

ERI-US 0006 Connectivity Corridor
US 6 over Sawmill Creek
ERI-00006-15.071

August 2025

Structure Hydraulics Report



Prepared for:



Ohio Department of Transportation
District 3
906 Clark Avenue
Ashland, OH 44805

Prepared by:

TRANSYSTEMS

1100 Superior Ave
Suite 1000
Cleveland, OH 44114

Project Number P403220071

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SECTION I

HYDRAULIC NARRATIVE

Hydraulic Narrative

Project Description

TranSystems is providing engineering services to the Ohio Department of Transportation, District 3 to increase the efficiency of the US Route 6 transportation corridor, increase safety, and improve multi-modal transportation options. The substructure of the bridge carrying US Route 6 over Sawmill Creek (ERI-00006-15.071) will be widened on the downstream side to accommodate the construction of a shared-use path adjacent to the vehicular bridge. The purpose of this hydraulic report is to determine the impacts of the proposed shared-use on the water surface elevations of Sawmill Creek as well as determine the hydraulic adequacy of the proposed structure, evaluate the flood hazard potential of the proposed structure, and to compute scour depths to aid in the design of the proposed abutment widening.

Existing Conditions

The existing structure (SFN 2201739) was originally constructed in 1990 to reconstruct a previous bridge. The structure carries two lanes of US 6 eastbound and westbound traffic over Sawmill Creek. The existing bridge consists of a single-span composite rolled steel beam superstructure and reinforced concrete wall type abutments supported on spread footings bearing on rock. The overall length of the bridge is 51.65' ± at a skew of 8° 45' 30", with a length of 47'-0" from centerline of bearing to centerline of bearing along the tangent chord. The out-to-out deck width is 44'-0" with deep beam bridge guiderails mounted on the sides of the deck slab.

At the bridge site, Sawmill Creek is approximately 30' wide from top of bank to top of bank. In the project area and upstream of the bridge, the banks and overbanks consist of brush, trees, and overgrowth. Downstream of the bridge, the banks and overbanks are primarily short grass as part of the Sawmill Creek Golf Course. Sawmill Creek meanders and discharges to Lake Erie approximately 0.6 miles north of the bridge location.

Proposed Conditions

The purpose of the project is to construct new pedestrian bridge adjacent to the downstream side of the existing bridge. Portions of the left (downstream) wingwalls will be removed, footings will be widened and the existing abutments will be widened on the left side. The pedestrian bridge is 10'-0" in width and will be a pre-engineered, prefabricated steel truss. The top of deck elevation of the pedestrian bridge is approximately the same as the top of deck elevation of the existing US 6 bridge. Given the loading requirements and superelevation of the existing US 6 bridge, the pedestrian bridge will have a higher low chord than the existing bridge. The pedestrian bridge will be the same length as the existing bridge.

Design Criteria

The proposed crossing is in a Federal Emergency Management Agency (FEMA) regulated floodplain with a floodway and will be required to meet the requirements of the National Flood Insurance Program (NFIP). The regulated floodplain is discussed in the FEMA Flood Insurance Study (FIS) for Erie County and Incorporated Areas, FIS number 39043CV000C, revised September 1, 2022. Portions of the FIS, the Flood Insurance Rate Map (FIRM), Discharges, Roughness Coefficients, Floodway Data and Flood Profile are

included in Section II of this report. The FEMA Electronic Model was requested for this location.

The flows published in the FIS for Sawmill Creek were developed using ODNR, Bulletin No. 45. The hydraulic study done on Sawmill Creek as part of the Flood Insurance Study was completed in 1979. The electronic data came in the form of a PDF of HEC-2 data and is included in Section II of this report. Because the existing data is in the HEC-2 format, the duplicate effective, corrected effective, and proposed HEC-RAS models were developed from data in the HEC-2 analysis. These models are described in the Hydraulic Analysis below.

Because the analysis was complete in 1979, prior to the acceptance of the NAVD 88 datum, the elevations in the original hydraulic model had to be shifted to accommodate the difference in survey datums. The prior datum is the NGVD 1929. The shift in elevation between values in the NGVD 1929 and NAVD 1988 datums was computed using the National Oceanic and Atmospheric Administration (NOAA) VDatum tool for transforming heights between vertical datums. For the project location, the difference between elevations is 0.74-feet. All elevations for the structures and cross sections taken from the Duplicate Effective model were lowered by 0.74-feet to bring the information into the proper datum.

The existing bridge abutments and the proposed bridge abutments are within the designated floodway and the floodway fringes. Floodway requirements state no increase in the 100-year water surface is allowed when encroaching on a designated floodway.

Hydrologic Analysis

In accordance with the ODOT Location and Design Manual Volume 2 Section 1005, the design discharges should be based on the Erie County Flood Insurance Study (FIS) Table 9: Summary of Discharges for Sawmill Creek found in section II of this report.

The USGS web application StreamStats was used to determine the drainage area to the point of the Sawmill Creek at the existing US 6 Bridge. The drainage area delineated by StreamStats is 13.7 square miles. The drainage area used in the FEMA FIS is 13.4 square miles. The difference between the flows from the FEMA FIS and the flows from StreamStats for the design storms are relatively small. In accordance with the *ODOT Location and Design Manual, Volume 2, Section 1005* and to maintain the integrity of the hydraulic data provided by FEMA, the flows published in the FIS were used in the study. Because the FIS does not contain a flow for the 25-year design storm, this value was interpolated from the design storms given in the FIS. The known water surface starting condition in HEC-RAS for the 25-year design storm was interpolated from the known water surfaces for the remaining design storms. The StreamStats output can be found in Section III of this report and is included for comparison only.

Hydraulic Analysis

Structure hydraulics for the existing and proposed conditions have been calculated using HEC-RAS version 6.3.1. The existing HEC-2 data was obtained from FEMA and is used as a comparison for this study. From the HEC-2 information and surveyed data the following HEC-RAS models were made: Duplicate Effective (DE), Corrected Effective (CE), and Proposed Conditions.

Duplicate Effective

The Duplicate Effective (DE) HEC-2 Model represents the HEC-2 Model as received. Because of the differences in analysis between HEC-2 and HEC-RAS, several cross-sections were added to the DE model to allow the model to run in HEC-RAS. Cross sections were added immediately upstream of each structure and are duplicates of the cross sections immediately downstream of the structure.

Corrected Effective

In order to complete the hydraulic analysis of this project, the Corrected Effective HEC-RAS model was developed from the Duplicate Effective model and modified to fit detailed survey of the project. In the Corrected Effective HEC-RAS model, several changes were made to incorporate detailed survey completed in the area, to analyze the stream using capabilities present in the HEC-RAS program that were not used in the development of the 1979 HEC-2 model.

Downstream of the project area, an additional cross-section was added using detailed survey information and LIDAR data obtained for the area at Cross Section 5.05. This cross section represents the condition downstream of the proposed pedestrian bridge and was added into the CE model so the proposed and existing conditions can be compared. Cross sections 5.0, 5.05, 5.1, and 5.21 were also modified to reflect the surveyed geometry. The existing US 6 bridge deck and internal bridge cross sections were also modified to reflect the surveyed conditions, including the cross-slope on the existing bridge. Manning's n values of 0.013 were added in the internal bridge cross section to model the concrete wall abutments in the channel. The length of the bridge was changed from 54-feet in the HEC-2 and DE models to 44-feet in the CE and Proposed Conditions to accurately reflect the length of the bridge.

The bridge at cross section 4.2 was removed. Per the reach lengths in the HEC-2 model, this bridge would be 127-feet downstream of the upstream face of the existing US 6 structure. Using aerial imagery, the nearest structure downstream of the US 6 bridge is at least 320-feet from the structure. Additionally, for the existing structures downstream of the bridge at cross section 5.2, the bridge modeling approach was changed to pressure and/or weir. Because the low chord at the bridge at cross section 5.2 as well as the bridges as cross sections 5.8 and 5.5 are not inundated, the bridge modeling approaches at these bridges was kept as energy only.

To maintain model integrity, the rest of the model's cross sections and structures were unchanged. This includes the remaining reach lengths, the placement of levees in the model, and the Manning's n-values throughout the stream cross sections. Additionally, the subcritical flow regime and conveyance settings were set to match the way that the HEC2 model would have analyzed the stream.

A comparison of the 100-Year FEMA water surface elevations between the Duplicate Effective FEMA Model and the Corrected Effective Model are included in Table 1.

Table 1: Cross Section FEMA 100-Year Flood Elevation Comparison

Note: HEC-2 Model and Duplicate Effective Models converted from NGVD 29 to NAVD 88 datum.

(NAVD 88 = NGVD 29 – 0.74)

FIS Cross Section	HEC 2 / HEC-RAS Station	HEC-2 Elevation (ft)	Duplicate Effective Elevation (ft)	Difference (DE – HEC 2 Elevation) (ft)
D	7	584.66	584.73	0.07
C	3.6	580.71	580.81	0.10
B	3	577.44	577.5	0.06
A	0.70	575.95	575.96	0.01

There may be various reasons for the differences in elevation at the FEMA cross sections D, C, B, and A. For the duplicate effective model, additional cross sections had to be added to properly analyze the structures. This adds additional analysis points into the model which may have a minor impact on the calculated water surface elevations. Additionally, HEC-RAS and HEC-2 may have different calculation tolerances and rounding procedures which can have an effect on the water surface elevations.

Proposed Conditions

The proposed construction for this project is lengthening the downstream side of the existing US 6 bridge over Sawmill Run to accommodate the construction of a pedestrian bridge adjacent to the existing bridge. HAS-RAS cannot reliably analyze two structures immediately next to one another without a cross-section in between. Because the existing US 6 bridge and the proposed pedestrian bridge are supported by the same abutments, a cross section between the two structures was not added. Given the amount of freeboard present in the Corrected Effective condition, the addition of the pedestrian bridge deck to the hydraulic model would not have a significant impact on the water surface elevations for the design storms through the channel.

The proposed conditions bridge width was initially modeled as the combined width of the US 6 bridge and the pedestrian bridge. The low chord of the existing US 6 bridge was maintained on the downstream side despite the pedestrian bridge having a shallower section. None of the design storms inundate the low chord in either the Corrected Effective or Proposed Conditions under these conditions, but the reduction in open area and the shifting of the downstream analysis point for the widened bridge showed minor increases in the water surface elevations upstream of the bridge. It was determined that the results were overly conservative and could likely be contributed to calculation tolerances of the bridge routine within the HEC-RAS program.

Because the low chord of the proposed pedestrian bridge would not be inundated, the most significant change to Sawmill Creek will be the lengthening of the abutments on the downstream side of the US 6 bridge. To model the impact of the extended abutments on the downstream side, cross section 5.1 was modified to include the abutments in the cross section geometry and the manning's n-values were modified to 0.013 for the abutment areas.

The results support a “no-rise” condition when comparing the Corrected Effective and Proposed Conditions for the FEMA 100-year design storm. There are minor increases upstream of the existing US 6 bridge for the 25-year design storm. These increases are caused by the minor reduction in open area in the stream channel when the existing abutments are lengthened. These increases are contained within the stream channel and will not adversely affect any nearby properties or structures. See Table 2 for the summary of hydraulic results at the upstream bridge section, Table 3 for a comparison of water surface elevations during the 25-year design storm across the model, and Table 4 for a comparison of water surface elevations during the 100-year design storm across the model.

Table 2: Hydraulic Results at Upstream Bridge Section (XS 5.21)

Design Storm	Flow (cfs)	Corrected Effective		Proposed Condition		Divergence (PR – CE)	
		Elevation (ft)	Velocity (ft/s)	Elevation (ft)	Velocity (ft/s)	Elevation (ft)	Velocity (ft/s)
25-Year	1750	580.60	9.04	581.07	8.26	0.47	-0.78
100-Year	2359	581.65	10.07	581.64	10.08	0.00	0.01

Table 3: 25-Year Design Storm Water Surface Elevation Comparison

River Sta	Corrected Effective		Proposed Condition		Divergence (PR - CE)	
	Elevation (ft)	Velocity (ft/s)	Elevation (ft)	Velocity (ft/s)	Elevation (ft)	Velocity (ft/s)
7	583.66	6.22	583.74	6.06	0.08	-0.16
5.81	582.73	4.61	582.88	4.49	0.15	-0.12
5.8	Bridge					
5.7	582.5	4.8	582.67	4.66	0.17	-0.14
5.6	582.46	4.6	582.63	4.47	0.17	-0.13
5.51	582.46	4.6	582.63	4.47	0.17	-0.13
5.5	Bridge					
5.4	582.19	4.82	582.39	4.66	0.20	-0.16
5.3	582.25	2.92	582.45	2.74	0.20	-0.18
5.21	580.6	9.04	581.07	8.26	0.47	-0.78
5.2	Bridge					
5.1	580.56	8	Pedestrian Bridge			
5.05	580.07	9.34	580.07	9.34	0	0
5	580.57	3.43	580.57	3.43	0	0
4.21	580.55	4.31	580.55	4.31	0	0
4.1	580.54	4.36	580.54	4.36	0	0
3.9	580.44	4.77	580.44	4.77	0	0
3.8	580.33	3.95	580.33	3.95	0	0
3.71	580.29	3.98	580.29	3.98	0	0
3.7	Bridge					
3.6	580.23	4.09	580.23	4.09	0	0
3.5	580.13	4.31	580.13	4.31	0	0
3.4	579.48	5.42	579.48	5.42	0	0
3.31	579.36	5.73	579.36	5.73	0	0
3.3	Bridge					
3.2	576.93	11.91	576.93	11.91	0	0
3.1	577.17	3.34	577.17	3.34	0	0
3	577.07	3.5	577.07	3.5	0	0
0.8	575.82	7.42	575.82	7.42	0	0
0.71	575.55	4.66	575.55	4.66	0	0
0.7	Bridge					
0.6	575.54	4.67	575.54	4.67	0	0
0.5	575.47	4.74	575.47	4.74	0	0
0.4	575.41	3.74	575.41	3.74	0	0
0.31	574.9	5.8	574.9	5.8	0	0
0.3	Bridge					
0.2	574.87	5.84	574.87	5.84	0	0
0.1	574.95	4.5	574.95	4.5	0	0

Note: XS 5.10 is an internal bridge cross section for the pedestrian bridge modeled as a cross section.

Table 4: 100-Year Design Storm Water Surface Elevation Comparison

River Sta	Corrected Effective		Proposed Condition		Divergence (PR - CE)	
	Elevation (ft)	Velocity (ft/s)	Elevation (ft)	Velocity (ft/s)	Elevation (ft)	Velocity (ft/s)
7	584.99	5.81	584.99	5.81	0	0
5.81	584.13	4.96	584.13	4.96	0	0
5.8	Bridge					
5.7	583.9	5.14	583.9	5.14	0	0
5.6	583.86	4.96	583.86	4.96	0	0
5.51	583.86	4.96	583.85	4.96	-0.01	0
5.5	Bridge					
5.4	583.58	5.17	583.58	5.18	0	0.01
5.3	583.71	2.58	583.7	2.58	-0.01	0
5.21	581.65	10.07	581.64	10.08	-0.01	0.01
5.2	Bridge					
5.1	581.51	8.92	Pedestrian Bridge			
5.05	580.44	11.48	580.44	11.48	0	0
5	581.04	3.88	581.04	3.88	0	0
4.21	581.05	4.44	581.05	4.44	0	0
4.1	581.03	4.51	581.03	4.51	0	0
3.9	580.94	4.91	580.94	4.91	0	0
3.8	580.82	4.33	580.82	4.33	0	0
3.71	580.78	4.34	580.78	4.34	0	0
3.7	Bridge					
3.6	580.71	4.49	580.71	4.49	0	0
3.5	580.6	4.73	580.6	4.73	0	0
3.4	579.82	6.22	579.82	6.22	0	0
3.31	579.49	7.25	579.49	7.25	0	0
3.3	Bridge					
3.2	579.15	8.5	579.15	8.5	0	0
3.1	577.6	3.68	577.6	3.68	0	0
3	577.5	3.85	577.5	3.85	0	0
0.8	576.11	8.2	576.11	8.2	0	0
0.71	575.97	5.81	575.97	5.81	0	0
0.7	Bridge					
0.6	575.95	5.83	575.95	5.83	0	0
0.5	575.84	5.95	575.84	5.95	0	0
0.4	575.83	4.3	575.83	4.3	0	0
0.31	574.61	8.38	574.61	8.38	0	0
0.3	Bridge					
0.2	574.47	8.68	574.47	8.68	0	0
0.1	574.54	7.2	574.54	7.2	0	0

Note: XS 5.10 is an internal bridge cross section for the pedestrian bridge modeled as a cross section.

Flood Hazard Evaluation

The hydraulic modeling of the existing and proposed conditions indicates that the modifications associated with the construction of the pedestrian bridge or the extension of the existing Sawmill Creek Bridge abutments will not have an adverse effect on the regulatory 100-year water surface elevations.

Scour Evaluation

The geotechnical investigation for this project is still pending. The potential contraction scour and local scour will be analyzed in a subsequent submission of this report.

The results of the contraction and local scour will be compared to the scour at the existing structure as noted in the bridge inspection report. Per the 2022 Bridge Inventory and Appraisal, the existing stream channel is in good condition and there was no scour noted at the existing bridge abutments or within the channel itself.

SECTION II

FIRM MAPS AND FIS DATA

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



ERIE COUNTY, OHIO

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BAY VIEW, VILLAGE OF	390595
(1) BELLEVUE, CITY OF	390487
BERLIN HEIGHTS, VILLAGE OF	390650
*CASTALIA, VILLAGE OF	390653
ERIE COUNTY, UNINCORPORATED AREAS	390153
HURON, CITY OF	390154
KELLEYS ISLAND, VILLAGE OF	390738
(2) MILAN, VILLAGE OF	390155
SANDUSKY, CITY OF	390156
(3) VERMILION, CITY OF	395374

*No Special Flood Hazard Areas Identified

(1) The City of Bellevue is a tri-county community located in Erie, Huron, and Sandusky Counties. It is not included in the Erie FIS Report and will be mapped with Huron County.

(2) The Village of Milan is a dual county community located in Erie and Huron Counties. Information for the entire community is included in the Erie County FIS report.

(3) The City of Vermilion is located in Erie and Lorain Counties. The entire community will be mapped with Lorain County. See Lorain County FIS Report.

REVISED:

SEPTEMBER 1, 2022

FLOOD INSURANCE STUDY NUMBER

39043CV000C

Version Number 2.3.3.5



FEMA

Table 2: Flooding Sources Included in this FIS Report (*continued*)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Plum Brook	Erie County, Unincorporated Areas	Approximately 1,250 feet upstream of Perkins Avenue	Approximately 900 feet downstream of Clark Road	04100011	2.6	N/A	N	A	April 2013
Plum Brook Trib A	Erie County, Unincorporated Areas	Confluence with Plum Brook Creek	Approximately 800 feet upstream of US Highway 250	04100011	0.7	N/A	N	A	April 2013
Saw Mill Creek Trib A	Erie County, Unincorporated Areas	Confluence with Saw Mill Creek	Approximately 0.3 miles upstream of confluence	04100011	0.3	N/A	N	A	April 2013
Saw Mill Creek Trib A1	Erie County, Unincorporated Areas	Confluence with Saw Mill Creek Trib A	Approximately 0.2 miles upstream of confluence	04100011	0.2	N/A	N	A	April 2013
Saw Mill Creek	Erie County, Unincorporated Areas	Dautch Ditch (approximately 1.4 miles upstream of Boos Road)	Fox Road	04100011	1.5	N/A	N	A	April 2013
Sawmill Creek	Erie County, Unincorporated Areas; Huron, City of	Mouth at Lake Erie	Dautch Ditch (approximately 1.4 miles upstream of Boos Road)	04100011 04100012 04120200	2.5	N/A	Y	AE	March 1979; April 1977
Storrs-Hemminger Ditch	Erie County, Unincorporated Areas	Confluence with Kob Ditch	Approximately 1,000 feet upstream of Columbus Avenue	04100011	2.4	N/A	Y	AE	March 1979
Sugar Creek	Erie County, Unincorporated Areas	Mouth at Lake Erie	Approximately 0.7 miles upstream of SR 2	04100012	2.3	N/A	N	A	April 2013
Sugar Creek 2 Trib A	Erie County, Unincorporated Areas	Confluence with Sugar Creek 2	Approximately 0.8 miles upstream of confluence	04100012	0.8	N/A	N	A	April 2013
Sugar Creek 2 Trib B	Erie County, Unincorporated Areas	Confluence with Sugar Creek 2	Approximately 0.8 miles upstream of confluence	04100012	0.8	N/A	N	A	April 2013
Sugar Creek 2	Erie County, Unincorporated Areas	Darrow Road	Joppa Road	04100012	3.4	N/A	N	A	April 2013

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Mills Creek	Above Windau Ditch	33.4	2,419	*	3,610	4,173	*	5,030
Mills Creek	Above State Route No. 2	28.1	2,081	*	3,111	3,597	*	4,340
Mudbrook Creek	At confluence with Huron River	9.45	720	*	1,067	1,217	*	4,960
Mudbrook Creek	At southern City of Huron Corporate Boundary (Mud Brook Road)	9.23	674	*	1,000	1,140	*	1,467
Pipe Creek	Perkins Avenue	27.2	2,350	*	3,523	4,082	*	4,960
Pipe Creek	Above Taylor Ditch	23.6	2,110	*	2,335	2,525	*	2,790
Pipe Creek	Campbell Street	23	2,074	*	3,116	3,612	*	4,370
Pipe Creek	State Route No. 2	21.5	1,997	*	3,005	3,486	*	4,240
Plum Brook	At Mouth	7.5	934	*	1,425	1,657	*	2,020
Plum Brook	Perkins Avenue	7.1	901	*	1,377	1,603	*	1,955
Sawmill Creek	At mouth	17.58	1,857	*	2,731	3,107	*	3,981
Sawmill Creek	Conrail	13.4	1,354	*	2,038	2,359	*	2,864
Storrs-Hemminger Ditch	Above Kob Ditch	1.8	327	*	506	590	*	725

*Not calculated for this Flood Risk Project

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Sawmill Creek	Mouth at Lake Erie	Dautch Ditch (approximately 1.4 miles upstream of Boos Road)	ODNR, Bulletin No. 45	HEC-2	March 1979; April 1977	AE w/ Floodway	2017 Redelineation from confluence with Lake Erie to US 6 upstream. (FEMA 2016)
Storrs-Hemminger Ditch	Confluence with Kob Ditch	Approximately 1,000 feet upstream of Columbus Avenue	ODNR, Bulletin No. 45	HEC-2	March 1979	AE w/ Floodway	Redelineation to USGS topographic data.
Sugar Creek	Mouth at Lake Erie	Approximately 0.7 miles upstream of SR 2	Regression Equations	HEC-RAS 4.1	April 2013	A	Manning's Roughness; Channel 0.04-0.045, Floodplain 0.045-0.08 Downstream tie-in with Lake Erie at US 6 (FEMA 2016)
Sugar Creek 2	Darrow Road	Joppa Road	Regression Equations	HEC-RAS 4.1	April 2013	A	Manning's Roughness; Channel 0.04-0.045, Floodplain 0.045-0.08.
Sugar Creek 2 Trib A	Confluence with Sugar Creek 2	Approximately 0.8 miles upstream of confluence	Regression Equations	HEC-RAS 4.1	April 2013	A	Manning's Roughness; Channel 0.04-0.045, Floodplain 0.045-0.08
Sugar Creek 2 Trib B	Confluence with Sugar Creek 2	Approximately 0.8 miles upstream of confluence	Regression Equations	HEC-RAS 4.1	April 2013	A	Manning's Roughness; Channel 0.04-0.045, Floodplain 0.045-0.08
Sulphur Brook	Confluence with Taylor Creek	Bogart Road	ODNR, Bulletin No. 45	HEC-2	March 1979	AE w/ Floodway	Redelineation to USGS topographic data.
Taylor Creek	From confluence with Pipe Creek	Approximately 400 feet upstream of Bogart Road	ODNR, Bulletin No. 45	HEC-2	March 1979	AE w/ Floodway	2017 Redelineation from confluence with Pipe Creek to US 250 upstream. (FEMA 2016)
Vermilion River	Dean Road	County Boundary	Regression Equations	HEC-RAS 4.1	April 2013	A	Manning's Roughness; Channel 0.04-0.045, Floodplain 0.045-0.08
Vermilion River Trib A	Confluence with Vermilion River	Approximately 0.9 miles upstream of confluence	Regression Equations	HEC-RAS 4.1	April 2013	A	Manning's Roughness; Channel 0.04-0.045, Floodplain 0.045-0.08

Table 13: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Boos Ditch	0.05 – 0.055	0.032 – 0.09
Cold Creek Main Branch	0.03 – 0.039	0.03 – 0.10
Edson Creek	0.03 – 0.035	0.03 – 0.09
Hahn Creek	0.015 – 0.025	0.035 – 0.045
Huron River	0.015 – 0.025	0.025 – 0.045
Huron River	0.03 – 0.035	0.035 – 0.09
Kob Ditch	0.03 – 0.04	0.035 – 0.095
Mills Creek	0.03 – 0.039	0.03 – 0.10
Mudbrook Creek	0.015 – 0.030	0.025 – 0.045
Pipe Creek	0.035 – 0.043	0.03 – 0.10
Plum Brook	0.03 – 0.045	0.03 – 0.08
Sawmill Creek	0.015 – 0.025	0.035
Sawmill Creek	0.03 – 0.04	0.035 – 0.08
Storrs-Hemminger Ditch	0.035 – 0.05	0.03 – 0.08
Sulphur Creek	0.03 – 0.045	0.02 – 0.048
Taylor Creek	0.02 – 0.055	0.03 – 0.10
Windau Ditch	0.05 – 0.10	0.035 – 0.06
Winkler Creek	0.015 – 0.025	0.015 – 0.055

5.3 Coastal Analyses

For the areas of Erie County that are impacted by coastal flooding processes, coastal flood hazard analyses were performed to provide estimates of coastal BFEs. Coastal BFEs reflect the increase in water levels during a flood event due to extreme tides and storm surge as well as overland wave effects.

The following subsections provide summaries of how each coastal process was considered for this FIS Report. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation. Table 14 summarizes the methods and/or models used for the coastal analyses. Refer to Section 2.5.1 for descriptions of the terms used in this section.

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pipe Creek								
V	27,513	252	1196	2.9	621.1	621.1	622.0	0.9
W	29,283	246	827	4.2	624.4	624.4	624.9	0.5
X	30,518	175	1447	2.4	630.9	630.9	631.6	0.7
Y	32,013	310	1816	1.9	631.0	631.0	631.9	0.9
Z	33,278	290	1616	2.2	631.2	631.2	632.2	1.0
Plum Brook								
A	790	588	1095	1.5	*	572.6 ²	573.6	1.0
B	2,600	256	683	2.4	*	573.8 ²	574.2	0.4
C	3,905	304	2473	0.7	579.6	579.6	579.6	0.0
D	5,240	298	2197	0.7	580.1	580.1	580.3	0.2
Sawmill Creek								
A	1,550	78	457	5.2	*	576.0 ²	576.7	0.7
B	2,200	200	741	3.2	577.5	577.5	578.3	0.8
C	3,140	127	553	4.3	580.7	580.7	581.1	0.4
D	4,750	84	434	5.4	584.7	584.7	585.3	0.6
E	6,180	62	508	4.6	589.6	589.6	590.5	0.9
F	7,680	142	753	3.1	593.0	593.0	594.0	1.0
G	9,135	156	641	3.7	596.4	596.4	596.7	0.3
H	11,550	244	1080	2.2	600.7	600.7	601.4	0.7

¹Feet above mouth

² Elevations computed without considering backwater from Lake Erie

*Controlled by coastal flooding – see FIRM for regulatory base flood elevation

TABLE 23

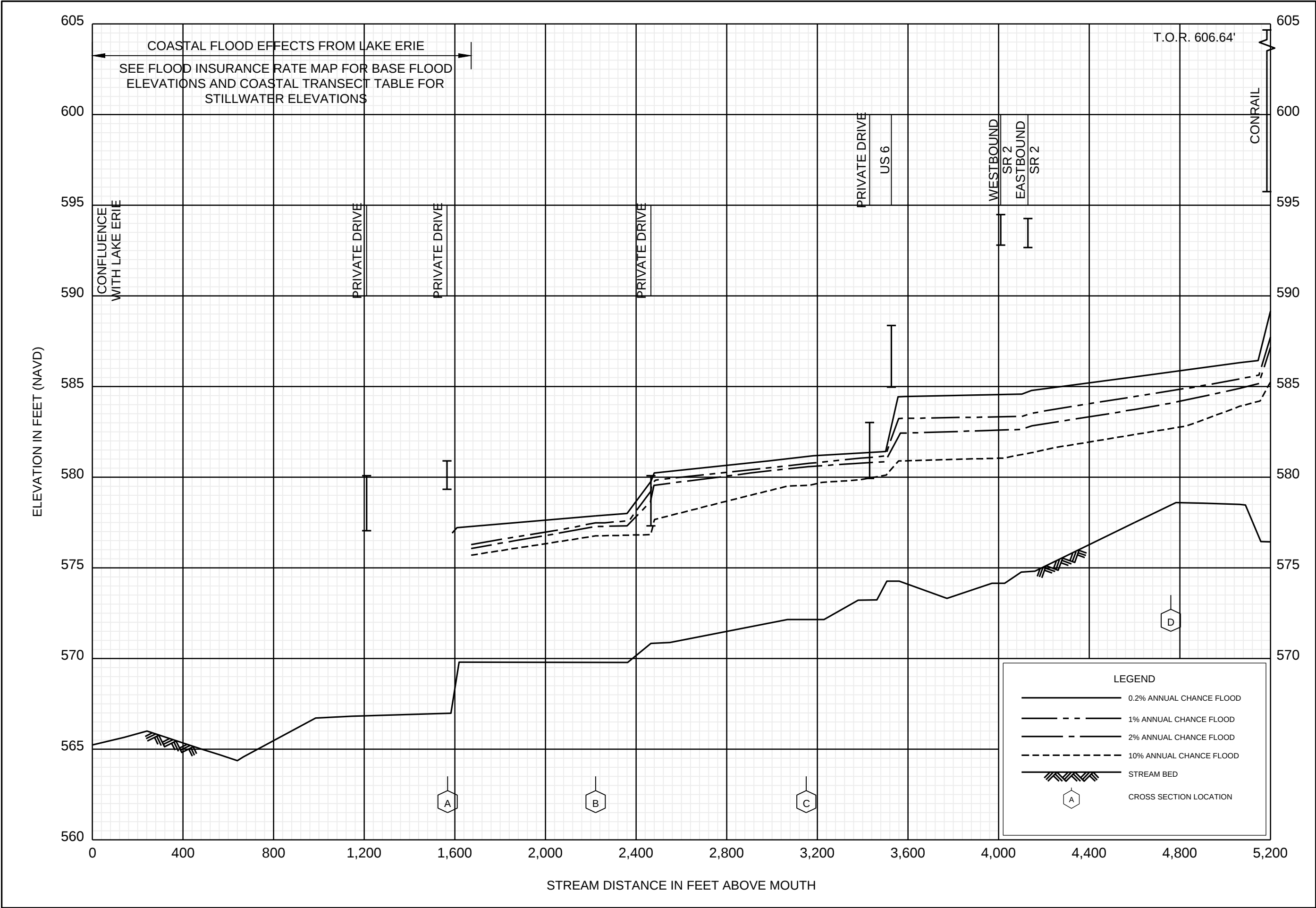
FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, OH

AND INCORPORATED AREAS

FLOODWAY DATA

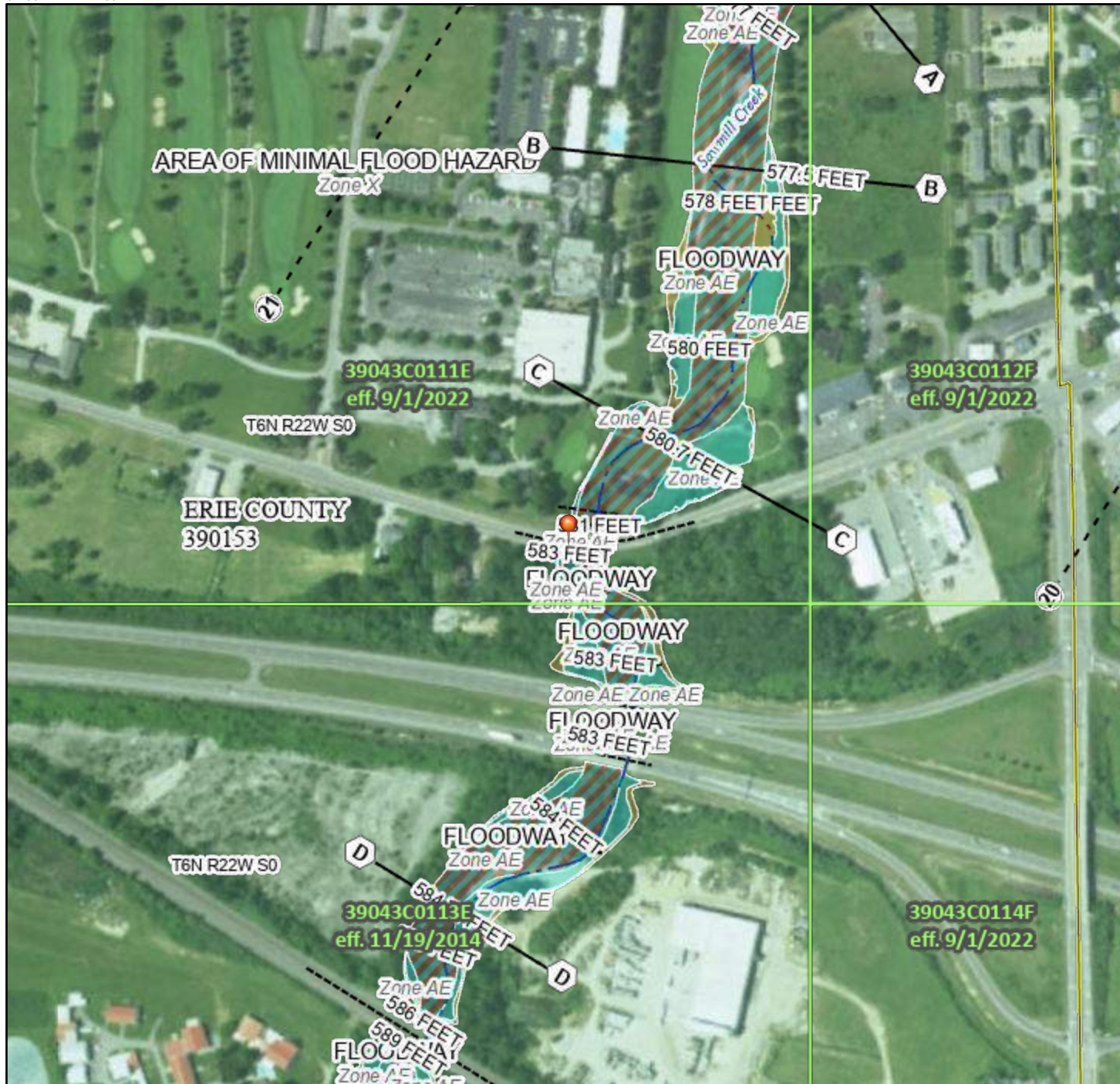
FLOODING SOURCE: PIPE CREEK, PLUM BROOK, & SAWMILL CREEK



National Flood Hazard Layer FIRMeTte



82°36'4"W 41°24'38"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

82°35'27"W 41°24'11"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/26/2024 at 1:11 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

7

390153

Erie

(CO)

OH

(Erie Co.)

4866

SAWMILL CREEK

MCALISTO - BLDG. 101, 1005--CYBER 175

SAWMILL CREEK
Summer 1950 TABLE

Summary 150 TABLE

	SEGRD	VLCH	ELTRD	ELLC	ELMIN	Q	OWSEL	CRINS	EG	LOK+5	VCH	HRFH	GDK
	.100	0.00	0.00	0.00	567.50	1354.00	574.27	0.00	574.84	26.79	6.15	231.15	251.61
	.100	0.00	0.00	0.00	567.50	2038.00	575.03	0.00	575.68	26.76	6.94	298.78	293.96
	.100	0.00	0.00	0.00	567.50	2359.00	575.28	0.00	575.95	26.92	7.21	461.53	454.64
	.100	0.00	0.00	0.00	567.50	2864.00	575.63	0.00	576.33	26.72	7.54	559.81	554.01
	.200	50.00	0.00	0.00	567.50	1354.00	574.40	0.00	574.98	27.31	6.09	227.16	238.17
	.200	50.00	0.00	0.00	567.50	2038.00	575.04	0.00	575.98	30.68	7.80	261.35	327.67
	.200	50.00	0.00	0.00	567.50	2359.00	575.20	0.00	576.37	46.21	8.69	272.06	347.01
	.200	50.00	0.00	0.00	567.50	2864.00	575.39	574.79	576.96	59.91	10.08	287.90	370.03
	.300	8.00	575.00	577.87	567.50	1354.00	574.44	0.00	575.00	26.37	6.05	223.94	261.23
	.300	8.00	575.00	577.87	567.50	2038.00	575.11	0.00	576.02	36.80	7.67	266.13	335.94
	.300	8.00	575.00	577.87	567.50	2359.00	575.32	0.00	576.43	42.73	8.45	281.77	360.88
	.300	8.00	575.00	577.87	567.50	2864.00	575.80	0.00	577.09	49.93	9.15	327.53	424.44
	.400	42.00	0.00	0.00	567.50	1354.00	574.79	0.00	575.15	13.17	5.03	346.93	347.62
	.400	42.00	0.00	0.00	567.50	2038.00	576.08	0.00	576.29	8.13	4.52	690.70	693.58
	.400	42.00	0.00	0.00	567.50	2359.00	576.36	0.00	576.76	7.09	4.32	863.37	868.49
	.400	42.00	0.00	0.00	567.50	2864.00	577.32	0.00	577.48	5.21	4.02	1165.63	1254.51
	.500	250.00	0.00	0.00	567.60	1354.00	575.17	0.00	575.50	12.63	4.59	295.96	300.93
	.500	250.00	0.00	0.00	567.60	2038.00	576.17	0.00	576.65	15.29	5.56	366.38	521.19
	.500	250.00	0.00	0.00	567.60	2359.00	576.37	0.00	577.12	15.33	5.56	296.02	383.71
	.500	250.00	0.00	0.00	567.60	2864.00	577.19	0.00	577.84	17.36	6.46	443.32	687.35
	.600	50.00	0.00	0.00	567.60	1354.00	575.25	0.00	575.56	12.06	4.50	300.86	309.96
	.600	50.00	0.00	0.00	567.60	2038.00	576.27	0.00	576.73	14.46	5.45	373.72	535.67
	.600	50.00	0.00	0.00	567.60	2359.00	576.68	0.00	577.21	13.44	5.84	404.12	600.37
	.600	50.00	0.00	0.00	567.60	2864.00	577.31	0.00	577.93	16.44	6.33	452.25	706.43
	.700	8.00	580.00	581.58	567.60	1354.00	575.26	0.00	575.57	11.97	4.49	301.64	391.44
	.700	8.00	580.00	581.58	567.60	2038.00	576.28	0.00	576.74	14.42	5.47	374.13	536.74
	.700	8.00	580.00	581.58	567.60	2359.00	576.69	0.00	577.22	15.39	5.83	404.57	601.35
	.700	8.00	580.00	581.58	567.60	2864.00	577.33	0.00	577.95	16.38	6.33	452.75	707.55
*	.800	42.00	0.00	0.00	570.50	1354.00	576.27	576.27	576.85	32.66	6.93	323.81	336.92
*	.800	42.00	0.00	0.00	570.50	2038.00	576.71	576.71	577.30	35.41	7.59	470.36	342.49
*	.800	42.00	0.00	0.00	570.50	2359.00	576.85	576.85	77.48	38.34	8.02	517.28	581.14
	.800	42.00	0.00	0.00	570.50	2864.00	577.90	0.00	78.13	13.01	5.31	936.24	794.12

SECNO	XLCH	ELTRD	ELLIC	ELMIN	Q	CMSL	CRIMS	EG	10K+S	VCH	AREA	.01K
3.000	600.00	0.00	0.00	570.50	1354.00	577.45	0.00	577.54	5.20	3.18	747.57	593.93
3.000	600.00	0.00	0.00	570.50	2038.00	577.97	0.00	578.08	6.06	3.65	966.25	827.90
3.000	600.00	0.00	0.00	570.50	2359.00	578.18	0.00	578.30	6.34	3.83	1060.07	936.57
3.000	600.00	0.00	0.00	570.50	2864.00	578.53	0.00	578.67	6.35	3.97	1225.21	1038.38
3.100	150.00	0.00	0.00	570.50	1354.00	577.53	0.00	577.61	4.65	3.04	781.34	628.12
3.100	150.00	0.00	0.00	570.50	2038.00	578.07	0.00	578.16	5.41	3.49	1008.55	876.33
3.100	150.00	0.00	0.00	570.50	2359.00	578.28	0.00	578.39	5.67	3.66	1105.48	990.78
3.100	150.00	0.00	0.00	570.50	2864.00	578.65	0.00	578.76	5.70	3.81	1273.27	1083.44
*	3.200	100.00	0.00	571.50	1354.00	576.91	576.91	578.82	95.00	11.08	122.16	138.92
*	3.200	100.00	0.00	571.50	2038.00	579.43	579.43	580.52	33.71	8.83	314.71	351.01
*	3.200	100.00	0.00	571.50	2359.00	579.94	579.94	580.81	26.98	8.34	452.46	454.14
*	3.200	100.00	0.00	571.50	2864.00	580.29	580.29	581.13	26.57	8.57	569.38	555.65
3.300	8.00	578.50	578.50	571.50	1354.00	577.88	0.00	579.10	82.45	8.85	153.03	149.12
3.300	8.00	578.50	578.50	571.50	2038.00	579.60	0.00	580.52	28.44	8.27	356.53	382.17
3.300	8.00	578.50	578.50	571.50	2359.00	580.07	0.00	580.81	23.03	7.82	498.42	491.51
3.300	8.00	578.50	578.50	571.50	2864.00	580.41	0.00	581.13	23.24	8.11	610.64	594.04
3.400	50.00	0.00	0.00	571.50	1354.00	578.55	0.00	579.43	30.68	7.59	186.93	244.44
3.400	50.00	0.00	0.00	571.50	2038.00	580.40	0.00	580.77	12.03	5.82	603.87	587.52
3.400	50.00	0.00	0.00	571.50	2359.00	580.62	0.00	581.00	12.30	6.02	690.03	672.71
3.400	50.00	0.00	0.00	571.50	2864.00	580.90	0.00	581.31	13.46	6.46	792.45	780.62
3.500	540.00	0.00	0.00	572.80	1354.00	580.16	0.00	580.44	11.37	4.69	415.86	401.60
3.500	540.00	0.00	0.00	572.80	2038.00	581.11	0.00	581.32	8.27	4.51	728.52	708.85
3.500	540.00	0.00	0.00	572.80	2359.00	581.34	0.00	581.57	8.61	4.72	811.31	804.13
3.500	540.00	0.00	0.00	572.80	2864.00	581.68	0.00	581.92	9.01	5.00	934.18	934.00
3.600	92.00	0.00	0.00	572.80	1354.00	580.32	0.00	580.55	9.33	4.34	465.00	443.23
3.600	92.00	0.00	0.00	572.80	2038.00	581.21	0.00	581.40	7.48	4.33	760.60	745.19
3.600	92.00	0.00	0.00	572.80	2359.00	581.45	0.00	581.65	7.79	4.54	845.89	845.33
3.600	92.00	0.00	0.00	572.80	2864.00	581.78	0.00	582.00	8.15	4.81	973.17	1003.44
3.700	16.00	579.30	579.76	572.80	1354.00	580.35	0.00	580.58	30.07	4.45	411.25	246.92
3.700	16.00	579.30	579.76	572.80	2038.00	581.27	0.00	581.43	22.08	3.58	638.93	431.71
3.700	16.00	579.30	579.76	572.80	2359.00	581.51	0.00	581.68	22.35	3.94	729.33	498.96
3.700	16.00	579.30	579.76	572.80	2864.00	581.84	0.00	582.03	22.70	4.00	831.41	601.17
3.800	51.00	0.00	0.00	572.80	1354.00	580.46	0.00	580.66	7.91	4.07	507.40	481.45
3.800	51.00	0.00	0.00	572.80	2038.00	581.32	0.00	581.49	6.61	3.12	801.44	792.52
3.800	51.00	0.00	0.00	572.80	2359.00	581.56	0.00	581.74	6.88	4.32	890.08	899.11
3.800	51.00	0.00	0.00	572.80	2864.00	581.90	0.00	582.10	7.26	4.60	1018.25	1062.74
3.900	160.00	0.00	0.00	573.90	1354.00	580.56	0.00	580.86	15.04	5.40	442.22	349.14
3.900	160.00	0.00	0.00	573.90	2038.00	581.44	0.00	581.63	10.32	4.82	750.50	634.32
3.900	160.00	0.00	0.00	573.90	2359.00	581.69	0.00	581.88	10.10	4.91	853.04	742.37
3.900	160.00	0.00	0.00	573.90	2864.00	582.04	0.00	582.23	9.87	5.03	1000.07	911.77
4.100	50.00	0.00	0.00	573.90	1354.00	580.71	0.00	580.94	12.16	4.91	491.07	388.34
4.100	50.00	0.00	0.00	573.90	2038.00	581.57	0.00	581.68	9.41	4.64	781.87	664.52
4.100	50.00	0.00	0.00	573.90	2359.00	581.75	0.00	581.93	9.31	4.75	880.33	773.19
4.100	50.00	0.00	0.00	573.90	2864.00	582.10	0.00	582.28	9.34	4.94	1021.34	937.27

CAUTION SECNO= 3.200 PROFILE= 3 PROBABLE MINIMUM SPECIFIC
CAUTION SECNO= 3.200 PROFILE= 3 20 TRIPS ATTEMPTED TO BAL
CAUTION SECNO= 3.200 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.200 PROFILE= 4 PROBABLE MINIMUM SPECIFIC

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CNSEL	CRIMS	EO	10K+S	VCH	AREA	.01K
4.200	8.00	579.40	581.30	573.90	1354.00	580.72	0.00	580.96	22.97	5.04	444.75	283.13
4.200	8.00	579.40	581.30	573.90	2038.00	581.56	0.00	581.70	19.34	3.88	709.05	463.41
4.200	8.00	579.40	581.30	573.90	2359.00	581.80	0.00	581.95	18.94	3.96	793.31	542.79
4.200	8.00	579.40	581.30	573.90	2864.00	582.14	0.00	582.30	18.44	3.85	918.11	667.00
5.000	25.00	0.00	0.00	573.90	1354.00	580.79	0.00	581.01	10.83	4.62	472.90	410.97
5.000	25.00	0.00	0.00	573.90	2038.00	581.56	0.00	581.77	10.35	4.83	671.85	633.52
5.000	25.00	0.00	0.00	573.90	2359.00	581.80	0.00	582.02	10.85	5.04	739.48	716.07
5.000	25.00	0.00	0.00	573.90	2864.00	582.13	0.00	582.38	11.54	5.34	838.95	843.00
5.100	38.00	0.00	0.00	575.00	1354.00	580.56	0.00	581.32	24.27	7.22	187.54	274.82
5.100	38.00	0.00	0.00	575.00	2038.00	580.94	0.00	582.53	43.75	10.13	201.12	308.13
5.100	38.00	0.00	0.00	575.00	2359.00	580.91	0.00	583.07	59.30	11.77	200.40	306.33
5.100	38.00	0.00	0.00	575.00	2864.00	581.14	581.14	584.07	76.65	13.73	208.62	327.13
5.200	54.00	588.00	585.76	575.00	1354.00	580.76	0.00	581.51	21.47	6.95	194.71	292.23
5.200	54.00	588.00	585.76	575.00	2038.00	581.49	0.00	582.81	32.25	9.23	220.00	358.66
5.200	54.00	588.00	585.76	575.00	2359.00	581.97	0.00	583.49	33.61	9.89	238.53	406.89
5.200	54.00	588.00	585.76	575.00	2864.00	583.04	581.14	584.70	30.48	10.33	277.17	518.75
5.300	208.00	0.00	0.00	574.00	1354.00	581.70	0.00	581.84	3.41	3.44	619.95	732.74
5.300	208.00	0.00	0.00	574.00	2038.00	583.21	0.00	583.30	2.28	3.18	1098.26	1348.61
5.300	208.00	0.00	0.00	574.00	2359.00	583.95	0.00	584.02	1.77	2.95	1386.83	1770.97
5.300	208.00	0.00	0.00	574.00	2864.00	585.20	0.00	585.25	1.16	2.59	1898.84	2657.37
5.400	200.00	0.00	0.00	574.80	1354.00	581.71	0.00	582.06	11.33	4.69	288.80	402.18
5.400	200.00	0.00	0.00	574.80	2038.00	583.11	0.00	583.57	12.32	5.43	375.11	590.69
5.400	200.00	0.00	0.00	574.80	2359.00	583.92	0.00	584.30	11.03	3.60	421.47	563.08
5.400	200.00	0.00	0.00	574.80	2864.00	585.03	0.00	585.52	10.57	5.66	506.39	860.97
5.500	65.00	594.75	593.75	574.80	1354.00	581.84	0.00	582.11	10.55	4.57	296.26	416.91
5.500	65.00	594.75	593.75	574.80	2038.00	583.25	0.00	583.72	11.37	5.28	386.03	604.40
5.500	65.00	594.75	593.75	574.80	2359.00	583.39	0.00	584.45	11.05	5.45	433.14	709.51
5.500	65.00	594.75	593.75	574.80	2864.00	585.19	0.00	585.66	9.92	5.53	518.11	909.25
5.600	5.00	0.00	0.00	574.80	1354.00	581.83	0.00	582.17	10.51	4.57	296.58	417.56
5.600	5.00	0.00	0.00	574.80	2038.00	583.29	0.00	583.72	11.34	5.27	386.41	605.25
5.600	5.00	0.00	0.00	574.80	2359.00	584.00	0.00	584.46	11.03	5.44	433.53	710.40
5.600	5.00	0.00	0.00	574.80	2864.00	585.19	0.00	585.67	9.90	5.52	518.49	910.16
5.700	60.00	0.00	0.00	575.50	1354.00	581.90	0.00	582.26	12.41	4.80	281.84	384.32
5.700	60.00	0.00	0.00	575.50	2038.00	583.35	0.00	583.81	12.84	5.48	371.90	568.82
5.700	60.00	0.00	0.00	575.50	2359.00	584.05	0.00	584.51	12.32	3.61	418.88	671.99
5.700	60.00	0.00	0.00	575.50	2864.00	585.24	0.00	585.74	10.89	5.69	503.30	867.83
5.800	50.00	594.90	593.56	575.50	1354.00	582.04	0.00	582.38	11.44	4.67	290.04	400.33
5.800	50.00	594.90	593.56	575.50	2038.00	583.53	0.00	583.97	11.78	5.32	383.41	593.69
5.800	50.00	594.90	593.56	575.50	2359.00	584.23	0.00	584.70	11.37	3.47	431.08	699.50
5.800	50.00	594.90	593.56	575.50	2864.00	585.41	0.00	585.89	10.19	5.56	515.48	892.09
7.000	620.00	0.00	0.00	579.20	1354.00	583.34	0.00	583.93	67.61	6.96	315.53	164.67
7.000	620.00	0.00	0.00	579.20	2038.00	584.73	0.00	585.15	35.14	6.27	566.11	343.80
7.000	620.00	0.00	0.00	579.20	2359.00	585.40	0.00	585.77	26.84	5.96	701.80	456.34
7.000	620.00	0.00	0.00	579.20	2864.00	586.48	0.00	586.78	18.51	5.59	935.97	665.74

SECN0	XLCH	ELTRO	ELLC	ELMIN	Q	CWSEL	CRJMS	EO	10K+S	VCH	AREA	.01K
7.100	310.00	0.00	0.00	579.20	1354.00	584.68	0.00	584.87	16.13	4.22	557.68	327.16
7.100	310.00	0.00	0.00	579.20	2038.00	585.65	0.00	585.89	16.61	4.84	753.54	500.02
7.100	310.00	0.00	0.00	579.20	2359.00	586.16	0.00	586.40	15.55	4.96	863.20	598.20
7.100	310.00	0.00	0.00	579.20	2864.00	587.04	0.00	587.27	13.19	4.98	1063.89	783.65
7.200	75.00	0.00	0.00	577.20	1354.00	584.41	0.00	585.58	64.98	8.66	156.28	167.97
7.200	75.00	0.00	0.00	577.20	2038.00	584.89	0.00	587.17	117.50	12.12	168.21	188.01
7.200	75.00	0.00	0.00	577.20	2359.00	585.11	0.00	587.98	142.62	13.58	173.75	197.53
7.200	75.00	0.00	0.00	577.20	2864.00	585.55	585.55	589.29	175.09	15.32	184.51	216.44
7.300	65.00	607.00	596.45	577.20	1354.00	585.04	0.00	586.01	49.95	7.90	171.46	191.58
7.300	65.00	607.00	596.45	577.20	2038.00	586.44	0.00	587.96	64.79	9.89	206.09	253.18
7.300	65.00	607.00	596.45	577.20	2359.00	587.24	0.00	588.93	65.75	10.43	226.11	290.93
7.300	65.00	607.00	596.45	577.20	2864.00	588.60	0.00	590.32	69.21	11.10	258.10	344.27
7.400	50.00	0.00	0.00	579.00	1354.00	586.20	0.00	586.32	6.06	3.36	690.60	550.18
7.400	50.00	0.00	0.00	579.00	2038.00	588.31	0.00	588.43	4.44	3.42	1080.05	967.24
7.400	50.00	0.00	0.00	579.00	2359.00	589.34	0.00	589.46	3.77	3.39	1290.31	1215.15
7.400	50.00	0.00	0.00	579.00	2864.00	591.00	0.00	591.10	2.86	3.26	1653.71	1693.78
7.500	110.00	0.00	0.00	579.49	1354.00	586.09	0.00	586.72	51.63	6.38	212.14	188.44
7.500	110.00	0.00	0.00	579.49	2038.00	588.20	0.00	588.75	31.70	5.91	345.07	361.96
7.500	110.00	0.00	0.00	579.49	2359.00	589.24	0.00	589.73	24.82	5.59	421.76	473.54
7.500	110.00	0.00	0.00	579.49	2864.00	590.91	0.00	591.32	16.26	5.13	558.70	710.16
7.600	33.00	593.90	592.70	579.49	1354.00	586.35	0.00	586.90	43.24	5.97	226.61	205.92
7.600	33.00	593.90	592.70	579.49	2038.00	588.34	0.00	588.86	29.46	5.75	354.65	375.47
7.600	33.00	593.90	592.70	579.49	2359.00	589.35	0.00	589.81	23.63	5.49	429.58	485.33
7.600	33.00	593.90	592.70	579.49	2864.00	590.97	0.00	591.37	15.77	5.08	563.88	721.09
7.700	157.00	0.00	0.00	580.00	1354.00	587.08	0.00	587.25	7.34	3.71	561.61	499.68
7.700	157.00	0.00	0.00	580.00	2038.00	589.97	0.00	589.14	5.97	3.92	908.84	834.14
7.700	157.00	0.00	0.00	580.00	2359.00	589.90	0.00	590.06	5.12	3.87	1100.71	1043.03
7.700	157.00	0.00	0.00	580.00	2864.00	591.42	0.00	591.56	3.93	3.74	1436.75	1444.77
9.000	630.00	0.00	0.00	581.10	1354.00	587.73	0.00	588.16	30.03	6.63	380.22	247.08
9.000	630.00	0.00	0.00	581.10	2038.00	589.45	0.00	589.87	23.84	6.86	592.09	426.48
9.000	630.00	0.00	0.00	581.10	2359.00	590.30	0.00	590.68	19.13	6.73	712.08	539.37
9.000	630.00	0.00	0.00	581.10	2864.00	591.72	0.00	592.03	13.75	6.33	928.58	772.47
11.000	1500.00	0.00	0.00	586.40	1354.00	592.27	0.00	592.61	29.26	5.71	422.22	250.30
11.000	1500.00	0.00	0.00	586.40	2038.00	593.27	0.00	593.65	27.97	6.32	599.60	385.32
11.000	1500.00	0.00	0.00	586.40	2359.00	593.69	0.00	594.08	27.25	6.53	682.05	451.93
11.000	1500.00	0.00	0.00	586.40	2864.00	594.38	0.00	594.78	25.01	6.70	825.57	572.71
13.000	1455.00	0.00	0.00	588.10	1354.00	595.65	0.00	595.97	18.71	5.03	388.71	313.00
13.000	1455.00	0.00	0.00	588.10	2038.00	596.71	0.00	597.12	20.43	5.88	561.80	450.86
13.000	1455.00	0.00	0.00	588.10	2359.00	597.12	0.00	597.55	20.90	6.18	644.98	515.99
13.000	1455.00	0.00	0.00	588.10	2864.00	597.69	0.00	598.17	21.46	6.60	775.71	618.20
15.000	2415.00	0.00	0.00	595.20	1354.00	600.19	0.00	600.26	16.69	4.09	392.02	331.39
15.000	2415.00	0.00	0.00	595.20	2038.00	601.07	0.00	601.14	13.63	4.17	1252.75	552.03
15.000	2415.00	0.00	0.00	595.20	2359.00	601.42	0.00	601.50	12.88	4.23	1404.42	657.22
15.000	2415.00	0.00	0.00	595.20	2864.00	601.95	0.00	602.03	12.13	4.35	1625.26	822.24

SANDHILL CREEK HE10

SUMMARY PRINTOUT TABLE 150

SECTNO	Q	QWSEL	DIFWSP	DIFWSX	DIFRWS	TOPWID	RLOH
.100	1354.00	574.27	0.00	0.00	-3.73	151.08	0.00
.100	2038.00	575.03	.75	0.00	-2.97	239.20	0.00
.100	2359.00	575.28	.25	0.00	-2.72	259.96	0.00
.100	2864.00	575.63	.36	0.00	-2.37	289.50	0.00
.200	1354.00	574.40	0.00	.13	0.00	60.14	50.00
.200	2038.00	575.04	.64	.01	0.00	65.12	50.00
.200	2359.00	575.20	.16	-.07	0.00	74.86	50.00
.200	2864.00	575.39	.18	-.25	0.00	85.93	50.00
.300	1354.00	574.44	0.00	.03	0.00	60.27	8.00
.300	2038.00	575.11	.68	.07	0.00	69.33	8.00
.300	2359.00	575.32	.21	.12	0.00	81.60	8.00
.300	2864.00	575.80	.48	.42	0.00	109.88	8.00
.400	1354.00	574.79	0.00	.35	0.00	213.10	42.00
.400	2038.00	576.06	1.27	.95	0.00	324.65	42.00
.400	2359.00	576.56	.50	1.24	0.00	365.98	42.00
.400	2864.00	577.32	.76	1.52	0.00	428.79	42.00
.500	1354.00	575.17	0.00	.38	0.00	68.44	250.00
.500	2038.00	576.17	1.00	.11	0.00	72.48	250.00
.500	2359.00	576.57	.40	.01	0.00	74.11	250.00
.500	2864.00	577.19	.62	-.13	0.00	76.65	250.00
.600	1354.00	575.23	0.00	.08	0.00	68.87	50.00
.600	2038.00	576.27	1.02	.10	0.00	72.09	50.00
.600	2359.00	576.68	.41	.11	0.00	74.77	50.00
.600	2864.00	577.31	.61	.12	0.00	77.27	50.00
.700	1354.00	575.26	0.00	.01	0.00	68.92	8.00
.700	2038.00	576.28	1.02	.01	0.00	72.11	8.00
.700	2359.00	576.69	.41	.01	0.00	74.80	8.00
.700	2864.00	577.33	.63	.01	0.00	77.40	8.00
*.800	1354.00	576.07	0.00	1.01	0.00	304.64	42.00
*.800	2038.00	576.71	.44	.43	0.00	348.05	42.00
*.800	2359.00	576.85	.13	.15	0.00	353.52	42.00
*.800	2864.00	577.90	1.06	.58	0.00	431.11	42.00
3.000	1354.00	577.43	0.00	1.18	0.00	405.53	600.00
3.000	2038.00	577.97	.52	1.26	0.00	425.04	600.00
3.000	2359.00	578.18	.21	1.34	0.00	447.09	600.00
3.000	2864.00	578.55	.36	.64	0.00	467.55	600.00
3.100	1354.00	577.53	0.00	.08	0.00	410.25	150.00
3.100	2038.00	578.07	.53	.10	0.00	440.51	150.00
3.100	2359.00	578.28	.22	.10	0.00	452.81	150.00
3.100	2864.00	578.65	.36	.10	0.00	473.34	150.00
*3.200	1354.00	576.91	0.00	-.62	0.00	32.03	100.00
*3.200	2038.00	579.43	2.52	1.36	0.00	223.45	100.00
*3.200	2359.00	579.94	.51	1.66	0.00	314.43	100.00
*3.200	2864.00	580.29	.35	1.65	0.00	344.14	100.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	WICH
3.300	1354.00	577.88	0.00	.97	0.00	33.39	8.00
3.300	2038.00	579.60	1.71	.17	0.00	254.53	8.00
3.300	2359.00	580.07	.48	.13	0.00	330.34	8.00
3.300	2864.00	580.41	.33	.11	0.00	351.73	8.00
3.400	1354.00	578.55	0.00	.66	0.00	66.66	50.00
3.400	2038.00	580.40	1.85	.80	0.00	350.47	50.00
3.400	2359.00	580.62	.23	.55	0.00	366.11	50.00
3.400	2864.00	580.90	.28	.50	0.00	383.87	50.00
3.500	1354.00	580.16	0.00	1.61	0.00	306.72	540.00
3.500	2038.00	581.11	.95	.71	0.00	351.12	540.00
3.500	2359.00	581.34	.23	.72	0.00	362.05	540.00
3.500	2864.00	581.68	.33	.77	0.00	377.70	540.00
3.600	1354.00	580.32	0.00	.16	0.00	313.79	92.00
3.600	2038.00	581.21	.69	.10	0.00	355.40	92.00
3.600	2359.00	581.45	.24	.10	0.00	366.53	92.00
3.600	2864.00	581.79	.34	.11	0.00	382.33	92.00
3.700	1354.00	580.35	0.00	.03	0.00	310.85	16.00
3.700	2038.00	581.27	.92	.06	0.00	347.65	16.00
3.700	2359.00	581.51	.24	.06	0.00	357.27	16.00
3.700	2864.00	581.84	.34	.06	0.00	370.71	16.00
3.800	1354.00	580.46	0.00	.11	0.00	320.09	51.00
3.800	2038.00	581.32	.96	.05	0.00	360.77	51.00
3.800	2359.00	581.56	.24	.05	0.00	372.16	51.00
3.800	2864.00	581.90	.34	.06	0.00	388.13	51.00
3.900	1354.00	580.56	0.00	.10	0.00	333.54	160.00
3.900	2038.00	581.44	.87	.12	0.00	387.41	160.00
3.900	2359.00	581.69	.25	.13	0.00	403.24	160.00
3.900	2864.00	582.04	.35	.14	0.00	423.55	160.00
4.100	1354.00	580.71	0.00	.15	0.00	342.54	50.00
4.100	2038.00	581.51	.79	.07	0.00	391.99	50.00
4.100	2359.00	581.75	.25	.07	0.00	407.31	50.00
4.100	2864.00	582.10	.35	.06	0.00	428.69	50.00
4.200	1354.00	580.72	0.00	.00	0.00	342.35	8.00
4.200	2038.00	581.56	.84	.05	0.00	394.40	8.00
4.200	2359.00	581.80	.24	.05	0.00	409.02	8.00
4.200	2864.00	582.14	.34	.04	0.00	429.63	8.00
5.000	1354.00	580.79	0.00	.08	0.00	345.60	25.00
5.000	2038.00	581.56	.76	.00	0.00	377.19	25.00
5.000	2359.00	581.80	.24	.00	0.00	387.14	25.00
5.000	2864.00	582.13	.34	.01	0.00	401.18	25.00
5.100	1354.00	580.56	0.00	-.24	0.00	36.00	38.00
5.100	2038.00	580.94	.18	-.62	0.00	36.00	38.00
5.100	2359.00	580.91	-.02	-.88	0.00	36.00	38.00
5.100	2864.00	581.14	.23	-.99	0.00	36.00	38.00

PRINTED IN U.S.A.

