

Jeffrey Energy Center Fly Ash Landfill Run-on and Run-Off Control System Plan

Jeffrey Energy Center
25905 Jeffrey Rd.
St. Marys, Kansas

Prepared for:



Evergy Kansas Central, Inc.

SCS ENGINEERS

25221157.00 | October 2026

40 Shuman Blvd, Ste 216
Naperville, IL 60563

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PLAN REVIEW/AMENDMENT LOG

[illegible]

PROFESSIONAL ENGINEER CERTIFICATION

I, Richard D. Southorn, hereby certify that this Run-On and Run-Off Control System Plan meets the requirements of 40 CFR §257.81, was prepared by me or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Kansas.



Richard D. Southorn, PE

License No. PE 25201

Expires 4/30/2027

1.0 INTRODUCTION

The Fly Ash Landfill (Landfill) is an existing coal combustion residual (CCR) landfill located at Evergy's Jeffrey Energy Center near St. Marys, Kansas. This Run-on and Run-off Control System Plan (RORO Plan) documents that the Landfill's run-on and run-off control systems have been designed and constructed to meet the applicable requirements of Title 40 Code of Federal Regulations (CFR) §257.81¹ of the CCR Rule.

2.0 REGULATORY REQUIREMENTS

40 CFR §257.81 Run-on and run-off controls for CCR landfills.

- (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:
 - (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; and
 - (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.
- (b) Run-off from the active portion of the CCR unit must be handled in accordance with the surface water requirements under 40 CFR §257.3-3¹.
- (c) Run-on and run-off control system plan
 - (1) Content of the 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 40 CFR §257.105(g)(3).

With reference to 40 CFR §257.81(c) above, the initial RORO Plan was required to be developed no later than October 17, 2016 for existing landfills (40 CFR §257.81(c)(3)(i))¹. Updates to the RORO Plan are required whenever there is a change in conditions that would substantially affect the written plan in effect (40 CFR §257.81(2))¹, or within five years of the previous plan (40 CFR §257.81(c)(4))¹.

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or EPA, where EPA is the permitting authority, stating that the initial and periodic RORO Plans meet the requirements of 40 CFR §257.81¹.

3.0 2026 RUN-ON AND RUN-OFF CONTROL SYSTEM PLAN UPDATE

This document has been prepared as the periodic update to the initial RORO Plan. This plan has been developed to reflect run-on and run-off controls that are being used at the facility at the time of this report. As such, this plan replaces the previous RORO Plan. The current run-on and run-off control systems at the Landfill have been reviewed as part of this 2026 Periodic RORO Plan update and have been found to meet the requirements of 40 CFR §257.81(a)¹, as outlined in Section 2.0.

Conveyance features that comprise the run-on and run-off control systems at the Landfill are depicted in **Figure 1**. Storm water calculations supporting the below discussion are included in **Appendices A through C**.

3.1 RUN-ON CONTROL SYSTEM

Non-contact storm water flowing toward the Landfill is intercepted and directed away from the landfill using swales, perimeter channels, and perimeter berms:

- **North Drainage Swale:** A drainage swale has been installed north end of the landfill to direct storm water that is shed from a hill located to the north of the landfill. The water is intercepted by the swale and directed to the north.
- **Perimeter Containment Berms:** The exterior of the active face is bound by containment berms that serve as a physical obstruction to prevent water moving into or out of the landfill. The north, east, and west berms are typically 15' above surrounding grade, although a smaller 2-foot berm is located in the southwest corner of the active face. A 2-foot tall containment berm is also located on the south side of the active face. However, this berm is a run-off control, as the landfill is significantly higher than the surrounding grade to the south.
- **Perimeter Channels:** Perimeter channels have been constructed at the exterior toe of the containment berms to convey non-contact water around the landfill for ultimate discharge into Tower Hill Lake. Tower Hill Lake is located immediately to the southwest of the Landfill and is permitted to receive non-contact water, contact water, and leachate from the JEC, including multiple landfills and surface impoundments under the facility's National Pollutant Discharge Elimination System (NPDES) Permit. In accordance with 40 CFR §257.81(b)¹, this is consistent with the surface water requirements under 40 CFR §257.3-3¹.

The run-on control system is depicted in **Figure 1**.

3.2 RUN-OFF CONTROL SYSTEM

Contact water is prevented from leaving the active face by the containment berms described in Section 3.1. Direct precipitation falling on a majority of the active portion of the Landfill remains within the active face until it infiltrates into the landfill. Due to the fact that the active face generally drains to the southwest, a two-basin contact water infiltration basin has been constructed as an additional safeguard to temporarily contain contact water that is shed across the surface of the landfill prior to infiltration. It is noted that the certifying engineer has been on-site during significant rain events and the rainwater was observed to infiltrate into the active area prior to reaching the contact basin. A 2-foot tall containment berm is located on the south side of the landfill and above the containment basin.

3.3 HYDROLOGIC AND HYDRAULIC ANALYSIS

Engineering calculations to evaluate the run-on control system at the Landfill consist of a hydrologic and hydraulic storm water model prepared using HydroCAD storm water modeling software. The run-on control system model for the Landfill is provided in **Appendix B**. A run-off control evaluation for the landfill was not completed because the containment berms provide physical barriers that prevent run-off from occurring.

3.3.1 Rainfall Data

Rainfall amounts for the 25-year, 24-hour storm were obtained from the Rainfall Intensity Tables for Counties in Kansas (2014) prepared by Kansas Department of Transportation. This document provides rainfall intensities for various durations and recurrence intervals, displayed in rainfall intensity tables for each county in Kansas. The rainfall intensity table applicable to the Landfill is the table prepared for Pottawatomie County (**Appendix A**). The 25-year, 24-hour rainfall amount for the Landfill was determined to be 6.00-inches, based on a rainfall rate of 0.25 inches/hour for 24 hours.

The Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS), Technical Release 55 (TR-55) was consulted to determine the appropriate storm water distribution pattern to model the rainfall depth in HydroCAD. According to TR-55², the Type-II 24-hour storm distribution is appropriate for all counties located in Kansas.

3.3.2 Model Input Parameters

Run-on controls were modeled as discreet nodes within HydroCAD modeling software to demonstrate the run-on control system is appropriately sized to accommodate the 25-year, 24-hour storm event.

Subcatchment areas (also known as watersheds) were delineated using AutoCAD Civil3D 2026 (AutoCAD) based on topographic divides within the analyzed area. For the Landfill run-on control system model, all areas flowing toward the Landfill and the active portion of the Landfill are delineated and modeled in HydroCAD. These areas are depicted in **Figure 1**.

The Curve number (CN) is a parameter used to determine the amount of runoff that will occur from a surface. High CN values indicate that the majority of rainfall will run off with minimal losses. Lower values correspond to an increased ability of rainfall to infiltrate the ground surface, leading to lower run off rates.

Runoff from each subcatchment area was calculated using the NRCS-SCS Technical Release 20 (TR-20) method that utilizes soil types, land covers, and flow length parameters to calculate storm water run-off. According to the NRCS Web Soil Survey for Pottawatomie County³, the predominant soil type within the Jeffrey Energy Center footprint is Hydrologic Soil Group D (HSG-D). All subcatchment areas have been modeled with the soil type designation. The land cover designations were selected from defined CN tables published in the NRCS-SCS TR-55. The land cover applicable for both models consists of open space with good grass cover (CN=80) and water surface (CN=98).

The time of concentration, defined as the longest amount of time a waterdrop would take to travel from the headwater of a subcatchment area to its downstream edge was delineated in AutoCAD and entered for each subcatchment in HydroCAD.

3.4 RESULTS AND CONCLUSIONS

The HydroCAD storm water model of the Landfill was developed to evaluate whether the peak flow from the 25-year, 24-hour storm event could be accommodated without overtopping the run-on control systems.

The run-on control system is designed and constructed to divert storm water away from the active portions of the Landfill and into Tower Hill Lake. Based on the results of the HydroCAD storm water model, the run-on control system was determined to accommodate the 25-year, 24-hour storm event without overtopping and meets the requirements of 40 CFR §257.81(a)(1)¹. The peak depth and freeboard remaining within each conveyance feature is summarized below:

Table 1 – Conveyance Feature Sizing		
Conveyance Feature Designation	Peak Depth (feet)	Freeboard (feet)
North Drainage Swale	1.49	1.51
North Berm Perimeter Channel	1.01	1.99
East Drainage Perimeter Swale	0.71	2.29
West Berm Perimeter Channel	1.43	1.57
(2) 24" Concrete Culvert	0.95	2.05
(3) 36" Concrete Culvert	0.62	2.38
Road B North Channel	0.25	1.75
Road B South Channel	0.21	1.79
Road B Outlet Pipe	0.44	1.56
East Berm Perimeter Channel	1.27	1.73
Southwest Perimeter Channel	0.82	2.18
West Catch Basin	1.81	1.19
Southeast Berm Perimeter Channel	0.34	2.66
East Letdown Pipe	1.05	1.95
West Downchute	0.70	2.30
East Downchute	0.83	2.17

4.0 CERTIFICATIONS

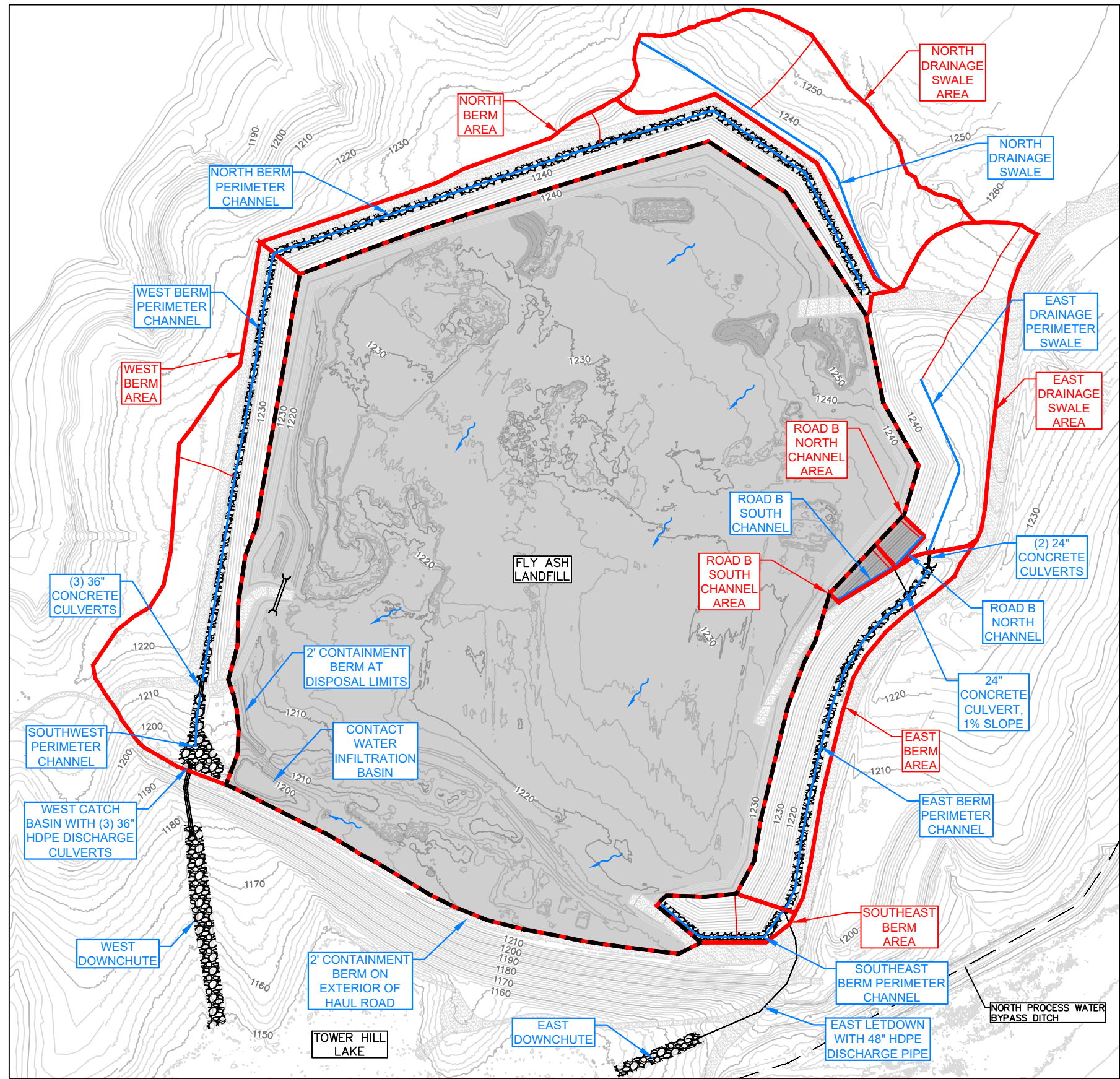
Richard D. Southorn, a licensed Professional Engineer in the State of Kansas, has overseen the preparation of this Run-On and Run-Off Control System Plan. A certification statement in accordance with 40 CFR §257.81(c)(5)¹ is provided on **Page iii** of this plan.

5.0 REFERENCES

1. U.S. Environmental Protection Agency, Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments, Title 40 Code of Federal Regulations Part §257. Federal Register 80, Subpart D, dated April 17, 2015.
2. USDA Natural Resources Conservation Service, Technical Release 55, dated June 1986.
3. USDA Natural Resources Conservation Service, Web Soil Survey for Pottawatomie County <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>, dated 2026.

Figures

Figure 1. Fly Ash Landfill Run-On and Run-Off Control System



N

LEGEND

EXISTING GRADE (2')

1230

EXISTING GRADE (10')

EXISTING GRAVEL ROAD

SUBCATCHMENT BOUNDARY

APPROXIMATE ACTIVE AREA BOUNDARY

NORTH PROCESS WATER BYPASS DITCH

WATER CONVEYANCE FEATURE LOCATION

TIME OF CONCENTRATION FLOW PATH

WEST BERM

SUBCATCHMENT NUMBER

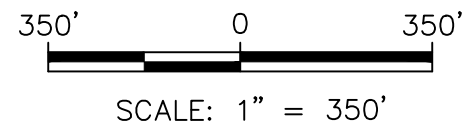
FLOW DIRECTION

CULVERT

RIPRAP

NOTES

1. EXISTING SITE TOPOGRAPHY DEVELOPED BY PROFESSIONAL ENGINEERING CONSULTANTS (PEC) IN SEPTEMBER 2025



PROJECT NO.	25221157.00	DRAWN BY:	LAC	ENGINEER SCS ENGINEERS 40 SHUMAN BLVD, STE 216, NAPERVILLE, IL 60563 PHONE: (331) 806-4300	CLIENT evergy	SITE JEFFREY ENERGY CENTER ST. MARYS, KS	RUN-ON AND RUN-OFF PLAN SUBCATCHMENT AREA	FIGURE
DRAWN:	08/28/2026	CHECKED BY:	RDS					1 OF 2
REVISED:	-	APPROVED BY:	RDS					

Appendices

Appendix A	Rainfall Intensity Table for Kansas Counties
Appendix B	Fly Ash Landfill Run-On Control System – HydroCAD Output Files

Appendix A Rainfall Intensity Table for Kansas Counties

ROAD MEMORANDUM NO. 16-03

DATE: September 2, 2016

SUBJECT: *Rainfall Intensity Tables*

The publication, *Rainfall Intensity Tables for Counties in Kansas*, dated June 1997, has recently be updated and replaced by *Rainfall Intensity Tables for Counties in Kansas (2014)*.

