Jeffrey Energy Center
Bottom Ash Settling Area
Inflow Design Flood Control System Plan

Jeffrey Energy Center
25905 Jeffrey Rd
St. Marys, Kansas

Prepared for:

Evergy Kansas Central, Inc.

SCS ENGINEERS

25221157.00 | October 2021

40 Shuman Blvd, Ste 216
Naperville, IL 60563

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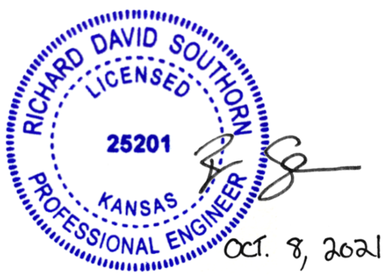
PLAN REVIEW/AMENDMENT LOG

Date of Review	Reviewer Name	Amendment Required (YES/NO)	Sections Amended and Reason
October 2016 (Revision 0)	CB&I Environmental & Infrastructure, Inc.	N/A	Initial Plan
October 2021 (Revision 1)	SCS Engineers	YES	All sections revised / updated as part of the 5-year periodic review process.

PROFESSIONAL ENGINEER CERTIFICATION

I, Richard D. Southorn, hereby certify that this Inflow Design Flood Control System Plan meets the requirements of 40 CFR §257.82, 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.

This plan has been prepared as a periodic update to the initial Inflow Design Flood Control System Plan that was certified on October 17, 2016.



Richard D. Southorn, PE

License No. PE 25201

Expires 4/30/2023

1.0 INTRODUCTION

The Bottom Ash Settling Area (Settling Area) is an existing coal combustion residual (CCR) surface impoundment located at Evergy's Jeffrey Energy Center near St. Marys, Kansas. This Inflow Design Flood Control System Plan documents that the Settling Area's inflow design flood control system has been designed and constructed to meet the applicable requirements of Title 40 Code of Federal Regulations (CFR) §257.82[1] of the CCR Rule.

2.0 REGULATORY REQUIREMENTS

40 CFR §257.82 Hydrologic and hydraulic capacity requirements for CCR surface impoundments.

(a) The owner or operator of an existing or new CCR surface impoundment or any lateral expansion of a CCR surface impoundment must design, construct, operate, and maintain an inflow design flood control system as specified in paragraphs (a)(1) and (2) of this section.

(1) The inflow design flood control system must adequately manage flow into the CCR unit during and following the peak discharge of the inflow design flood specified in paragraph (a)(3) of this section.

(2) The inflow design flood control system must adequately manage flow from the CCR unit to collect and control the peak discharge of the inflow design flood specified in paragraph (a)(3) of this section.

(3) The inflow design flood is:

i. For a high hazard potential CCR surface impoundment, as determined under 40 CFR §257.73(a)(2) or §257.74(a)(2), the probable maximum flood;

ii. For a significant hazard potential CCR surface impoundment, as determined under 40 CFR §257.73(a)(2) or §257.74(a)(2), the 1,000-year flood;

iii. For a low hazard potential CCR surface impoundment, as determined under 40 CFR §257.73(a)(2) or §257.74(a)(2), the 100-year flood;

iv. For an incised CCR surface impoundment, the 25-year flood.

(b) Discharge from the CCR unit must be handled in accordance with the surface water requirements under 40 CFR §257.3-3[1].

(c) Inflow design flood control system plan

(1) Content of the plan. The owner or operator must prepare initial and periodic inflow design flood 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 inflow design flood control system has 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 inflow design flood control system when the plan has been placed in the facility's operating record as required by 40 CFR §257.105(g)(4).

With reference to 40 CFR §257.82(c) above, the initial inflow design flood control system (IDF Plan) was required to be developed no later than October 17, 2016 for existing CCR surface impoundments (40 CFR §257.82(c)(3)(i))[1]. Updates to the IDF Plan are required whenever there is a change in conditions that would substantially affect the written plan in effect (40 CFR §257.82(2))[1], or within five years of the previous plan (40 CFR §257.82(c)(4))[1].

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the initial and periodic IDF Plans meet the requirements of 40 CFR §257.82[1].

3.0 2021 INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN UPDATE

This document has been prepared as the periodic update to the initial IDF Plan. This plan has been developed to reflect inflow design flood controls that being used at the facility at the time of this report. As such, this plan will replace the previous IDF Plan. The current inflow design flood control system has been reviewed as part of this 2021 Periodic IDF Plan update and have been found to meet the requirements of 40 CFR §257.82(a)[1], as outlined in Section 2.0.

Conveyance features that comprise the inflow design flood control systems at the Settling Area are depicted in Figure 1. Stormwater calculations supporting the below discussion are included in Appendices A and B.