00740X	10						
00750GR	590	0	585	200	580	300	
00760GR	573.4	517	571.5	528	573.6	542	

LOCATION: 2.200 PROFILE: 3 FRIABLE MASONRY SPECIFIC ENERGY
CAUTION: 2.200 PROFILE: 3 20 TOTAL ATTENTION TO DAMAGE

SECTNO	D	CRSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
5.200	1354.00	580.76	0.00	.20	0.00	36.00	54.00
5.200	2038.00	581.49	.72	.55	0.00	36.00	54.00
5.200	2359.00	584.97	.48	1.06	0.00	36.00	54.00
5.200	2864.00	581.04	1.07	1.50	0.00	36.00	54.00
5.300	1354.00	581.70	0.00	.95	0.00	271.48	208.00
5.300	2038.00	583.21	1.50	1.72	0.00	363.06	208.00
5.300	2359.00	583.95	.74	1.98	0.00	406.56	208.00
5.300	2864.00	585.20	1.25	2.45	0.00	415.60	208.00
5.400	1354.00	581.71	0.00	.01	0.00	58.56	200.00
5.400	2038.00	583.11	1.40	-.09	0.00	54.57	200.00
5.400	2359.00	583.82	.70	-.43	0.00	67.58	200.00
5.400	2864.00	585.03	1.21	-.17	0.00	72.76	200.00
5.500	1354.00	581.84	0.00	.13	0.00	53.11	65.00
5.500	2038.00	583.28	1.44	.17	0.00	65.25	65.00
5.500	2359.00	583.99	.71	.17	0.00	68.31	65.00
5.500	2864.00	585.19	1.20	.16	0.00	73.45	65.00
5.600	1354.00	581.85	0.00	.01	0.00	39.13	5.00
5.600	2038.00	583.29	1.44	.01	0.00	65.32	5.00
5.600	2359.00	584.00	.71	.01	0.00	68.34	5.00
5.600	2864.00	585.19	1.20	.01	0.00	73.47	5.00
5.700	1354.00	581.90	0.00	.05	0.00	59.08	60.00
5.700	2038.00	583.35	1.45	.06	0.00	65.28	60.00
5.700	2359.00	584.05	.70	.05	0.00	68.29	60.00
5.700	2864.00	585.24	1.19	.05	0.00	73.39	60.00
5.800	1354.00	582.04	0.00	.14	0.00	31.67	50.00
5.800	2038.00	583.53	1.49	.16	0.00	66.03	50.00
5.800	2359.00	584.23	.71	.18	0.00	69.05	50.00
5.800	2864.00	585.41	1.18	.17	0.00	74.09	50.00
7.000	1354.00	583.34	0.00	1.30	0.00	167.47	620.00
7.000	2038.00	584.73	1.39	1.20	0.00	193.63	620.00
7.000	2359.00	585.40	.67	1.17	0.00	206.41	620.00
7.000	2864.00	586.48	1.08	1.07	0.00	226.79	620.00
7.100	1354.00	584.62	0.00	1.34	0.00	192.80	310.00
7.100	2038.00	585.65	.97	.92	0.00	211.08	310.00
7.100	2359.00	586.16	.51	.76	0.00	220.66	310.00
7.100	2864.00	587.04	.88	.56	0.00	237.18	310.00
7.200	1354.00	584.41	0.00	-.27	0.00	25.00	75.00
7.200	2038.00	584.89	.48	-.76	0.00	25.00	75.00
7.200	2359.00	585.11	.22	-1.05	0.00	25.00	75.00
7.200	2864.00	585.55	.43	-1.49	0.00	25.00	75.00
7.300	1354.00	585.04	0.00	.63	0.00	25.00	65.00
7.300	2038.00	586.44	1.40	1.54	0.00	25.00	65.00
7.300	2359.00	587.24	.81	2.13	0.00	25.00	65.00
7.300	2864.00	588.60	1.36	3.06	0.00	25.00	65.00

014000R 588.8 586 588 710 590 1250
014105H 1.3 2.7 36 370
01420X1 5.2 54 54 54
01430X2 4 585.76 583
01440X3 1.0

SECNO	Q	ONSEL	DIFWSP	DIFMSX	DIFKWS	TOPWID	SLCH
7.400	1354.00	586.20	0.00	1.15	0.00	170.73	50.00
7.400	2038.00	589.31	2.12	1.87	0.00	197.44	50.00
7.400	2359.00	589.34	1.03	2.10	0.00	210.46	50.00
7.400	2864.00	591.00	1.66	2.40	0.00	225.63	50.00
7.500	1354.00	586.09	0.00	-1.10	0.00	55.58	110.00
7.500	2038.00	588.20	2.11	-1.11	0.00	70.34	110.00
7.500	2359.00	589.24	1.04	-1.10	0.00	77.59	110.00
7.500	2864.00	590.91	1.67	-1.09	0.00	85.00	110.00
7.600	1354.00	586.35	0.00	.26	0.00	57.37	33.00
7.600	2038.00	588.34	1.99	.14	0.00	71.28	33.00
7.600	2359.00	589.35	1.00	.30	0.00	78.29	33.00
7.600	2864.00	590.97	1.63	.36	0.00	85.00	33.00
7.700	1354.00	587.08	0.00	.73	0.00	156.90	157.00
7.700	2038.00	588.97	1.89	.62	0.00	200.87	157.00
7.700	2359.00	589.90	.93	.55	0.00	211.34	157.00
7.700	2864.00	591.42	1.53	.45	0.00	229.22	157.00
9.000	1354.00	587.73	0.00	.65	0.00	110.43	630.00
9.000	2038.00	589.45	1.73	.49	0.00	135.94	630.00
9.000	2359.00	590.30	.85	.40	0.00	146.66	630.00
9.000	2864.00	591.72	1.42	.30	0.00	159.18	630.00
11.000	1354.00	593.27	0.00	4.54	0.00	163.19	1500.00
11.000	2038.00	593.27	1.00	3.82	0.00	189.02	1500.00
11.000	2359.00	593.69	.42	3.39	0.00	199.90	1500.00
11.000	2864.00	594.38	.69	2.66	0.00	217.53	1500.00
13.000	1354.00	595.65	0.00	3.38	0.00	139.19	1455.00
13.000	2038.00	596.71	1.06	3.44	0.00	191.30	1455.00
13.000	2359.00	597.12	.41	3.43	0.00	212.99	1455.00
13.000	2864.00	597.69	.58	3.31	0.00	243.24	1455.00
15.000	1354.00	600.19	0.00	4.54	0.00	402.60	2415.00
15.000	2038.00	601.07	.38	4.36	0.00	414.92	2415.00
15.000	2359.00	601.42	.35	4.31	0.00	419.99	2415.00
15.000	2864.00	601.95	.53	4.26	0.00	427.27	2415.00

SUMMARY OF ERRORS

CAUTION SECNO= .800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= .800 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= .800 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= .800 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= .800 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= .800 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= .800 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= .800 PROFILE= 3 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 3.200 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.200 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.200 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.200 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.200 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.200 PROFILE= 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.200 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY

02060BT	500	607.3	577.2	500	607.3	583.97	500.5	607.3	587.47	501.5
02070BT	607.3	589.91	503	607.3	592.09	504.5	607.3	593.57	505.5	607.3

CAUTION SECNO= 3.200 PROFILE= 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.200 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.200 PROFILE= 4 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.200 PROFILE= 4 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.100 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 5.100 PROFILE= 4 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 7.200 PROFILE= 4 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 7.200 PROFILE= 4 MINIMUM SPECIFIC ENERGY

HE100T2 12:16 MAR 27, '79

FLOOD INSURANCE ZONE DATA FOR SAWMILL CREEK HE10

SAWMILL CREEK

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

INSURANCE

HUD-COPS

SECTION NUMBER	CUMULATIVE DISTANCE	ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND		
		10% 10%	2% 2%	0.2% 0.2%

.100	0.	-1.01	-.25	.36
.200	50.	-.80	-.16	.19
.300	58.	-.89	-.21	.48
.400	100.	-1.77	-.50	.76
.500	350.	-1.40	-.40	.62
.600	400.	-1.43	-.41	.63
.700	408.	-1.43	-.41	.63
.800	450.	-.53	-.13	1.06
3.000	1030.	-.73	-.21	.36
3.100	1200.	-.75	-.22	.36
3.200	1300.	-3.03	-.51	.35
3.300	1308.	-2.19	-.48	.33
3.400	1358.	-2.08	-.23	.28
3.500	1898.	-1.18	-.23	.33
3.600	1990.	-1.13	-.24	.34
3.700	2006.	-1.16	-.24	.34
3.800	2037.	-1.10	-.24	.34
3.900	2217.	-1.12	-.25	.35
4.100	2267.	-1.04	-.23	.35
4.200	2275.	-1.08	-.24	.34
5.000	2300.	-1.00	-.24	.34
5.100	2338.	-.36	.02	.23
5.200	2392.	-1.22	-.59	1.07
5.300	2600.	-2.24	-.74	1.25
5.400	2800.	-2.10	-.70	1.21
5.500	2865.	-2.15	-.71	1.20
5.600	2870.	-2.15	-.71	1.20
5.700	2930.	-2.15	-.70	1.19
5.800	2980.	-2.19	-.71	1.18
7.000	3600.	-2.06	-.67	1.08
7.100	3910.	-1.48	-.51	.88
7.200	3985.	-.70	-.22	.43
7.300	4050.	-2.21	-.81	1.36
7.400	4100.	-3.15	-1.03	1.66
7.500	4210.	-3.15	-1.04	1.67
7.600	4243.	-3.00	-1.00	1.63
7.700	4400.	-2.82	-.93	1.53
9.000	5030.	-2.57	-.85	1.42
11.000	6530.	-1.42	-.42	.69
13.000	7985.	-1.46	-.41	.58
15.000	10400.	-1.23	-.35	.53

WEIGHTED AVG FOR REACH -1.65 -.49 .90

FHF FOR THE REACH = 0.15 WITH 75.3% OF THE REACH WITHIN .5 FEET
ZONE FOR THE REACH = A 3

3.900	581.69	0.00	581.88	403.24	1.09	304.81	1454.10	0.00	0.00	499.00	531.00	0.00
3.900	582.36	.67	582.72	135.84	0.00	1213.56	1145.44	.42	499.00	499.00	531.00	634.84
4.100	581.75	0.00	581.93	407.51	.14	685.85	1473.02	0.00	0.00	499.00	531.00	0.00

CONTINUOUS FLOOD HAZARD FACTORS BY EVEN INCREMENTS

INC. TOTAL WEIGHTED AVG DIFFERENCE
NO. LENGTH BETWEEN BASE FLOOD AND
10% 1% 0.2%

4 400. -1.78 -.52 .74

FHF FOR REACH 1 = 020 WITH 100% OF THE REACH WITHIN .5 FEET
ZONE FOR THE REACH = A 4

12 1200. -.81 -.21 .60

FHF FOR REACH 2 = 010 WITH 83% OF THE REACH WITHIN .5 FEET
ZONE FOR THE REACH = A 2

25 2500. -1.13 -.29 .41

FHF FOR REACH 3 = 010 WITH 80% OF THE REACH WITHIN .5 FEET
ZONE FOR THE REACH = A 2

61 6100. -2.29 -.75 1.24

FHF FOR REACH 4 = 025 WITH 98% OF THE REACH WITHIN 1.0 FEET
ZONE FOR THE REACH = A 5

103 10300. -1.40 -.40 .60

FHF FOR REACH 5 = 015 WITH 100% OF THE REACH WITHIN .5 FEET
ZONE FOR THE REACH = A 3

SEE CITY OF HURON REPORT

REACH 1 - D/S LAKE ERIE

Continuing

10% 1% 0.2%

-1.01 -0.26 0.48

81% WITHIN 0.5 FEET

ZONE FOR REACH = A2

HEC2 RELEASE DATED NOV 76 UPDATED

11.000	593.69	0.00	594.08	199.90	1040.24	1283.64	35.12	0.00	0.00	781.00	792.00	0.00
11.000	594.70	1.01	594.95	142.00	1159.75	1199.24	0.00	142.00	650.00	761.00	792.00	792.00

00100T1 TYPE 15 FIS. ERIE COUNTY
00110T2 100 YEAR
00120T3 SAWMILL CREEK HE10

JCW-Worklist

Sawmill Creek

Inlet & Floodway

	00130J1	-10	4							575.28	
	00140J2	1		-1							
	00150J3	110	200								
	00160J5	-10									
	00170NC	.035	.035	.03	.1	.3					
	00180QT	5	1334	2038	2359	2864	2357				
	00190ET						10.4				
0.1	00200X1	.1	7	513	569	0	0				
	00210GR	580	200	575	400	573.5	513	56.15	538	573.4	569.
	00220GR	590	850	585	1000						
	00230NC				.3	.5					
	00240X1	.2	13	503	578	50	50	50			
0.2	00250X3	10							575	575	
	00260GR	580	200	575	400	580.4	480	580.4	503	577.87	503.
	00270GR	573.5	513	567.5	538	573.4	569	577.76	578	579.6	576.
	00280GR	579.9	603	580	850	585	1000				
	00290SB		1.5	2.8		10		455	3.2		
	00300X1	.3				8	8	8			
	00310X2			1	577.87	575					
0.3	00320X3	10							575	571.9	
	00330BT	10	200	580	580	400	575	575	480	580.4	580.4
	00340BT	503	580.4	580.4	303	580.4	577.87	578	580.4	577.67	578.
	00350BT	579.6	579.6	603	579.9	579.9	850	580	580	1000	585.
	00360BT	585									
	00370NC										
0.4	00380X1	.4	7	513	569	42	42	42			
	00390GR	580	200	575	400	573.5	513	567.5	538	573.4	569.
	00400GR	580	850	585	1000						
	00410NC				.1	.3					
	00420X1	.5	8	608	687	250	250	250			
0.5	00430GR	580	350	578.4	608	573.1	613	567.6	640	573.4	674.
	00440GR	577.6	687	580	800	585	1000				
	00450NC				.3	.8					
	00460X1	.6	13	605	687	50	50	50			
0.6	00470X3	10							580	580	
	00480GR	580	350	583.19	600	581.58	605	581	605	573.1	613.
	00490GR	567.6	640	573.4	674	577.6	687	581.6	687	581.65	692.
	00500GR	582.4	710	580	800	585	1000				
	00510SB		1.5	2.8		10		675	4		
	00520X1	.7				8	8	8			
0.7	00530X2			1	581.58	580					
	00540X3	10							580	580	
	00550BT	10	350	580	580	600	583.19	583.19	605	581.58	581.58
	00560BT	605	681.58	581	687	581.6	577.6	687	581.6	581.6	692.
	00570BT	581.65	581.65	710	582.4	582.4	800	580	580	1000	585.
	00580BT	585									
	00590NC										
	00600ET						9.1		170	370	
0.8	00610X1	.8	11	170	206	42	42	42			
	00620GR	585	0	580	100	577	150	577.2	170	572.4	174.
	00630GR	570.5	194	572.8	203	576.6	206	576.3	236	575	430.
	00640GR	580	650								
	00650NC				.1	.3					
3	00660ET						9.1		170	370	
	00670X1	.3				600	200	600			
	00680NC										
3.1	00690ET						9.1		170	370	
	00700X1	1.1					150	150			
3.2	00710NC				.3	.5					
	00720ET						9.1		450	600	
	00730X1										

7.300	25.	263.	9.0	588.7	587.2	1.5
7.400	108.	993.	2.4	590.1	589.3	.8
7.500	83.	495.	4.3	590.1	589.2	.9

[illegible]

5.2 US6	01400BT	588.8	588	588	588	588	588	588	588	588	588
	01410BT		1.3	2.7			36		370		
	01420X1	5.2					54		54		
	01430X2			1	589.76	589					
	01440X3	10							589.1	589	
	01450BT	14	85	596	596	163	584	584	280	592	592
	01460BT	335	590	590	450	589.36	589.36	498	589.1	588.2	500
	01470BT	589.1	579.5	500	589.1	583.76	536	589.1	585.44	536	589.1
	01480BT	575.9	540	589.1	589.6	586	588.8	588.8	710	588	588
	01490BT	1250	590	590							
5.3	01500NC										
	01510BT						3.1			137	270
	01520X1	5.3	10	182	218	206	208	209			
	01530GR	596	0	560	68	590	167	576	192	574	185
	01540GR	574	215	375	218	590	231	592	370	594	425
	01550NC										
	01560BT										
	01570X1	5.4	14	500	599	200	200	200			
	01580X3	10							583	583	
	01590GR	602	0	600	90	598	430	596	340	595.46	450
5.4	01600GR	594.2	494	591.2	500	575.7	535	574.8	552	575.8	568
	01610GR	591.1	599	594.1	606	594.74	649	595	1100		
	01620BT	1.25	1.5	2.7		35	6	1204	1.8		
	01630X1	5.3				63	65	63			
	01640X2			1	593.75	594.75					
	01650X3	10							595.1	594.75	
	01660BT	13	0	602	602	90	600	600	150	598	598
	01670BT	340	596	596	450	595.46	595.46	494	593.1	594.2	500
	01680BT	595.1	591.2	500	595.1	593.75	599	595.1	593.4	598	595.1
	01690BT	591.1	606	595	594.1	649	594.75	594.75	1100	595	595
5.5	01700NC										
	01710X1	5.6				5	5	5			
	01720NC										
	01730X1	5.7	14	500	599	60	60	60			
	01740X3	10							593	593	
	01750GR	602	20	600	155	598	150	596	360	595.39	450
	01760GR	594.9	494	591.8	500	573.9	536	573.9	552	576.2	570
	01770GR	590.6	599	594.9	606	594.6	649	595	1100		
	01780BT	1.25	1.5	2.7		35	6	1144	1.8		
	01790X	5.8				50	50	50			
5.6	01800BT			1	593.36	594.3					
	01810X3	10							594.9	595	
	01820BT	13	20	602	602	153	600	600	190	598	598
	01830BT	360	596	596	450	595.39	595.39	494	594.9	594.9	500
	01840BT	594.9	591.8	500	594.9	593.36	599	594.9	593.16	598	594.9
	01850BT	590.6	606	594.9	604.6	649	594.6	594.6	1100	595	595
	01860NC	.08	.08	.04							
	01870X1	7	11	806	849	620	620	620			
	01880GR	590	600	590	732	581	806	580.1	812	579.2	829
	01890GR	580.1	846	581.7	849	581.6	863	582	940	590	1025
7	01900GR	800	1035								
	01910NC										
	01920X1	7.1			1	.3					
	01930X3	10									
	01940X1	7.2	23	500	525	75	75	75			
	01950X3	10							600	600	
	01960GR	607	0	607.27	450	602.2	497	577.2	500	577.24	500.5
	01970GR	577.32	501.5	577.45	503	577.57	504.5	577.74	506.5	577.91	506.5
	01980GR	578.67	510.3	578.2	512	578.35	514.5	578.48	516.5	578.6	516.5
	01990GR	578.72	520.5	578.82	522	578.91	523.5	578.97	524.5	578	525
7.1	02000GR	603.1	526	607.24	523	607	410				
	02010BT		1.5	2.6		21.3		390			
	02020X1	7.3				63	63	63			
	02030X2			1	596.45	607					
	02040X3	10							607	607	
	02050BT	85	0	607	607	153	607	607	190	598	598
	02060BT	360	596	596	450	595.39	595.39	494	594.9	594.9	500
	02070BT	594.9	591.8	500	594.9	593.36	599	594.9	593.16	598	594.9
	02080BT	590.6	606	594.9	604.6	649	594.6	594.6	1100	595	595
	02090NC	.08	.08	.04							
7.2	02100X1	7.4	24	500	525	75	75	75			
	02110X3	10							600	600	
	02120GR	607	0	607.27	450	602.2	497	577.2	500	577.24	500.5
	02130GR	577.32	501.5	577.45	503	577.57	504.5	577.74	506.5	577.91	506.5
	02140GR	578.67	510.3	578.2	512	578.35	514.5	578.48	516.5	578.6	516.5
	02150GR	578.72	520.5	578.82	522	578.91	523.5	578.97	524.5	578	525
	02160GR	603.1	526	607.24	523	607	410				
	02170BT		1.5	2.6		21.3		390			
	02180X1	7.5				63	63	63			
	02190X2			1	596.45	607					
7.3	02200X3	10							607	607	
	02210BT	85	0	607	607	153	607	607	190	598	598
	02220BT	360	596	596	450	595.39	595.39	494	594.9	594.9	500
	02230BT	594.9	591.8	500	594.9	593.36	599	594.9	593.16	598	594.9
	02240BT	590.6	606	594.9	604.6	649	594.6	594.6	1100	595	595
	02250NC	.08	.08	.04							
	02260X1	7.6	25	500	525	75	75	75			
	02270X3	10							600	600	
	02280GR	607	0	607.27	450	602.2	497	577.2	500	577.24	500.5
	02290GR	577.32	501.5	577.45	503	577.57	504.5	577.74	506.5	577.91	506.5

02030BT	500	607.3	577.2	500	607.3	583.97	500.3	607.3	587.47	501.5
02070BT	607.3	589.91	503	607.3	592.09	504.5	607.3	593.57	506.5	607.3
02080BT	594.94	508.5	607.3	595.81	510.5	607.3	596.31	512	607.3	596.47
02090BT	514.5	607.3	596.31	516.5	607.3	595.81	518.5	607.3	594.94	520.5
02100BT	607.3	593.57	322	607.3	592.09	323.5	607.3	589.91	524.5	607.3
02110BT	587.47	525	607.3	583.97	525	607.3	579	528	607.3	603.1
02120BT	575	607.24	607.24	1100	607	607				
02130NC										
02140X1	7.4	10	185	225	50	50	50			
02150GR	500	0	598	60	390	90	580	185	579	190.
02160GR	579	220	580	225	582	230	584	290	600	340.
02170NC										
02180X1	7.5	14	500	585	110	110	110			
02190X3	10							592	592	
02200GR	602	170	600	280	598	300	594.59	450	589.9	500.
02210GR	579.49	540	579.69	544	580	551	590.8	585	593.93	605.
02220GR	596	675	598	745	600	780	602	985		
02230SB	1.25	1.5	2.7		12		670	2.8		
02240X1	7.6				33	33	33			
02250X2			1	592.7	593.9					
02260X3	10							593.9	593.9	
02270BT	13	170	600	602	280	600	600	300	598	598.
02280BT	450	594.59	594.59	500	593.9	589.9	500	593.9	592.7	585.
02290BT	593.9	592.38	585	593.9	590.8	605	593.93	593.93	605	596.
02300BT	596	745	598	598	780	600	600	985	602	602.
02310NC										
02320X1	7.7	13	430	470	157	157	157			
02330GR	603	0	602	170	600	280	598	302	596	370.
02340GR	580	430	580	470	582	475	584	490	586	525.
02350GR	588	590	590	605	600	683				
02360NC	8	.08	.04	.1	.3					
02370X1	9	10	548	568	630	630	630			
02380GR	600.4	500	599.7	523	581.1	548	581.2	503	581.9	559.
02390GR	581.9	568	583.4	594	590	680	594	710	596	730.
02400NC										
02410ET						9.1			650	792
02420X1	11	11	761	792	1500	1300	1300			
02430GR	600	440	592	640	589.9	700	588.7	761	586.6	774.
02440GR	586.4	779	586.9	786	589.6	792	589.7	795	605.13	805.
02450GR	606	715								
02460NC										
02470ET						9.1			444	600
02480X1	13	14	444	452	1455	1455	1455			
02490GR	607.8	400	607.4	405	593	444	591.4	456	588.6	461.
02500GR	588.1	467	588.7	478	590.6	482	592.3	504	594	510.
02510GR	596	590	596	690	600	870	608	970		
02520NC										
02530ET						10.4				
02540X1	15	12	868	883	2413	2413	2413			
02550GR	608	455	600	520	598	600	597.7	800	598.6	858.
02560GR	595.3	368	595.2	871	595.7	878	576.9	883	597.2	918.
02570GR	600	520	606	955						
02580EJ										
02590T1										
02600T2										
02610T3										
02620J1	-10	6							576.28	
02630J2	15		-1							
02640										
02650										
02660										
02670ER										
02680VEUR										

TYPE 15 FIS. ERIE COUNTY
100-YEAR FLOODWAY
SANDHILL CR. EK HE10

HE100T1 13:39 MAR 27 '79

SAWMILL CREEK HE10

SUMMARY PRINTOUT TABLE 110

SAWMILL CR.

Floodway

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR	
.100	575.28	0.00	575.95	260.24	261.93	1938.35	158.72	0.00	0.00	513.00	569.00	0.00	
.100	576.28	1.00	577.10	56.00	0.00	2359.00	6.00	.34	513.00	513.00	569.00	569.00	
.200	575.21	0.00	576.37	75.00	.75	2358.23	0.00	0.00	0.00	503.00	578.00	0.00	
.200	576.61	1.40	577.26	69.75	0.00	2359.00	0.00	.02	503.00	503.00	578.00	578.00	
.300	575.32	0.00	576.43	81.71	2.11	2355.69	0.00	0.00	0.00	503.00	578.00	0.00	
.300	576.73	1.40	577.35	70.25	0.00	2359.00	0.00	.03	503.00	503.00	578.00	578.00	
.400	576.56	0.00	576.76	366.04	561.02	1472.75	325.24	0.00	0.00	513.00	569.00	0.00	
.400	577.10	.54	577.47	102.83	412.70	1940.86	5.44	.36	467.38	513.00	569.00	570.22	
.500	576.57	0.00	577.12	74.11	0.00	2359.00	0.00	0.00	0.00	608.00	687.00	0.00	
.500	577.32	.75	577.74	77.11	0.00	2359.00	0.00	0.00	608.00	608.00	687.00	687.00	
.600	576.68	0.00	577.21	74.78	0.00	2359.00	0.00	0.00	0.00	605.00	687.00	0.00	
.600	577.39	.71	577.80	77.64	0.00	2359.00	0.00	0.00	605.00	605.00	687.00	687.00	
.700	576.69	0.00	577.22	74.80	0.00	2359.00	0.00	0.00	0.00	605.00	687.00	0.00	
.700	577.40	.71	577.81	77.74	0.00	2359.00	0.00	0.00	605.00	605.00	687.00	687.00	
* .800	576.85	0.00	577.48	353.52	0.00	1358.41	1000.58	0.00	0.00	170.00	206.00	0.00	
.800	577.23	.39	578.14	200.00	0.00	1633.35	725.65	200.00	170.00	170.00	206.00	370.00	
3.000	578.18	0.00	578.30	447.09	33.26	832.47	1493.27	0.00	0.00	170.00	206.00	0.00	
3.000	578.95	.77	579.16	290.00	0.00	1117.49	1241.51	200.00	170.00	170.00	206.00	370.00	
3.100	578.28	0.00	578.39	452.81	37.17	808.96	1512.87	0.00	0.00	170.00	206.00	0.00	
3.100	579.09	.81	579.28	200.00	0.00	1093.01	1265.99	200.00	170.00	170.00	206.00	370.00	
* 3.200	579.24	0.00	580.81	314.43	285.89	1866.91	206.20	0.00	0.00	512.00	546.00	0.00	
* 3.200	579.61	1.33	580.90	150.00	140.94	2057.76	160.29	150.00	450.00	512.00	546.00	600.00	
3.300	580.07	0.00	580.81	330.34	343.83	1787.71	227.86	0.00	0.00	512.00	546.00	0.00	
3.300	579.80	1.28	580.90	150.00	177.06	1990.70	191.24	150.00	450.00	512.00	546.00	600.00	
3.400	580.62	0.00	581.00	366.11	563.83	1488.34	306.33	0.00	0.00	512.00	546.00	0.00	
3.400	579.99	1.64	581.06	110.00	159.29	2010.24	189.47	110.00	470.00	512.00	546.00	580.00	
1	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
3.500	581.34	0.00	581.57	362.05	9.45	1369.18	980.77	0.00	0.00	503.00	551.00	0.00	
3.500	581.71	.37	582.09	127.00	0.00	1694.21	664.79	127.00	503.00	503.00	551.00	630.00	
3.600	581.45	0.00	581.65	366.53	10.50	1336.72	1011.78	0.00	0.00	503.00	551.00	0.00	
3.600	581.85	.40	582.20	127.00	0.00	1673.08	685.92	127.00	503.00	503.00	551.00	630.00	
3.700	581.51	0.00	581.68	357.27	0.00	1842.68	1516.32	0.00	0.00	503.00	551.00	0.00	
3.700	581.75	.25	582.36	127.00	0.00	1295.26	1063.74	127.00	503.00	503.00	551.00	630.00	
3.800	581.36	0.00	581.74	372.16	11.86	1297.85	1049.29	0.00	0.00	503.00	551.00	0.00	
3.800	792.21	.66	582.54	114.21	0.00	1685.99	673.01	.37	503.00	503.00	551.00	617.21	

3.900	581.69	0.00	581.88	403.24	.09	904.81	1454.10	0.00	0.00	499.00	531.00	0.00	
3.900	582.36	.07	582.72	135.84	0.00	1213.56	1145.44	.42	499.00	499.00	531.00	634.84	
4.100	581.75	0.00	581.93	407.31	.14	885.85	1473.02	0.00	0.00	499.00	531.00	0.00	
4.100	582.51	.76	582.80	151.00	0.00	1127.76	1231.24	151.00	499.00	499.00	531.00	650.00	
4.200	581.80	0.00	581.95	409.02	0.00	609.02	1749.98	0.00	0.00	499.00	531.00	0.00	
4.200	582.46	.66	582.89	151.00	0.00	859.54	1499.46	151.00	499.00	499.00	531.00	650.00	
5.000	581.80	0.00	582.02	287.14	0.00	1033.96	1325.04	0.00	0.00	80.00	119.00	0.00	
5.000	582.59	.79	582.96	110.56	0.00	1328.66	1030.34	.36	80.00	80.00	119.00	194.07	
5.100	580.91	0.00	583.07	36.00	0.00	2359.00	0.00	0.00	0.00	500.00	536.00	0.00	
5.100	582.13	1.22	583.58	36.00	0.00	2359.00	0.00	0.00	500.00	500.00	536.00	536.00	
5.200	581.97	0.00	583.49	36.00	0.00	2359.00	0.00	0.00	0.00	500.00	536.00	0.00	
5.200	583.19	1.22	584.27	36.00	0.00	2359.00	0.00	0.00	500.00	500.00	536.00	536.00	
5.300	583.95	0.00	584.02	406.56	642.82	1041.27	674.91	0.00	0.00	182.00	218.00	0.00	
5.300	584.53	.58	584.60	137.00	495.32	1386.86	476.81	137.00	133.00	182.00	218.00	270.00	
5.400	583.82	0.00	584.30	67.58	0.00	2359.00	0.00	0.00	0.00	500.00	599.00	0.00	
5.400	584.50	.68	584.89	70.48	0.00	2359.00	0.00	0.00	500.00	500.00	599.00	599.00	
5.500	583.99	0.00	584.45	68.31	0.00	2359.00	0.00	0.00	0.00	500.00	599.00	0.00	
5.500	584.99	1.00	585.33	72.60	0.00	2359.00	0.00	0.00	0.00	500.00	599.00	0.00	
5.600	584.00	0.00	584.46	68.34	0.00	2359.00	0.00	0.00	0.00	500.00	599.00	0.00	
5.600	584.99	1.00	585.33	72.61	0.00	2359.00	0.00	0.00	500.00	500.00	599.00	599.00	
5.700	584.05	0.00	584.54	68.29	0.00	2359.00	0.00	0.00	0.00	500.00	599.00	0.00	
5.700	585.03	.98	585.39	72.47	0.00	2359.00	0.00	0.00	500.00	500.00	599.00	599.00	
5.800	584.23	0.00	584.70	69.05	0.00	2359.00	0.00	0.00	0.00	500.00	599.00	0.00	
5.800	585.23	1.00	585.58	73.33	0.00	2359.00	0.00	0.00	0.00	500.00	599.00	0.00	
7.000	585.40	0.00	585.77	206.41	123.38	1425.52	804.10	0.00	0.00	806.00	849.00	0.00	
7.000	585.97	.57	586.62	83.94	0.00	1873.85	485.15	.30	806.00	806.00	849.00	889.94	
7.100	586.16	0.00	586.40	220.66	150.23	1342.76	866.02	0.00	0.00	806.00	849.00	0.00	
7.100	587.11	.95	587.45	99.81	0.00	1675.68	693.32	.27	806.00	806.00	849.00	905.81	
7.200	585.11	0.00	587.98	25.00	0.00	2359.00	0.00	0.00	0.00	500.00	525.00	0.00	
7.200	586.57	1.46	588.53	25.00	0.00	2359.00	0.00	0.00	500.00	500.00	525.00	525.00	
1	SECNO	CWSFL	DIFKWS	EG	TOPWID	QLOB	Q'N	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
7.300	587.24	0.00	588.93	25.00	0.00	2359.00	0.00	0.00	0.00	500.00	525.00	0.00	
7.300	588.70	1.46	589.95	25.00	0.00	2359.00	0.00	0.00	0.00	500.00	500.00	525.00	525.00
7.400	589.34	0.00	589.46	210.46	416.35	1383.62	559.03	0.00	0.00	185.00	225.00	0.00	
7.400	590.17	.83	590.33	107.73	271.35	1630.91	456.74	.18	162.12	185.00	225.00	269.86	
7.500	589.24	0.00	589.73	77.59	0.00	2359.00	0.00	0.00	0.00	500.00	595.00	0.00	
7.500	590.12	.91	590.50	82.96	0.00	2359.00	0.00	0.00	500.00	500.00	595.00	595.00	
7.600	589.35	0.00	589.81	78.29	0.00	2359.00	0.00	0.00	0.00	500.00	595.00	0.00	
7.600	590.25	.91	590.60	83.28	0.00	2359.00	0.00	0.00	500.00	500.00	595.00	595.00	
7.700	589.90	0.00	590.06	211.34	219.00	1533.44	606.56	0.00	0.00	430.00	470.00	0.00	
7.700	590.59	.70	590.79	96.76	0.00	1729.97	629.03	.20	430.00	430.00	470.00	526.77	
9.000	590.30	0.00	590.68	146.66	110.51	1140.51	1107.98	0.00	0.00	548.00	568.00	0.00	
9.000	591.21	.91	591.66	61.93	0.00	1233.12	1125.89	.23	548.00	548.00	568.00	609.93	

11.000	593.69	0.00	594.08	199.90	1040.24	1283.64	35.12	0.00	0.00	761.00	792.00	0.00
11.000	594.70	1.01	594.95	142.00	1159.75	1199.24	0.00	142.00	650.00	761.00	792.00	792.00
13.000	597.12	0.00	597.55	212.99	30.22	1668.55	640.23	0.00	0.00	444.00	482.00	0.00
13.000	597.38	.26	597.77	156.00	0.00	1650.78	708.22	156.00	444.00	444.00	482.00	600.00
15.000	601.42	0.00	601.50	419.99	1713.68	363.03	282.29	0.00	0.00	868.00	883.00	0.00
15.000	602.16	.73	602.26	244.46	1946.67	412.33	0.00	.33	638.54	868.00	883.00	883.00

SUMMARY OF ERRORS

CAUTION SECNO= .800 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= .800 PROFILE= 1 MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.200 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.200 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.200 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO= 3.200 PROFILE= 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 3.200 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO= 3.200 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

1

FLOODWAY DATA, SAWMILL CREEK HE10
PROFILE NO. 2

STATION	WIDTH (FT)	FLOODWAY		WATER SURFACE ELEVATION		
		SECTION AREA	MEAN VELOCITY	WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.100	56.	325.	7.3	576.3	575.3	1.0
.200	70.	366.	6.5	576.6	575.2	1.4
.300	70.	374.	6.3	576.7	575.3	1.4
.400	103.	527.	4.5	577.1	576.6	.5
.500	77.	452.	5.2	577.3	576.6	.7
.600	78.	457.	5.2	577.4	576.7	.7
.700	70.	459.	5.1	577.4	576.7	.7
.800	200.	399.	5.9	577.2	576.8	.4
1.000	200.	741.	3.2	579.0	578.2	.8
3.100	200.	768.	3.1	579.1	578.3	.8
3.200	150.	324.	7.3	579.7	579.0	-.7
3.300	150.	353.	6.7	579.9	580.1	-.2
3.400	110.	339.	7.0	580.1	580.6	-.5
3.500	127.	534.	4.4	581.7	581.3	.4
3.600	127.	553.	4.3	581.8	581.4	.4
3.700	127.	380.	6.2	581.7	581.5	.2
3.800	114.	564.	4.2	582.3	581.6	.7
3.900	136.	545.	4.3	582.4	581.7	.7
4.100	151.	619.	3.9	582.6	581.8	.8
4.200	151.	449.	5.2	582.5	581.8	.7
5.000	111.	522.	4.5	582.6	581.8	.8
5.100	36.	244.	9.7	582.1	580.9	1.2
5.200	36.	282.	8.4	583.2	582.0	1.2
5.300	137.	876.	2.7	584.5	583.9	.6
5.400	70.	468.	5.0	584.5	583.8	.7
5.500	73.	504.	4.7	585.0	584.0	1.0
5.600	73.	504.	4.7	585.0	584.0	1.0
5.700	72.	488.	4.8	585.0	584.0	1.0
5.800	73.	502.	4.7	585.2	584.2	1.0
7.000	84.	434.	5.4	586.0	585.4	.6
7.100	100.	612.	3.9	587.1	586.2	.9
7.200	98.	610.	4.1	586.6	585.4	1.2

7.300	25.	263.	9.0	588.7	587.2	1.5
7.400	108.	993.	2.4	590.1	589.3	.8
7.500	83.	495.	4.3	590.1	589.2	.9
7.600	83.	503.	4.7	590.2	589.3	.9
7.700	97.	789.	3.0	590.6	589.9	.7
7.800	62.	508.	4.6	591.2	590.3	.9
7.900	142.	753.	3.1	594.7	593.7	1.0
8.000	156.	641.	3.7	597.4	597.1	.3
8.100	244.	1080.	2.2	602.1	601.4	.7

1

HEC2 RELEASE DATED NOV 76 UPDATED AUG1977

ERROR CORR - 01.02

MODIFICATION - 50, 51, 52, 53

STOR
MEMBER
DITCH

SECTION III
STORM DISCHARGE
CALCULATIONS

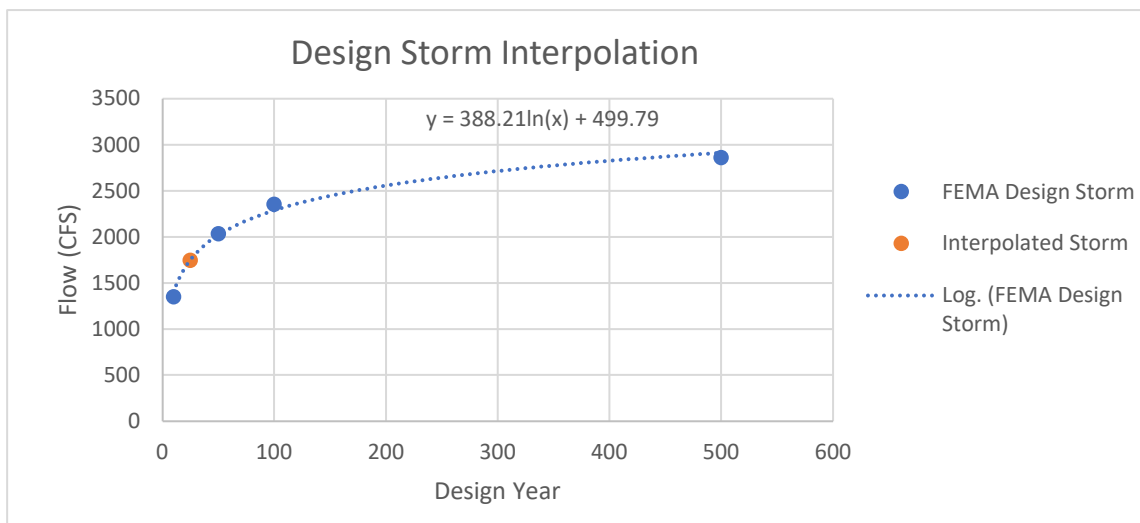
25-Year Design Storm Interpolation - Flows

FEMA Design Storm

Design Year	FIS Flow (cfs)
10	1354
50	2038
100	2356
500	2864

Interpolated Storm

Design Year	Flow (cfs)
25	1750



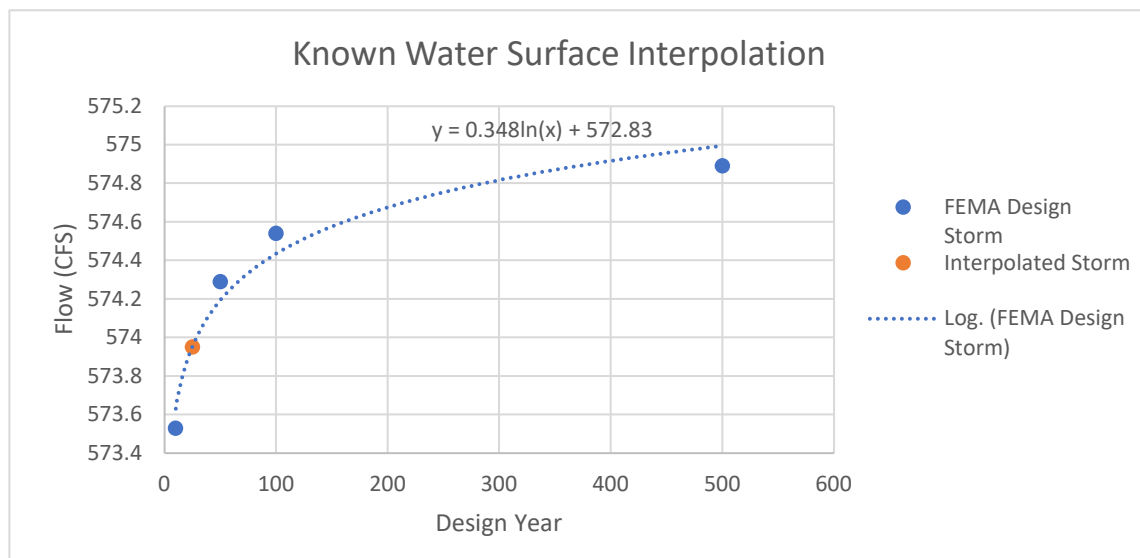
25-Year Design Storm Interpolation - Known Water Surface Starting Condition

FEMA Design Storm

Design Year	Known WS Elevation (ft)
10	573.53
50	574.29
100	574.54
500	574.89

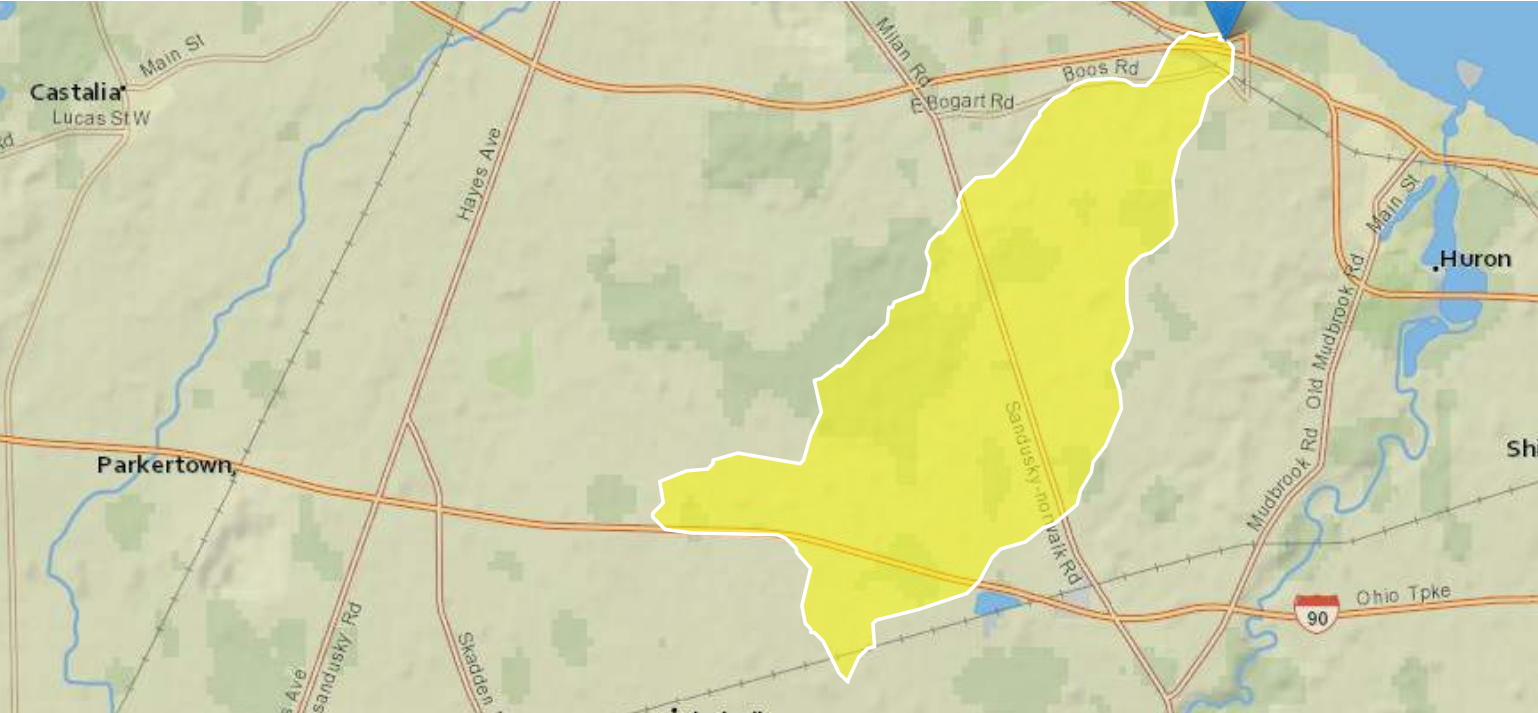
Interpolated Storm

Design Year	Known WS (ft)
25	573.95



StreamStats Report

Region ID: OH
Workspace ID: OH20240209195427099000
Clicked Point (Latitude, Longitude): 41.40678, -82.59558
Time: 2024-02-09 14:54:50 -0500



Collapse All

➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CSL1085LFP	Change in elevation divided by length between points 10 and 85 percent of distance along the longest flow path to the basin divide, LFP from 2D grid	12.4	feet per mi
DRNAREA	Area that drains to a point on a stream	13.7	square miles
FOREST	Percentage of area covered by forest	18	percent
LAT_CENT	Latitude of Basin Centroid	41.3591	decimal degrees
LC92STOR	Percentage of water bodies and wetlands determined from the NLCD	1.71	percent
LONG_CENT	Longitude Basin Centroid	82.6435	decimal degrees
OHREGA	Ohio Region A Indicator	1	dimensionless
OHREGC	Ohio Region C Indicator	0	dimensionless
PRECIPCENT	Mean Annual Precip at Basin Centroid	34.7	inches

Parameter Code	Parameter Description	Value	Unit
STREAM_VARG	Streamflow variability index as defined in WRIR 02-4068, computed from regional grid	0.62	dimensionless

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Flow Full Model Reg A SIR2019 5018]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	0.04	5989
OHREGC	Ohio Region C Indicator 1 if in C else 0	0	dimensionless	0	1
OHREGA	Ohio Region A Indicator 1 if in A else 0	1	dimensionless	0	1
CSL1085LFP	Stream Slope 10 and 85 Longest Flow Path	12.4	feet per mi	1.53	516
LC92STOR	Percent Storage from NLCD1992	1.71	percent	0	25.35

Peak-Flow Statistics Flow Report [Peak Flow Full Model Reg A SIR2019 5018]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	636	ft^3/s	338	1200	40.1
20-percent AEP flood	1020	ft^3/s	566	1840	37.2
10-percent AEP flood	1310	ft^3/s	723	2370	37.6
4-percent AEP flood	1710	ft^3/s	937	3120	38.1
2-percent AEP flood	2040	ft^3/s	1110	3760	37.8
1-percent AEP flood	2390	ft^3/s	1280	4450	39.6
0.2-percent AEP flood	3280	ft^3/s	1750	6160	40.3

Peak-Flow Statistics Citations

Koltun, G.F.,2019, Flood-frequency estimates for Ohio streamgages based on data through water year 2015 and techniques for estimating flood-frequency characteristics of rural, unregulated Ohio streams: U.S. Geological Survey Scientific Investigations Report 2019–5018, 25 p. (<https://dx.doi.org/10.3133/sir20195018>)

➤ Flow-Duration Statistics

Flow-Duration Statistics Parameters [Low Flow Region A 2012 5138]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	1	1250
STREAM_VARG	Streamflow Variability Index from Grid	0.62	dimensionless	0.24	1.12

Flow-Duration Statistics Flow Report [Low Flow Region A 2012 5138]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE
80 Percent Duration	0.919	ft^3/s	29.1

Flow-Duration Statistics Citations

Koltun, G.F., and Kula, S.P.,2013, Methods for estimating selected low-flow statistics and development of annual flow-duration statistics for Ohio: U.S. Geological Survey Scientific Investigations Report 2012–5138, 195 p. (<http://pubs.usgs.gov/sir/2012/5138/>)

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region A 2012 5138]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	1	1250
STREAM_VARG	Streamflow Variability Index from Grid	0.62	dimensionless	0.24	1.12

Low-Flow Statistics Flow Report [Low Flow Region A 2012 5138]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE
1 Day 10 Year Low Flow	0.0893	ft^3/s	53.1
7 Day 10 Year Low Flow	0.123	ft^3/s	40
30 Day 10 Year Low Flow	0.208	ft^3/s	35.7
90 Day 10 Year Low Flow	0.379	ft^3/s	29.8

Low-Flow Statistics Citations

Koltun, G.F., and Kula, S.P.,2013, Methods for estimating selected low-flow statistics and development of annual flow-duration statistics for Ohio: U.S. Geological Survey Scientific Investigations Report 2012–5138, 195 p. (<http://pubs.usgs.gov/sir/2012/5138/>)

➤ Annual Flow Statistics

Annual Flow Statistics Parameters [Low Flow LatGT 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	0.12	7422
LAT_CENT	Latitude of Basin Centroid	41.3591	decimal degrees	41.2	41.59
PRECIPCENT	Mean Annual Precip at Basin Centroid	34.7	inches	34	43.2

Annual Flow Statistics Flow Report [Low Flow LatGT 41.2 wri02 4068]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
Mean Annual Flow	12.4	ft^3/s	11.4	11.4

Annual Flow Statistics Citations

Koltun, G. F., and Whitehead, M. T.,2002, Techniques for Estimating Selected Streamflow Characteristics of Rural, Unregulated Streams in Ohio: U. S. Geological Survey Water-Resources Investigations Report 02-4068, 50 p (<https://pubs.er.usgs.gov/publication/wri024068>)

➤ Monthly Flow Statistics

Monthly Flow Statistics Parameters [Low Flow LatGT 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	0.12	7422
LC92STOR	Percent Storage from NLCD1992	1.71	percent	0	19
PRECIPCENT	Mean Annual Precip at Basin Centroid	34.7	inches	34	43.2
FOREST	Percent Forest	18	percent	0	99.1
LAT_CENT	Latitude of Basin Centroid	41.3591	decimal degrees	41.2	41.59
STREAM_VARG	Streamflow Variability Index from Grid	0.62	dimensionless	0.25	1.13

Monthly Flow Statistics Flow Report [Low Flow LatGT 41.2 wri02 4068]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
January Mean Flow	17.2	ft^3/s	16.6	16.6
February Mean Flow	24.8	ft^3/s	11.9	11.9
March Mean Flow	28.7	ft^3/s	14	14
April Mean Flow	23.1	ft^3/s	11.2	11.2
May Mean Flow	17.3	ft^3/s	19.5	19.5
June Mean Flow	9.13	ft^3/s	27	27
July Mean Flow	5.71	ft^3/s	28.2	28.2
August Mean Flow	2.9	ft^3/s	36.8	36.8
September Mean Flow	1.9	ft^3/s	43.6	43.6
October Mean Flow	7.24	ft^3/s	50.8	50.8
November Mean Flow	12.3	ft^3/s	37.5	37.5
December Mean Flow	19.3	ft^3/s	21.8	21.8

Monthly Flow Statistics Citations

➤ General Flow Statistics

General Flow Statistics Parameters [Low Flow LatGT 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	0.12	7422
LC92STOR	Percent Storage from NLCD1992	1.71	percent	0	19
STREAM_VARG	Streamflow Variability Index from Grid	0.62	dimensionless	0.25	1.13
LAT_CENT	Latitude of Basin Centroid	41.3591	decimal degrees	41.2	41.59

General Flow Statistics Flow Report [Low Flow LatGT 41.2 wri02 4068]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
Harmonic Mean Streamflow	1.14	ft^3/s	65.9	65.9

General Flow Statistics Citations

Koltun, G. F., and Whitehead, M. T.,2002, Techniques for Estimating Selected Streamflow Characteristics of Rural, Unregulated Streams in Ohio: U. S. Geological Survey Water-Resources Investigations Report 02-4068, 50 p (<https://pubs.er.usgs.gov/publication/wri024068>)

➤ Flow Percentile Statistics

Flow Percentile Statistics Parameters [Low Flow LatGT 41.2 wri02 4068]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	0.12	7422
LC92STOR	Percent Storage from NLCD1992	1.71	percent	0	19
STREAM_VARG	Streamflow Variability Index from Grid	0.62	dimensionless	0.25	1.13
LAT_CENT	Latitude of Basin Centroid	41.3591	decimal degrees	41.2	41.59
LONG_CENT	Longitude of Basin Centroid	82.6435	decimal degrees	80.53	84.6

Flow Percentile Statistics Flow Report [Low Flow LatGT 41.2 wri02 4068]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
25th Percentile Flow	1.4	ft^3/s	29.2	29.2
50th Percentile Flow Median	3.82	ft^3/s	40.3	40.3

Statistic	Value	Unit	SE	ASEp
75th Percentile Flow	10.6	ft^3/s	47.9	47.9
<i>Flow Percentile Statistics Citations</i>				
Koltun, G. F., and Whitehead, M. T.,2002, Techniques for Estimating Selected Streamflow Characteristics of Rural, Unregulated Streams in Ohio: U. S. Geological Survey Water-Resources Investigations Report 02-4068, 50 p (https://pubs.er.usgs.gov/publication/wri024068)				

➤ Bankfull Statistics

Bankfull Statistics Parameters [Interior Plains D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	0.19305	59927.7393

Bankfull Statistics Parameters [Central Lowland P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	0.200772	59927.66594

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Interior Plains D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	29.4	ft
Bieger_D_channel_depth	2.47	ft
Bieger_D_channel_cross_sectional_area	74.2	ft^2

Bankfull Statistics Flow Report [Central Lowland P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	32.9	ft
Bieger_P_channel_depth	2.89	ft
Bieger_P_channel_cross_sectional_area	69.5	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	31.1	ft
Bieger_USA_channel_depth	2.11	ft
Bieger_USA_channel_cross_sectional_area	70.2	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bieger_D_channel_width	29.4	ft
Bieger_D_channel_depth	2.47	ft
Bieger_D_channel_cross_sectional_area	74.2	ft^2
Bieger_P_channel_width	32.9	ft
Bieger_P_channel_depth	2.89	ft
Bieger_P_channel_cross_sectional_area	69.5	ft^2
Bieger_USA_channel_width	31.1	ft
Bieger_USA_channel_depth	2.11	ft
Bieger_USA_channel_cross_sectional_area	70.2	ft^2

Bankfull Statistics Citations

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPag)

➤ Probability Statistics

Probability Statistics Parameters [P zero Flow 2012 5138]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	1	1250
STREAM_VARG	Streamflow Variability Index from Grid	0.62	dimensionless	0.24	1.12

Probability Statistics Flow Report [P zero Flow 2012 5138]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PC
Probability zero flow 1Day	0.0562	dim	91
Probability zero flow 7Day	0.026	dim	94
Probability zero flow 30Day	0.00135	dim	97

Probability Statistics Citations

Koltun, G.F., and Kula, S.P.,2013, Methods for estimating selected low-flow statistics and development of annual flow-duration statistics for Ohio: U.S. Geological Survey Scientific Investigations Report 2012–5138, 195 p. (<http://pubs.usgs.gov/sir/2012/5138/>)

➤ Maximum Probable Flood Statistics

Maximum Probable Flood Statistics Parameters [99.0 Percent (13.6 square miles) Crippen Bue Region 6]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	13.7	square miles	0.1	10000

Maximum Probable Flood Statistics Disclaimers [99.0 Percent (13.6 square miles) Crippen Bue Region 6]

Weighted flows were not calculated. Users should be careful to evaluate the applicability of the provided estimates. Percentage of area falls outside where region is undefined. Whole estimates have been provided using available regional equations.

Maximum Probable Flood Statistics Flow Report [99.0 Percent (13.6 square miles) Crippen Bue Region 6]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	49500	ft^3/s

Maximum Probable Flood Statistics Citations

Crippen, J.R. and Bue, Conrad D.1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (<https://pubs.usgs.gov/wsp/1887/report.pdf>)

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Application Version: 4.19.4

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

SECTION IV
CHANNEL PHOTOGRAPHS



Looking Downstream



Upstream elevation of existing bridge



Looking Upstream



Downstream elevation of existing bridge

SECTION V
EXISTING BRIDGE
PLANS

NOTE:

Earthwork Limits Shown are approximate. Actual Slopes shall conform to plan cross-sections.

BENCHMARK ELEVATION: 582.92
RR SPIKE IN POWER POLE #285 B3-10
LEFT ± STA 790+10±

HYDRAULIC DATA

INTERVAL (YEAR)	ELEV. (FT.)	Q (C.F.S.)	V (FT./SEC.)
25	580.56	1724	7.50
100	580.76	2327	9.76

DRAINAGE AREA = 13.89 SQ. MI.

EXISTING STRUCTURE

TYPE: SINGLE SPAN CONCRETE BEAM WITH CONCRETE DECK ON HIGH WALL ABUTMENTS
SPANS: 34'-0" ± CLEAR
ROADWAY: 51' f/f PARAPET
SKEW: 13°-26' L.F.
ALIGNMENT: 8°-45'-30" CURVE LEFT

STRUCTURE FILE NO. 2201771

PROPOSED STRUCTURE

TYPE: SINGLE SPAN COMPOSITE A588 STEEL BEAMS WITH REINFORCED CONC. DECK & WALL TYPE ABUT.

SPAN: 47'-0" c/c BEARINGS
ROADWAY: 44'-0" f/f GUARDRAIL
SKEW: 13°-30' L.F. *
DESIGN LOADING: HS 20-44 AND ALTERNATE MILITARY LOADING

APPROACH SLAB: AS-1-B1 (25'-0")
ALIGNMENT: 8°-45'-30" CURVE LEFT
SUPERELEVATION: 0.0770 ft./ft.
WEARING SURFACE: MONOLITHIC CONC.
AVG. DAILY TRAFFIC: 1989 ADT 9680
2009 ADT 11620

2009 ADTT=232

THOMAS FOK & ASSOCIATES, LIMITED
CONSULTING ENGINEER, SURVEYOR & PLANNER
3896 MAHONING AVE. YOUNGSTOWN, OHIO

SITE PLAN
BRIDGE NO. ERI-6-1494
OVER SAWMILL CREEK
ERIE COUNTY STA. 788+79.70
STA. 789+31.35

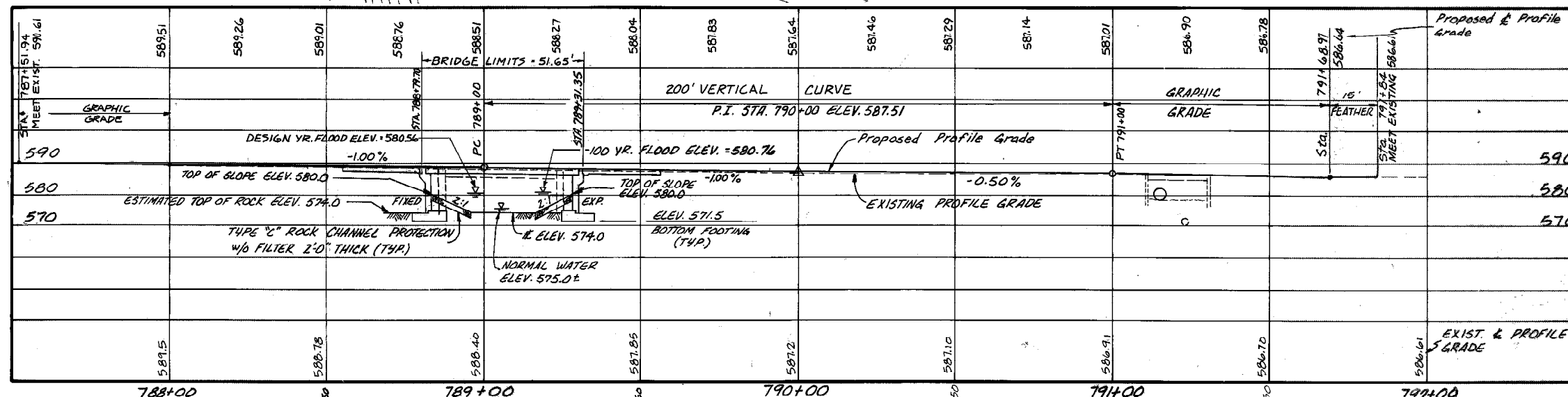
PRESENT TOPOGRAPHY		PROPOSED WORK		CHECKED		REVIEWED	
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	DESIGNED	CHECKED	REVIEWED
J.F.	A.L.	J.V.	J.V.	K.R.M.	J.F.	J.F.	J.F.
10/88	12/88	2-89	2-89	2-89	4-89		

CURVE DATA

Δ = 36° 31' 30"
R = 654.14'
Dc = 8° 45' 30"
L = 47.03
T = 215.89'
C = 410.01'
e = 34.70
P.I. Sta = 789+67.82

P.C. Sta. 787+51.94
P.T. Sta. 791+68.97
V₀ = 55 MPH
V_{ACT} = 47 MPH
SSD = 355

PLAN



PROFILE ON & SURVEY

REVIEWED BY BURGESS & NIPLE LTD.