The new tables were developed from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Volume 8 (Perica et al. 2013) which was recently released by the National Weather Service (NWS) Hydro Meteorological Design Studies Center. The new tables provide rainfall intensities for durations from 5 minutes to 24 hours and various recurrence intervals from 1-500 years.

The *Rainfall Intensity Tables for Counties in Kansas (2014)* supersede the previous rainfall tables based on TP-40 and HYDRO-35 (McEnroe 1997). The new rainfall tables are available on the Kansas Department of Transportation's (KDOT) website at <http://kart.ksdot.org>.

If you have any questions, please contact John Hobelman at (785) 368-8791.



Scott W. King, P.E., Chief
Bureau of Road Design

SWK:js

By e-mail: American Council of Engineering Companies
Federal Highway Administration
Kansas Contractors Association (kca@ink.org)
Active Consultants
Director of Engineering & Design
Director of Operations
District Engineers
Area Engineers
Chief, Bureau of Local Projects
Chief, Bureau of Right of Way
Chief, Bureau of Transportation Safety & Technology
Chief, Bureau of Construction & Materials
Chief, Bureau of Maintenance
Chief, Bureau of Structures and Geotechnical Services
Road Design/Squad Leaders
Coordinating Section

Rainfall Intensity Tables for Counties in Kansas



(December, 2014 Edition)

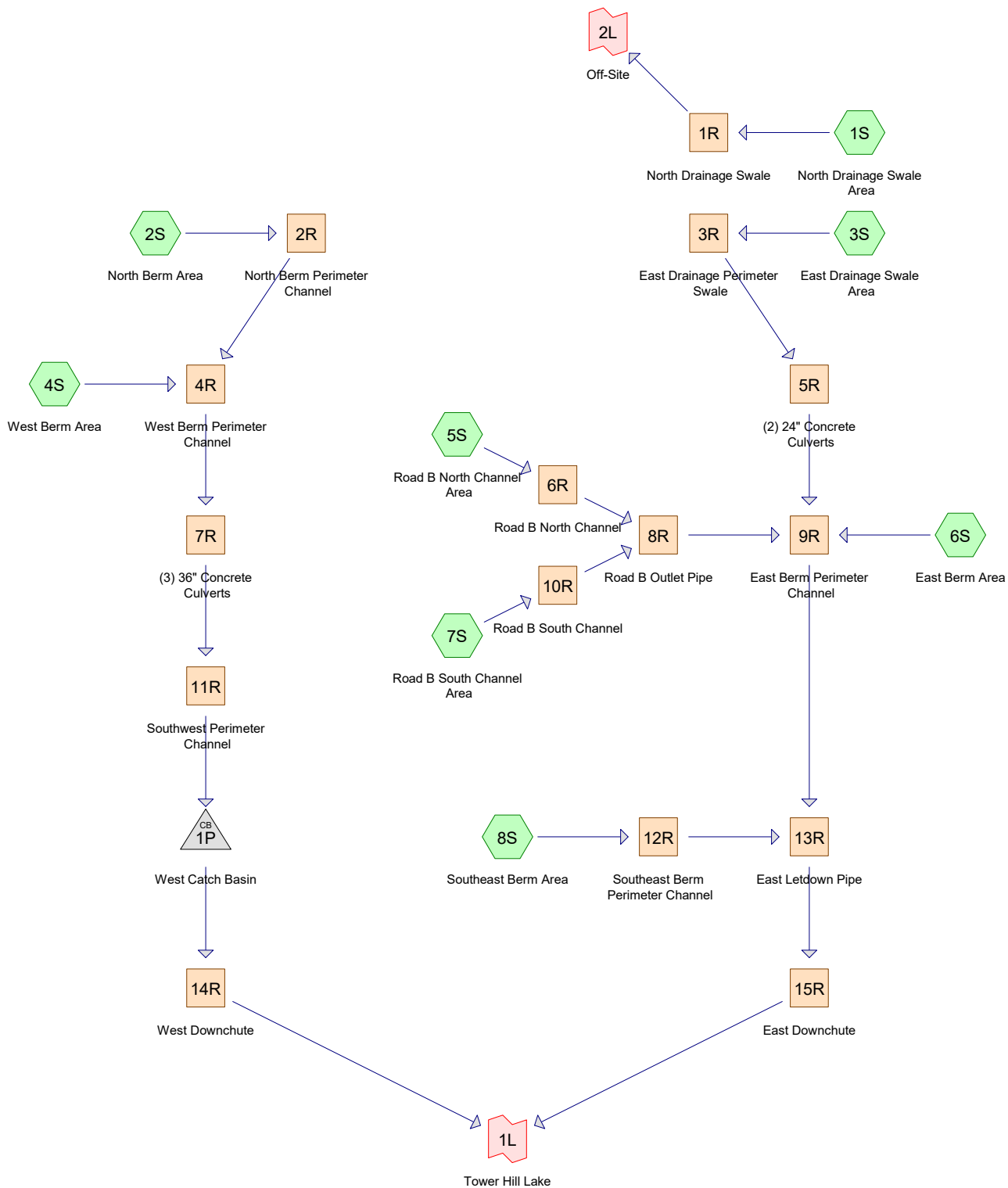
RAINFALL INTENSITY TABLE

POTTAWATOMIE COUNTY, KANSAS

This table contains average rainfall intensities in inches per hour.

DURATION (H:M)	AVERAGE RECURRENCE INTERVAL								
	1 yr	2 yr	5 yr	10 yr	25 yr	50 yr	100 yr	200 yr	500 yr
3:15	0.58	0.68	0.87	1.03	1.27	1.47	1.68	1.91	2.22
3:30	0.55	0.65	0.82	0.98	1.21	1.40	1.59	1.81	2.11
3:45	0.52	0.61	0.78	0.93	1.15	1.33	1.52	1.72	2.00
4:00	0.49	0.58	0.74	0.88	1.09	1.26	1.44	1.64	1.91
4:15	0.47	0.56	0.71	0.84	1.04	1.21	1.38	1.56	1.82
4:30	0.45	0.53	0.68	0.81	1.00	1.16	1.32	1.50	1.74
4:45	0.43	0.51	0.65	0.78	0.96	1.11	1.27	1.44	1.67
5:00	0.42	0.49	0.63	0.74	0.92	1.06	1.22	1.38	1.61
5:15	0.40	0.47	0.60	0.72	0.89	1.02	1.17	1.33	1.54
5:30	0.39	0.46	0.58	0.69	0.85	0.99	1.13	1.28	1.49
5:45	0.37	0.44	0.56	0.67	0.82	0.95	1.09	1.23	1.43
6:00	0.36	0.43	0.54	0.64	0.80	0.92	1.05	1.19	1.38
6:30	0.34	0.40	0.51	0.61	0.75	0.86	0.99	1.12	1.30
7:00	0.32	0.38	0.48	0.57	0.70	0.81	0.93	1.05	1.22
7:30	0.30	0.36	0.46	0.54	0.67	0.77	0.88	0.99	1.15
8:00	0.29	0.34	0.43	0.51	0.63	0.73	0.83	0.94	1.09
8:30	0.27	0.32	0.41	0.49	0.60	0.70	0.79	0.90	1.04
9:00	0.26	0.31	0.39	0.47	0.57	0.66	0.76	0.85	0.99
9:30	0.25	0.30	0.38	0.45	0.55	0.63	0.72	0.81	0.94
10:00	0.24	0.28	0.36	0.43	0.53	0.61	0.69	0.78	0.90
10:30	0.23	0.27	0.35	0.41	0.50	0.58	0.66	0.75	0.86
11:00	0.22	0.26	0.33	0.40	0.49	0.56	0.64	0.72	0.83
11:30	0.21	0.25	0.32	0.38	0.47	0.54	0.61	0.69	0.80
12:00	0.21	0.24	0.31	0.37	0.45	0.52	0.59	0.66	0.77
13:00	0.19	0.23	0.29	0.34	0.42	0.48	0.55	0.62	0.72
14:00	0.18	0.22	0.27	0.32	0.39	0.45	0.51	0.58	0.67
15:00	0.17	0.20	0.26	0.30	0.37	0.43	0.48	0.55	0.63
16:00	0.16	0.19	0.24	0.29	0.35	0.40	0.46	0.52	0.59
17:00	0.16	0.18	0.23	0.27	0.33	0.38	0.43	0.49	0.56
18:00	0.15	0.18	0.22	0.26	0.32	0.36	0.41	0.46	0.53
19:00	0.14	0.17	0.21	0.25	0.30	0.35	0.39	0.44	0.51
20:00	0.14	0.16	0.20	0.24	0.29	0.33	0.37	0.42	0.49
21:00	0.13	0.15	0.19	0.23	0.28	0.32	0.36	0.40	0.46
22:00	0.13	0.15	0.19	0.22	0.27	0.30	0.34	0.39	0.45
23:00	0.12	0.14	0.18	0.21	0.26	0.29	0.33	0.37	0.43
24:00	0.12	0.14	0.17	0.20	0.25	0.28	0.32	0.36	0.41

Appendix B Fly Ash Landfill Run-On Control System – HydroCAD Output Files



Routing Diagram for 260828 Fly Ash Landfill

Prepared by SCS Engineers, Printed 8/28/2026

HydroCAD® 10.20-8a s/n 05804 © 2025 HydroCAD Software Solutions LLC

260828_Fly Ash Landfill

Prepared by SCS Engineers

HydroCAD® 10.20-8a s/n 05804 © 2025 HydroCAD Software Solutions LLC

Type II 24-hr 25-year,24-hour Rainfall=6.00"

Printed 8/28/2026

Page 2

Summary for Subcatchment 1S: North Drainage Swale Area

Runoff = 39.03 cfs @ 12.00 hrs, Volume= 2.080 af, Depth= 3.78"
Routed to Reach 1R : North Drainage Swale

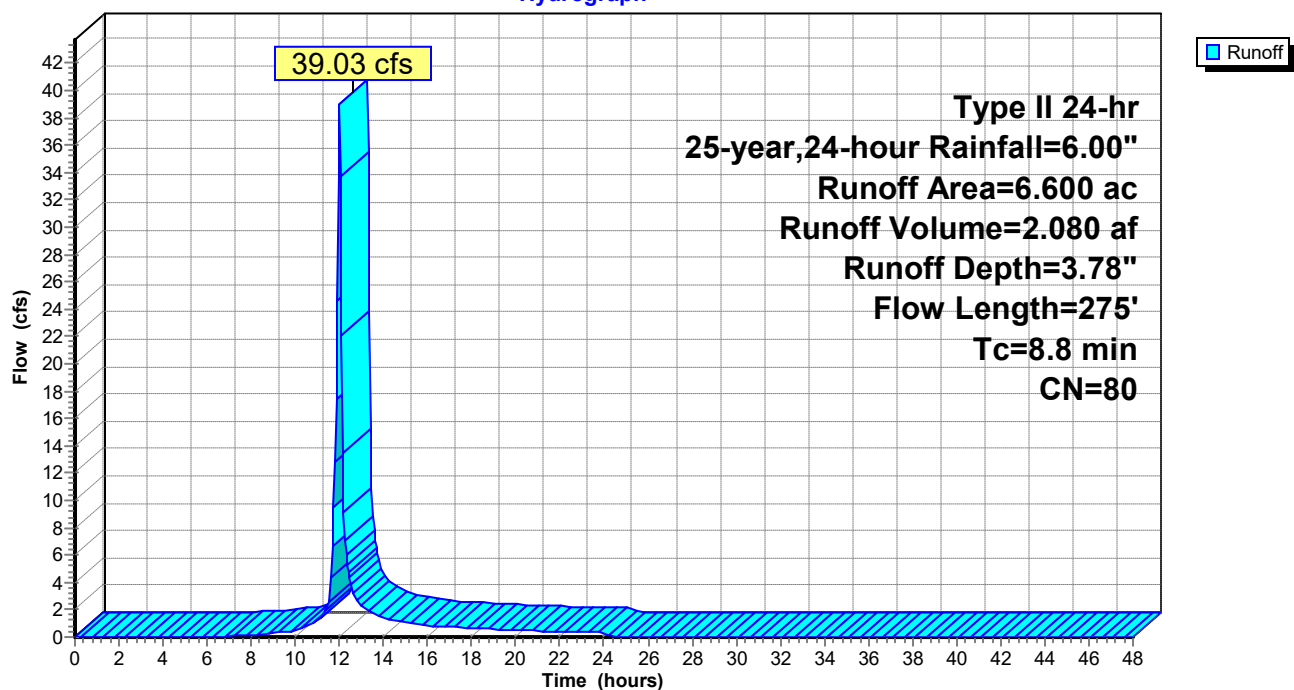
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-year,24-hour Rainfall=6.00"

Area (ac)	CN	Description
6.600	80	>75% Grass cover, Good, HSG D
6.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.0390	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 3.36"
1.5	175	0.0816	2.00		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.8	275	Total			

Subcatchment 1S: North Drainage Swale Area

Hydrograph



260828_Fly Ash Landfill

Prepared by SCS Engineers

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Type II 24-hr 25-year,24-hour Rainfall=6.00"

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Summary for Subcatchment 2S: North Berm Area[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 47.82 cfs @ 11.95 hrs, Volume= 2.313 af, Depth= 4.63"
Routed to Reach 2R : North Berm Perimeter Channel

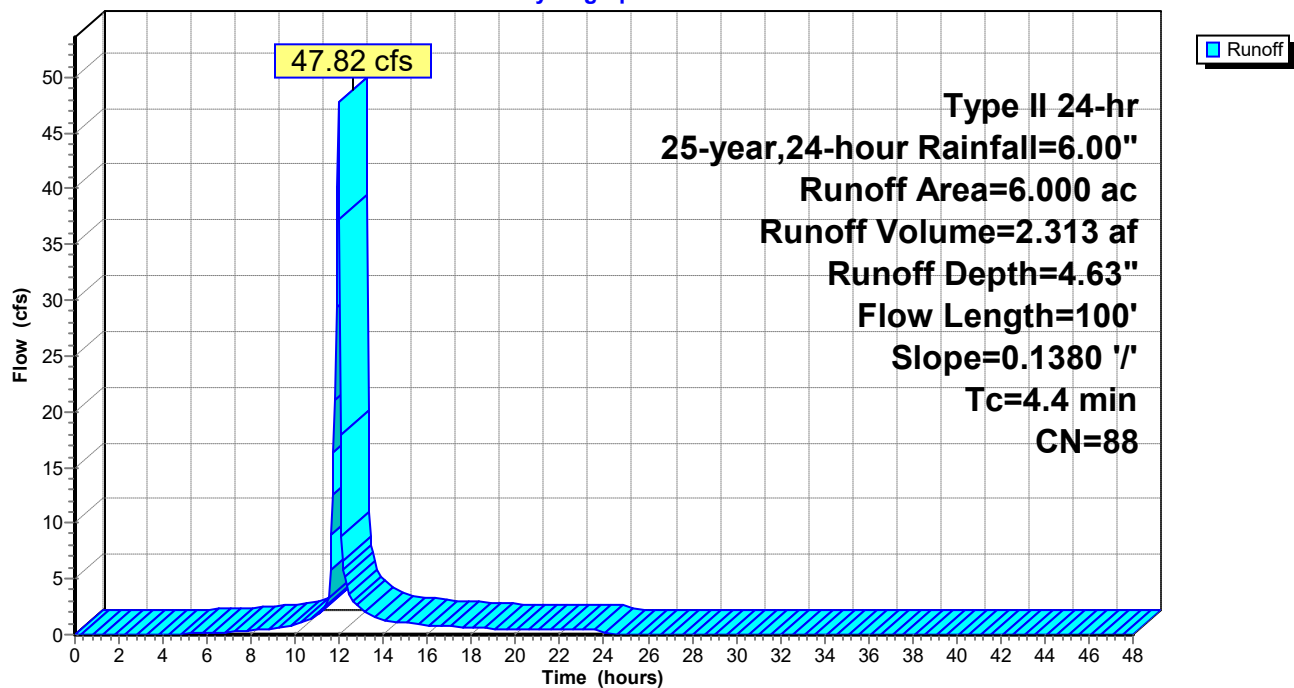
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, $dt=0.05$ hrs
Type II 24-hr 25-year,24-hour Rainfall=6.00"

