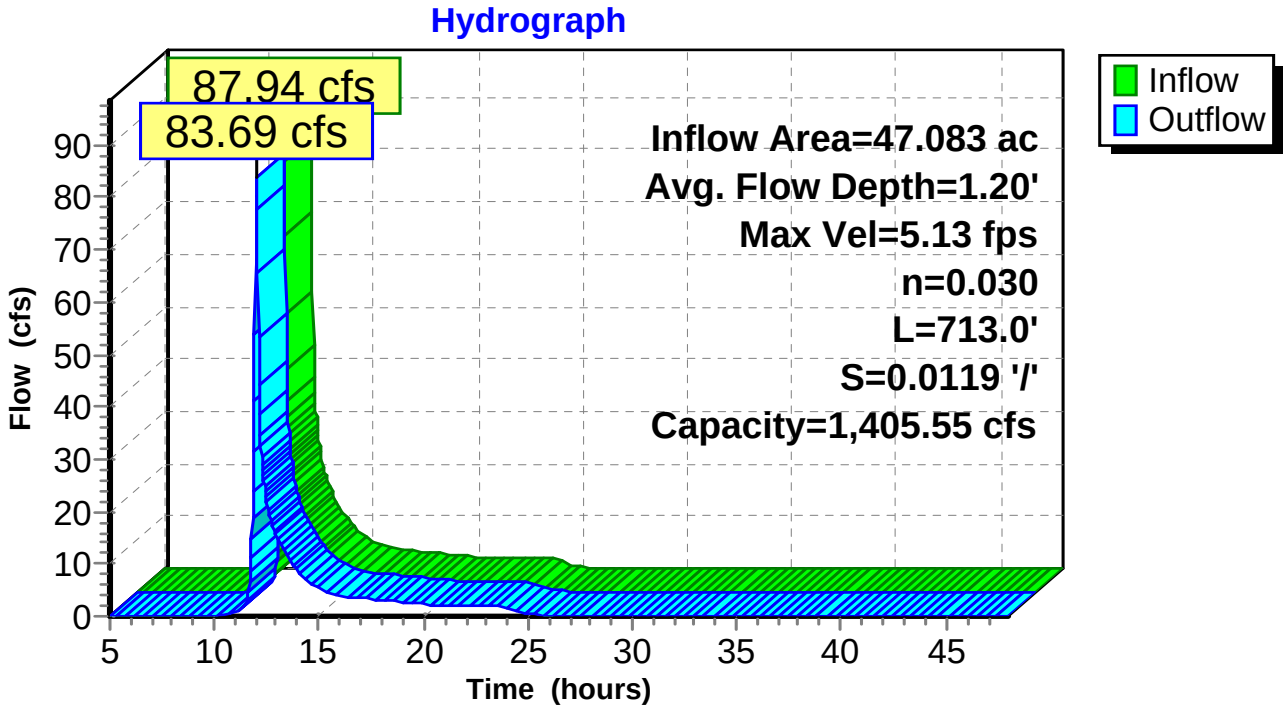
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 5.13 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 10.6 min

Peak Storage= 11,619 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.20'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 1,405.55 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 713.0' Slope= 0.0119 '/'
Inlet Invert= 529.00', Outlet Invert= 520.52'

‡

Reach 75R: PD3-2



Summary for Reach 77R: PD3-7

Inflow Area = 5.600 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 22.63 cfs @ 11.99 hrs, Volume= 1.103 af
Outflow = 18.78 cfs @ 12.04 hrs, Volume= 1.103 af, Atten= 17%, Lag= 2.9 min

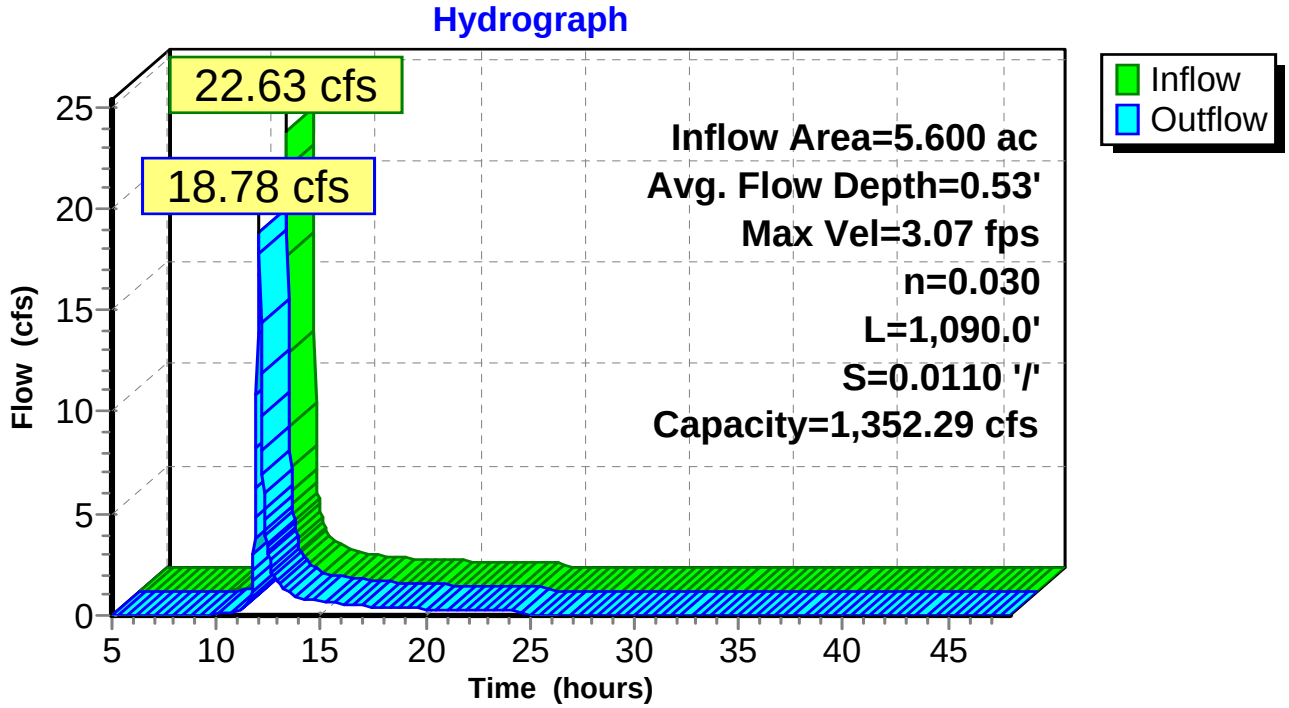
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 3.07 fps, Min. Travel Time= 5.9 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 21.6 min

Peak Storage= 6,636 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 1,352.29 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 1,090.0' Slope= 0.0110 '/'
Inlet Invert= 557.00', Outlet Invert= 545.00'

‡

Reach 77R: PD3-7



Summary for Reach 87R: PD4-2

[62] Hint: Exceeded Reach 113R OUTLET depth by 0.03' @ 12.59 hrs

Inflow Area = 21.257 ac, 0.00% Impervious, Inflow Depth = 2.08" for JMSS_25-Year event
Inflow = 41.86 cfs @ 12.08 hrs, Volume= 3.681 af
Outflow = 39.34 cfs @ 12.14 hrs, Volume= 3.681 af, Atten= 6%, Lag= 4.0 min

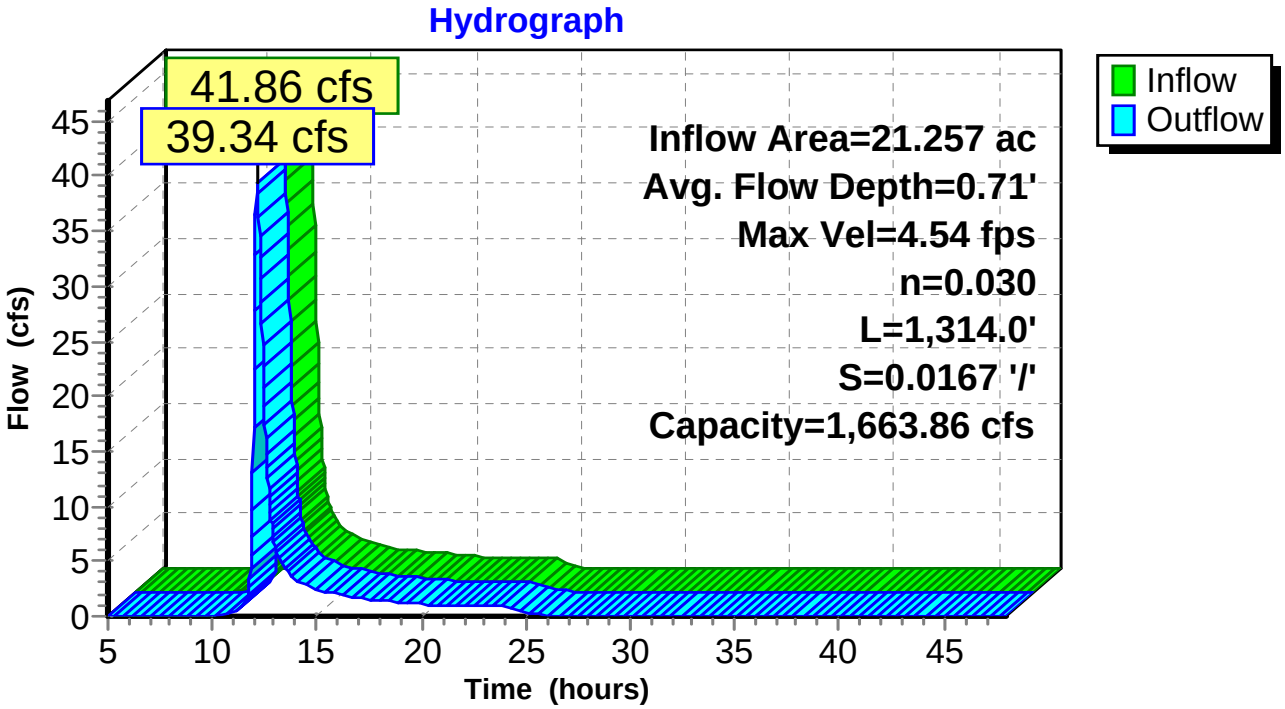
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 4.54 fps, Min. Travel Time= 4.8 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 16.3 min

Peak Storage= 11,393 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 1,663.86 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 1,314.0' Slope= 0.0167 '/'
Inlet Invert= 535.00', Outlet Invert= 513.10'

‡

Reach 87R: PD4-2



Summary for Reach 108R: PD3-6

[62] Hint: Exceeded Reach 77R OUTLET depth by 0.34' @ 12.02 hrs

Inflow Area = 13.400 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 40.24 cfs @ 12.00 hrs, Volume= 2.640 af
Outflow = 37.34 cfs @ 12.03 hrs, Volume= 2.640 af, Atten= 7%, Lag= 2.4 min

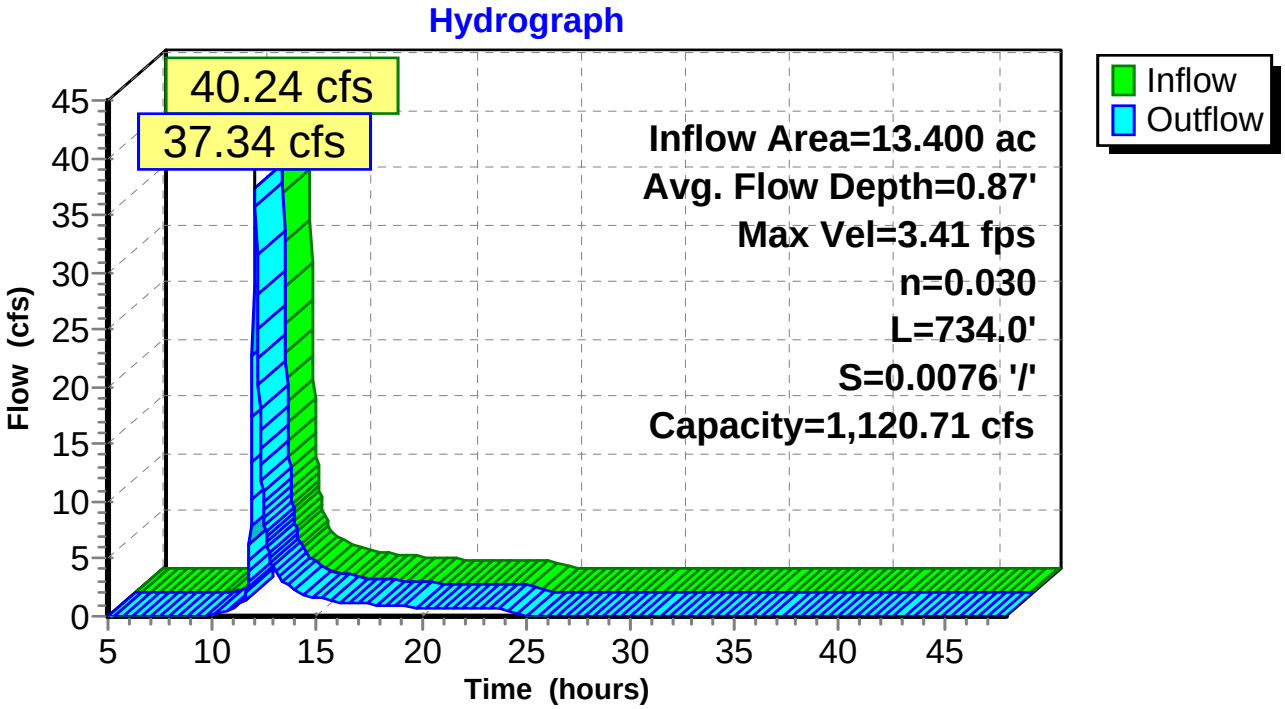
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 3.41 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.93 fps, Avg. Travel Time= 13.1 min

Peak Storage= 8,025 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.87'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 1,120.71 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 734.0' Slope= 0.0076 '/'
Inlet Invert= 545.00', Outlet Invert= 539.45'

‡

Reach 108R: PD3-6



Summary for Reach 113R: PD3-5

Inflow Area = 15.147 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 31.57 cfs @ 12.10 hrs, Volume= 2.984 af
Outflow = 31.45 cfs @ 12.12 hrs, Volume= 2.984 af, Atten= 0%, Lag= 1.3 min

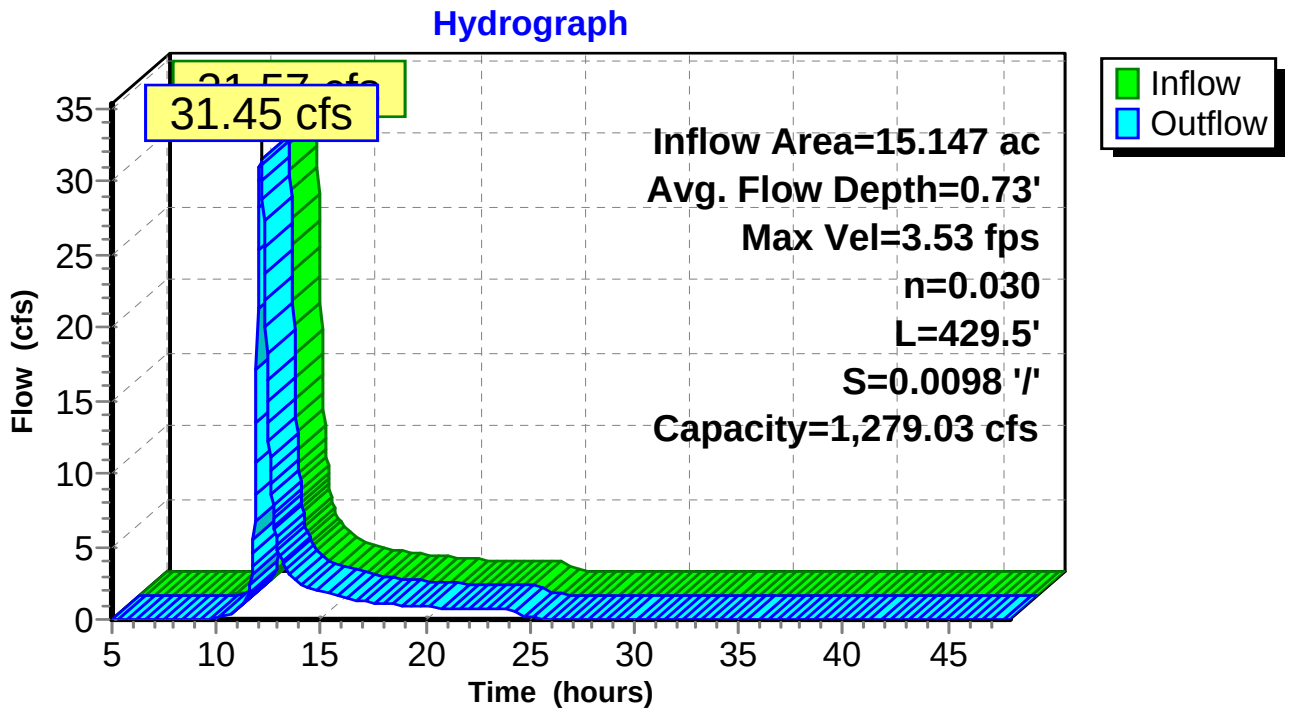
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 3.53 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.06 fps, Avg. Travel Time= 6.8 min

Peak Storage= 3,823 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 1,279.03 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 429.5' Slope= 0.0098 '/'
Inlet Invert= 539.23', Outlet Invert= 535.00'

‡

Reach 113R: PD3-5



Summary for Reach 115R: PD3-4

Inflow Area = 6.423 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 27.68 cfs @ 11.97 hrs, Volume= 1.265 af
Outflow = 26.22 cfs @ 11.99 hrs, Volume= 1.265 af, Atten= 5%, Lag= 1.4 min