TJK 8-11-89

SECTION VI
PROPOSED BRIDGE PLANS

APPENDIX A

HYDRAULIC CALCULATIONS – DUPLICATE EFFECTIVE HEC-RAS MODEL

HEC-RAS HEC-RAS 6.3.1 September 2022
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```

X      X  XXXXXX   XXXX      XXXX      XX      XXXX
X      X  X        X  X      X  X      X  X      X
X      X  X        X        X  X      X  X      X
XXXXXXXX XXXX      X        XXX XXXX      XXXXXX   XXXX
X      X  X        X        X  X      X  X      X
X      X  X        X  X      X  X      X  X      X
X      X  XXXXXX   XXXX      X  X      X  X      XXXXX

```

PROJECT DATA

Project Title: SawmillRun
Project File : SawmillRun.prj
Run Date and Time: 2/15/2024 4:59:16 PM

Project in English units

PLAN DATA

Plan Title: FEMA_Duplicate Effective
Plan File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.p01

Geometry Title: Sawmill Run - FEMA_DE
Geometry File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.g01

Flow Title : FEMA Flows
Flow File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.f01

Plan Summary Information:

Number of: Cross Sections =	30	Multiple Openings =	0
Culverts =	0	Inline Structures =	0
Bridges =	8	Lateral Structures =	0

Computational Information

Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01

Maximum number of iterations	=	40
Maximum difference tolerance	=	0.3
Flow tolerance factor	=	0.001

Computation Options

Critical depth computed at all cross sections	
Conveyance Calculation Method:	Between every coordinate point (HEC2 Style)
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

FLOW DATA

Flow Title: FEMA Flows

Flow File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.f01

Flow Data (cfs)

River	Reach	RS	PF 1 - 10 Year	PF 2 - 50 Year	PF 3 -
100 Year PF 4 - 500 Year					
Sawmill Run	Sawmill Run	7	1354	2038	
2359	2864				

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
Sawmill Run	Sawmill Run	PF 1 - 10 Year	
Known WS = 574.27			
Sawmill Run	Sawmill Run	PF 2 - 50 Year	
Known WS = 575.03			
Sawmill Run	Sawmill Run	PF 3 - 100 Year	
Known WS = 575.28			
Sawmill Run	Sawmill Run	PF 4 - 500 Year	
Known WS = 575.63			

GEOMETRY DATA

Geometry Title: Sawmill Run - FEMA_DE

Geometry File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.g01

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 7

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
600	590	732	590	806	581	812	580.1	829	579.2
846	580.1	849	581.7	869	581.8	940	582	1025	590
1055	600								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
600	.8	806	.04	849	.08

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	806	849		618 618	618		.3	.5

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.81

INPUT

Description:

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
20	602	155	600	190	598	360	596	450	595.39
494	594.9	500	591.8	536	575.9	552	575.5	570	576.2
599	590.6	606	594.9	649	594.6	1100	595		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
20	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		52 52	52		.3	.5

Left Levee Station= 500 Elevation= 593

Right Levee Station= 599 Elevation= 593

BRIDGE

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.8

INPUT

Description:

Distance from Upstream XS = 1

Deck/Roadway Width = 50

Weir Coefficient = 2.7

Upstream Deck/Roadway Coordinates

num= 13

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
20		602		602	135		600		600	190		598		598
360		596		596	450	595.39		595.39		494	594.9		594.9	
500	594.9		591.8		500	594.9		593.56		599	594.9		593.16	
599	594.9		590.6		606	594.9		594.9		649	594.6		594.6	
1100		595		595										

Upstream Bridge Cross Section Data

Station Elevation Data

num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
20	602	155	600	190	598	360	596	450	595.39
494	594.9	500	591.8	536	575.9	552	575.5	570	576.2
599	590.6	606	594.9	649	594.6	1100	595		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
20	.035	500	.03	599	.035

Bank	Sta: Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5

Left Levee Station= 500 Elevation= 593

Right Levee Station= 599 Elevation= 593

Downstream Deck/Roadway Coordinates

num= 13

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
20		602		602	135		600		600	190		598		598
360		596		596	450	595.39		595.39		494	594.9		594.9	
500	594.9		591.8		500	594.9		593.56		599	594.9		593.16	
599	594.9		590.6		606	594.9		594.9		649	594.6		594.6	
1100		595		595										

Downstream Bridge Cross Section Data

Station Elevation Data

num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
20	602	155	600	190	598	360	596	450	595.39
494	594.9	500	591.8	536	575.9	552	575.5	570	576.2
599	590.6	606	594.9	649	594.6	1100	595		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
20	.035	500	.03	599	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5
Left Levee	Station=		500	Elevation= 593	
Right Levee	Station=		599	Elevation= 593	

Upstream Embankment side slope = 0 horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins =

Energy head used in spillway design =

Spillway height used in design =

Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	549.5	Downstream=	549.5
Upstream	num=	2		
Width	Elev	Width	Elev	
6	570	6	593.5	
Downstream	num=	2		
Width	Elev	Width	Elev	
6	570	6	593.5	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Yarnell KVal = 1.25

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.7

INPUT

Description:

Station		Elevation Data		num=	14					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
20	602	155	600	190	598	360	596	450	595.39	
494	594.9	500	591.8	536	575.9	552	575.5	570	576.2	
599	590.6	606	594.9	649	594.6	1100	595			

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
20	.035	500	.03
599	.035		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		60 60	60		.3	.5
Left Levee	Station=		500	Elevation=	593			
Right Levee	Station=		599	Elevation=	593			

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.6

INPUT

Description:

Station		Elevation Data		num=	14					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	602	90	600	150	598	340	596	450	595.46	
494	594.2	500	591.2	535	575.7	552	574.8	568	575.8	
599	591.1	606	594.1	649	594.75	1100	595			

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
0	.035	500	.03
599	.035		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		3 3	3		.3	.5

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.51

INPUT

Description:

Station		Elevation Data		num=	14					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	

0	602	90	600	150	598	340	596	450	595.46
494	594.2	500	591.2	535	575.7	552	574.8	568	575.8
599	591.1	606	594.1	649	594.75	1100	595		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		67 67	67		.3	.5
Left Levee		Station=	500	Elevation=	595.1			
Right Levee		Station=	599	Elevation=	594.75			

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 5.5

INPUT

Description:

Distance from Upstream XS = 1
 Deck/Roadway Width = 65
 Weir Coefficient = 2.7

Upstream Deck/Roadway Coordinates

num= 13

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	602		602		90	600		600		150	598		598	
340	596		596		450	595.46		595.46		494	595.1		594.2	
500	595.1		591.2		500	595.1		593.75		599	595.1		593.4	
599	595		591.1		606	595		594.1		649	594.75		594.75	
1100	595		595											

Upstream Bridge Cross Section Data

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	602	90	600	150	598	340	596	450	595.46
494	594.2	500	591.2	535	575.7	552	574.8	568	575.8
599	591.1	606	594.1	649	594.75	1100	595		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5
Left Levee		Station=	500	Elevation=	595.1
Right Levee		Station=	599	Elevation=	594.75

Downstream Deck/Roadway Coordinates

num= 13

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0		602		602	90		600		600	150		598		598
340		596		596	450	595.46		595.46		494	595.1		594.2	
500	595.1		591.2		500	595.1		593.75		599	595.1		593.4	
599	595		591.1		606	595		594.1		649	594.75		594.75	
1100	595		595											

Downstream Bridge Cross Section Data

Station Elevation Data

num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	602	90	600	150	598	340	596	450	595.46
494	594.2	500	591.2	535	575.7	552	574.8	568	575.8
599	591.1	606	594.1	649	594.75	1100	595		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta: Left Right Coeff Contr. Expan.

500 599 .3 .5

Left Levee Station= 500 Elevation= 583

Right Levee Station= 599 Elevation= 583

Upstream Embankment side slope = 0 horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins =

Energy head used in spillway design =

Spillway height used in design =

Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 549.5 Downstream= 549.5

Upstream num= 2

Width	Elev	Width	Elev
6	574	6	593.5

Downstream num= 2

Width	Elev	Width	Elev
6	574	6	593.5

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Yarnell KVal = 1.25

Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.4

INPUT

Description:

Station Elevation Data		num=		14							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	602	90	600	150	598	340	596	450	595.46		
494	594.2	500	591.2	535	575.7	552	574.8	568	575.8		
599	591.1	606	594.1	649	594.75	1100	595				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		200 200	200		.3	.5
Left Levee		Station=	500	Elevation=	583			
Right Levee		Station=	599	Elevation=	583			

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.3

INPUT

Description:

Station Elevation Data		num=		10							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	596	88	580	167	580	182	576	185	574		
215	574	218	576	231	580	370	582	475	584		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	182	.03	218	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	182	218		206 206	206		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 5.21

INPUT

Description:

Station Elevation Data	num=	13							
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev									
85 596 165 594 280 592 335 590 450 589.36									
499 588.8 500 575.5 518 575 576 575.9 580 588.6									
586 588.8 710 588 1250 590									

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
85 .035 500 .03 576 .035		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	576		56 56	56		.3	.5
Left Levee	Station=	500	Elevation=	589.1				
Right Levee	Station=	576	Elevation=	588				

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 5.2

INPUT

Description:

Distance from Upstream XS = 1
 Deck/Roadway Width = 54
 Weir Coefficient = 2.7

Upstream Deck/Roadway Coordinates

num=	14								
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord									
85 596 596 163 594 594 280 592 592									
335 590 590 450 589.36 589.36 498 589.1 588.2									
500 589.1 575.5 500 589.1 585.76 536 589.1 585.44									
536 589.1 574 540 589.1 574 586 588.8 574									
710 588 574 1250 590 574									

Upstream Bridge Cross Section Data

Station Elevation Data	num=	13						
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev								
85 596 165 594 280 592 335 590 450 589.36								

499	588.8	500	575.5	518	575	576	575.9	580	588.6
586	588.8	710	588	1250	590				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
85	.035	500	.03	576	.035

Bank Sta: Left Right Coeff Contr. Expan.

500	576	.3	.5
-----	-----	----	----

Left Levee Station= 500 Elevation= 589.1

Right Levee Station= 576 Elevation= 588

Downstream Deck/Roadway Coordinates

num= 14

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
85		596		596	163		594		594	280		592		592
335		590		590	450	589.36	589.36			498	589.1	588.2		
500	589.1		575.5		500	589.1	585.76			536	589.1	585.44		
536	589.1		574		540	589.1	574			586	588.8	574		
710	588		574		1250	590	574							

Downstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
85	596	165	594	280	592	335	590	450	589.36
499	588.8	500	575.5	518	575	576	575.9	580	588.6
586	588.8	710	588	1250	590				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
85	.035	500	.03	576	.035

Bank Sta: Left Right Coeff Contr. Expan.

500	576	.3	.5
-----	-----	----	----

Left Levee Station= 500 Elevation= 586

Right Levee Station= 576 Elevation= 586

Upstream Embankment side slope = 0 horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins =

Energy head used in spillway design =

Spillway height used in design =

Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.1

INPUT

Description:

Station		Elevation Data		num=	13					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
85	596	165	594	280	592	335	590	450	589.36	
499	588.8	500	575.5	518	575	576	575.9	580	588.6	
586	588.8	710	588	1250	590					

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
85	.035	500	.03	576	.035

Bank	Sta: Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	576		38 38	38		.3	.5
Left Levee		Station=	500	Elevation=	586			
Right Levee		Station=	576	Elevation=	586			

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5

INPUT

Description:

Station		Elevation Data		num=	11					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	595	50	590	75	585	80	584.9	96	574.3	
104	573.9	112	574.1	119	578.4	300	580	500	585	
650	585									

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val

0 .035 80 .03 119 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	80	119		23 23	23		.3	.5

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 4.21

INPUT

Description:

Station Elevation Data	num=	12							
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev									
400 590 480 587.88 499 581.3 515 574.3 523 573.9									
531 574.1 538 578.4 553 579 573 579.4 800 580									
1100 585 1200 590									

Manning's n Values	num=	3			
Sta n Val Sta n Val Sta n Val					
400 499 499 .03 531 .035					

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	499	531		10 10	10		.3	.5
Left Levee	Station=	499	Elevation=	583.67				
Right Levee	Station=	531	Elevation=	579.4				

BRIDGE

RIVER: Sawmill Run

REACH: Sawmill Run RS: 4.2

INPUT

Description:

Distance from Upstream XS = 1
Deck/Roadway Width = 8
Weir Coefficient = 2.8

Upstream Deck/Roadway Coordinates

num=	10								
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord									
400 590 590 480 587.88 587.88 499 585.06 581.3									
538 583.3 579.9 538 583.3 578.4 553 582.84 579									
573 579.4 579.4 900 580 580 1100 585 585									
1200 590 590									

Upstream Bridge Cross Section Data

Station Elevation Data	num=	12						
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev								

400	590	480	587.88	499	581.3	515	574.3	523	573.9
531	574.1	538	578.4	553	579	573	579.4	800	580
1100	585	1200	590						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	499	.03	531	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	499	531		.3	.5
Left Levee		Station=	499	Elevation=	583.67
Right Levee		Station=	531	Elevation=	579.4

Downstream Deck/Roadway Coordinates

num= 10

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
400		590		590	480	587.88		587.88		499	585.06		581.3	
	538	583.3		579.9		538	583.3		578.4		553	582.84		579
		573		579.4			573		579.4			900		580
												1100		585
														585
1200		590		590										

Downstream Bridge Cross Section Data

Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	590	480	587.88	499	581.3	515	574.3	523	573.9
	531		574.1		538		578.4		553
							579		573
									579.4
									800
									580
1100	585	1200	590						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	499	.03	531	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	499	531		.3	.5
Left Levee		Station=	499	Elevation=	579
Right Levee		Station=	531	Elevation=	579

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins =
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 4.1

INPUT

Description:

Station Elevation Data				num=	12					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
400	590	480	587.88	499	581.3	515	574.3	523	573.9	
531	574.1	538	578.4	553	579	573	579.4	800	580	
1100	585	1200	590							

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
400	.035	499	.03	531	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	499	531		50 50	50		.3	.5
Left Levee		Station=	499	Elevation=	579			
Right Levee		Station=	531	Elevation=	579			

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.9

INPUT

Description:

Station Elevation Data				num=	12					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
400	590	480	587.88	499	581.3	515	574.3	523	573.9	
531	574.1	538	578.4	553	579	573	579.4	800	580	
1100	585	1200	590							

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val

400 .035 499 .03 531 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	499	531		160 160	160		.1	.3

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.8

INPUT

Description:

Station Elevation Data				num=	11				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	590	480	583	503	579.76	519	573.7	524	572.8
532	573.7	551	577.3	591	579.3	800	580	1000	585
1100	590								

Manning's n Values				num=	3				
Sta	n Val	Sta	n Val	Sta	n Val				
400	.035	503	.03	551	.035				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	551		49 49	49		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.71

INPUT

Description:

Station Elevation Data				num=	11				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	590	480	583	503	579.76	519	573.7	524	572.8
532	573.7	551	577.3	591	579.3	800	580	1000	585
1100	590								

Manning's n Values				num=	3				
Sta	n Val	Sta	n Val	Sta	n Val				
400	.035	503	.03	551	.035				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	551		18 18	18		.3	.5
Left Levee	Station=		503	Elevation=	583.5			
Right Levee	Station=		551	Elevation=	579.3			

BRIDGE

RIVER: Sawmill Run

REACH: Sawmill Run RS: 3.7

INPUT

Description:

Distance from Upstream XS = 1

Deck/Roadway Width = 16

Weir Coefficient = 2.8

Upstream Deck/Roadway Coordinates

num= 9

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
400		590		590	480		583		583	503		583.5		579.76
551		582.8		579.18	551		582.8		577.3	591		579.3		579.3
800		580		580	1000		585		585	1100		590		590

Upstream Bridge Cross Section Data

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	590	480	583	503	579.76	519	573.7	524	572.8
532	573.7	551	577.3	591	579.3	800	580	1000	585
1100	590								

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank Sta: Left Right Coeff Contr. Expan.

503 551 .3 .5

Left Levee Station= 503 Elevation= 583.5

Right Levee Station= 551 Elevation= 579.3

Downstream Deck/Roadway Coordinates

num= 9

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
400		590		590	480		583		583	503		583.5		579.76
551		582.8		579.18	551		582.8		577.3	591		579.3		579.3
800		580		580	1000		585		585	1100		590		590

Downstream Bridge Cross Section Data

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	590	480	583	503	579.76	519	573.7	524	572.8
532	573.7	551	577.3	591	579.3	800	580	1000	585
1100	590								

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank Sta: Left	Right	Coeff	Contr.	Expan.
503	551		.3	.5
Left Levee	Station=	503	Elevation=	579.3
Right Levee	Station=	551	Elevation=	579.3

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 3.6

INPUT

Description:

Station Elevation Data	num=	11
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
400 590 480 583 503 579.76 519 573.7 524 572.8		
532 573.7 551 577.3 591 579.3 800 580 1000 585		
1100 590		

Manning's n Values	num=	3
--------------------	------	---

Sta n Val Sta n Val Sta n Val
400 .035 503 .03 551 .035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff	Contr.	Expan.
503	551	92 92	92		.3	.5

Left Levee	Station=	503	Elevation=	579.3
Right Levee	Station=	551	Elevation=	579.3

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.5

INPUT

Description:

Station Elevation Data		num=		11					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	590	480	583	503	579.76	519	573.7	524	572.8
532	573.7	551	577.3	591	579.3	800	580	1000	585
1100	590								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	551		540 540	540		.1	.3

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.4

INPUT

Description:

Station Elevation Data		num=		13					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	590	200	585	300	580	480	578.7	512	578.5
517	573.4	528	571.5	542	573.6	546	577.3	546	577.72
578	578.8	625	580	850	585				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	512	.03	546	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	512	546		48 48	48		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.31

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	590	200	585	300	580	480	578.7	512	578.5
517	573.4	528	571.5	542	573.6	546	577.3	546	577.72
578	578.8	625	580	850	585				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	512	.03	546	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

512	546	10	10	10	.3	.5
Left Levee	Station=	512	Elevation=	578.5		
Right Levee	Station=	546	Elevation=	578.8		

BRIDGE

RIVER: Sawmill Run

REACH: Sawmill Run RS: 3.3

INPUT

Description:

Distance from Upstream XS = 1
Deck/Roadway Width = 8
Weir Coefficient = 2.8
Upstream Deck/Roadway Coordinates

num= 11

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	590		590		200	585		585		300	580		580	
486	578.7		578.7		512	578.5		578.5		512	581.5		578.5	
546	581		577.72		546	577.72		577.72		578	578.8		578.8	
625	580		580		850	585		585						

Upstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	590	200	585	300	580	480	578.7	512	578.5
517	573.4	528	571.5	542	573.6	546	577.3	546	577.72
578	578.8	625	580	850	585				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	512	.03	546	.035

Bank Sta: Left Right Coeff Contr. Expan.

512	546	.3	.5
-----	-----	----	----

Left Levee Station= 512 Elevation= 578.5
 Right Levee Station= 546 Elevation= 578.8

Downstream Deck/Roadway Coordinates

num= 11

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0		590		590	200		585		585	300		580		580
486		578.7		578.7	512		578.5		578.5	512		581.5		578.5
546		581		577.72	546		577.72		577.72	578		578.8		578.8
625		580		580	850		585		585					

Downstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	590	200	585	300	580	480	578.7	512	578.5
517	573.4	528	571.5	542	573.6	546	577.3	546	577.72
578	578.8	625	580	850	585				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	512	.03	546	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	512	546		.3	.5
Left Levee		Station=	512	Elevation=	578
Right Levee		Station=	546	Elevation=	578

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins =
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
 inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.2

INPUT

Description:

Station Elevation Data				num=	13						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	590	200	585	300	580	480	578.7	512	578.5		
517	573.4	528	571.5	542	573.6	546	577.3	546	577.72		
578	578.8	625	580	850	585						

Manning's n Values				num=	3						
Sta	n Val	Sta	n Val	Sta	n Val						
0	.035	512	.03	546	.035						

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	512	546		100 100	100		.3	.5
Left Levee	Station=		512	Elevation=	578			
Right Levee	Station=		546	Elevation=	578			

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.1

INPUT

Description:

Station Elevation Data				num=	11						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev		
0	585	100	580	150	577	170	577.2	174	572.4		
194	570.5	203	572.8	206	576.6	236	576.2	430	575		
650	580										

Manning's n Values				num=	3						
Sta	n Val	Sta	n Val	Sta	n Val						
0	.035	170	.03	206	.035						

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	170	206		150 150	150		.1	.3

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	585	100	580	150	577	170	577.2	174	572.4
194	570.5	203	572.8	206	576.6	236	576.2	430	575
650	580								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	170	.03	206	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

170	206	600	600	600	.1	.3
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CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.8

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	585	100	580	150	577	170	577.2	174	572.4
194	570.5	203	572.8	206	576.6	236	576.2	430	575
650	580								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	170	.03	206	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

170	206	40	40	40	.3	.5
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CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.71

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	580	600	583.19	605	581.58	605	581	613	573.1
640	567.6	674	573.4	687	577.6	687	581.6	692	581.65
710	582.4	800	580	1000	585				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
350	.035	605	.03	687	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	605	687		10 10	10		.3	.5
Left Levee	Station=		605	Elevation=	580			
Right Levee	Station=		687	Elevation=	580			

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.7

INPUT

Description:

Distance from Upstream XS = 1

Deck/Roadway Width = 8

Weir Coefficient = 2.8

Upstream Deck/Roadway Coordinates

num= 10

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
350		580		580	600	583.19		583.19		603	581.58		581.58	
605	581.58		581		687	581.6		577.6		687	581.6		581.6	
692	581.65		581.65		710	582.4		582.4		800	580		580	
1000	585		585											

Upstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	580	600	583.19	605	581.58	605	581	613	573.1
640	567.6	674	573.4	687	577.6	687	581.6	692	581.65
710	582.4	800	580	1000	585				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
350	.035	605	.03	687	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	605	687		.3	.5
Left Levee	Station=		605	Elevation=	580
Right Levee	Station=		687	Elevation=	580

Downstream Deck/Roadway Coordinates

num= 10

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
350		580		580	600	583.19		583.19		603	581.58		581.58	
605	581.58		581		687	581.6		577.6		687	581.6		581.6	

692	581.65	581.65	710	582.4	582.4	800	580	580
1000	585	585						

Downstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	580	600	583.19	605	581.58	605	581	613	573.1
640	567.6	674	573.4	687	577.6	687	581.6	692	581.65
710	582.4	800	580	1000	585				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
350	.035	605	.03	687	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	605	687		.3	.5

Left Levee Station= 605 Elevation= 580

Right Levee Station= 687 Elevation= 580

Upstream Embankment side slope = 0 horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins = 581.58

Energy head used in spillway design =

Spillway height used in design =

Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth

inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.6

INPUT

Description:

Station Elevation Data				num=	13					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
350	580	600	583.19	605	581.58	605	581	613	573.1	
640	567.6	674	573.4	687	577.6	687	581.6	692	581.65	
710	582.4	800	580	1000	585					

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
350	.035	605	.03	687	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	605	687		50 50	50		.3	.5
Left Levee	Station=		605	Elevation=	580			
Right Levee	Station=		687	Elevation=	580			

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.5

INPUT

Description:

Station Elevation Data				num=	8				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	580	608	578.4	613	573.1	640	567.6	674	573.4
687	577.6	800	580	1000	585				

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
350	.035	608	.03	687	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	608	687		250 250	250		.1	.3

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.4

INPUT

Description:

Station Elevation Data				num=	7				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	580	400	575	513	573.5	538	567.5	569	573.4
850	580	1000	585						

Manning's n Values				num=	3
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Sta	n Val	Sta	n Val	Sta	n Val
200	.035	513	.03	569	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	513	569		40	40		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.31

INPUT

Description:

Station Elevation Data	num=	13
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
200 580 400 575 480 580.4 503 580.4 503 577.87		
513 573.5 538 567.5 569 573.4 578 577.76 578 579.6		
603 579.9 850 580 1000 585		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
200 .035 503 .03 578 .035		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	578		10	10		.3	.5
Left Levee	Station=	503	Elevation=	575				
Right Levee	Station=	578	Elevation=	579.9				

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.3

INPUT

Description:

Distance from Upstream XS = 1
 Deck/Roadway Width = 8
 Weir Coefficient = 2.8
 Upstream Deck/Roadway Coordinates

num=	10
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord	
200 580 580 400 575 575 480 580.4 580.4	
503 580.4 580.4 503 580.4 577.87 578 580.4 577.67	
578 579.6 579.6 603 579.9 579.9 850 580 580	
1000 585 585	

Upstream Bridge Cross Section Data

Station Elevation Data	num=	13
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Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	580	400	575	480	580.4	503	580.4	503	577.87
513	573.5	538	567.5	569	573.4	578	577.76	578	579.6
603	579.9	850	580	1000	585				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
200	.035	503	.03	578	.035

Bank Sta: Left Right Coeff Contr. Expan.

503	578	.3	.5
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Left Levee Station= 503 Elevation= 575

Right Levee Station= 578 Elevation= 579.9

Downstream Deck/Roadway Coordinates

num= 10

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
200	580		580		400	575		575		480	580.4		580.4	
503	580.4		580.4		503	580.4		577.87		578	580.4		577.67	
578	579.6		579.6		603	579.9		579.9		850	580		580	
1000	585		585											

Downstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	580	400	575	480	580.4	503	580.4	503	577.87
513	573.5	538	567.5	569	573.4	578	577.76	578	579.6
603	579.9	850	580	1000	585				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
200	.035	503	.03	578	.035

Bank Sta: Left Right Coeff Contr. Expan.

503	578	.3	.5
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Left Levee Station= 503 Elevation= 575

Right Levee Station= 578 Elevation= 575

Upstream Embankment side slope = horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins = 577.87

Energy head used in spillway design =

Spillway height used in design =

Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.2

INPUT

Description:

Station		Elevation Data		num=	13				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	580	400	575	480	580.4	503	580.4	503	577.87
513	573.5	538	567.5	569	573.4	578	577.76	578	579.6
603	579.9	850	580	1000	585				

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
200	.035	503	.03	578	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	578		50 50	50		.3	.5
Left Levee	Station=		503	Elevation=	575			