Area (ac)	CN	Description
3.100	80	>75% Grass cover, Good, HSG D
1.500	96	Gravel surface, HSG D
1.400	96	Gravel surface, HSG D
6.000	88	Weighted Average
6.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	100	0.1380	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 3.36"

Subcatchment 2S: North Berm Area

Hydrograph



260828_Fly Ash Landfill

Prepared by SCS Engineers

HydroCAD® 10.20-8a s/n 05804 © 2025 HydroCAD Software Solutions LLC

Type II 24-hr 25-year,24-hour Rainfall=6.00"

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Page 4

Summary for Subcatchment 3S: East Drainage Swale Area

Runoff = 35.88 cfs @ 12.04 hrs, Volume= 2.136 af, Depth= 3.88"
Routed to Reach 3R : East Drainage Perimeter Swale

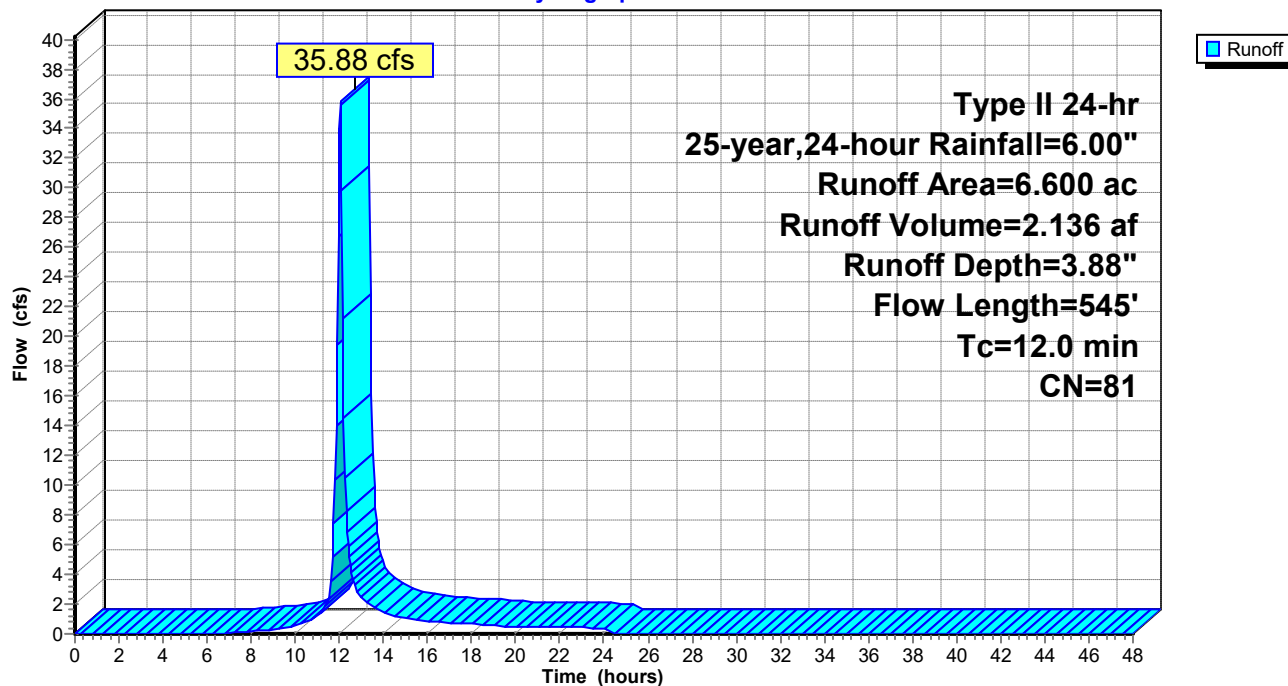
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-year,24-hour Rainfall=6.00"

Area (ac)	CN	Description
6.000	80	>75% Grass cover, Good, HSG D
0.600	96	Gravel surface, HSG D
6.600	81	Weighted Average
6.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	100	0.0330	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.36"
4.2	445	0.0630	1.76		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
12.0	545	Total			

Subcatchment 3S: East Drainage Swale Area

Hydrograph



260828_Fly Ash Landfill

Prepared by SCS Engineers

HydroCAD® 10.20-8a s/n 05804 © 2025 HydroCAD Software Solutions LLC

Type II 24-hr 25-year,24-hour Rainfall=6.00"

Printed 8/28/2026

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Summary for Subcatchment 4S: West Berm Area

Runoff = 56.53 cfs @ 12.00 hrs, Volume= 3.048 af, Depth= 4.30"
Routed to Reach 4R : West Berm Perimeter Channel

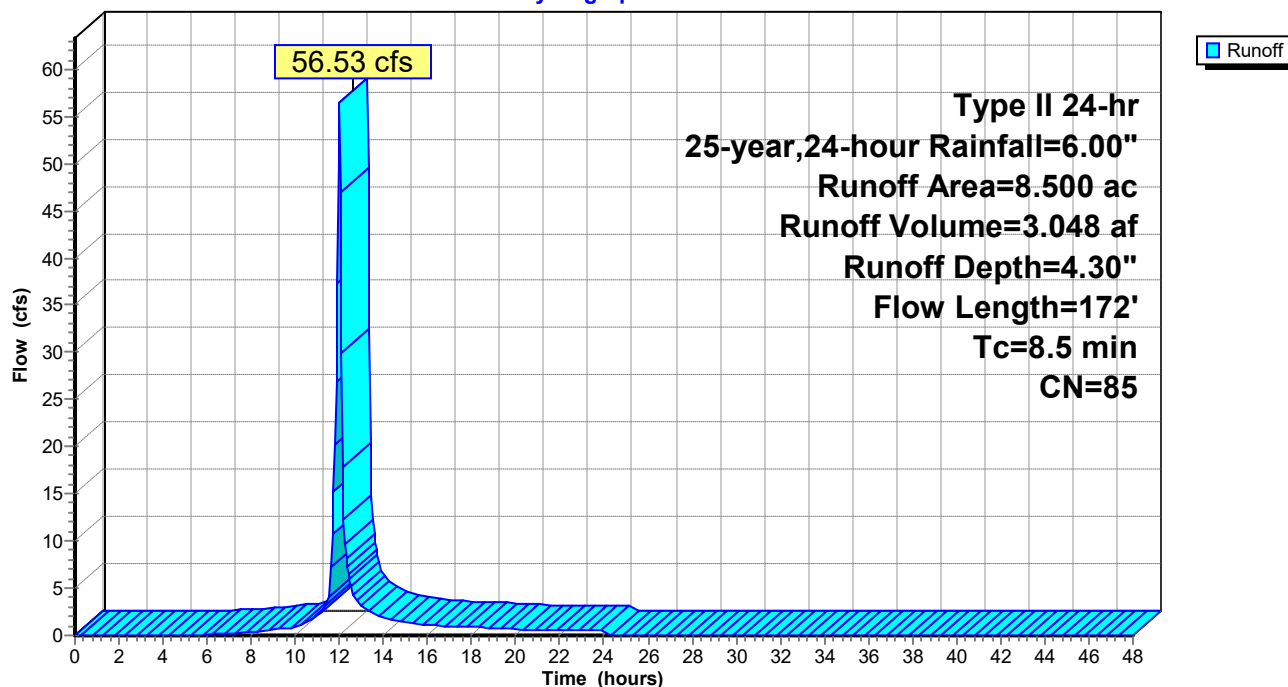
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-year,24-hour Rainfall=6.00"

Area (ac)	CN	Description
6.000	80	>75% Grass cover, Good, HSG D
1.300	96	Gravel surface, HSG D
1.200	96	Gravel surface, HSG D
8.500	85	Weighted Average
8.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0310	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.36"
0.5	72	0.1128	2.35		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.5	172	Total			

Subcatchment 4S: West Berm Area

Hydrograph



Summary for Subcatchment 5S: Road B North Channel Area

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 1.42 cfs @ 11.93 hrs, Volume= 0.063 af, Depth= 3.78"
 Routed to Reach 6R : Road B North Channel

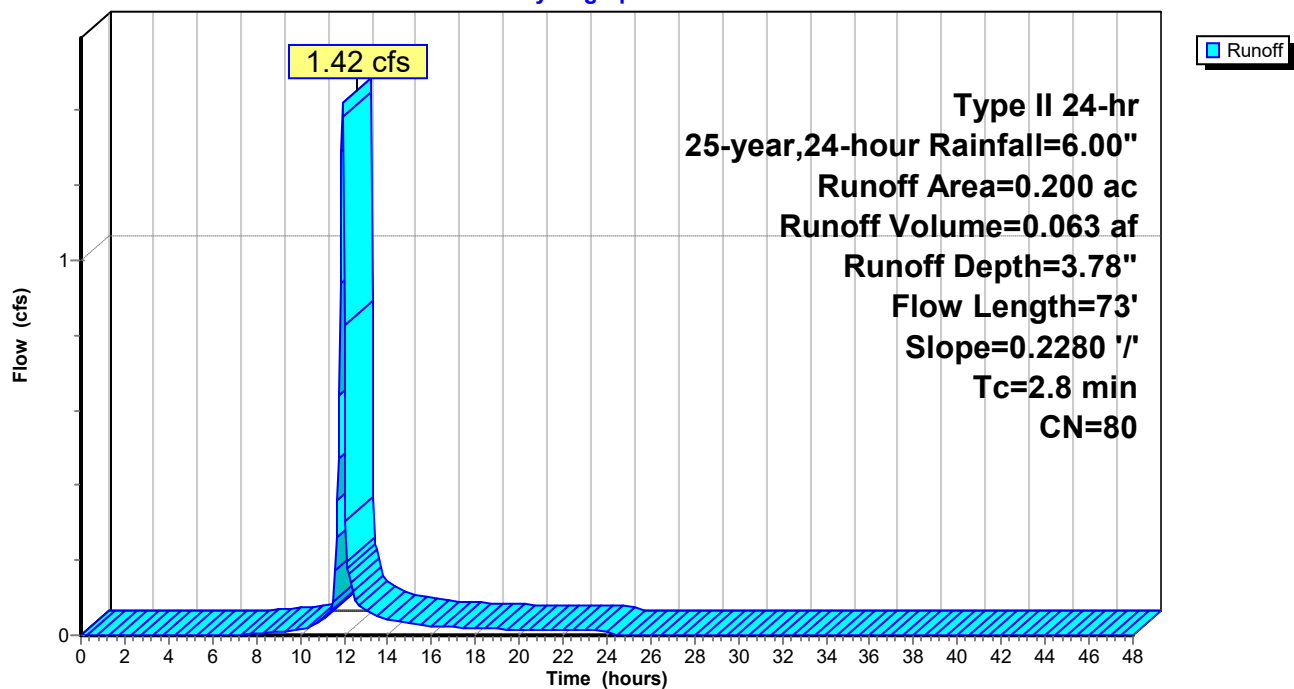
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, $dt=0.05$ hrs
 Type II 24-hr 25-year,24-hour Rainfall=6.00"

Area (ac)	CN	Description
0.200	80	>75% Grass cover, Good, HSG D
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	73	0.2280	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 3.36"

Subcatchment 5S: Road B North Channel Area

Hydrograph



260828_Fly Ash Landfill

Prepared by SCS Engineers

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Type II 24-hr 25-year,24-hour Rainfall=6.00"

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Summary for Subcatchment 6S: East Berm Area

Runoff = 28.23 cfs @ 11.99 hrs, Volume= 1.504 af, Depth= 4.20"
Routed to Reach 9R : East Berm Perimeter Channel

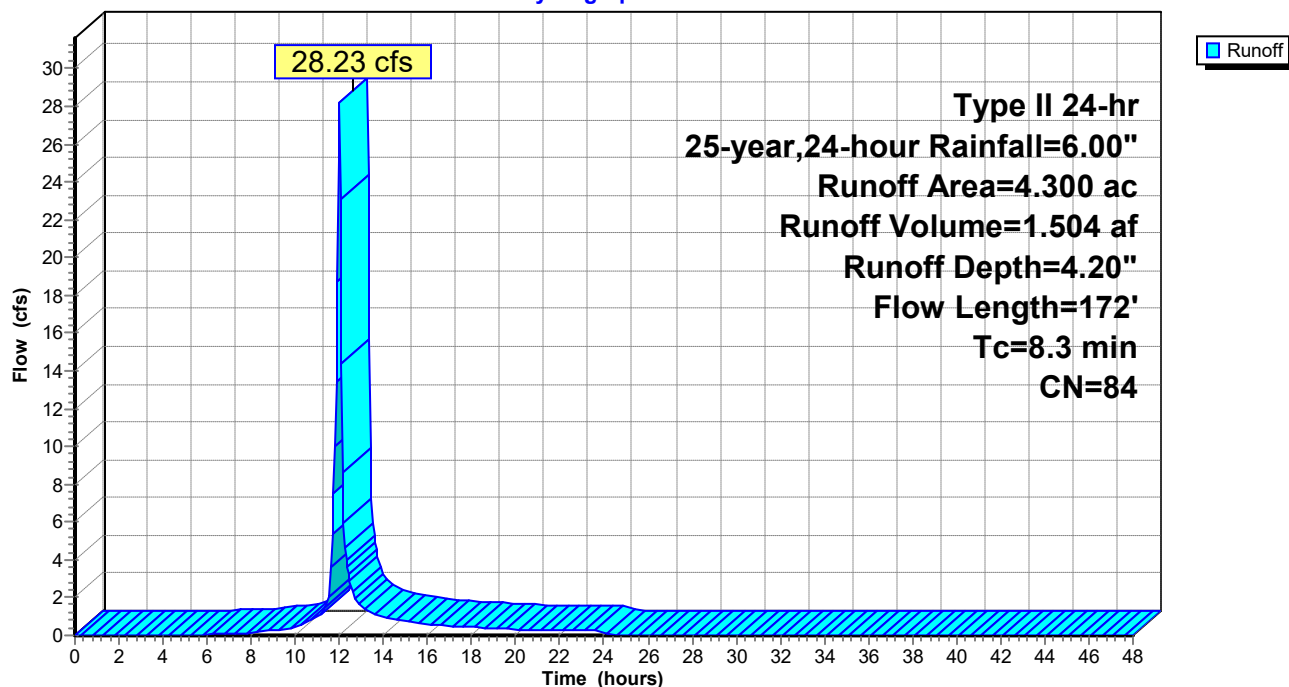
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-year,24-hour Rainfall=6.00"