3.1 HAZARD POTENTIAL DEFINITION

In accordance with §257.82(a)(3)[1], the inflow design flood event utilized to demonstrate compliance with the CCR Rule is determined by the hazard potential classification. Hazard potential classifications are based on potential loss or damage to the following:

- Human life
- Economic loss
- Environmental damage
- Disruption of lifeline facilities

An Initial Hazard Potential Classification Assessment was undertaken in line with 40 CFR §257.73(a)(2)[1] and determined that the Bottom Ash Settling Area surface impoundment meets the criteria to be classified as a Low Hazard Potential[4].

As defined in 40 CFR §257.82(a)(3)[1], the 100-year flood event (100-year, 24-hour storm event) is utilized for inflow design flood control system analysis for low hazard potential surface impoundments. The inflow design control system will be evaluated to demonstrate the ability to adequately manage storm water flow into the CCR Unit, per 40 CFR §257.82(a)(1)[1], and storm water flow from the CCR Unit, per 40 CFR §257.82(a)(2)[1].

3.2 INFLOW DESIGN FLOOD CONTROL SYSTEM

The Settling Area was designed to accept process water, bottom ash slurry, and some non-contact water (storm water) from adjacent areas to the east. However, the Settling Area is in the process of final closure. The Settling Area no longer accepts inflow process water or bottom ash slurry. The Settling Area is in the process of being dewatered through the outlet riser structure. SCS personnel conducted an inspection of the Settling Area on September 14, 2021. No surficial water was observed at the time of inspection.

The Settling Area is bounded by an impoundment berm along the north and west boundaries of the Settling Area footprint. The impoundment berm also serves as a site access road. The impoundment berm has an approximate minimum elevation of 1,241.6 ft. mean sea level (MSL).

The impounded Settling Area is drained by an outlet riser. The outlet riser structure consists of a 24-in vertical overflow pipe connected to a 36-in horizontal discharge pipe. The Settling Area has been graded to positively drain toward this outlet riser. The outlet riser discharges into the South Bypass Ditch at the outside toe of the impoundment berm. The South Bypass Ditch ultimately discharges into Tower Hill Lake. Tower Hill Lake is designed to collect and convey process water, storm water and run-off from multiple landfills and surface impoundments located at the Jeffrey Energy Center under the facility's National Pollutant Discharge Elimination System (NPDES) Permit. A depiction of these elements is provided in Figure 1.

3.3 HYDROLOGIC AND HYDRAULIC ANALYSIS

Engineering calculations to evaluate the inflow design flood control system at the Settling Area consist of a hydrologic and hydraulic stormwater model prepared using HydroCAD stormwater modeling software. The inflow design flood control system model for the Settling Area is provided in Appendix B.

3.3.1 Rainfall Data

Rainfall amounts for the 100-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 Settling Area is the table prepared for Pottawatomie County (Appendix A). The 100-year, 24-hour rainfall amount for the Settling Area was determined to be 7.68-inches, based on a rainfall rate of 0.32 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 stormwater distribution pattern to model the rainfall depth in HydroCAD. According to TR-55[2], the Type-II 24-hour storm distribution is appropriate for all counties located in Kansas.

3.3.2 Model Input Parameters

Subcatchment areas (also known as watersheds) were delineated using AutoCAD Civil3D 2020 (AutoCAD) based on topographic divides within the analyzed area. Run-off from each subcatchment area was calculated using the NRCS-SCS Technical Release 20 (TR-20) method that utilizes curve numbers and flow length parameters to calculate stormwater run-off. These areas are depicted in Figure 1.

Both soil type and land cover are parameters used to define a Curve Number (CN). 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.

A curve number of 80 was selected for all areas with surficial bottom ash, based on typical curve numbers for this CCR material. For areas outside of the landfill, the soil type and ground cover were considered to select the appropriate curve number using NRCS lookup tables. According to the NRCS Web Soil Survey for Pottawatomie County[3], the predominant soil type within the Jeffrey Energy Center footprint is Hydrologic Soil Group D (HSG-D). HSG-D soils provide the highest curve numbers of all soil types. Therefore, all subcatchment areas have been modeled with this soil type designation. For vegetated soil areas draining into the Settling Area, a curve number of 80 was used. For the power block area to the east of the railroad tracks, the ground surface has both paved and gravel surfaces. A curve number of 98 was conservatively selected for this area.

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.

3.3.3 Conveyance Features

Storm water run-on from the northeast is conveyed to a run-on ditch (HydroCAD Node RD1) that collects and conveys run-on to the Settling Area. This area and feature are modeled in HydroCAD to demonstrate the inflow design flood control system is appropriately sized to accommodate the 100-year, 24-hour storm event.