Right Levee	Station=		578	Elevation=	575			

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.1

INPUT

Description:

Station		Elevation Data		num=	7				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	580	400	575	513	573.5	538	567.5	569	573.4
850	580	1000	585						

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val

200 .035 513 .03 569 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
513 569 0 0 0 .1 .3

SUMMARY OF MANNING'S N VALUES

River:Sawmill Run

Reach	River Sta.	n1	n2	n3
Sawmill Run	7	.8	.04	.08
Sawmill Run	5.81	.035	.03	.035
Sawmill Run	5.8	Bridge		
Sawmill Run	5.7	.035	.03	.035
Sawmill Run	5.6	.035	.03	.035
Sawmill Run	5.51	.035	.03	.035
Sawmill Run	5.5	Bridge		
Sawmill Run	5.4	.035	.03	.035
Sawmill Run	5.3	.035	.03	.035
Sawmill Run	5.21	.035	.03	.035
Sawmill Run	5.2	Bridge		
Sawmill Run	5.1	.035	.03	.035
Sawmill Run	5	.035	.03	.035
Sawmill Run	4.21	499	.03	.035
Sawmill Run	4.2	Bridge		
Sawmill Run	4.1	.035	.03	.035
Sawmill Run	3.9	.035	.03	.035
Sawmill Run	3.8	.035	.03	.035
Sawmill Run	3.71	.035	.03	.035
Sawmill Run	3.7	Bridge		
Sawmill Run	3.6	.035	.03	.035
Sawmill Run	3.5	.035	.03	.035
Sawmill Run	3.4	.035	.03	.035
Sawmill Run	3.31	.035	.03	.035
Sawmill Run	3.3	Bridge		
Sawmill Run	3.2	.035	.03	.035
Sawmill Run	3.1	.035	.03	.035
Sawmill Run	3	.035	.03	.035
Sawmill Run	0.8	.035	.03	.035
Sawmill Run	0.71	.035	.03	.035
Sawmill Run	0.7	Bridge		
Sawmill Run	0.6	.035	.03	.035
Sawmill Run	0.5	.035	.03	.035
Sawmill Run	0.4	.035	.03	.035
Sawmill Run	0.31	.035	.03	.035
Sawmill Run	0.3	Bridge		
Sawmill Run	0.2	.035	.03	.035

Sawmill Run	0.1	.035	.03	.035
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SUMMARY OF REACH LENGTHS

River: Sawmill Run

Reach	River Sta.	Left	Channel	Right
Sawmill Run	7	618	618	618
Sawmill Run	5.81	52	52	52
Sawmill Run	5.8	Bridge		
Sawmill Run	5.7	60	60	60
Sawmill Run	5.6	3	3	3
Sawmill Run	5.51	67	67	67
Sawmill Run	5.5	Bridge		
Sawmill Run	5.4	200	200	200
Sawmill Run	5.3	206	206	206
Sawmill Run	5.21	56	56	56
Sawmill Run	5.2	Bridge		
Sawmill Run	5.1	38	38	38
Sawmill Run	5	23	23	23
Sawmill Run	4.21	10	10	10
Sawmill Run	4.2	Bridge		
Sawmill Run	4.1	50	50	50
Sawmill Run	3.9	160	160	160
Sawmill Run	3.8	49	49	49
Sawmill Run	3.71	18	18	18
Sawmill Run	3.7	Bridge		
Sawmill Run	3.6	92	92	92
Sawmill Run	3.5	540	540	540
Sawmill Run	3.4	48	48	48
Sawmill Run	3.31	10	10	10
Sawmill Run	3.3	Bridge		
Sawmill Run	3.2	100	100	100
Sawmill Run	3.1	150	150	150
Sawmill Run	3	600	600	600
Sawmill Run	0.8	40	40	40
Sawmill Run	0.71	10	10	10
Sawmill Run	0.7	Bridge		
Sawmill Run	0.6	50	50	50
Sawmill Run	0.5	250	250	250
Sawmill Run	0.4	40	40	40
Sawmill Run	0.31	10	10	10
Sawmill Run	0.3	Bridge		
Sawmill Run	0.2	50	50	50
Sawmill Run	0.1	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Sawmill Run

Reach	River Sta.	Contr.	Expan.
Sawmill Run	7	.3	.5
Sawmill Run	5.81	.3	.5
Sawmill Run	5.8	Bridge	
Sawmill Run	5.7	.3	.5
Sawmill Run	5.6	.3	.5
Sawmill Run	5.51	.3	.5
Sawmill Run	5.5	Bridge	
Sawmill Run	5.4	.3	.5
Sawmill Run	5.3	.3	.5
Sawmill Run	5.21	.3	.5
Sawmill Run	5.2	Bridge	
Sawmill Run	5.1	.3	.5
Sawmill Run	5	.3	.5
Sawmill Run	4.21	.3	.5
Sawmill Run	4.2	Bridge	
Sawmill Run	4.1	.3	.5
Sawmill Run	3.9	.1	.3
Sawmill Run	3.8	.3	.5
Sawmill Run	3.71	.3	.5
Sawmill Run	3.7	Bridge	
Sawmill Run	3.6	.3	.5
Sawmill Run	3.5	.1	.3
Sawmill Run	3.4	.3	.5
Sawmill Run	3.31	.3	.5
Sawmill Run	3.3	Bridge	
Sawmill Run	3.2	.3	.5
Sawmill Run	3.1	.1	.3
Sawmill Run	3	.1	.3
Sawmill Run	0.8	.3	.5
Sawmill Run	0.71	.3	.5
Sawmill Run	0.7	Bridge	
Sawmill Run	0.6	.3	.5
Sawmill Run	0.5	.1	.3
Sawmill Run	0.4	.3	.5
Sawmill Run	0.31	.3	.5
Sawmill Run	0.3	Bridge	
Sawmill Run	0.2	.3	.5
Sawmill Run	0.1	.1	.3

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : FEMA_CE

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 4 - 100 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 5 - 500 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 4 - 100 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 5 - 500 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 1 - 10 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 1 - 10 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 2 - 25 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 2 - 25 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 3 - 50 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 3 - 50 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 4 - 100 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 4 - 100 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 5 - 500 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 1 - 10 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 1 - 10 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 2 - 25 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 2 - 25 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 3 - 50 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 3 - 50 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 1 - 10 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 2 - 25 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 3 - 50 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 4 - 100 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 5 - 500 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream

conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 1 - 10 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 2 - 25 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 3 - 50 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 4 - 100 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 5 - 500 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 3 - 50 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 4 - 100 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 5 - 500 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 1 - 10 Year Upstream

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 1 - 10 Year Downstream

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 2 - 25 Year

Warning:The flow regime calculated by the momentum equation shows class B flow.

For the best solution, this profile should be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 2 - 25 Year Upstream

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 2 - 25 Year Downstream

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 3 - 50 Year

Warning:The flow regime calculated by the momentum equation shows class B flow. For the best solution, this profile should be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 3 - 50 Year Upstream

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 3 - 50 Year Downstream

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 4 - 100 Year

Warning:The flow regime calculated by the momentum equation shows class B flow. For the best solution, this profile should be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 4 - 100 Year Upstream

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 4 - 100 Year Downstream

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 5 - 500 Year

Warning:The flow regime calculated by the momentum equation shows class B flow.

For the best solution, this profile should
be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 5 - 500 Year
Upstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 5 - 500 Year
Downstream

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 3 - 50 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 4 - 100 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 1 - 10 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 2 - 25 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 3 - 50 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 4 - 100 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical

depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 5 - 500 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 1 - 10 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 2 - 25 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 3 - 50 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 1 - 10 Year

Warning:The pure energy/weir calculations did not converge within the given number of iterations.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 1 - 10 Year
Upstream

Warning:Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 1 - 10 Year
Downstream

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the energy is based on critical depth over the weir.

The water surface has been projected.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 2 - 25 Year

Warning:The pure energy/weir calculations did not converge within the given number of iterations.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 2 - 25 Year

Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 2 - 25 Year

Downstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 3 - 50 Year

Warning: The pure energy/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 3 - 50 Year

Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 3 - 50 Year

Downstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does

not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 4 - 100 Year

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 4 - 100 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 4 - 100 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 5 - 500 Year

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 5 - 500 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 5 - 500 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.6 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.6 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.6 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.5 Profile: PF 1 - 10 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 1 - 10 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 1 - 10 Year

Warning: The pure energy/weir calculations did not converge within the given number of iterations.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 1 - 10 Year Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 1 - 10 Year Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 2 - 25 Year

Warning: The pure energy/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is below the minimum elevation for pressure flow. The sluice gate equations were used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 2 - 25 Year Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 2 - 25 Year Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy are based on critical depth over the weir.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 3 - 50 Year

Warning: The pure energy/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is below the minimum elevation for pressure flow. The sluice gate equations were used

for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 3 - 50 Year
Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 3 - 50 Year
Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the energy is based on critical depth over the weir.

The water surface has been projected.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 4 - 100 Year

Note: The downstream water surface is below the minimum elevation for pressure flow. The sluice gate equations were used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 4 - 100 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 4 - 100 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 5 - 500 Year

Note: The downstream water surface is above the minimum elevation required

for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 1 - 10 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 2 - 25 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current

and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 3 - 50 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 4 - 100 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 5 - 500 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 1 - 10 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 2 - 25 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 3 - 50 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 4 - 100 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 5 - 500 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 1 - 10 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:Divided flow computed for this cross-section.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 2 - 25 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:Divided flow computed for this cross-section.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 3 - 50 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 4 - 100 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 3 - 50 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 4 - 100 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 5 - 500 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 1 - 10 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 1 - 10 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 2 - 25 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 2 - 25 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 3 - 50 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 3 - 50 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 4 - 100 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 4 - 100 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.5 Profile: PF 4 - 100 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.5 Profile: PF 5 - 500 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 3 - 50 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 4 - 100 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 5 - 500 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 2 - 25 Year

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 3 - 50 Year

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 4 - 100 Year

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 5 - 500 Year

Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 1 - 10 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 1 - 10 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 2 - 25 Year
Upstream

Note: Multiple critical depths were found at this location. The critical

depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 2 - 25 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 3 - 50 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 3 - 50 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 2 - 25 Year
Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 3 - 50 Year

Warning:Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 4 - 100 Year

Warning:Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 5 - 500 Year

Warning:Divided flow computed for this cross-section.

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

HEC-RAS Plan: FEMA_DE River: Sawmill Run Reach: Sawmill Run

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	7	PF 1 - 10 Year	1354.00	579.20	583.42	583.00	584.01	0.006442	6.89	329.10	168.99	0.64
Sawmill Run	7	PF 2 - 50 Year	2038.00	579.20	584.88	583.62	585.30	0.003375	6.27	595.00	196.42	0.49
Sawmill Run	7	PF 3 - 100 Year	2359.00	579.20	585.47	583.86	585.87	0.002830	6.19	715.28	207.64	0.46
Sawmill Run	7	PF 4 - 500 Year	2864.00	579.20	586.56	584.20	586.90	0.002010	5.87	951.70	228.09	0.40
Sawmill Run	5.81	PF 1 - 10 Year	1354.00	575.50	582.30	579.24	582.61	0.000985	4.43	305.71	60.79	0.35
Sawmill Run	5.81	PF 2 - 50 Year	2038.00	575.50	583.85	580.22	584.24	0.001013	5.04	404.67	67.39	0.36
Sawmill Run	5.81	PF 3 - 100 Year	2359.00	575.50	584.43	580.64	584.86	0.001045	5.31	444.45	69.87	0.37
Sawmill Run	5.81	PF 4 - 500 Year	2864.00	575.50	585.58	581.24	586.04	0.000953	5.42	528.17	74.82	0.36
Sawmill Run	5.8		Bridge									
Sawmill Run	5.7	PF 1 - 10 Year	1354.00	575.50	582.05	579.24	582.39	0.001137	4.66	290.68	59.72	0.37
Sawmill Run	5.7	PF 2 - 50 Year	2038.00	575.50	583.57	580.22	584.00	0.001156	5.28	386.08	66.20	0.39
Sawmill Run	5.7	PF 3 - 100 Year	2359.00	575.50	584.13	580.64	584.61	0.001193	5.57	423.81	68.60	0.39
Sawmill Run	5.7	PF 4 - 500 Year	2864.00	575.50	585.31	581.24	585.81	0.001061	5.64	508.07	73.66	0.38
Sawmill Run	5.6	PF 1 - 10 Year	1354.00	574.80	582.01	578.82	582.31	0.000962	4.42	306.15	59.82	0.34
Sawmill Run	5.6	PF 2 - 50 Year	2038.00	574.80	583.52	579.85	583.92	0.001019	5.08	401.52	66.30	0.36
Sawmill Run	5.6	PF 3 - 100 Year	2359.00	574.80	584.08	580.26	584.53	0.001064	5.37	439.15	68.69	0.37
Sawmill Run	5.6	PF 4 - 500 Year	2864.00	574.80	585.27	580.87	585.73	0.000962	5.47	523.90	73.78	0.36
Sawmill Run	5.51	PF 1 - 10 Year	1354.00	574.80	582.00	578.84	582.31	0.000964	4.43	305.93	59.80	0.34
Sawmill Run	5.51	PF 2 - 50 Year	2038.00	574.80	583.52	579.85	583.92	0.001021	5.08	401.27	66.28	0.36
Sawmill Run	5.51	PF 3 - 100 Year	2359.00	574.80	584.07	580.26	584.52	0.001066	5.38	438.88	68.67	0.37
Sawmill Run	5.51	PF 4 - 500 Year	2864.00	574.80	585.26	580.88	585.73	0.000964	5.47	523.63	73.77	0.36
Sawmill Run	5.5		Bridge									
Sawmill Run	5.4	PF 1 - 10 Year	1354.00	574.80	581.70	578.84	582.04	0.001143	4.70	287.97	58.50	0.37
Sawmill Run	5.4	PF 2 - 50 Year	2038.00	574.80	583.17	579.85	583.62	0.001201	5.38	378.56	64.80	0.39
Sawmill Run	5.4	PF 3 - 100 Year	2359.00	574.80	583.70	580.26	584.20	0.001259	5.71	413.33	67.06	0.41
Sawmill Run	5.4	PF 4 - 500 Year	2864.00	574.80	584.93	580.88	585.44	0.001098	5.73	499.42	72.35	0.38
Sawmill Run	5.3	PF 1 - 10 Year	1354.00	574.00	581.69	577.75	581.82	0.000348	3.47	614.23	269.60	0.22
Sawmill Run	5.3	PF 2 - 50 Year	2038.00	574.00	583.26	578.85	583.35	0.000219	3.12	1118.61	366.30	0.18
Sawmill Run	5.3	PF 3 - 100 Year	2359.00	574.00	583.83	579.29	583.91	0.000194	3.06	1334.97	399.09	0.17
Sawmill Run	5.3	PF 4 - 500 Year	2864.00	574.00	585.10	580.71	585.16	0.000123	2.65	1859.04	415.07	0.14
Sawmill Run	5.21	PF 1 - 10 Year	1354.00	575.00	581.62	577.54	581.75	0.000355	2.87	472.54	76.00	0.20
Sawmill Run	5.21	PF 2 - 50 Year	2038.00	575.00	583.07	578.22	583.26	0.000417	3.50	582.90	76.00	0.22
Sawmill Run	5.21	PF 3 - 100 Year	2359.00	575.00	583.59	578.50	583.81	0.000457	3.79	621.91	76.00	0.23

HEC-RAS Plan: FEMA DE River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sawmill Run	5.21	PF 4 - 500 Year	2864.00	575.00	584.81	578.94	585.06	0.000439	4.01	714.86	76.00	0.23
Sawmill Run	5.2		Bridge									
Sawmill Run	5.1	PF 1 - 10 Year	1354.00	575.00	580.98	577.55	581.14	0.000499	3.19	424.18	76.00	0.24
Sawmill Run	5.1	PF 2 - 50 Year	2038.00	575.00	581.96	578.21	582.22	0.000682	4.09	498.08	76.00	0.28
Sawmill Run	5.1	PF 3 - 100 Year	2359.00	575.00	581.83	578.51	582.19	0.000972	4.83	488.33	76.00	0.34
Sawmill Run	5.1	PF 4 - 500 Year	2864.00	575.00	582.12	578.94	582.60	0.001250	5.61	510.14	76.00	0.38
Sawmill Run	5	PF 1 - 10 Year	1354.00	573.90	580.92	579.90	581.11	0.000929	4.33	504.65	250.91	0.33
Sawmill Run	5	PF 2 - 50 Year	2038.00	573.90	581.99	580.45	582.13	0.000670	4.02	795.91	295.19	0.29
Sawmill Run	5	PF 3 - 100 Year	2359.00	573.90	581.87	580.64	582.08	0.001013	4.90	759.46	290.02	0.35
Sawmill Run	5	PF 4 - 500 Year	2864.00	573.90	582.20	580.89	582.43	0.001088	5.21	858.17	303.82	0.37
Sawmill Run	4.21	PF 1 - 10 Year	1354.00	573.90	580.91	580.19	581.07	0.001062	4.22	559.90	354.84	0.33
Sawmill Run	4.21	PF 2 - 50 Year	2038.00	573.90	582.00	580.62	582.09	0.000582	3.46	982.04	420.97	0.25
Sawmill Run	4.21	PF 3 - 100 Year	2359.00	573.90	581.88	580.77	582.02	0.000896	4.24	931.86	413.76	0.31
Sawmill Run	4.21	PF 4 - 500 Year	2864.00	573.90	582.22	580.97	582.37	0.000901	4.39	1075.81	434.13	0.31
Sawmill Run	4.2		Bridge									
Sawmill Run	4.1	PF 1 - 10 Year	1354.00	573.90	580.85	580.19	581.02	0.001159	4.41	536.69	350.74	0.34
Sawmill Run	4.1	PF 2 - 50 Year	2038.00	573.90	581.98	580.62	582.08	0.000583	3.52	976.53	422.07	0.25
Sawmill Run	4.1	PF 3 - 100 Year	2359.00	573.90	581.86	580.76	582.00	0.000908	4.33	922.83	413.99	0.31
Sawmill Run	4.1	PF 4 - 500 Year	2864.00	573.90	582.19	580.97	582.35	0.000912	4.51	1065.61	435.14	0.32
Sawmill Run	3.9	PF 1 - 10 Year	1354.00	573.90	580.72	580.14	580.95	0.001203	4.89	493.61	343.00	0.38
Sawmill Run	3.9	PF 2 - 50 Year	2038.00	573.90	581.94	580.61	582.05	0.000558	3.76	958.43	419.36	0.27
Sawmill Run	3.9	PF 3 - 100 Year	2359.00	573.90	581.78	580.78	581.95	0.000903	4.69	891.20	409.15	0.34
Sawmill Run	3.9	PF 4 - 500 Year	2864.00	573.90	582.12	580.95	582.29	0.000908	4.88	1032.28	430.29	0.35
Sawmill Run	3.8	PF 1 - 10 Year	1354.00	572.80	580.63	578.13	580.79	0.000636	3.73	565.44	328.52	0.28
Sawmill Run	3.8	PF 2 - 50 Year	2038.00	572.80	581.87	579.42	581.97	0.000377	3.30	1008.65	386.88	0.23
Sawmill Run	3.8	PF 3 - 100 Year	2359.00	572.80	581.66	580.17	581.83	0.000619	4.14	929.36	377.10	0.29
Sawmill Run	3.8	PF 4 - 500 Year	2864.00	572.80	581.99	580.47	582.17	0.000669	4.45	1053.02	392.24	0.30
Sawmill Run	3.71	PF 1 - 10 Year	1354.00	572.80	580.59	578.03	580.76	0.000714	3.79	548.84	320.59	0.29
Sawmill Run	3.71	PF 2 - 50 Year	2038.00	572.80	581.85	579.37	581.95	0.000415	3.28	985.68	371.11	0.23
Sawmill Run	3.71	PF 3 - 100 Year	2359.00	572.80	581.63	580.21	581.80	0.000691	4.15	903.55	362.15	0.29
Sawmill Run	3.71	PF 4 - 500 Year	2864.00	572.80	581.95	580.50	582.13	0.000749	4.44	1021.01	374.90	0.30
Sawmill Run	3.7		Bridge									

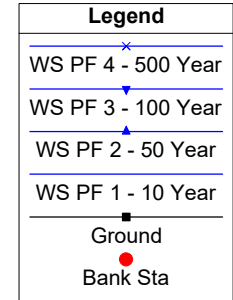
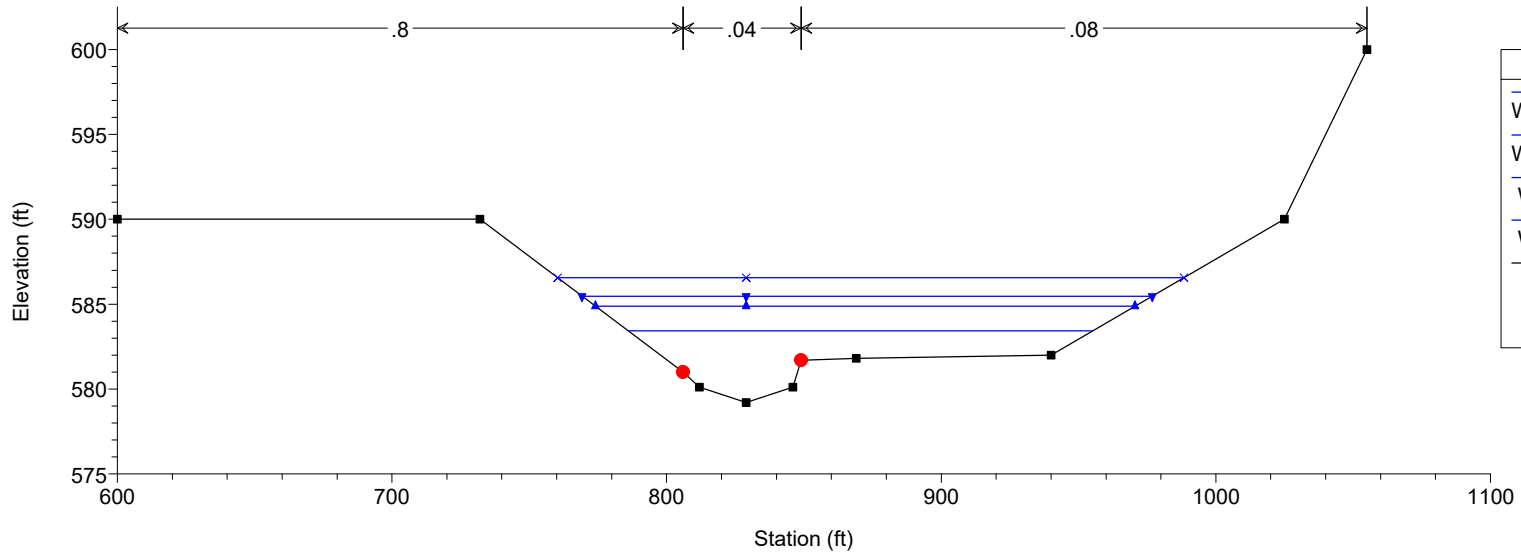
HEC-RAS Plan: FEMA_DE River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	3.6	PF 1 - 10 Year	1354.00	572.80	580.31	578.03	580.54	0.000996	4.36	460.91	313.17	0.34
Sawmill Run	3.6	PF 2 - 50 Year	2038.00	572.80	581.81	579.40	581.92	0.000414	3.35	986.39	384.16	0.23
Sawmill Run	3.6	PF 3 - 100 Year	2359.00	572.80	581.55	580.20	581.73	0.000724	4.31	885.38	371.57	0.30
Sawmill Run	3.6	PF 4 - 500 Year	2864.00	572.80	581.86	580.50	582.06	0.000778	4.62	1005.63	386.51	0.32
Sawmill Run	3.5	PF 1 - 10 Year	1354.00	572.80	580.14	578.13	580.43	0.001175	4.75	407.78	305.08	0.38
Sawmill Run	3.5	PF 2 - 50 Year	2038.00	572.80	581.77	579.42	581.88	0.000417	3.44	968.72	381.98	0.24
Sawmill Run	3.5	PF 3 - 100 Year	2359.00	572.80	581.45	580.17	581.66	0.000768	4.51	850.77	367.15	0.32
Sawmill Run	3.5	PF 4 - 500 Year	2864.00	572.80	581.76	580.47	581.99	0.000829	4.84	966.36	381.69	0.34
Sawmill Run	3.4	PF 1 - 10 Year	1354.00	571.50	578.41	576.90	579.36	0.003373	7.84	178.76	54.34	0.61
Sawmill Run	3.4	PF 2 - 50 Year	2038.00	571.50	581.57	578.36	581.67	0.000348	3.47	1061.19	426.95	0.21
Sawmill Run	3.4	PF 3 - 100 Year	2359.00	571.50	580.94	579.91	581.20	0.000883	5.24	804.66	385.93	0.34
Sawmill Run	3.4	PF 4 - 500 Year	2864.00	571.50	581.18	580.30	581.48	0.001009	5.72	900.89	401.81	0.36
Sawmill Run	3.31	PF 1 - 10 Year	1354.00	571.50	577.90	576.92	579.09	0.004772	8.77	154.45	33.41	0.72
Sawmill Run	3.31	PF 2 - 50 Year	2038.00	571.50	581.55	579.46	581.66	0.000365	3.46	1053.93	425.84	0.21
Sawmill Run	3.31	PF 3 - 100 Year	2359.00	571.50	580.87	579.89	581.15	0.000981	5.35	779.50	381.66	0.34
Sawmill Run	3.31	PF 4 - 500 Year	2864.00	571.50	581.10	580.31	581.42	0.001134	5.87	868.47	396.53	0.37
Sawmill Run	3.3		Bridge									
Sawmill Run	3.2	PF 1 - 10 Year	1354.00	571.50	576.90	576.90	578.82	0.009587	11.12	121.78	32.00	1.00
Sawmill Run	3.2	PF 2 - 50 Year	2038.00	571.50	579.45	579.45	580.52	0.003386	8.77	319.13	226.94	0.63
Sawmill Run	3.2	PF 3 - 100 Year	2359.00	571.50	579.89	579.89	580.81	0.002899	8.50	437.56	305.90	0.59
Sawmill Run	3.2	PF 4 - 500 Year	2864.00	571.50	580.31	580.31	581.12	0.002646	8.47	577.00	345.46	0.57
Sawmill Run	3.1	PF 1 - 10 Year	1354.00	570.50	577.56	576.28	577.64	0.000477	3.09	766.14	401.99	0.23
Sawmill Run	3.1	PF 2 - 50 Year	2038.00	570.50	578.12	576.71	578.22	0.000541	3.51	1002.25	436.17	0.25
Sawmill Run	3.1	PF 3 - 100 Year	2359.00	570.50	578.34	576.85	578.45	0.000568	3.68	1098.98	449.42	0.26
Sawmill Run	3.1	PF 4 - 500 Year	2864.00	570.50	578.68	577.06	578.79	0.000590	3.89	1253.01	469.75	0.27
Sawmill Run	3	PF 1 - 10 Year	1354.00	570.50	577.47	576.28	577.56	0.000535	3.23	731.84	396.78	0.25
Sawmill Run	3	PF 2 - 50 Year	2038.00	570.50	578.03	576.71	578.13	0.000605	3.67	960.18	430.28	0.27
Sawmill Run	3	PF 3 - 100 Year	2359.00	570.50	578.24	576.85	578.36	0.000635	3.85	1053.41	443.23	0.28
Sawmill Run	3	PF 4 - 500 Year	2864.00	570.50	578.57	577.06	578.70	0.000656	4.06	1203.80	463.35	0.28
Sawmill Run	0.8	PF 1 - 10 Year	1354.00	570.50	576.29	576.29	576.87	0.003214	6.90	321.64	293.00	0.59
Sawmill Run	0.8	PF 2 - 50 Year	2038.00	570.50	576.71	576.71	577.34	0.003732	7.79	452.77	334.74	0.64
Sawmill Run	0.8	PF 3 - 100 Year	2359.00	570.50	576.85	576.85	577.52	0.004002	8.20	500.70	341.10	0.66
Sawmill Run	0.8	PF 4 - 500 Year	2864.00	570.50	577.87	577.06	578.12	0.001438	5.56	894.41	420.90	0.41

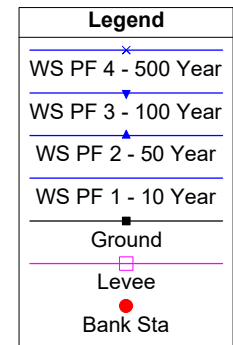
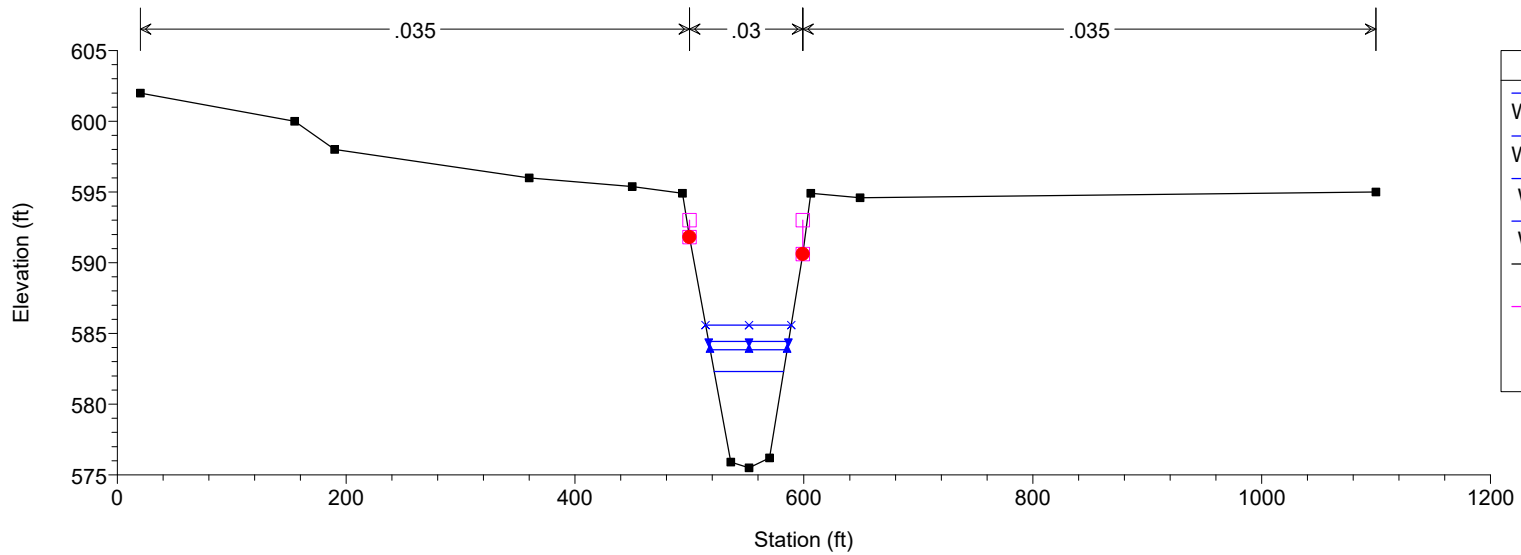
HEC-RAS Plan: FEMA_DE River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	0.71	PF 1 - 10 Year	1354.00	567.60	575.26	572.84	575.58	0.001188	4.48	302.39	68.96	0.38
Sawmill Run	0.71	PF 2 - 50 Year	2038.00	567.60	576.29	573.72	576.74	0.001432	5.43	374.99	73.16	0.42
Sawmill Run	0.71	PF 3 - 100 Year	2359.00	567.60	576.70	574.08	577.22	0.001529	5.82	405.45	74.85	0.44
Sawmill Run	0.71	PF 4 - 500 Year	2864.00	567.60	577.33	574.59	577.95	0.001626	6.31	453.93	77.46	0.46
Sawmill Run	0.7	Bridge										
Sawmill Run	0.6	PF 1 - 10 Year	1354.00	567.60	575.25	572.84	575.56	0.001199	4.49	301.42	68.90	0.38
Sawmill Run	0.6	PF 2 - 50 Year	2038.00	567.60	576.27	573.72	576.73	0.001447	5.45	373.69	73.08	0.43
Sawmill Run	0.6	PF 3 - 100 Year	2359.00	567.60	576.68	574.08	577.21	0.001545	5.84	404.00	74.77	0.44
Sawmill Run	0.6	PF 4 - 500 Year	2864.00	567.60	577.31	574.59	577.94	0.001643	6.33	452.31	77.38	0.46
Sawmill Run	0.5	PF 1 - 10 Year	1354.00	567.60	575.17	572.83	575.50	0.001262	4.57	296.09	68.45	0.39
Sawmill Run	0.5	PF 2 - 50 Year	2038.00	567.60	576.17	573.71	576.65	0.001533	5.57	366.10	72.46	0.44
Sawmill Run	0.5	PF 3 - 100 Year	2359.00	567.60	576.57	574.07	577.12	0.001641	5.97	395.39	74.08	0.46
Sawmill Run	0.5	PF 4 - 500 Year	2864.00	567.60	577.19	574.58	577.84	0.001748	6.47	442.35	76.59	0.47
Sawmill Run	0.4	PF 1 - 10 Year	1354.00	567.50	574.79	573.02	575.15	0.001535	5.07	344.70	211.86	0.43
Sawmill Run	0.4	PF 2 - 50 Year	2038.00	567.50	576.06	574.35	576.29	0.000864	4.52	690.59	324.67	0.34
Sawmill Run	0.4	PF 3 - 100 Year	2359.00	567.50	576.56	574.84	576.76	0.000707	4.32	862.51	365.79	0.31
Sawmill Run	0.4	PF 4 - 500 Year	2864.00	567.50	577.32	575.27	577.48	0.000522	4.02	1164.81	428.63	0.27
Sawmill Run	0.31	PF 1 - 10 Year	1354.00	567.50	574.44	573.03	575.01	0.002675	6.04	224.27	60.29	0.55
Sawmill Run	0.31	PF 2 - 50 Year	2038.00	567.50	575.11	573.96	576.03	0.003672	7.66	266.37	69.54	0.66
Sawmill Run	0.31	PF 3 - 100 Year	2359.00	567.50	575.32	574.31	576.43	0.004271	8.45	281.85	81.65	0.71
Sawmill Run	0.31	PF 4 - 500 Year	2864.00	567.50	575.82	574.86	577.09	0.004471	9.09	330.56	111.50	0.74
Sawmill Run	0.3	Bridge										
Sawmill Run	0.2	PF 1 - 10 Year	1354.00	567.50	574.40	573.03	574.98	0.002758	6.10	221.97	60.13	0.56
Sawmill Run	0.2	PF 2 - 50 Year	2038.00	567.50	575.04	573.96	575.99	0.003862	7.79	261.53	65.29	0.67
Sawmill Run	0.2	PF 3 - 100 Year	2359.00	567.50	575.21	574.31	576.38	0.004620	8.68	272.91	74.89	0.74
Sawmill Run	0.2	PF 4 - 500 Year	2864.00	567.50	575.38	574.86	576.97	0.006036	10.10	286.99	85.30	0.85
Sawmill Run	0.1	PF 1 - 10 Year	1354.00	567.50	574.27	573.02	574.84	0.002680	6.15	251.12	151.05	0.56
Sawmill Run	0.1	PF 2 - 50 Year	2038.00	567.50	575.03	574.35	575.68	0.002662	6.92	399.95	239.60	0.57
Sawmill Run	0.1	PF 3 - 100 Year	2359.00	567.50	575.28	574.84	575.96	0.002683	7.20	462.43	260.24	0.58
Sawmill Run	0.1	PF 4 - 500 Year	2864.00	567.50	575.63	575.28	576.33	0.002685	7.55	558.57	289.14	0.59

SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
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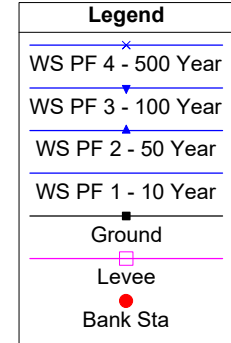
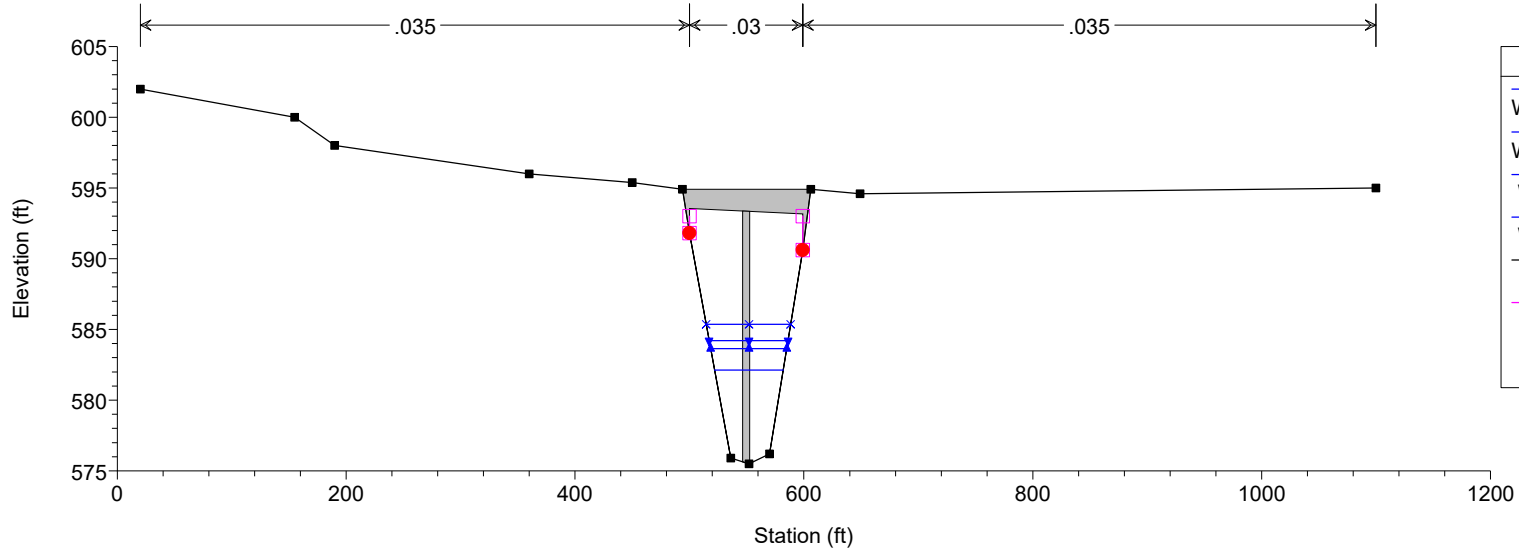


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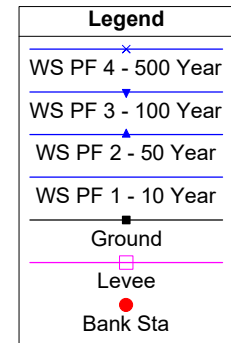
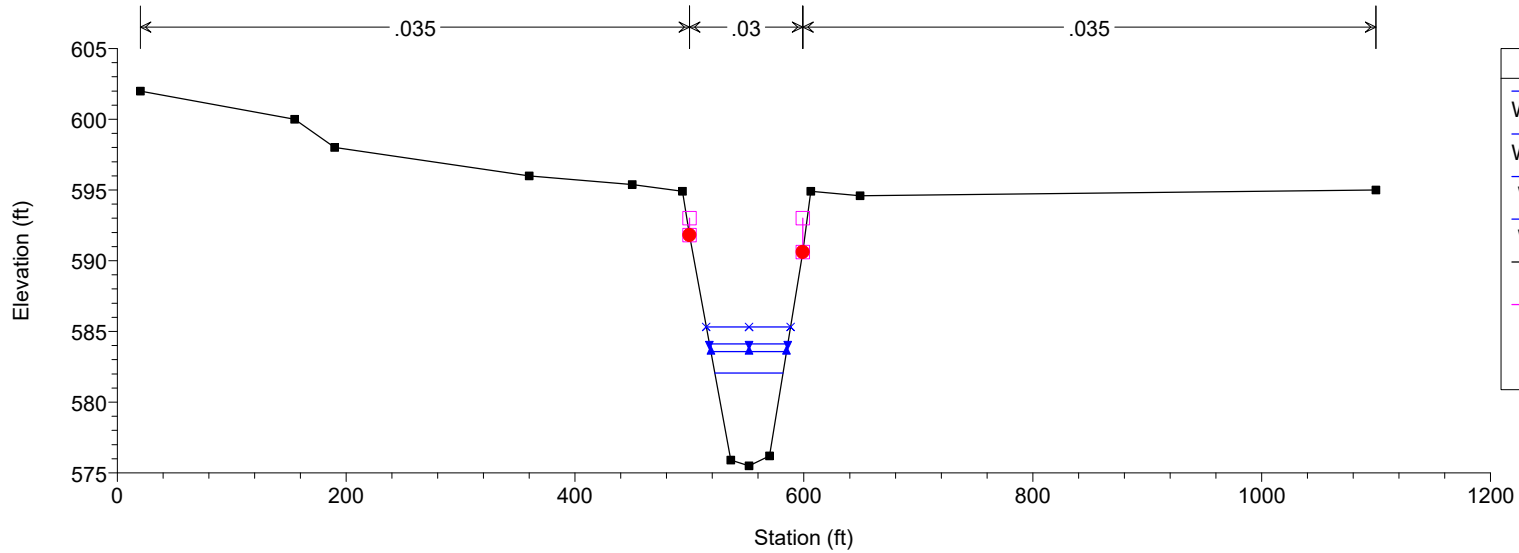
SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024

RS = 5.8 BR

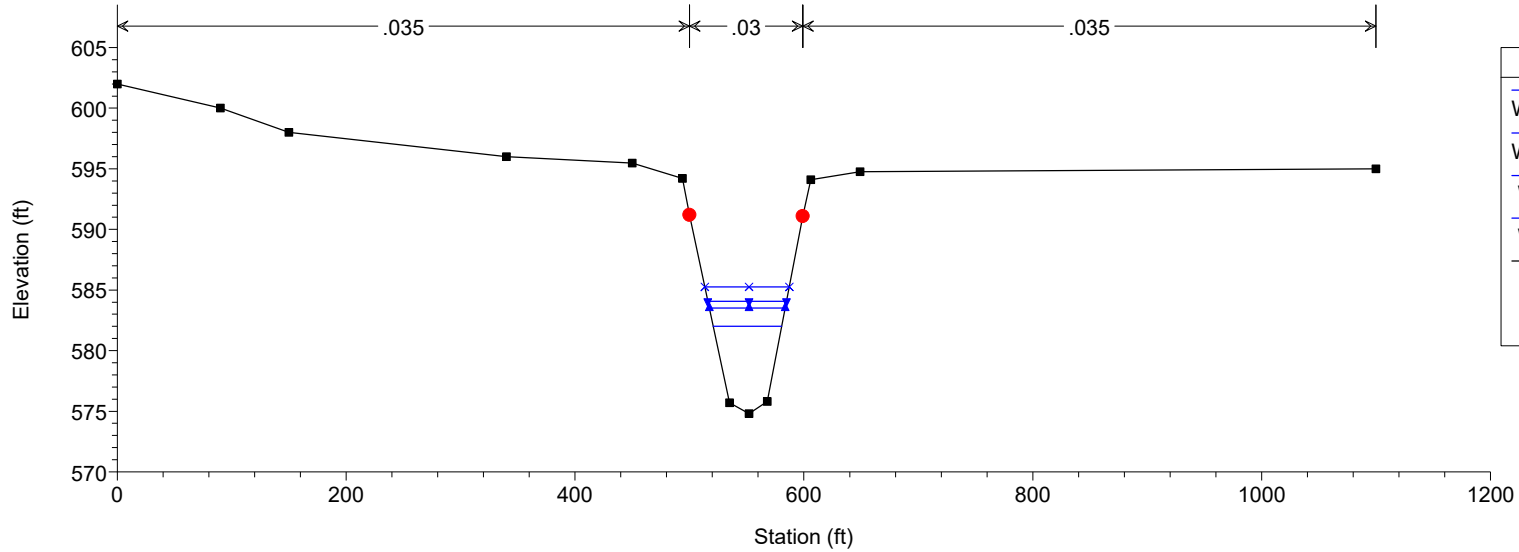


SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024

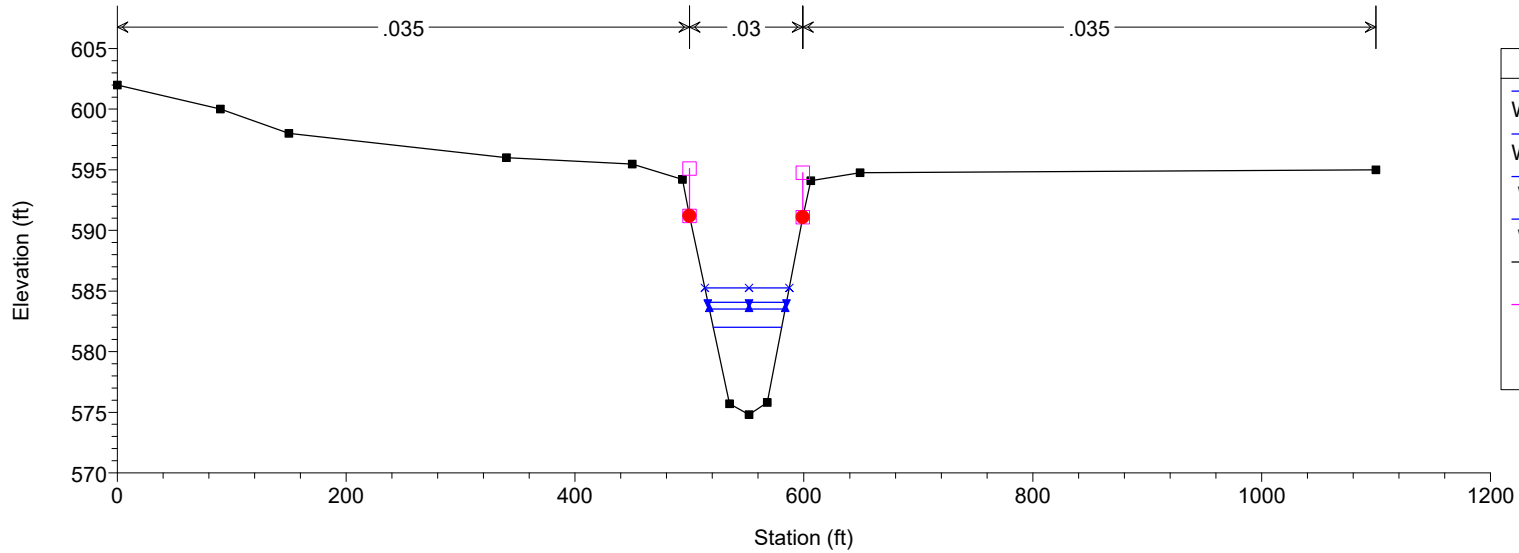
RS = 5.7



SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 5.6

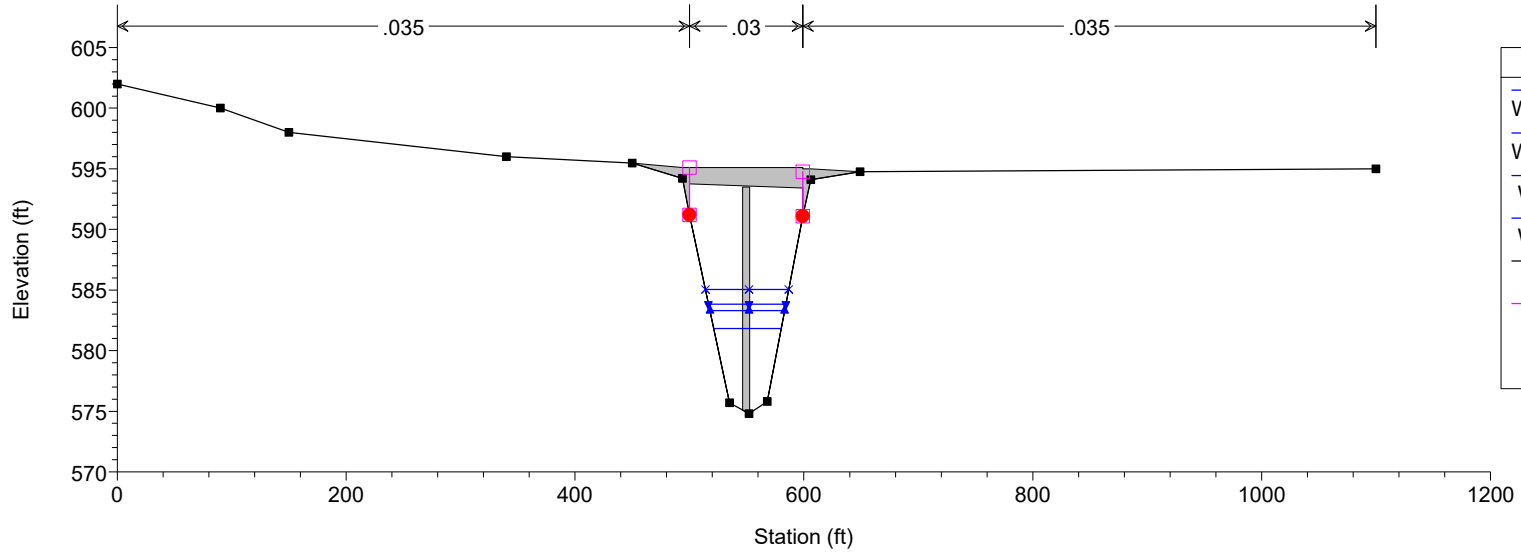


SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 5.51



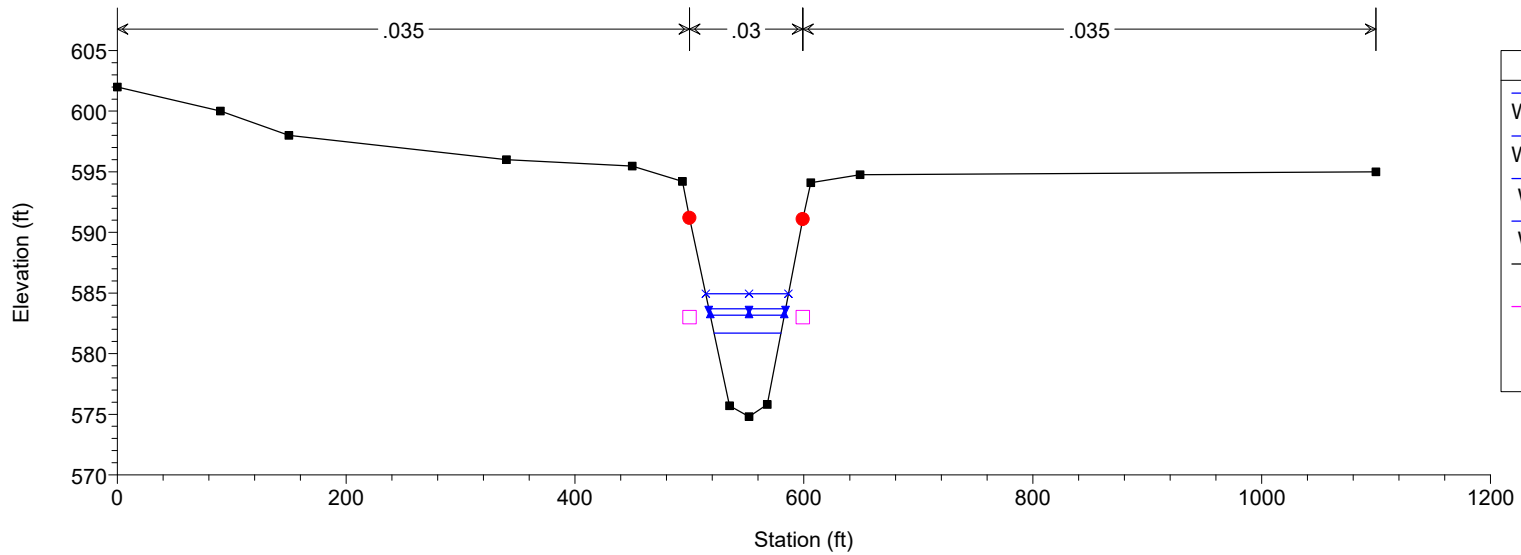
SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024

RS = 5.5 BR

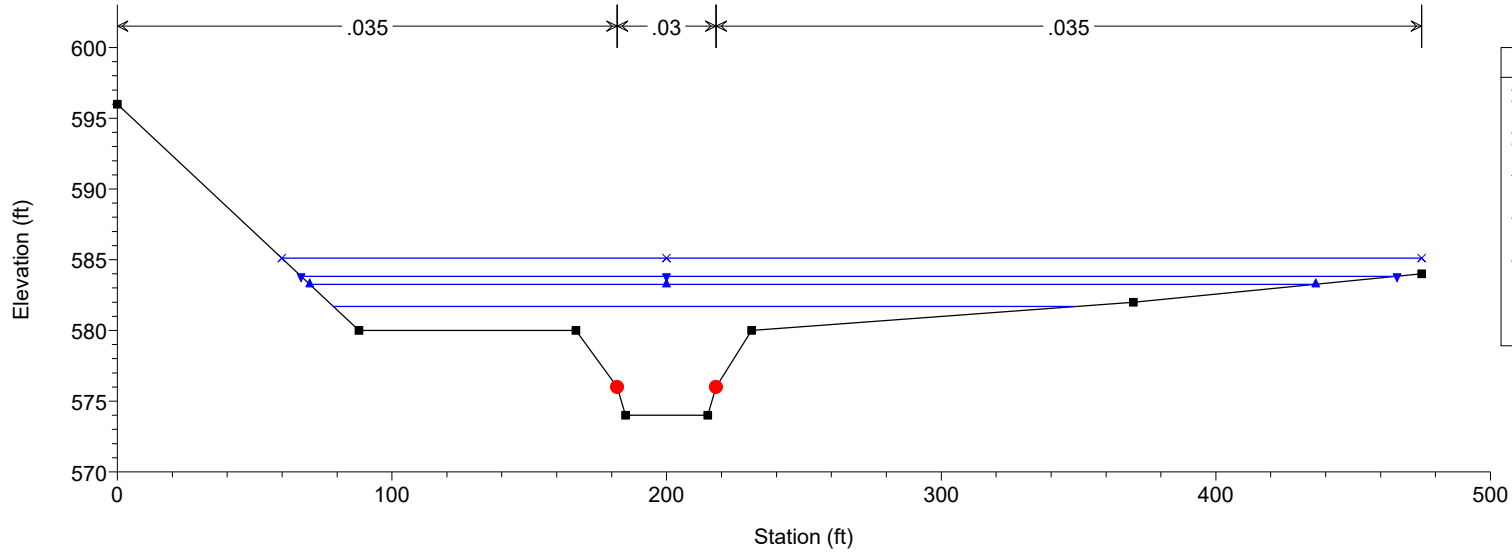


SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024

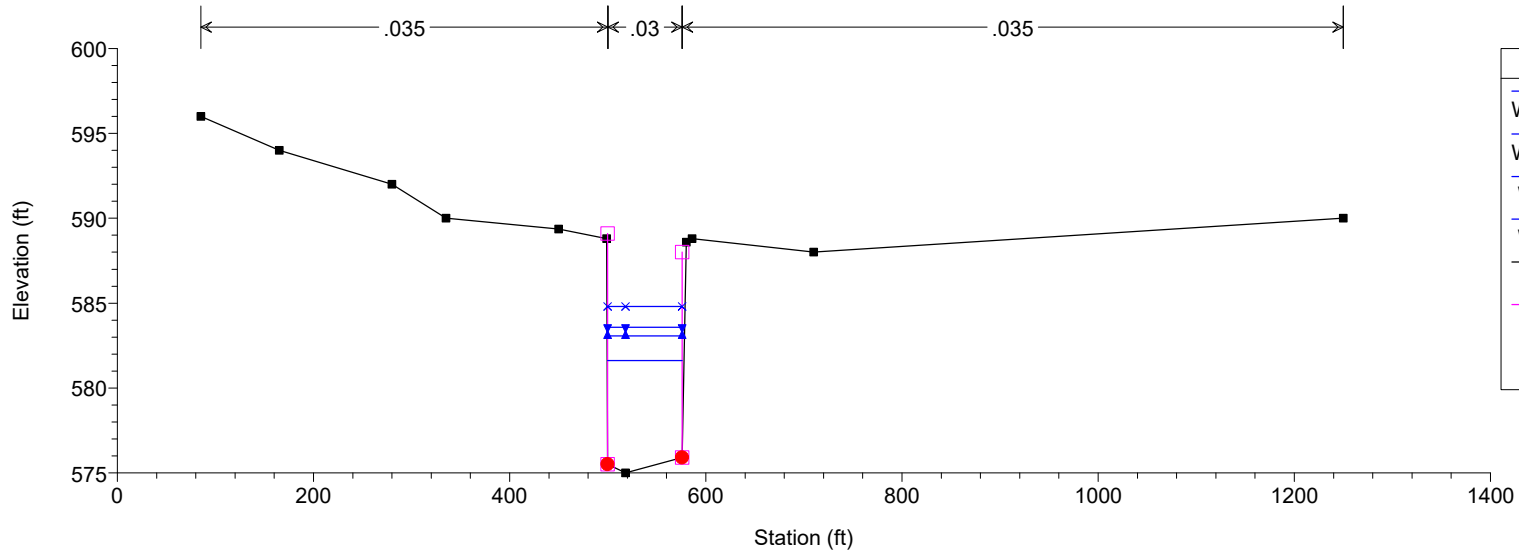
RS = 5.4

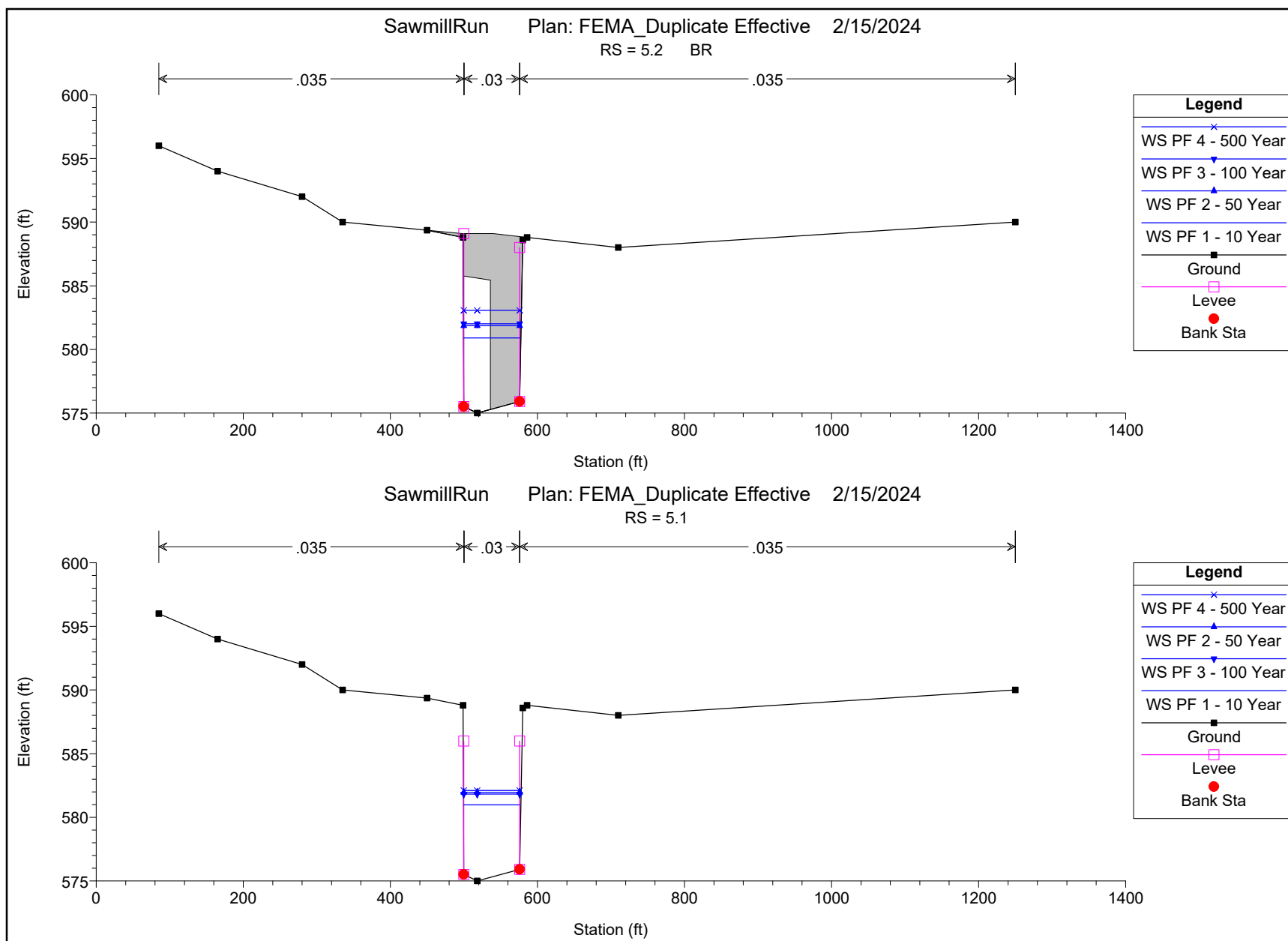


SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 5.3

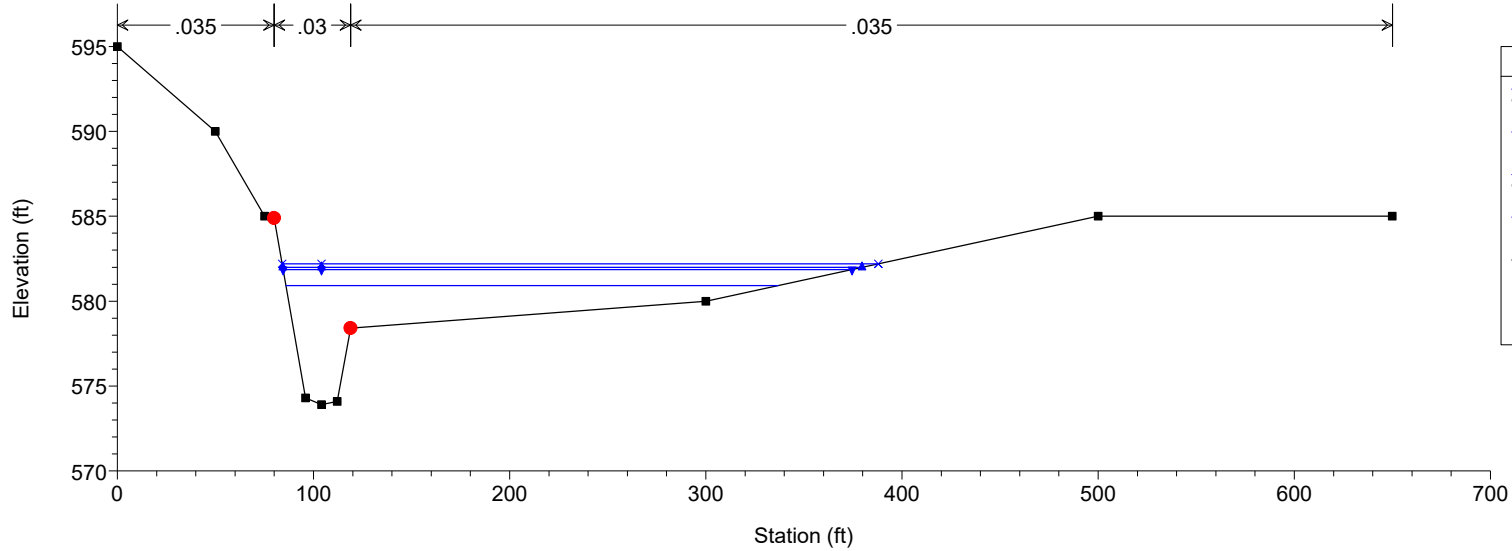


SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 5.21

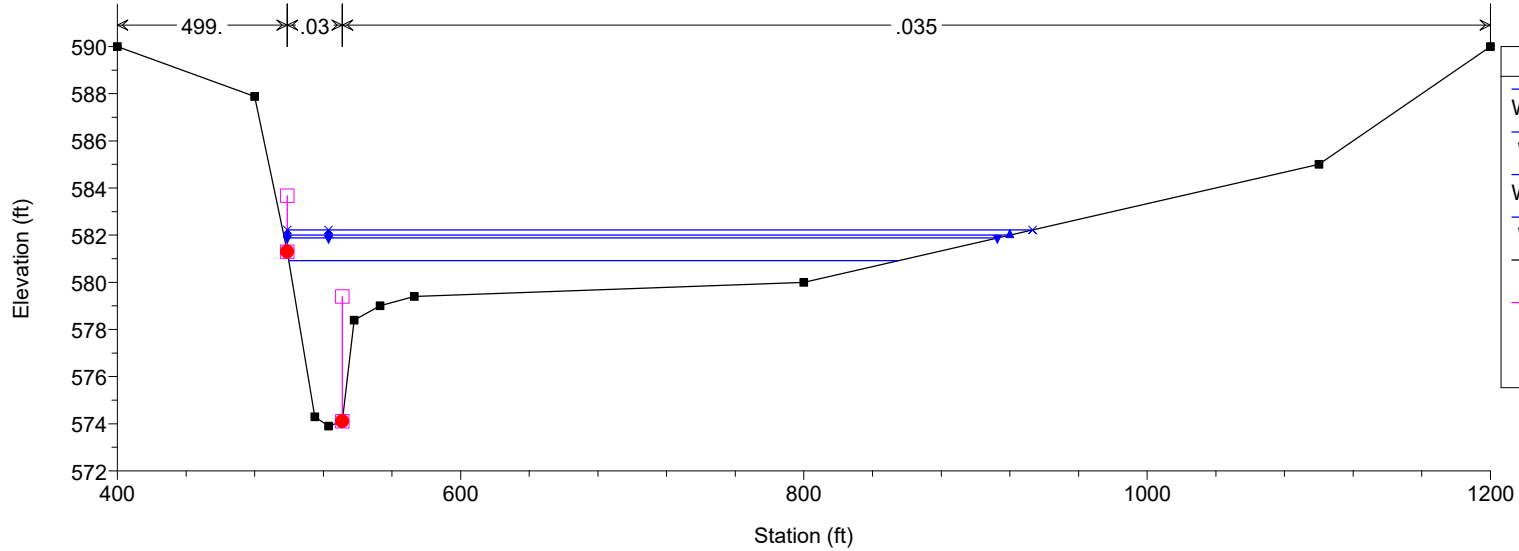




SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 5

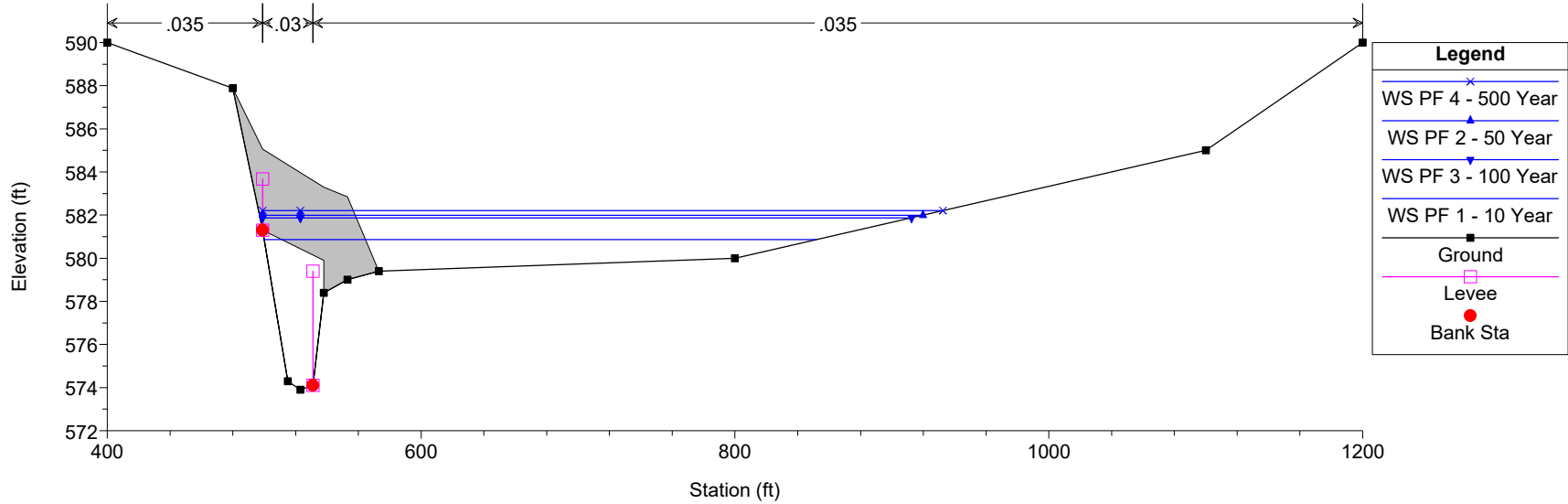


SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 4.21



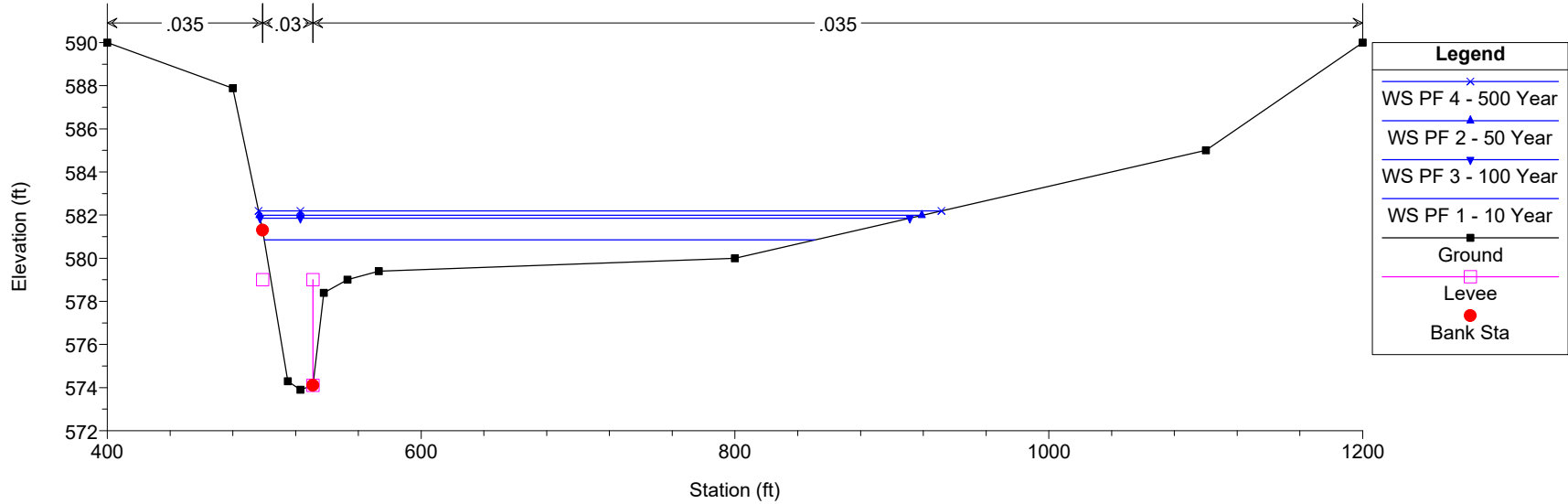
SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024

RS = 4.2 BR

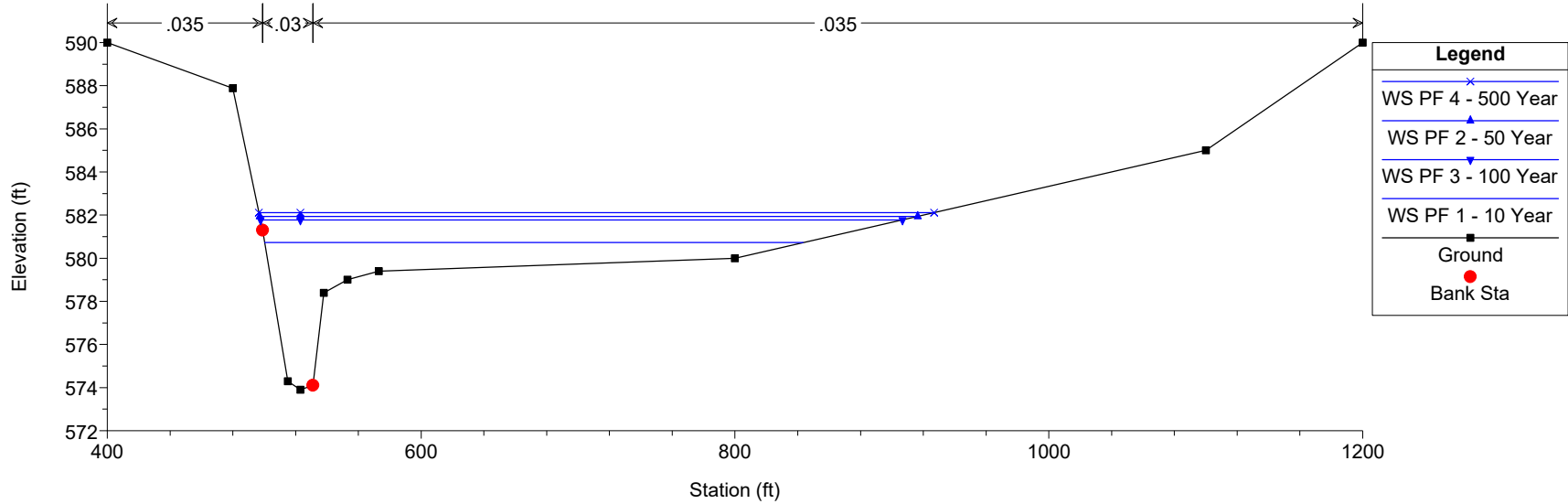


SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024

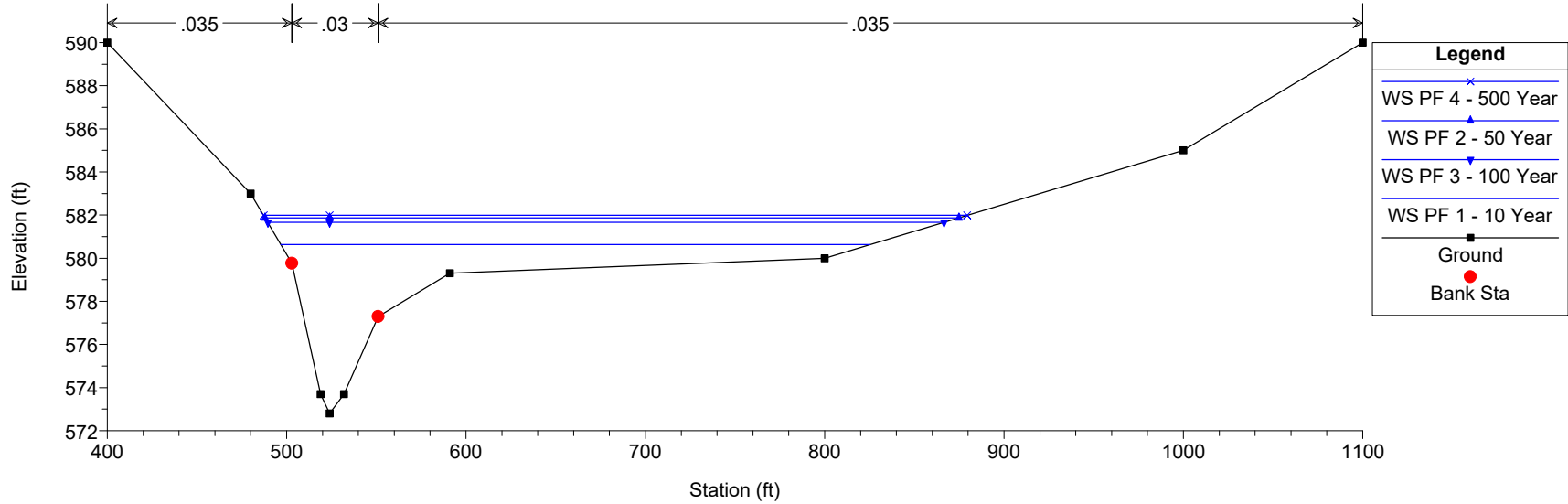
RS = 4.1



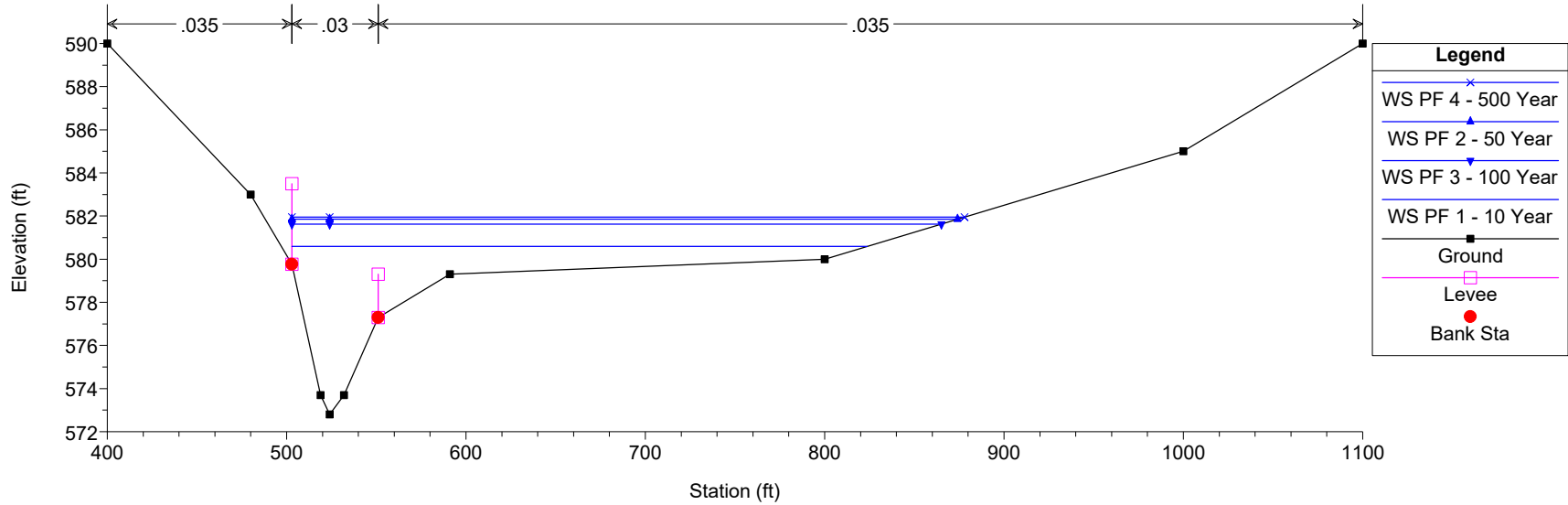
SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 3.9



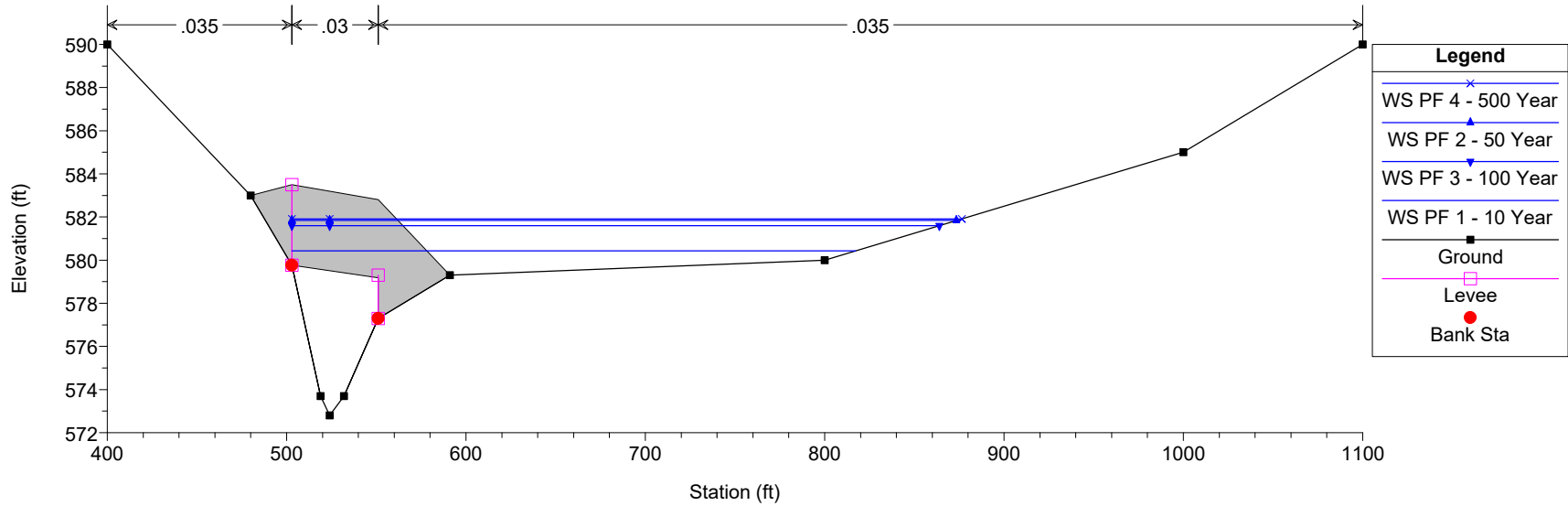
SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 3.8



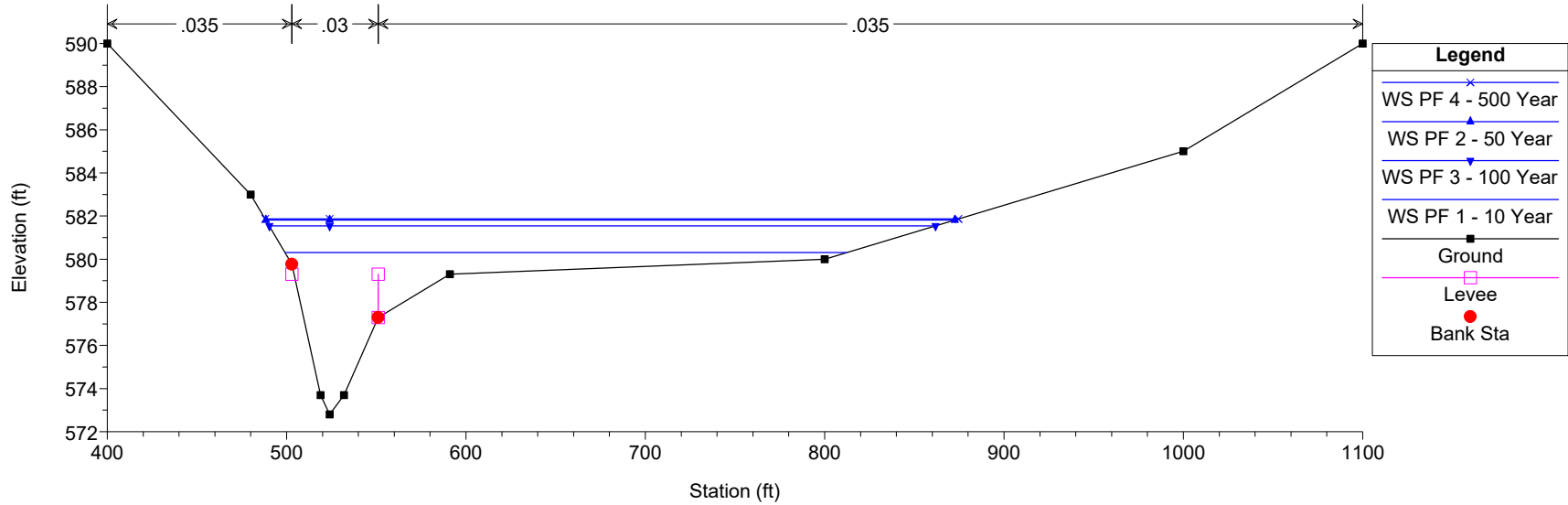
SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 3.71



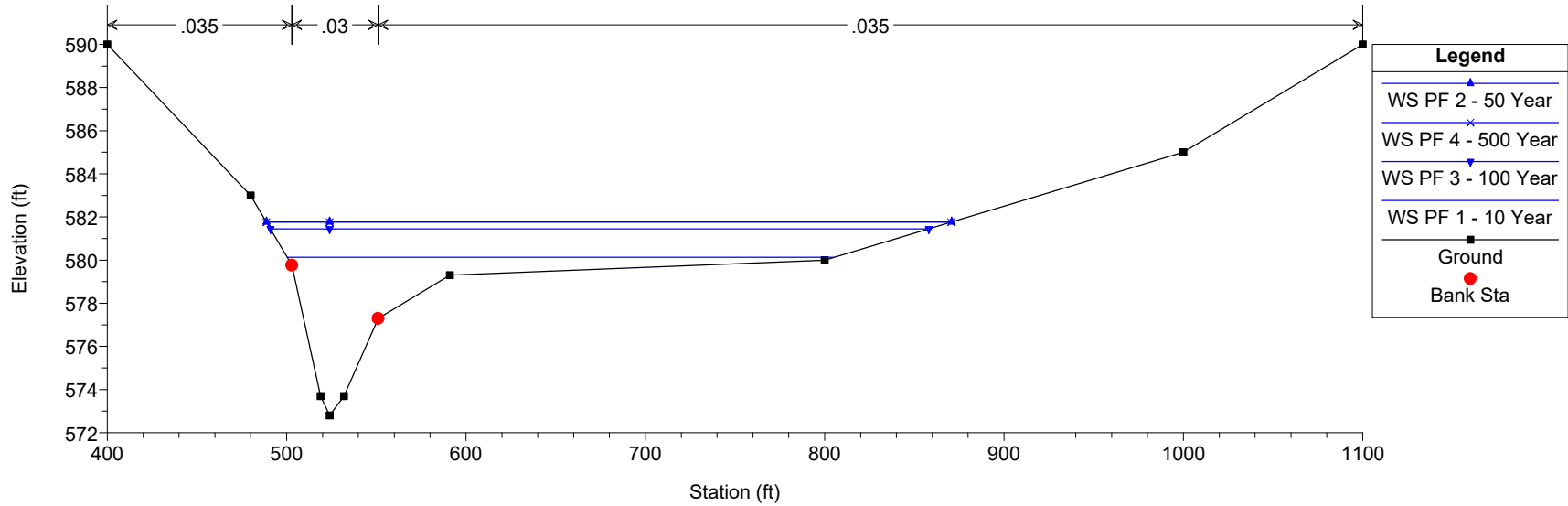
SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 3.7 BR

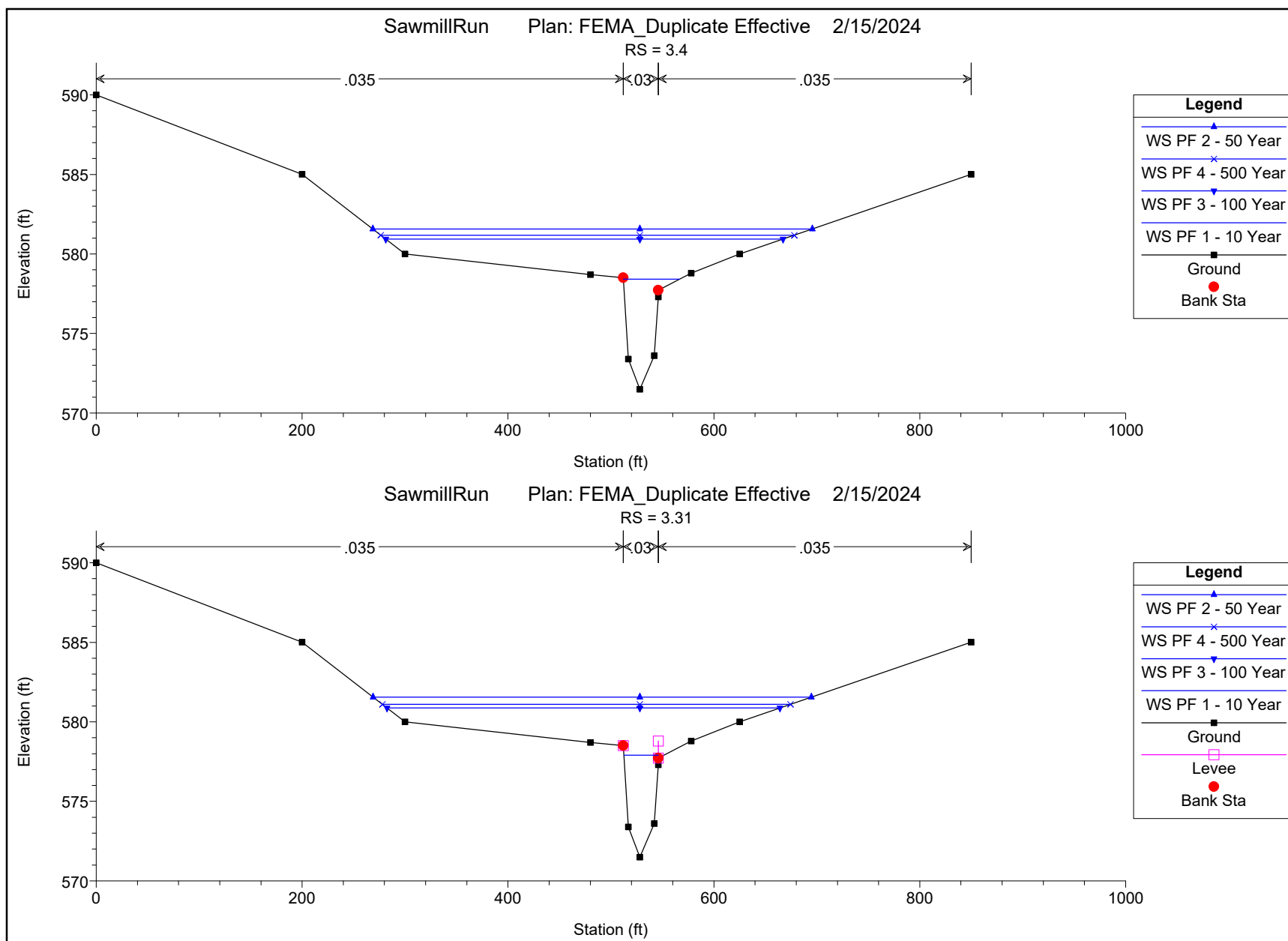


SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 3.6

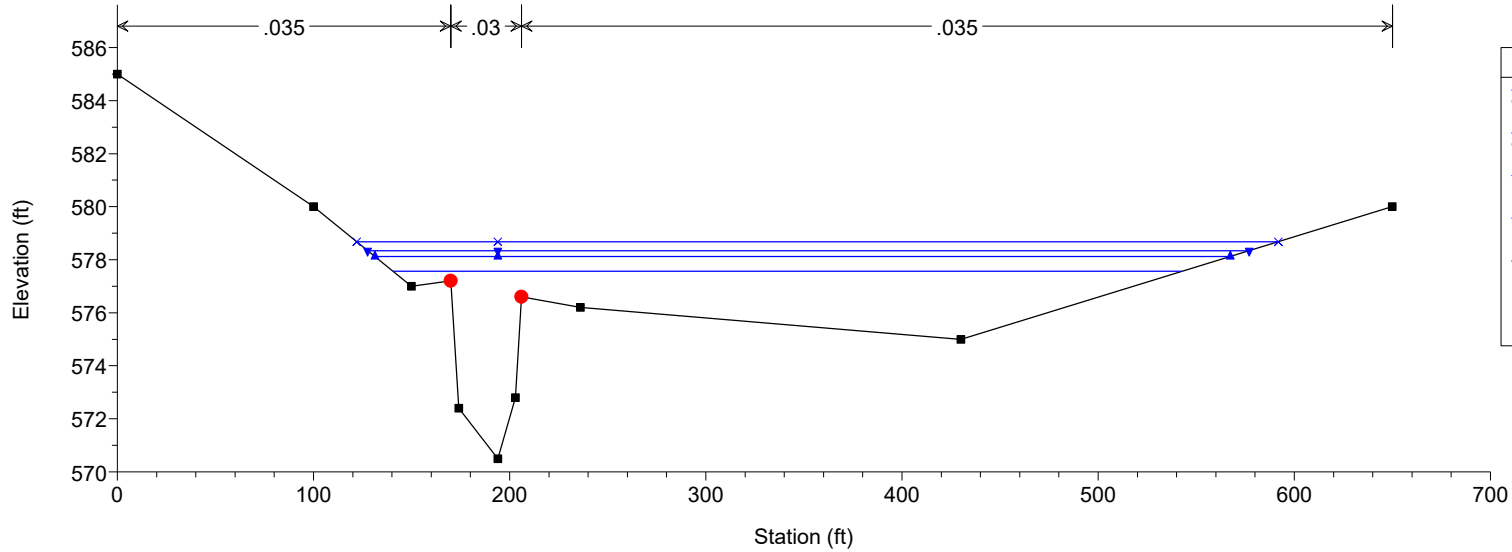


SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 3.5

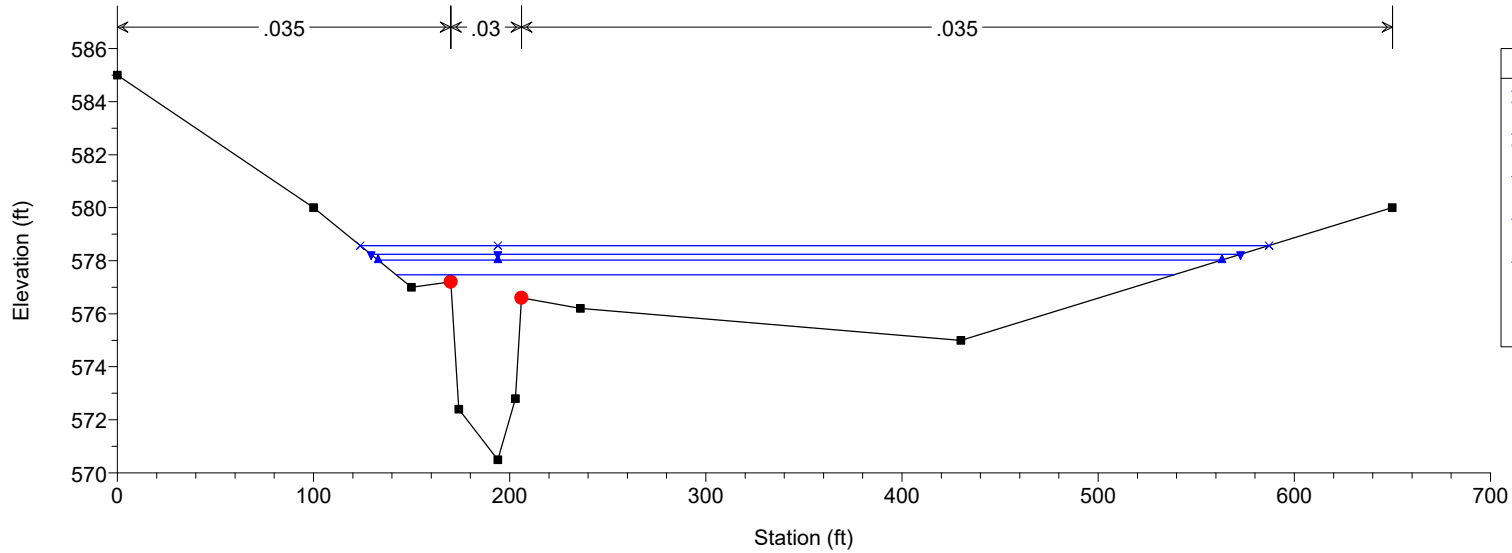


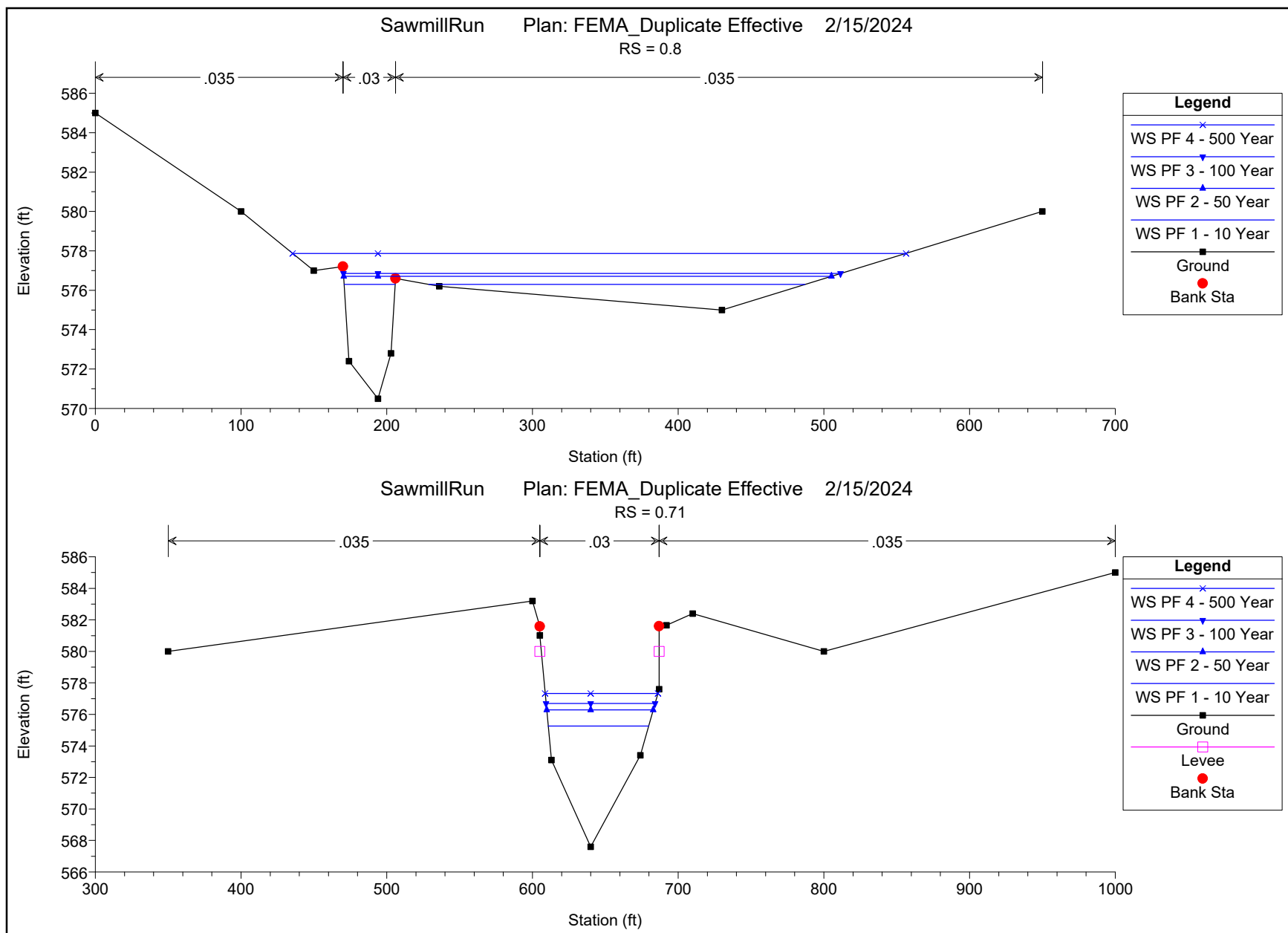


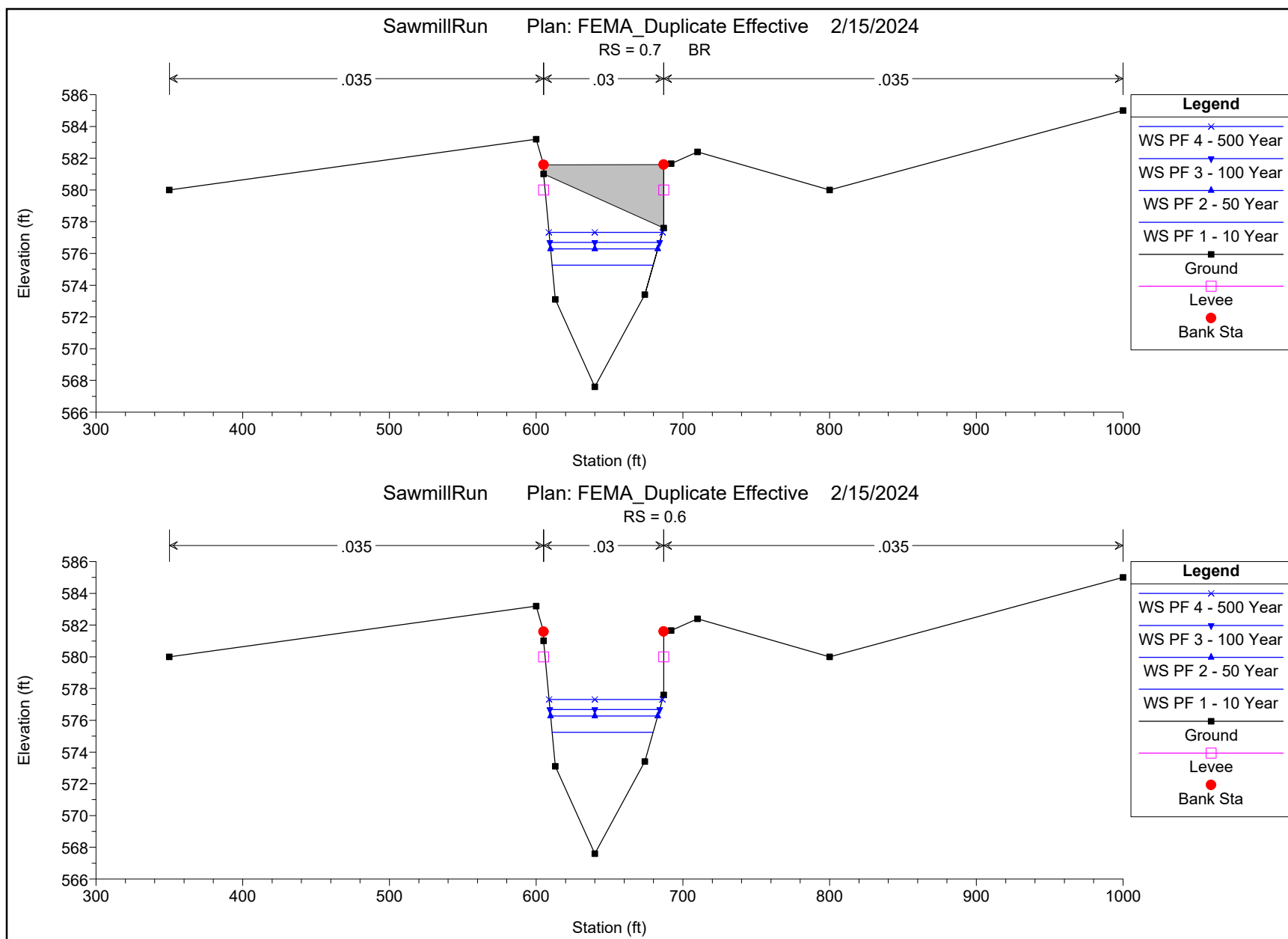
SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 3.1

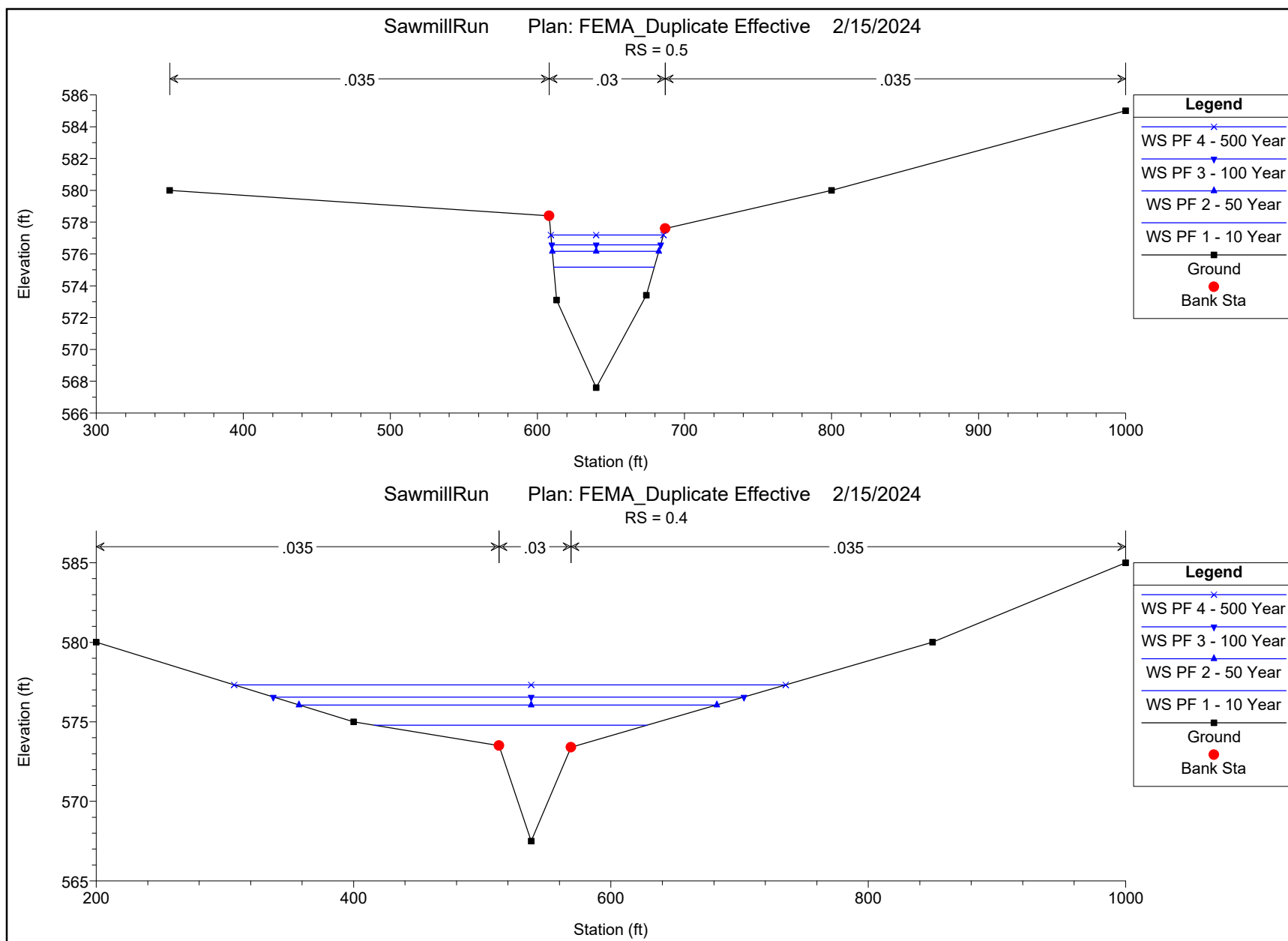


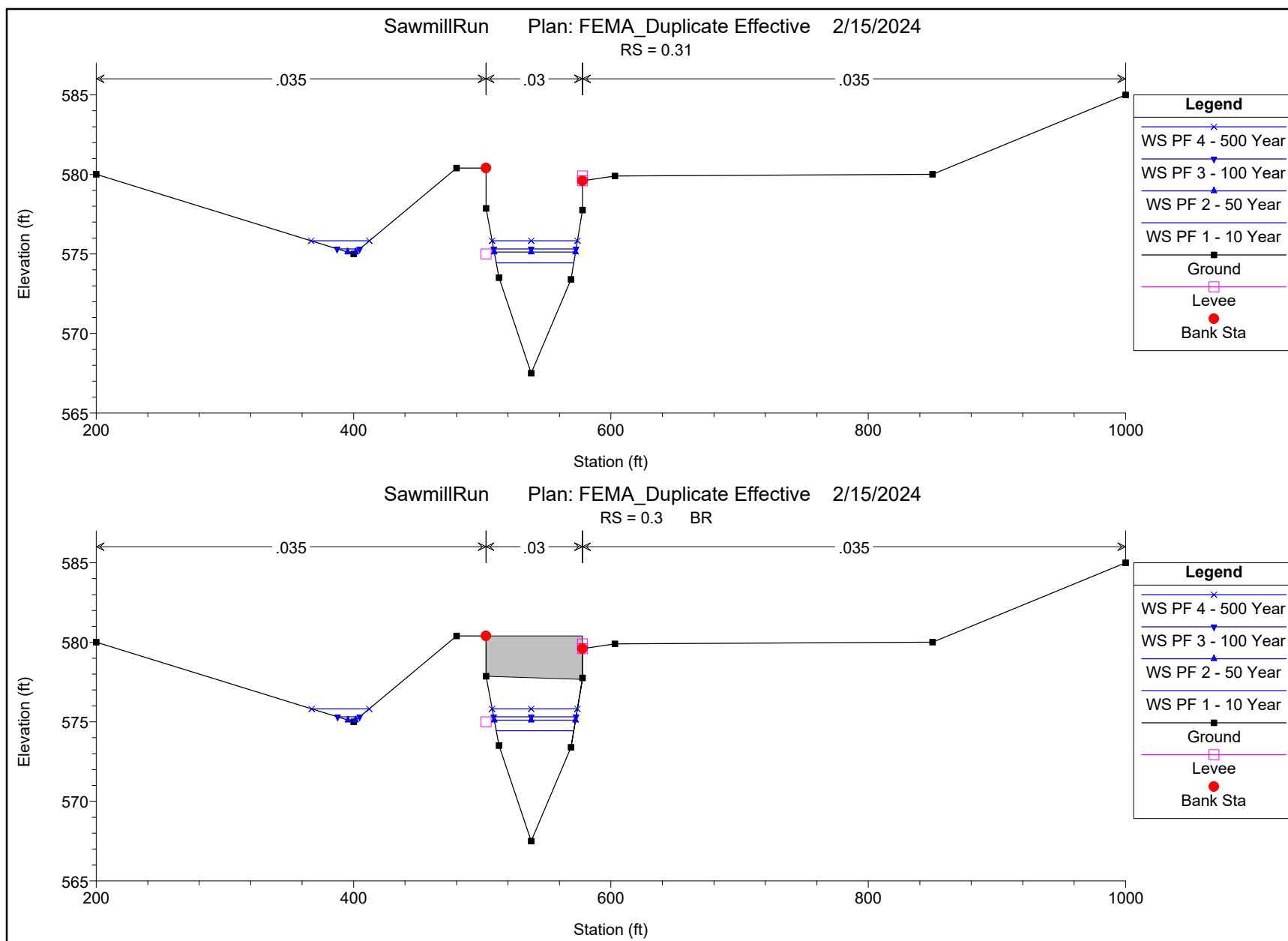
SawmillRun Plan: FEMA_Duplicate Effective 2/15/2024
RS = 3

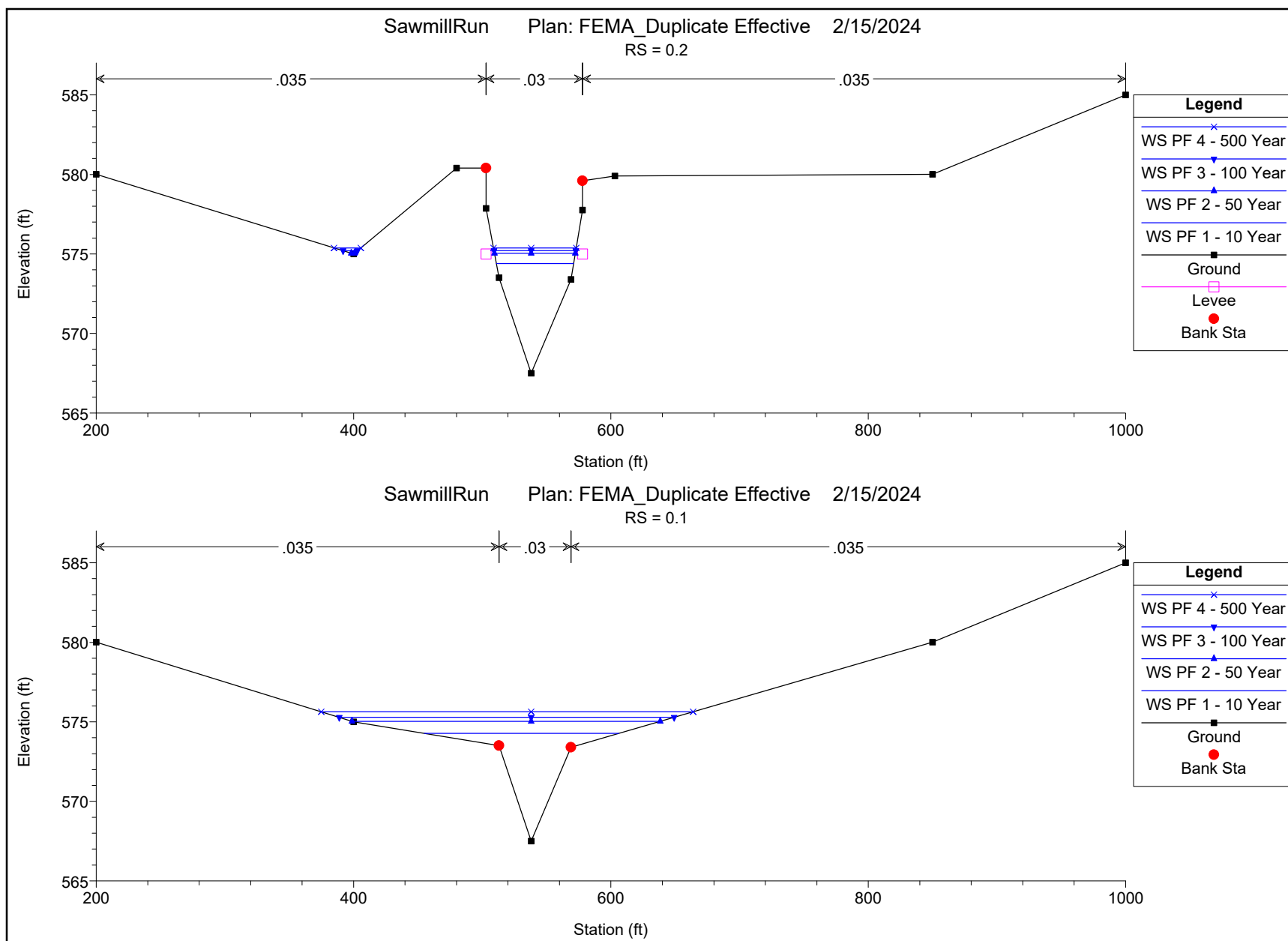












APPENDIX B

HYDRAULIC CALCULATIONS – CORRECTED EFFECTIVE HEC-RAS MODEL

HEC-RAS HEC-RAS 6.3.1 September 2022
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```

X      X  XXXXXX   XXXX      XXXX      XX      XXXX
X      X  X        X  X      X  X      X  X      X
X      X  X        X        X  X      X  X      X
XXXXXXXX XXXX      X        XXX XXXX      XXXXXX   XXXX
X      X  X        X        X  X      X  X      X
X      X  X        X  X      X  X      X  X      X
X      X  XXXXXX   XXXX      X  X      X  X      XXXXX