Area (ac)	CN	Description
3.200	80	>75% Grass cover, Good, HSG D
0.400	96	Gravel surface, HSG D
0.700	96	Gravel surface, HSG D
4.300	84	Weighted Average
4.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	100	0.0330	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.36"
0.5	72	0.1101	2.32		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
8.3	172	Total			

Subcatchment 6S: East Berm Area

Hydrograph



Summary for Subcatchment 7S: Road B South Channel Area

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 2.13 cfs @ 11.94 hrs, Volume= 0.095 af, Depth= 3.78"
 Routed to Reach 10R : Road B South Channel

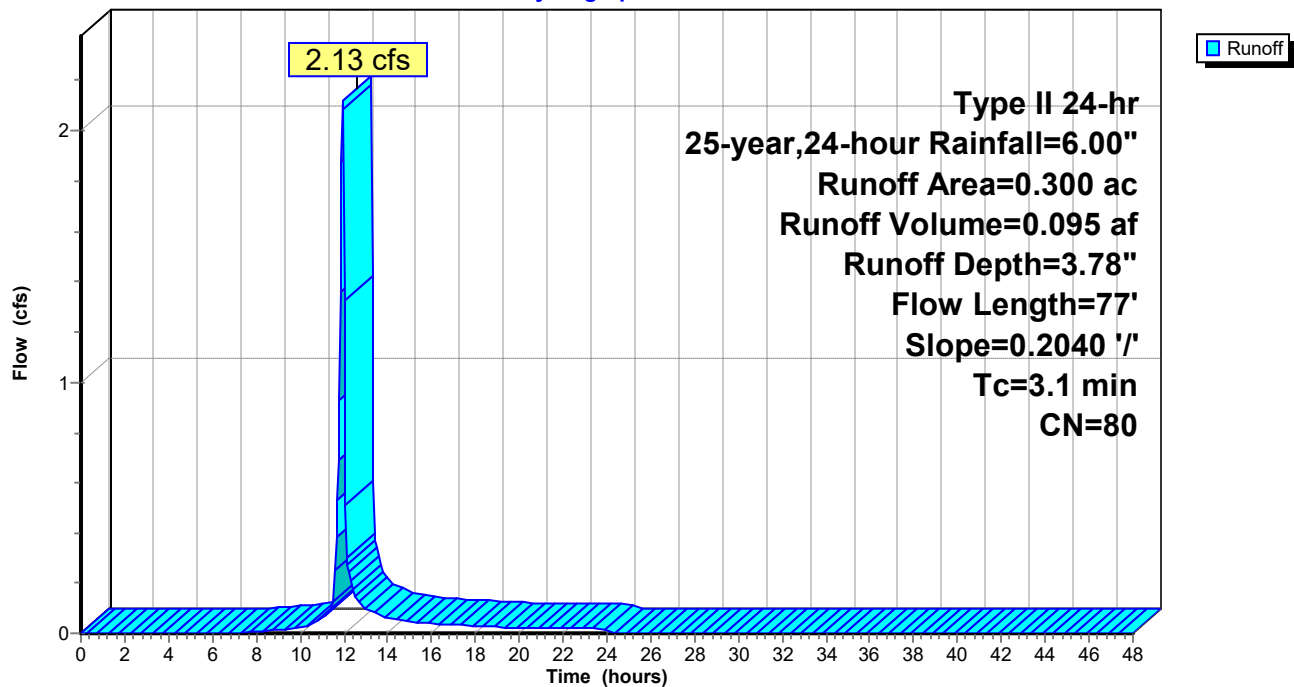
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, $dt=0.05$ hrs
 Type II 24-hr 25-year,24-hour Rainfall=6.00"

Area (ac)	CN	Description
0.300	80	>75% Grass cover, Good, HSG D
0.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	77	0.2040	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 3.36"

Subcatchment 7S: Road B South Channel Area

Hydrograph



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Type II 24-hr 25-year,24-hour Rainfall=6.00"

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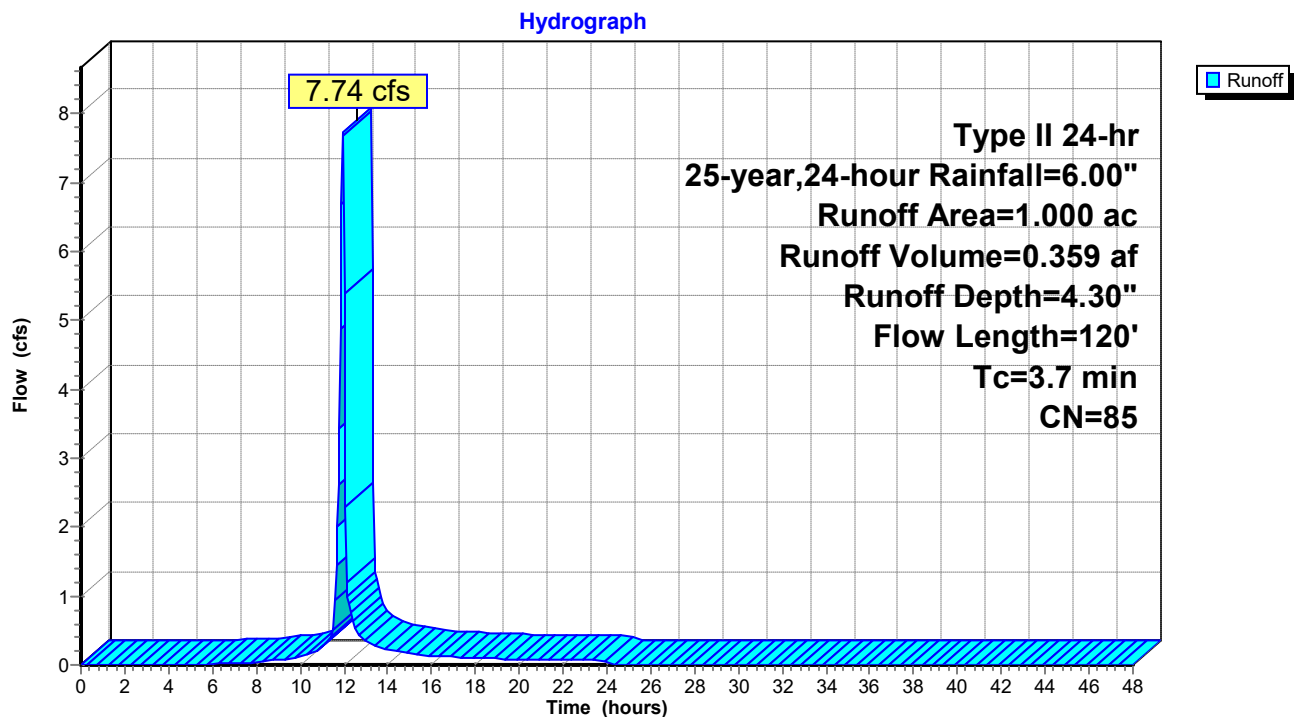
Summary for Subcatchment 8S: Southeast Berm Area[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 7.74 cfs @ 11.94 hrs, Volume= 0.359 af, Depth= 4.30"
Routed to Reach 12R : Southeast Berm Perimeter Channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, $dt=0.05$ hrs
Type II 24-hr 25-year,24-hour Rainfall=6.00"

Area (ac)	CN	Description
0.700	80	>75% Grass cover, Good, HSG D
0.300	96	Gravel surface, HSG D
1.000	85	Weighted Average
1.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.2340	0.47		Sheet Flow, Grass: Short n= 0.150 P2= 3.36"
0.1	20	0.1887	3.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
3.7	120	Total			

Subcatchment 8S: Southeast Berm Area

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Type II 24-hr 25-year, 24-hour Rainfall=6.00"

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Summary for Reach 1R: North Drainage Swale

Inflow Area = 6.600 ac, 0.00% Impervious, Inflow Depth = 3.78" for 25-year, 24-hour event
Inflow = 39.03 cfs @ 12.00 hrs, Volume= 2.080 af
Outflow = 36.17 cfs @ 12.08 hrs, Volume= 2.080 af, Atten= 7%, Lag= 4.9 min
Routed to Link 2L : Off-Site

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.49 fps, Min. Travel Time= 2.8 min

Avg. Velocity= 1.80 fps, Avg. Travel Time= 8.6 min

Peak Storage= 6,128 cf @ 12.03 hrs

Average Depth at Peak Storage= 1.49' , Surface Width= 8.92'

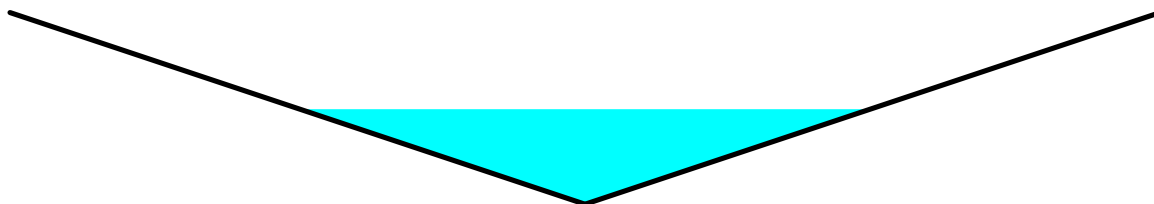
Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 237.49 cfs

0.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight

Side Slope Z-value= 3.0 '/' Top Width= 18.00'

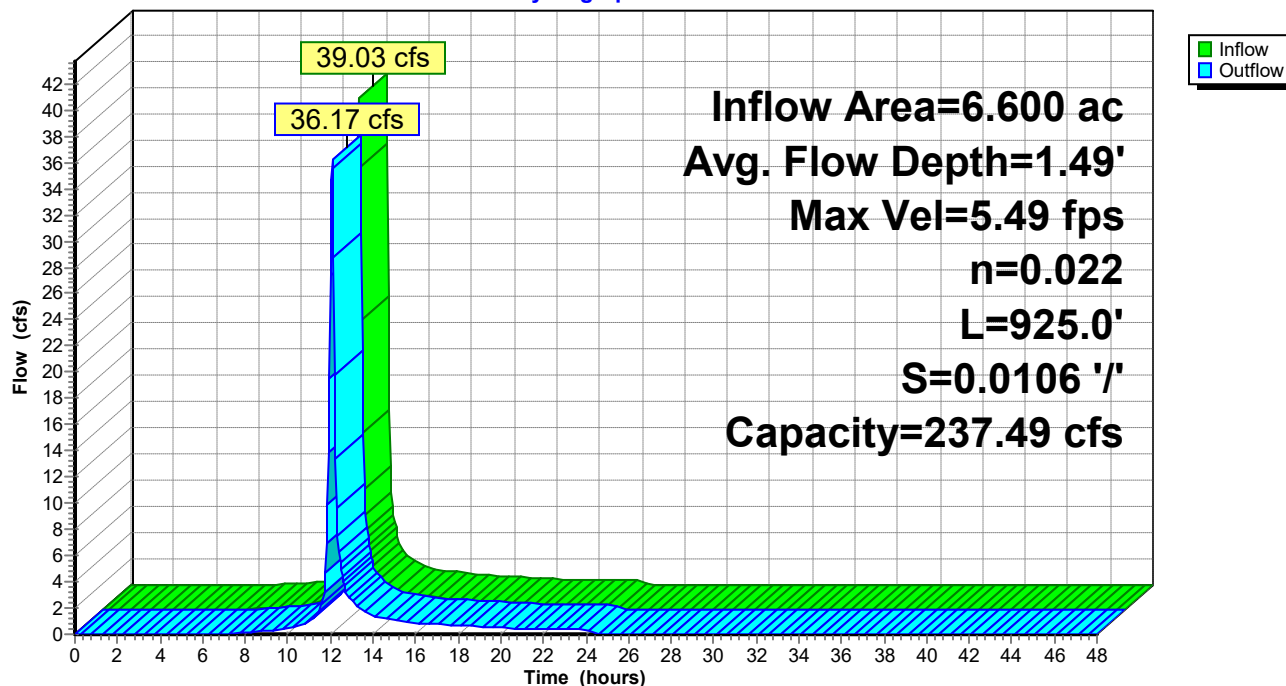
Length= 925.0' Slope= 0.0106 '/'

Inlet Invert= 1,243.30', Outlet Invert= 1,233.50'



Reach 1R: North Drainage Swale

Hydrograph



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Type II 24-hr 25-year, 24-hour Rainfall=6.00"

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Summary for Reach 2R: North Berm Perimeter Channel

Inflow Area = 6.000 ac, 0.00% Impervious, Inflow Depth = 4.63" for 25-year, 24-hour event
Inflow = 47.82 cfs @ 11.95 hrs, Volume= 2.313 af
Outflow = 25.82 cfs @ 12.33 hrs, Volume= 2.313 af, Atten= 46%, Lag= 22.9 min
Routed to Reach 4R : West Berm Perimeter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.97 fps, Min. Travel Time= 17.7 min

Avg. Velocity= 0.38 fps, Avg. Travel Time= 91.3 min

Peak Storage= 27,538 cf @ 12.03 hrs

Average Depth at Peak Storage= 1.01', Surface Width= 16.07'

Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 204.37 cfs

10.00' x 3.00' deep channel, n= 0.069 Riprap, 6-inch

Side Slope Z-value= 3.0 ' ' Top Width= 28.00'

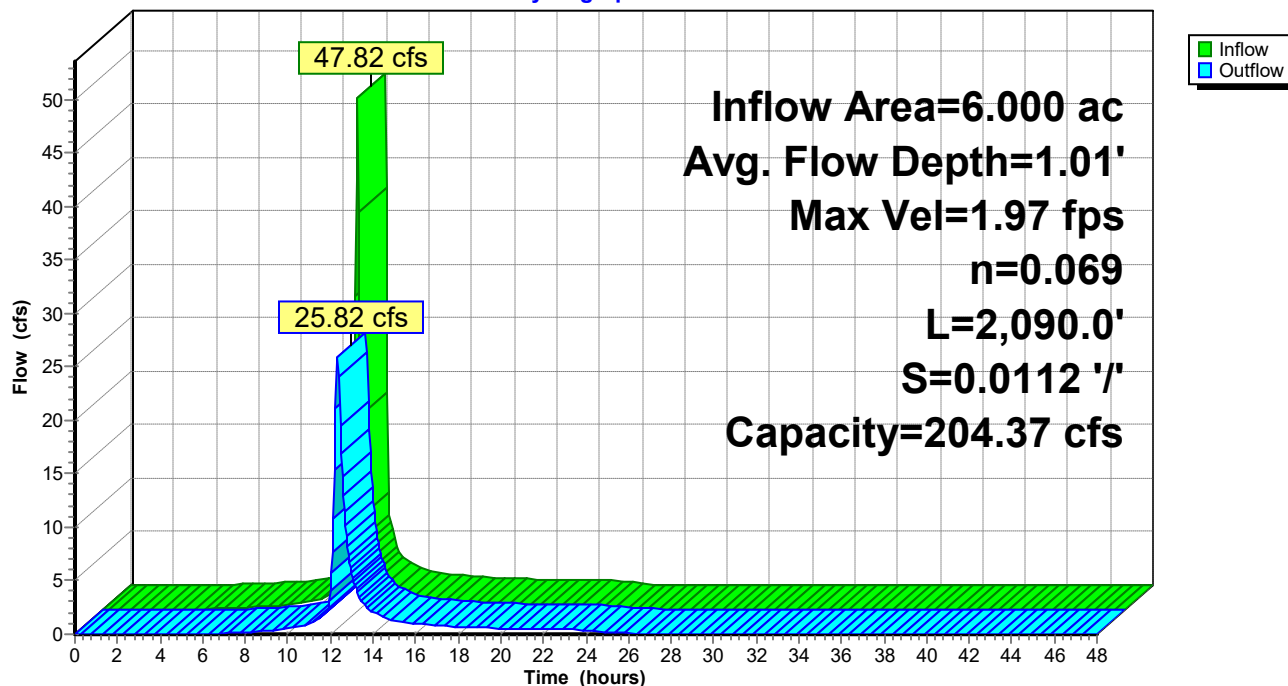
Length= 2,090.0' Slope= 0.0112 ' '