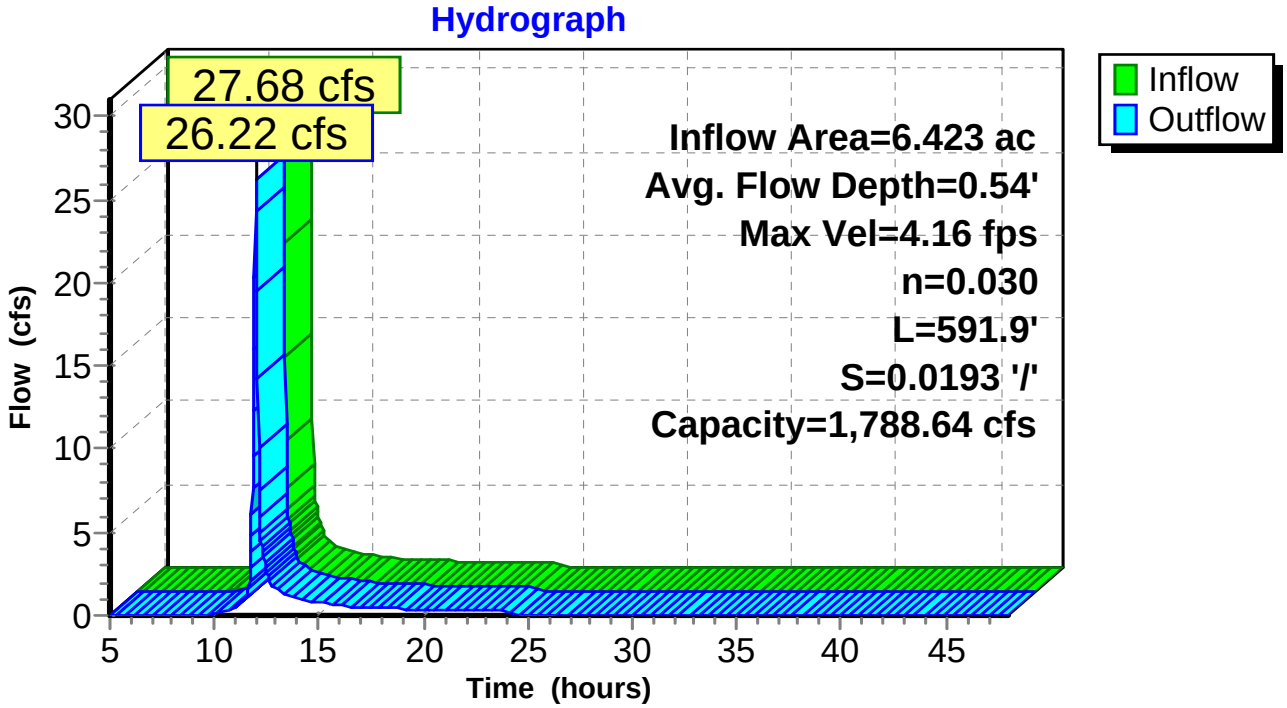
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Max. Velocity= 4.16 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 9.0 min

Peak Storage= 3,734 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 5.00' Flow Area= 125.0 sf, Capacity= 1,788.64 cfs

10.00' x 5.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 40.00'
Length= 591.9' Slope= 0.0193 '/'
Inlet Invert= 540.00', Outlet Invert= 528.60'

‡

Reach 115R: PD3-4



Summary for Pond 2P: LD1-3

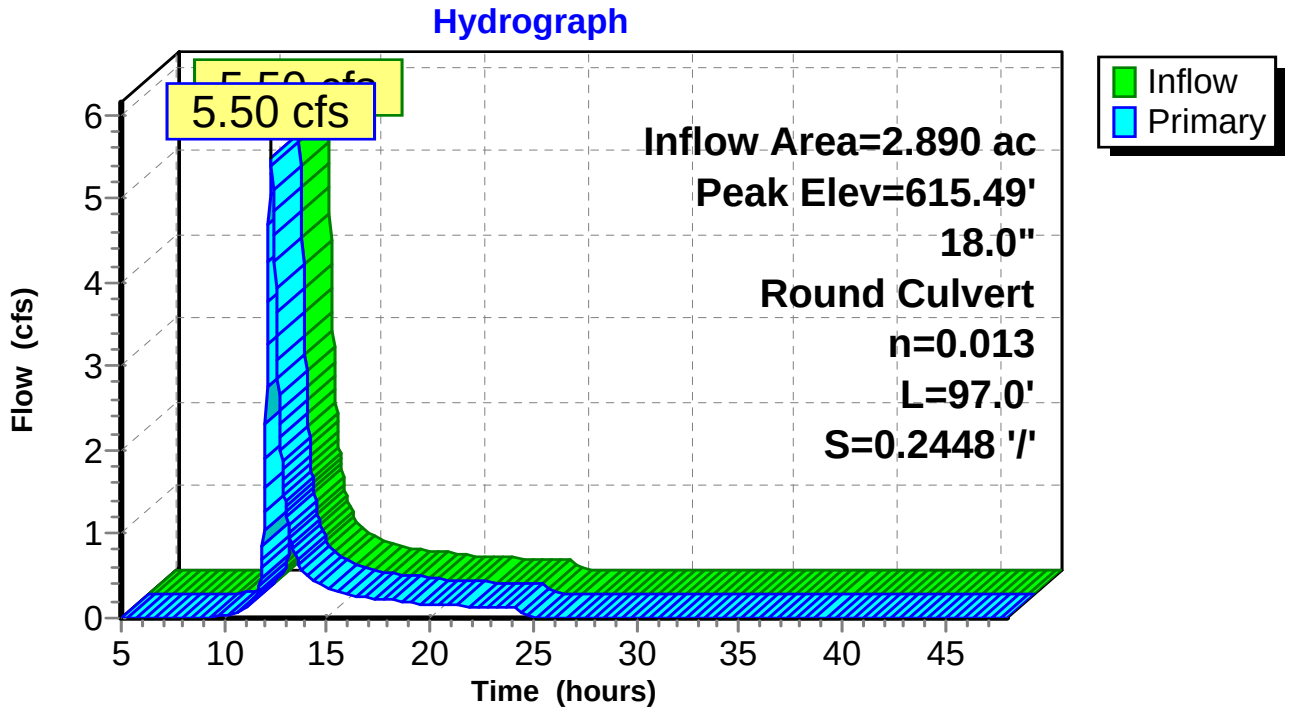
Inflow Area = 2.890 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 5.50 cfs @ 12.29 hrs, Volume= 0.569 af
Outflow = 5.50 cfs @ 12.29 hrs, Volume= 0.569 af, Atten= 0%, Lag= 0.0 min
Primary = 5.50 cfs @ 12.29 hrs, Volume= 0.569 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 615.49' @ 12.29 hrs
Flood Elev= 617.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	614.31'	**18.0" Round Culvert** L= 97.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 614.31' / 590.56' S= 0.2448 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.49 cfs @ 12.29 hrs HW=615.49' TW=591.85' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.49 cfs @ 3.69 fps)

Pond 2P: LD1-3



Summary for Pond 3P: LD1-2

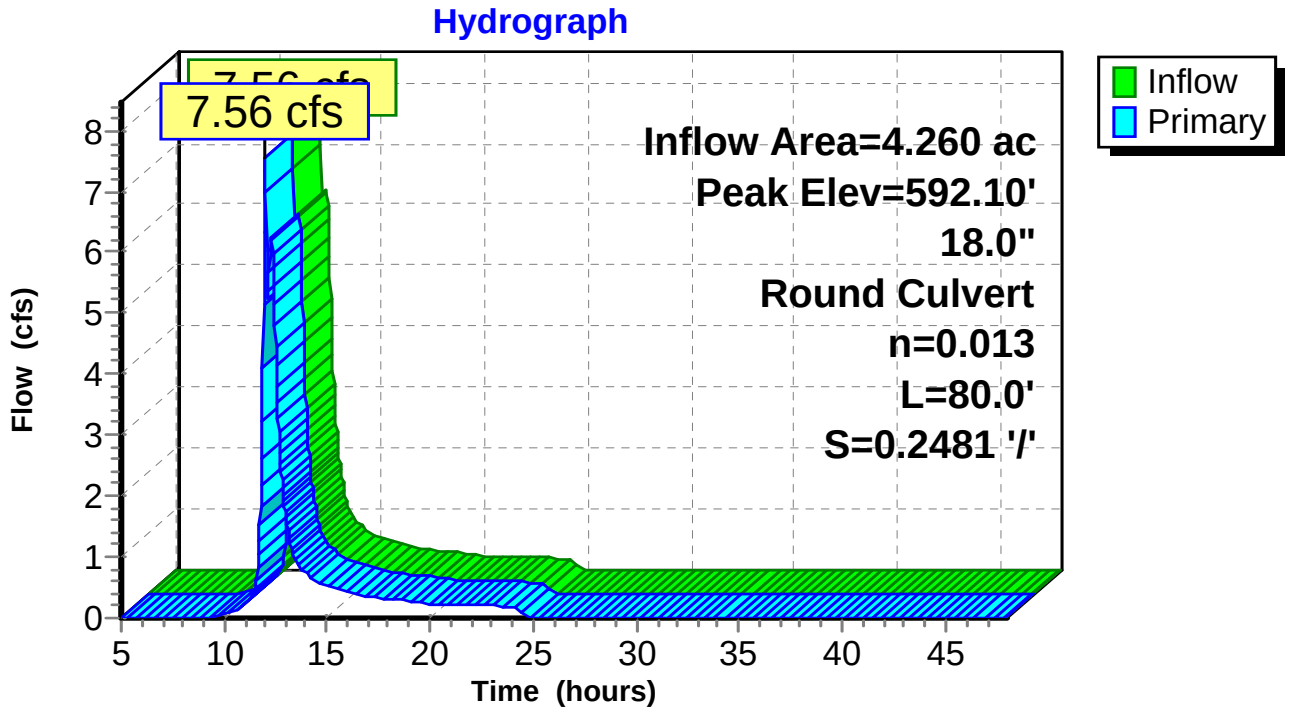
Inflow Area = 4.260 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 7.56 cfs @ 11.98 hrs, Volume= 0.839 af
Outflow = 7.56 cfs @ 11.98 hrs, Volume= 0.839 af, Atten= 0%, Lag= 0.0 min
Primary = 7.56 cfs @ 11.98 hrs, Volume= 0.839 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 592.10' @ 11.98 hrs
Flood Elev= 594.72'

Device	Routing	Invert	Outlet Devices
#1	Primary	590.56'	**18.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 590.56' / 570.71' S= 0.2481 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.48 cfs @ 11.98 hrs HW=592.08' TW=573.57' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.48 cfs @ 4.24 fps)

Pond 3P: LD1-2



Summary for Pond 4P: LD1-1

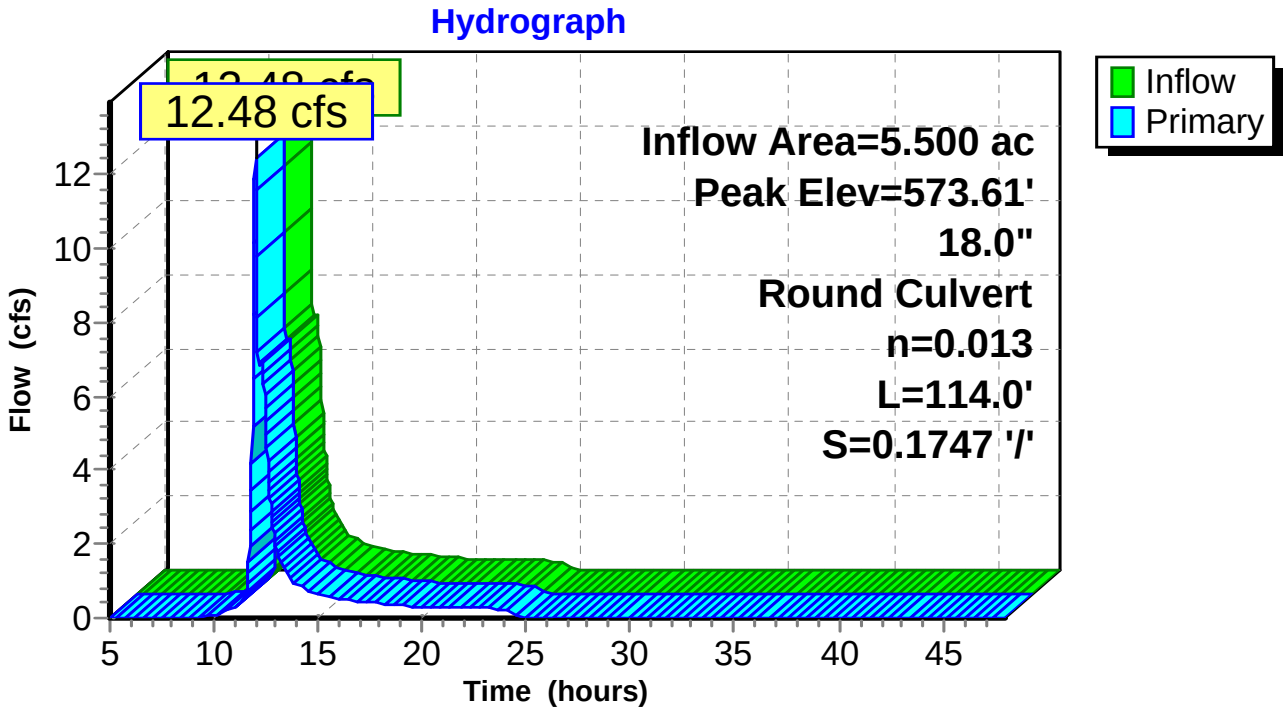
Inflow Area = 5.500 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 12.48 cfs @ 11.99 hrs, Volume= 1.084 af
Outflow = 12.48 cfs @ 11.99 hrs, Volume= 1.084 af, Atten= 0%, Lag= 0.0 min
Primary = 12.48 cfs @ 11.99 hrs, Volume= 1.084 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 573.61' @ 11.99 hrs
Flood Elev= 574.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	570.71'	**18.0" Round Culvert** L= 114.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 570.71' / 550.79' S= 0.1747 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=12.42 cfs @ 11.99 hrs HW=573.59' TW=554.80' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.42 cfs @ 7.03 fps)

Pond 4P: LD1-1



Summary for Pond 12P: LD2-1

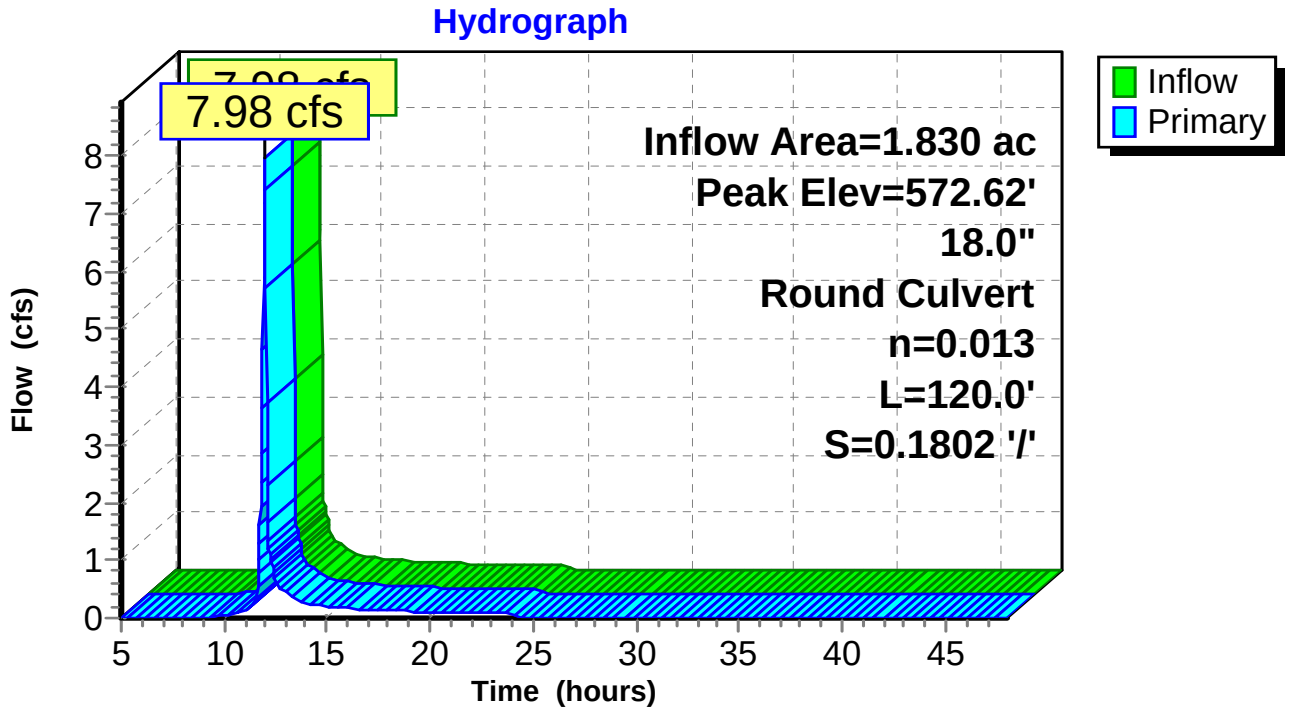
Inflow Area = 1.830 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 7.98 cfs @ 11.96 hrs, Volume= 0.361 af
Outflow = 7.98 cfs @ 11.96 hrs, Volume= 0.361 af, Atten= 0%, Lag= 0.0 min
Primary = 7.98 cfs @ 11.96 hrs, Volume= 0.361 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 572.62' @ 11.96 hrs
Flood Elev= 575.71'

Device	Routing	Invert	Outlet Devices
#1	Primary	570.99'	**18.0" Round Culvert** L= 120.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 570.99' / 549.37' S= 0.1802 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.93 cfs @ 11.96 hrs HW=572.61' TW=551.87' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.93 cfs @ 4.49 fps)

Pond 12P: LD2-1



Summary for Pond 13P: LD2-2

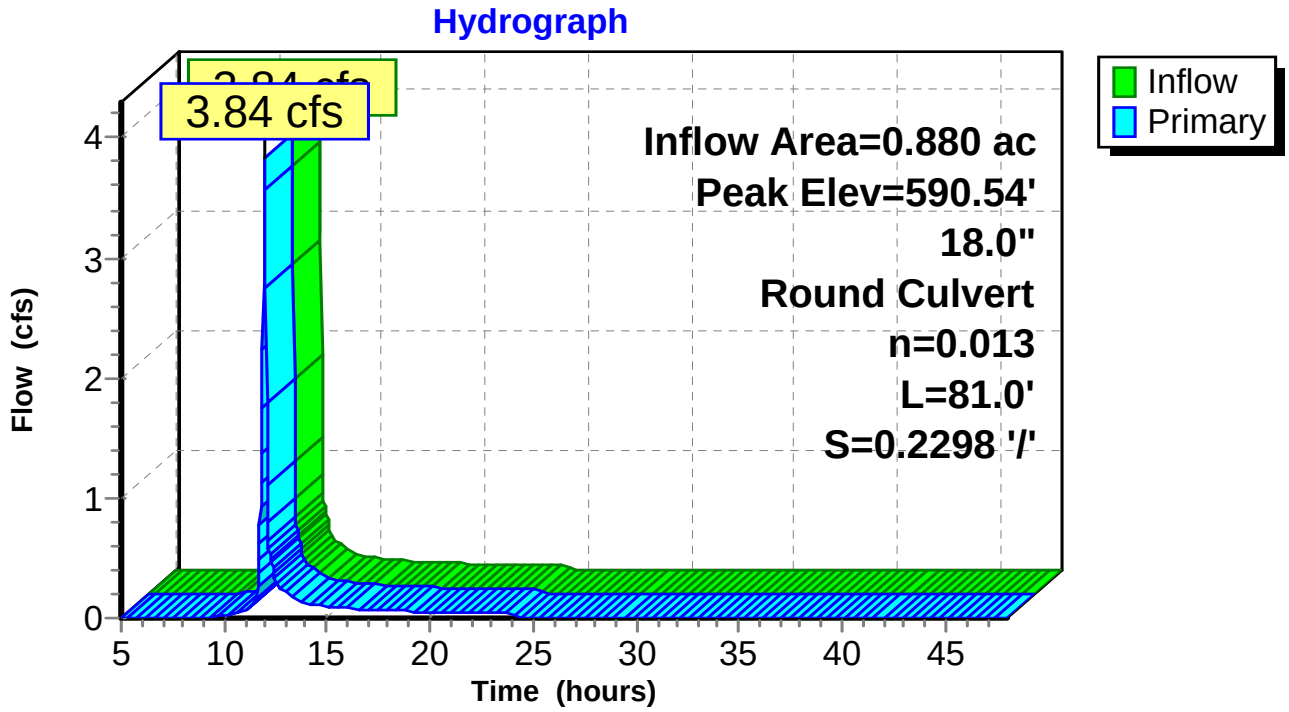
Inflow Area = 0.880 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 3.84 cfs @ 11.96 hrs, Volume= 0.173 af
Outflow = 3.84 cfs @ 11.96 hrs, Volume= 0.173 af, Atten= 0%, Lag= 0.0 min
Primary = 3.84 cfs @ 11.96 hrs, Volume= 0.173 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 590.54' @ 11.96 hrs
Flood Elev= 595.08'