```

PROJECT DATA

Project Title: SawmillRun
Project File : SawmillRun.prj
Run Date and Time: 2/27/2024 2:32:44 PM

Project in English units

PLAN DATA

Plan Title: FEMA_Corrected Effective
Plan File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.p02

Geometry Title: Sawmill Run - FEMA_CE
Geometry File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.g03

Flow Title : FEMA Flows_Corrected
Flow File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.f02

Plan Summary Information:

Number of: Cross Sections =	31	Multiple Openings =	0
Culverts =	0	Inline Structures =	0
Bridges =	7	Lateral Structures =	0

Computational Information

Water surface calculation tolerance = 0.0001
Critical depth calculation tolerance = 0.01

Maximum number of iterations	=	40
Maximum difference tolerance	=	0.5
Flow tolerance factor	=	0.001

Computation Options

Critical depth computed at all cross sections	
Conveyance Calculation Method:	Between every coordinate point (HEC2 Style)
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

FLOW DATA

Flow Title: FEMA Flows_Corrected
Flow File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.f02

Flow Data (cfs)

River	Reach	RS	PF 1 - 10 Year	PF 2 - 25 Year	PF 3 -
50 Year PF 4 - 100 Year PF 5 - 500 Year					
Sawmill Run	Sawmill Run	7	1354	1750	
2038	2359	2864			

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
Sawmill Run	Sawmill Run	PF 1 - 10 Year	Normal S = 0.00348
Known WS = 573.53			
Sawmill Run	Sawmill Run	PF 2 - 25 Year	Normal S = 0.00348
Known WS = 574.95			
Sawmill Run	Sawmill Run	PF 3 - 50 Year	Normal S = 0.00348
Known WS = 574.29			
Sawmill Run	Sawmill Run	PF 4 - 100 Year	Normal S = 0.00348
Known WS = 574.54			
Sawmill Run	Sawmill Run	PF 5 - 500 Year	Normal S = 0.00348
Known WS = 574.89			

GEOMETRY DATA

Geometry Title: Sawmill Run - FEMA_CE

Geometry File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.g03

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 7

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
600	589.26	732	589.26	806	580.26	812	579.36	829	578.46
846	579.36	849	580.96	869	581.06	940	581.26	1025	589.26
1055	599.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
600	.8	806	.04	849	.08

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	806	849		618 618	618		.1	.3

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.81

INPUT

Description:

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
20	601.26	155	599.26	190	597.26	360	595.26	450	594.65
494	594.16	500	591.06	536	575.16	552	574.76	570	575.46
599	589.86	606	594.16	649	593.86	1100	594.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
20	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		52 52	52		.3	.5

Left Levee Station= 500 Elevation= 592.26

Right Levee Station= 599 Elevation= 592.26

BRIDGE

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.8

INPUT

Description:

Distance from Upstream XS = 1

Deck/Roadway Width = 50

Weir Coefficient = 2.7

Upstream Deck/Roadway Coordinates

num= 13

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
20	601.26	601.26			135	599.26	599.26			190	597.26	597.26		
360	595.26	595.26			450	594.65	594.65			494	594.16	594.16		
500	594.16	591.06			500	594.16	592.82			599	594.16	592.42		
599	594.16	589.86			606	594.16	594.16			649	593.86	593.86		
1100	594.26	594.26												

Upstream Bridge Cross Section Data

Station Elevation Data

num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
20	601.26	155	599.26	190	597.26	360	595.26	450	594.65
494	594.16	500	591.06	536	575.16	552	574.76	570	575.46
599	589.86	606	594.16	649	593.86	1100	594.26		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
20	.035	500	.03	599	.035

Bank	Sta: Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5

Left Levee Station= 500 Elevation= 592.26

Right Levee Station= 599 Elevation= 592.26

Downstream Deck/Roadway Coordinates

num= 13

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
20	601.26	601.26			135	599.26	599.26			190	597.26	597.26		
360	595.26	595.26			450	594.65	594.65			494	594.16	594.16		
500	594.16	591.06			500	594.16	592.82			599	594.16	592.42		
599	594.16	589.86			606	594.16	594.16			649	593.86	593.86		
1100	594.26	594.26												

Downstream Bridge Cross Section Data

Station Elevation Data

num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
20	601.26	155	599.26	190	597.26	360	595.26	450	594.65

494	594.16	500	591.06	536	575.16	552	574.76	570	575.46
599	589.86	606	594.16	649	593.86	1100	594.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
20	.035	500	.03	599	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5
Left Levee		Station=	500	Elevation=	592.26
Right Levee		Station=	599	Elevation=	592.26

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	549.5	Downstream=	549.5
Upstream	num=	2		
Width	Elev	Width	Elev	
6	569.26	6	592.76	
Downstream	num=	2		
Width	Elev	Width	Elev	
6	569.26	6	592.76	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy	
Yarnell	KVal = 1.25

Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters

- Add Friction component to Momentum
- Do not add Weight component to Momentum
- Class B flow critical depth computations use critical depth inside the bridge at the upstream end
- Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 5.7

INPUT

Description:

Station Elevation Data		num=		14					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
20	601.26	155	599.26	190	597.26	360	595.26	450	594.65
494	594.16	500	591.06	536	575.16	552	574.76	570	575.46
599	589.86	606	594.16	649	593.86	1100	594.26		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
20	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		60 60	60		.3	.5
Left Levee		Station=	500	Elevation=	592.26			
Right Levee		Station=	599	Elevation=	592.26			

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 5.6

INPUT

Description:

Station Elevation Data		num=		14					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	601.26	90	599.26	150	597.26	340	595.26	450	594.72
494	593.46	500	590.46	535	574.96	552	574.06	568	575.06
599	590.36	606	593.36	649	594.01	1100	594.26		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		3 3	3		.3	.5

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 5.51

INPUT

Description:

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	601.26	90	599.26	150	597.26	340	595.26	450	594.72
494	593.46	500	590.46	535	574.96	552	574.06	568	575.06
599	590.36	606	593.36	649	594.01	1100	594.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		67 67	67		.3	.5
Left Levee		Station=	500	Elevation=	594.36			
Right Levee		Station=	599	Elevation=	594.01			

BRIDGE

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.5

INPUT

Description:

Distance from Upstream XS = 1

Deck/Roadway Width = 65

Weir Coefficient = 2.7

Upstream Deck/Roadway Coordinates

num=	13								
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	601.26	601.26			90	599.26	599.26		
340	595.26	595.26			450	594.72	594.72		
500	594.36	590.46			500	594.36	593.01		
599	594.26	590.36			606	594.26	593.36		
1100	594.26	594.26							

Upstream Bridge Cross Section Data

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	601.26	90	599.26	150	597.26	340	595.26	450	594.72
494	593.46	500	590.46	535	574.96	552	574.06	568	575.06
599	590.36	606	593.36	649	594.01	1100	594.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5
Left Levee		Station=	500	Elevation=	594.36
Right Levee		Station=	599	Elevation=	594.01

Downstream Deck/Roadway Coordinates

num= 13

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	601.26	601.26			90	599.26	599.26			150	597.26	597.26		
340	595.26	595.26			450	594.72	594.72			494	594.36	593.46		
500	594.36	590.46			500	594.36	593.01			599	594.36	592.66		
599	594.26	590.36			606	594.26	593.36			649	594.01	594.01		
1100	594.26	594.26												

Downstream Bridge Cross Section Data

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	601.26	90	599.26	150	597.26	340	595.26	450	594.72
494	593.46	500	590.46	535	574.96	552	574.06	568	575.06
599	590.36	606	593.36	649	594.01	1100	594.26		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5

Left Levee	Station=	500	Elevation=	582.26
Right Levee	Station=	599	Elevation=	582.26

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 549.5 Downstream= 549.5

Upstream	num=	2
Width	Elev	Width Elev
6	573.26	6 592.76
Downstream	num=	2
Width	Elev	Width Elev
6	573.26	6 592.76

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy		
Yarnell	KVal =	1.25

Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.4

INPUT

Description:

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	601.26	90	599.26	150	597.26	340	595.26	450	594.72
494	593.46	500	590.46	535	574.96	552	574.06	568	575.06
599	590.36	606	593.36	649	594.01	1100	594.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		200 200	200		.3	.5
Left Levee	Station=	500		Elevation=	582.26			
Right Levee	Station=	599		Elevation=	582.26			

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.3

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	595.26	88	579.26	167	579.26	182	575.26	185	573.26
215	573.26	218	575.26	231	579.26	370	581.26	475	583.26
580	595								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	182	.03	218	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	182	218		206 206	206		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 5.21

INPUT

Description:

Station Elevation Data				num=	33				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
85	595.26	165	593.26	280	591.26	335	589.26	416.22	589
445.185	589	488.8	589	493.91	588	494.1	587	494.29	586
494.47	580	494.993	579	495.73	578	501.66	577	503.09	576
504.13	575	509.1	574	521.29	574	527.23	575	528.45	576
529.32	577	530.12	578	531.79	580	532.77	581	534.72	583
537.27	585	537.84	586	538.42	587	539	588	553.77	588
611.79	587	710	587.26	1250	589.26				

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
85	.035	493.91	.03	539	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	493.91	539		56 56	56		.3	.5
Left Levee	Station=		494.29	Elevation=	588.36			
Right Levee	Station=		537.84	Elevation=	587.26			

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 5.2

INPUT

Description:

Distance from Upstream XS = 1
 Deck/Roadway Width = 44
 Weir Coefficient = 2.7
 Upstream Deck/Roadway Coordinates

num= 17														
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
85	595.26				165	593.26				280	591.26			
335	589.26				450	588.62				490.17	588.97			
498.22	588.97				499.99	588.97			570	500	588.72	585.652		

544.32	588.61	585.257	544.33	588.41	570	546.89	588.61
555.24	588.41		573.26	588.12		586	588.06
710	587.26		1250	589.26			

Upstream Bridge Cross Section Data

Station Elevation Data				num=	25				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
85	595.26	165	593.26	280	591.26	335	589.26	450	588.62
494.56	589	500	585	500.33	580	501.03	578	505.44	578
506.69	577	508.23	576	509.96	575	514.69	574	526.66	574
532.54	575	534.56	577	536.2	578	537.28	580	542.61	585
544.34	588	580	587.86	586	588.06	710	587.26	1250	589.26

Manning's n Values				num=	5				
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
85	.035	500	.013	514.69	.03	526.66	.013	537.28	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	542.61		.3	.5
Left Levee		Station=	494.29	Elevation=	588.36
Right Levee		Station=	537.84	Elevation=	587.26

Downstream Deck/Roadway Coordinates

num=				17					
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
85	595.26				165	593.26			
335	589.26				427.68	587.26			
490.24	586.42				498.39	586.33			
500	586.33	583.192			544.9	585.86	582.77		
549.35	585.87				565.33	585.65			
637.21	586				710	587.26			

Downstream Bridge Cross Section Data

Station Elevation Data				num=	20				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
85	595.26	165	593.26	280	591.26	335	589.26	462.06	587
500	586	500.26	585	502.24	583	503.33	582	504.23	581
505.14	580	509.66	575	511.6	574	529.71	574	531.81	575
540.43	580	544.78	585	573.42	585.56	710	587.26	1250	589.26

Manning's n Values				num=	6				
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
85	.035	500	.03	500.26	.013	509.66	.03	531.81	.013
544.78	.035								

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500.26	544.78		.3	.5
Left Levee		Station=	487.25	Elevation=	585.26
Right Levee		Station=	576	Elevation=	585.26

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins =
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
 inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.1

INPUT

Description:

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
85	595.26	165	593.26	280	591.26	335	589.26	401.8	588
428.09	587	456.48	586	482.21	585	487.25	584	489.46	583
491.47	582	493.48	581	495.48	580	497.5	579	499.34	578
501.17	577	503	576	504.97	575	508.51	574	526.36	574
528.23	575	529.9	576	532.04	577	536.31	578	540.71	579
541.05	580	541.41	583	545.71	583	552.28	583	572.05	584
618.83	585	765.46	586	1250	589.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
85	.035	482.21	.03	618.83	.035

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	482.21	618.83	4	4	4			
Left Levee	Station=	487.25	Elevation=	585.26				
Right Levee	Station=	576	Elevation=	585.26				

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.05

INPUT

Description:

Station Elevation Data	num=	33
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
85 595.15 165 593.15 280 591.15 335 589.15 365.44 589		
428.95 588 447.75 587 458.51 586 481.08 585 485.25 584		
487.3 583 489.31 582 491.32 581 493.58 580 495.88 579		
498.18 578 500.48 577 502.75 576 508.59 575 526.11 574		
528.31 575 530.01 576 532.06 577 535.55 578 539.48 579		
542.34 580 542.46 581 587.98 582 604.45 583 620.3 584		
652.77 585 778.7 586 1250 589.15		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
85 .035 487.3 .03 604.45 .035		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff	Contr.	Expan.
487.3	604.45	34	34		.3	.5
Left Levee	Station=	487.3	Elevation=	584.26		
Right Levee	Station=	576	Elevation=	584.26		

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5

INPUT

Description:

Station Elevation Data	num=	29
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
-15.4 593 -1.92 592 11.42 591 24.76 590 35.96 589		
45.28 588 54.6 587 63.92 586 66.44 585 77.97 580		
83.88 577 86.89 576 90.09 575 93.3 574 113.01 574		
114.87 575 119.15 577 126.91 578 140.56 579 221.28 579		
251.7 578 265.4 579 284 580 333.84 585 377.02 586		
441.69 586 450.26 585 500 584.26 650 584.26		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
-15.4 .035 77.97 .03 284 .035		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff	Contr.	Expan.
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77.97	284	23	23	23	.3	.5
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CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 4.21

INPUT

Description:

Station Elevation Data				num=	12						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	587.14	499	580.56	515	573.56	523	573.16		
531	573.36	538	577.66	553	578.26	573	578.66	800	579.26		
1100	584.26	1200	589.26								

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
400	499	499	.03	531	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	499	531		10 10	10		.3	.5
Left Levee	Station=		499	Elevation=	582.93			
Right Levee	Station=		531	Elevation=	578.66			

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 4.1

INPUT

Description:

Station Elevation Data				num=	12						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	587.14	499	580.56	515	573.56	523	573.16		
531	573.36	538	577.66	553	578.26	573	578.66	800	579.26		
1100	584.26	1200	589.26								

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
400	.035	499	.03	531	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	499	531		50 50	50		.3	.5
Left Levee	Station=		499	Elevation=	578.26			
Right Levee	Station=		531	Elevation=	578.26			

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.9

INPUT

Description:

Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	587.14	499	580.56	515	573.56	523	573.16
531	573.36	538	577.66	553	578.26	573	578.66	800	579.26
1100	584.26	1200	589.26						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	499	.03	531	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	499	531		160 160	160		.1	.3

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.8

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	582.26	503	579.02	519	572.96	524	572.06
532	572.96	551	576.56	591	578.56	800	579.26	1000	584.26
1100	589.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	551		49 49	49		.3	.5

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.71

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-----	------	-----	------	-----	------	-----	------	-----	------

num=9														
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord

400	589.26	589.26	480	582.26	582.26	503	582.76	579.02
551	582.06	578.44	551	582.06	576.56	591	578.56	578.56
800	579.26	579.26	1000	584.26	584.26	1100	589.26	589.26

Downstream Bridge Cross Section Data

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	582.26	503	579.02	519	572.96	524	572.06
532	572.96	551	576.56	591	578.56	800	579.26	1000	584.26
1100	589.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	503	551		.3	.5

Left Levee Station= 503 Elevation= 578.56

Right Levee Station= 551 Elevation= 578.56

Upstream Embankment side slope = 0 horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins =

Energy head used in spillway design =

Spillway height used in design =

Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .8

Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.6

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	582.26	503	579.02	519	572.96	524	572.06
532	572.96	551	576.56	591	578.56	800	579.26	1000	584.26
1100	589.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank	Sta: Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	551		92 92	92		.3	.5
Left Levee	Station=	503		Elevation=	578.56			
Right Levee	Station=	551		Elevation=	578.56			

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.5

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	582.26	503	579.02	519	572.96	524	572.06
532	572.96	551	576.56	591	578.56	800	579.26	1000	584.26
1100	589.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank	Sta: Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	551		540 540	540		.1	.3

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.4

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	589.26	200	584.26	300	579.26	480	577.96	512	577.76
517	572.66	528	570.76	542	572.86	546	576.56	546	576.98
578	578.06	625	579.26	850	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	512	.03	546	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	512	546		48 48	48		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.31

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	589.26	200	584.26	300	579.26	480	577.96	512	577.76
517	572.66	528	570.76	542	572.86	546	576.56	546	576.98
578	578.06	625	579.26	850	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	512	.03	546	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	512	546		10 10	10		.3	.5
Left Levee	Station=	512	Elevation=	577.76				
Right Levee	Station=	546	Elevation=	578.06				

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.3

INPUT

Description:

Distance from Upstream XS = 1
 Deck/Roadway Width = 8
 Weir Coefficient = 2.8
 Upstream Deck/Roadway Coordinates

num= 11

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	589.26	589.26			200	584.26	584.26			300	579.26	579.26		

486	577.96	577.96	512	577.76	577.76	512	580.76	577.76
546	580.26	576.98	546	576.98	576.98	578	578.06	578.06
625	579.26	579.26	850	584.26	584.26			

Upstream Bridge Cross Section Data

Station Elevation Data						num=	13		
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	589.26	200	584.26	300	579.26	480	577.96	512	577.76
517	572.66	528	570.76	542	572.86	546	576.56	546	576.98
578	578.06	625	579.26	850	584.26				

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
0	.035	512	.03	546	.035		

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	512	546		.3	.5
Left Levee		Station=	512	Elevation=	577.76
Right Levee		Station=	546	Elevation=	578.06

Downstream Deck/Roadway Coordinates

num= 11														
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	589.26	589.26			200	584.26	584.26			300	579.26	579.26		
486	577.96	577.96			512	577.76	577.76			512	580.76	577.76		
546	580.26	576.98			546	576.98	576.98			578	578.06	578.06		
625	579.26	579.26			850	584.26	584.26							

Downstream Bridge Cross Section Data

Station Elevation Data						num=	13		
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	589.26	200	584.26	300	579.26	480	577.96	512	577.76
517	572.66	528	570.76	542	572.86	546	576.56	546	576.98
578	578.06	625	579.26	850	584.26				

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
0	.035	512	.03	546	.035		

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	512	546		.3	.5
Left Levee		Station=	512	Elevation=	577.26
Right Levee		Station=	546	Elevation=	577.26

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	
Energy head used in spillway design	=	
Spillway height used in design	=	

Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .8

Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth

inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 3.2

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	589.26	200	584.26	300	579.26	480	577.96	512	577.76
517	572.66	528	570.76	542	572.86	546	576.56	546	576.98
578	578.06	625	579.26	850	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	512	.03	546	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	512	546		100 100	100	.3	.5
Left Levee		Station=	512	Elevation=	577.26		
Right Levee		Station=	546	Elevation=	577.26		

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 3.1

Description:

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	584.26	100	579.26	150	576.26	170	576.46	174	571.66
194	569.76	203	572.06	206	575.86	236	575.46	430	574.26
650	579.26								

Sta	n	Val	Sta	n	Val	Sta	n	Val
0		.035	170		.03	206		.035

CROSS SECTION

Description:

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	584.26	100	579.26	150	576.26	170	576.46	174	571.66
194	569.76	203	572.06	206	575.86	236	575.46	430	574.26
650	579.26								

Sta	n	Val	Sta	n	Val	Sta	n	Val
0		.035	170		.03	206		.035

CROSS SECTION

Description:

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	584.26	100	579.26	150	576.26	170	576.46	174	571.66
194	569.76	203	572.06	206	575.86	236	575.46	430	574.26
650	579.26								

Manning's n Values	num=	3
Sta n Val	Sta n Val	Sta n Val
0 .035	170 .03	206 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	170	206		40 40	40		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.71

INPUT

Description:

Station Elevation Data	num=	13
Sta Elev	Sta Elev	Sta Elev
350 579.26	600 582.45	605 580.84
640 566.86	674 572.66	687 576.86
710 581.66	800 579.26	1000 584.26

Manning's n Values	num=	3
Sta n Val	Sta n Val	Sta n Val
350 .035	605 .03	687 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	605	687		10 10	10		.3	.5
Left Levee	Station=	605	Elevation=	579.26				
Right Levee	Station=	687	Elevation=	579.26				

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.7

INPUT

Description:

Distance from Upstream XS = 1
 Deck/Roadway Width = 8
 Weir Coefficient = 2.8

Upstream Deck/Roadway Coordinates

num=	10
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
350 579.26 579.26	600 582.45 582.45
605 580.84 580.26	687 580.86 576.86
692 580.91 580.91	710 581.66 581.66
1000 584.26 584.26	800 579.26 579.26

Upstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	579.26	600	582.45	605	580.84	605	580.26	613	572.36
640	566.86	674	572.66	687	576.86	687	580.86	692	580.91
710	581.66	800	579.26	1000	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
350	.035	605	.03	687	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	605	687		.3	.5

Left Levee	Station=	605	Elevation=	579.26
Right Levee	Station=	687	Elevation=	579.26

Downstream Deck/Roadway Coordinates

num= 10											
Sta	Hi	Cord	Lo Cord	Sta	Hi	Cord	Lo Cord	Sta	Hi	Cord	Lo Cord
350	579.26	579.26		600	582.45	582.45		603	580.84	580.84	
605	580.84	580.26		687	580.86	576.86		687	580.86	580.86	
692	580.91	580.91		710	581.66	581.66		800	579.26	579.26	
1000	584.26	584.26									

Downstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	579.26	600	582.45	605	580.84	605	580.26	613	572.36
640	566.86	674	572.66	687	576.86	687	580.86	692	580.91
710	581.66	800	579.26	1000	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
350	.035	605	.03	687	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	605	687		.3	.5

Left Levee	Station=	605	Elevation=	579.26
Right Levee	Station=	687	Elevation=	579.26

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	580.84
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =
Submerged Inlet + Outlet Cd = .8
Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.6

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	579.26	600	582.45	605	580.84	605	580.26	613	572.36
640	566.86	674	572.66	687	576.86	687	580.86	692	580.91
710	581.66	800	579.26	1000	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
350	.035	605	.03	687	.035

Bank	Sta: Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	605	687		50 50	50		.3	.5
Left Levee		Station=	605	Elevation=	579.26			
Right Levee		Station=	687	Elevation=	579.26			

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.5

INPUT

Description:

Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	579.26	608	577.66	613	572.36	640	566.86	674	572.66

687	576.86	800	579.26	1000	584.26
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Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
350	.035	608	.03	687	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	608	687		250	250		.1	.3

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 0.4

INPUT

Description:

Station Elevation Data		num=		7					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	579.26	400	574.26	513	572.76	538	566.76	569	572.66
850	579.26	1000	584.26						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
200	.035	513	.03	569	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	513	569		40	40		.3	.5

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 0.31

INPUT

Description:

Station Elevation Data		num=		13					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	579.26	400	574.26	480	579.66	503	579.66	503	577.13
513	572.76	538	566.76	569	572.66	578	577.02	578	578.86
603	579.16	850	579.26	1000	584.26				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
200	.035	503	.03	578	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	578		10	10		.3	.5

Left Levee	Station=	503	Elevation=	574.26
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Right Levee Station= 578 Elevation= 579.16

BRIDGE

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.3

INPUT

Description:

Distance from Upstream XS = 1

Deck/Roadway Width = 8

Weir Coefficient = 2.8

Upstream Deck/Roadway Coordinates

num= 10

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
200	579.26	579.26			400	574.26	574.26			480	579.66	579.66		
503	579.66	579.66			503	579.66	577.13			578	579.66	576.93		
578	578.86	578.86			603	579.16	579.16			850	579.26	579.26		
1000	584.26	584.26												

Upstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	579.26	400	574.26	480	579.66	503	579.66	503	577.13
513	572.76	538	566.76	569	572.66	578	577.02	578	578.86
603	579.16	850	579.26	1000	584.26				

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
200	.035	503	.03	578	.035

Bank	Sta: Left	Right	Coeff	Contr.	Expan.
	503	578		.3	.5

Left Levee Station= 503 Elevation= 574.26

Right Levee Station= 578 Elevation= 579.16

Downstream Deck/Roadway Coordinates

num= 10

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
200	579.26	579.26			400	574.26	574.26			480	579.66	579.66		
503	579.66	579.66			503	579.66	577.13			578	579.66	576.93		
578	578.86	578.86			603	579.16	579.16			850	579.26	579.26		
1000	584.26	584.26												

Downstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	579.26	400	574.26	480	579.66	503	579.66	503	577.13
513	572.76	538	566.76	569	572.66	578	577.02	578	578.86

603 579.16 850 579.26 1000 584.26

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
200 .035 503 .03 578 .035

Bank Sta: Left Right Coeff Contr. Expan.
503 578 .3 .5
Left Levee Station= 503 Elevation= 574.26
Right Levee Station= 578 Elevation= 574.26

Upstream Embankment side slope = horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins = 577.13
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =
Submerged Inlet + Outlet Cd = .8
Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.2

INPUT

Description:

Station Elevation Data num= 13
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
200 579.26 400 574.26 480 579.66 503 579.66 503 577.13
513 572.76 538 566.76 569 572.66 578 577.02 578 578.86

603	579.16	850	579.26	1000	584.26
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Manning's n Values			num=	3
Sta	n Val	Sta	n Val	Sta n Val
200	.035	503	.03	578 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	578		50 50	50		.3	.5
Left Levee	Station=		503	Elevation=	574.26			
Right Levee	Station=		578	Elevation=	574.26			

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.1

INPUT

Description:

Station Elevation Data			num=	7
Sta	Elev	Sta	Elev	Sta Elev Sta Elev Sta Elev
200	579.26	400	574.26	513 572.76 538 566.76 569 572.66
850	579.26	1000	584.26	

Manning's n Values			num=	3
Sta	n Val	Sta	n Val	Sta n Val
200	.035	513	.03	569 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	513	569		0 0	0		.1	.3

SUMMARY OF MANNING'S N VALUES

River:Sawmill Run

Reach	River Sta.	n1	n2	n3
Sawmill Run	7	.8	.04	.08
Sawmill Run	5.81	.035	.03	.035
Sawmill Run	5.8	Bridge		
Sawmill Run	5.7	.035	.03	.035
Sawmill Run	5.6	.035	.03	.035
Sawmill Run	5.51	.035	.03	.035
Sawmill Run	5.5	Bridge		
Sawmill Run	5.4	.035	.03	.035
Sawmill Run	5.3	.035	.03	.035
Sawmill Run	5.21	.035	.03	.035
Sawmill Run	5.2	Bridge		

Sawmill Run	5.1	.035	.03	.035
Sawmill Run	5.05	.035	.03	.035
Sawmill Run	5	.035	.03	.035
Sawmill Run	4.21	499	.03	.035
Sawmill Run	4.1	.035	.03	.035
Sawmill Run	3.9	.035	.03	.035
Sawmill Run	3.8	.035	.03	.035
Sawmill Run	3.71	.035	.03	.035
Sawmill Run	3.7	Bridge		
Sawmill Run	3.6	.035	.03	.035
Sawmill Run	3.5	.035	.03	.035
Sawmill Run	3.4	.035	.03	.035
Sawmill Run	3.31	.035	.03	.035
Sawmill Run	3.3	Bridge		
Sawmill Run	3.2	.035	.03	.035
Sawmill Run	3.1	.035	.03	.035
Sawmill Run	3	.035	.03	.035
Sawmill Run	0.8	.035	.03	.035
Sawmill Run	0.71	.035	.03	.035
Sawmill Run	0.7	Bridge		
Sawmill Run	0.6	.035	.03	.035
Sawmill Run	0.5	.035	.03	.035
Sawmill Run	0.4	.035	.03	.035
Sawmill Run	0.31	.035	.03	.035
Sawmill Run	0.3	Bridge		
Sawmill Run	0.2	.035	.03	.035
Sawmill Run	0.1	.035	.03	.035

SUMMARY OF REACH LENGTHS

River: Sawmill Run

Reach	River Sta.	Left	Channel	Right
Sawmill Run	7	618	618	618
Sawmill Run	5.81	52	52	52
Sawmill Run	5.8	Bridge		
Sawmill Run	5.7	60	60	60
Sawmill Run	5.6	3	3	3
Sawmill Run	5.51	67	67	67
Sawmill Run	5.5	Bridge		
Sawmill Run	5.4	200	200	200
Sawmill Run	5.3	206	206	206
Sawmill Run	5.21	56	56	56
Sawmill Run	5.2	Bridge		
Sawmill Run	5.1	4	4	4
Sawmill Run	5.05	34	34	34

Sawmill Run	5	23	23	23
Sawmill Run	4.21	10	10	10
Sawmill Run	4.1	50	50	50
Sawmill Run	3.9	160	160	160
Sawmill Run	3.8	49	49	49
Sawmill Run	3.71	18	18	18
Sawmill Run	3.7	Bridge		
Sawmill Run	3.6	92	92	92
Sawmill Run	3.5	540	540	540
Sawmill Run	3.4	48	48	48
Sawmill Run	3.31	10	10	10
Sawmill Run	3.3	Bridge		
Sawmill Run	3.2	100	100	100
Sawmill Run	3.1	150	150	150
Sawmill Run	3	600	600	600
Sawmill Run	0.8	40	40	40
Sawmill Run	0.71	10	10	10
Sawmill Run	0.7	Bridge		
Sawmill Run	0.6	50	50	50
Sawmill Run	0.5	250	250	250
Sawmill Run	0.4	40	40	40
Sawmill Run	0.31	10	10	10
Sawmill Run	0.3	Bridge		
Sawmill Run	0.2	50	50	50
Sawmill Run	0.1	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Sawmill Run

Reach	River Sta.	Contr.	Expan.
Sawmill Run	7	.1	.3
Sawmill Run	5.81	.3	.5
Sawmill Run	5.8	Bridge	
Sawmill Run	5.7	.3	.5
Sawmill Run	5.6	.3	.5
Sawmill Run	5.51	.3	.5
Sawmill Run	5.5	Bridge	
Sawmill Run	5.4	.3	.5
Sawmill Run	5.3	.3	.5
Sawmill Run	5.21	.3	.5
Sawmill Run	5.2	Bridge	
Sawmill Run	5.1	.3	.5
Sawmill Run	5.05	.3	.5
Sawmill Run	5	.3	.5
Sawmill Run	4.21	.3	.5

Sawmill Run	4.1	.3	.5
Sawmill Run	3.9	.1	.3
Sawmill Run	3.8	.3	.5
Sawmill Run	3.71	.3	.5
Sawmill Run	3.7	Bridge	
Sawmill Run	3.6	.3	.5
Sawmill Run	3.5	.1	.3
Sawmill Run	3.4	.3	.5
Sawmill Run	3.31	.3	.5
Sawmill Run	3.3	Bridge	
Sawmill Run	3.2	.3	.5
Sawmill Run	3.1	.1	.3
Sawmill Run	3	.1	.3
Sawmill Run	0.8	.3	.5
Sawmill Run	0.71	.3	.5
Sawmill Run	0.7	Bridge	
Sawmill Run	0.6	.3	.5
Sawmill Run	0.5	.1	.3
Sawmill Run	0.4	.3	.5
Sawmill Run	0.31	.3	.5
Sawmill Run	0.3	Bridge	
Sawmill Run	0.2	.3	.5
Sawmill Run	0.1	.1	.3

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : FEMA_CE

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 1 - 10 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 2 - 25 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 3 - 50 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 4 - 100 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream

conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 5 - 500 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 4 - 100 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 5 - 500 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 1 - 10 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 1 - 10 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 2 - 25 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 2 - 25 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 3 - 50 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 3 - 50 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 4 - 100 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 5 - 500 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 1 - 10 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 1 - 10 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 2 - 25 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 2 - 25 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 3 - 50 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 3 - 50 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 4 - 100 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 5 - 500 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 1 - 10 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 2 - 25 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 3 - 50 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 4 - 100 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 5 - 500 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 1 - 10 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 2 - 25 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 3 - 50 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 4 - 100 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 5 - 500 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 1 - 10 Year Upstream

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 1 - 10 Year Downstream

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 2 - 25 Year

Warning: The flow regime calculated by the momentum equation shows class B flow. For the best solution, this profile should be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 2 - 25 Year Upstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 2 - 25 Year Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 3 - 50 Year

Warning: The flow regime calculated by the momentum equation shows class B flow. For the best solution, this profile should be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 3 - 50 Year Upstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 3 - 50 Year Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 4 - 100 Year

Warning: The flow regime calculated by the momentum equation shows class B flow. For the best solution, this profile should be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 4 - 100 Year Upstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 4 - 100 Year Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 5 - 500 Year

Warning: The flow regime calculated by the momentum equation shows class B flow. For the best solution, this profile should be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 5 - 500 Year Upstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 5 - 500 Year Downstream

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that

there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 3 - 50 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 4 - 100 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 1 - 10 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 2 - 25 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 3 - 50 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 4 - 100 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 5 - 500 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 1 - 10 Year

Warning: The pure energy/weir calculations did not converge within the given number of iterations.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 1 - 10 Year
Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration

with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 1 - 10 Year Downstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the energy is based on critical depth over the weir.

The water surface has been projected.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 2 - 25 Year

Warning: The pure energy/weir calculations did not converge within the given number of iterations.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 2 - 25 Year Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from

the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 2 - 25 Year Downstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from

the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 3 - 50 Year

Warning: The pure energy/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 3 - 50 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 3 - 50 Year Downstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 4 - 100 Year

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 5 - 500 Year

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.6 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.6 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.6 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.5 Profile: PF 1 - 10 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 1 - 10 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 1 - 10 Year

Warning: The pure energy/weir calculations did not converge within the given number of iterations.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 1 - 10 Year
Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 1 - 10 Year
Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 2 - 25 Year

Warning: The pure energy/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is below the minimum elevation for pressure flow. The sluice gate equations were used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 2 - 25 Year
Upstream

Warning:Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 2 - 25 Year Downstream

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy are based on critical depth over the weir.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 3 - 50 Year

Warning:The pure energy/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is below the minimum elevation for pressure flow. The sluice gate equations were used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 3 - 50 Year Upstream

Warning:Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 3 - 50 Year Downstream

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the

energy is based on critical depth over the weir.

The water surface has been projected.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 4 - 100 Year

Note: The downstream water surface is below the minimum elevation for pressure flow. The sluice gate equations were used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 5 - 500 Year

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 1 - 10 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 2 - 25 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 3 - 50 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 4 - 100 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 5 - 500 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 2 - 25 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 3 - 50 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 4 - 100 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 5 - 500 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 1 - 10 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:Divided flow computed for this cross-section.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 2 - 25 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:Divided flow computed for this cross-section.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 3 - 50 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:The conveyance ratio (upstream conveyance divided by downstream

conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 4 - 100 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 1 - 10 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 1 - 10 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 2 - 25 Year

Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 2 - 25 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 3 - 50 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 3 - 50 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 4 - 100 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 5 - 500 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.5 Profile: PF 4 - 100 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.5 Profile: PF 5 - 500 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 2 - 25 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 3 - 50 Year
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 4 - 100 Year
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 5 - 500 Year
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 1 - 10 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 2 - 25 Year
Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 3 - 50 Year
Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 4 - 100 Year
Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 5 - 500 Year
Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 1 - 10 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 1 - 10 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 2 - 25 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 2 - 25 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 3 - 50 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 3 - 50 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 4 - 100 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 4 - 100 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 2 - 25 Year
Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 3 - 50 Year
Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 4 - 100 Year
Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 5 - 500 Year
Warning: Divided flow computed for this cross-section.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

HEC-RAS Plan: FEMA_CE River: Sawmill Run Reach: Sawmill Run

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	7	PF 1 - 10 Year	1354.00	578.46	582.77	582.26	583.31	0.005773	6.64	344.59	170.71	0.61
Sawmill Run	7	PF 2 - 25 Year	1750.00	578.46	583.66	582.63	584.10	0.003791	6.22	503.60	187.44	0.51
Sawmill Run	7	PF 3 - 50 Year	2038.00	578.46	584.30	582.88	584.69	0.002941	5.98	628.09	199.57	0.46
Sawmill Run	7	PF 4 - 100 Year	2359.00	578.46	584.99	583.12	585.34	0.002345	5.81	769.93	212.54	0.42
Sawmill Run	7	PF 5 - 500 Year	2864.00	578.46	586.02	583.46	586.33	0.001780	5.63	998.00	231.89	0.38
Sawmill Run	5.81	PF 1 - 10 Year	1354.00	574.76	581.89	578.50	582.16	0.000824	4.16	325.72	62.18	0.32
Sawmill Run	5.81	PF 2 - 25 Year	1750.00	574.76	582.73	579.09	583.06	0.000893	4.61	379.78	65.79	0.34
Sawmill Run	5.81	PF 3 - 50 Year	2038.00	574.76	583.41	579.49	583.77	0.000880	4.79	425.61	68.71	0.34
Sawmill Run	5.81	PF 4 - 100 Year	2359.00	574.76	584.13	579.90	584.51	0.000864	4.96	475.78	71.76	0.34
Sawmill Run	5.81	PF 5 - 500 Year	2864.00	574.76	585.18	580.49	585.59	0.000838	5.18	553.38	76.25	0.34
Sawmill Run	5.8	Bridge										
Sawmill Run	5.7	PF 1 - 10 Year	1354.00	574.76	581.69	578.50	581.98	0.000917	4.32	313.57	61.34	0.34
Sawmill Run	5.7	PF 2 - 25 Year	1750.00	574.76	582.50	579.09	582.86	0.000999	4.80	364.88	64.82	0.36
Sawmill Run	5.7	PF 3 - 50 Year	2038.00	574.76	583.18	579.49	583.57	0.000977	4.97	409.93	67.73	0.36
Sawmill Run	5.7	PF 4 - 100 Year	2359.00	574.76	583.90	579.90	584.31	0.000953	5.14	459.37	70.78	0.36
Sawmill Run	5.7	PF 5 - 500 Year	2864.00	574.76	584.95	580.49	585.39	0.000914	5.34	536.09	75.27	0.35
Sawmill Run	5.6	PF 1 - 10 Year	1354.00	574.06	581.65	578.08	581.92	0.000781	4.11	329.63	61.48	0.31
Sawmill Run	5.6	PF 2 - 25 Year	1750.00	574.06	582.46	578.70	582.79	0.000871	4.60	380.77	64.94	0.33
Sawmill Run	5.6	PF 3 - 50 Year	2038.00	574.06	583.14	579.11	583.50	0.000865	4.78	425.94	67.86	0.34
Sawmill Run	5.6	PF 4 - 100 Year	2359.00	574.06	583.86	579.52	584.24	0.000854	4.96	475.51	70.92	0.34
Sawmill Run	5.6	PF 5 - 500 Year	2864.00	574.06	584.91	580.13	585.33	0.000831	5.18	552.46	75.42	0.34
Sawmill Run	5.51	PF 1 - 10 Year	1354.00	574.06	581.65	578.10	581.91	0.000782	4.11	329.46	61.47	0.31
Sawmill Run	5.51	PF 2 - 25 Year	1750.00	574.06	582.46	578.71	582.79	0.000873	4.60	380.57	64.93	0.33
Sawmill Run	5.51	PF 3 - 50 Year	2038.00	574.06	583.14	579.11	583.50	0.000866	4.79	425.73	67.85	0.34
Sawmill Run	5.51	PF 4 - 100 Year	2359.00	574.06	583.86	579.52	584.24	0.000855	4.96	475.29	70.91	0.34
Sawmill Run	5.51	PF 5 - 500 Year	2864.00	574.06	584.91	580.14	585.32	0.000832	5.19	552.23	75.41	0.34
Sawmill Run	5.5	Bridge										
Sawmill Run	5.4	PF 1 - 10 Year	1354.00	574.06	581.42	578.10	581.71	0.000883	4.29	315.54	60.49	0.33
Sawmill Run	5.4	PF 2 - 25 Year	1750.00	574.06	582.19	578.71	582.55	0.000995	4.82	363.06	63.77	0.36
Sawmill Run	5.4	PF 3 - 50 Year	2038.00	574.06	582.87	579.11	583.26	0.000979	5.00	407.29	66.67	0.36
Sawmill Run	5.4	PF 4 - 100 Year	2359.00	574.06	583.58	579.52	584.00	0.000959	5.17	455.99	69.73	0.36
Sawmill Run	5.4	PF 5 - 500 Year	2864.00	574.06	584.64	580.14	585.09	0.000923	5.38	531.94	74.25	0.35
Sawmill Run	5.3	PF 1 - 10 Year	1354.00	573.26	581.44	577.01	581.53	0.000230	2.95	755.71	303.45	0.18
Sawmill Run	5.3	PF 2 - 25 Year	1750.00	573.26	582.25	577.66	582.33	0.000199	2.92	1021.47	350.58	0.17

HEC-RAS Plan: FEMA CE River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sawmill Run	5.3	PF 3 - 50 Year	2038.00	573.26	582.96	578.11	583.03	0.000158	2.74	1285.37	391.82	0.16
Sawmill Run	5.3	PF 4 - 100 Year	2359.00	573.26	583.71	578.55	583.76	0.000127	2.58	1588.20	415.45	0.14
Sawmill Run	5.3	PF 5 - 500 Year	2864.00	573.26	584.80	579.97	584.84	0.000095	2.39	2048.93	431.17	0.12
Sawmill Run	5.21	PF 1 - 10 Year	1354.00	574.00	580.35	578.77	581.19	0.003099	7.34	184.50	37.68	0.58
Sawmill Run	5.21	PF 2 - 25 Year	1750.00	574.00	580.60	579.47	581.86	0.004489	9.04	193.62	37.92	0.7
Sawmill Run	5.21	PF 3 - 50 Year	2038.00	574.00	581.12	579.94	582.53	0.004567	9.55	213.47	38.45	0.71
Sawmill Run	5.21	PF 4 - 100 Year	2359.00	574.00	581.65	580.42	583.23	0.004664	10.07	234.26	38.99	0.72
Sawmill Run	5.21	PF 5 - 500 Year	2864.00	574.00	582.43	581.14	584.25	0.004809	10.81	264.99	39.77	0.74
Sawmill Run	5.2		Bridge									
Sawmill Run	5.1	PF 1 - 10 Year	1354.00	574.00	580.09	578.60	580.83	0.002999	6.87	197.15	45.77	0.58
Sawmill Run	5.1	PF 2 - 25 Year	1750.00	574.00	580.56	579.29	581.55	0.003693	8.00	218.69	46.75	0.65
Sawmill Run	5.1	PF 3 - 50 Year	2038.00	574.00	581.04	579.72	582.15	0.003755	8.44	241.34	47.77	0.66
Sawmill Run	5.1	PF 4 - 100 Year	2359.00	574.00	581.51	580.15	582.75	0.003861	8.92	264.37	48.79	0.68
Sawmill Run	5.1	PF 5 - 500 Year	2864.00	574.00	581.59	580.79	583.37	0.005457	10.68	268.24	48.95	0.80
Sawmill Run	5.05	PF 1 - 10 Year	1354.00	574.00	579.83	578.95	580.75	0.004511	7.70	175.86	47.90	0.71
Sawmill Run	5.05	PF 2 - 25 Year	1750.00	574.00	580.07	579.60	581.43	0.006299	9.34	187.28	48.92	0.84
Sawmill Run	5.05	PF 3 - 50 Year	2038.00	574.00	580.09	580.02	581.91	0.008410	10.83	188.26	48.97	0.97
Sawmill Run	5.05	PF 4 - 100 Year	2359.00	574.00	580.44	580.44	582.49	0.008694	11.48	205.40	49.80	1.00
Sawmill Run	5.05	PF 5 - 500 Year	2864.00	574.00	581.59	581.59	583.31	0.009172	10.50	272.64	79.38	1.00
Sawmill Run	5	PF 1 - 10 Year	1354.00	574.00	580.12	578.72	580.29	0.001676	3.23	418.94	207.56	0.40
Sawmill Run	5	PF 2 - 25 Year	1750.00	574.00	580.57	579.35	580.75	0.001453	3.43	511.71	212.98	0.38
Sawmill Run	5	PF 3 - 50 Year	2038.00	574.00	580.80	579.48	581.00	0.001460	3.65	561.32	215.82	0.39
Sawmill Run	5	PF 4 - 100 Year	2359.00	574.00	581.04	579.65	581.27	0.001469	3.88	613.59	218.77	0.40
Sawmill Run	5	PF 5 - 500 Year	2864.00	574.00	581.37	579.86	581.65	0.001504	4.21	687.72	222.89	0.41
Sawmill Run	4.21	PF 1 - 10 Year	1354.00	573.16	580.05	579.43	580.24	0.001275	4.57	516.97	347.22	0.36
Sawmill Run	4.21	PF 2 - 25 Year	1750.00	573.16	580.55	579.71	580.71	0.001038	4.31	699.20	378.50	