Inlet Invert= 1,246.70', Outlet Invert= 1,223.20'



Reach 2R: North Berm Perimeter Channel

Hydrograph



Summary for Reach 3R: East Drainage Perimeter Swale

Inflow Area = 6.600 ac, 0.00% Impervious, Inflow Depth = 3.88" for 25-year,24-hour event
Inflow = 35.88 cfs @ 12.04 hrs, Volume= 2.136 af
Outflow = 34.23 cfs @ 12.10 hrs, Volume= 2.136 af, Atten= 5%, Lag= 3.6 min
Routed to Reach 5R : (2) 24" Concrete Culverts

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.08 fps, Min. Travel Time= 2.1 min

Avg. Velocity= 0.99 fps, Avg. Travel Time= 8.7 min

Peak Storage= 4,416 cf @ 12.06 hrs

Average Depth at Peak Storage= 0.71', Surface Width= 14.24'

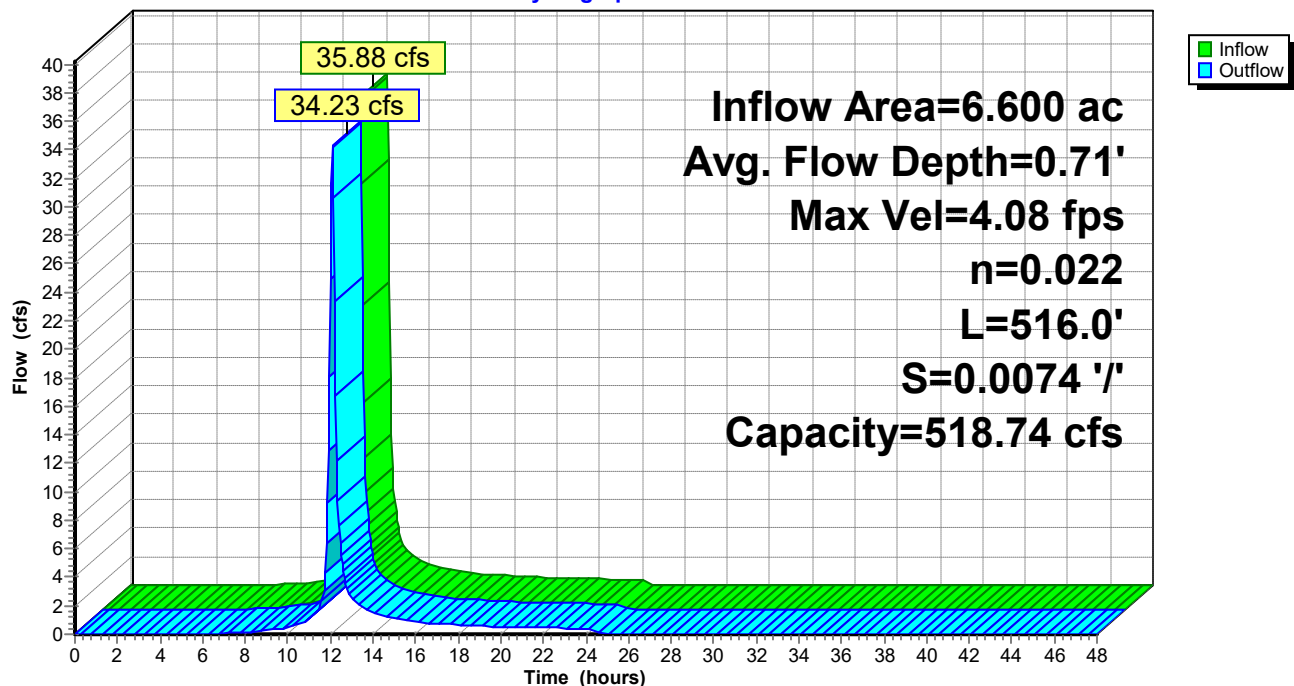
Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 518.74 cfs

10.00' x 3.00' deep channel, n= 0.022 Earth, clean & straight

Side Slope Z-value= 3.0 '/' Top Width= 28.00'

Length= 516.0' Slope= 0.0074 '/'

Inlet Invert= 1,230.20', Outlet Invert= 1,226.40'

**Reach 3R: East Drainage Perimeter Swale****Hydrograph**

Summary for Reach 4R: West Berm Perimeter Channel

[62] Hint: Exceeded Reach 2R OUTLET depth by 0.58' @ 12.45 hrs

Inflow Area = 14.500 ac, 0.00% Impervious, Inflow Depth = 4.44" for 25-year,24-hour event
Inflow = 60.62 cfs @ 12.00 hrs, Volume= 5.361 af
Outflow = 46.81 cfs @ 12.22 hrs, Volume= 5.361 af, Atten= 23%, Lag= 13.3 min
Routed to Reach 7R : (3) 36" Concrete Culverts

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.28 fps, Min. Travel Time= 9.0 min
Avg. Velocity= 0.46 fps, Avg. Travel Time= 44.4 min

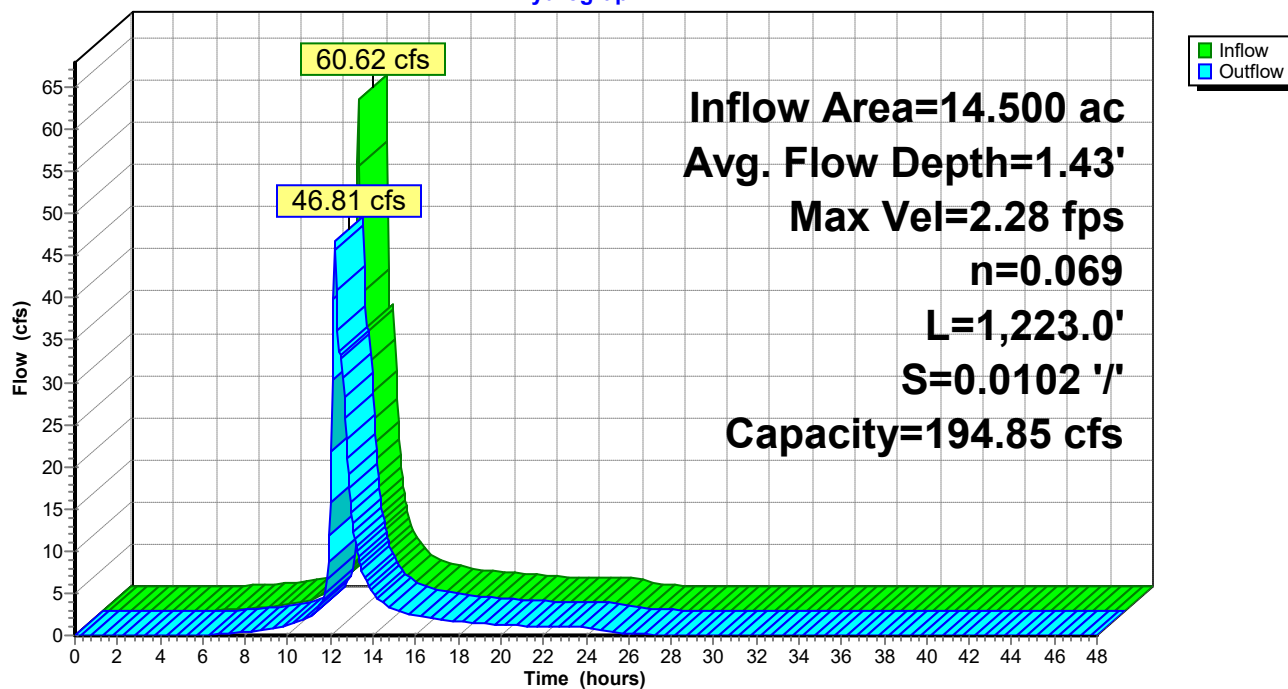
Peak Storage= 25,077 cf @ 12.07 hrs
Average Depth at Peak Storage= 1.43' , Surface Width= 18.60'
Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 194.85 cfs

10.00' x 3.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 3.0 '/' Top Width= 28.00'
Length= 1,223.0' Slope= 0.0102 '/'
Inlet Invert= 1,223.20', Outlet Invert= 1,210.70'



Reach 4R: West Berm Perimeter Channel

Hydrograph



Summary for Reach 5R: (2) 24" Concrete Culverts

[52] Hint: Inlet/Outlet conditions not evaluated

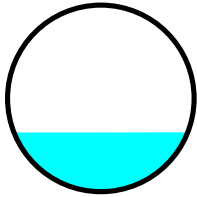
[62] Hint: Exceeded Reach 3R OUTLET depth by 0.31' @ 12.15 hrs

Inflow Area = 6.600 ac, 0.00% Impervious, Inflow Depth = 3.88" for 25-year,24-hour event
Inflow = 34.23 cfs @ 12.10 hrs, Volume= 2.136 af
Outflow = 34.12 cfs @ 12.10 hrs, Volume= 2.136 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 9R : East Berm Perimeter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.85 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 2.64 fps, Avg. Travel Time= 0.4 min

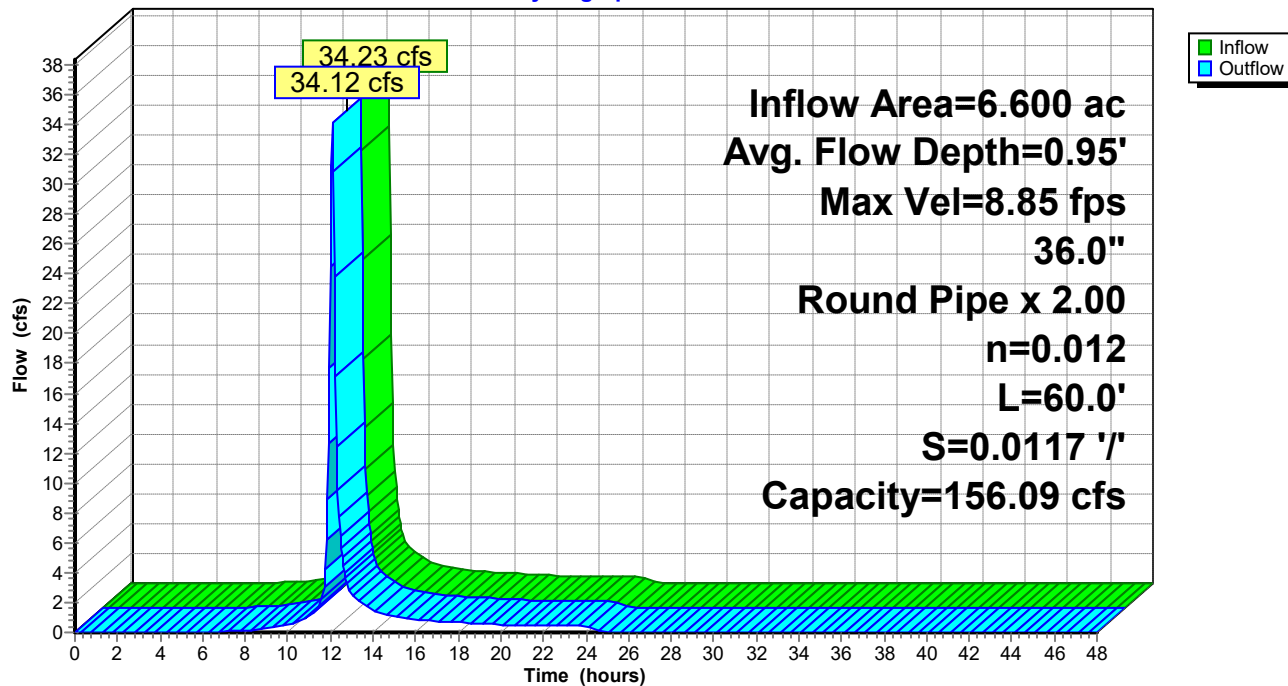
Peak Storage= 232 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.95' , Surface Width= 5.59'
Bank-Full Depth= 3.00' Flow Area= 14.1 sf, Capacity= 156.09 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
36.0" Round Pipe
n= 0.012 Concrete pipe, finished
Length= 60.0' Slope= 0.0117 '/'
Inlet Invert= 1,226.40', Outlet Invert= 1,225.70'



Reach 5R: (2) 24" Concrete Culverts

Hydrograph



Summary for Reach 6R: Road B North Channel

Inflow Area = 0.200 ac, 0.00% Impervious, Inflow Depth = 3.78" for 25-year, 24-hour event
Inflow = 1.42 cfs @ 11.93 hrs, Volume= 0.063 af
Outflow = 1.29 cfs @ 11.99 hrs, Volume= 0.063 af, Atten= 9%, Lag= 3.8 min
Routed to Reach 8R : Road B Outlet Pipe

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.79 fps, Min. Travel Time= 2.5 min

Avg. Velocity= 0.19 fps, Avg. Travel Time= 10.2 min

Peak Storage= 197 cf @ 11.95 hrs

Average Depth at Peak Storage= 0.25', Surface Width= 7.72'