3.3.4 Bottom Ash Settling Area

The Settling Area was modeled with incremental detention volume defined by the contour from the outlet riser structure at approximate elevation 1,237.25 ft. MSL, the lowest contour within the settling area at approximate elevation 1,238.0 ft. MSL, and the lowest elevation of the perimeter berm at approximate elevation 1,241.6 ft. MSL.

The Settling Area outlet structure was modeled as a 24-in vertical overflow pipe connected to a 36-in horizontal discharge pipe. These features are modeled in HydroCAD to demonstrate the inflow design flood control system is appropriately sized to accommodate the 100-year, 24-hour storm event.

3.4 RESULTS AND CONCLUSIONS

Inflow Design Flood Control System

The inflow design flood control system is designed and constructed to collect and convey the current direct precipitation and storm water run-on within the Settling Area. Based on the results of the HydroCAD stormwater model, the inflow design flood control system was determined to accommodate the 100-year, 24-hour storm event without overtopping. The peak depth and freeboard remaining within each control feature is summarized below:

Table 1 – Control Feature Sizing		
Control Feature Designation	Peak Depth (feet)	Freeboard (feet)
RD1	0.71	3.29

Model results indicate that the water flow that collects in the Settling Area reaches a peak elevation of 1,241.04 ft MSL, which is 0.56 ft below the lowest elevation of the Settling Area containment berm.

Based on the results from the HydroCAD model, the inflow design flood control system is designed to adequately manage flow into the CCR unit (40 CFR §257.82(a)(1)[1]) and is designed to adequately manage flow from the CCR unit (40 CFR §257.82(a)(2)[1]) during the peak discharge from the 100-year, 24-hour storm event. In addition, discharge from the Settling Area flows to Tower Hill Lake which is permitted to receive contact water runoff through the Jeffrey Energy Center NPDES Permit, meeting the requirements of 40 CFR §257.82(b)[1].