HEC-RAS Plan: FEMA_CE River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	3.9	PF 1 - 10 Year	1354.00	573.16	579.86	579.40	580.14	0.001441	5.30	451.94	335.35	0.42
Sawmill Run	3.9	PF 2 - 25 Year	1750.00	573.16	580.44	579.70	580.63	0.001065	4.77	656.45	371.40	0.37
Sawmill Run	3.9	PF 3 - 50 Year	2038.00	573.16	580.69	579.87	580.88	0.001041	4.83	750.99	387.00	0.36
Sawmill Run	3.9	PF 4 - 100 Year	2359.00	573.16	580.94	580.04	581.13	0.001012	4.91	852.51	403.16	0.36
Sawmill Run	3.9	PF 5 - 500 Year	2864.00	573.16	581.30	580.21	581.49	0.000985	5.05	1000.70	425.65	0.36
Sawmill Run	3.8	PF 1 - 10 Year	1354.00	572.06	579.76	577.39	579.95	0.000747	3.98	522.58	322.31	0.31
Sawmill Run	3.8	PF 2 - 25 Year	1750.00	572.06	580.33	578.09	580.49	0.000641	3.95	712.91	349.02	0.29
Sawmill Run	3.8	PF 3 - 50 Year	2038.00	572.06	580.57	578.68	580.74	0.000669	4.14	797.36	360.24	0.30
Sawmill Run	3.8	PF 4 - 100 Year	2359.00	572.06	580.82	579.43	581.00	0.000691	4.33	888.71	371.99	0.30
Sawmill Run	3.8	PF 5 - 500 Year	2864.00	572.06	581.16	579.73	581.36	0.000725	4.59	1019.96	388.25	0.32
Sawmill Run	3.71	PF 1 - 10 Year	1354.00	572.06	579.71	577.29	579.90	0.000846	4.06	504.25	314.98	0.32
Sawmill Run	3.71	PF 2 - 25 Year	1750.00	572.06	580.29	577.92	580.46	0.000715	3.98	694.00	338.22	0.29
Sawmill Run	3.71	PF 3 - 50 Year	2038.00	572.06	580.53	578.63	580.71	0.000748	4.17	775.39	347.71	0.30
Sawmill Run	3.71	PF 4 - 100 Year	2359.00	572.06	580.78	579.47	580.96	0.000773	4.34	863.24	357.67	0.31
Sawmill Run	3.71	PF 5 - 500 Year	2864.00	572.06	581.12	579.76	581.32	0.000813	4.59	988.67	371.44	0.32
Sawmill Run	3.7	Bridge										
Sawmill Run	3.6	PF 1 - 10 Year	1354.00	572.06	579.57	577.29	579.80	0.000996	4.36	461.00	313.19	0.34
Sawmill Run	3.6	PF 2 - 25 Year	1750.00	572.06	580.23	577.92	580.41	0.000743	4.09	680.52	344.62	0.30
Sawmill Run	3.6	PF 3 - 50 Year	2038.00	572.06	580.47	578.66	580.66	0.000777	4.30	761.45	355.51	0.31
Sawmill Run	3.6	PF 4 - 100 Year	2359.00	572.06	580.71	579.46	580.91	0.000801	4.49	849.41	366.98	0.32
Sawmill Run	3.6	PF 5 - 500 Year	2864.00	572.06	581.05	579.76	581.26	0.000840	4.76	975.39	382.81	0.33
Sawmill Run	3.5	PF 1 - 10 Year	1354.00	572.06	579.40	577.39	579.69	0.001175	4.75	407.72	305.07	0.38
Sawmill Run	3.5	PF 2 - 25 Year	1750.00	572.06	580.13	578.09	580.34	0.000800	4.31	645.62	339.82	0.32
Sawmill Run	3.5	PF 3 - 50 Year	2038.00	572.06	580.36	578.68	580.57	0.000840	4.53	723.43	350.44	0.33
Sawmill Run	3.5	PF 4 - 100 Year	2359.00	572.06	580.60	579.43	580.82	0.000867	4.73	808.87	361.74	0.34
Sawmill Run	3.5	PF 5 - 500 Year	2864.00	572.06	580.93	579.73	581.17	0.000909	5.02	931.02	377.31	0.35
Sawmill Run	3.4	PF 1 - 10 Year	1354.00	570.76	577.67	576.17	578.62	0.003375	7.84	178.72	54.31	0.61
Sawmill Run	3.4	PF 2 - 25 Year	1750.00	570.76	579.48	576.89	579.82	0.001076	5.42	545.85	339.55	0.36
Sawmill Run	3.4	PF 3 - 50 Year	2038.00	570.76	579.61	577.62	580.01	0.001259	5.93	590.16	347.93	0.40
Sawmill Run	3.4	PF 4 - 100 Year	2359.00	570.76	579.82	579.17	580.23	0.001330	6.22	664.51	361.55	0.41
Sawmill Run	3.4	PF 5 - 500 Year	2864.00	570.76	580.12	579.56	580.55	0.001421	6.60	773.22	380.59	0.43
Sawmill Run	3.31	PF 1 - 10 Year	1354.00	570.76	577.16	576.17	578.35	0.004755	8.76	154.64	33.41	0.72
Sawmill Run	3.31	PF 2 - 25 Year	1750.00	570.76	579.36	576.92	579.75	0.001299	5.73	503.83	331.41	0.39
Sawmill Run	3.31	PF 3 - 50 Year	2038.00	570.76	579.38	578.72	579.90	0.001718	6.61	510.95	332.80	0.45
Sawmill Run	3.31	PF 4 - 100 Year	2359.00	570.76	579.49	579.15	580.10	0.002024	7.25	547.90	339.94	0.49

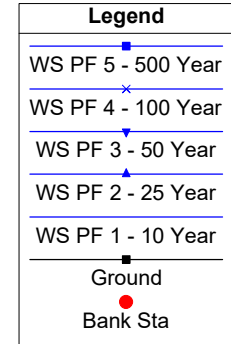
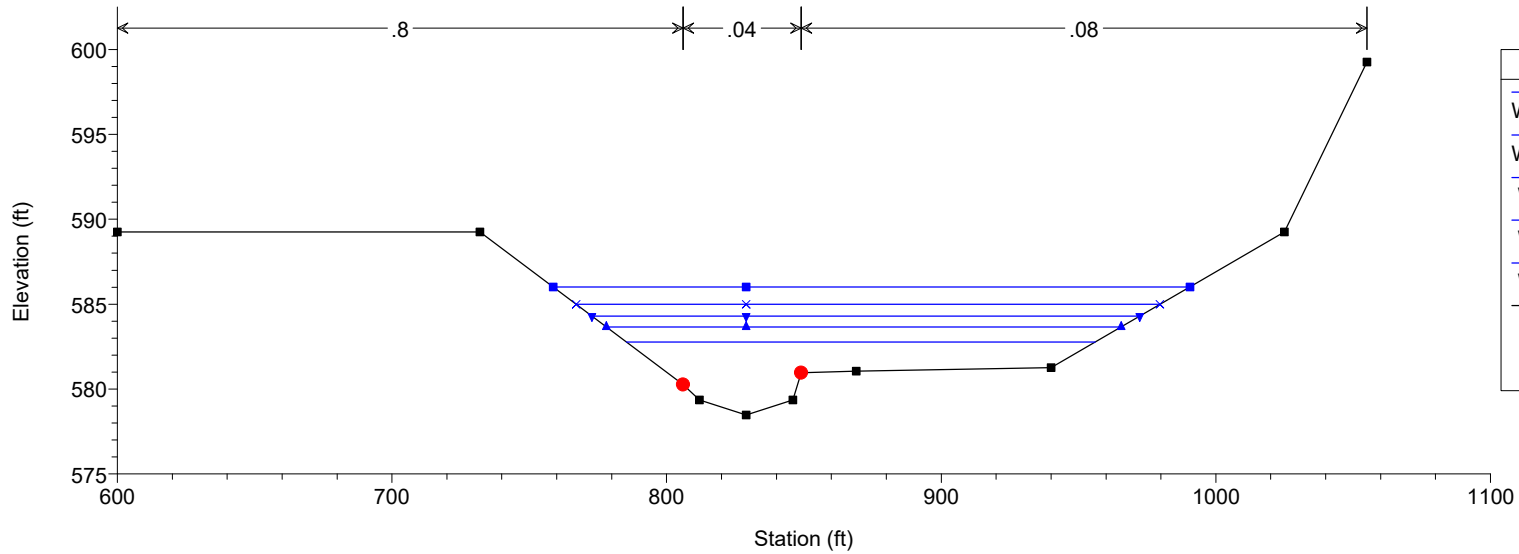
HEC-RAS Plan: FEMA_CE River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	3.31	PF 5 - 500 Year	2864.00	570.76	579.78	579.57	580.41	0.002137	7.65	649.17	358.78	0.50
Sawmill Run	3.3	Bridge										
Sawmill Run	3.2	PF 1 - 10 Year	1354.00	570.76	576.18	576.18	578.08	0.009463	11.07	122.33	32.04	1.00
Sawmill Run	3.2	PF 2 - 25 Year	1750.00	570.76	576.93	576.93	579.13	0.009237	11.91	146.92	33.19	1.00
Sawmill Run	3.2	PF 3 - 50 Year	2038.00	570.76	578.71	578.71	579.78	0.003386	8.77	319.13	226.94	0.63
Sawmill Run	3.2	PF 4 - 100 Year	2359.00	570.76	579.15	579.15	580.07	0.002899	8.50	437.56	305.90	0.59
Sawmill Run	3.2	PF 5 - 500 Year	2864.00	570.76	579.57	579.57	580.38	0.002646	8.47	577.00	345.46	0.57
Sawmill Run	3.1	PF 1 - 10 Year	1354.00	569.76	576.82	575.54	576.90	0.000476	3.08	766.97	402.11	0.23
Sawmill Run	3.1	PF 2 - 25 Year	1750.00	569.76	577.17	575.82	577.26	0.000516	3.34	908.42	422.92	0.25
Sawmill Run	3.1	PF 3 - 50 Year	2038.00	569.76	577.38	575.97	577.48	0.000542	3.51	1001.24	436.03	0.25
Sawmill Run	3.1	PF 4 - 100 Year	2359.00	569.76	577.60	576.11	577.71	0.000568	3.68	1098.84	449.40	0.26
Sawmill Run	3.1	PF 5 - 500 Year	2864.00	569.76	577.94	576.32	578.06	0.000587	3.88	1254.90	470.00	0.27
Sawmill Run	3	PF 1 - 10 Year	1354.00	569.76	576.74	575.54	576.83	0.000534	3.23	732.74	396.92	0.25
Sawmill Run	3	PF 2 - 25 Year	1750.00	569.76	577.07	575.82	577.17	0.000577	3.50	869.53	417.30	0.26
Sawmill Run	3	PF 3 - 50 Year	2038.00	569.76	577.28	575.97	577.39	0.000607	3.68	959.06	430.12	0.27
Sawmill Run	3	PF 4 - 100 Year	2359.00	569.76	577.50	576.11	577.62	0.000636	3.85	1053.30	443.21	0.28
Sawmill Run	3	PF 5 - 500 Year	2864.00	569.76	577.84	576.32	577.96	0.000653	4.05	1205.92	463.63	0.28
Sawmill Run	0.8	PF 1 - 10 Year	1354.00	569.76	575.55	575.55	576.13	0.003214	6.90	321.64	293.00	0.59
Sawmill Run	0.8	PF 2 - 25 Year	1750.00	569.76	575.82	575.82	576.42	0.003517	7.42	402.23	324.49	0.62
Sawmill Run	0.8	PF 3 - 50 Year	2038.00	569.76	575.97	575.97	576.60	0.003732	7.79	452.77	334.74	0.64
Sawmill Run	0.8	PF 4 - 100 Year	2359.00	569.76	576.11	576.11	576.78	0.004002	8.20	500.68	341.09	0.66
Sawmill Run	0.8	PF 5 - 500 Year	2864.00	569.76	577.15	576.32	577.39	0.001415	5.53	900.07	421.72	0.41
Sawmill Run	0.71	PF 1 - 10 Year	1354.00	566.86	574.53	572.10	574.84	0.001186	4.47	302.58	68.97	0.38
Sawmill Run	0.71	PF 2 - 25 Year	1750.00	566.86	575.55	572.65	575.89	0.001052	4.66	375.50	73.19	0.36
Sawmill Run	0.71	PF 3 - 50 Year	2038.00	566.86	575.55	572.97	576.01	0.001427	5.43	375.50	73.19	0.42
Sawmill Run	0.71	PF 4 - 100 Year	2359.00	566.86	575.97	573.33	576.49	0.001521	5.81	406.23	74.89	0.44
Sawmill Run	0.71	PF 5 - 500 Year	2864.00	566.86	576.61	573.85	577.22	0.001616	6.30	454.96	77.52	0.46
Sawmill Run	0.7	Bridge										
Sawmill Run	0.6	PF 1 - 10 Year	1354.00	566.86	574.51	572.10	574.83	0.001197	4.49	301.58	68.91	0.38
Sawmill Run	0.6	PF 2 - 25 Year	1750.00	566.86	575.54	572.65	575.88	0.001060	4.67	374.57	73.13	0.36
Sawmill Run	0.6	PF 3 - 50 Year	2038.00	566.86	575.53	572.97	576.00	0.001442	5.45	374.14	73.11	0.42
Sawmill Run	0.6	PF 4 - 100 Year	2359.00	566.86	575.95	573.33	576.48	0.001538	5.83	404.70	74.81	0.44
Sawmill Run	0.6	PF 5 - 500 Year	2864.00	566.86	576.58	573.85	577.21	0.001634	6.32	453.22	77.43	0.46

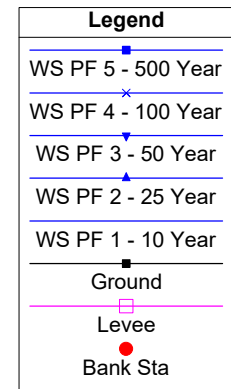
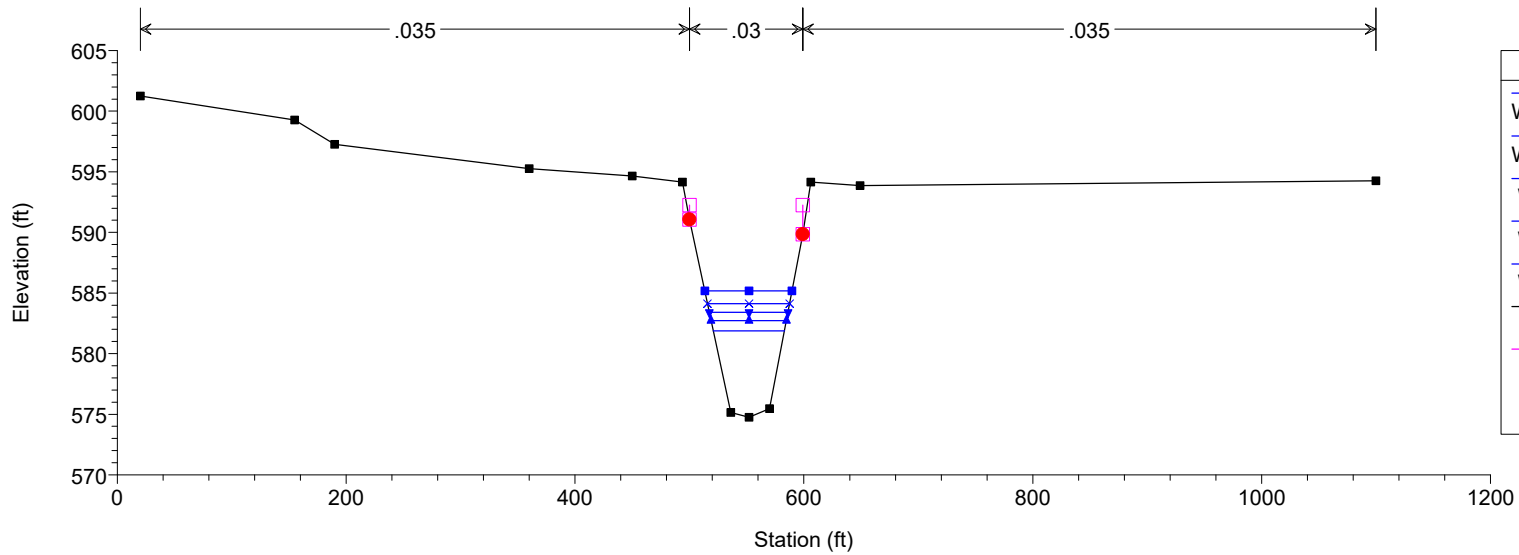
HEC-RAS Plan: FEMA_CE River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	0.5	PF 1 - 10 Year	1354.00	566.86	574.44	572.09	574.76	0.001261	4.57	296.18	68.45	0.39
Sawmill Run	0.5	PF 2 - 25 Year	1750.00	566.86	575.47	572.64	575.82	0.001101	4.74	369.38	72.64	0.37
Sawmill Run	0.5	PF 3 - 50 Year	2038.00	566.86	575.43	572.97	575.92	0.001527	5.56	366.59	72.49	0.44
Sawmill Run	0.5	PF 4 - 100 Year	2359.00	566.86	575.84	573.33	576.39	0.001632	5.95	396.14	74.12	0.45
Sawmill Run	0.5	PF 5 - 500 Year	2864.00	566.86	576.46	573.84	577.11	0.001736	6.46	443.33	76.65	0.47
Sawmill Run	0.4	PF 1 - 10 Year	1354.00	566.76	574.05	572.28	574.41	0.001530	5.06	345.26	212.17	0.43
Sawmill Run	0.4	PF 2 - 25 Year	1750.00	566.76	575.41	572.92	575.57	0.000580	3.74	720.87	332.28	0.28
Sawmill Run	0.4	PF 3 - 50 Year	2038.00	566.76	575.33	573.61	575.56	0.000856	4.50	693.59	325.43	0.34
Sawmill Run	0.4	PF 4 - 100 Year	2359.00	566.76	575.83	574.10	576.03	0.000698	4.30	867.24	366.85	0.31
Sawmill Run	0.4	PF 5 - 500 Year	2864.00	566.76	576.59	574.53	576.75	0.000516	4.00	1171.05	429.83	0.27
Sawmill Run	0.31	PF 1 - 10 Year	1354.00	566.76	573.71	572.28	574.27	0.002661	6.03	224.68	60.32	0.55
Sawmill Run	0.31	PF 2 - 25 Year	1750.00	566.76	574.90	572.84	575.42	0.001887	5.80	311.33	100.77	0.48
Sawmill Run	0.31	PF 3 - 50 Year	2038.00	566.76	574.39	573.21	575.30	0.003630	7.63	267.52	70.51	0.66
Sawmill Run	0.31	PF 4 - 100 Year	2359.00	566.76	574.61	573.58	575.70	0.004170	8.38	284.73	83.72	0.71
Sawmill Run	0.31	PF 5 - 500 Year	2864.00	566.76	575.17	574.15	576.38	0.004233	8.91	339.78	116.29	0.72
Sawmill Run	0.3	Bridge										
Sawmill Run	0.2	PF 1 - 10 Year	1354.00	566.76	573.66	572.28	574.24	0.002758	6.10	221.96	60.13	0.56
Sawmill Run	0.2	PF 2 - 25 Year	1750.00	566.76	574.87	572.84	575.40	0.001924	5.84	308.45	99.07	0.48
Sawmill Run	0.2	PF 3 - 50 Year	2038.00	566.76	574.30	573.21	575.25	0.003862	7.79	261.52	65.28	0.67
Sawmill Run	0.2	PF 4 - 100 Year	2359.00	566.76	574.47	573.58	575.64	0.004621	8.68	272.89	74.88	0.74
Sawmill Run	0.2	PF 5 - 500 Year	2864.00	566.76	574.64	574.15	576.23	0.006042	10.11	286.85	85.20	0.85
Sawmill Run	0.1	PF 1 - 10 Year	1354.00	566.76	573.53	572.28	574.10	0.002680	6.15	251.12	151.05	0.56
Sawmill Run	0.1	PF 2 - 25 Year	1750.00	566.76	574.95	572.90	575.20	0.000940	4.50	576.07	294.10	0.35
Sawmill Run	0.1	PF 3 - 50 Year	2038.00	566.76	574.29	573.61	574.94	0.002662	6.92	399.94	239.60	0.57
Sawmill Run	0.1	PF 4 - 100 Year	2359.00	566.76	574.54	574.10	575.22	0.002683	7.20	462.42	260.24	0.58
Sawmill Run	0.1	PF 5 - 500 Year	2864.00	566.76	574.89	574.54	575.59	0.002685	7.55	558.58	289.15	0.59

SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 7

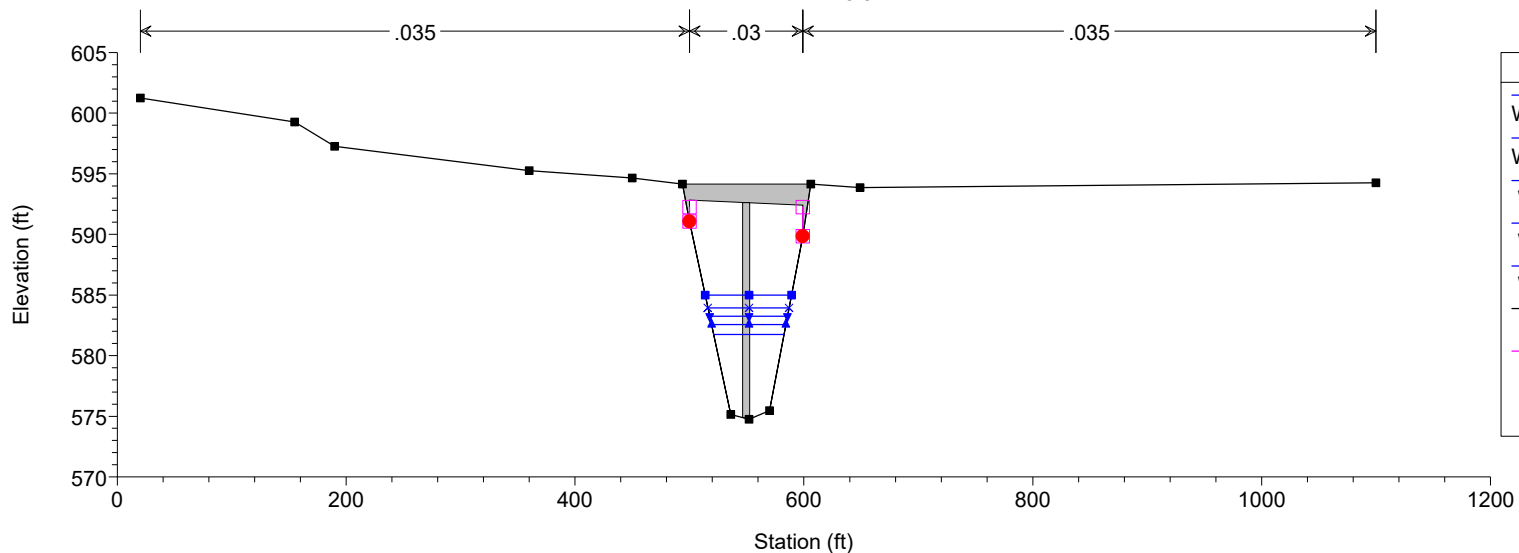


SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
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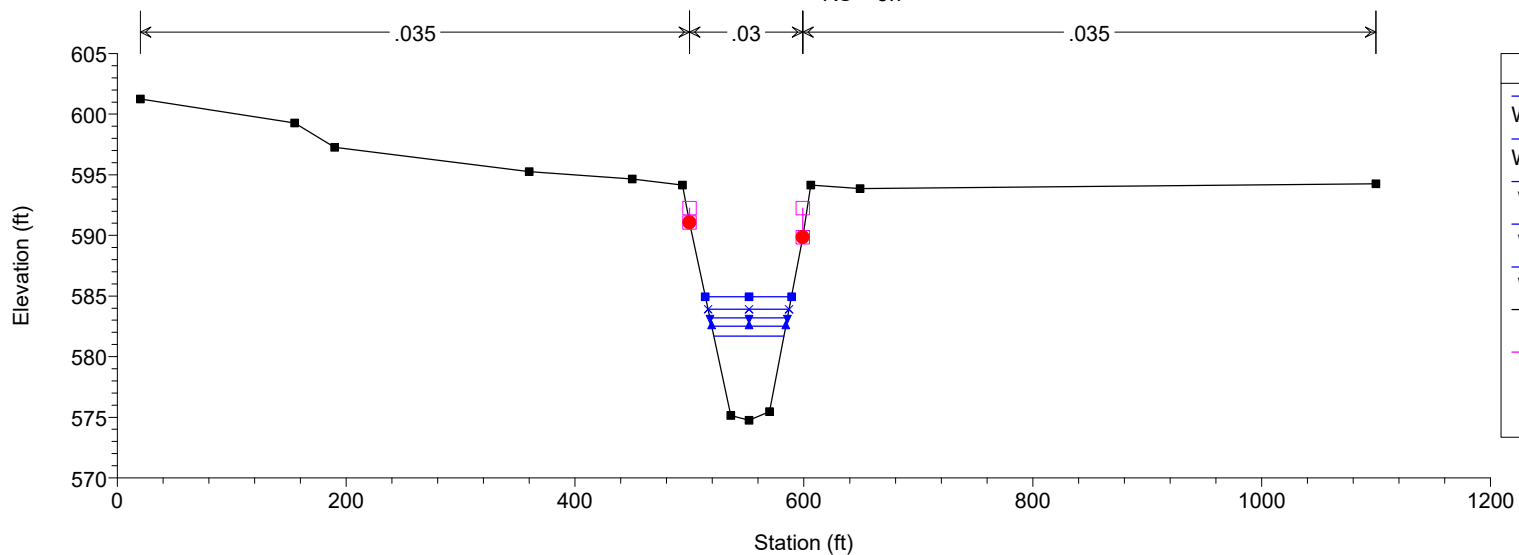
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024

RS = 5.8 BR



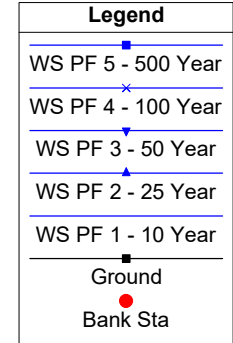
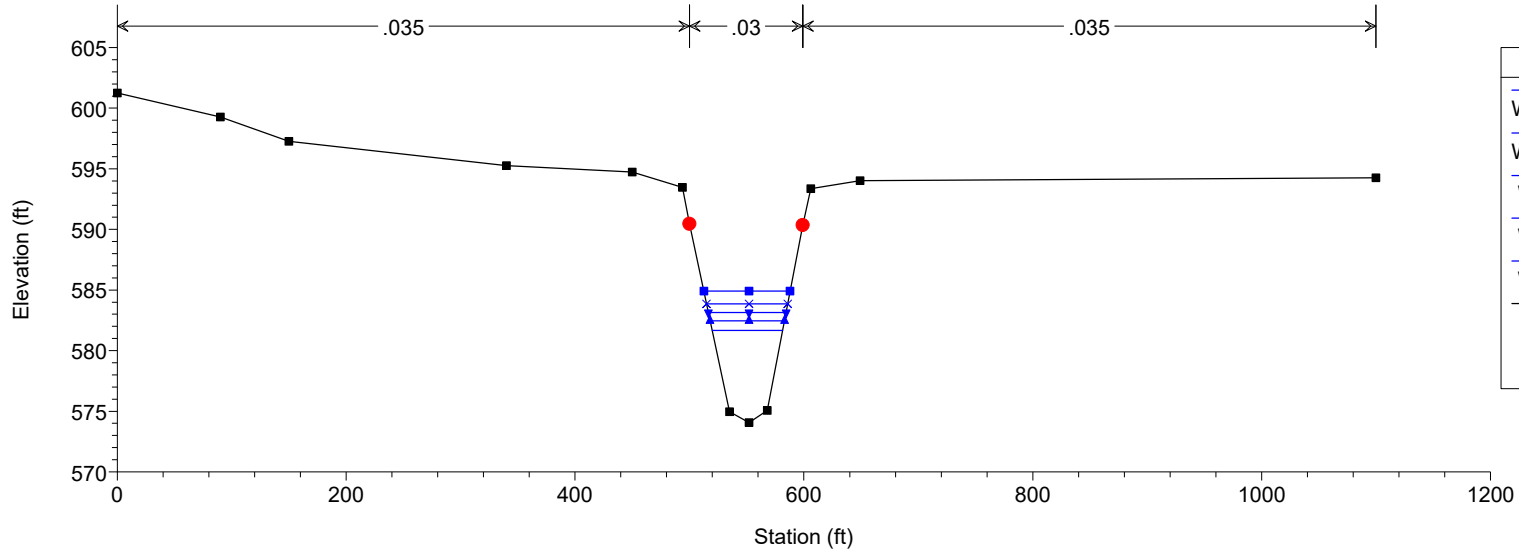
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RS = 5.7



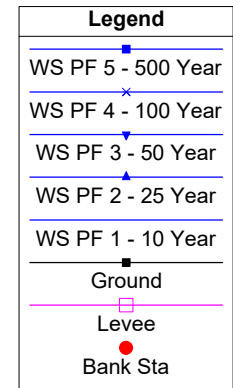
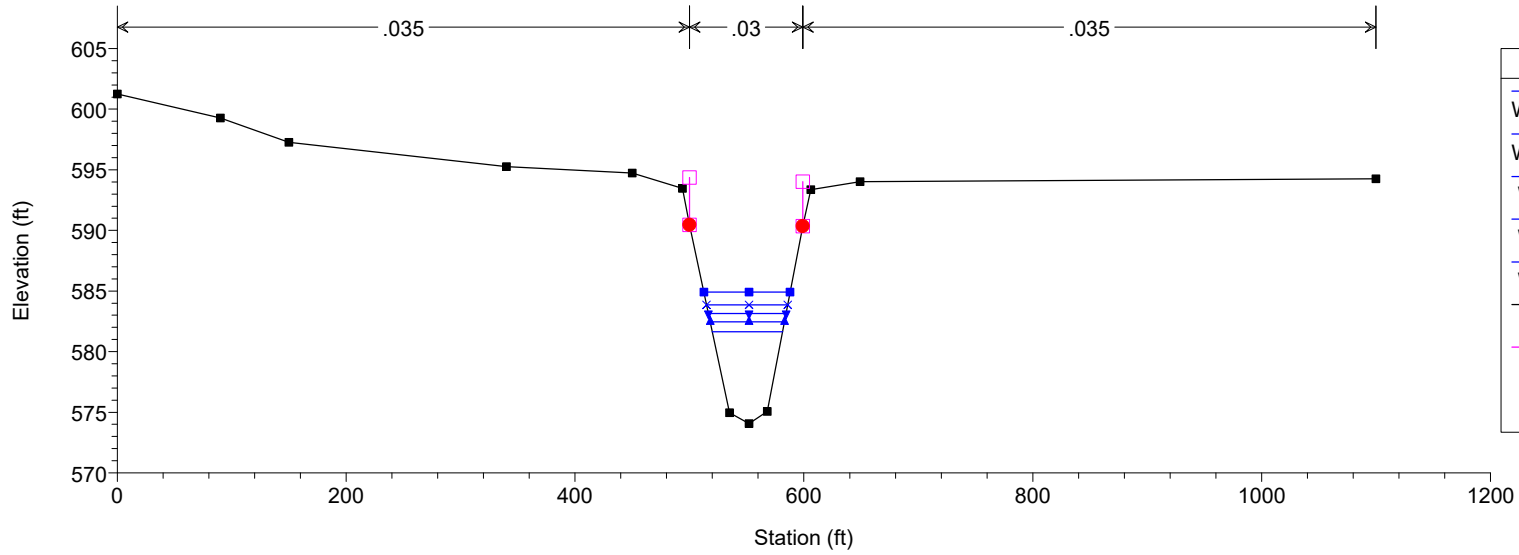
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024

RS = 5.6



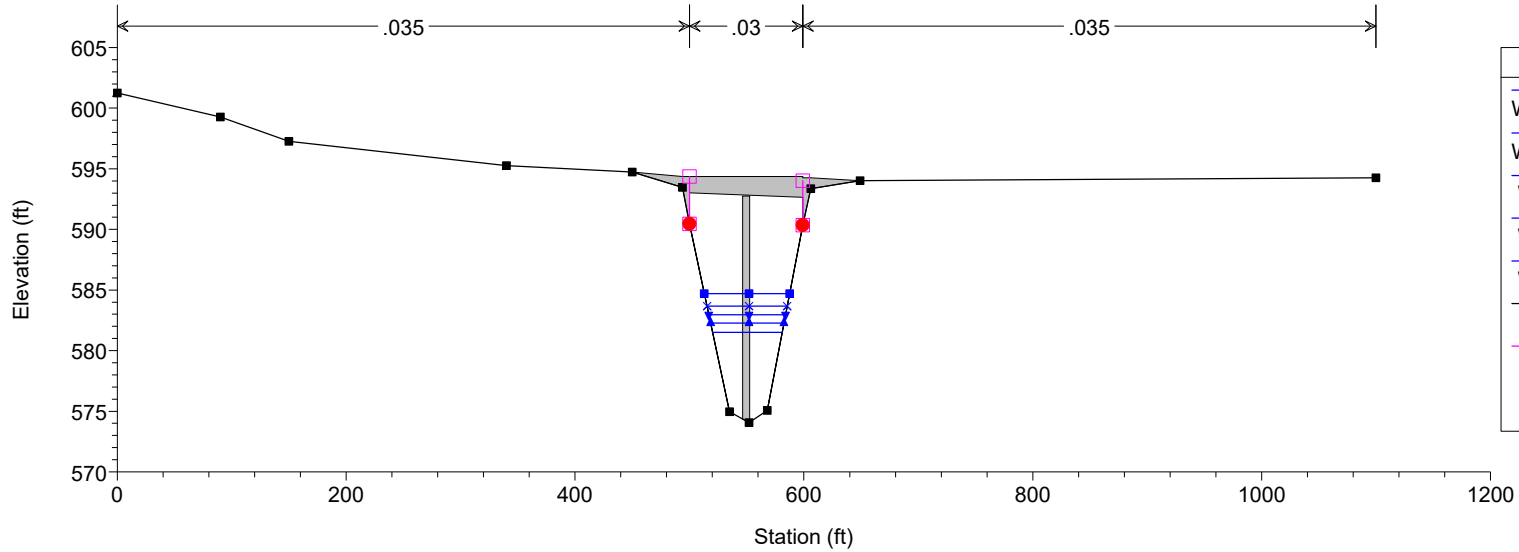
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024

RS = 5.51



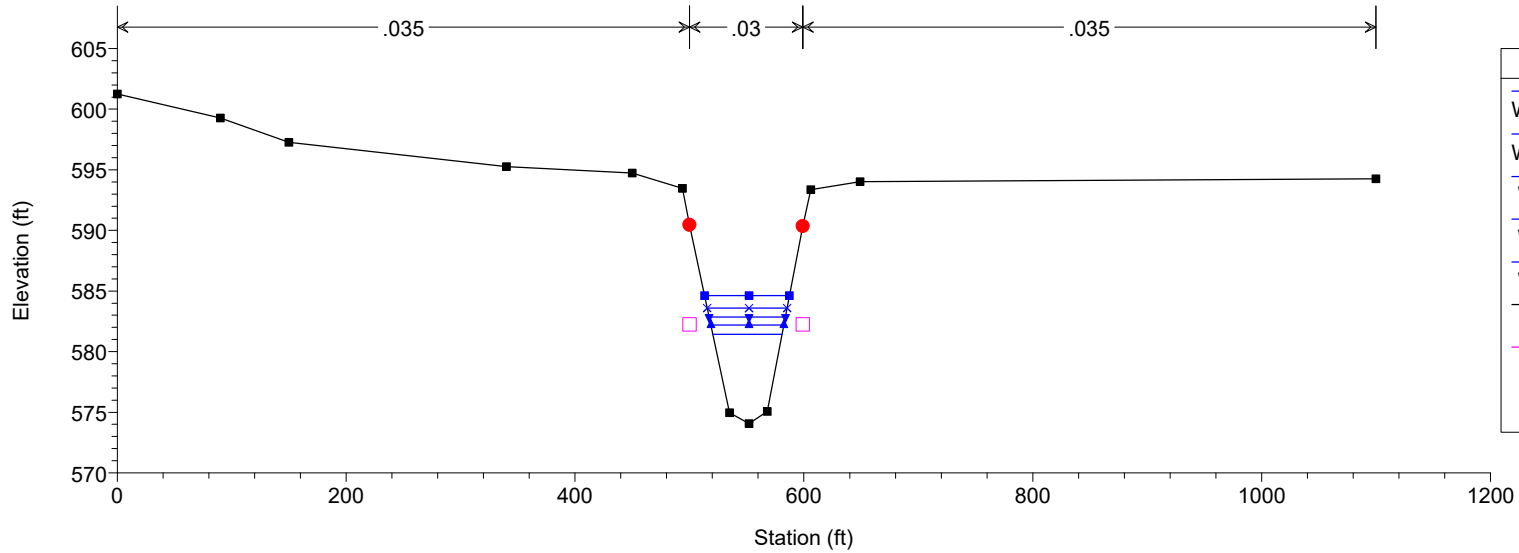
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024

RS = 5.5 BR

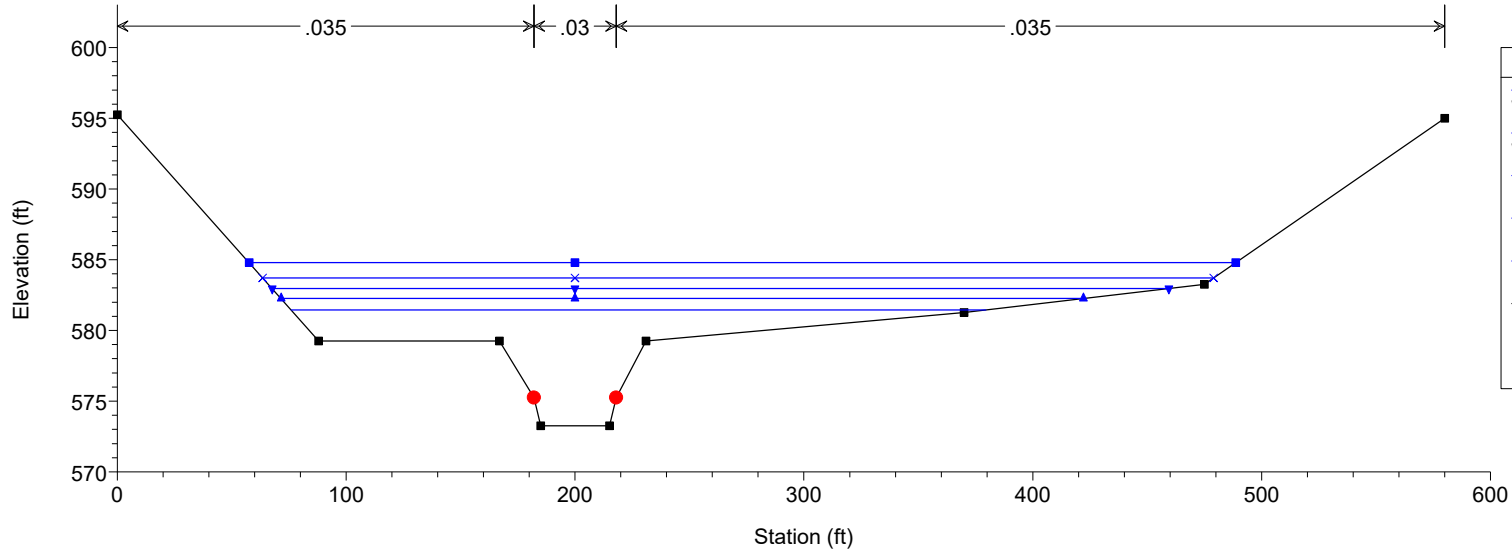


SawmillRun Plan: FEMA_Corrected Effective 2/27/2024

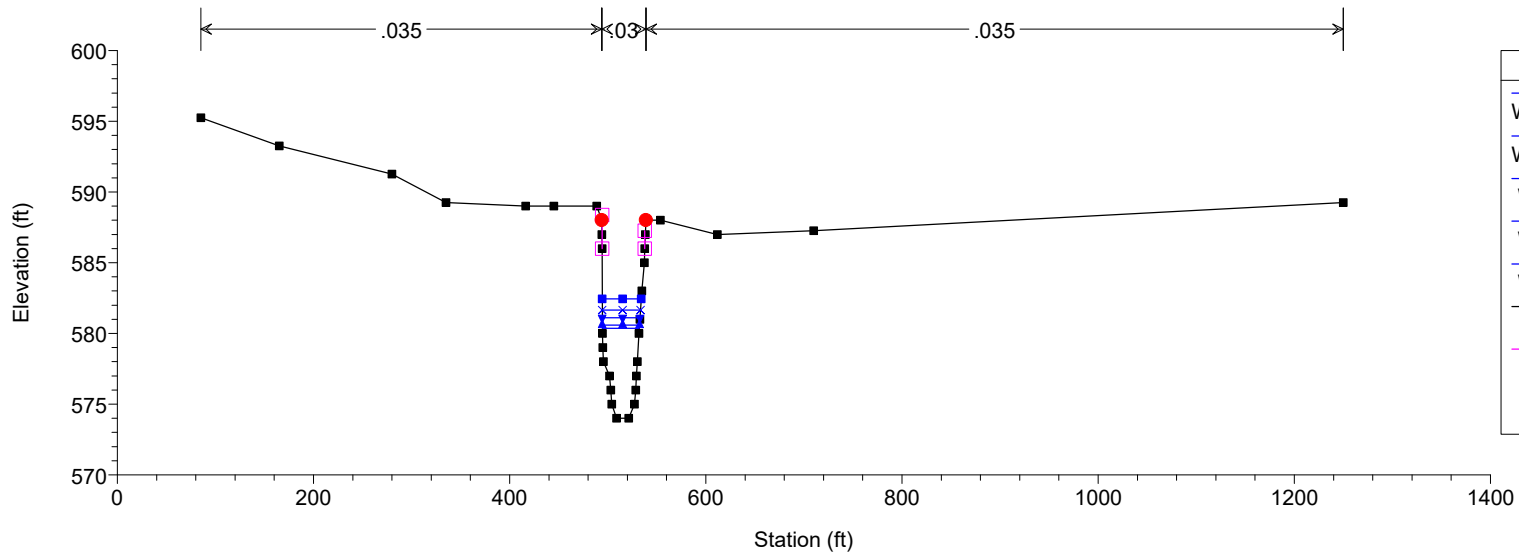
RS = 5.4

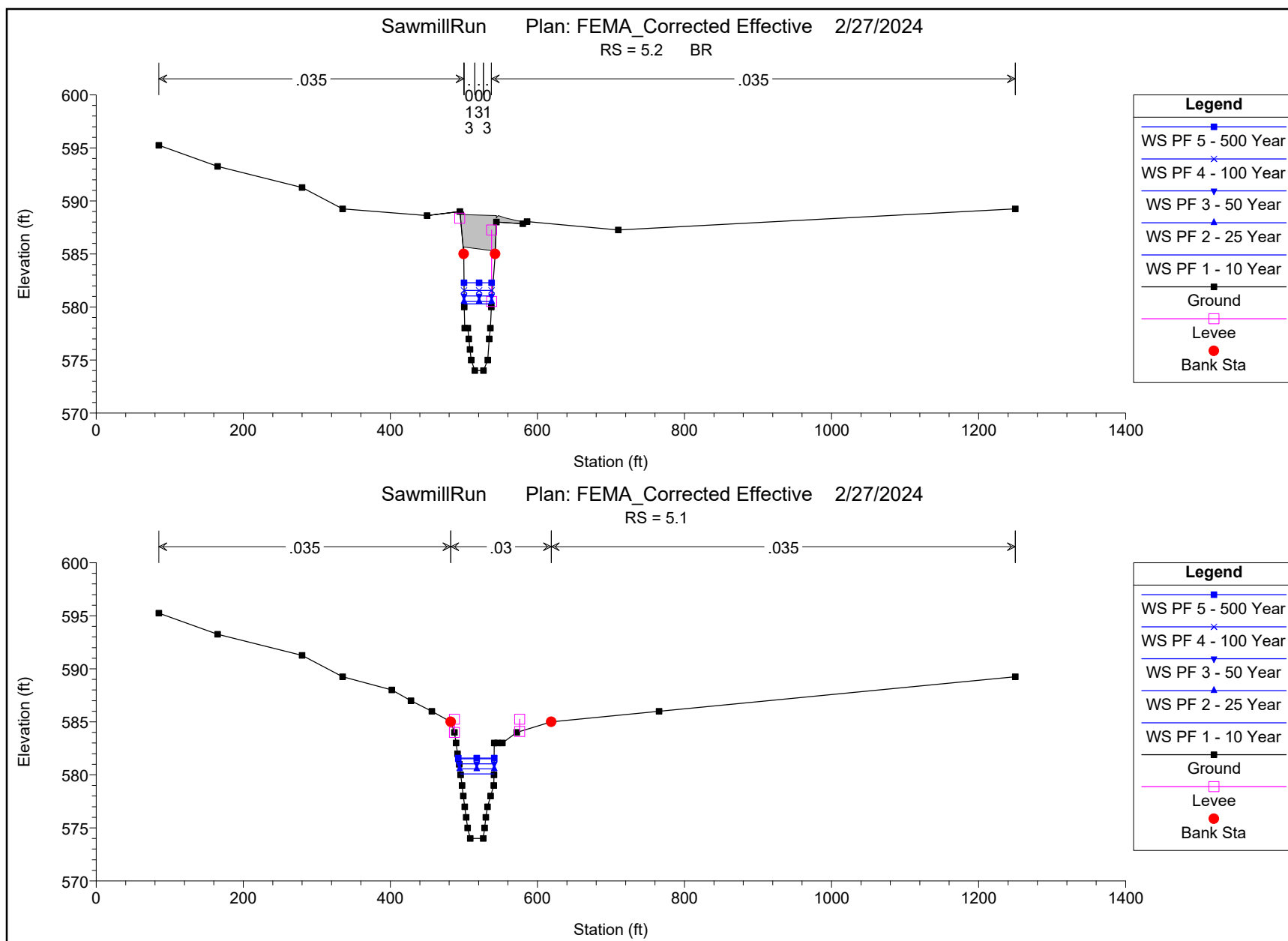


SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 5.3

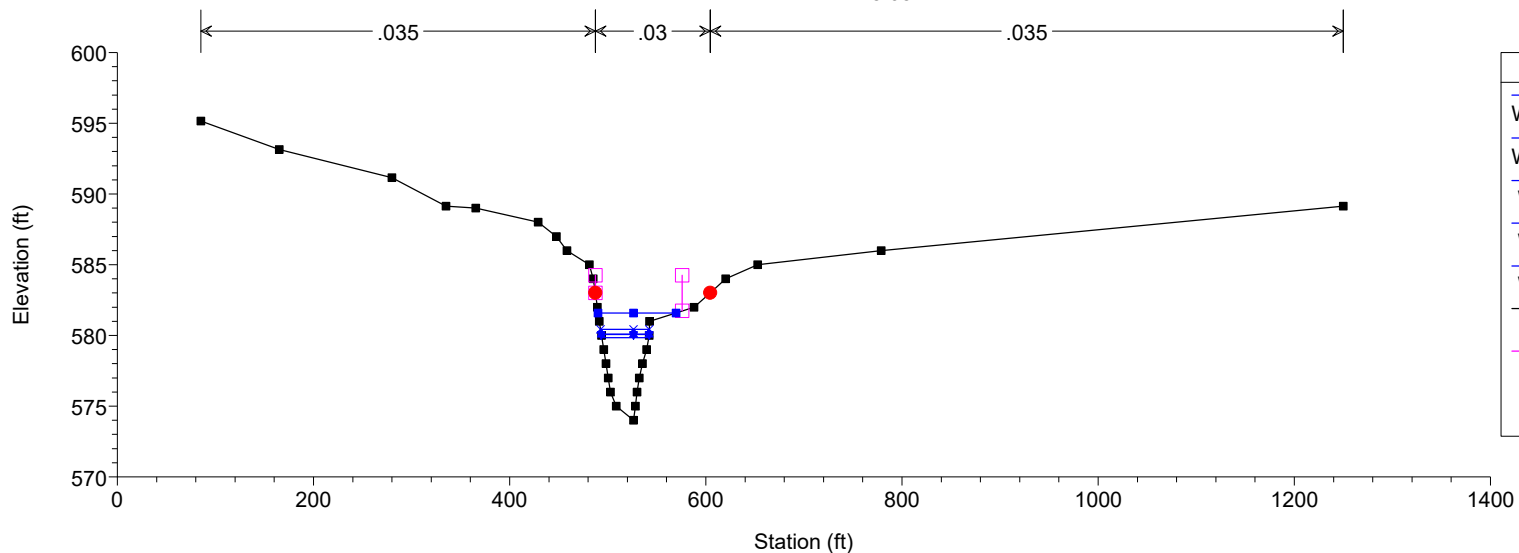


SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 5.21

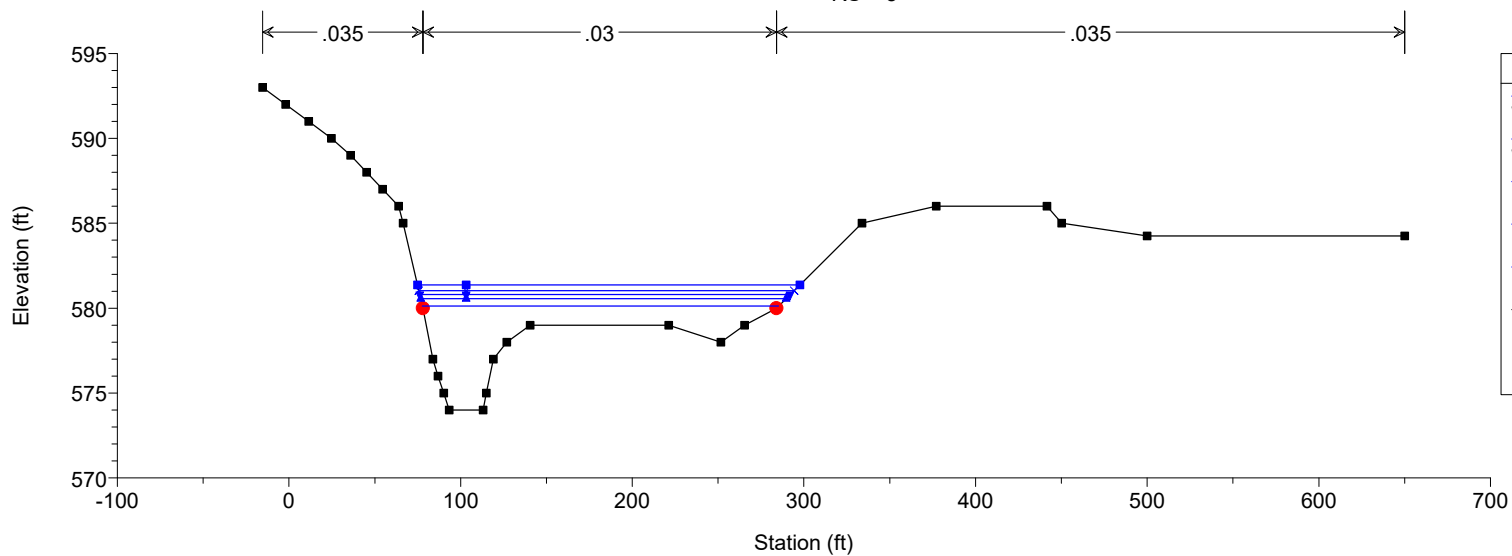




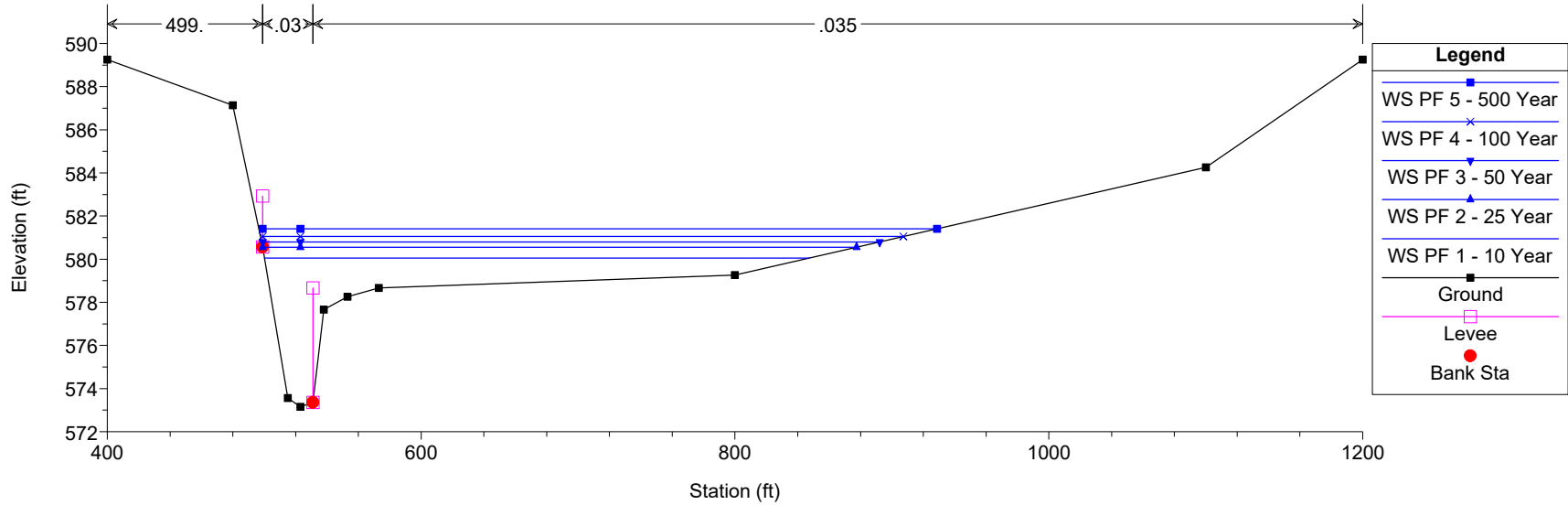
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 5.05



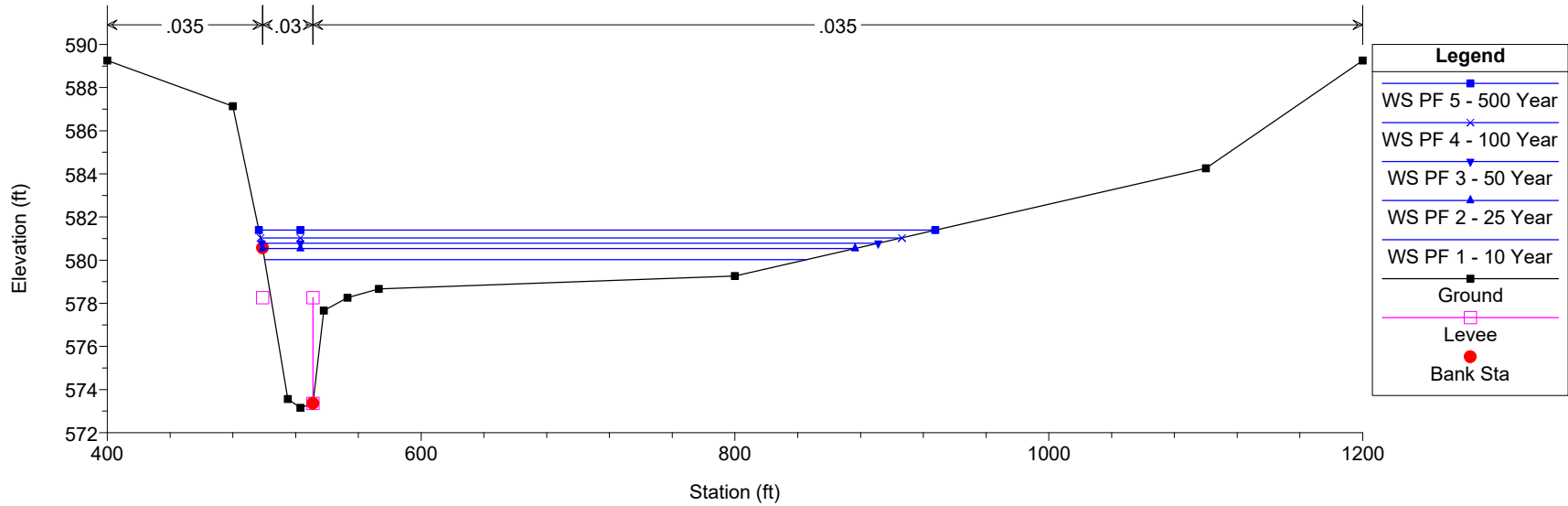
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 5



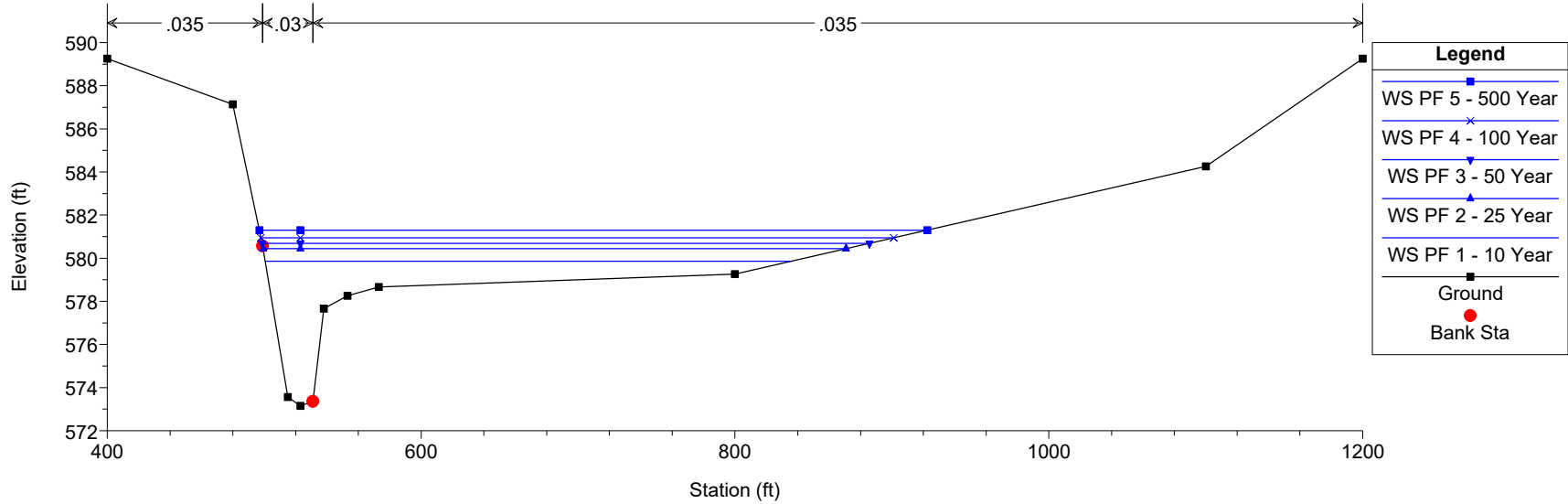
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 4.21



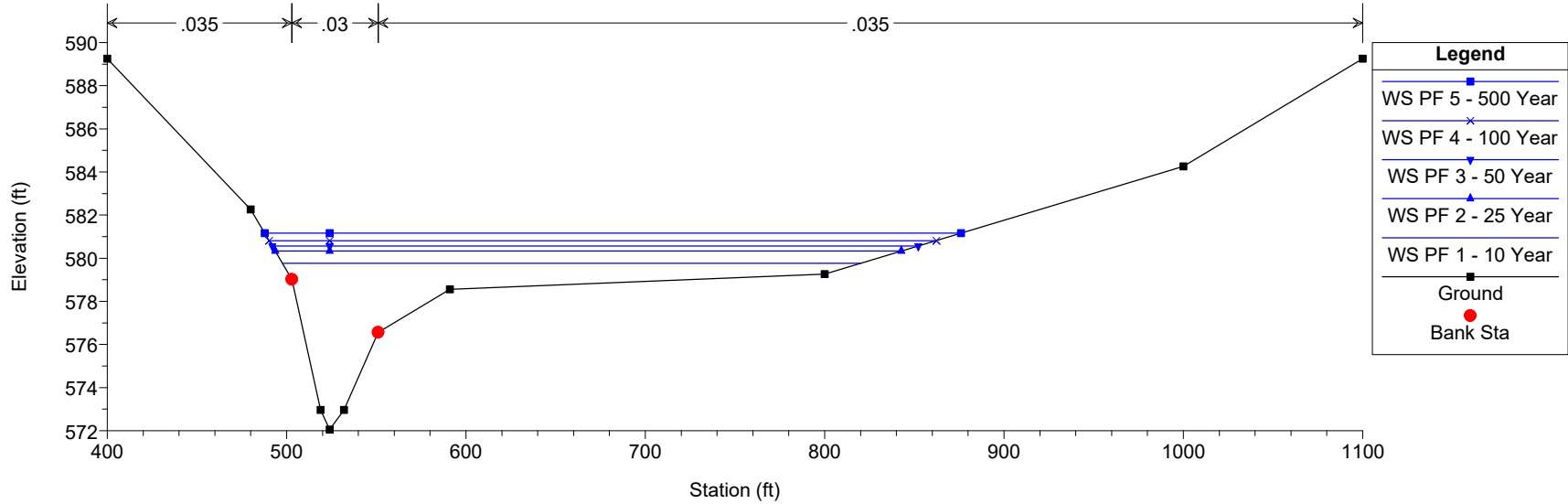
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 4.1