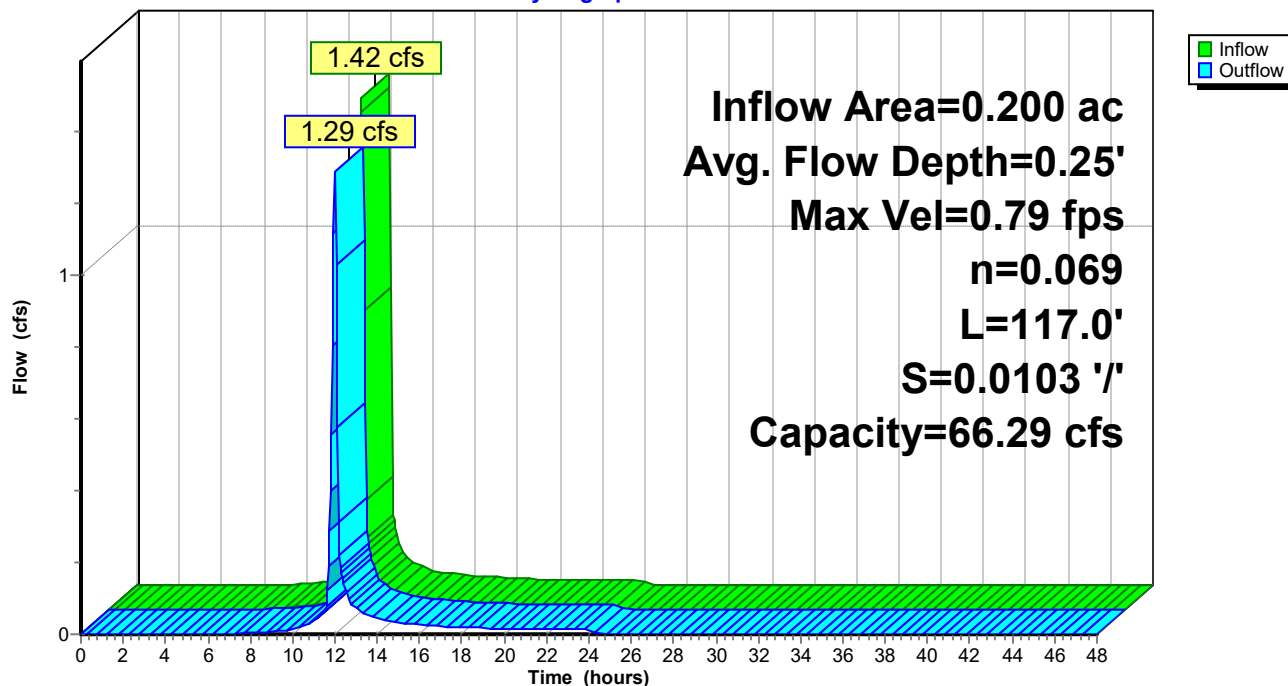
Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 66.29 cfs

6.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch

Side Slope Z-value= 3.0 4.0 '/' Top Width= 20.00'

Length= 117.0' Slope= 0.0103 '/'

Inlet Invert= 1,231.20', Outlet Invert= 1,230.00'

**Reach 6R: Road B North Channel****Hydrograph**

Summary for Reach 7R: (3) 36" Concrete Culverts

[52] Hint: Inlet/Outlet conditions not evaluated

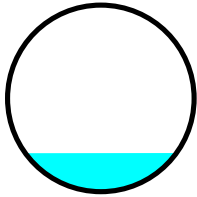
[61] Hint: Exceeded Reach 4R outlet invert by 0.62' @ 12.20 hrs

Inflow Area = 14.500 ac, 0.00% Impervious, Inflow Depth = 4.44" for 25-year,24-hour event
Inflow = 46.81 cfs @ 12.22 hrs, Volume= 5.361 af
Outflow = 46.73 cfs @ 12.22 hrs, Volume= 5.361 af, Atten= 0%, Lag= 0.1 min
Routed to Reach 11R : Southwest Perimeter Channel

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 14.60 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 3.79 fps, Avg. Travel Time= 0.2 min

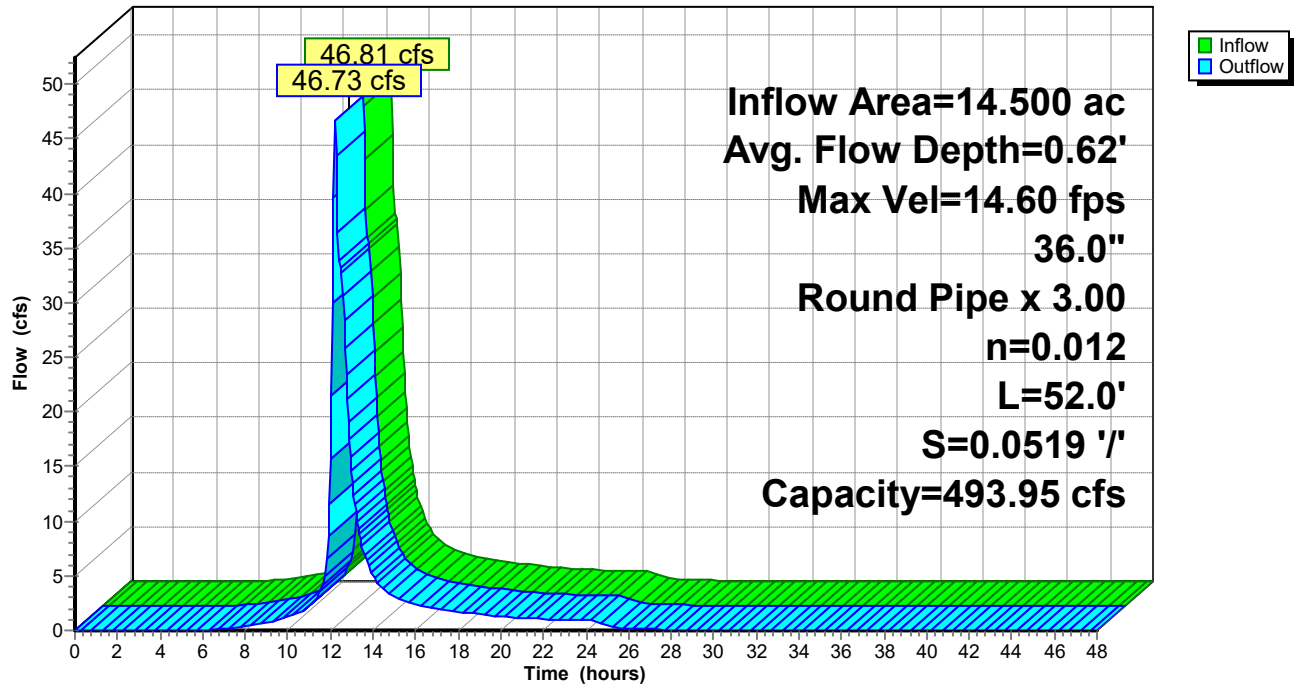
Peak Storage= 166 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.62' , Surface Width= 7.31'
Bank-Full Depth= 3.00' Flow Area= 21.2 sf, Capacity= 493.95 cfs

A factor of 3.00 has been applied to the storage and discharge capacity
36.0" Round Pipe
n= 0.012 Concrete pipe, finished
Length= 52.0' Slope= 0.0519 '/'
Inlet Invert= 1,210.70', Outlet Invert= 1,208.00'



Reach 7R: (3) 36" Concrete Culverts

Hydrograph



Summary for Reach 8R: Road B Outlet Pipe

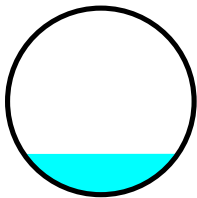
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.500 ac, 0.00% Impervious, Inflow Depth = 3.78" for 25-year,24-hour event
Inflow = 2.76 cfs @ 12.03 hrs, Volume= 0.158 af
Outflow = 2.74 cfs @ 12.04 hrs, Volume= 0.158 af, Atten= 1%, Lag= 0.4 min
Routed to Reach 9R : East Berm Perimeter Channel

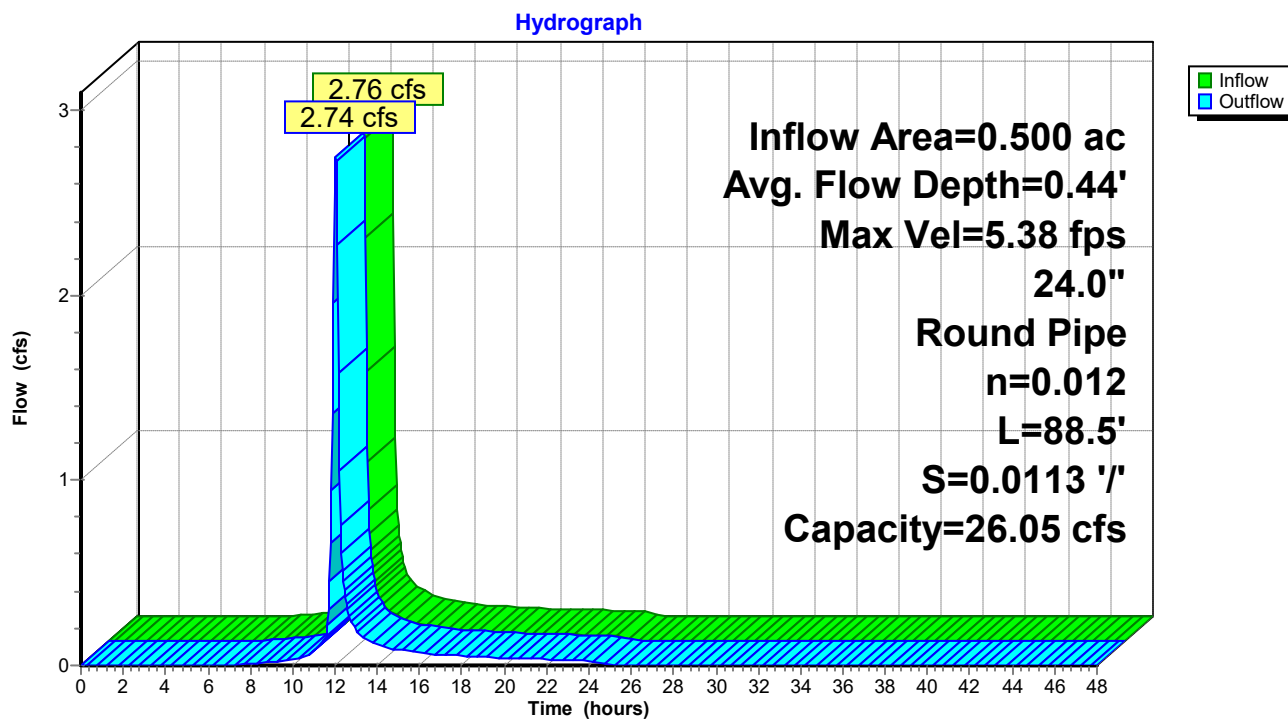
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.38 fps, Min. Travel Time= 0.3 min
Avg. Velocity= 1.58 fps, Avg. Travel Time= 0.9 min

Peak Storage= 45 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.44' , Surface Width= 1.66'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 26.05 cfs

24.0" Round Pipe
n= 0.012 Concrete pipe, finished
Length= 88.5' Slope= 0.0113 '/'
Inlet Invert= 1,227.80', Outlet Invert= 1,226.80'



Reach 8R: Road B Outlet Pipe



Summary for Reach 9R: East Berm Perimeter Channel

[62] Hint: Exceeded Reach 5R OUTLET depth by 0.37' @ 12.25 hrs

[61] Hint: Exceeded Reach 8R outlet invert by 0.17' @ 12.10 hrs

Inflow Area = 11.400 ac, 0.00% Impervious, Inflow Depth = 4.00" for 25-year,24-hour event
Inflow = 57.31 cfs @ 12.04 hrs, Volume= 3.797 af
Outflow = 49.75 cfs @ 12.22 hrs, Volume= 3.797 af, Atten= 13%, Lag= 10.7 min
Routed to Reach 13R : East Letdown Pipe

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.87 fps, Min. Travel Time= 6.5 min

Avg. Velocity= 0.62 fps, Avg. Travel Time= 29.9 min

Peak Storage= 19,578 cf @ 12.11 hrs

Average Depth at Peak Storage= 1.27', Surface Width= 17.60'

Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 262.02 cfs

10.00' x 3.00' deep channel, n= 0.069 Riprap, 6-inch

Side Slope Z-value= 3.0 '/' Top Width= 28.00'

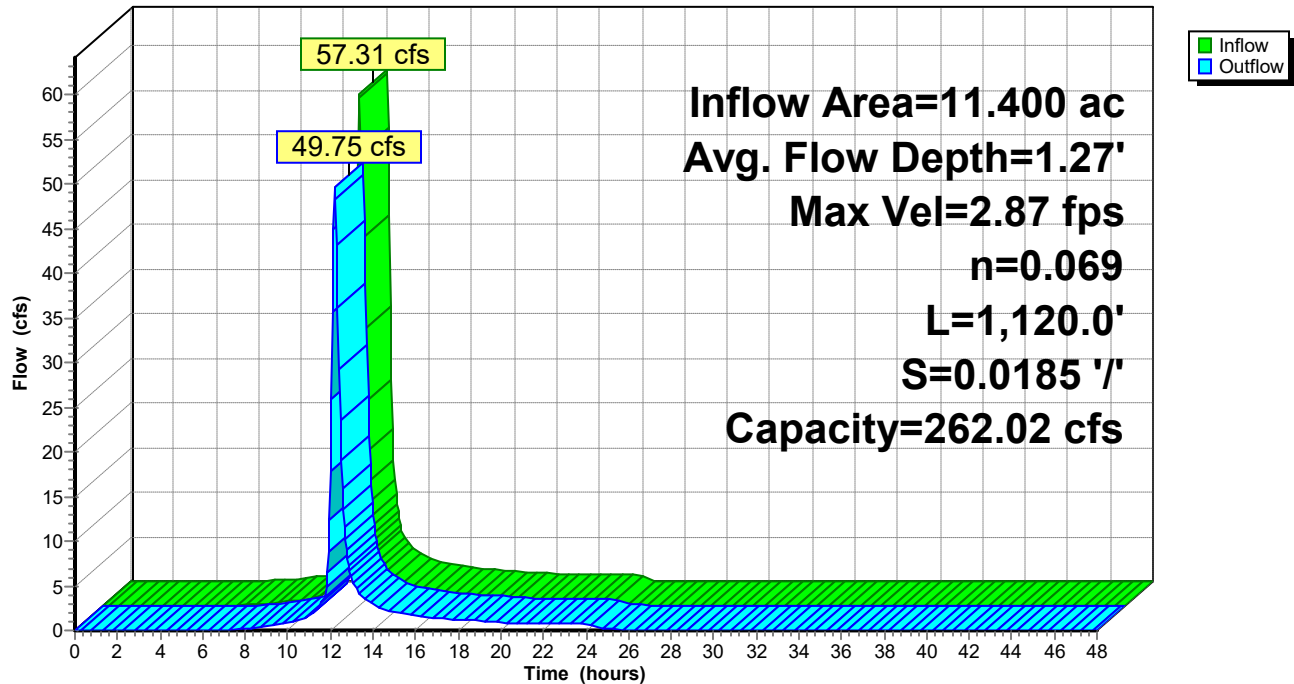
Length= 1,120.0' Slope= 0.0185 '/'

Inlet Invert= 1,225.70', Outlet Invert= 1,205.00'



Reach 9R: East Berm Perimeter Channel

Hydrograph



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Summary for Reach 10R: Road B South Channel

Inflow Area = 0.300 ac, 0.00% Impervious, Inflow Depth = 3.78" for 25-year,24-hour event
Inflow = 2.13 cfs @ 11.94 hrs, Volume= 0.095 af
Outflow = 1.71 cfs @ 12.06 hrs, Volume= 0.095 af, Atten= 20%, Lag= 7.8 min
Routed to Reach 8R : Road B Outlet Pipe

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.22 fps, Min. Travel Time= 5.4 min

Avg. Velocity= 0.32 fps, Avg. Travel Time= 20.6 min

Peak Storage= 559 cf @ 11.98 hrs

Average Depth at Peak Storage= 0.21', Surface Width= 7.48'

Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 113.83 cfs

6.00' x 2.00' deep channel, n= 0.069 Riprap, 6-inch

Side Slope Z-value= 4.0 3.0 '/' Top Width= 20.00'