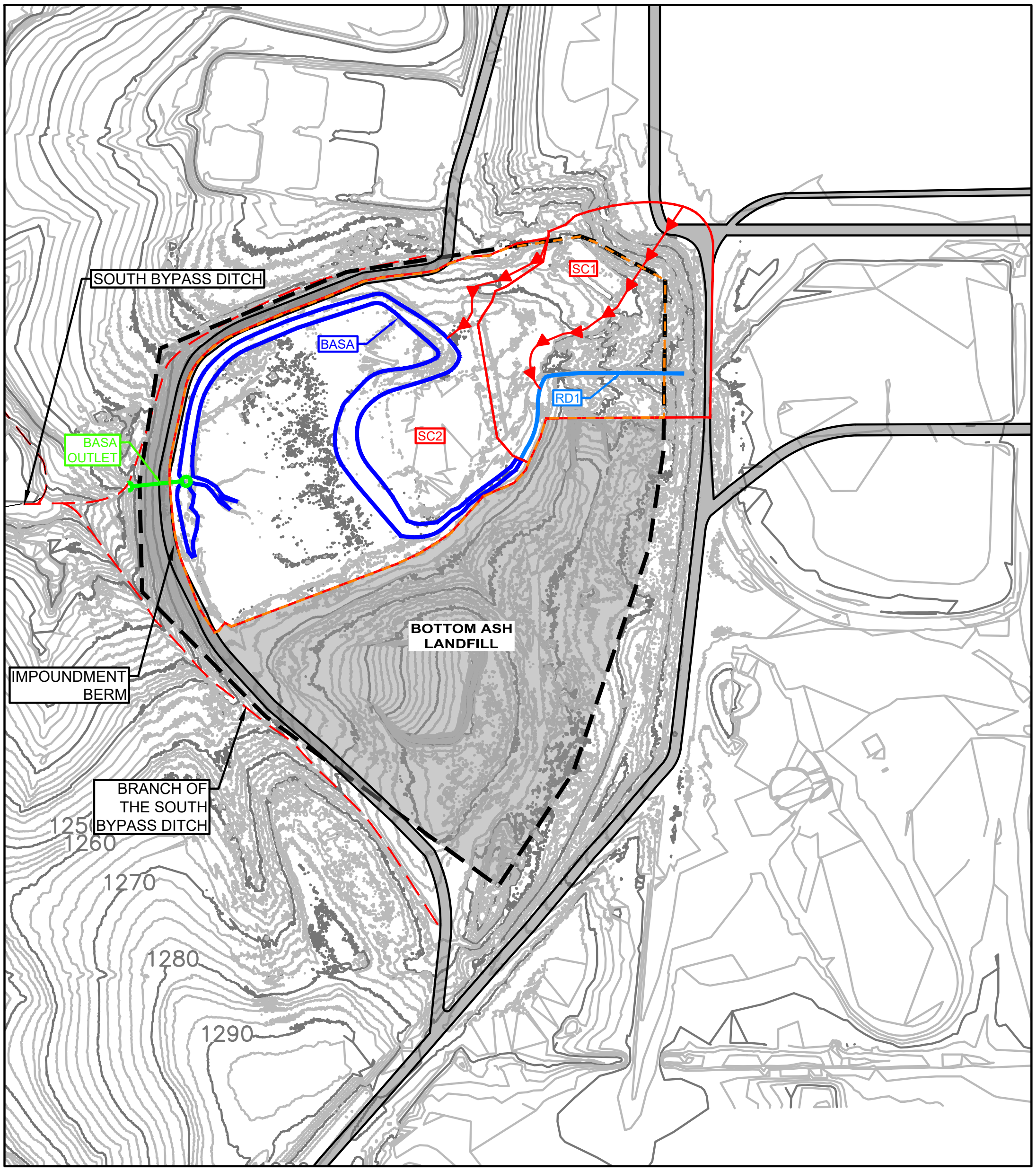
4.0 CERTIFICATIONS

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 §257.82(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 2021.
4. Haley and Aldrich, Initial Hazard Potential Classification Assessment, Bottom Ash Area 1 Impoundment, Jeffrey Energy Center, St. Marys, Kansas, September 30, 2016, and subsequent versions.

Figures



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EXISTING SITE TOPOGRAPHY DEVELOPED BY PROFESSIONAL ENGINEERING CONSULTANTS (PEC) IN DECEMBER 2020

LEGEND

- APPROXIMATE CCR UNIT BOUNDARY
- APPROXIMATE BOTTOM ASH SETTLING AREA UNIT BOUNDARY
- SUBCATCHMENT BOUNDARY
- APPROXIMATE SETTLING AREA BOUNDARY
- DRAINAGE DITCH LOCATION
- WATER CULVERT(S) LOCATION
- TIME OF CONCENTRATION FLOW PATH
- APPROXIMATE ROADWAY / RAILROAD LOCATION

500 0 500

SCALE: 1" = 500'

CLIENT	SITE		
evergy	JEFFREY ENERGY CENTER ST. MARYS, KS	INFLOW DESIGN FLOOD CONTROL PLAN SUBCATCHMENT DELINEATION	

				ENGINEER	FIGURE
PROJECT NO.	25221157	DRAWN BY:	NV	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE 1 OF 1
DRAWN:	10/08/2021	CHECKED BY:	SJL		
REVISED:	-	APPROVED BY:	RDS		

I:\25221157.00\Drawings\Site Layout-HydroCAD (JEC RORO).dwg, 10/8/2021 3:21:40 PM

Appendices

Appendix A Rainfall Intensity Table for Kansas Counties

MEMO

Kansas
Department of Transportation
Bureau of Road Design

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

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

Kansas Department of Transportation

(December, 2014 Edition)