Device	Routing	Invert	Outlet Devices
#1	Primary	589.60'	**18.0" Round Culvert** L= 81.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 589.60' / 570.99' S= 0.2298 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.81 cfs @ 11.96 hrs HW=590.54' TW=572.61' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.81 cfs @ 3.29 fps)

Pond 13P: LD2-2



Summary for Pond 14P: LD2-3

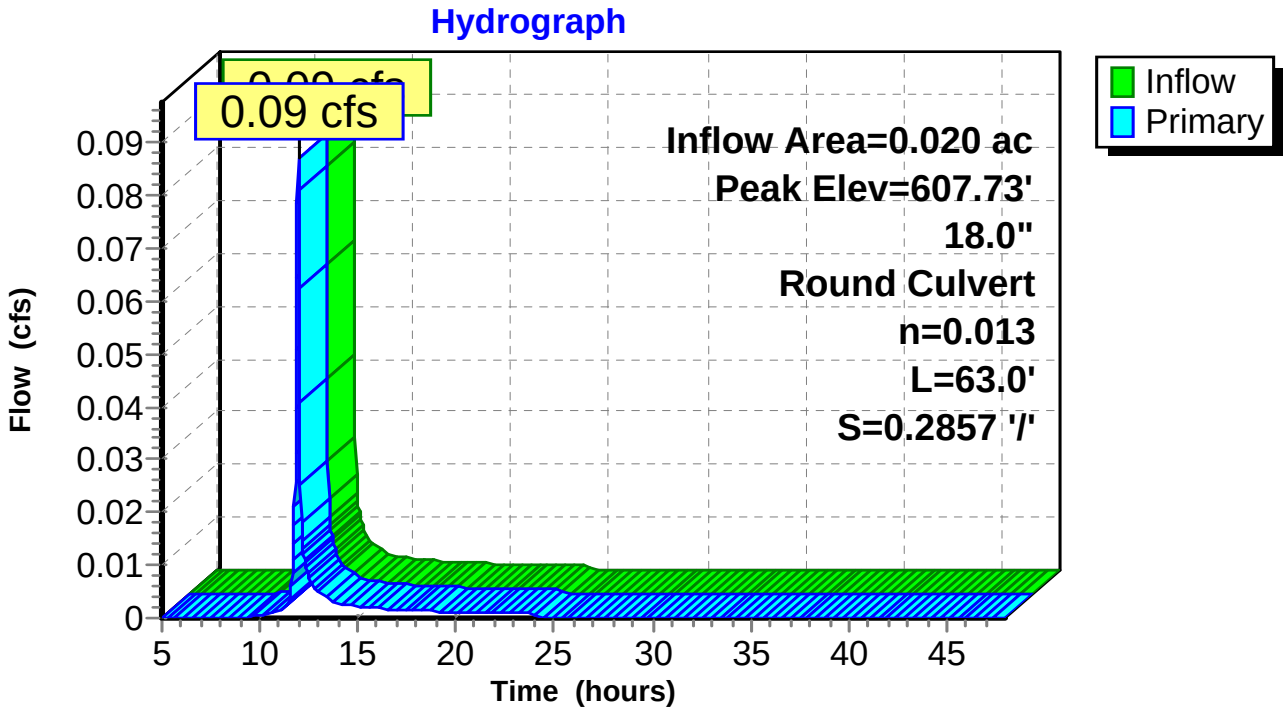
Inflow Area =	0.020 ac,	0.00% Impervious,	Inflow Depth =	2.36"	for JMSS_25-Year event
Inflow =	0.09 cfs @	11.96 hrs,	Volume=	0.004 af	
Outflow =	0.09 cfs @	11.96 hrs,	Volume=	0.004 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.09 cfs @	11.96 hrs,	Volume=	0.004 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 607.73' @ 11.96 hrs
Flood Elev= 609.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	607.60'	**18.0" Round Culvert** L= 63.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 607.60' / 589.60' S= 0.2857 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.09 cfs @ 11.96 hrs HW=607.73' TW=590.54' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.09 cfs @ 1.21 fps)

Pond 14P: LD2-3



Summary for Pond 23P: LD3-1

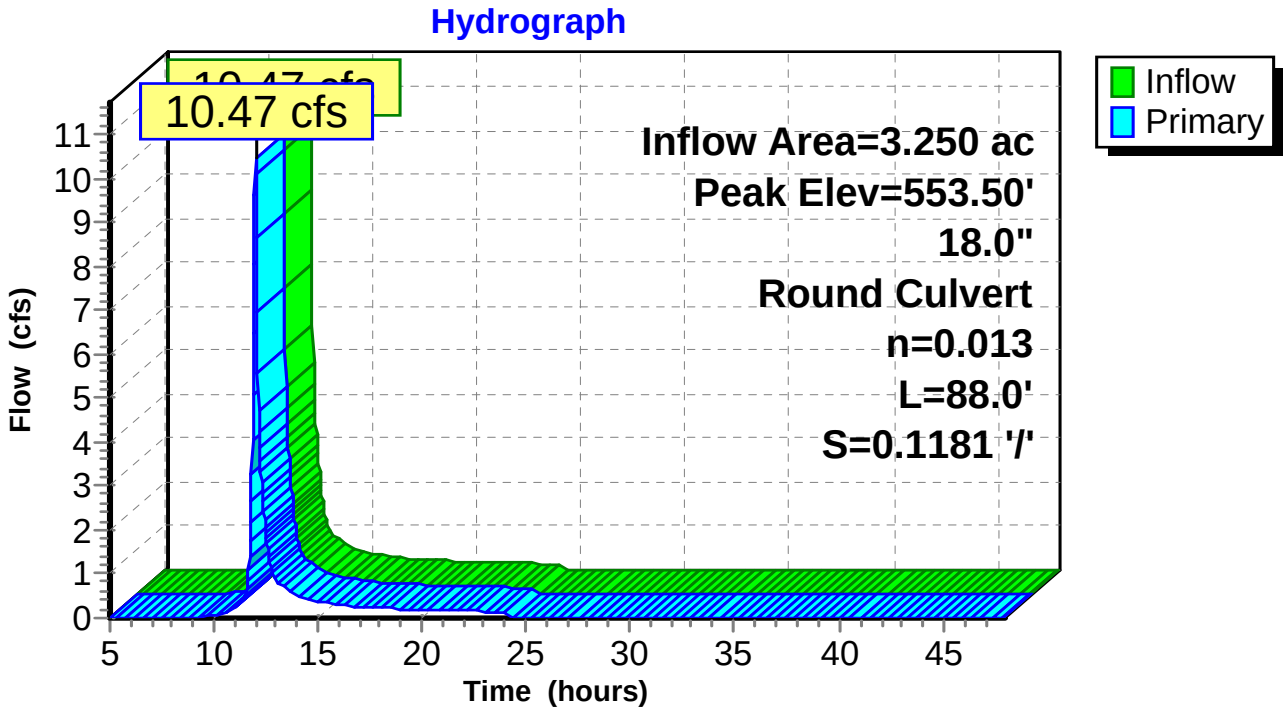
Inflow Area = 3.250 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 10.47 cfs @ 12.00 hrs, Volume= 0.640 af
Outflow = 10.47 cfs @ 12.00 hrs, Volume= 0.640 af, Atten= 0%, Lag= 0.0 min
Primary = 10.47 cfs @ 12.00 hrs, Volume= 0.640 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 553.50' @ 12.00 hrs
Flood Elev= 555.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	551.24'	**18.0" Round Culvert** L= 88.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 551.24' / 540.85' S= 0.1181 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=10.38 cfs @ 12.00 hrs HW=553.48' TW=541.24' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 10.38 cfs @ 5.87 fps)

Pond 23P: LD3-1



Summary for Pond 24P: LD3-2

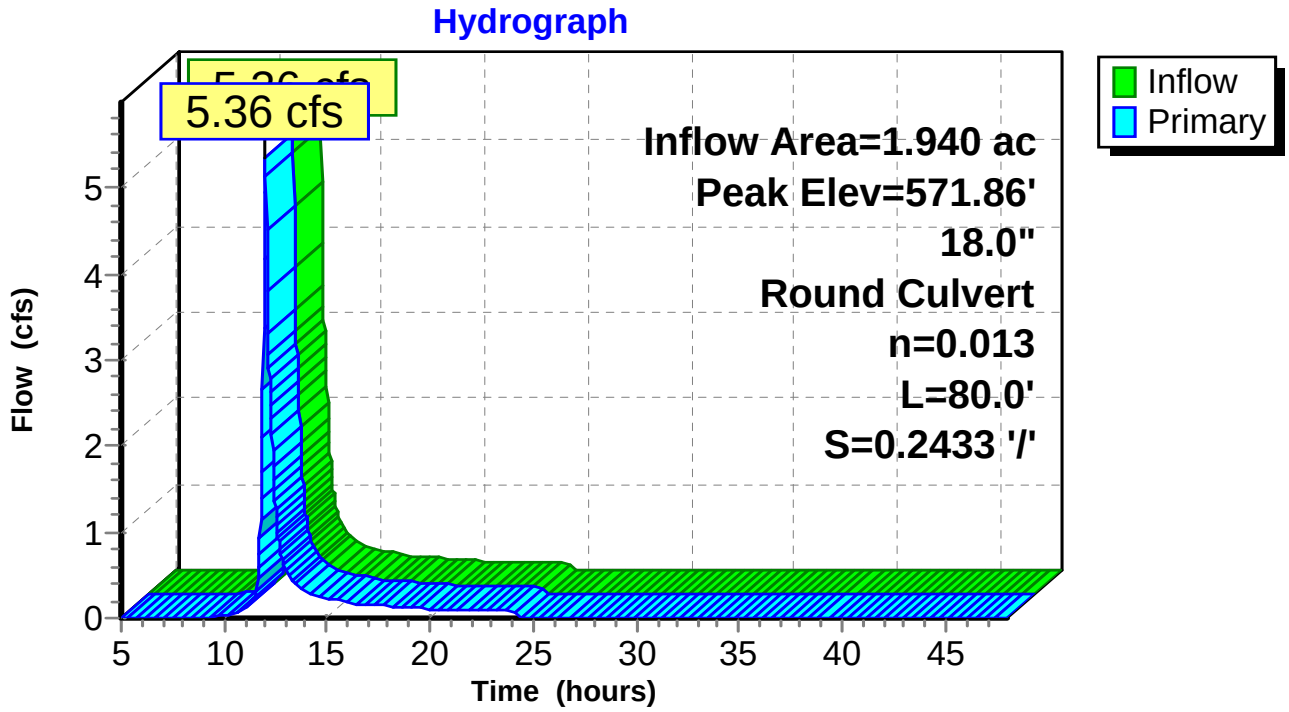
Inflow Area =	1.940 ac,	0.00% Impervious,	Inflow Depth =	2.36"	for JMSS_25-Year event
Inflow =	5.36 cfs @	11.99 hrs,	Volume=	0.382 af	
Outflow =	5.36 cfs @	11.99 hrs,	Volume=	0.382 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.36 cfs @	11.99 hrs,	Volume=	0.382 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 571.86' @ 11.99 hrs
Flood Elev= 574.52'

Device	Routing	Invert	Outlet Devices
#1	Primary	570.70'	**18.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 570.70' / 551.24' S= 0.2433 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.32 cfs @ 11.99 hrs HW=571.85' TW=553.48' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.32 cfs @ 3.65 fps)

Pond 24P: LD3-2



Summary for Pond 25P: LD3-3

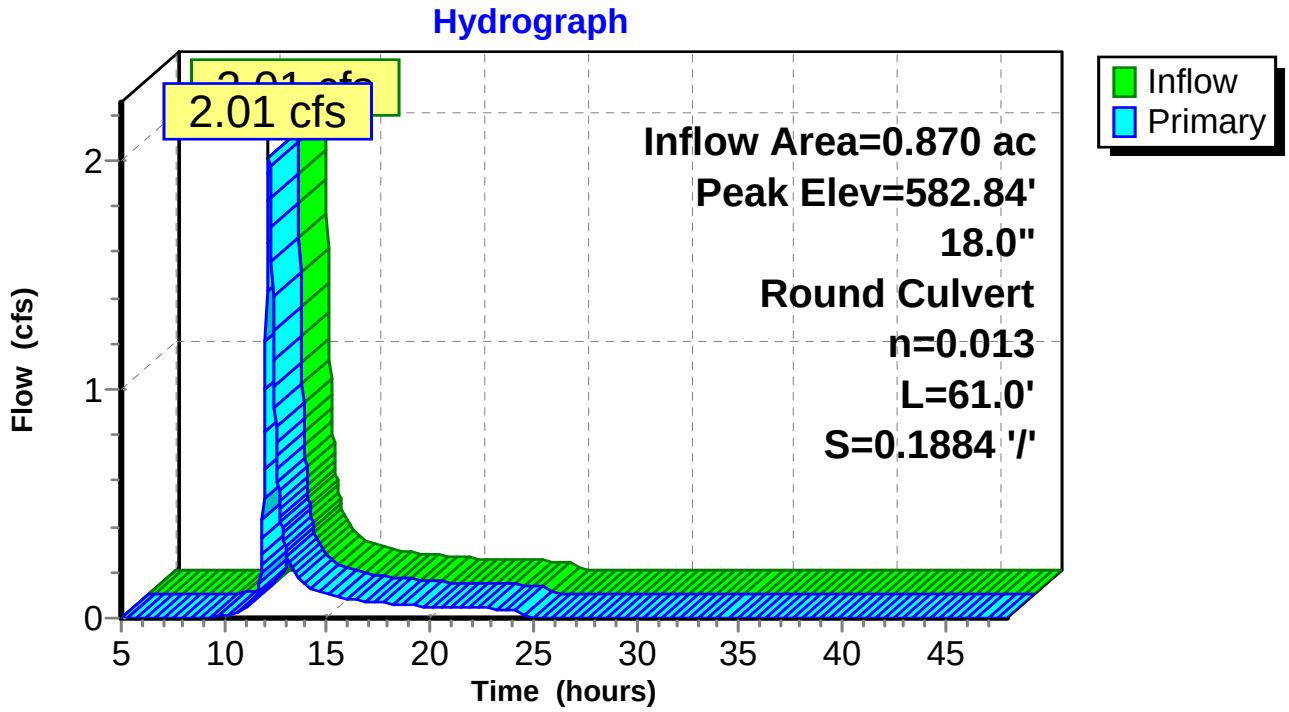
Inflow Area = 0.870 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 2.01 cfs @ 12.18 hrs, Volume= 0.171 af
Outflow = 2.01 cfs @ 12.18 hrs, Volume= 0.171 af, Atten= 0%, Lag= 0.0 min
Primary = 2.01 cfs @ 12.18 hrs, Volume= 0.171 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 582.84' @ 12.18 hrs
Flood Elev= 584.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	582.19'	**18.0" Round Culvert** L= 61.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.19' / 570.70' S= 0.1884 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.00 cfs @ 12.18 hrs HW=582.84' TW=571.49' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.00 cfs @ 2.74 fps)

Pond 25P: LD3-3



Summary for Pond 33P: LD4-1

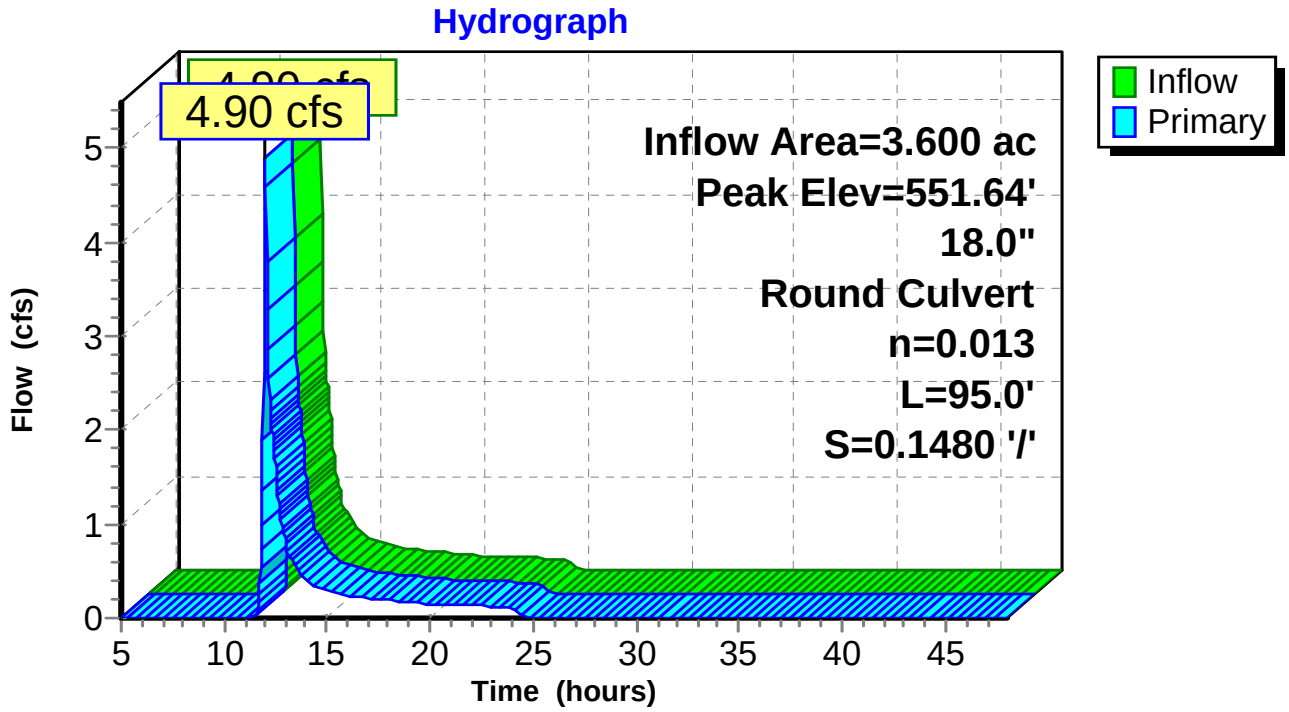
Inflow Area =	3.600 ac,	0.00% Impervious,	Inflow Depth =	1.37"	for JMSS_25-Year event
Inflow =	4.90 cfs @	12.00 hrs,	Volume=	0.411 af	
Outflow =	4.90 cfs @	12.00 hrs,	Volume=	0.411 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.90 cfs @	12.00 hrs,	Volume=	0.411 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 551.64' @ 12.00 hrs
Flood Elev= 554.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	550.45'	**18.0" Round Culvert** L= 95.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 550.45' / 536.39' S= 0.1480 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.84 cfs @ 12.00 hrs HW=551.63' TW=537.83' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.84 cfs @ 3.26 fps)