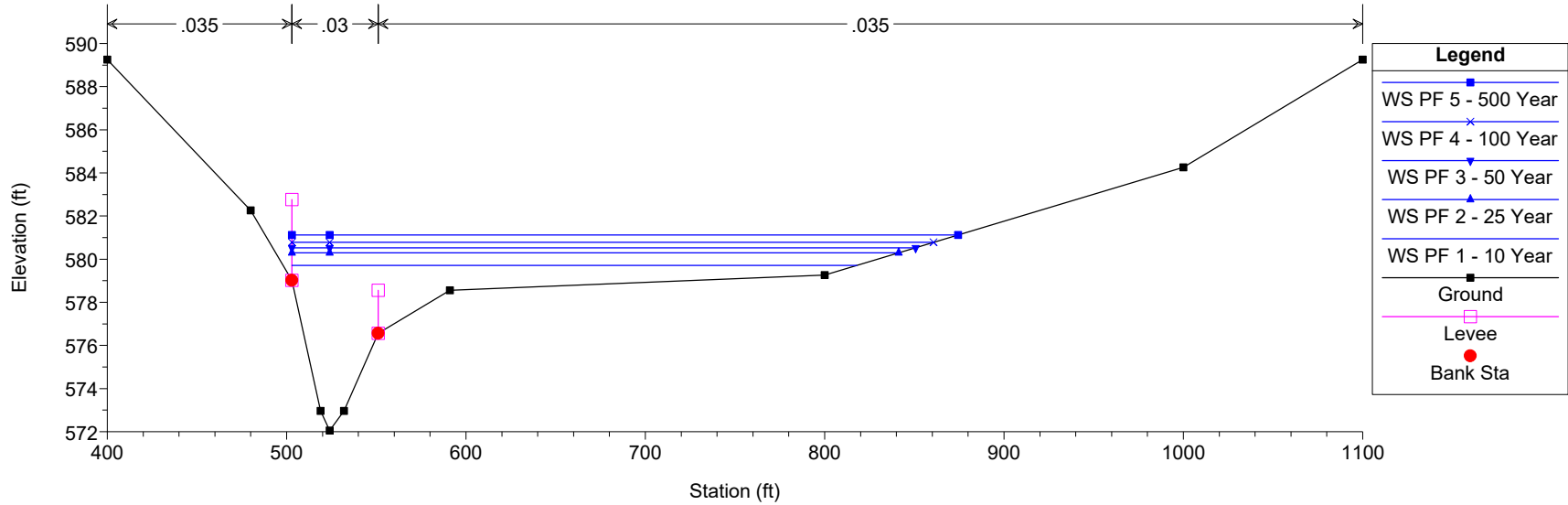
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 3.9



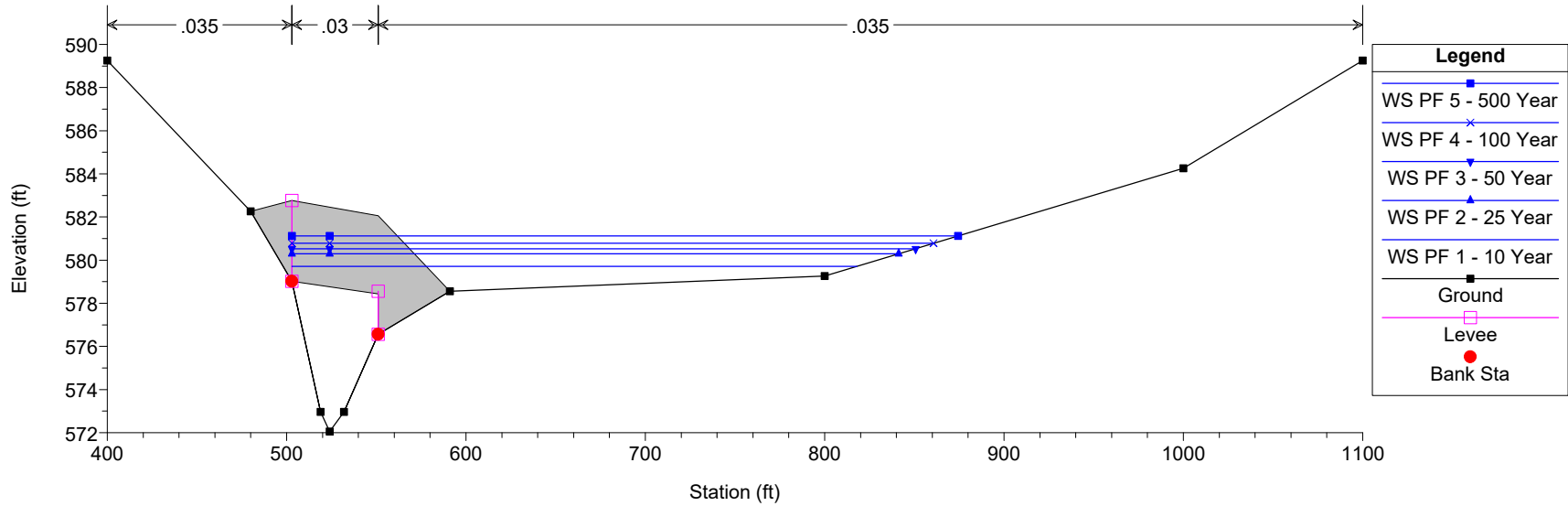
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 3.8



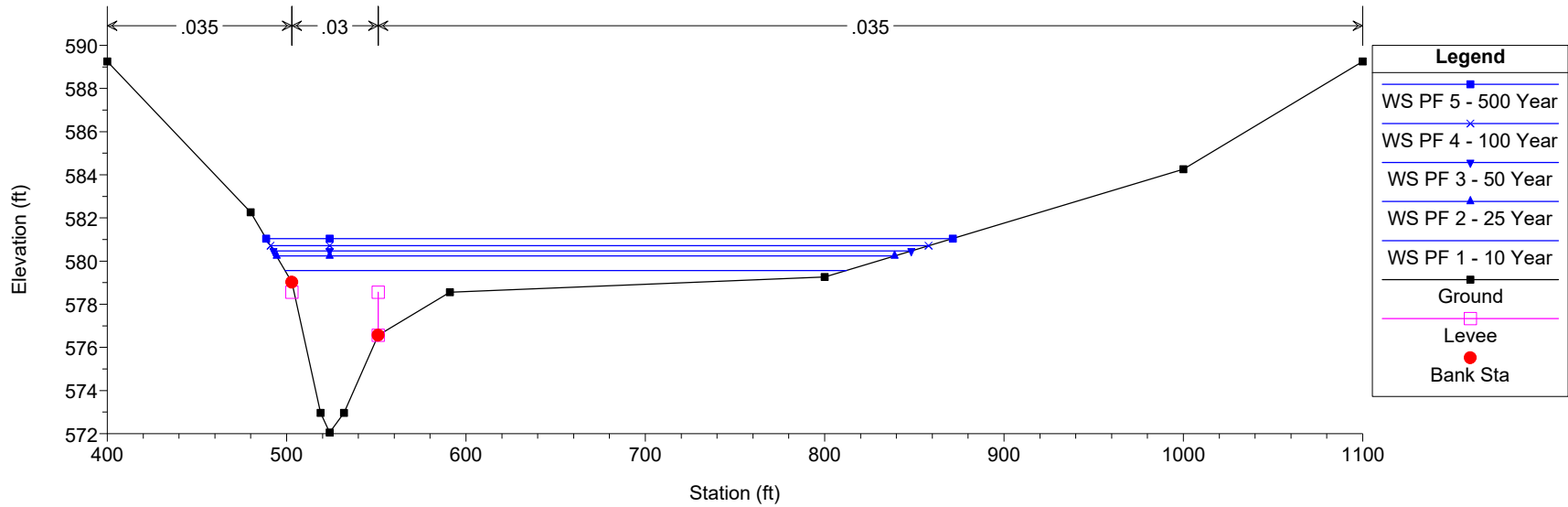
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 3.71



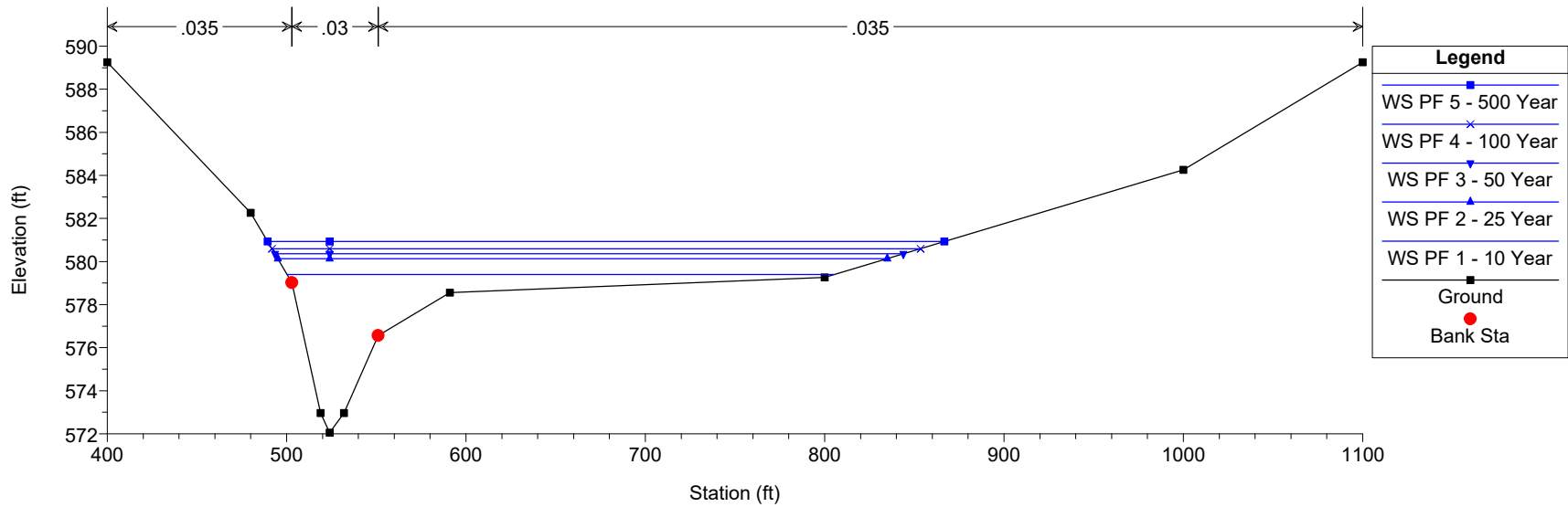
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 3.7 BR

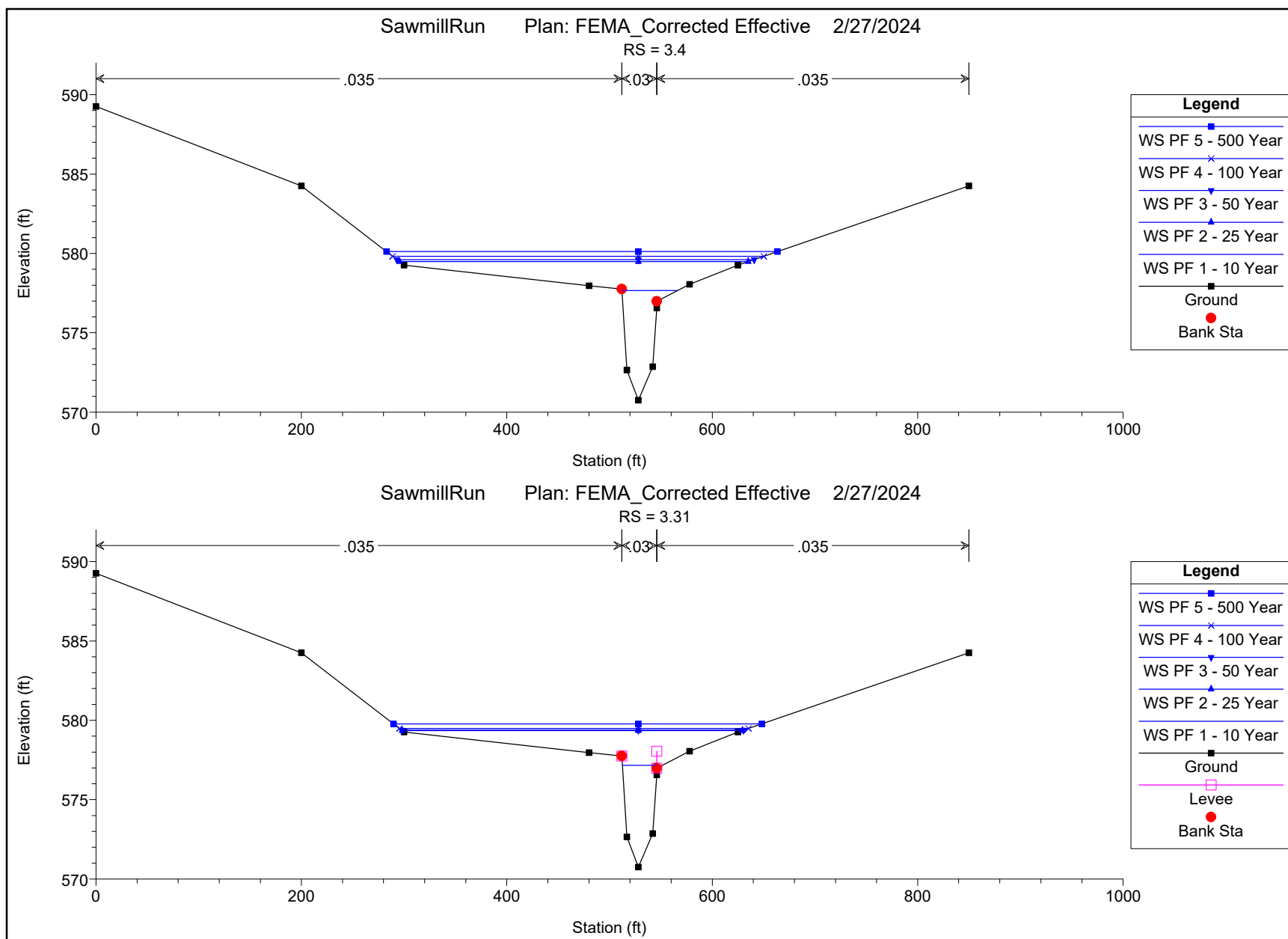


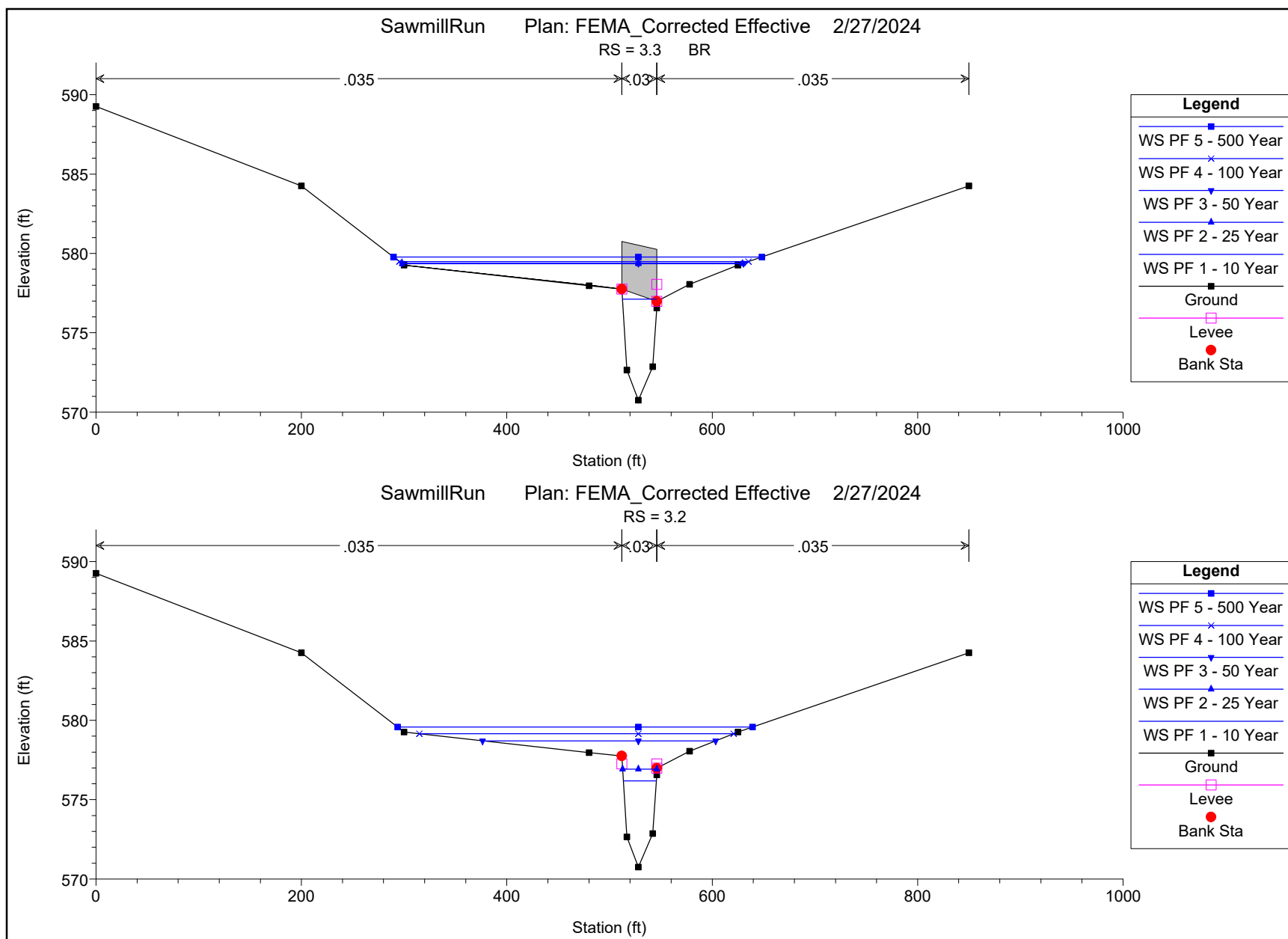
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 3.6



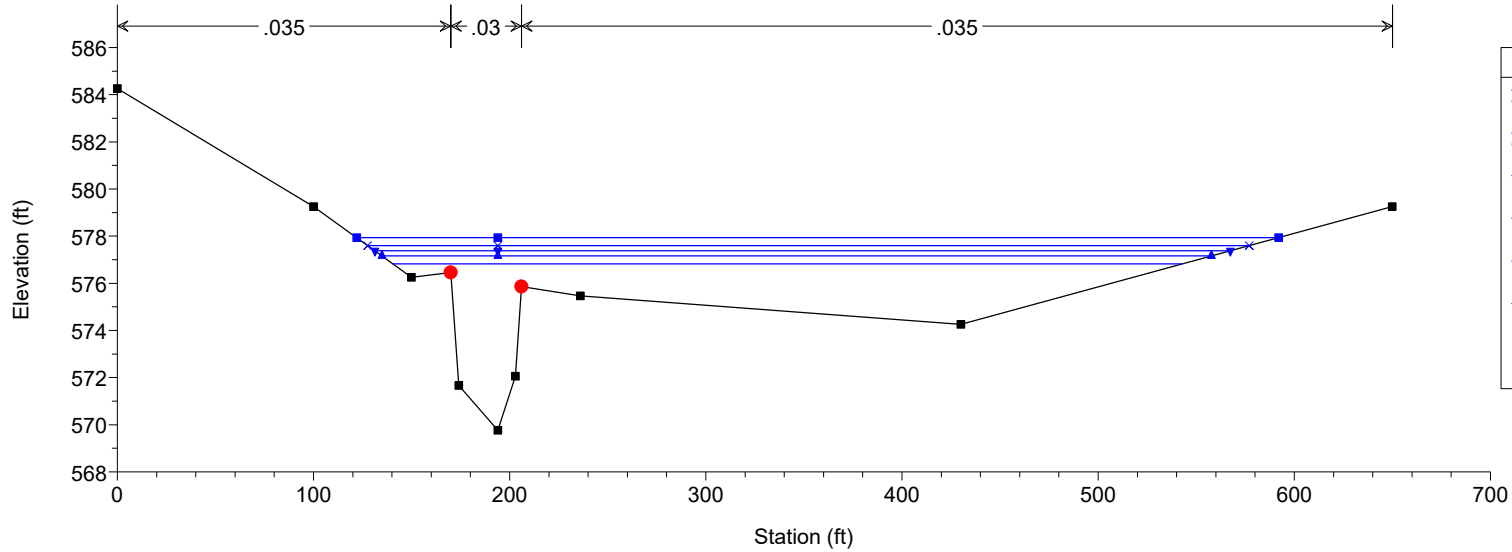
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 3.5



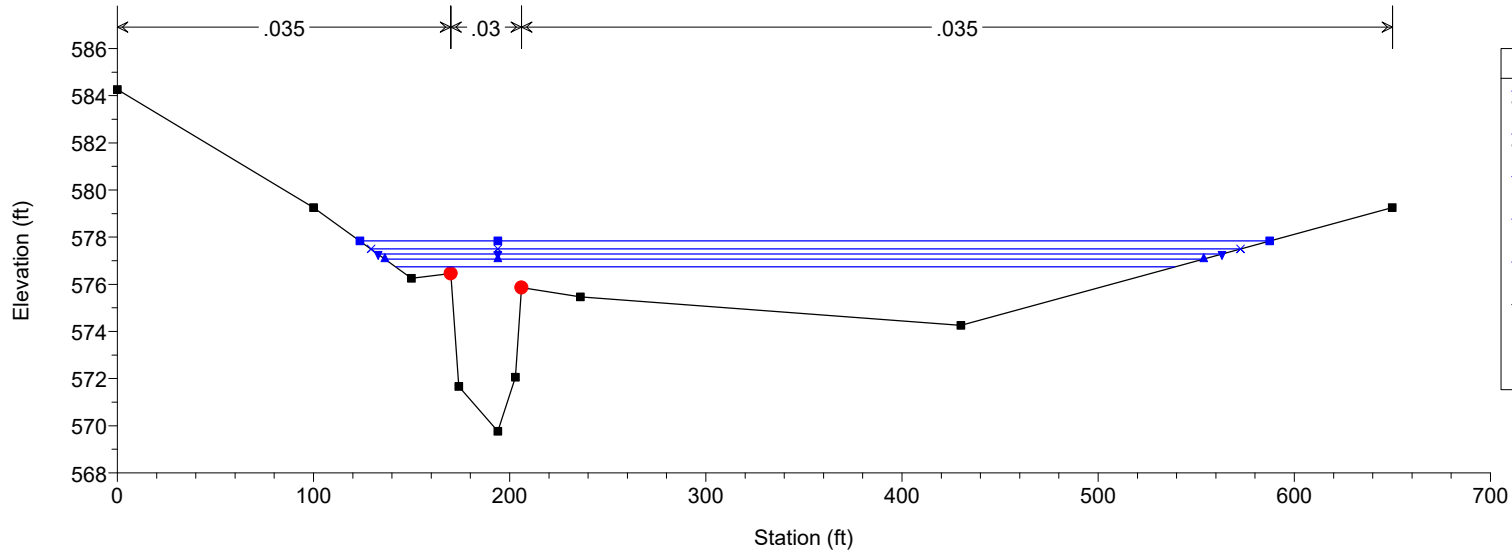




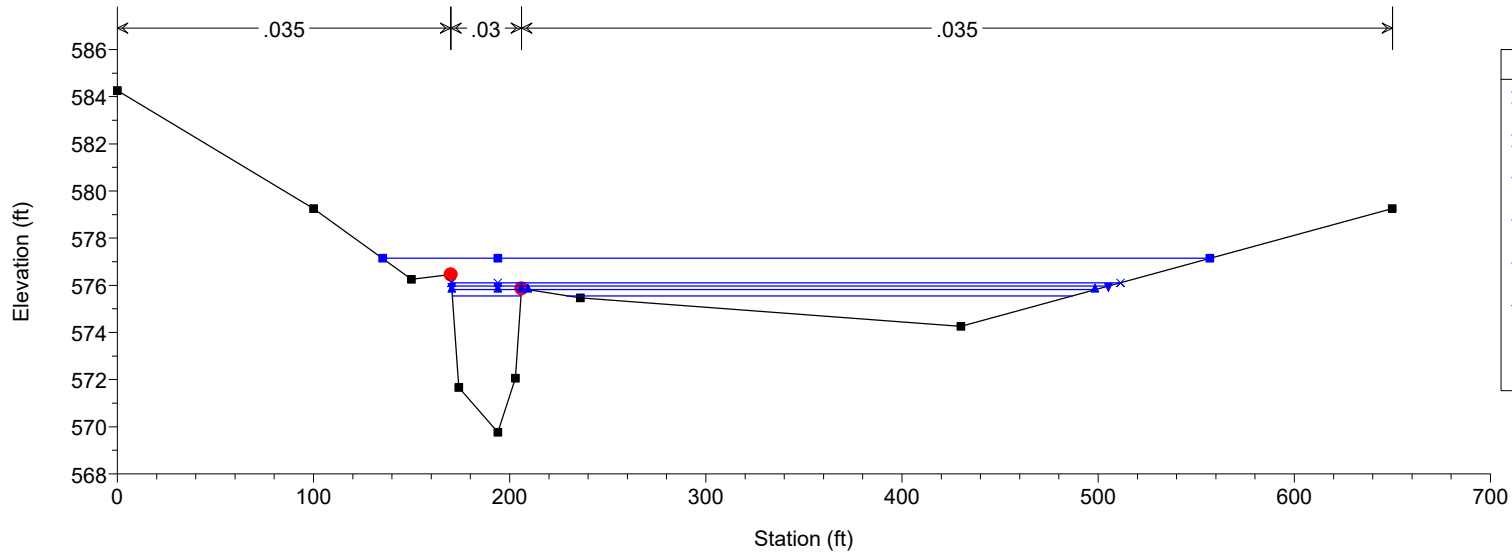
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 3.1



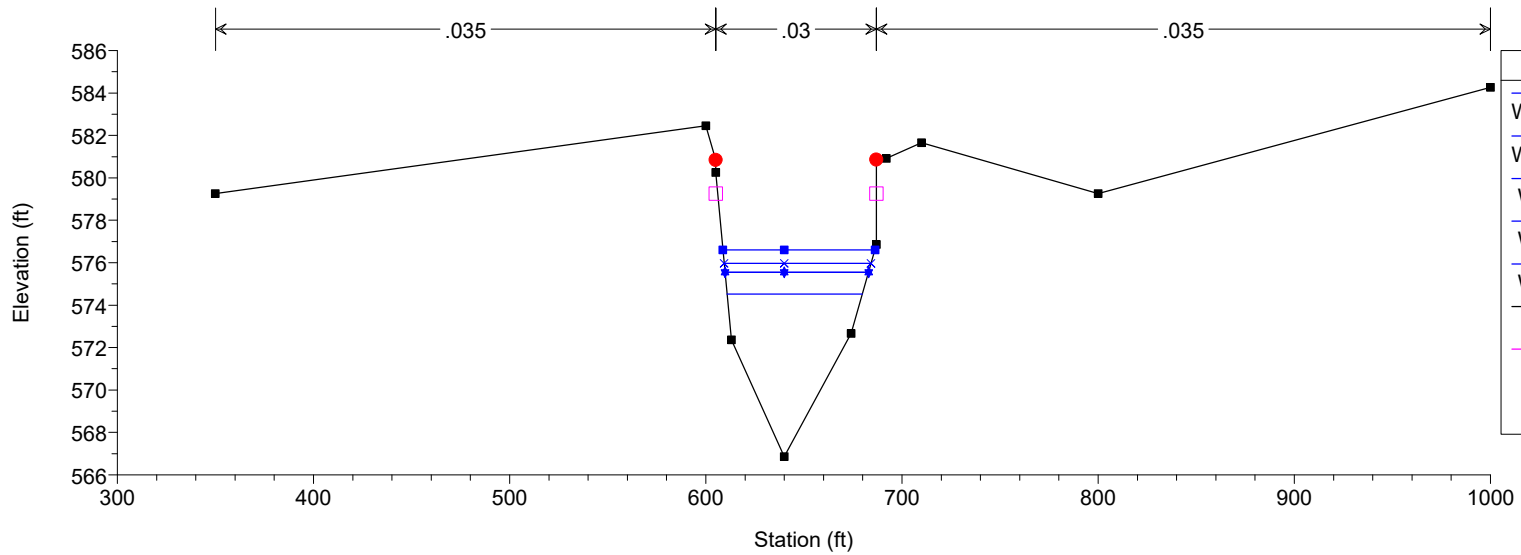
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 3

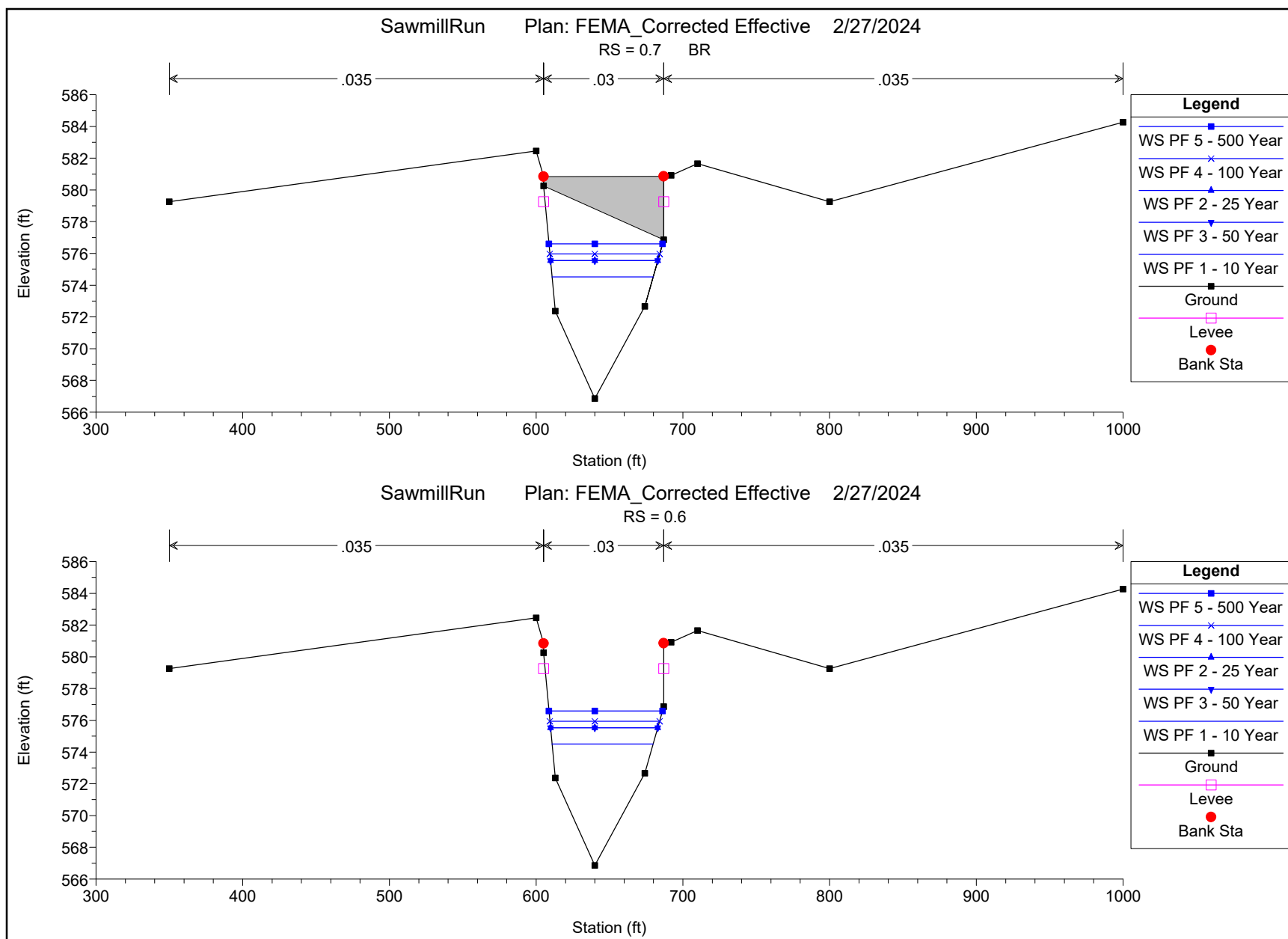


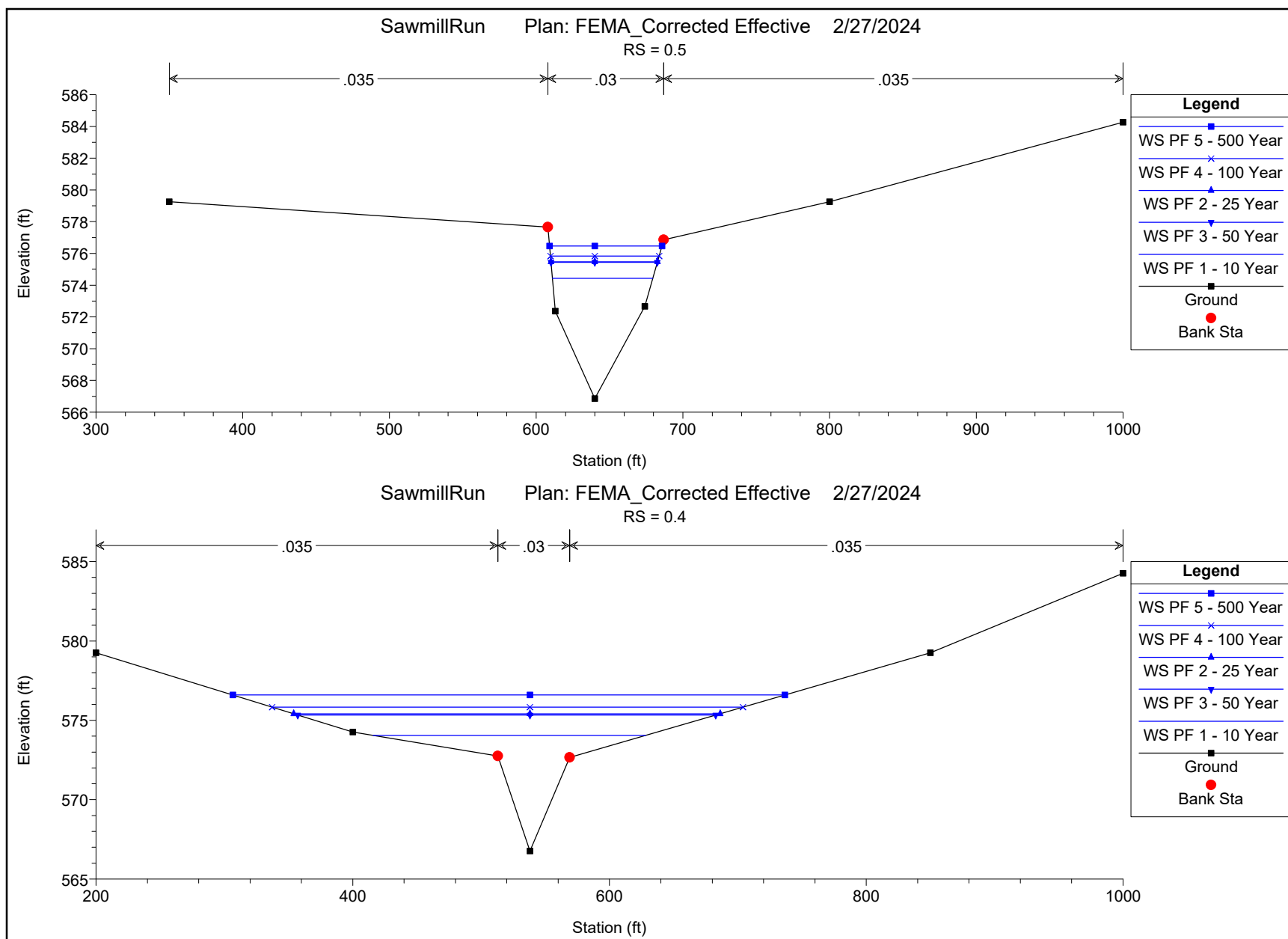
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 0.8



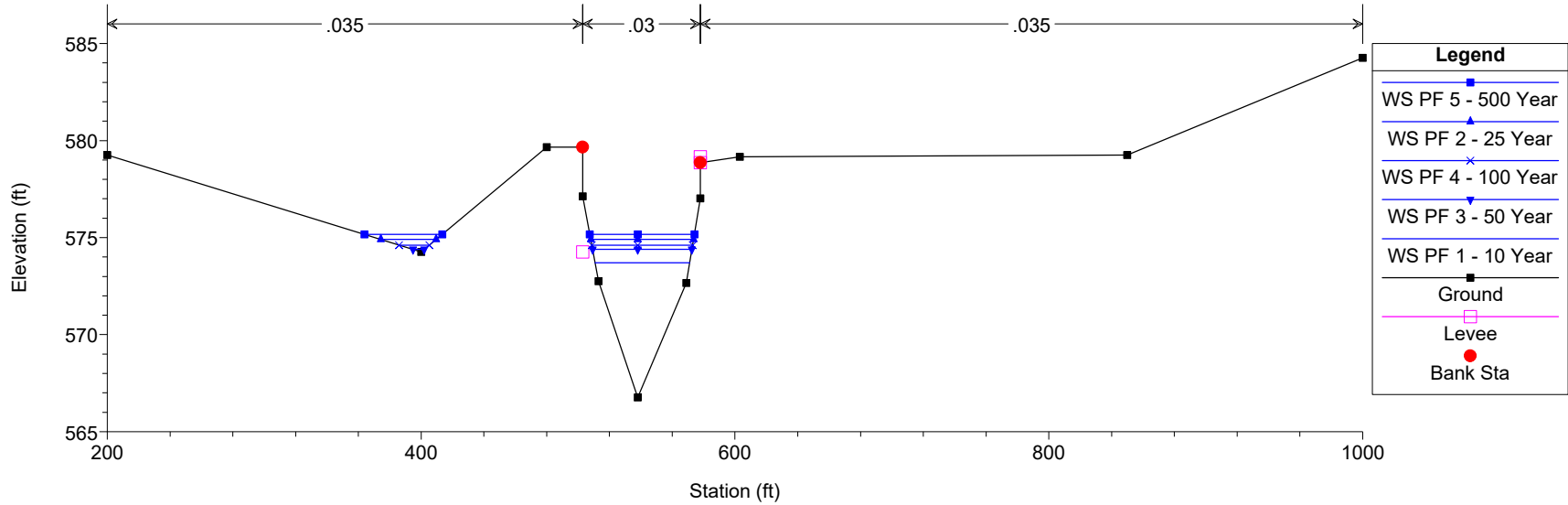
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 0.71



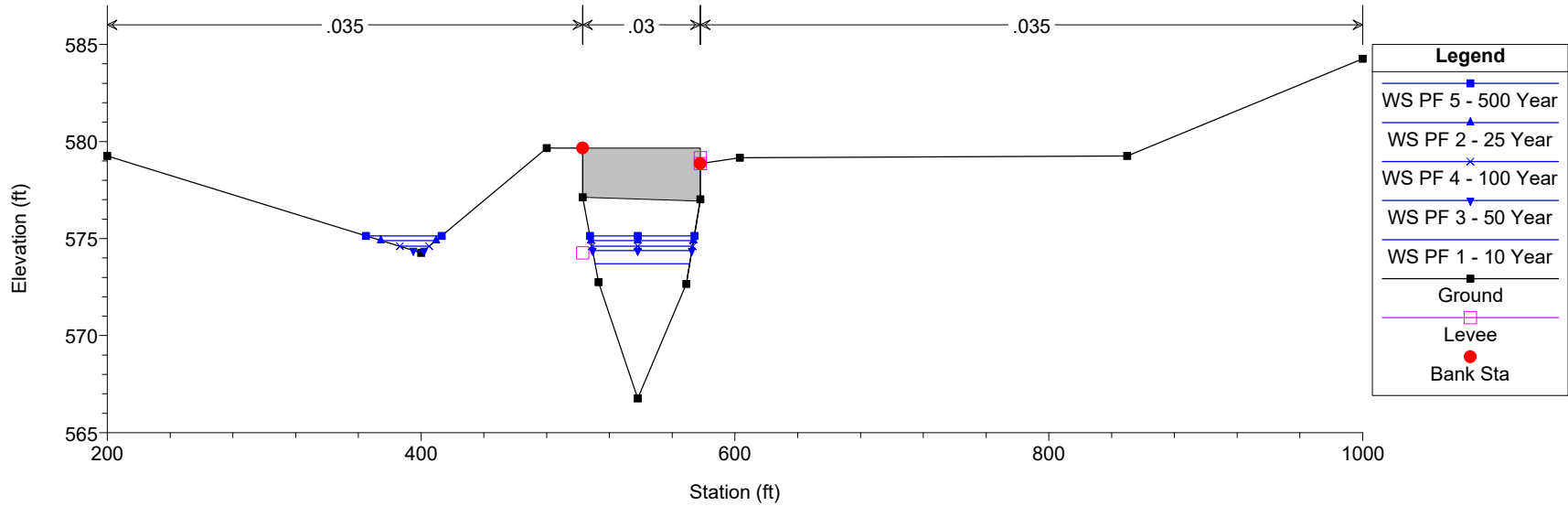




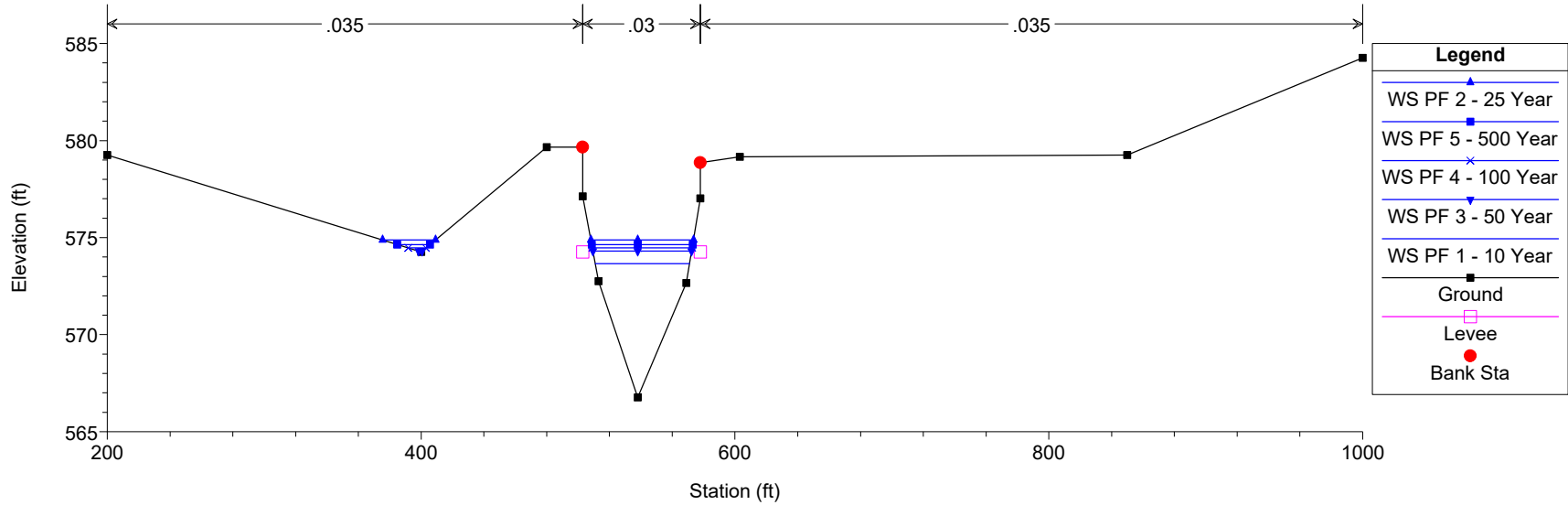
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 0.31



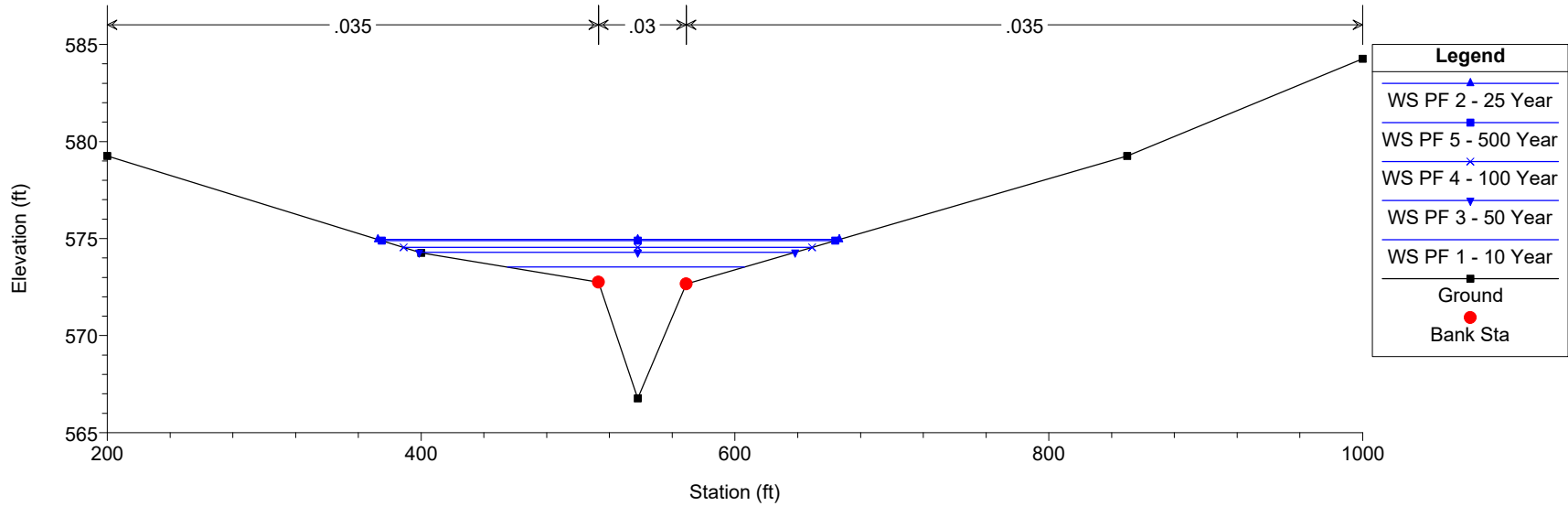
SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 0.3 BR



SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 0.2



SawmillRun Plan: FEMA_Corrected Effective 2/27/2024
RS = 0.1



APPENDIX C

HYDRAULIC CALCULATIONS – PROPOSED HEC-RAS MODEL

HEC-RAS HEC-RAS 6.3.1 September 2022
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```