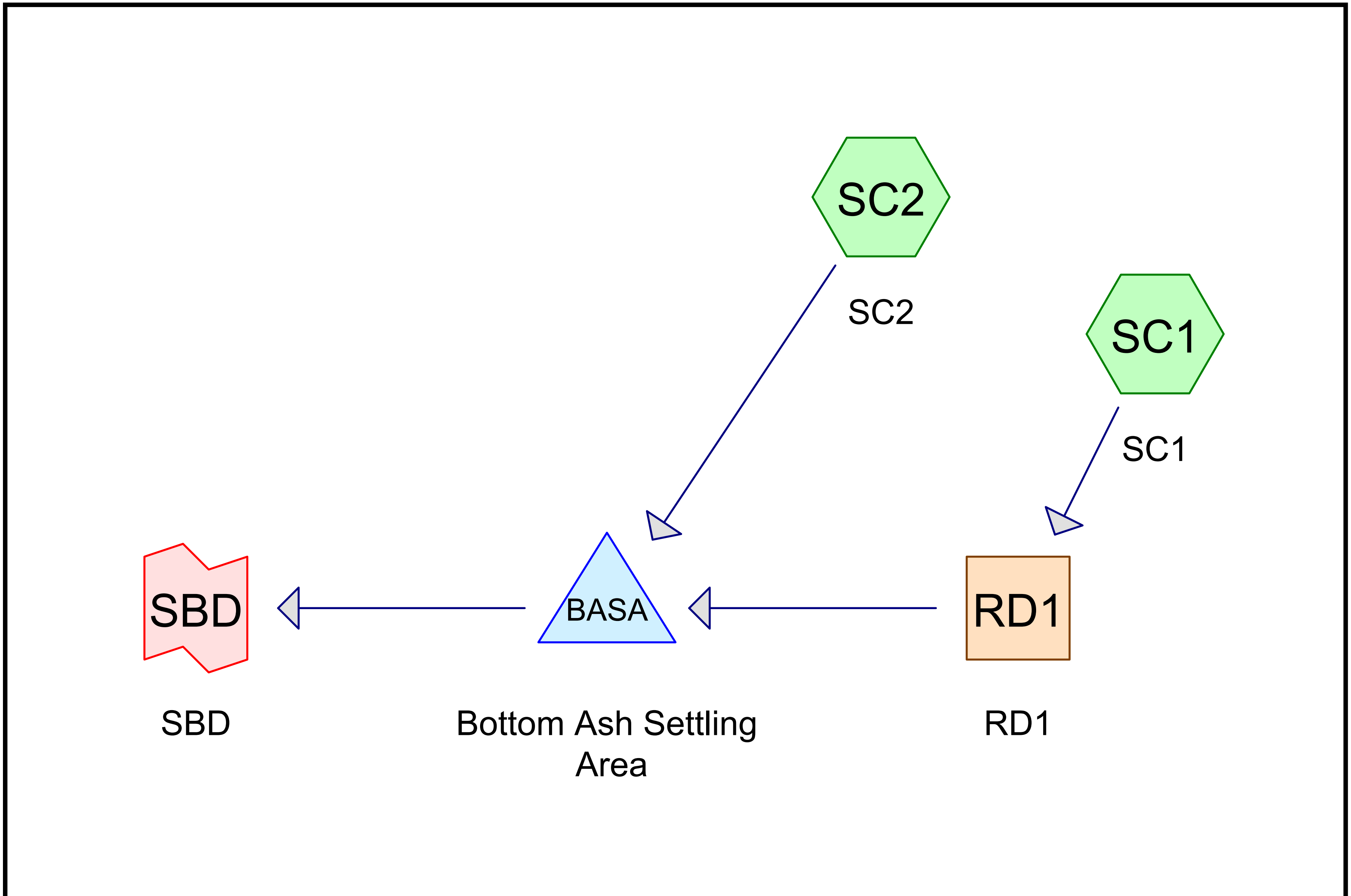
RAINFALL INTENSITY TABLE

POTTAWATOMIE COUNTY, KANSAS

This table contains average rainfall intensities in inches per hour.

DURATION	AVERAGE RECURRENCE INTERVAL								
(H:M)	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 Bottom Ash Settling Area Inflow Design Flood Control System – HydroCAD Output Files



Routing Diagram for Bottom Ash Settling Area
Prepared by SCS Engineers, Printed 10/8/2021

Summary for Subcatchment SC1: SC1

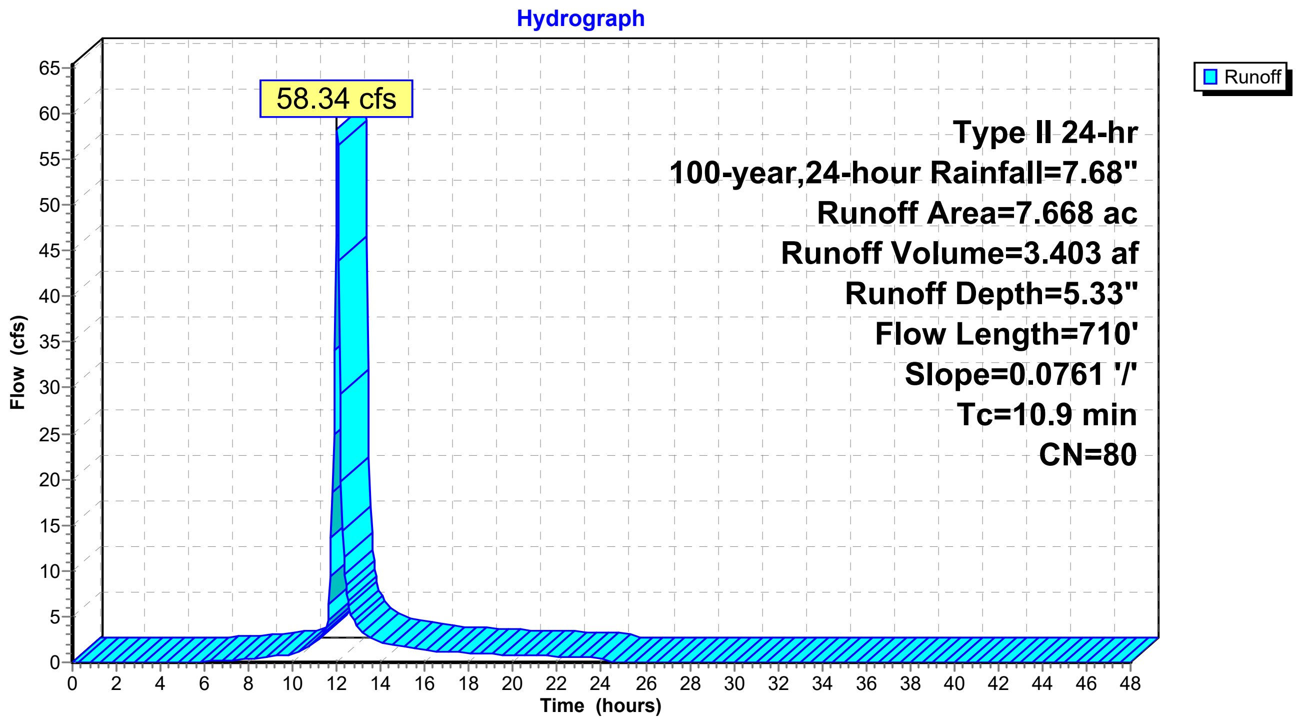
Runoff = 58.34 cfs @ 12.02 hrs, Volume= 3.403 af, Depth= 5.33"
Routed to Reach RD1 : RD1