Pond 33P: LD4-1



Summary for Pond 34P: LD4-2

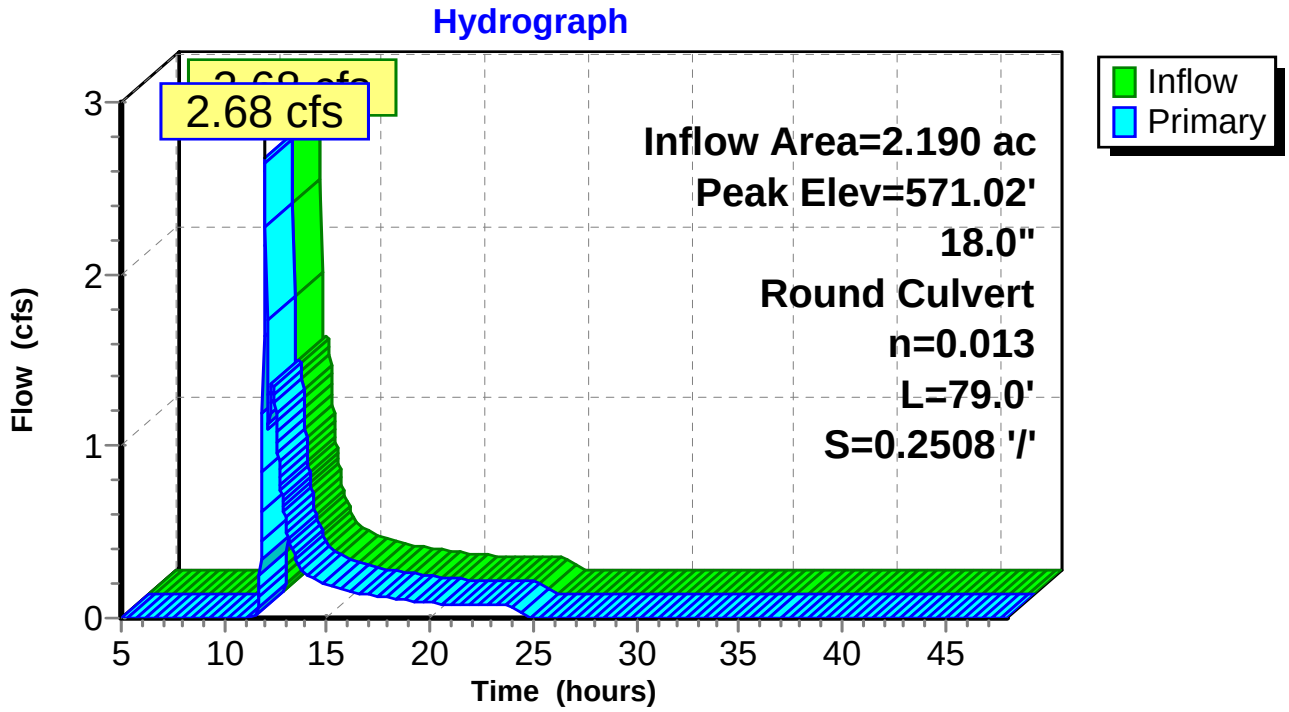
Inflow Area = 2.190 ac, 0.00% Impervious, Inflow Depth = 1.37" for JMSS_25-Year event
Inflow = 2.68 cfs @ 11.98 hrs, Volume= 0.250 af
Outflow = 2.68 cfs @ 11.98 hrs, Volume= 0.250 af, Atten= 0%, Lag= 0.0 min
Primary = 2.68 cfs @ 11.98 hrs, Volume= 0.250 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 571.02' @ 11.98 hrs
Flood Elev= 574.64'

Device	Routing	Invert	Outlet Devices
#1	Primary	570.26'	**18.0" Round Culvert** L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 570.26' / 550.45' S= 0.2508 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.63 cfs @ 11.98 hrs HW=571.01' TW=551.60' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.63 cfs @ 2.96 fps)

Pond 34P: LD4-2



Summary for Pond 35P: LD4-3

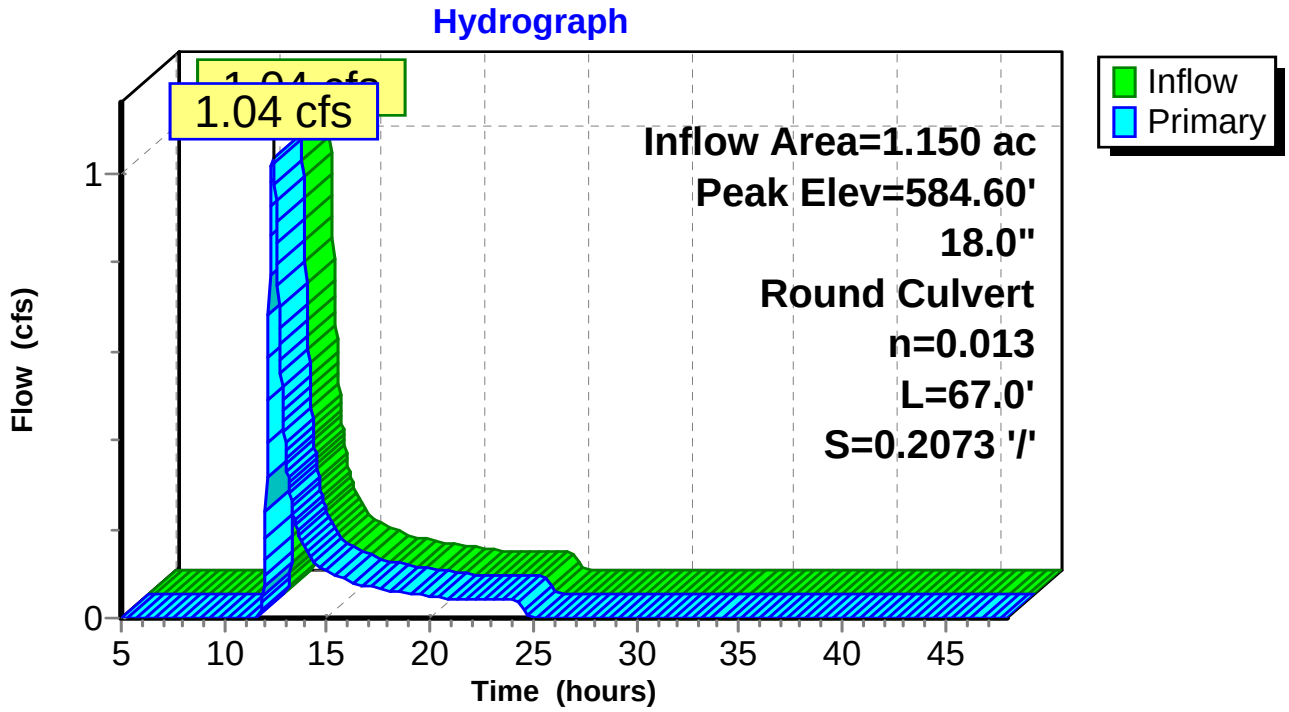
Inflow Area = 1.150 ac, 0.00% Impervious, Inflow Depth = 1.37" for JMSS_25-Year event
Inflow = 1.04 cfs @ 12.37 hrs, Volume= 0.131 af
Outflow = 1.04 cfs @ 12.37 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.04 cfs @ 12.37 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 584.60' @ 12.37 hrs
Flood Elev= 586.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	584.15'	**18.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 584.15' / 570.26' S= 0.2073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.03 cfs @ 12.37 hrs HW=584.60' TW=570.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.03 cfs @ 2.29 fps)

Pond 35P: LD4-3



Summary for Pond 41P: LD5-1

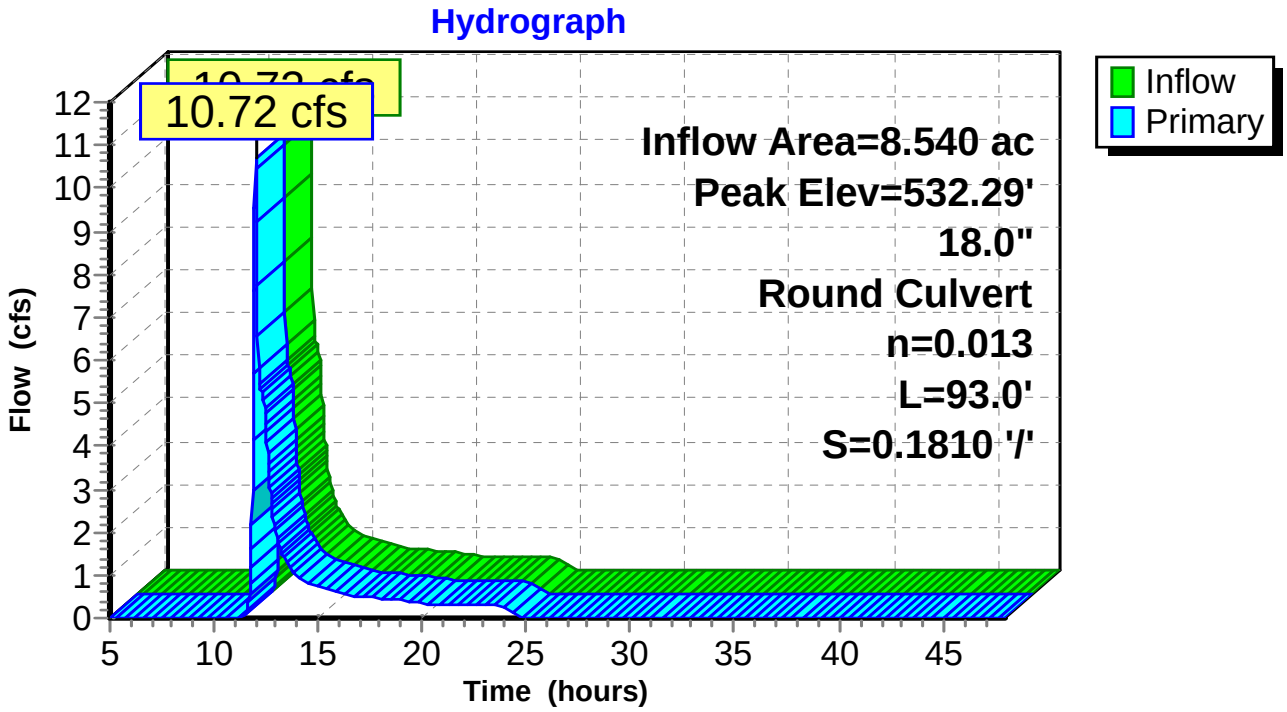
Inflow Area = 8.540 ac, 0.00% Impervious, Inflow Depth = 1.37" for JMSS_25-Year event
Inflow = 10.72 cfs @ 12.00 hrs, Volume= 0.974 af
Outflow = 10.72 cfs @ 12.00 hrs, Volume= 0.974 af, Atten= 0%, Lag= 0.0 min
Primary = 10.72 cfs @ 12.00 hrs, Volume= 0.974 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 532.29' @ 12.00 hrs
Flood Elev= 533.99'

Device	Routing	Invert	Outlet Devices
#1	Primary	529.95'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 529.95' / 513.12' S= 0.1810 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=10.57 cfs @ 12.00 hrs HW=532.24' TW=513.38' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 10.57 cfs @ 5.98 fps)

Pond 41P: LD5-1



Summary for Pond 42P: LD5-2

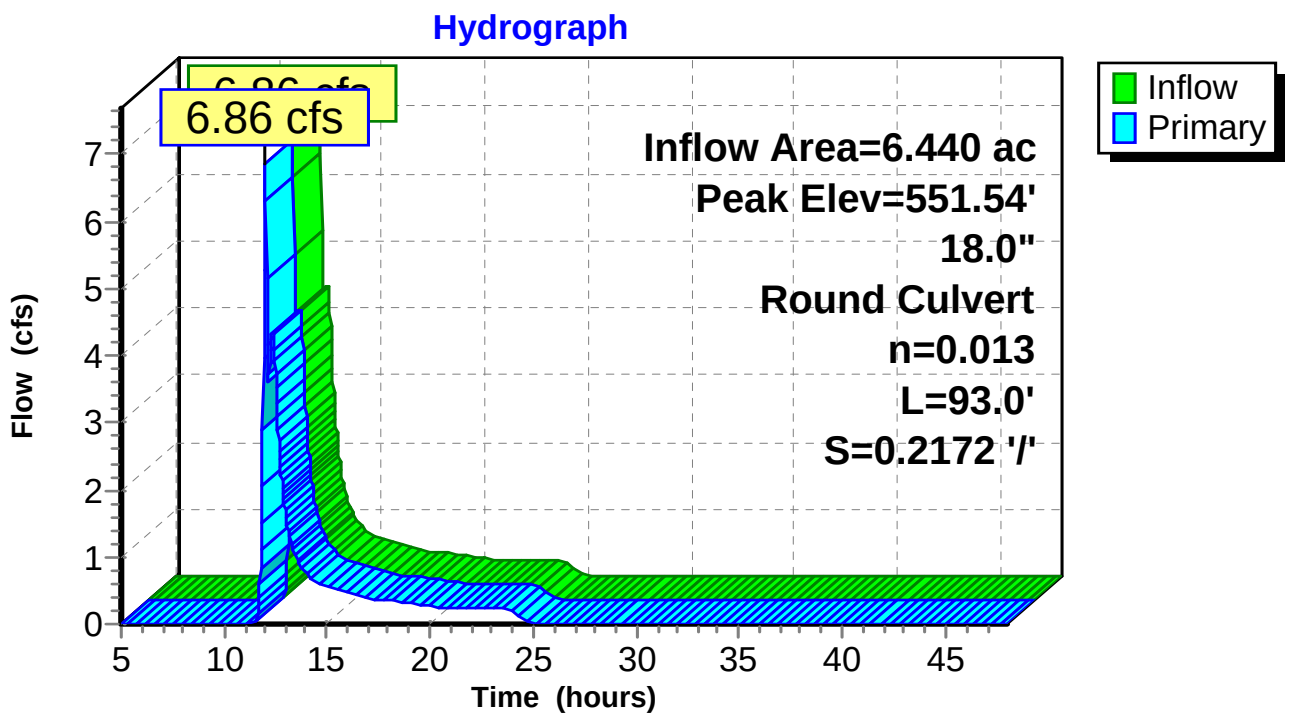
Inflow Area = 6.440 ac, 0.00% Impervious, Inflow Depth = 1.37" for JMSS_25-Year event
Inflow = 6.86 cfs @ 11.99 hrs, Volume= 0.735 af
Outflow = 6.86 cfs @ 11.99 hrs, Volume= 0.735 af, Atten= 0%, Lag= 0.0 min
Primary = 6.86 cfs @ 11.99 hrs, Volume= 0.735 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 551.54' @ 11.99 hrs
Flood Elev= 554.87'

Device	Routing	Invert	Outlet Devices
#1	Primary	550.15'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 550.15' / 529.95' S= 0.2172 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.83 cfs @ 11.99 hrs HW=551.53' TW=532.24' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.83 cfs @ 4.01 fps)

Pond 42P: LD5-2



Summary for Pond 43P: LD5-3

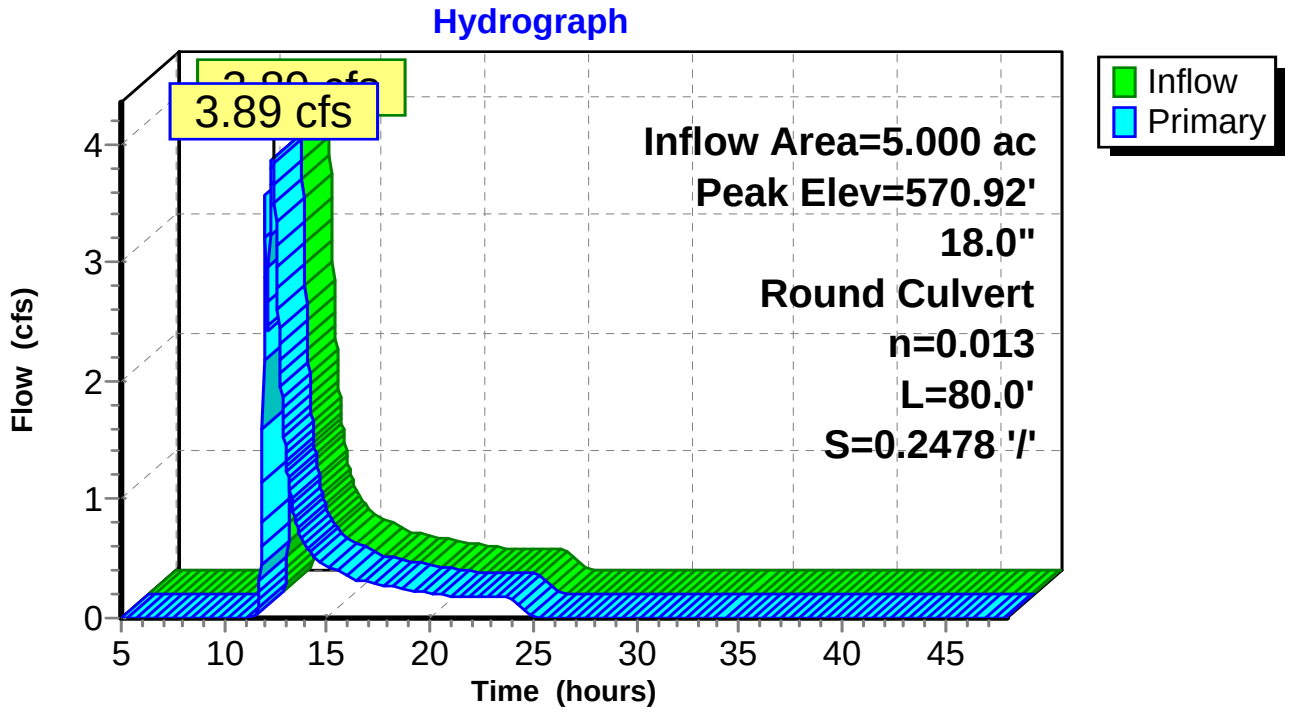
Inflow Area =	5.000 ac,	0.00% Impervious,	Inflow Depth =	1.37"	for JMSS_25-Year event
Inflow =	3.89 cfs @	12.35 hrs,	Volume=	0.570 af	
Outflow =	3.89 cfs @	12.35 hrs,	Volume=	0.570 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.89 cfs @	12.35 hrs,	Volume=	0.570 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 570.92' @ 12.35 hrs
Flood Elev= 574.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	569.97'	**18.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 569.97' / 550.15' S= 0.2478 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.89 cfs @ 12.35 hrs HW=570.92' TW=551.17' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.89 cfs @ 3.31 fps)