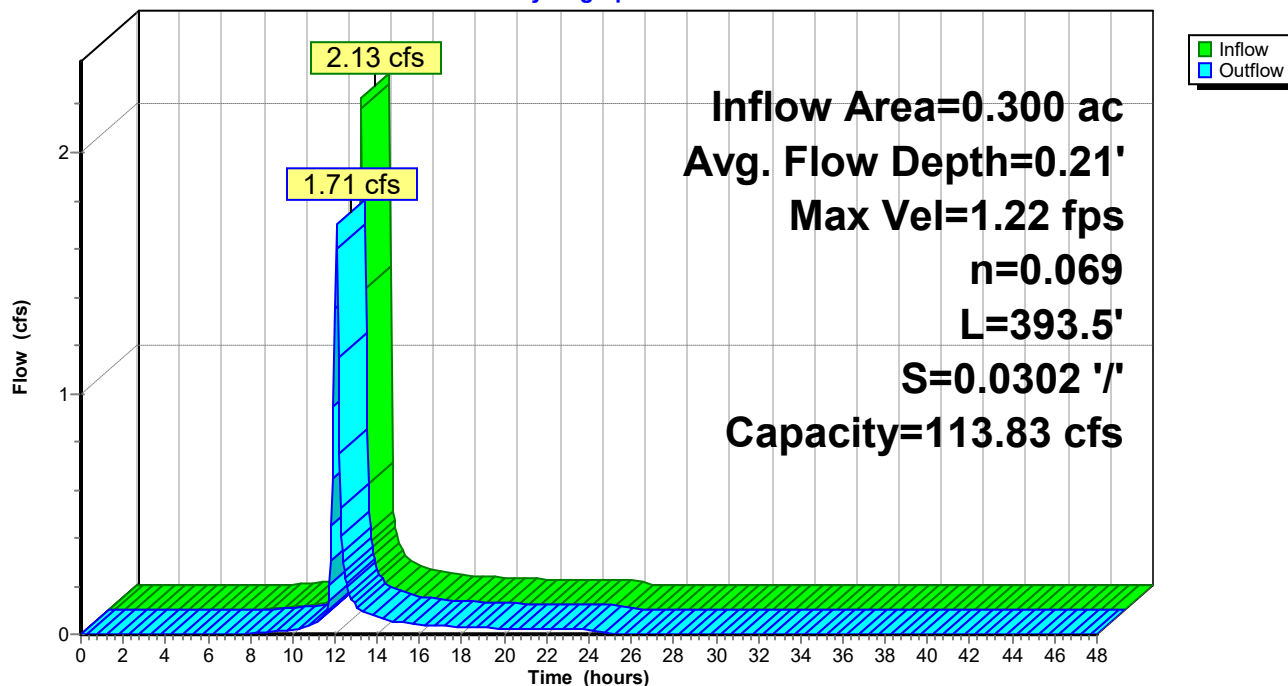
Length= 393.5' Slope= 0.0302 '/'

Inlet Invert= 1,241.90', Outlet Invert= 1,230.00'



Reach 10R: Road B South Channel

Hydrograph



Summary for Reach 11R: Southwest Perimeter Channel

[62] Hint: Exceeded Reach 7R OUTLET depth by 0.20' @ 12.25 hrs

Inflow Area = 14.500 ac, 0.00% Impervious, Inflow Depth = 4.44" for 25-year,24-hour event
Inflow = 46.73 cfs @ 12.22 hrs, Volume= 5.361 af
Outflow = 46.09 cfs @ 12.24 hrs, Volume= 5.361 af, Atten= 1%, Lag= 1.1 min
Routed to Pond 1P : West Catch Basin

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.55 fps, Min. Travel Time= 0.5 min
Avg. Velocity= 0.97 fps, Avg. Travel Time= 2.5 min

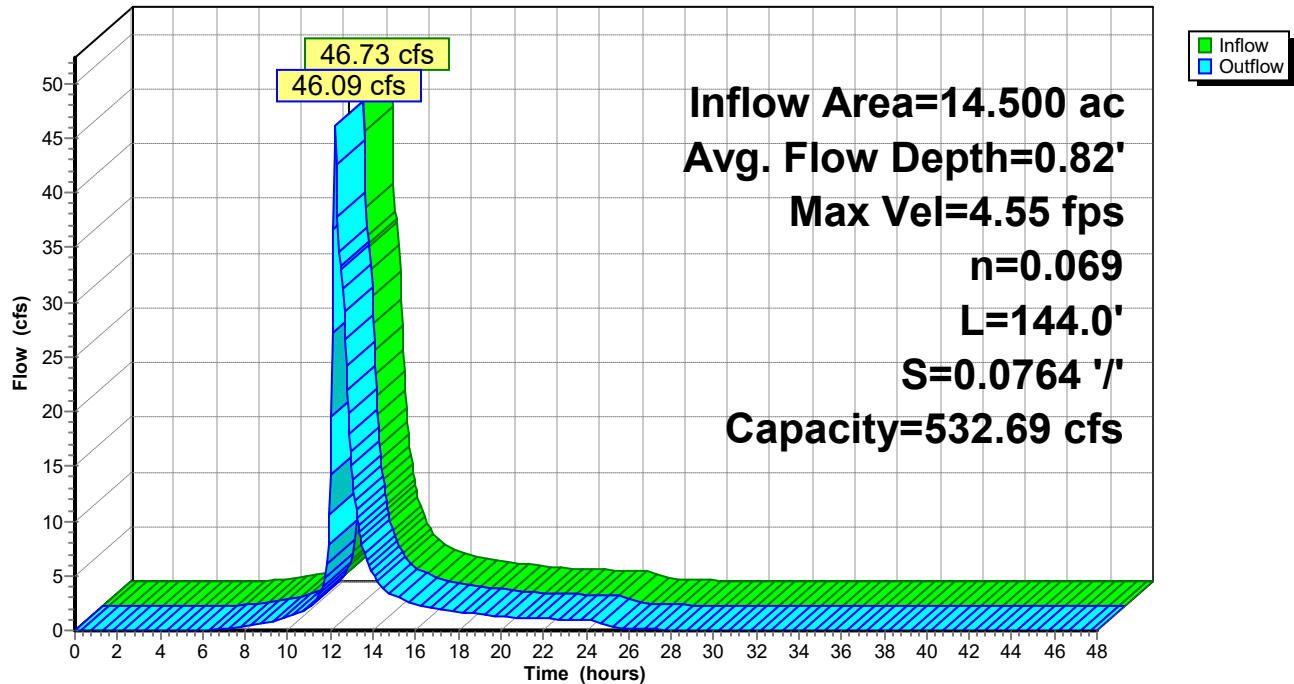
Peak Storage= 1,467 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.82' , Surface Width= 14.91'
Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 532.69 cfs

10.00' x 3.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 3.0 '/' Top Width= 28.00'
Length= 144.0' Slope= 0.0764 '/'
Inlet Invert= 1,208.00', Outlet Invert= 1,197.00'



Reach 11R: Southwest Perimeter Channel

Hydrograph



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Summary for Reach 12R: Southeast Berm Perimeter Channel

Inflow Area = 1.000 ac, 0.00% Impervious, Inflow Depth = 4.30" for 25-year,24-hour event
Inflow = 7.74 cfs @ 11.94 hrs, Volume= 0.359 af
Outflow = 6.61 cfs @ 12.04 hrs, Volume= 0.359 af, Atten= 15%, Lag= 5.9 min
Routed to Reach 13R : East Letdown Pipe

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.81 fps, Min. Travel Time= 4.0 min

Avg. Velocity= 0.45 fps, Avg. Travel Time= 15.9 min

Peak Storage= 1,595 cf @ 11.97 hrs

Average Depth at Peak Storage= 0.34' , Surface Width= 12.02'

Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 359.97 cfs

10.00' x 3.00' deep channel, n= 0.069 Riprap, 6-inch

Side Slope Z-value= 3.0 '/' Top Width= 28.00'

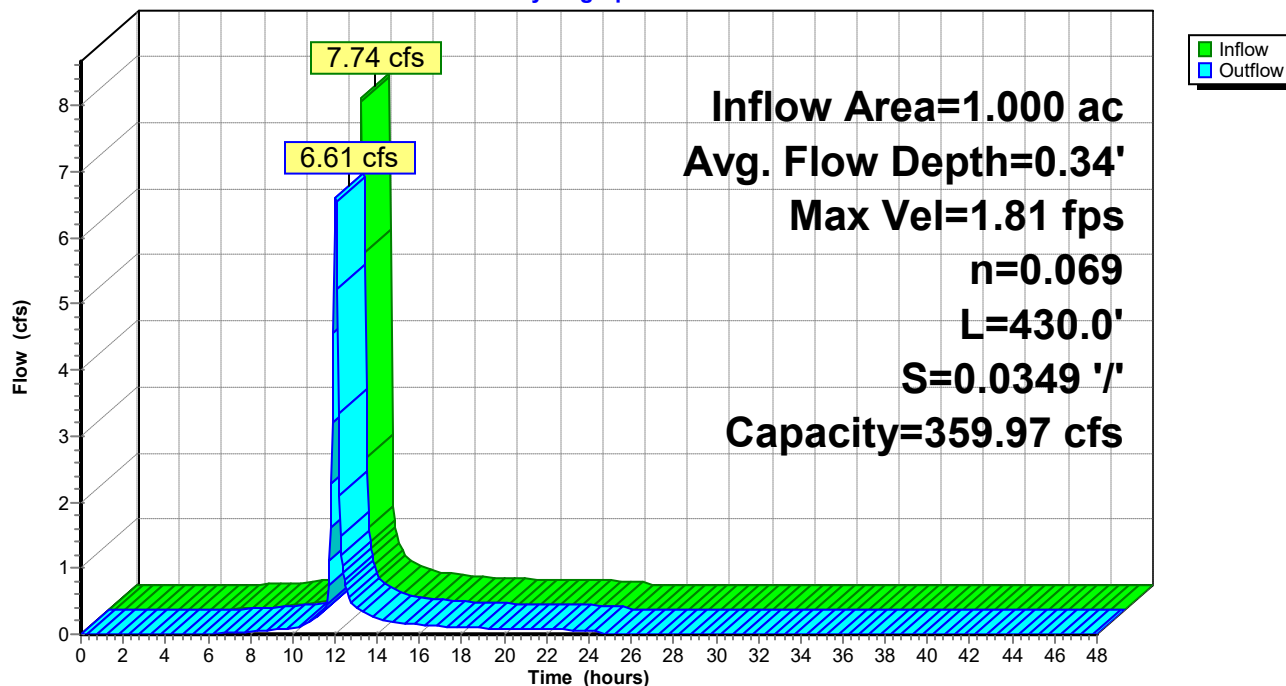
Length= 430.0' Slope= 0.0349 '/'

Inlet Invert= 1,220.00', Outlet Invert= 1,205.00'



Reach 12R: Southeast Berm Perimeter Channel

Hydrograph



Summary for Reach 13R: East Letdown Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

[62] Hint: Exceeded Reach 9R OUTLET depth by 0.08' @ 12.35 hrs

[62] Hint: Exceeded Reach 12R OUTLET depth by 0.92' @ 12.20 hrs

Inflow Area = 12.400 ac, 0.00% Impervious, Inflow Depth = 4.02" for 25-year,24-hour event

Inflow = 51.65 cfs @ 12.21 hrs, Volume= 4.156 af

Outflow = 51.37 cfs @ 12.22 hrs, Volume= 4.156 af, Atten= 1%, Lag= 0.6 min

Routed to Reach 15R : East Downchute

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 23.51 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 6.40 fps, Avg. Travel Time= 1.3 min

Peak Storage= 1,076 cf @ 12.21 hrs

Average Depth at Peak Storage= 1.05', Surface Width= 2.86'

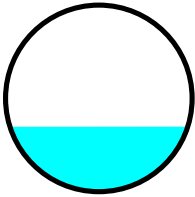
Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 197.58 cfs

36.0" Round Pipe

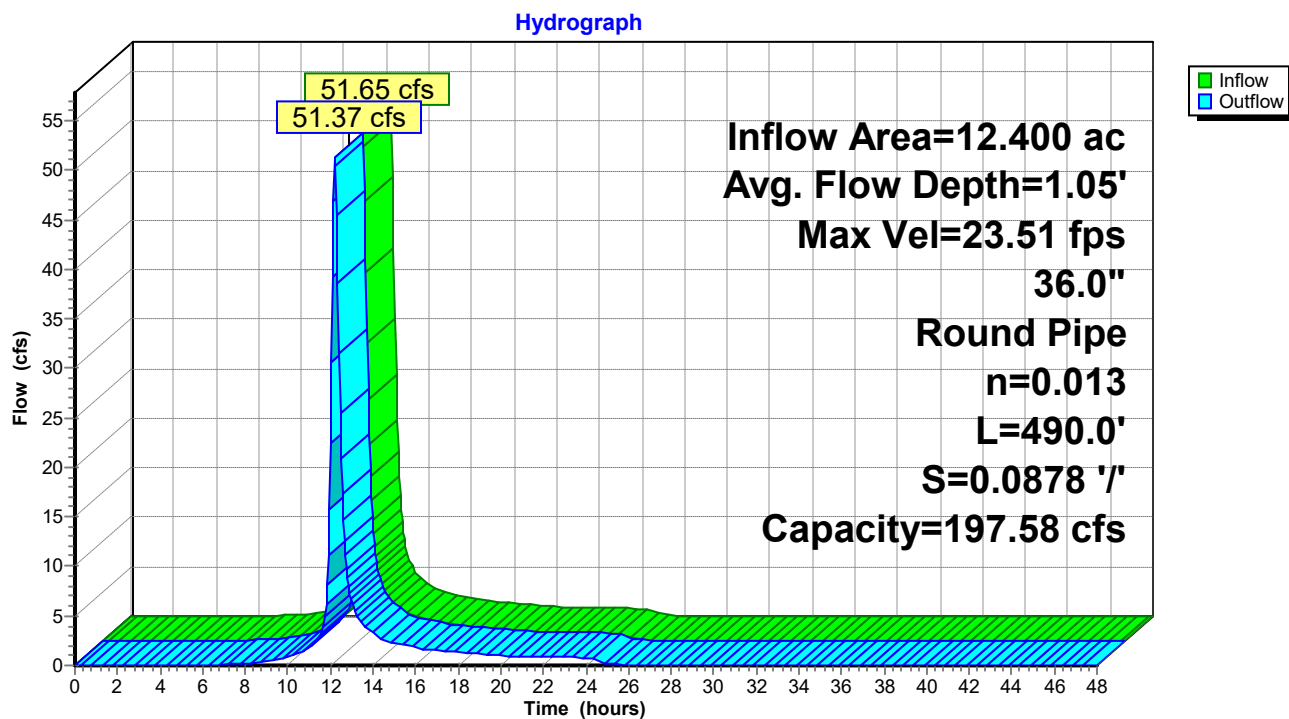
n= 0.013 Corrugated PE, smooth interior

Length= 490.0' Slope= 0.0878 '/'

Inlet Invert= 1,205.00', Outlet Invert= 1,162.00'



Reach 13R: East Letdown Pipe



Summary for Reach 14R: West Downchute

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.69'