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 100-year,24-hour Rainfall=7.68"

	Area (ac)	CN	Description
*	7.668	80	Bottom Ash with No Cover
	7.668		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	100	0.0761	0.30		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.36"
5.3	610	0.0761	1.93		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.9	710	Total			

Subcatchment SC1: SC1



Summary for Subcatchment SC2: SC2

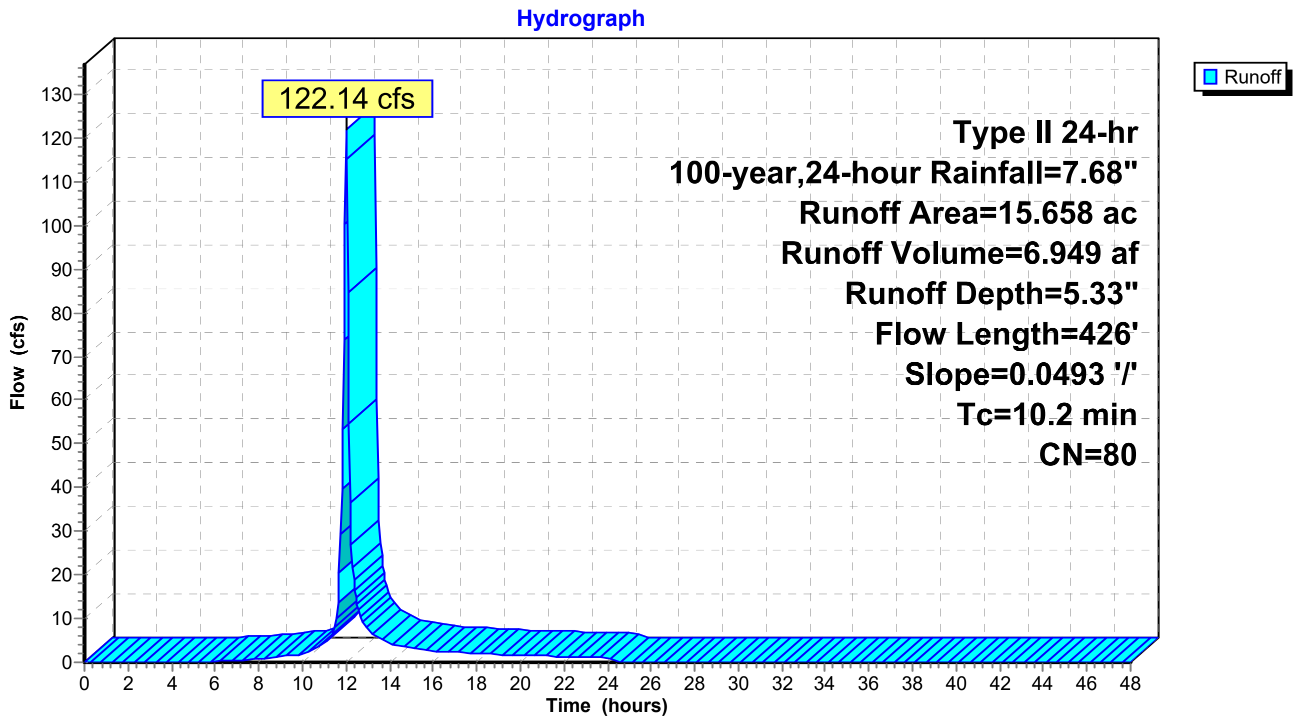
Runoff = 122.14 cfs @ 12.01 hrs, Volume= 6.949 af, Depth= 5.33"
Routed to Pond BASA : Bottom Ash Settling Area