Pond 43P: LD5-3



Summary for Pond 44P: LD5-4

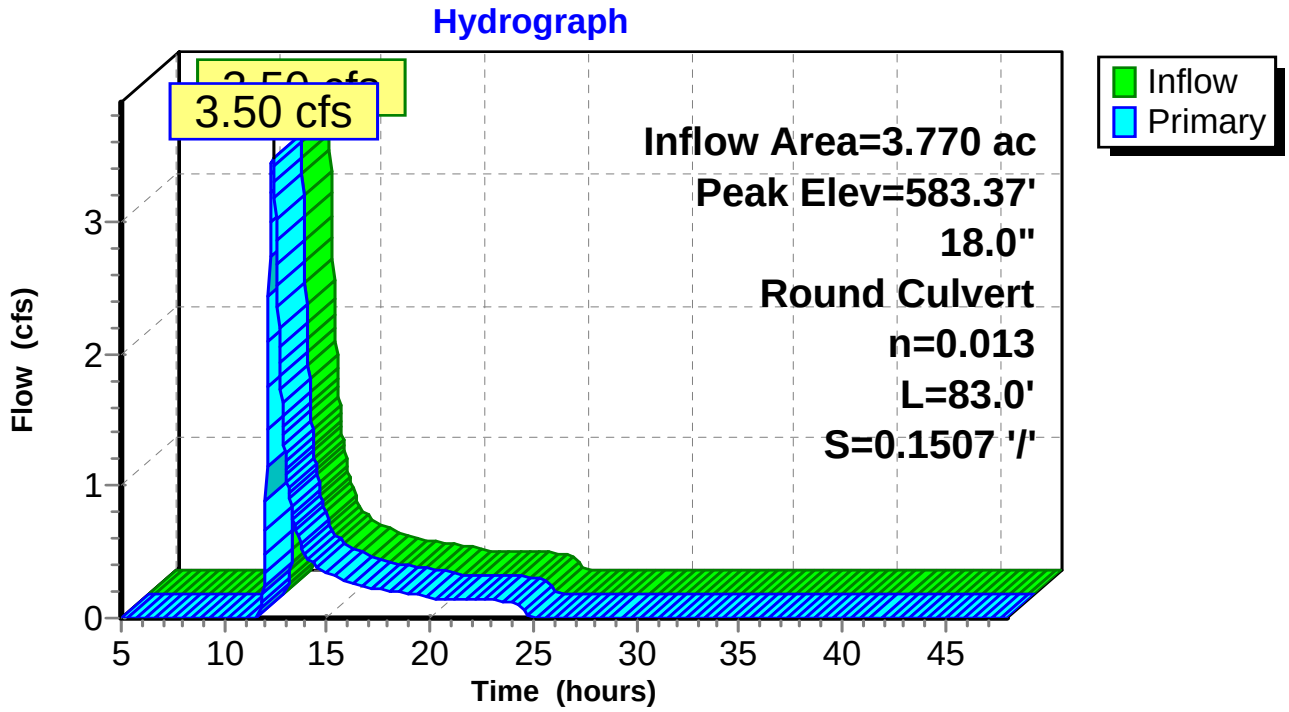
Inflow Area = 3.770 ac, 0.00% Impervious, Inflow Depth = 1.37" for JMSS_25-Year event
Inflow = 3.50 cfs @ 12.35 hrs, Volume= 0.430 af
Outflow = 3.50 cfs @ 12.35 hrs, Volume= 0.430 af, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.35 hrs, Volume= 0.430 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 583.37' @ 12.35 hrs
Flood Elev= 584.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	582.48'	**18.0" Round Culvert** L= 83.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.48' / 569.97' S= 0.1507 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.50 cfs @ 12.35 hrs HW=583.37' TW=570.92' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.50 cfs @ 3.21 fps)

Pond 44P: LD5-4



Summary for Pond 55P: LD6-1

Inflow Area =	42.060 ac,	0.00% Impervious,	Inflow Depth =	2.34"	for JMSS_25-Year event
Inflow =	34.79 cfs @	12.40 hrs,	Volume=	8.203 af	
Outflow =	34.79 cfs @	12.40 hrs,	Volume=	8.203 af,	Atten= 0%, Lag= 0.0 min
Primary =	34.79 cfs @	12.40 hrs,	Volume=	8.203 af	
Secondary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

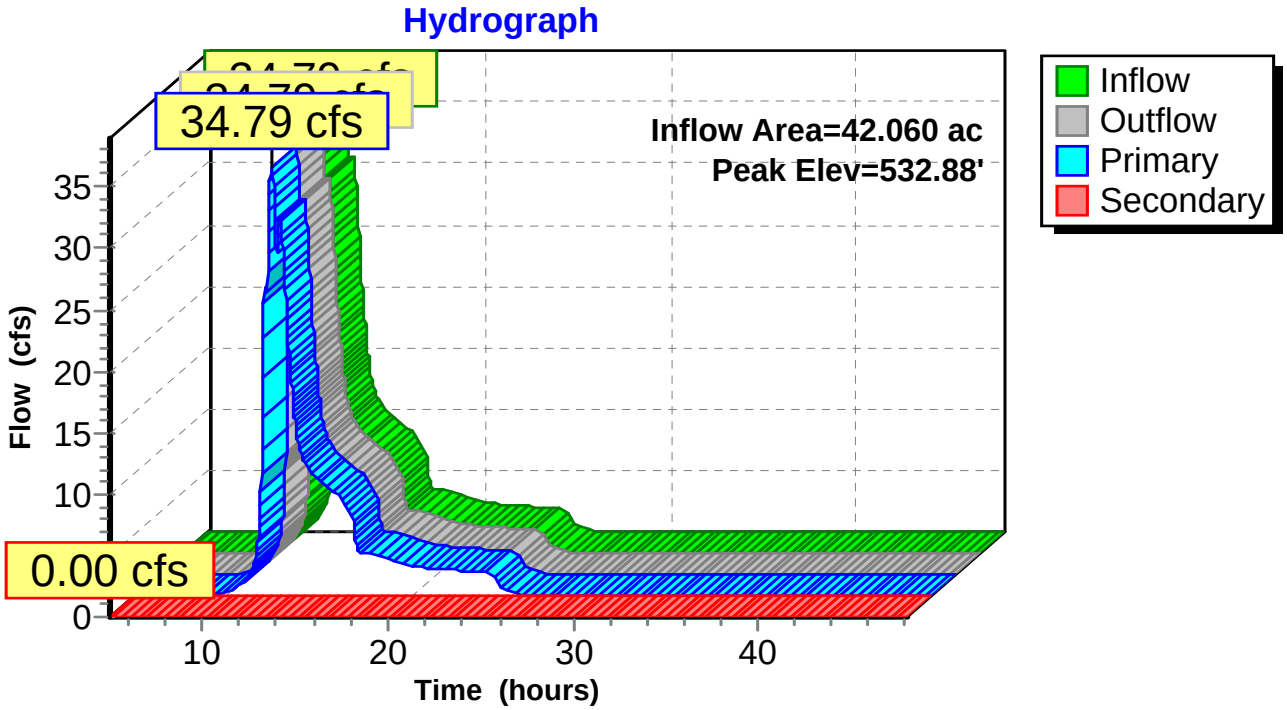
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 532.88' @ 12.40 hrs
Flood Elev= 534.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	526.59'	**24.0" Round Culvert** L= 98.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 526.59' / 507.15' S= 0.1984 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	534.17'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=34.75 cfs @ 12.40 hrs HW=532.87' TW=509.24' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 34.75 cfs @ 11.06 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=526.59' TW=507.30' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 55P: LD6-1



Summary for Pond 56P: LD6-2

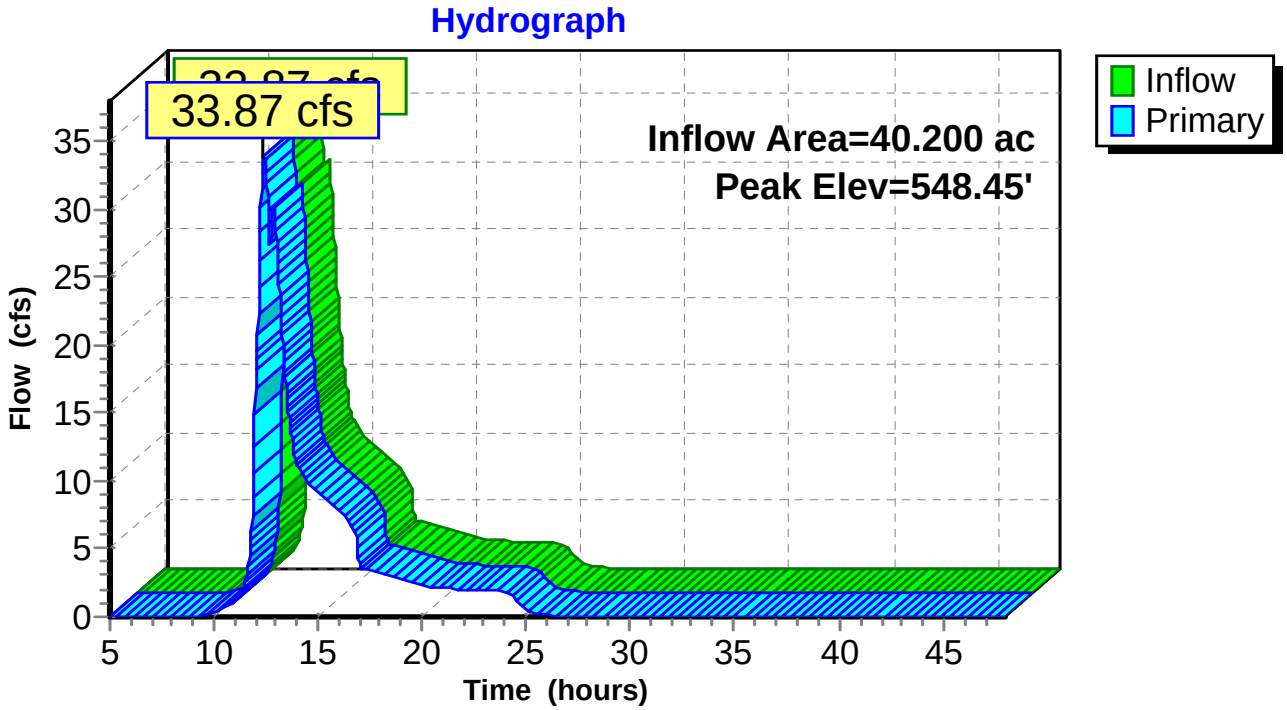
Inflow Area = 40.200 ac, 0.00% Impervious, Inflow Depth = 2.34" for JMSS_25-Year event
Inflow = 33.87 cfs @ 12.41 hrs, Volume= 7.837 af
Outflow = 33.87 cfs @ 12.41 hrs, Volume= 7.837 af, Atten= 0%, Lag= 0.0 min
Primary = 33.87 cfs @ 12.41 hrs, Volume= 7.837 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 548.45' @ 12.41 hrs
Flood Elev= 553.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	542.44'	**24.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 542.44' / 526.59' S= 0.1981 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	553.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=33.84 cfs @ 12.41 hrs HW=548.45' TW=532.87' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 33.84 cfs @ 10.77 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 56P: LD6-2



Summary for Pond 57P: LD6-3

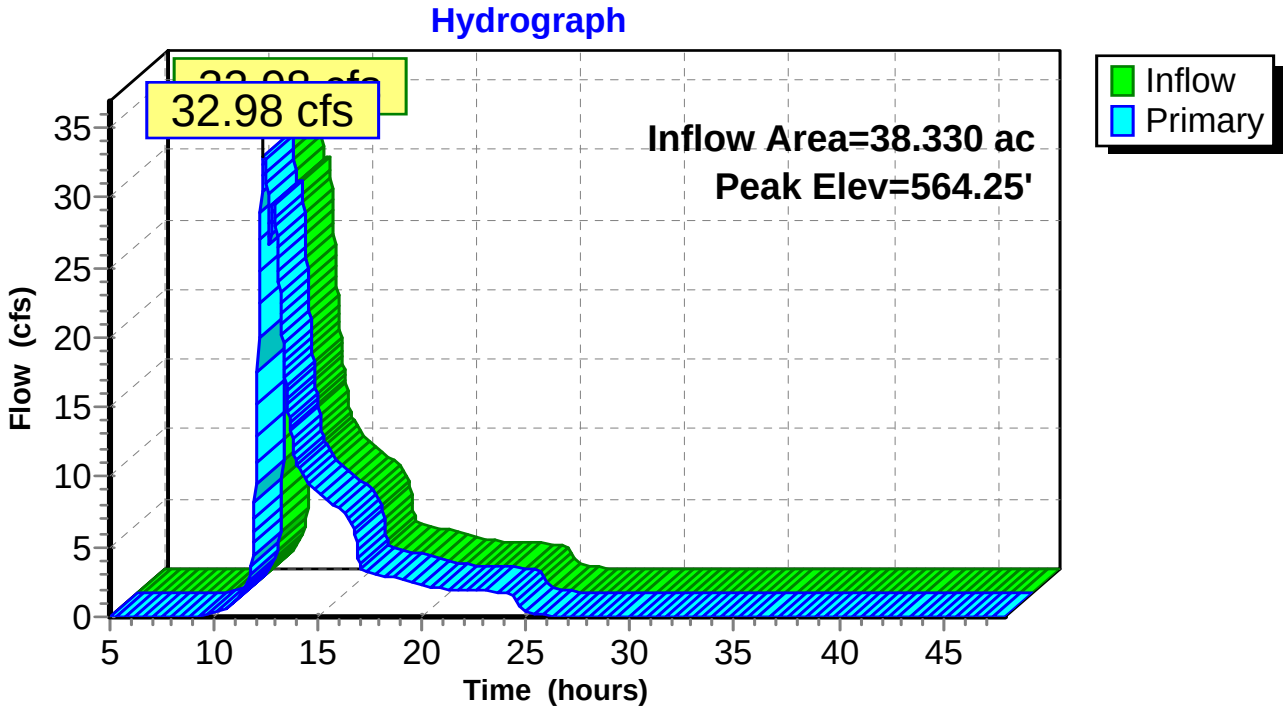
Inflow Area = 38.330 ac, 0.00% Impervious, Inflow Depth = 2.34" for JMSS_25-Year event
Inflow = 32.98 cfs @ 12.41 hrs, Volume= 7.468 af
Outflow = 32.98 cfs @ 12.41 hrs, Volume= 7.468 af, Atten= 0%, Lag= 0.0 min
Primary = 32.98 cfs @ 12.41 hrs, Volume= 7.468 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 564.25' @ 12.41 hrs
Flood Elev= 572.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	558.50'	**24.0" Round Culvert** L= 81.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 558.50' / 542.43' S= 0.1984 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Primary	572.40'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=32.97 cfs @ 12.41 hrs HW=564.25' TW=548.45' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 32.97 cfs @ 10.50 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 57P: LD6-3



Summary for Pond 65P: LD7-1

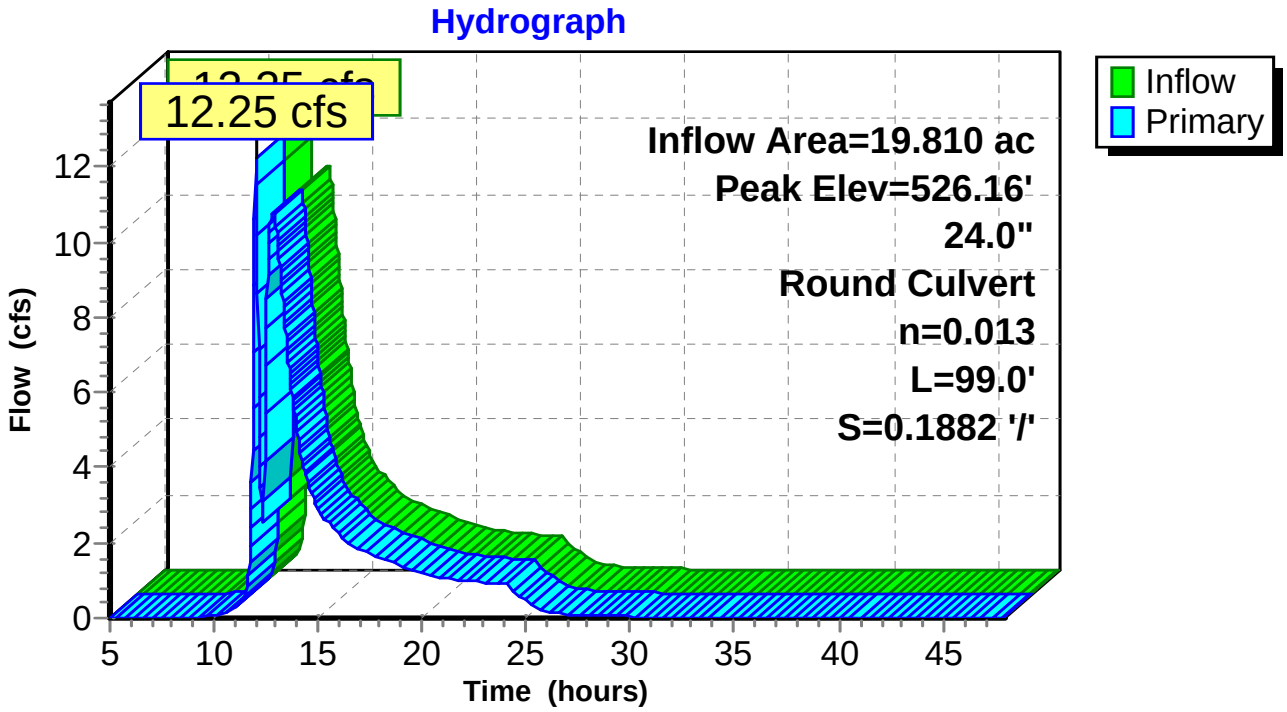
Inflow Area = 19.810 ac, 0.00% Impervious, Inflow Depth > 1.80" for JMSS_25-Year event
Inflow = 12.25 cfs @ 12.01 hrs, Volume= 2.978 af
Outflow = 12.25 cfs @ 12.01 hrs, Volume= 2.978 af, Atten= 0%, Lag= 0.0 min
Primary = 12.25 cfs @ 12.01 hrs, Volume= 2.978 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 526.16' @ 12.01 hrs
Flood Elev= 533.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	524.50'	**24.0" Round Culvert** L= 99.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 524.50' / 505.87' S= 0.1882 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.17 cfs @ 12.01 hrs HW=526.15' TW=506.94' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.17 cfs @ 4.38 fps)