Inflow Area = 14.500 ac, 0.00% Impervious, Inflow Depth = 4.44" for 25-year,24-hour event
Inflow = 46.09 cfs @ 12.24 hrs, Volume= 5.361 af
Outflow = 44.99 cfs @ 12.31 hrs, Volume= 5.361 af, Atten= 2%, Lag= 4.4 min
Routed to Link 1L : Tower Hill Lake

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.48 fps, Min. Travel Time= 2.5 min
Avg. Velocity= 0.74 fps, Avg. Travel Time= 11.9 min

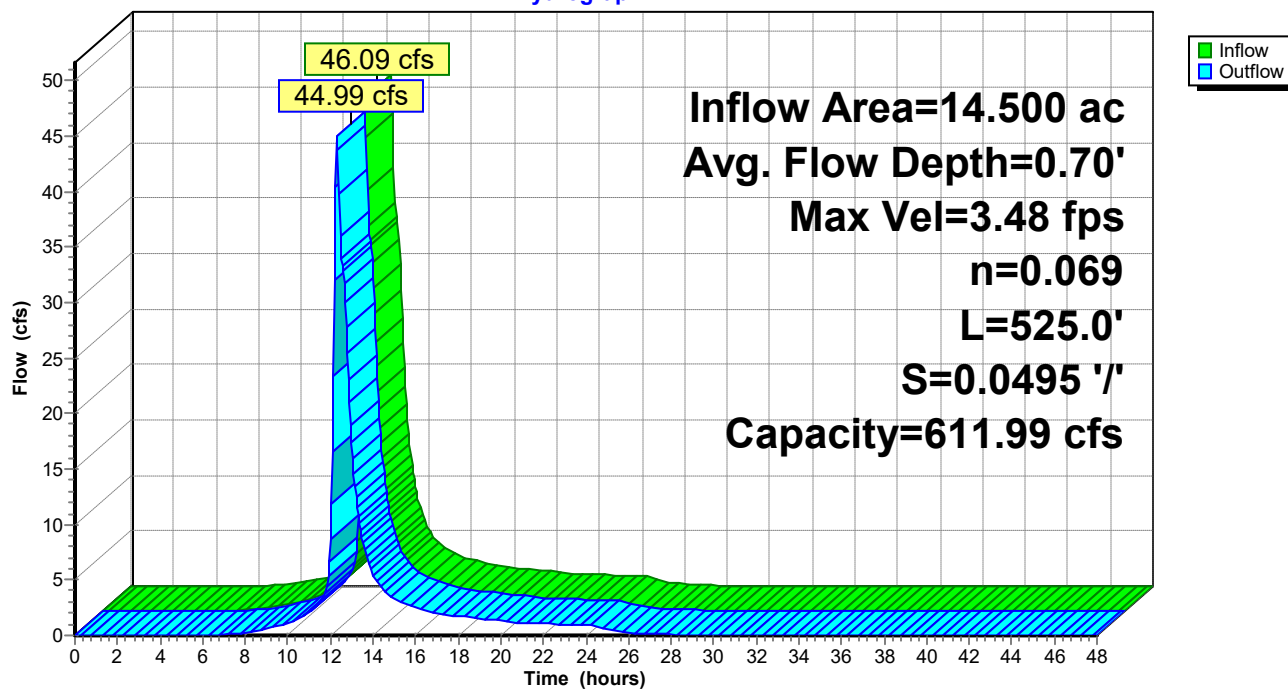
Peak Storage= 6,821 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.70' , Surface Width= 20.69'
Bank-Full Depth= 3.00' Flow Area= 76.5 sf, Capacity= 611.99 cfs

16.50' x 3.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 3.0 '/' Top Width= 34.50'
Length= 525.0' Slope= 0.0495 '/'
Inlet Invert= 1,174.00', Outlet Invert= 1,148.00'



Reach 14R: West Downchute

Hydrograph



Summary for Reach 15R: East Downchute

[61] Hint: Exceeded Reach 13R outlet invert by 0.83' @ 12.25 hrs

Inflow Area = 12.400 ac, 0.00% Impervious, Inflow Depth = 4.02" for 25-year,24-hour event
Inflow = 51.37 cfs @ 12.22 hrs, Volume= 4.156 af
Outflow = 50.46 cfs @ 12.26 hrs, Volume= 4.156 af, Atten= 2%, Lag= 2.8 min
Routed to Link 1L : Tower Hill Lake

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.52 fps, Min. Travel Time= 1.6 min
Avg. Velocity= 0.76 fps, Avg. Travel Time= 7.3 min

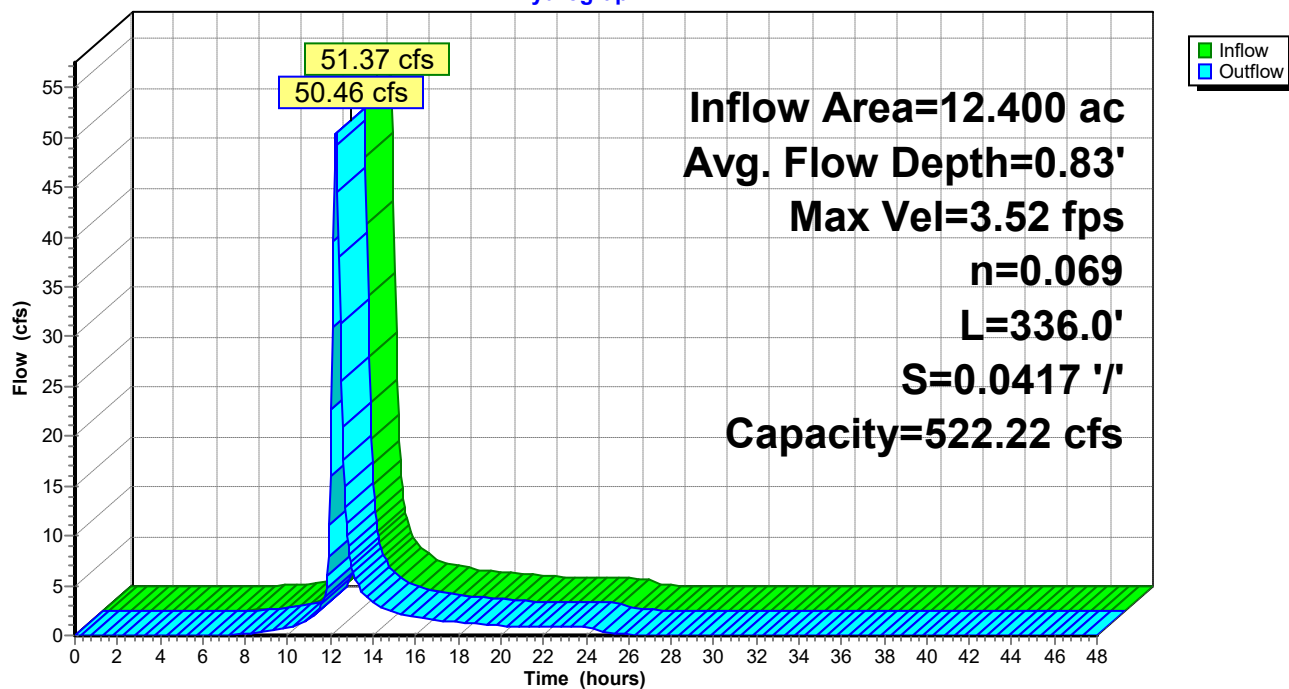
Peak Storage= 4,871 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.83' , Surface Width= 19.97'
Bank-Full Depth= 3.00' Flow Area= 72.0 sf, Capacity= 522.22 cfs

15.00' x 3.00' deep channel, n= 0.069 Riprap, 6-inch
Side Slope Z-value= 3.0 '/' Top Width= 33.00'
Length= 336.0' Slope= 0.0417 '/'
Inlet Invert= 1,162.00', Outlet Invert= 1,148.00'



Reach 15R: East Downchute

Hydrograph



Summary for Pond 1P: West Catch Basin

[57] Hint: Peaked at 1,196.81' (Flood elevation advised)

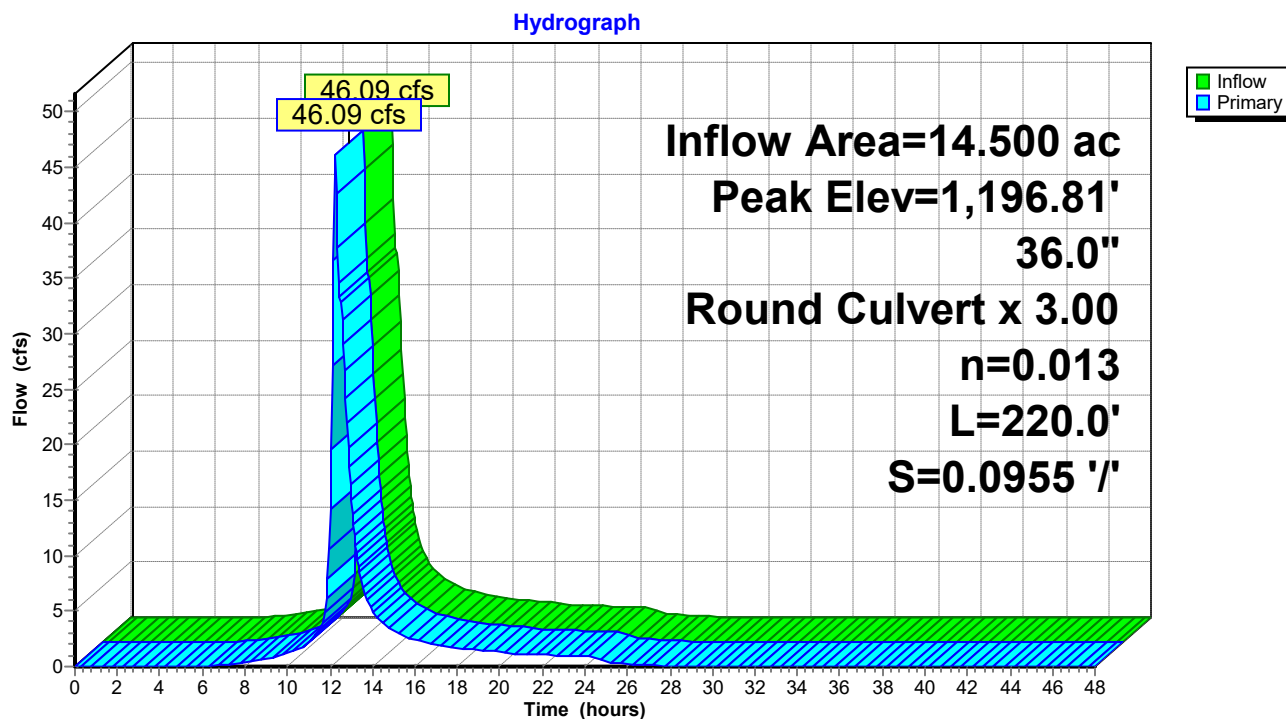
Inflow Area = 14.500 ac, 0.00% Impervious, Inflow Depth = 4.44" for 25-year,24-hour event
 Inflow = 46.09 cfs @ 12.24 hrs, Volume= 5.361 af
 Outflow = 46.09 cfs @ 12.24 hrs, Volume= 5.361 af, Atten= 0%, Lag= 0.0 min
 Primary = 46.09 cfs @ 12.24 hrs, Volume= 5.361 af
 Routed to Reach 14R : West Downchute

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,196.81' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	1,195.00'	36.0" Round Culvert X 3.00 L= 220.0' Ke= 1.000 Inlet / Outlet Invert= 1,195.00' / 1,174.00' S= 0.0955 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=45.73 cfs @ 12.24 hrs HW=1,196.81' (Free Discharge)
 ↑1=Culvert (Inlet Controls 45.73 cfs @ 3.43 fps)

Pond 1P: West Catch Basin



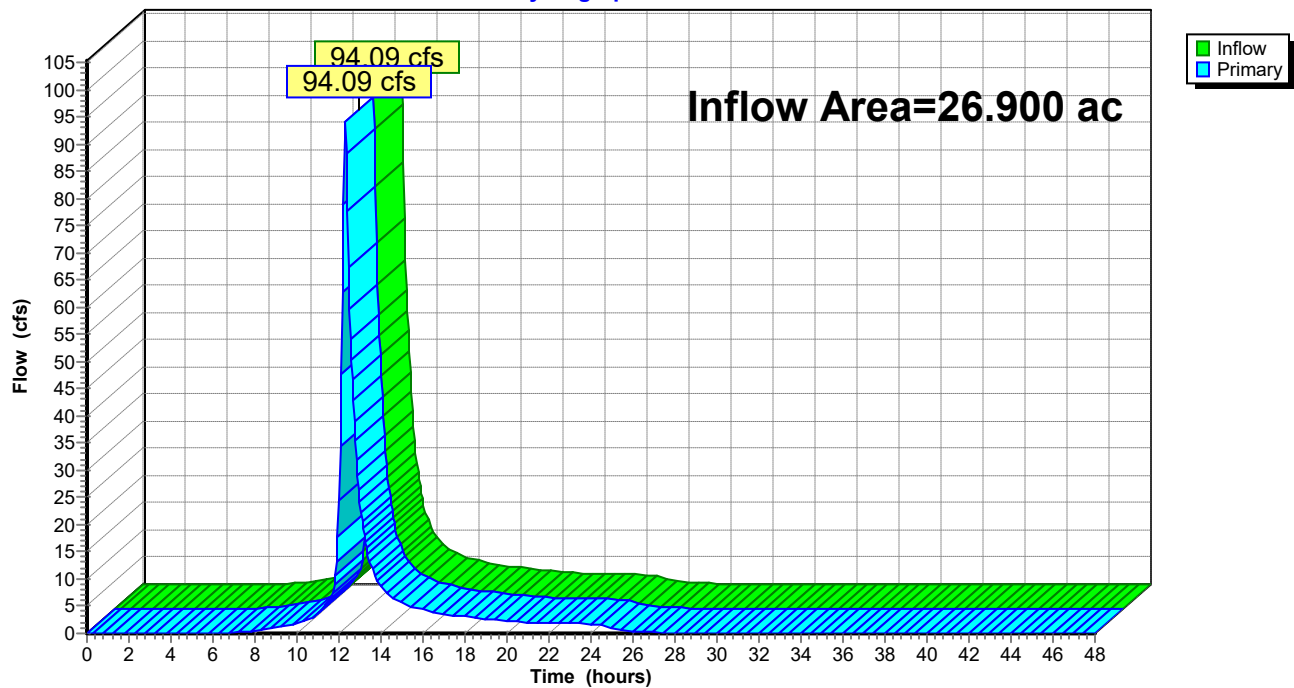
Summary for Link 1L: Tower Hill Lake

Inflow Area = 26.900 ac, 0.00% Impervious, Inflow Depth = 4.25" for 25-year,24-hour event
Inflow = 94.09 cfs @ 12.29 hrs, Volume= 9.516 af
Primary = 94.09 cfs @ 12.29 hrs, Volume= 9.516 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 1L: Tower Hill Lake

Hydrograph



Summary for Link 2L: Off-Site

Inflow Area = 6.600 ac, 0.00% Impervious, Inflow Depth = 3.78" for 25-year, 24-hour event
Inflow = 36.17 cfs @ 12.08 hrs, Volume= 2.080 af
Primary = 36.17 cfs @ 12.08 hrs, Volume= 2.080 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 2L: Off-Site

Hydrograph