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 100-year,24-hour Rainfall=7.68"

	Area (ac)	CN	Description
*	15.658	80	Bottom Ash with no Cover
	15.658		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0493	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.36"
3.5	326	0.0493	1.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.2	426	Total			

Subcatchment SC2: SC2



Summary for Reach RD1: RD1

Inflow Area = 7.668 ac, 0.00% Impervious, Inflow Depth = 5.33" for 100-year,24-hour event
Inflow = 58.34 cfs @ 12.02 hrs, Volume= 3.403 af
Outflow = 55.76 cfs @ 12.07 hrs, Volume= 3.403 af, Atten= 4%, Lag= 2.7 min
Routed to Pond BASA : Bottom Ash Settling Area

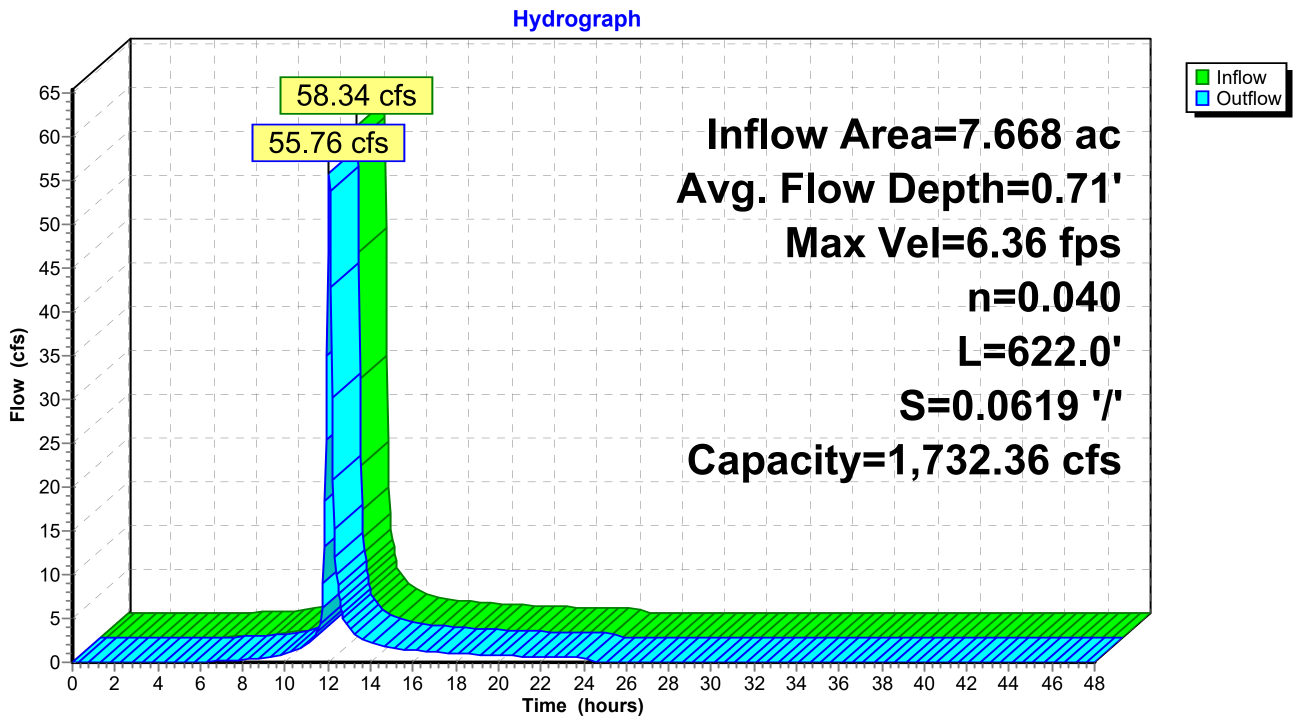
Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.36 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 6.4 min

Peak Storage= 5,626 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.71' , Surface Width= 15.64'
Bank-Full Depth= 4.00' Flow Area= 104.0 sf, Capacity= 1,732.36 cfs

10.00' x 4.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 4.0 '/' Top Width= 42.00'
Length= 622.0' Slope= 0.0619 '/'
Inlet Invert= 1,279.50', Outlet Invert= 1,241.00'

‡

Reach RD1: RD1



Summary for Pond BASA: Bottom Ash Settling Area

Inflow Area = 23.326 ac, 0.00% Impervious, Inflow Depth = 5.33" for 100-year,24-hour event
Inflow = 173.32 cfs @ 12.03 hrs, Volume= 10.352 af
Outflow = 25.29 cfs @ 12.42 hrs, Volume= 10.352 af, Atten= 85%, Lag= 23.6 min
Primary = 25.29 cfs @ 12.42 hrs, Volume= 10.352 af
Routed to Link SBD : SBD