Pond 65P: LD7-1



Summary for Pond 66P: LD7-2

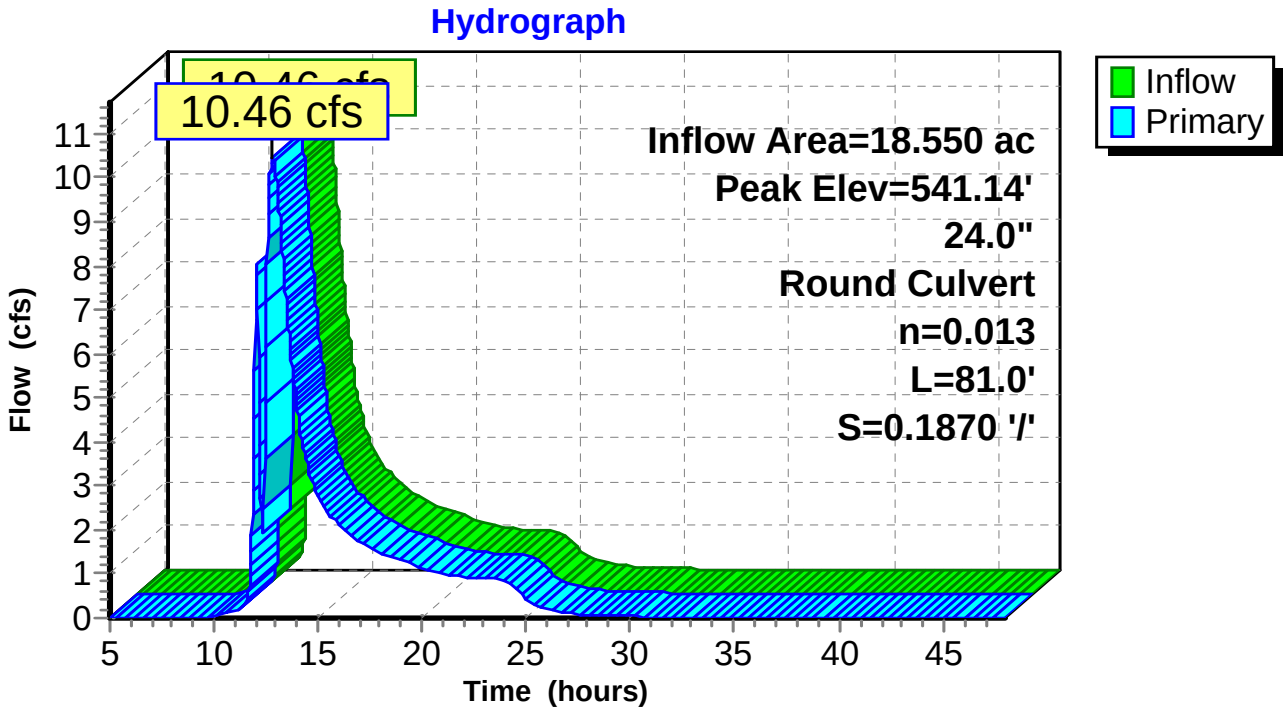
Inflow Area = 18.550 ac, 0.00% Impervious, Inflow Depth > 1.77" for JMSS_25-Year event
Inflow = 10.46 cfs @ 12.81 hrs, Volume= 2.730 af
Outflow = 10.46 cfs @ 12.81 hrs, Volume= 2.730 af, Atten= 0%, Lag= 0.0 min
Primary = 10.46 cfs @ 12.81 hrs, Volume= 2.730 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 541.14' @ 12.81 hrs
Flood Elev= 553.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	539.65'	**24.0" Round Culvert** L= 81.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 539.65' / 524.50' S= 0.1870 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.46 cfs @ 12.81 hrs HW=541.14' TW=526.02' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 10.46 cfs @ 4.16 fps)

Pond 66P: LD7-2



Summary for Pond 67P: LD7-3

Inflow Area = 16.080 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 30.83 cfs @ 12.28 hrs, Volume= 3.168 af
Outflow = 9.73 cfs @ 12.83 hrs, Volume= 2.243 af, Atten= 68%, Lag= 32.8 min
Primary = 9.73 cfs @ 12.83 hrs, Volume= 2.243 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 569.58' @ 12.83 hrs Surf.Area= 22,191 sf Storage= 60,702 cf
Flood Elev= 575.00' Surf.Area= 95,614 sf Storage= 190,635 cf

Plug-Flow detention time= 217.3 min calculated for 2.243 af (71% of inflow)
Center-of-Mass det. time= 112.7 min (971.6 - 858.9)

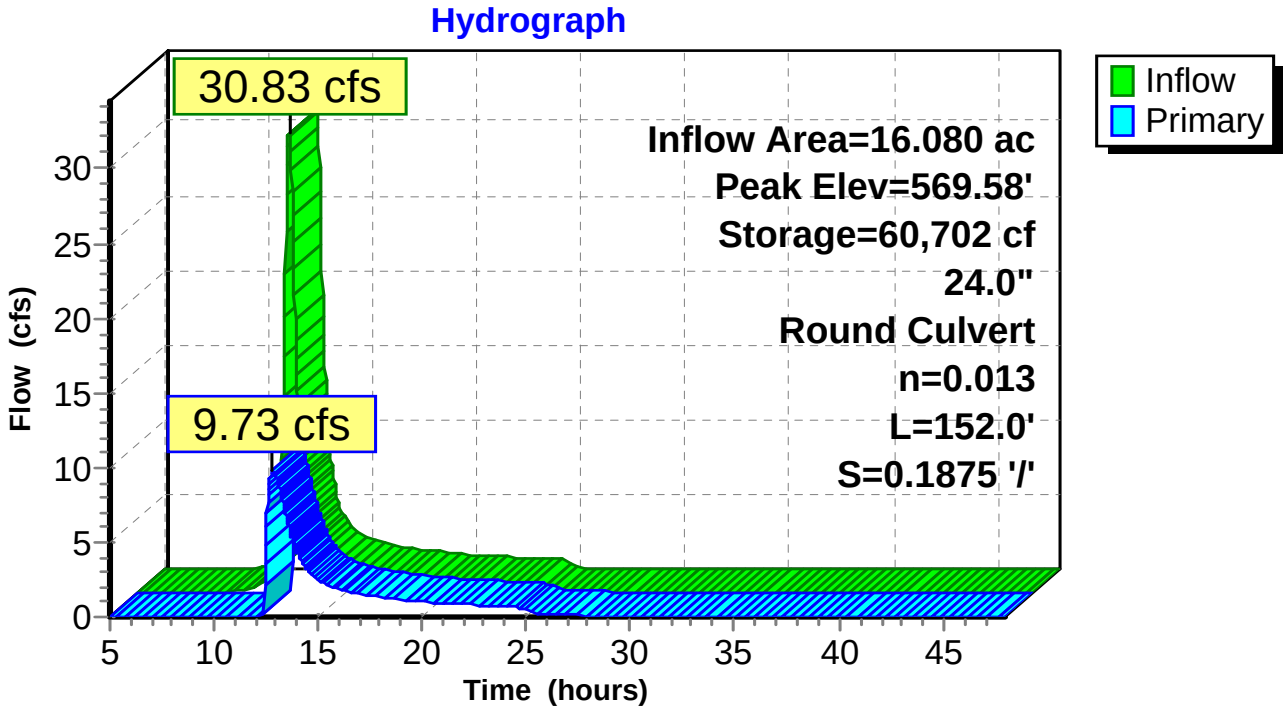
Volume	Invert	Avail.Storage	Storage Description
#1	560.00'	190,635 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
560.00	135	0	0
561.00	910	523	523
562.00	2,596	1,753	2,276
563.00	3,721	3,159	5,434
564.00	4,738	4,230	9,664
565.00	5,731	5,235	14,898
566.00	6,858	6,295	21,193
567.00	8,657	7,758	28,950
568.00	10,391	9,524	38,474
569.00	13,524	11,958	50,432
570.00	28,594	21,059	71,491
571.00	57,040	42,817	114,308
572.00	95,614	76,327	190,635

Device	Routing	Invert	Outlet Devices
#1	Primary	568.15'	**24.0" Round Culvert** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 568.15' / 539.65' S= 0.1875 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=9.73 cfs @ 12.83 hrs HW=569.58' TW=541.14' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 9.73 cfs @ 4.06 fps)

Pond 67P: LD7-3



Summary for Pond 72P: RETENTION POND

Outlet details per 1994 Landfill 9 (sheets 10 and 12) expansion prepared by Woolpert and 2015 Outfall 019 and 020 Modification drawings prepared by DP&L.

8" skimmer with 6" orifice flows used as provided by SW Products Model 3 skimmer detail.

14" culvert length approximated by path shown on Outfall 019 and 020 drawings in conjuction with Google Earth. Downstream invert estimated as 3' below existing topography (498').

Parshall flume discharge table provided by Open Channel Flow.

16" culvert length approximated by path shown on Outfall 019 and 020 drawings in conjuction with Google Earth. Downstream invert estimated using existing topography shown in Google Earth. Pipe material not noted on drawings.

Parshall flume overlow crest length taken as flume perimeter and breadth estimated based on total in-line length of Parshall flume.

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[62] Hint: Exceeded Reach 64R OUTLET depth by 1.03' @ 29.69 hrs
[62] Hint: Exceeded Reach 74R OUTLET depth by 0.52' @ 27.35 hrs

Inflow Area =	239.440 ac,	0.00% Impervious,	Inflow Depth =	2.13"	for JMSS_25-Year event
Inflow =	256.57 cfs @	12.25 hrs,	Volume=	42.465 af	
Outflow =	4.55 cfs @	25.10 hrs,	Volume=	13.898 af,	Atten= 98%, Lag= 771.3 min
Primary =	4.55 cfs @	25.10 hrs,	Volume=	13.898 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 503.55' @ 25.10 hrs Surf.Area= 24.969 ac Storage= 36.561 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 861.7 min (1,759.5 - 897.7)

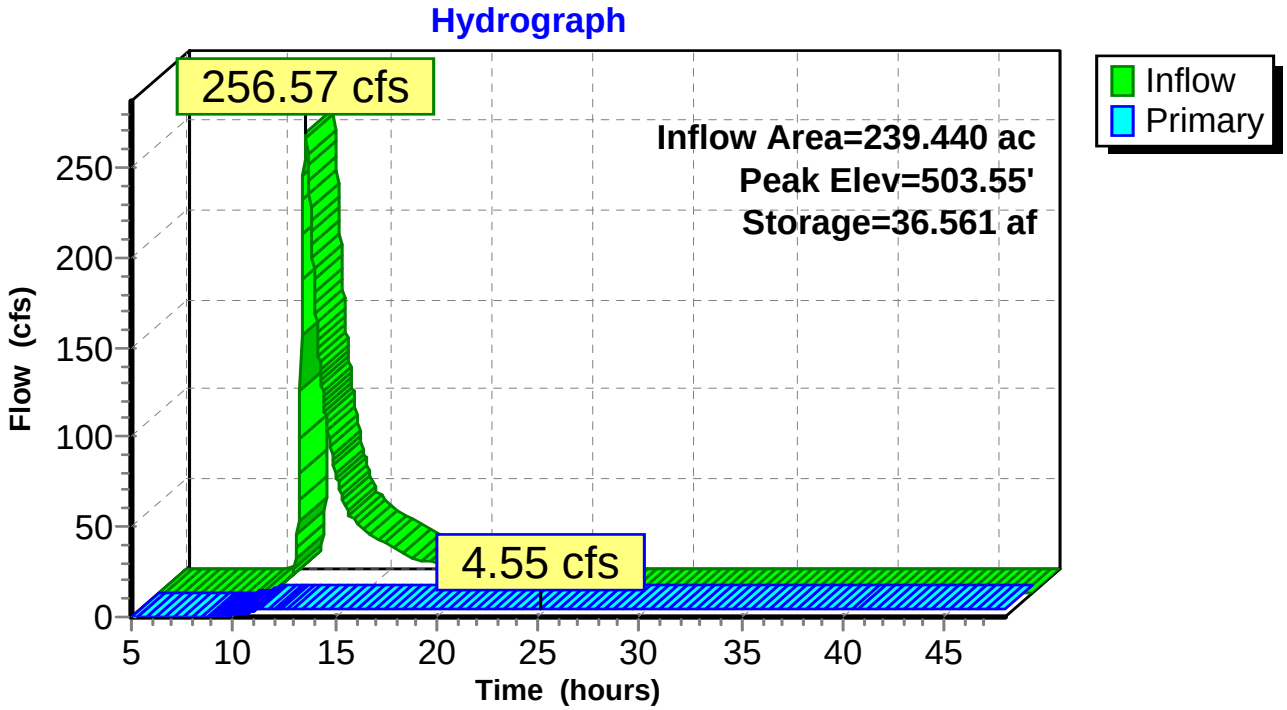
Volume	Invert	Avail.Storage	Storage Description
#1	502.00'	154.376 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
502.00	21.900	0.000	0.000
503.00	24.200	23.050	23.050
504.00	25.600	24.900	47.950
505.00	26.500	26.050	74.000
506.00	28.650	27.575	101.575
507.00	29.400	29.025	130.600
507.80	30.040	23.776	154.376

Device	Routing	Invert	Outlet Devices
#1	Primary	495.00'	**16.0" Round Culvert** L= 240.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 495.00' / 490.00' S= 0.0208 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.40 sf
#2	Device 1	496.50'	**7.5' long x 3.0' breadth Parshall flume overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Device 1	495.00'	**Parshall flume** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05 1.10 1.15 1.20 1.25 1.30 1.35 1.40 1.45 1.50 Disch. (cfs) 0.000 0.028 0.052 0.082 0.116 0.153 0.195 0.240 0.288 0.339 0.393 0.438 0.497 0.571 0.635 0.702 0.771 0.843 0.916 0.992 1.070 1.150 1.232 1.316 1.402 1.490 1.580 1.671 1.765 1.860
#4	Device 2	497.00'	**14.0" Round Culvert** L= 300.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 497.00' / 495.00' S= 0.0067 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.07 sf
#5	Device 3	497.00'	**8.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600
#6	Device 3	497.25'	**8.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600
#7	Device 4	497.50'	**8.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 497.50' / 497.25' S= 0.0050 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.35 sf
#8	Device 4	501.50'	**Skimmer** Head (feet) 0.00 0.10 0.20 0.30 0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 12.00 Disch. (cfs) 0.000 0.306 0.373 0.455 0.555 0.623 0.676 0.721 0.759 0.794 0.824 0.676 0.676

Primary OutFlow Max=4.55 cfs @ 25.10 hrs HW=503.55' (Free Discharge)
- **1=Culvert** (Passes 4.55 cfs of 18.38 cfs potential flow)
  - **2=Parshall flume overflow** (Passes 2.69 cfs of 466.06 cfs potential flow)
    - **4=Culvert** (Passes 2.69 cfs of 9.27 cfs potential flow)
      - **7=Culvert** (Barrel Controls 1.96 cfs @ 5.62 fps)
      - **8=Skimmer** (Custom Controls 0.72 cfs)
  - **3=Parshall flume** (Custom Controls 1.86 cfs)
    - **5=Orifice/Grate** (Passes < 5.33 cfs potential flow)
    - **6=Orifice/Grate** (Passes < 5.23 cfs potential flow)

Pond 72P: RETENTION POND



Summary for Pond 80P: LD9

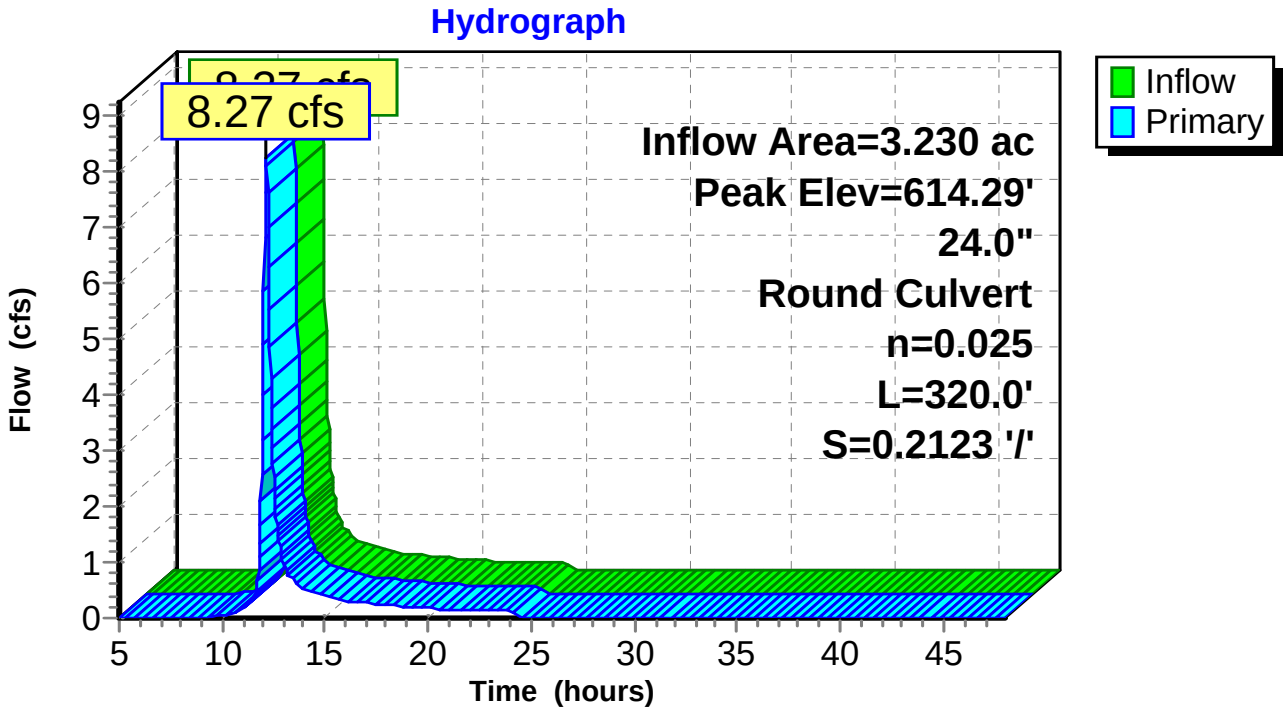
Inflow Area = 3.230 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 8.27 cfs @ 12.14 hrs, Volume= 0.636 af
Outflow = 8.27 cfs @ 12.14 hrs, Volume= 0.636 af, Atten= 0%, Lag= 0.0 min
Primary = 8.27 cfs @ 12.14 hrs, Volume= 0.636 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 614.29' @ 12.14 hrs
Flood Elev= 617.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	613.00'	**24.0" Round Culvert** L= 320.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 613.00' / 545.06' S= 0.2123 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=8.26 cfs @ 12.14 hrs HW=614.29' TW=545.74' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 8.26 cfs @ 3.86 fps)