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 1,241.04' @ 12.42 hrs Surf.Area= 1.836 ac Storage= 4.496 af

Plug-Flow detention time= 95.4 min calculated for 10.352 af (100% of inflow)
Center-of-Mass det. time= 95.0 min (902.3 - 807.3)

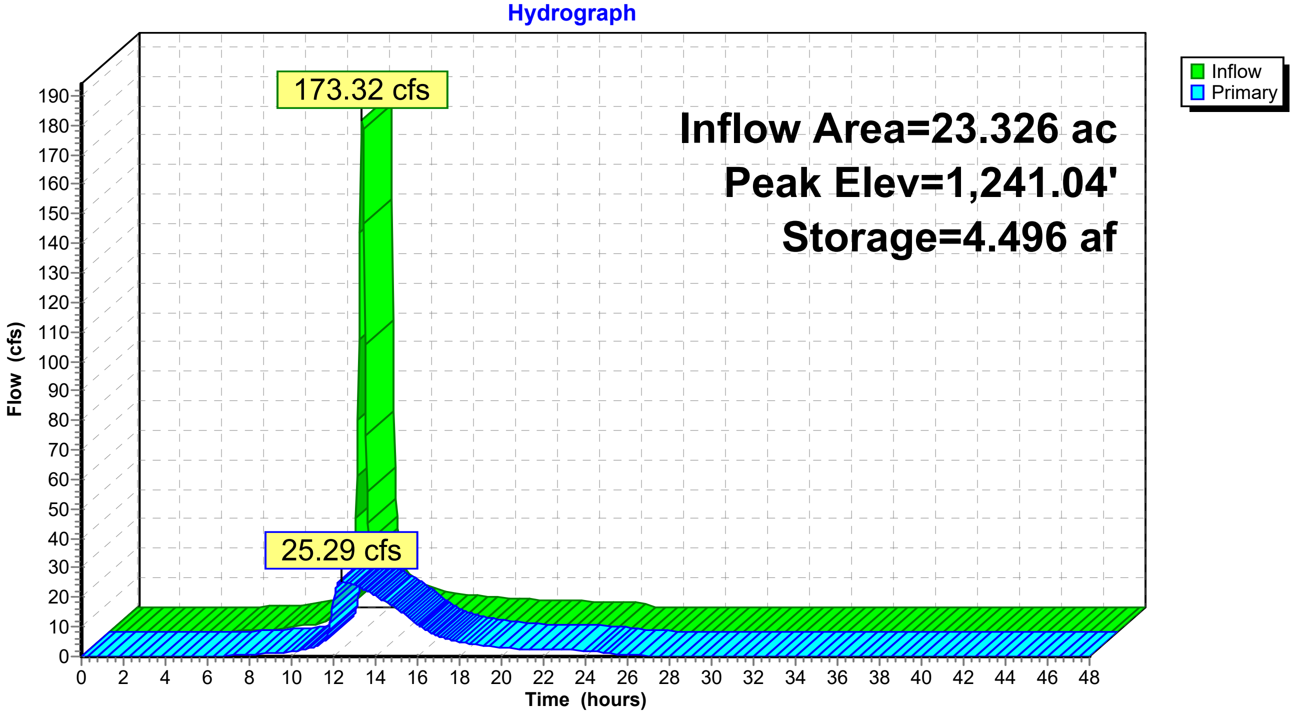
Volume	Invert	Avail.Storage	Storage Description
#1	1,237.25'	5.563 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
1,237.25	0.000	0.000	0.000
1,238.00	0.896	0.336	0.336
1,241.60	2.008	5.227	5.563

Device	Routing	Invert	Outlet Devices
#1	Primary	1,220.00'	**36.0" Round Culvert** L= 138.5' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,220.00' / 1,205.56' S= 0.1043 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Device 1	1,237.25'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=25.28 cfs @ 12.42 hrs HW=1,241.04' (Free Discharge)
└─**1=Culvert** (Passes 25.28 cfs of 141.53 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 25.28 cfs @ 8.05 fps)

Pond BASA: Bottom Ash Settling Area



Summary for Link SBD: SBD

Inflow Area = 23.326 ac, 0.00% Impervious, Inflow Depth = 5.33" for 100-year,24-hour event
Inflow = 25.29 cfs @ 12.42 hrs, Volume= 10.352 af
Primary = 25.29 cfs @ 12.42 hrs, Volume= 10.352 af, Atten= 0%, Lag= 0.0 min

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

Link SBD: SBD