Pond 80P: LD9



Summary for Pond 84P: LD8

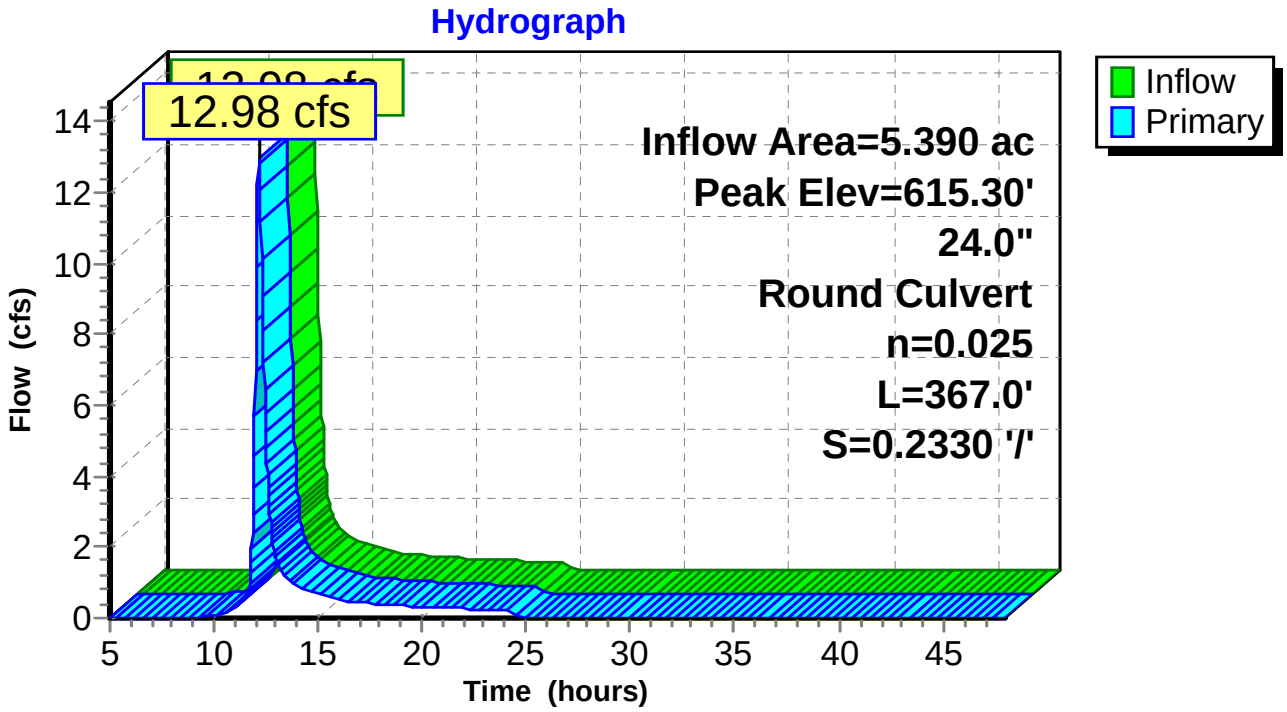
Inflow Area = 5.390 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 12.98 cfs @ 12.16 hrs, Volume= 1.062 af
Outflow = 12.98 cfs @ 12.16 hrs, Volume= 1.062 af, Atten= 0%, Lag= 0.0 min
Primary = 12.98 cfs @ 12.16 hrs, Volume= 1.062 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 615.30' @ 12.16 hrs
Flood Elev= 616.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	613.57'	**24.0" Round Culvert** L= 367.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 613.57' / 528.06' S= 0.2330 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=12.95 cfs @ 12.16 hrs HW=615.30' TW=529.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.95 cfs @ 4.48 fps)

Pond 84P: LD8



Summary for Pond 94P: LD10

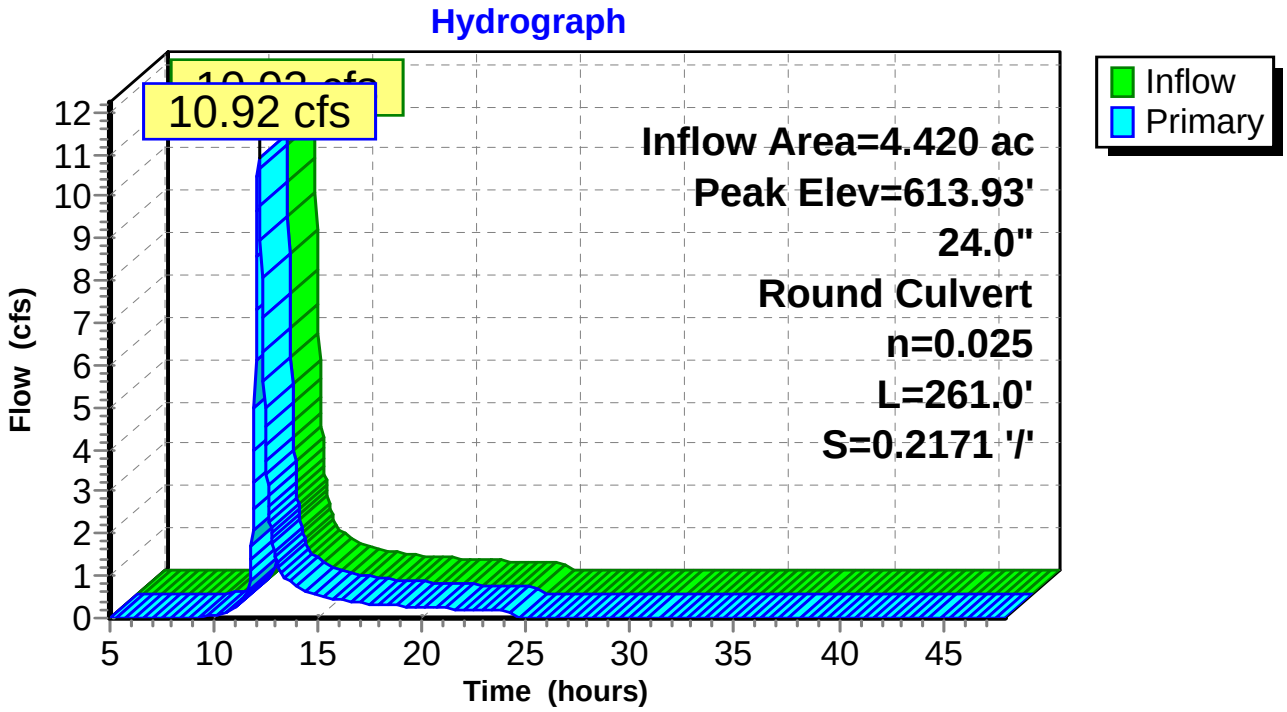
Inflow Area = 4.420 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 10.92 cfs @ 12.15 hrs, Volume= 0.871 af
Outflow = 10.92 cfs @ 12.15 hrs, Volume= 0.871 af, Atten= 0%, Lag= 0.0 min
Primary = 10.92 cfs @ 12.15 hrs, Volume= 0.871 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 613.93' @ 12.15 hrs
Flood Elev= 617.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	612.39'	**24.0" Round Culvert** L= 261.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 612.39' / 555.73' S= 0.2171 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=10.87 cfs @ 12.15 hrs HW=613.92' TW=557.73' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 10.87 cfs @ 4.21 fps)

Pond 94P: LD10



Summary for Pond 95P: PIPE PD4

[62] Hint: Exceeded Reach 87R OUTLET depth by 2.33' @ 12.14 hrs

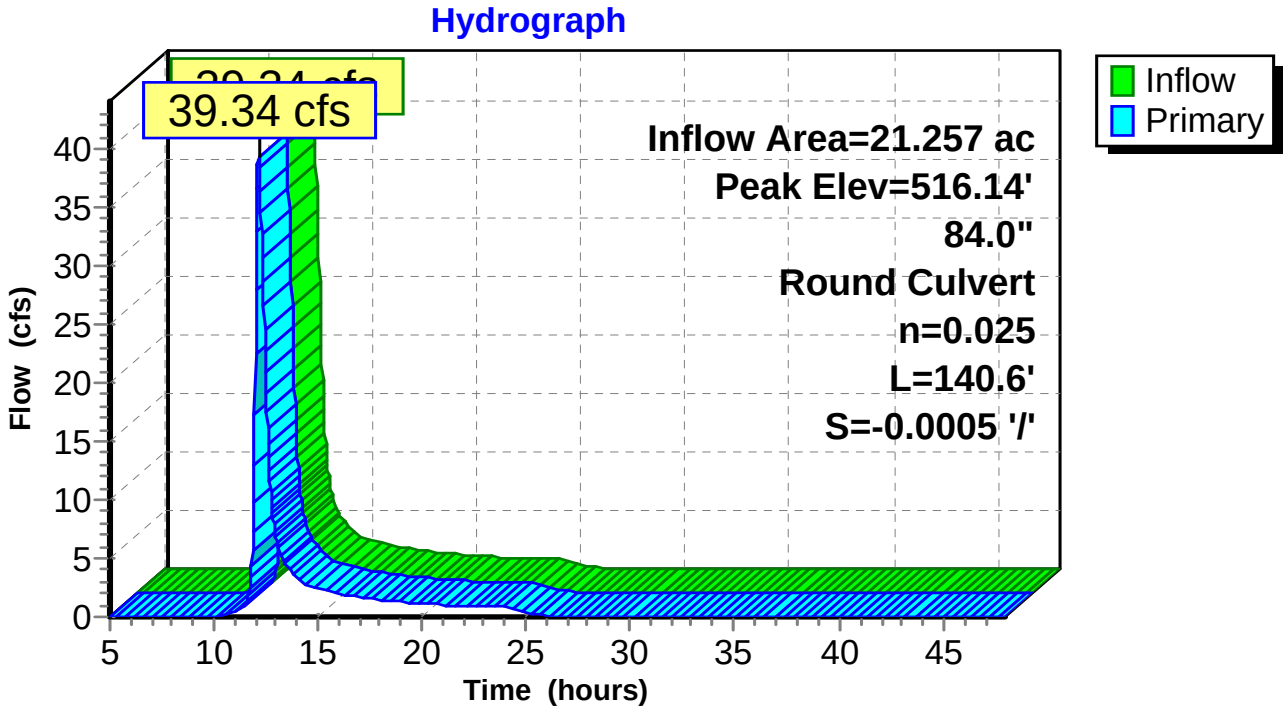
Inflow Area =	21.257 ac,	0.00% Impervious,	Inflow Depth =	2.08"	for JMSS_25-Year event
Inflow =	39.34 cfs @	12.14 hrs,	Volume=	3.681 af	
Outflow =	39.34 cfs @	12.14 hrs,	Volume=	3.681 af,	Atten= 0%, Lag= 0.0 min
Primary =	39.34 cfs @	12.14 hrs,	Volume=	3.681 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 516.14' @ 12.14 hrs
Flood Elev= 520.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	513.17'	**84.0" Round Culvert** L= 140.6' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 513.10' / 513.17' S= -0.0005 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 38.48 sf

Primary OutFlow Max=39.28 cfs @ 12.14 hrs HW=516.14' TW=514.01' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 39.28 cfs @ 3.61 fps)

Pond 95P: PIPE PD4



Summary for Pond 96P: LD6-4

Inflow Area = 6.620 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 14.31 cfs @ 12.22 hrs, Volume= 1.304 af
Outflow = 6.00 cfs @ 12.57 hrs, Volume= 1.221 af, Atten= 58%, Lag= 21.0 min
Primary = 6.00 cfs @ 12.57 hrs, Volume= 1.221 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 575.80' @ 12.57 hrs Surf.Area= 0.482 ac Storage= 0.444 af
Flood Elev= 581.00' Surf.Area= 1.002 ac Storage= 1.326 af

Plug-Flow detention time= 109.8 min calculated for 1.220 af (94% of inflow)
Center-of-Mass det. time= 75.7 min (929.5 - 853.9)

Volume	Invert	Avail.Storage	Storage Description
#1	574.00'	1.326 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

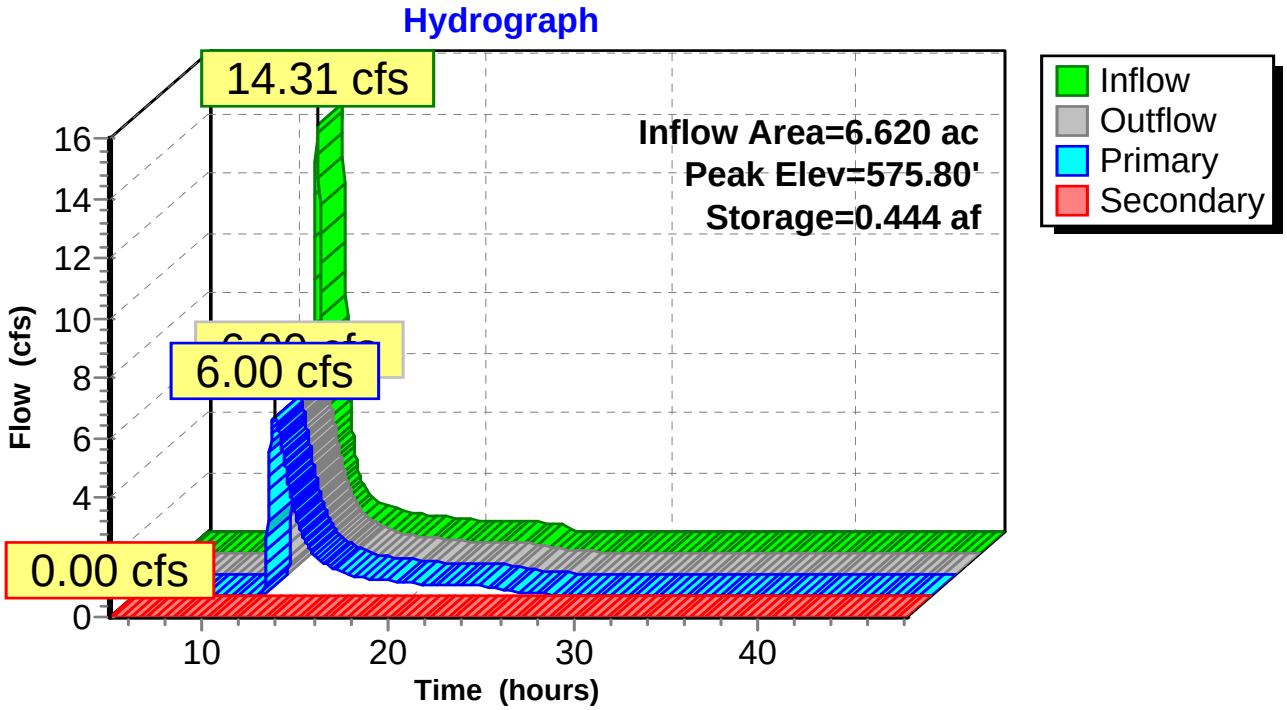
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
574.00	0.110	0.000	0.000
575.00	0.220	0.165	0.165
576.00	0.550	0.385	0.550
577.00	1.002	0.776	1.326

Device	Routing	Invert	Outlet Devices
#1	Primary	574.57'	**24.0" Round Culvert** L= 81.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 574.57' / 558.50' S= 0.1984 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	576.30'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 28.00 59.00 87.00 117.00 156.00 177.00 199.00 233.00 267.00 286.00 320.00 337.00 Height (feet) 4.65 3.90 3.60 3.10 2.80 2.60 1.30 0.60 0.00 0.50 1.30 4.00 4.65

Primary OutFlow Max=6.00 cfs @ 12.57 hrs HW=575.79' TW=563.44' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.00 cfs @ 2.97 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=574.00' TW=560.00' (Dynamic Tailwater)
└─**2=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 96P: LD6-4



Summary for Pond 97P: PIPE T-1

Inflow Area = 13.300 ac, 0.00% Impervious, Inflow Depth = 1.37" for JMSS_25-Year event
Inflow = 10.92 cfs @ 12.44 hrs, Volume= 1.517 af
Outflow = 5.71 cfs @ 12.90 hrs, Volume= 1.517 af, Atten= 48%, Lag= 27.5 min
Primary = 5.71 cfs @ 12.90 hrs, Volume= 1.517 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 592.25' @ 12.90 hrs Surf.Area= 10,197 sf Storage= 14,253 cf

Plug-Flow detention time= 42.9 min calculated for 1.517 af (100% of inflow)
Center-of-Mass det. time= 42.5 min (945.6 - 903.1)

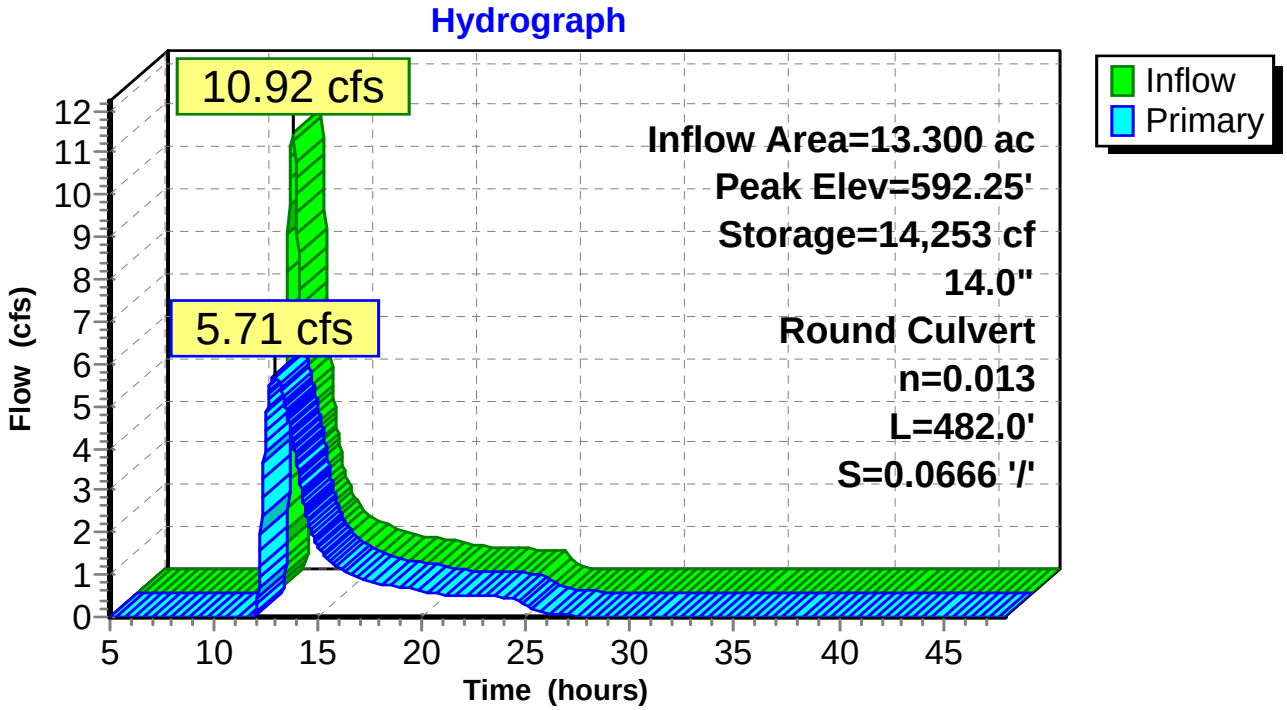
Volume	Invert	Avail.Storage	Storage Description
#1	590.43'	22,561 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.43	3,600	0	0
591.00	7,586	3,188	3,188
592.00	9,669	8,628	11,816
593.00	11,821	10,745	22,561

Device	Routing	Invert	Outlet Devices
#1	Primary	590.43'	**14.0" Round Culvert** L= 482.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 590.43' / 558.35' S= 0.0666 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.07 sf

Primary OutFlow Max=5.71 cfs @ 12.90 hrs HW=592.25' TW=529.47' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.71 cfs @ 5.34 fps)

Pond 97P: PIPE T-1



Summary for Pond 100P: PIPE T-2

Inflow Area = 18.650 ac, 0.00% Impervious, Inflow Depth = 2.36" for JMSS_25-Year event
Inflow = 26.44 cfs @ 12.52 hrs, Volume= 3.674 af
Outflow = 15.40 cfs @ 12.94 hrs, Volume= 3.674 af, Atten= 42%, Lag= 25.4 min
Primary = 15.40 cfs @ 12.94 hrs, Volume= 3.674 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 582.16' @ 12.94 hrs Surf.Area= 51,541 sf Storage= 41,574 cf

Plug-Flow detention time= 41.4 min calculated for 3.674 af (100% of inflow)
Center-of-Mass det. time= 41.3 min (916.4 - 875.1)

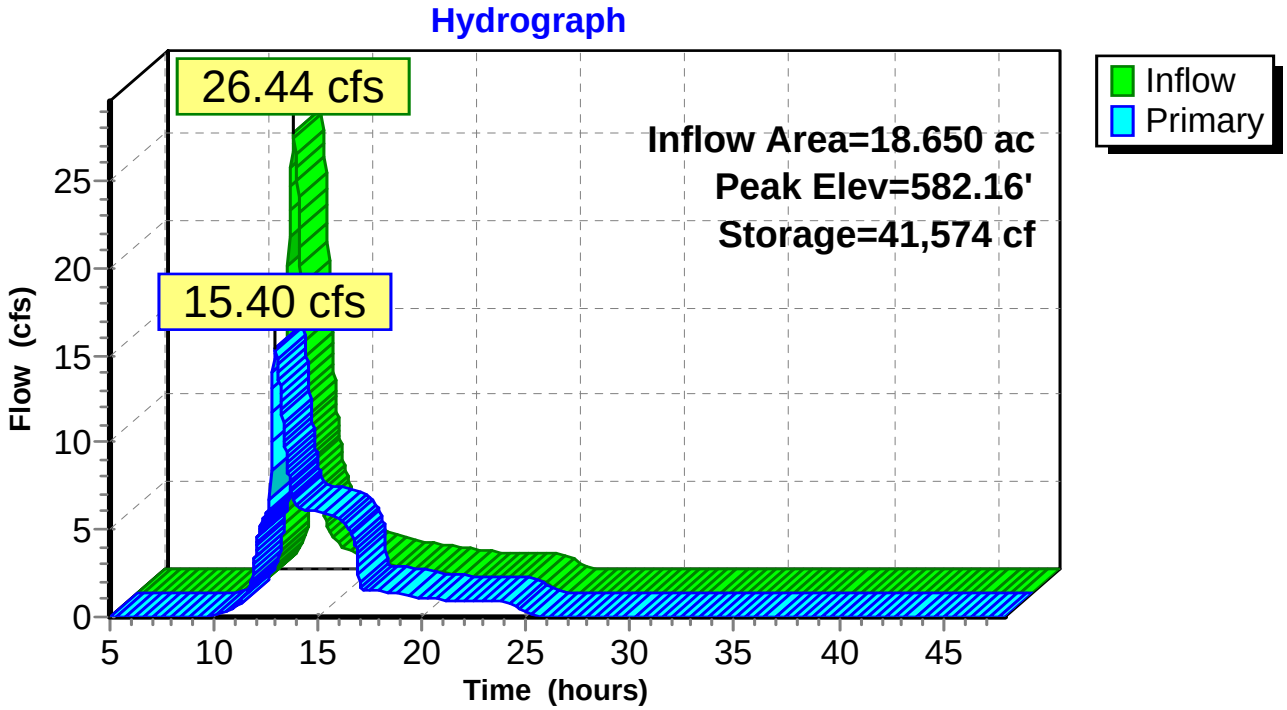
Volume	Invert	Avail.Storage	Storage Description
#1	576.77'	99,675 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
576.77	0	0	0
577.50	4	1	1
578.00	57	15	17
579.00	470	264	280
580.00	2,334	1,402	1,682
581.00	8,611	5,473	7,155
582.00	45,176	26,894	34,048
583.00	86,078	65,627	99,675

Device	Routing	Invert	Outlet Devices
#1	Primary	577.09'	**14.0" Round Culvert** L= 242.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 576.77' / 577.09' S= -0.0013 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.07 sf
#2	Primary	582.00'	**55.0' long x 60.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=15.39 cfs @ 12.94 hrs HW=582.16' TW=563.11' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 6.36 cfs @ 5.95 fps)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 9.03 cfs @ 1.06 fps)

Pond 100P: PIPE T-2



Summary for Pond 106P: PIPE PD3-2

Inflow Area = 5.360 ac, 0.00% Impervious, Inflow Depth = 1.37" for JMSS_25-Year event
Inflow = 6.70 cfs @ 12.19 hrs, Volume= 0.612 af
Outflow = 3.68 cfs @ 12.42 hrs, Volume= 0.611 af, Atten= 45%, Lag= 13.9 min
Primary = 3.68 cfs @ 12.42 hrs, Volume= 0.611 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 551.71' @ 12.42 hrs Surf.Area= 8,822 sf Storage= 4,917 cf

Plug-Flow detention time= 24.3 min calculated for 0.611 af (100% of inflow)
Center-of-Mass det. time= 24.0 min (909.2 - 885.3)

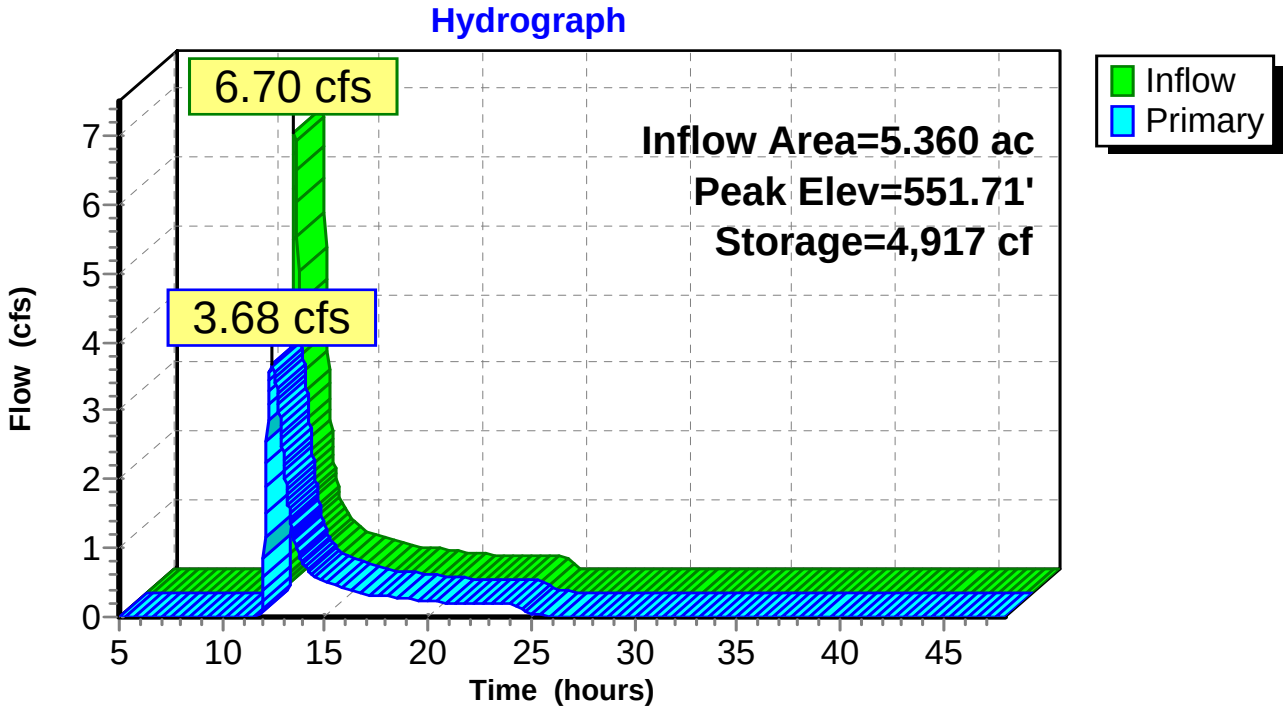
Volume	Invert	Avail.Storage	Storage Description
#1	550.62'	44,898 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
550.62	1,500	0	0
551.00	2,788	815	815
552.00	11,326	7,057	7,872
553.00	20,909	16,118	23,989
554.00	20,909	20,909	44,898

Device	Routing	Invert	Outlet Devices
#1	Primary	550.62'	**14.0" Round Culvert** L= 117.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 550.62' / 533.38' S= 0.1474 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.07 sf
#2	Primary	553.00'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.68 cfs @ 12.42 hrs HW=551.71' TW=529.60' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.68 cfs @ 3.55 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 106P: PIPE PD3-2



Summary for Pond 109P: PIPE PD3-1

[62] Hint: Exceeded Reach 75R OUTLET depth by 4.29' @ 12.02 hrs

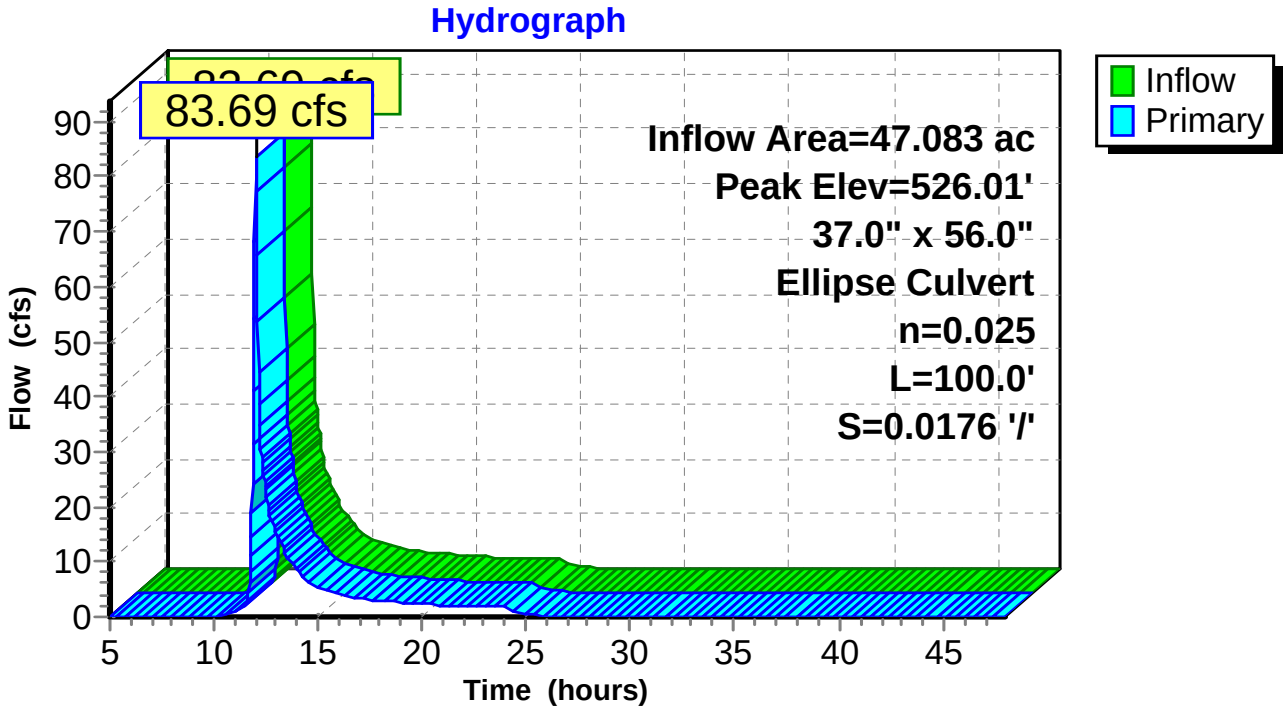
Inflow Area =	47.083 ac,	0.00% Impervious,	Inflow Depth =	1.80"	for JMSS_25-Year event
Inflow =	83.69 cfs @	12.02 hrs,	Volume=	7.057 af	
Outflow =	83.69 cfs @	12.02 hrs,	Volume=	7.057 af,	Atten= 0%, Lag= 0.0 min
Primary =	83.69 cfs @	12.02 hrs,	Volume=	7.057 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 526.01' @ 12.02 hrs
Flood Elev= 533.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	520.52'	**37.0" W x 56.0" H Ellipse Culvert** L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 520.52' / 518.76' S= 0.0176 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 11.30 sf

Primary OutFlow Max=83.19 cfs @ 12.02 hrs HW=525.98' TW=520.16' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 83.19 cfs @ 7.92 fps)

Pond 109P: PIPE PD3-1



Summary for Pond 110P: PIPE PD3-3

[62] Hint: Exceeded Reach 108R OUTLET depth by 2.00' @ 12.17 hrs

Inflow Area =	13.400 ac,	0.00% Impervious,	Inflow Depth =	2.36"	for JMSS_25-Year event
Inflow =	37.34 cfs @	12.03 hrs,	Volume=	2.640 af	
Outflow =	29.96 cfs @	12.12 hrs,	Volume=	2.640 af,	Atten= 20%, Lag= 5.4 min
Primary =	29.96 cfs @	12.12 hrs,	Volume=	2.640 af	

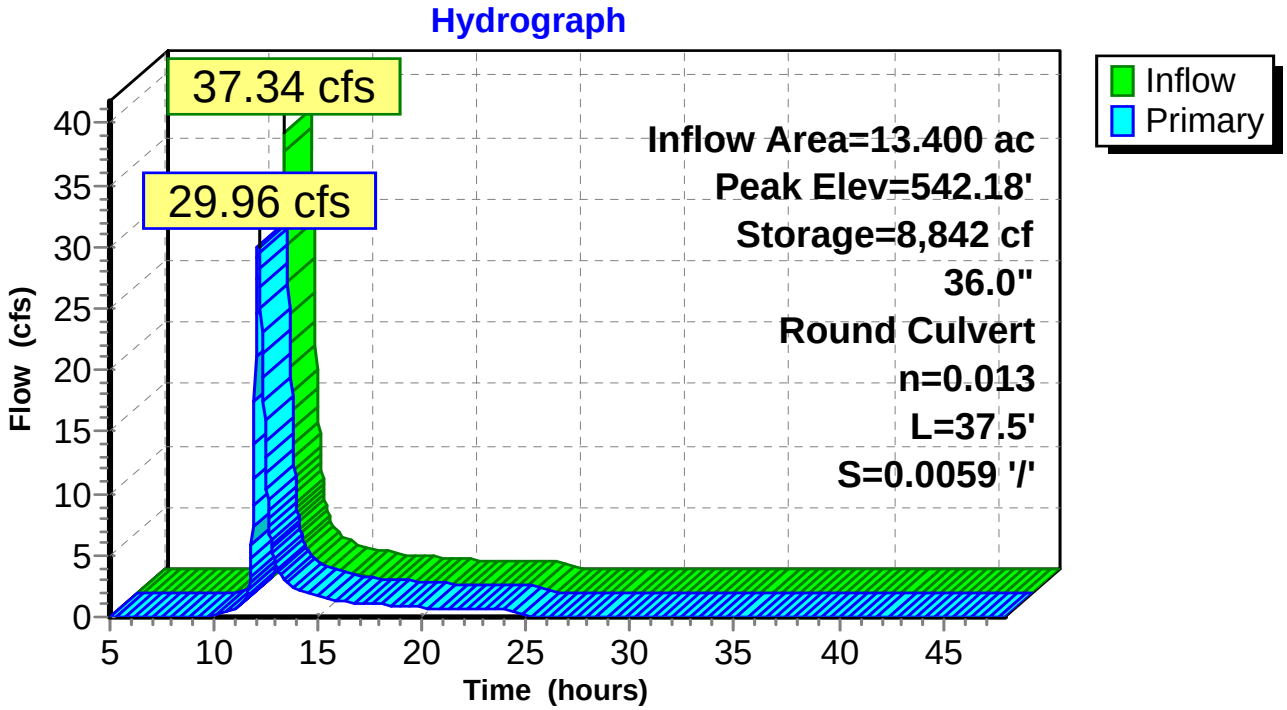
Routing by Dyn-Stor-Ind method, Time Span= 5.00-47.99 hrs, dt= 0.03 hrs
Peak Elev= 542.18' @ 12.12 hrs Surf.Area= 8,373 sf Storage= 8,842 cf

Plug-Flow detention time= 2.2 min calculated for 2.638 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (853.9 - 851.7)

Volume	Invert	Avail.Storage	Storage Description
#1	539.45'	37,224 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
539.45	10	0	0
540.00	143	42	42
541.00	3,622	1,883	1,925
542.00	7,314	5,468	7,393
542.66	11,097	6,076	13,468
543.00	14,731	4,391	17,859
544.00	24,000	19,366	37,224

Device	Routing	Invert	Outlet Devices
#1	Primary	539.45'	**36.0" Round Culvert** L= 37.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 539.45' / 539.23' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=29.86 cfs @ 12.12 hrs HW=542.18' TW=539.96' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 29.86 cfs @ 5.81 fps)

Pond 110P: PIPE PD3-3