X      X  XXXXXX      XXXX      XXXX      XX      XXXX
X      X  X          X  X          X  X      X  X      X
X      X  X          X          X  X      X  X      X
XXXXXXXX XXXX      X          XXX XXXX      XXXXXX      XXXX
X      X  X          X          X  X      X  X          X
X      X  X          X  X          X  X      X  X          X
X      X  XXXXXX      XXXX      X  X      X  X      XXXXX

```

PROJECT DATA

Project Title: SawmillRun
Project File : SawmillRun.prj
Run Date and Time: 2/27/2024 2:29:49 PM

Project in English units

PLAN DATA

Plan Title: FEMA_Proposed
Plan File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.p03

Geometry Title: Sawmill Run - FEMA_PR
Geometry File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.g05

Flow Title : FEMA Flows_Corrected
Flow File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.f02

Plan Summary Information:

Number of: Cross Sections =	31	Multiple Openings =	0
Culverts =	0	Inline Structures =	0
Bridges =	7	Lateral Structures =	0

Computational Information

Water surface calculation tolerance = 0.0001
Critical depth calculation tolerance = 0.01

Maximum number of iterations	=	40
Maximum difference tolerance	=	0.5
Flow tolerance factor	=	0.001

Computation Options

Critical depth computed at all cross sections	
Conveyance Calculation Method:	Between every coordinate point (HEC2 Style)
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

FLOW DATA

Flow Title: FEMA Flows_Corrected
Flow File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.f02

Flow Data (cfs)

River	Reach	RS	PF 1 - 10 Year	PF 2 - 25 Year	PF 3 -
50 Year PF 4 - 100 Year PF 5 - 500 Year					
Sawmill Run	Sawmill Run	7	1354	1750	
2038	2359	2864			

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
Sawmill Run	Sawmill Run	PF 1 - 10 Year	Normal S = 0.00348
Known WS = 573.53			
Sawmill Run	Sawmill Run	PF 2 - 25 Year	Normal S = 0.00348
Known WS = 574.95			
Sawmill Run	Sawmill Run	PF 3 - 50 Year	Normal S = 0.00348
Known WS = 574.29			
Sawmill Run	Sawmill Run	PF 4 - 100 Year	Normal S = 0.00348
Known WS = 574.54			
Sawmill Run	Sawmill Run	PF 5 - 500 Year	Normal S = 0.00348
Known WS = 574.89			

GEOMETRY DATA

Geometry Title: Sawmill Run - FEMA_PR

Geometry File : k:\PGH_SHARED\TR\BRIDGES\TRS\ODOT - Sawmill\HEC
RAS\2024.02.23\SawmillRun.g05

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 7

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
600	589.26	732	589.26	806	580.26	812	579.36	829	578.46
846	579.36	849	580.96	869	581.06	940	581.26	1025	589.26
1055	599.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
600	.8	806	.04	849	.08

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	806	849		618 618	618		.1	.3

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.81

INPUT

Description:

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
20	601.26	155	599.26	190	597.26	360	595.26	450	594.65
494	594.16	500	591.06	536	575.16	552	574.76	570	575.46
599	589.86	606	594.16	649	593.86	1100	594.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
20	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		52 52	52		.3	.5

Left Levee Station= 500 Elevation= 592.26

Right Levee Station= 599 Elevation= 592.26

BRIDGE

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.8

INPUT

Description:

Distance from Upstream XS = 1

Deck/Roadway Width = 50

Weir Coefficient = 2.7

Upstream Deck/Roadway Coordinates

num= 13

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
20	601.26	601.26			135	599.26	599.26			190	597.26	597.26		
360	595.26	595.26			450	594.65	594.65			494	594.16	594.16		
500	594.16	591.06			500	594.16	592.82			599	594.16	592.42		
599	594.16	589.86			606	594.16	594.16			649	593.86	593.86		
1100	594.26	594.26												

Upstream Bridge Cross Section Data

Station Elevation Data

num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
20	601.26	155	599.26	190	597.26	360	595.26	450	594.65
494	594.16	500	591.06	536	575.16	552	574.76	570	575.46
599	589.86	606	594.16	649	593.86	1100	594.26		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
20	.035	500	.03	599	.035

Bank	Sta: Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5

Left Levee Station= 500 Elevation= 592.26

Right Levee Station= 599 Elevation= 592.26

Downstream Deck/Roadway Coordinates

num= 13

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
20	601.26	601.26			135	599.26	599.26			190	597.26	597.26		
360	595.26	595.26			450	594.65	594.65			494	594.16	594.16		
500	594.16	591.06			500	594.16	592.82			599	594.16	592.42		
599	594.16	589.86			606	594.16	594.16			649	593.86	593.86		
1100	594.26	594.26												

Downstream Bridge Cross Section Data

Station Elevation Data

num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
20	601.26	155	599.26	190	597.26	360	595.26	450	594.65

494	594.16	500	591.06	536	575.16	552	574.76	570	575.46
599	589.86	606	594.16	649	593.86	1100	594.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
20	.035	500	.03	599	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5
Left Levee		Station=	500	Elevation=	592.26
Right Levee		Station=	599	Elevation=	592.26

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	549.5	Downstream=	549.5
Upstream	num=	2		
Width	Elev	Width	Elev	
6	569.26	6	592.76	
Downstream	num=	2		
Width	Elev	Width	Elev	
6	569.26	6	592.76	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy	
Yarnell	KVal = 1.25

Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters

- Add Friction component to Momentum
- Do not add Weight component to Momentum
- Class B flow critical depth computations use critical depth inside the bridge at the upstream end
- Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 5.7

INPUT

Description:

Station		Elevation Data		num=	14					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
20	601.26	155	599.26	190	597.26	360	595.26	450	594.65	
494	594.16	500	591.06	536	575.16	552	574.76	570	575.46	
599	589.86	606	594.16	649	593.86	1100	594.26			

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
20	.035	500	.03
		599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		60 60	60		.3	.5
Left Levee		Station=	500	Elevation=	592.26			
Right Levee		Station=	599	Elevation=	592.26			

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 5.6

INPUT

Description:

Station		Elevation Data		num=	14					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	601.26	90	599.26	150	597.26	340	595.26	450	594.72	
494	593.46	500	590.46	535	574.96	552	574.06	568	575.06	
599	590.36	606	593.36	649	594.01	1100	594.26			

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
0	.035	500	.03
		599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		3 3	3		.3	.5

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 5.51

INPUT

Description:

Station Elevation Data		num= 14							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	601.26	90	599.26	150	597.26	340	595.26	450	594.72
494	593.46	500	590.46	535	574.96	552	574.06	568	575.06
599	590.36	606	593.36	649	594.01	1100	594.26		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		67	67		.3	.5
Left Levee		Station=	500	Elevation=	594.36			
Right Levee		Station=	599	Elevation=	594.01			

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 5.5

INPUT

Description:

Distance from Upstream XS = 1

Deck/Roadway Width = 65

Weir Coefficient = 2.7

Upstream Deck/Roadway Coordinates

num= 13											
Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	601.26	601.26	90	599.26	599.26	150	597.26	597.26			
340	595.26	595.26	450	594.72	594.72	494	594.36	593.46			
500	594.36	590.46	500	594.36	593.01	599	594.36	592.66			
599	594.26	590.36	606	594.26	593.36	649	594.01	594.01			
1100	594.26	594.26									

Upstream Bridge Cross Section Data

Station Elevation Data		num= 14							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	601.26	90	599.26	150	597.26	340	595.26	450	594.72
494	593.46	500	590.46	535	574.96	552	574.06	568	575.06
599	590.36	606	593.36	649	594.01	1100	594.26		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5
Left Levee		Station=	500	Elevation=	594.36
Right Levee		Station=	599	Elevation=	594.01

Downstream Deck/Roadway Coordinates

num= 13

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	601.26	601.26			90	599.26	599.26			150	597.26	597.26		
340	595.26	595.26			450	594.72	594.72			494	594.36	593.46		
500	594.36	590.46			500	594.36	593.01			599	594.36	592.66		
599	594.26	590.36			606	594.26	593.36			649	594.01	594.01		
1100	594.26	594.26												

Downstream Bridge Cross Section Data

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	601.26	90	599.26	150	597.26	340	595.26	450	594.72
494	593.46	500	590.46	535	574.96	552	574.06	568	575.06
599	590.36	606	593.36	649	594.01	1100	594.26		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	599		.3	.5

Left Levee	Station=	500	Elevation=	582.26
Right Levee	Station=	599	Elevation=	582.26

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 549.5 Downstream= 549.5

Upstream	num=	2
Width	Elev	Width Elev
6	573.26	6 592.76
Downstream	num=	2
Width	Elev	Width Elev
6	573.26	6 592.76

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy
Yarnell KVal = 1.25

Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.4

INPUT

Description:

Station		Elevation Data		num=	14										
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	601.26	90	599.26	150	597.26	340	595.26	450	594.72						
494	593.46	500	590.46	535	574.96	552	574.06	568	575.06						
599	590.36	606	593.36	649	594.01	1100	594.26								

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	500	.03	599	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	500	599		200 200	200		.3	.5
Left Levee	Station=		500	Elevation=	582.26			
Right Levee	Station=		599	Elevation=	582.26			

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.3

INPUT

Description:

Station		Elevation Data		num=	11										
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	595.26	88	579.26	167	579.26	182	575.26	185	573.26						
215	573.26	218	575.26	231	579.26	370	581.26	475	583.26						
580	595														

Manning's n Values		num=	3		
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Sta	n Val	Sta	n Val	Sta	n Val
0	.035	182	.03	218	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	182	218		206 206	206		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 5.21

INPUT

Description:

Station Elevation Data				num=	33				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
85	595.26	165	593.26	280	591.26	335	589.26	416.22	589
445.185	589	488.8	589	493.91	588	494.1	587	494.29	586
494.47	580	494.993	579	495.73	578	501.66	577	503.09	576
504.13	575	509.1	574	521.29	574	527.23	575	528.45	576
529.32	577	530.12	578	531.79	580	532.77	581	534.72	583
537.27	585	537.84	586	538.42	587	539	588	553.77	588
611.79	587	710	587.26	1250	589.26				

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
85	.035	493.91	.03	539	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	493.91	539		56 56	56		.3	.5
Left Levee	Station=		494.29	Elevation=	588.36			
Right Levee	Station=		537.84	Elevation=	587.26			

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 5.2

INPUT

Description:

Distance from Upstream XS = 1
 Deck/Roadway Width = 44
 Weir Coefficient = 2.7
 Upstream Deck/Roadway Coordinates

num= 17														
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
85	595.26				165	593.26				280	591.26			
335	589.26				450	588.62				490.17	588.97			
498.22	588.97				499.99	588.97			570	500	588.72	585.652		

544.32	588.61	585.257	544.33	588.41	570	546.89	588.61
555.24	588.41		573.26	588.12		586	588.06
710	587.26		1250	589.26			

Upstream Bridge Cross Section Data

Station Elevation Data				num=	25				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
85	595.26	165	593.26	280	591.26	335	589.26	450	588.62
494.56	589	500	585	500.33	580	501.03	578	505.44	578
506.69	577	508.23	576	509.96	575	514.69	574	526.66	574
532.54	575	534.56	577	536.2	578	537.28	580	542.61	585
544.34	588	580	587.86	586	588.06	710	587.26	1250	589.26

Manning's n Values				num=	5				
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
85	.035	500	.013	514.69	.03	526.66	.013	537.28	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500	542.61		.3	.5
Left Levee		Station=	494.29	Elevation=	588.36
Right Levee		Station=	537.84	Elevation=	587.26

Downstream Deck/Roadway Coordinates

num=				17					
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
85	595.26				165	593.26			
335	589.26				427.68	587.26			
490.24	586.42				498.39	586.33			
500	586.33	583.192			544.9	585.86	582.77		
549.35	585.87				565.33	585.65			
637.21	586				710	587.26			

Downstream Bridge Cross Section Data

Station Elevation Data				num=	20				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
85	595.26	165	593.26	280	591.26	335	589.26	462.06	587
500	586	500.26	585	502.24	583	503.33	582	504.23	581
505.14	580	509.66	575	511.6	574	529.71	574	531.81	575
540.43	580	544.78	585	573.42	585.56	710	587.26	1250	589.26

Manning's n Values				num=	6				
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
85	.035	500	.03	500.26	.013	509.66	.03	529.71	.013
544.78	.035								

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	500.26	544.78		.3	.5
Left Levee		Station=	482.21	Elevation=	585.26
Right Levee		Station=	576	Elevation=	585.26

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins =
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Energy Only

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
 inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.1

INPUT

Description:

Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
85	595.26	165	593.26	280	591.26	335	589.26	401.8	588
428.09	587	456.48	586	482.21	585	487.25	584	496.37	583
496.5	582	496.55	581	496.6	580	496.67	579	498.67	578
500.67	577	502.67	576	504.67	575	508.51	574	526.36	574
528.31	574	530.31	575	532.31	576	534.31	577	536.31	578
540.71	579	541.05	580	541.41	583	545.71	583	552.28	583
572.05	584	618.83	585	765.46	586	1250	589.26		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
85	.035	487.25	.013	508.51	.03	528.31	.013	545.71	.035

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	496.37	541.41	4	4	4			
Left Levee	Station=	482.21	Elevation=	585.26				
Right Levee	Station=	576	Elevation=	585.26				

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5.05

INPUT

Description:

Station Elevation Data	num=	33
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
85 595.15 165 593.15 280 591.15 335 589.15 365.44 589		
428.95 588 447.75 587 458.51 586 481.08 585 485.25 584		
487.3 583 489.31 582 491.32 581 493.58 580 495.88 579		
498.18 578 500.48 577 502.75 576 508.59 575 526.11 574		
528.31 575 530.01 576 532.06 577 535.55 578 539.48 579		
542.34 580 542.46 581 587.98 582 604.45 583 620.3 584		
652.77 585 778.7 586 1250 589.15		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
85 .035 487.3 .03 604.45 .035		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff	Contr.	Expan.
487.3	604.45	34	34		.3	.5
Left Levee	Station=	485.25	Elevation=	584.26		
Right Levee	Station=	576	Elevation=	584.26		

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 5

INPUT

Description:

Station Elevation Data	num=	29
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
-15.4 593 -1.92 592 11.42 591 24.76 590 35.96 589		
45.28 588 54.6 587 63.92 586 66.44 585 77.97 580		
83.88 577 86.89 576 90.09 575 93.3 574 113.01 574		
114.87 575 119.15 577 126.91 578 140.56 579 221.28 579		
251.7 578 265.4 579 284 580 333.84 585 377.02 586		
441.69 586 450.26 585 500 584.26 650 584.26		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
-15.4 .035 77.97 .03 284 .035		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff	Contr.	Expan.
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77.97	284	23	23	23	.3	.5
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CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 4.21

INPUT

Description:

Station Elevation Data				num=	12						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	587.14	499	580.56	515	573.56	523	573.16		
531	573.36	538	577.66	553	578.26	573	578.66	800	579.26		
1100	584.26	1200	589.26								

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
400	499	499	.03	531	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	499	531		10 10	10		.3	.5
Left Levee	Station=		499	Elevation=	582.93			
Right Levee	Station=		531	Elevation=	578.66			

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 4.1

INPUT

Description:

Station Elevation Data				num=	12						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	587.14	499	580.56	515	573.56	523	573.16		
531	573.36	538	577.66	553	578.26	573	578.66	800	579.26		
1100	584.26	1200	589.26								

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
400	.035	499	.03	531	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	499	531		50 50	50		.3	.5
Left Levee	Station=		499	Elevation=	578.26			
Right Levee	Station=		531	Elevation=	578.26			

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.9

INPUT

Description:

Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	587.14	499	580.56	515	573.56	523	573.16
531	573.36	538	577.66	553	578.26	573	578.66	800	579.26
1100	584.26	1200	589.26						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	499	.03	531	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	499	531		160 160	160		.1	.3

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.8

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	582.26	503	579.02	519	572.96	524	572.06
532	572.96	551	576.56	591	578.56	800	579.26	1000	584.26
1100	589.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	551		49 49	49		.3	.5

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.71

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-----	------	-----	------	-----	------	-----	------	-----	------

num=	9	
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord

400	589.26	589.26	480	582.26	582.26	503	582.76	579.02
551	582.06	578.44	551	582.06	576.56	591	578.56	578.56
800	579.26	579.26	1000	584.26	584.26	1100	589.26	589.26

Downstream Bridge Cross Section Data

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	582.26	503	579.02	519	572.96	524	572.06
532	572.96	551	576.56	591	578.56	800	579.26	1000	584.26
1100	589.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	503	551		.3	.5

Left Levee Station= 503 Elevation= 578.56

Right Levee Station= 551 Elevation= 578.56

Upstream Embankment side slope = 0 horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins =

Energy head used in spillway design =

Spillway height used in design =

Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .8

Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth

inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.6

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	582.26	503	579.02	519	572.96	524	572.06
532	572.96	551	576.56	591	578.56	800	579.26	1000	584.26
1100	589.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	551		92 92	92		.3	.5
Left Levee		Station=	503	Elevation=	578.56			
Right Levee		Station=	551	Elevation=	578.56			

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.5

INPUT

Description:

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
400	589.26	480	582.26	503	579.02	519	572.96	524	572.06
532	572.96	551	576.56	591	578.56	800	579.26	1000	584.26
1100	589.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
400	.035	503	.03	551	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	551		540 540	540		.1	.3

CROSS SECTION

RIVER: Sawmill Run
REACH: Sawmill Run RS: 3.4

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	589.26	200	584.26	300	579.26	480	577.96	512	577.76
517	572.66	528	570.76	542	572.86	546	576.56	546	576.98
578	578.06	625	579.26	850	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	512	.03	546	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	512	546		48 48	48		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.31

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	589.26	200	584.26	300	579.26	480	577.96	512	577.76
517	572.66	528	570.76	542	572.86	546	576.56	546	576.98
578	578.06	625	579.26	850	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	512	.03	546	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	512	546		10 10	10		.3	.5
Left Levee	Station=	512	Elevation=	577.76				
Right Levee	Station=	546	Elevation=	578.06				

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 3.3

INPUT

Description:

Distance from Upstream XS = 1
 Deck/Roadway Width = 8
 Weir Coefficient = 2.8
 Upstream Deck/Roadway Coordinates

num= 11

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	589.26	589.26			200	584.26	584.26			300	579.26	579.26		

486	577.96	577.96	512	577.76	577.76	512	580.76	577.76
546	580.26	576.98	546	576.98	576.98	578	578.06	578.06
625	579.26	579.26	850	584.26	584.26			

Upstream Bridge Cross Section Data

Station Elevation Data						num=	13		
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	589.26	200	584.26	300	579.26	480	577.96	512	577.76
517	572.66	528	570.76	542	572.86	546	576.56	546	576.98
578	578.06	625	579.26	850	584.26				

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
0	.035	512	.03	546	.035		

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	512	546		.3	.5
Left Levee		Station=	512	Elevation=	577.76
Right Levee		Station=	546	Elevation=	578.06

Downstream Deck/Roadway Coordinates

num= 11														
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	589.26	589.26			200	584.26	584.26			300	579.26	579.26		
486	577.96	577.96			512	577.76	577.76			512	580.76	577.76		
546	580.26	576.98			546	576.98	576.98			578	578.06	578.06		
625	579.26	579.26			850	584.26	584.26							

Downstream Bridge Cross Section Data

Station Elevation Data						num=	13		
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	589.26	200	584.26	300	579.26	480	577.96	512	577.76
517	572.66	528	570.76	542	572.86	546	576.56	546	576.98
578	578.06	625	579.26	850	584.26				

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
0	.035	512	.03	546	.035		

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	512	546		.3	.5
Left Levee		Station=	512	Elevation=	577.26
Right Levee		Station=	546	Elevation=	577.26

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	
Energy head used in spillway design	=	
Spillway height used in design	=	

Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .8

Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth

inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 3.2

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	589.26	200	584.26	300	579.26	480	577.96	512	577.76
517	572.66	528	570.76	542	572.86	546	576.56	546	576.98
578	578.06	625	579.26	850	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	512	.03	546	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	512	546		100 100	100	.3	.5
Left Levee		Station=	512	Elevation=	577.26		
Right Levee		Station=	546	Elevation=	577.26		

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 3.1

Description:

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	584.26	100	579.26	150	576.26	170	576.46	174	571.66
194	569.76	203	572.06	206	575.86	236	575.46	430	574.26
650	579.26								

Sta	n	Val	Sta	n	Val	Sta	n	Val
0		.035	170		.03	206		.035

CROSS SECTION

Description:

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	584.26	100	579.26	150	576.26	170	576.46	174	571.66
194	569.76	203	572.06	206	575.86	236	575.46	430	574.26
650	579.26								

Sta	n	Val	Sta	n	Val	Sta	n	Val
0		.035	170		.03	206		.035

CROSS SECTION

Description:

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	584.26	100	579.26	150	576.26	170	576.46	174	571.66
194	569.76	203	572.06	206	575.86	236	575.46	430	574.26
650	579.26								

Manning's n Values	num=	3
Sta n Val	Sta n Val	Sta n Val
0 .035	170 .03	206 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	170	206		40 40	40		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.71

INPUT

Description:

Station Elevation Data	num=	13
Sta Elev	Sta Elev	Sta Elev
350 579.26	600 582.45	605 580.84
640 566.86	674 572.66	687 576.86
710 581.66	800 579.26	1000 584.26

Manning's n Values	num=	3
Sta n Val	Sta n Val	Sta n Val
350 .035	605 .03	687 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	605	687		10 10	10		.3	.5
Left Levee	Station=	605	Elevation=	579.26				
Right Levee	Station=	687	Elevation=	579.26				

BRIDGE

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.7

INPUT

Description:

Distance from Upstream XS = 1
 Deck/Roadway Width = 8
 Weir Coefficient = 2.8

Upstream Deck/Roadway Coordinates

num=	10
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
350 579.26 579.26	600 582.45 582.45
605 580.84 580.26	687 580.86 576.86
692 580.91 580.91	710 581.66 581.66
1000 584.26 584.26	800 579.26 579.26

Upstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	579.26	600	582.45	605	580.84	605	580.26	613	572.36
640	566.86	674	572.66	687	576.86	687	580.86	692	580.91
710	581.66	800	579.26	1000	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
350	.035	605	.03	687	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	605	687		.3	.5

Left Levee	Station=	605	Elevation=	579.26
Right Levee	Station=	687	Elevation=	579.26

Downstream Deck/Roadway Coordinates

num= 10														
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
350	579.26	579.26			600	582.45	582.45			603	580.84	580.84		
605	580.84	580.26			687	580.86	576.86			687	580.86	580.86		
692	580.91	580.91			710	581.66	581.66			800	579.26	579.26		
1000	584.26	584.26												

Downstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	579.26	600	582.45	605	580.84	605	580.26	613	572.36
640	566.86	674	572.66	687	576.86	687	580.86	692	580.91
710	581.66	800	579.26	1000	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
350	.035	605	.03	687	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	605	687		.3	.5

Left Levee	Station=	605	Elevation=	579.26
Right Levee	Station=	687	Elevation=	579.26

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	580.84
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =
Submerged Inlet + Outlet Cd = .8
Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.6

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	579.26	600	582.45	605	580.84	605	580.26	613	572.36
640	566.86	674	572.66	687	576.86	687	580.86	692	580.91
710	581.66	800	579.26	1000	584.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
350	.035	605	.03	687	.035

Bank	Sta: Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	605	687		50 50	50		.3	.5
Left Levee		Station=	605	Elevation=	579.26			
Right Levee		Station=	687	Elevation=	579.26			

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.5

INPUT

Description:

Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
350	579.26	608	577.66	613	572.36	640	566.86	674	572.66

687	576.86	800	579.26	1000	584.26
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Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
350	.035	608	.03	687	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	608	687		250 250	250		.1	.3

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.4

INPUT

Description:

Station Elevation Data		num=		7	
Sta	Elev	Sta	Elev	Sta	Elev
200	579.26	400	574.26	513	572.76
850	579.26	1000	584.26	538	566.76
				569	572.66

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
200	.035	513	.03	569	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	513	569		40 40	40		.3	.5

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.31

INPUT

Description:

Station Elevation Data		num=		13	
Sta	Elev	Sta	Elev	Sta	Elev
200	579.26	400	574.26	480	579.66
513	572.76	538	566.76	569	572.66
603	579.16	850	579.26	1000	584.26
				503	579.66
				578	577.02
				578	578.86

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
200	.035	503	.03	578	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	578		10 10	10		.3	.5

Left Levee	Station=	503	Elevation=	574.26
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Right Levee Station= 578 Elevation= 579.16

BRIDGE

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.3

INPUT

Description:

Distance from Upstream XS = 1

Deck/Roadway Width = 8

Weir Coefficient = 2.8

Upstream Deck/Roadway Coordinates

num= 10

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
200	579.26	579.26			400	574.26	574.26			480	579.66	579.66		
503	579.66	579.66			503	579.66	577.13			578	579.66	576.93		
578	578.86	578.86			603	579.16	579.16			850	579.26	579.26		
1000	584.26	584.26												

Upstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	579.26	400	574.26	480	579.66	503	579.66	503	577.13
513	572.76	538	566.76	569	572.66	578	577.02	578	578.86
603	579.16	850	579.26	1000	584.26				

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
200	.035	503	.03	578	.035

Bank	Sta: Left	Right	Coeff	Contr.	Expan.
	503	578		.3	.5

Left Levee Station= 503 Elevation= 574.26

Right Levee Station= 578 Elevation= 579.16

Downstream Deck/Roadway Coordinates

num= 10

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
200	579.26	579.26			400	574.26	574.26			480	579.66	579.66		
503	579.66	579.66			503	579.66	577.13			578	579.66	576.93		
578	578.86	578.86			603	579.16	579.16			850	579.26	579.26		
1000	584.26	584.26												

Downstream Bridge Cross Section Data

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	579.26	400	574.26	480	579.66	503	579.66	503	577.13
513	572.76	538	566.76	569	572.66	578	577.02	578	578.86

603 579.16 850 579.26 1000 584.26

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
200 .035 503 .03 578 .035

Bank Sta: Left Right Coeff Contr. Expan.
503 578 .3 .5
Left Levee Station= 503 Elevation= 574.26
Right Levee Station= 578 Elevation= 574.26

Upstream Embankment side slope = horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins = 577.13
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =
Submerged Inlet + Outlet Cd = .8
Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sawmill Run

REACH: Sawmill Run RS: 0.2

INPUT

Description:

Station Elevation Data num= 13
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
200 579.26 400 574.26 480 579.66 503 579.66 503 577.13
513 572.76 538 566.76 569 572.66 578 577.02 578 578.86

603	579.16	850	579.26	1000	584.26
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Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
200	.035	503	.03	578	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	503	578		50 50	50		.3	.5
Left Levee	Station=		503	Elevation=	574.26			
Right Levee	Station=		578	Elevation=	574.26			

CROSS SECTION

RIVER: Sawmill Run
 REACH: Sawmill Run RS: 0.1

INPUT

Description:

Station Elevation Data			num= 7						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
200	579.26	400	574.26	513	572.76	538	566.76	569	572.66
850	579.26	1000	584.26						

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
200	.035	513	.03	569	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	513	569		0 0	0		.1	.3

SUMMARY OF MANNING'S N VALUES

River:Sawmill Run

Reach	River Sta.	n1	n2	n3	n4	n5
Sawmill Run	7	.8	.04	.08		
Sawmill Run	5.81	.035	.03	.035		
Sawmill Run	5.8	Bridge				
Sawmill Run	5.7	.035	.03	.035		
Sawmill Run	5.6	.035	.03	.035		

Sawmill Run	5.51		.035	.03	.035		
Sawmill Run	5.5	Bridge					
Sawmill Run	5.4		.035	.03	.035		
Sawmill Run	5.3		.035	.03	.035		
Sawmill Run	5.21		.035	.03	.035		
Sawmill Run	5.2	Bridge					
Sawmill Run	5.1		.035	.013	.03	.013	.035
Sawmill Run	5.05		.035	.03	.035		
Sawmill Run	5		.035	.03	.035		
Sawmill Run	4.21		499	.03	.035		
Sawmill Run	4.1		.035	.03	.035		
Sawmill Run	3.9		.035	.03	.035		
Sawmill Run	3.8		.035	.03	.035		
Sawmill Run	3.71		.035	.03	.035		
Sawmill Run	3.7	Bridge					
Sawmill Run	3.6		.035	.03	.035		
Sawmill Run	3.5		.035	.03	.035		
Sawmill Run	3.4		.035	.03	.035		
Sawmill Run	3.31		.035	.03	.035		
Sawmill Run	3.3	Bridge					
Sawmill Run	3.2		.035	.03	.035		
Sawmill Run	3.1		.035	.03	.035		
Sawmill Run	3		.035	.03	.035		
Sawmill Run	0.8		.035	.03	.035		
Sawmill Run	0.71		.035	.03	.035		
Sawmill Run	0.7	Bridge					
Sawmill Run	0.6		.035	.03	.035		

Sawmill Run	0.5	.035	.03	.035
Sawmill Run	0.4	.035	.03	.035
Sawmill Run	0.31	.035	.03	.035
Sawmill Run	0.3	Bridge		
Sawmill Run	0.2	.035	.03	.035
Sawmill Run	0.1	.035	.03	.035

SUMMARY OF REACH LENGTHS

River: Sawmill Run

Reach	River Sta.	Left	Channel	Right
Sawmill Run	7	618	618	618
Sawmill Run	5.81	52	52	52
Sawmill Run	5.8	Bridge		
Sawmill Run	5.7	60	60	60
Sawmill Run	5.6	3	3	3
Sawmill Run	5.51	67	67	67
Sawmill Run	5.5	Bridge		
Sawmill Run	5.4	200	200	200
Sawmill Run	5.3	206	206	206
Sawmill Run	5.21	56	56	56
Sawmill Run	5.2	Bridge		
Sawmill Run	5.1	4	4	4
Sawmill Run	5.05	34	34	34
Sawmill Run	5	23	23	23
Sawmill Run	4.21	10	10	10
Sawmill Run	4.1	50	50	50
Sawmill Run	3.9	160	160	160
Sawmill Run	3.8	49	49	49
Sawmill Run	3.71	18	18	18
Sawmill Run	3.7	Bridge		
Sawmill Run	3.6	92	92	92
Sawmill Run	3.5	540	540	540
Sawmill Run	3.4	48	48	48
Sawmill Run	3.31	10	10	10
Sawmill Run	3.3	Bridge		
Sawmill Run	3.2	100	100	100
Sawmill Run	3.1	150	150	150
Sawmill Run	3	600	600	600

Sawmill Run	0.8		40	40	40
Sawmill Run	0.71		10	10	10
Sawmill Run	0.7	Bridge			
Sawmill Run	0.6		50	50	50
Sawmill Run	0.5		250	250	250
Sawmill Run	0.4		40	40	40
Sawmill Run	0.31		10	10	10
Sawmill Run	0.3	Bridge			
Sawmill Run	0.2		50	50	50
Sawmill Run	0.1		0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Sawmill Run

Reach	River Sta.	Contr.	Expan.
Sawmill Run	7	.1	.3
Sawmill Run	5.81	.3	.5
Sawmill Run	5.8	Bridge	
Sawmill Run	5.7	.3	.5
Sawmill Run	5.6	.3	.5
Sawmill Run	5.51	.3	.5
Sawmill Run	5.5	Bridge	
Sawmill Run	5.4	.3	.5
Sawmill Run	5.3	.3	.5
Sawmill Run	5.21	.3	.5
Sawmill Run	5.2	Bridge	
Sawmill Run	5.1	.3	.5
Sawmill Run	5.05	.3	.5
Sawmill Run	5	.3	.5
Sawmill Run	4.21	.3	.5
Sawmill Run	4.1	.3	.5
Sawmill Run	3.9	.1	.3
Sawmill Run	3.8	.3	.5
Sawmill Run	3.71	.3	.5
Sawmill Run	3.7	Bridge	
Sawmill Run	3.6	.3	.5
Sawmill Run	3.5	.1	.3
Sawmill Run	3.4	.3	.5
Sawmill Run	3.31	.3	.5
Sawmill Run	3.3	Bridge	
Sawmill Run	3.2	.3	.5
Sawmill Run	3.1	.1	.3
Sawmill Run	3	.1	.3
Sawmill Run	0.8	.3	.5
Sawmill Run	0.71	.3	.5

Sawmill Run	0.7	Bridge		
Sawmill Run	0.6		.3	.5
Sawmill Run	0.5		.1	.3
Sawmill Run	0.4		.3	.5
Sawmill Run	0.31		.3	.5
Sawmill Run	0.3	Bridge		
Sawmill Run	0.2		.3	.5
Sawmill Run	0.1		.1	.3

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : FEMA_PR

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 1 - 10 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 2 - 25 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 3 - 50 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 4 - 100 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 7 Profile: PF 5 - 500 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 1 - 10 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 2 - 25 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical

depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 4 - 100 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.81 Profile: PF 5 - 500 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 1 - 10 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 1 - 10 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 2 - 25 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 2 - 25 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 3 - 50 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 3 - 50 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.8 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.7 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 2 - 25 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 3 - 50 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 4 - 100 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.51 Profile: PF 5 - 500 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 1 - 10 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 1 - 10 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 2 - 25 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 2 - 25 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 3 - 50 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 3 - 50 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.5 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 4 - 100 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.4 Profile: PF 5 - 500 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 1 - 10 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 2 - 25 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 3 - 50 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 4 - 100 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.3 Profile: PF 5 - 500 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 1 - 10 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 4 - 100 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.21 Profile: PF 5 - 500 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 1 - 10 Year Upstream

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 1 - 10 Year Downstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 2 - 25 Year Upstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical

depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 2 - 25 Year Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 3 - 50 Year

Warning: The flow regime calculated by the momentum equation shows class B flow.

For the best solution, this profile should be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 3 - 50 Year Upstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 3 - 50 Year Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 4 - 100 Year

Warning: The flow regime calculated by the momentum equation shows class B flow.

For the best solution, this profile should be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 4 - 100 Year Upstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 4 - 100 Year Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 5 - 500 Year

Warning: The flow regime calculated by the momentum equation shows class B flow.

For the best solution, this profile should be run as a mixed flow problem.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 5 - 500 Year Upstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.2 Profile: PF 5 - 500 Year Downstream

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Manning's n values were composited to a single value in the main channel.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 3 - 50 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 4 - 100 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.1 Profile: PF 5 - 500 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Manning's n values were composited to a single value in the main channel.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 1 - 10 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 2 - 25 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 3 - 50 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 4 - 100 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 5.05 Profile: PF 5 - 500 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 4.21 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 2 - 25 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 3 - 50 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.71 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 1 - 10 Year

Warning: The pure energy/weir calculations did not converge within the given number of iterations.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 1 - 10 Year Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 1 - 10 Year Downstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the energy is based on critical depth over the weir.

The water surface has been projected.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 2 - 25 Year

Warning: The pure energy/weir calculations did not converge within the given number of iterations.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 2 - 25 Year Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 2 - 25 Year Downstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical

depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 3 - 50 Year

Warning: The pure energy/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 3 - 50 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 3 - 50 Year
Downstream

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 4 - 100 Year

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 4 - 100 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 4 - 100 Year
Downstream

Note: Multiple critical depths were found at this location. The critical

depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 5 - 500 Year

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 5 - 500 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.7 Profile: PF 5 - 500 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.6 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.6 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.6 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.5 Profile: PF 1 - 10 Year

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 1 - 10 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 2 - 25 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 3 - 50 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.31 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 1 - 10 Year

Warning:The pure energy/weir calculations did not converge within the given number of iterations.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 1 - 10 Year Upstream

Warning:Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 1 - 10 Year Downstream

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 2 - 25 Year

Warning:The pure energy/weir flow answer did not converge within the given

number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is below the minimum elevation for pressure flow. The sluice gate equations were used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 2 - 25 Year Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 2 - 25 Year Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy are based on critical depth over the weir.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 3 - 50 Year

Warning: The pure energy/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is below the minimum elevation for pressure flow. The sluice gate equations were used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 3 - 50 Year Upstream

Warning: Critical depth could not be determined within the specified number of iterations. The program used the iteration with the lowest energy.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 3 - 50 Year Downstream

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the energy is based on critical depth over the weir.

The water surface has been projected.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 4 - 100 Year

Note: The downstream water surface is below the minimum elevation for pressure flow. The sluice gate equations were used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from

the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from

the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 5 - 500 Year

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from

the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.3 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Note: For the cross section inside the bridge at the downstream end, the

water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 1 - 10 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 2 - 25 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 3 - 50 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream

conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 4 - 100 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 3.2 Profile: PF 5 - 500 Year

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 1 - 10 Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 2 - 25 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 3 - 50 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 4 - 100 Year

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 3 Profile: PF 5 - 500 Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 1 - 10 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:Divided flow computed for this cross-section.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 2 - 25 Year

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.

Warning:Divided flow computed for this cross-section.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that

there is not a valid subcritical answer. The
program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 3 - 50 Year

Warning: The energy equation could not be balanced within the specified number
of iterations. The program used critical depth
for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was
set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that
there is not a valid subcritical answer. The
program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.8 Profile: PF 4 - 100 Year

Warning: The energy equation could not be balanced within the specified number
of iterations. The program used critical depth
for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was
set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that
there is not a valid subcritical answer. The
program defaulted to critical depth.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 2 - 25 Year

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 3 - 50 Year

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 4 - 100 Year

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.71 Profile: PF 5 - 500 Year

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 1 - 10 Year
Upstream

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was

used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 1 - 10 Year
Downstream

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 2 - 25 Year
Upstream

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 2 - 25 Year
Downstream

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 3 - 50 Year
Upstream

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 3 - 50 Year
Downstream

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 4 - 100 Year
Upstream

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 4 - 100 Year
Downstream

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 5 - 500 Year
Upstream

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.7 Profile: PF 5 - 500 Year
Downstream

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical
depth with the lowest, valid, water surface was
used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 2 - 25 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 3 - 50 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 4 - 100 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.6 Profile: PF 5 - 500 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.5 Profile: PF 4 - 100 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.5 Profile: PF 5 - 500 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 2 - 25 Year
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 3 - 50 Year
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 4 - 100 Year
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.4 Profile: PF 5 - 500 Year
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 1 - 10 Year
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 2 - 25 Year
Warning:Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 3 - 50 Year
Warning:Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 4 - 100 Year
Warning:Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.31 Profile: PF 5 - 500 Year
Warning:Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 1 - 10 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 1 - 10 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 2 - 25 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 2 - 25 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 3 - 50 Year
Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 3 - 50 Year
Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 4 - 100 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 4 - 100 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 5 - 500 Year Upstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.3 Profile: PF 5 - 500 Year Downstream

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 1 - 10 Year

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 2 - 25 Year
Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 3 - 50 Year
Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 4 - 100 Year
Warning: Divided flow computed for this cross-section.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

River: Sawmill Run Reach: Sawmill Run RS: 0.2 Profile: PF 5 - 500 Year
Warning: Divided flow computed for this cross-section.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Note: Multiple critical depths were found at this location. The critical

depth with the lowest, valid, water surface was
used.

HEC-RAS Plan: FEMA_PR River: Sawmill Run Reach: Sawmill Run

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	7	PF 1 - 10 Year	1354.00	578.46	582.78	582.26	583.32	0.005708	6.61	346.21	170.89	0.61
Sawmill Run	7	PF 2 - 25 Year	1750.00	578.46	583.74	582.63	584.15	0.003511	6.06	519.22	189.01	0.50
Sawmill Run	7	PF 3 - 50 Year	2038.00	578.46	584.30	582.88	584.69	0.002944	5.99	627.88	199.55	0.46
Sawmill Run	7	PF 4 - 100 Year	2359.00	578.46	584.99	583.12	585.34	0.002347	5.81	769.69	212.52	0.42
Sawmill Run	7	PF 5 - 500 Year	2864.00	578.46	586.02	583.46	586.33	0.001782	5.63	997.72	231.86	0.38
Sawmill Run	5.81	PF 1 - 10 Year	1354.00	574.76	581.91	578.50	582.17	0.000815	4.14	326.88	62.26	0.32
Sawmill Run	5.81	PF 2 - 25 Year	1750.00	574.76	582.88	579.09	583.19	0.000831	4.49	389.52	66.42	0.33
Sawmill Run	5.81	PF 3 - 50 Year	2038.00	574.76	583.41	579.49	583.77	0.000881	4.79	425.50	68.70	0.34
Sawmill Run	5.81	PF 4 - 100 Year	2359.00	574.76	584.13	579.90	584.51	0.000865	4.96	475.64	71.76	0.34
Sawmill Run	5.81	PF 5 - 500 Year	2864.00	574.76	585.18	580.49	585.59	0.000838	5.18	553.25	76.24	0.34
Sawmill Run	5.8	Bridge										
Sawmill Run	5.7	PF 1 - 10 Year	1354.00	574.76	581.71	578.50	582.00	0.000906	4.30	314.85	61.43	0.33
Sawmill Run	5.7	PF 2 - 25 Year	1750.00	574.76	582.67	579.09	583.01	0.000920	4.66	375.78	65.53	0.34
Sawmill Run	5.7	PF 3 - 50 Year	2038.00	574.76	583.18	579.49	583.57	0.000978	4.97	409.80	67.72	0.36
Sawmill Run	5.7	PF 4 - 100 Year	2359.00	574.76	583.90	579.90	584.31	0.000954	5.14	459.22	70.77	0.36
Sawmill Run	5.7	PF 5 - 500 Year	2864.00	574.76	584.95	580.49	585.39	0.000915	5.34	535.94	75.27	0.35
Sawmill Run	5.6	PF 1 - 10 Year	1354.00	574.06	581.68	578.08	581.94	0.000772	4.09	330.94	61.57	0.31
Sawmill Run	5.6	PF 2 - 25 Year	1750.00	574.06	582.63	578.70	582.94	0.000804	4.47	391.91	65.68	0.32
Sawmill Run	5.6	PF 3 - 50 Year	2038.00	574.06	583.14	579.11	583.50	0.000865	4.79	425.80	67.85	0.34
Sawmill Run	5.6	PF 4 - 100 Year	2359.00	574.06	583.86	579.52	584.24	0.000854	4.96	475.36	70.91	0.34
Sawmill Run	5.6	PF 5 - 500 Year	2864.00	574.06	584.91	580.13	585.33	0.000832	5.19	552.31	75.42	0.34
Sawmill Run	5.51	PF 1 - 10 Year	1354.00	574.06	581.67	578.10	581.93	0.000773	4.09	330.78	61.56	0.31
Sawmill Run	5.51	PF 2 - 25 Year	1750.00	574.06	582.63	578.71	582.94	0.000805	4.47	391.73	65.66	0.32
Sawmill Run	5.51	PF 3 - 50 Year	2038.00	574.06	583.14	579.11	583.50	0.000867	4.79	425.59	67.84	0.34
Sawmill Run	5.51	PF 4 - 100 Year	2359.00	574.06	583.85	579.52	584.24	0.000855	4.96	475.14	70.90	0.34
Sawmill Run	5.51	PF 5 - 500 Year	2864.00	574.06	584.90	580.14	585.32	0.000833	5.19	552.08	75.40	0.34
Sawmill Run	5.5	Bridge										
Sawmill Run	5.4	PF 1 - 10 Year	1354.00	574.06	581.45	578.10	581.73	0.000871	4.27	317.04	60.59	0.33
Sawmill Run	5.4	PF 2 - 25 Year	1750.00	574.06	582.39	578.71	582.72	0.000904	4.66	375.80	64.62	0.34
Sawmill Run	5.4	PF 3 - 50 Year	2038.00	574.06	582.86	579.11	583.25	0.000980	5.01	407.13	66.66	0.36
Sawmill Run	5.4	PF 4 - 100 Year	2359.00	574.06	583.58	579.52	583.99	0.000960	5.18	455.83	69.72	0.36
Sawmill Run	5.4	PF 5 - 500 Year	2864.00	574.06	584.63	580.14	585.08	0.000924	5.39	531.77	74.24	0.35
Sawmill Run	5.3	PF 1 - 10 Year	1354.00	573.26	581.47	577.01	581.56	0.000225	2.92	763.57	304.94	0.18
Sawmill Run	5.3	PF 2 - 25 Year	1750.00	573.26	582.45	577.66	582.52	0.000170	2.74	1093.35	362.28	0.16

HEC-RAS Plan: FEMA PR River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	5.3	PF 3 - 50 Year	2038.00	573.26	582.96	578.11	583.03	0.000159	2.74	1284.44	391.68	0.16
Sawmill Run	5.3	PF 4 - 100 Year	2359.00	573.26	583.70	578.55	583.76	0.000127	2.58	1587.24	415.42	0.14
Sawmill Run	5.3	PF 5 - 500 Year	2864.00	573.26	584.79	579.97	584.84	0.000095	2.39	2048.00	431.14	0.13
Sawmill Run	5.21	PF 1 - 10 Year	1354.00	574.00	580.40	578.77	581.22	0.003014	7.27	186.24	37.72	0.58
Sawmill Run	5.21	PF 2 - 25 Year	1750.00	574.00	581.07	579.47	582.13	0.003447	8.26	211.79	38.40	0.62
Sawmill Run	5.21	PF 3 - 50 Year	2038.00	574.00	581.11	579.94	582.53	0.004585	9.56	213.20	38.44	0.72
Sawmill Run	5.21	PF 4 - 100 Year	2359.00	574.00	581.64	580.42	583.22	0.004681	10.08	233.98	38.98	0.73
Sawmill Run	5.21	PF 5 - 500 Year	2864.00	574.00	582.42	581.14	584.24	0.004826	10.82	264.68	39.76	0.74
Sawmill Run	5.2		Bridge									
Sawmill Run	5.1	PF 1 - 10 Year	1354.00	574.00	580.22	578.36	580.85	0.001113	6.37	212.43	44.49	0.51
Sawmill Run	5.1	PF 2 - 25 Year	1750.00	574.00	580.72	579.06	581.58	0.001349	7.45	234.82	44.57	0.57
Sawmill Run	5.1	PF 3 - 50 Year	2038.00	574.00	581.18	579.47	582.17	0.001401	7.98	255.33	44.65	0.59
Sawmill Run	5.1	PF 4 - 100 Year	2359.00	574.00	581.63	579.89	582.77	0.001476	8.56	275.44	44.73	0.61
Sawmill Run	5.1	PF 5 - 500 Year	2864.00	574.00	581.71	580.50	583.35	0.002090	10.27	278.95	44.74	0.72
Sawmill Run	5.05	PF 1 - 10 Year	1354.00	574.00	579.83	578.95	580.75	0.004511	7.70	175.86	47.90	0.71
Sawmill Run	5.05	PF 2 - 25 Year	1750.00	574.00	580.07	579.60	581.43	0.006299	9.34	187.28	48.92	0.84
Sawmill Run	5.05	PF 3 - 50 Year	2038.00	574.00	580.09	580.02	581.91	0.008410	10.83	188.26	48.97	0.97
Sawmill Run	5.05	PF 4 - 100 Year	2359.00	574.00	580.44	580.44	582.49	0.008694	11.48	205.40	49.80	1.00
Sawmill Run	5.05	PF 5 - 500 Year	2864.00	574.00	581.59	581.59	583.31	0.009172	10.50	272.64	79.38	1.00
Sawmill Run	5	PF 1 - 10 Year	1354.00	574.00	580.12	578.72	580.29	0.001676	3.23	418.94	207.56	0.40
Sawmill Run	5	PF 2 - 25 Year	1750.00	574.00	580.57	579.35	580.75	0.001453	3.43	511.71	212.98	0.38
Sawmill Run	5	PF 3 - 50 Year	2038.00	574.00	580.80	579.48	581.00	0.001460	3.65	561.32	215.82	0.39
Sawmill Run	5	PF 4 - 100 Year	2359.00	574.00	581.04	579.65	581.27	0.001469	3.88	613.59	218.77	0.40
Sawmill Run	5	PF 5 - 500 Year	2864.00	574.00	581.37	579.86	581.65	0.001504	4.21	687.72	222.89	0.41
Sawmill Run	4.21	PF 1 - 10 Year	1354.00	573.16	580.05	579.43	580.24	0.001275	4.57	516.97	347.22	0.36
Sawmill Run	4.21	PF 2 - 25 Year	1750.00	573.16	580.55	579.71	580.71	0.001038	4.31	699.20	378.50	0.33
Sawmill Run	4.21	PF 3 - 50 Year	2038.00	573.16	580.80	579.88	580.95	0.001020	4.38	793.23	393.14	0.33
Sawmill Run	4.21	PF 4 - 100 Year	2359.00	573.16	581.05	580.02	581.20	0.000997	4.44	894.86	408.35	0.32
Sawmill Run	4.21	PF 5 - 500 Year	2864.00	573.16	581.40	580.22	581.56	0.000978	4.54	1043.55	429.65	0.32
Sawmill Run	4.1	PF 1 - 10 Year	1354.00	573.16	580.03	579.45	580.23	0.001309	4.66	508.60	345.71	0.37
Sawmill Run	4.1	PF 2 - 25 Year	1750.00	573.16	580.54	579.72	580.69	0.001052	4.36	693.15	377.50	0.33
Sawmill Run	4.1	PF 3 - 50 Year	2038.00	573.16	580.78	579.88	580.94	0.001030	4.44	786.95	392.80	0.33
Sawmill Run	4.1	PF 4 - 100 Year	2359.00	573.16	581.03	580.02	581.19	0.001004	4.51	888.44	408.73	0.33
Sawmill Run	4.1	PF 5 - 500 Year	2864.00	573.16	581.39	580.23	581.55	0.000981	4.64	1037.15	431.00	0.33

HEC-RAS Plan: FEMA_PR River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	3.9	PF 1 - 10 Year	1354.00	573.16	579.86	579.40	580.14	0.001441	5.30	451.94	335.35	0.42
Sawmill Run	3.9	PF 2 - 25 Year	1750.00	573.16	580.44	579.70	580.63	0.001065	4.77	656.45	371.40	0.37
Sawmill Run	3.9	PF 3 - 50 Year	2038.00	573.16	580.69	579.87	580.88	0.001041	4.83	750.99	387.00	0.36
Sawmill Run	3.9	PF 4 - 100 Year	2359.00	573.16	580.94	580.04	581.13	0.001012	4.91	852.51	403.16	0.36
Sawmill Run	3.9	PF 5 - 500 Year	2864.00	573.16	581.30	580.21	581.49	0.000985	5.05	1000.70	425.65	0.36
Sawmill Run	3.8	PF 1 - 10 Year	1354.00	572.06	579.76	577.39	579.95	0.000747	3.98	522.58	322.31	0.31
Sawmill Run	3.8	PF 2 - 25 Year	1750.00	572.06	580.33	578.09	580.49	0.000641	3.95	712.91	349.02	0.29
Sawmill Run	3.8	PF 3 - 50 Year	2038.00	572.06	580.57	578.68	580.74	0.000669	4.14	797.36	360.24	0.30
Sawmill Run	3.8	PF 4 - 100 Year	2359.00	572.06	580.82	579.43	581.00	0.000691	4.33	888.71	371.99	0.30
Sawmill Run	3.8	PF 5 - 500 Year	2864.00	572.06	581.16	579.73	581.36	0.000725	4.59	1019.96	388.25	0.32
Sawmill Run	3.71	PF 1 - 10 Year	1354.00	572.06	579.71	577.29	579.90	0.000846	4.06	504.25	314.98	0.32
Sawmill Run	3.71	PF 2 - 25 Year	1750.00	572.06	580.29	577.92	580.46	0.000715	3.98	694.00	338.22	0.29
Sawmill Run	3.71	PF 3 - 50 Year	2038.00	572.06	580.53	578.63	580.71	0.000748	4.17	775.39	347.71	0.30
Sawmill Run	3.71	PF 4 - 100 Year	2359.00	572.06	580.78	579.47	580.96	0.000773	4.34	863.24	357.67	0.31
Sawmill Run	3.71	PF 5 - 500 Year	2864.00	572.06	581.12	579.76	581.32	0.000813	4.59	988.67	371.44	0.32
Sawmill Run	3.7	Bridge										
Sawmill Run	3.6	PF 1 - 10 Year	1354.00	572.06	579.57	577.29	579.80	0.000996	4.36	461.00	313.19	0.34
Sawmill Run	3.6	PF 2 - 25 Year	1750.00	572.06	580.23	577.92	580.41	0.000743	4.09	680.52	344.62	0.30
Sawmill Run	3.6	PF 3 - 50 Year	2038.00	572.06	580.47	578.66	580.66	0.000777	4.30	761.45	355.51	0.31
Sawmill Run	3.6	PF 4 - 100 Year	2359.00	572.06	580.71	579.46	580.91	0.000801	4.49	849.41	366.98	0.32
Sawmill Run	3.6	PF 5 - 500 Year	2864.00	572.06	581.05	579.76	581.26	0.000840	4.76	975.39	382.81	0.33
Sawmill Run	3.5	PF 1 - 10 Year	1354.00	572.06	579.40	577.39	579.69	0.001175	4.75	407.72	305.07	0.38
Sawmill Run	3.5	PF 2 - 25 Year	1750.00	572.06	580.13	578.09	580.34	0.000800	4.31	645.62	339.82	0.32
Sawmill Run	3.5	PF 3 - 50 Year	2038.00	572.06	580.36	578.68	580.57	0.000840	4.53	723.43	350.44	0.33
Sawmill Run	3.5	PF 4 - 100 Year	2359.00	572.06	580.60	579.43	580.82	0.000867	4.73	808.87	361.74	0.34
Sawmill Run	3.5	PF 5 - 500 Year	2864.00	572.06	580.93	579.73	581.17	0.000909	5.02	931.02	377.31	0.35
Sawmill Run	3.4	PF 1 - 10 Year	1354.00	570.76	577.67	576.17	578.62	0.003375	7.84	178.72	54.31	0.61
Sawmill Run	3.4	PF 2 - 25 Year	1750.00	570.76	579.48	576.89	579.82	0.001076	5.42	545.85	339.55	0.36
Sawmill Run	3.4	PF 3 - 50 Year	2038.00	570.76	579.61	577.62	580.01	0.001259	5.93	590.16	347.93	0.40
Sawmill Run	3.4	PF 4 - 100 Year	2359.00	570.76	579.82	579.17	580.23	0.001330	6.22	664.51	361.55	0.41
Sawmill Run	3.4	PF 5 - 500 Year	2864.00	570.76	580.12	579.56	580.55	0.001421	6.60	773.22	380.59	0.43
Sawmill Run	3.31	PF 1 - 10 Year	1354.00	570.76	577.16	576.17	578.35	0.004755	8.76	154.64	33.41	0.72
Sawmill Run	3.31	PF 2 - 25 Year	1750.00	570.76	579.36	576.92	579.75	0.001299	5.73	503.83	331.41	0.39
Sawmill Run	3.31	PF 3 - 50 Year	2038.00	570.76	579.38	578.72	579.90	0.001718	6.61	510.95	332.80	0.45
Sawmill Run	3.31	PF 4 - 100 Year	2359.00	570.76	579.49	579.15	580.10	0.002024	7.25	547.90	339.94	0.49

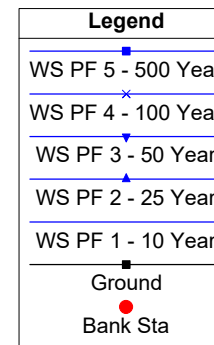
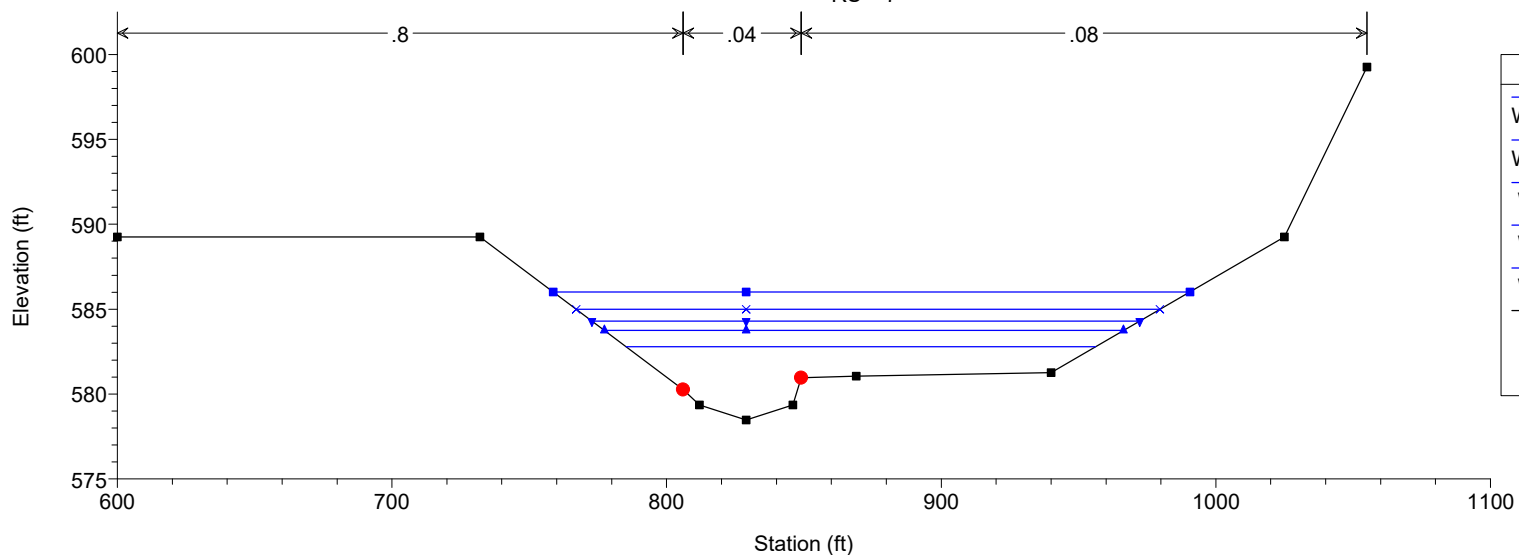
HEC-RAS Plan: FEMA_PR River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	3.31	PF 5 - 500 Year	2864.00	570.76	579.78	579.57	580.41	0.002137	7.65	649.17	358.78	0.50
Sawmill Run	3.3	Bridge										
Sawmill Run	3.2	PF 1 - 10 Year	1354.00	570.76	576.18	576.18	578.08	0.009463	11.07	122.33	32.04	1.00
Sawmill Run	3.2	PF 2 - 25 Year	1750.00	570.76	576.93	576.93	579.13	0.009237	11.91	146.92	33.19	1.00
Sawmill Run	3.2	PF 3 - 50 Year	2038.00	570.76	578.71	578.71	579.78	0.003386	8.77	319.13	226.94	0.63
Sawmill Run	3.2	PF 4 - 100 Year	2359.00	570.76	579.15	579.15	580.07	0.002899	8.50	437.56	305.90	0.59
Sawmill Run	3.2	PF 5 - 500 Year	2864.00	570.76	579.57	579.57	580.38	0.002646	8.47	577.00	345.46	0.57
Sawmill Run	3.1	PF 1 - 10 Year	1354.00	569.76	576.82	575.54	576.90	0.000476	3.08	766.97	402.11	0.23
Sawmill Run	3.1	PF 2 - 25 Year	1750.00	569.76	577.17	575.82	577.26	0.000516	3.34	908.42	422.92	0.25
Sawmill Run	3.1	PF 3 - 50 Year	2038.00	569.76	577.38	575.97	577.48	0.000542	3.51	1001.24	436.03	0.25
Sawmill Run	3.1	PF 4 - 100 Year	2359.00	569.76	577.60	576.11	577.71	0.000568	3.68	1098.84	449.40	0.26
Sawmill Run	3.1	PF 5 - 500 Year	2864.00	569.76	577.94	576.32	578.06	0.000587	3.88	1254.90	470.00	0.27
Sawmill Run	3	PF 1 - 10 Year	1354.00	569.76	576.74	575.54	576.83	0.000534	3.23	732.74	396.92	0.25
Sawmill Run	3	PF 2 - 25 Year	1750.00	569.76	577.07	575.82	577.17	0.000577	3.50	869.53	417.30	0.26
Sawmill Run	3	PF 3 - 50 Year	2038.00	569.76	577.28	575.97	577.39	0.000607	3.68	959.06	430.12	0.27
Sawmill Run	3	PF 4 - 100 Year	2359.00	569.76	577.50	576.11	577.62	0.000636	3.85	1053.30	443.21	0.28
Sawmill Run	3	PF 5 - 500 Year	2864.00	569.76	577.84	576.32	577.96	0.000653	4.05	1205.92	463.63	0.28
Sawmill Run	0.8	PF 1 - 10 Year	1354.00	569.76	575.55	575.55	576.13	0.003214	6.90	321.64	293.00	0.59
Sawmill Run	0.8	PF 2 - 25 Year	1750.00	569.76	575.82	575.82	576.42	0.003517	7.42	402.23	324.49	0.62
Sawmill Run	0.8	PF 3 - 50 Year	2038.00	569.76	575.97	575.97	576.60	0.003732	7.79	452.77	334.74	0.64
Sawmill Run	0.8	PF 4 - 100 Year	2359.00	569.76	576.11	576.11	576.78	0.004002	8.20	500.68	341.09	0.66
Sawmill Run	0.8	PF 5 - 500 Year	2864.00	569.76	577.15	576.32	577.39	0.001415	5.53	900.07	421.72	0.41
Sawmill Run	0.71	PF 1 - 10 Year	1354.00	566.86	574.53	572.10	574.84	0.001186	4.47	302.58	68.97	0.38
Sawmill Run	0.71	PF 2 - 25 Year	1750.00	566.86	575.55	572.65	575.89	0.001052	4.66	375.50	73.19	0.36
Sawmill Run	0.71	PF 3 - 50 Year	2038.00	566.86	575.55	572.97	576.01	0.001427	5.43	375.50	73.19	0.42
Sawmill Run	0.71	PF 4 - 100 Year	2359.00	566.86	575.97	573.33	576.49	0.001521	5.81	406.23	74.89	0.44
Sawmill Run	0.71	PF 5 - 500 Year	2864.00	566.86	576.61	573.85	577.22	0.001616	6.30	454.96	77.52	0.46
Sawmill Run	0.7	Bridge										
Sawmill Run	0.6	PF 1 - 10 Year	1354.00	566.86	574.51	572.10	574.83	0.001197	4.49	301.58	68.91	0.38
Sawmill Run	0.6	PF 2 - 25 Year	1750.00	566.86	575.54	572.65	575.88	0.001060	4.67	374.57	73.13	0.36
Sawmill Run	0.6	PF 3 - 50 Year	2038.00	566.86	575.53	572.97	576.00	0.001442	5.45	374.14	73.11	0.42
Sawmill Run	0.6	PF 4 - 100 Year	2359.00	566.86	575.95	573.33	576.48	0.001538	5.83	404.70	74.81	0.44
Sawmill Run	0.6	PF 5 - 500 Year	2864.00	566.86	576.58	573.85	577.21	0.001634	6.32	453.22	77.43	0.46

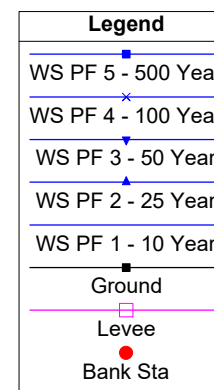
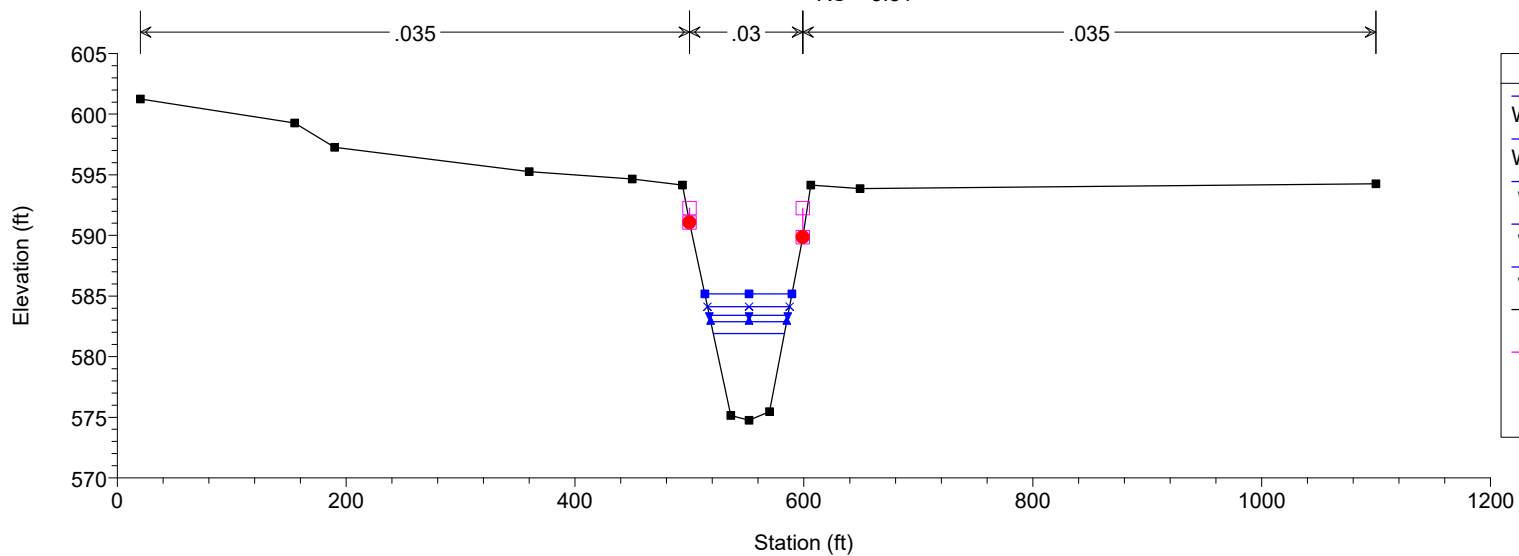
HEC-RAS Plan: FEMA_PR River: Sawmill Run Reach: Sawmill Run (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sawmill Run	0.5	PF 1 - 10 Year	1354.00	566.86	574.44	572.09	574.76	0.001261	4.57	296.18	68.45	0.39
Sawmill Run	0.5	PF 2 - 25 Year	1750.00	566.86	575.47	572.64	575.82	0.001101	4.74	369.38	72.64	0.37
Sawmill Run	0.5	PF 3 - 50 Year	2038.00	566.86	575.43	572.97	575.92	0.001527	5.56	366.59	72.49	0.44
Sawmill Run	0.5	PF 4 - 100 Year	2359.00	566.86	575.84	573.33	576.39	0.001632	5.95	396.14	74.12	0.45
Sawmill Run	0.5	PF 5 - 500 Year	2864.00	566.86	576.46	573.84	577.11	0.001736	6.46	443.33	76.65	0.47
Sawmill Run	0.4	PF 1 - 10 Year	1354.00	566.76	574.05	572.28	574.41	0.001530	5.06	345.26	212.17	0.43
Sawmill Run	0.4	PF 2 - 25 Year	1750.00	566.76	575.41	572.92	575.57	0.000580	3.74	720.87	332.28	0.28
Sawmill Run	0.4	PF 3 - 50 Year	2038.00	566.76	575.33	573.61	575.56	0.000856	4.50	693.59	325.43	0.34
Sawmill Run	0.4	PF 4 - 100 Year	2359.00	566.76	575.83	574.10	576.03	0.000698	4.30	867.24	366.85	0.31
Sawmill Run	0.4	PF 5 - 500 Year	2864.00	566.76	576.59	574.53	576.75	0.000516	4.00	1171.05	429.83	0.27
Sawmill Run	0.31	PF 1 - 10 Year	1354.00	566.76	573.71	572.28	574.27	0.002661	6.03	224.68	60.32	0.55
Sawmill Run	0.31	PF 2 - 25 Year	1750.00	566.76	574.90	572.84	575.42	0.001887	5.80	311.33	100.77	0.48
Sawmill Run	0.31	PF 3 - 50 Year	2038.00	566.76	574.39	573.21	575.30	0.003630	7.63	267.52	70.51	0.66
Sawmill Run	0.31	PF 4 - 100 Year	2359.00	566.76	574.61	573.58	575.70	0.004170	8.38	284.73	83.72	0.71
Sawmill Run	0.31	PF 5 - 500 Year	2864.00	566.76	575.17	574.15	576.38	0.004233	8.91	339.78	116.29	0.72
Sawmill Run	0.3		Bridge									
Sawmill Run	0.2	PF 1 - 10 Year	1354.00	566.76	573.66	572.28	574.24	0.002758	6.10	221.96	60.13	0.56
Sawmill Run	0.2	PF 2 - 25 Year	1750.00	566.76	574.87	572.84	575.40	0.001924	5.84	308.45	99.07	0.48
Sawmill Run	0.2	PF 3 - 50 Year	2038.00	566.76	574.30	573.21	575.25	0.003862	7.79	261.52	65.28	0.67
Sawmill Run	0.2	PF 4 - 100 Year	2359.00	566.76	574.47	573.58	575.64	0.004621	8.68	272.89	74.88	0.74
Sawmill Run	0.2	PF 5 - 500 Year	2864.00	566.76	574.64	574.15	576.23	0.006042	10.11	286.85	85.20	0.85
Sawmill Run	0.1	PF 1 - 10 Year	1354.00	566.76	573.53	572.28	574.10	0.002680	6.15	251.12	151.05	0.56
Sawmill Run	0.1	PF 2 - 25 Year	1750.00	566.76	574.95	572.90	575.20	0.000940	4.50	576.07	294.10	0.35
Sawmill Run	0.1	PF 3 - 50 Year	2038.00	566.76	574.29	573.61	574.94	0.002662	6.92	399.94	239.60	0.57
Sawmill Run	0.1	PF 4 - 100 Year	2359.00	566.76	574.54	574.10	575.22	0.002683	7.20	462.42	260.24	0.58
Sawmill Run	0.1	PF 5 - 500 Year	2864.00	566.76	574.89	574.54	575.59	0.002685	7.55	558.58	289.15	0.59

SawmillRun Plan: FEMA_Proposed 2/27/2024
RS = 7

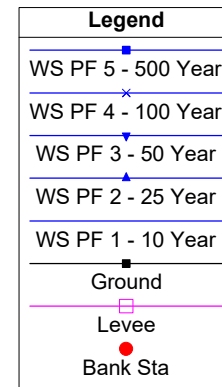
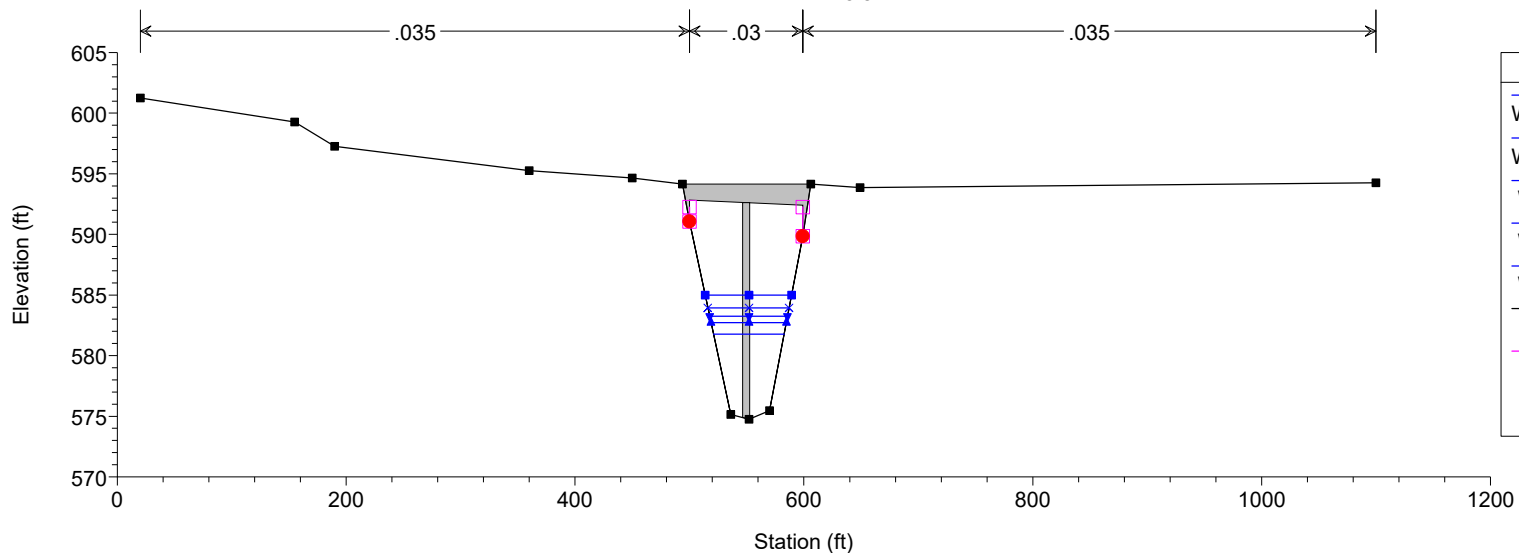


SawmillRun Plan: FEMA_Proposed 2/27/2024
RS = 5.81



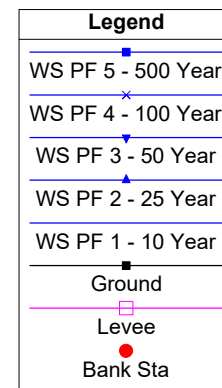
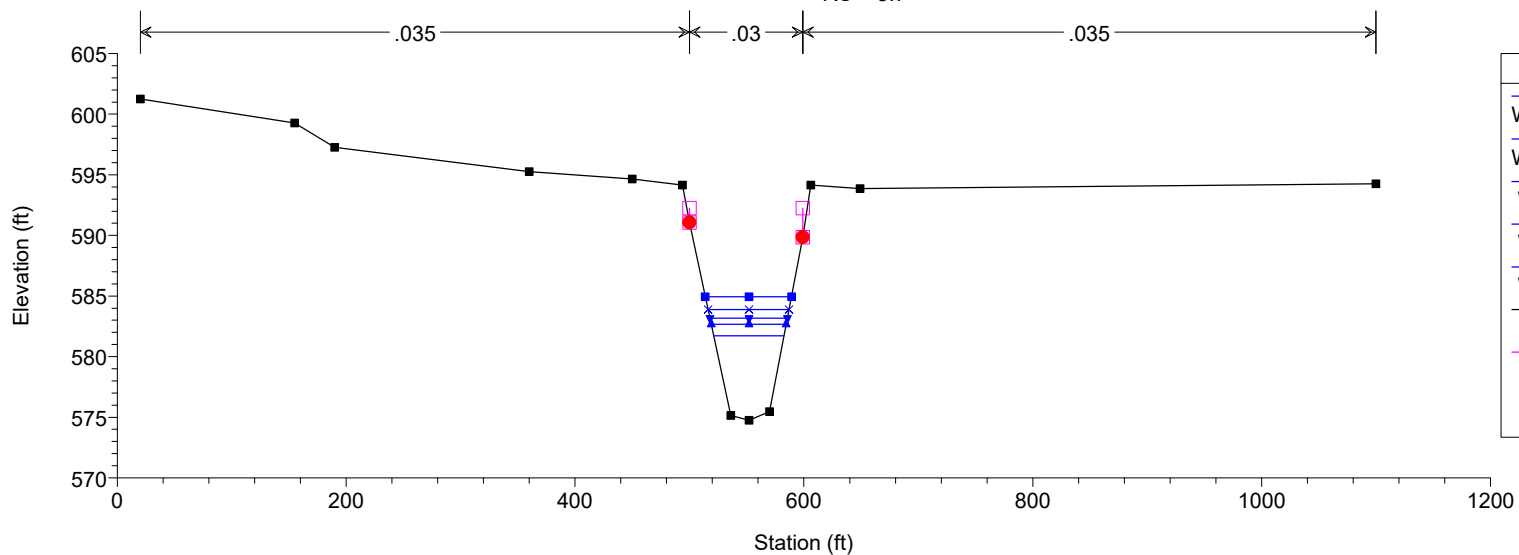
SawmillRun Plan: FEMA_Proposed 2/27/2024

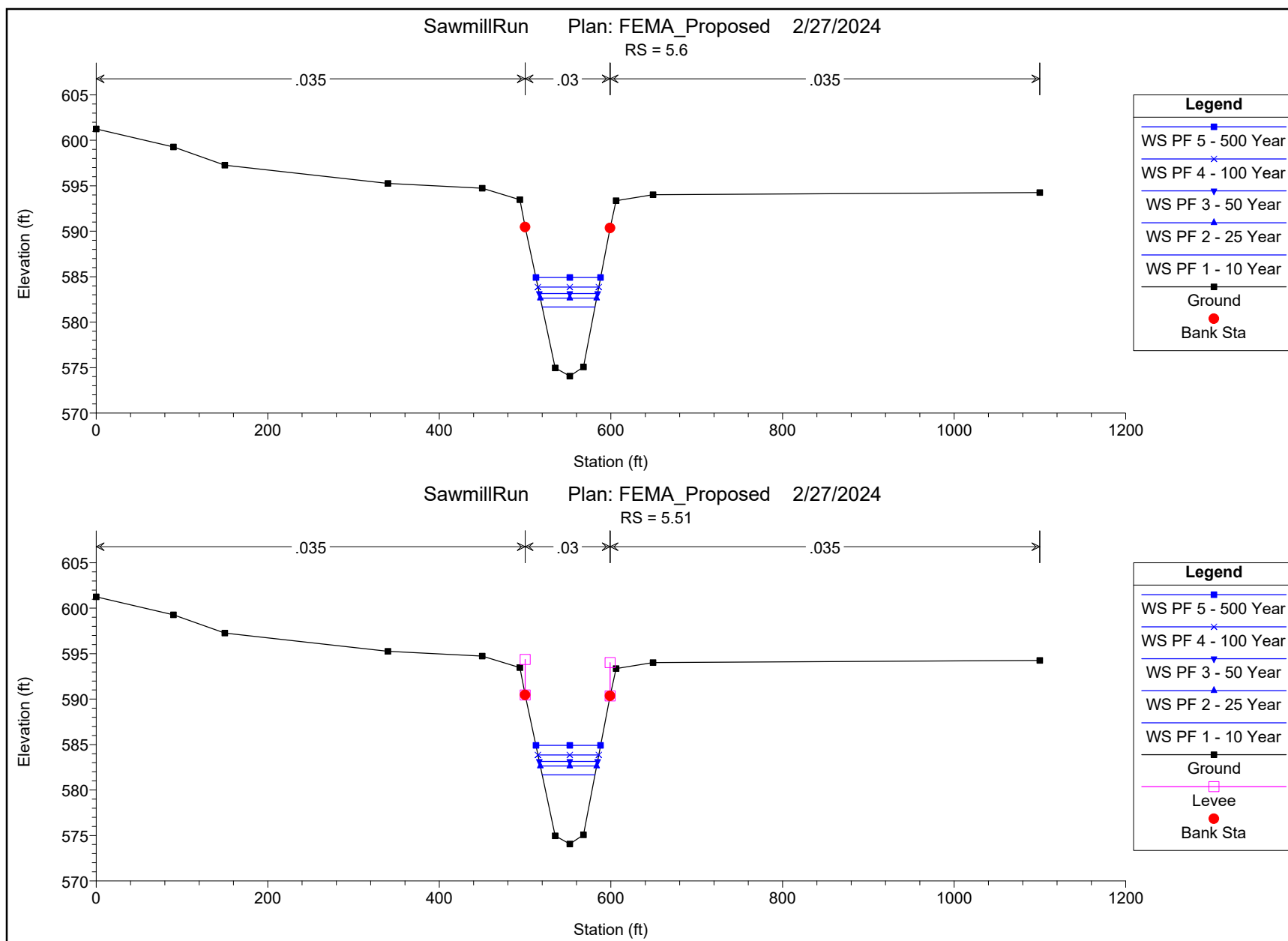
RS = 5.8 BR



SawmillRun Plan: FEMA_Proposed 2/27/2024

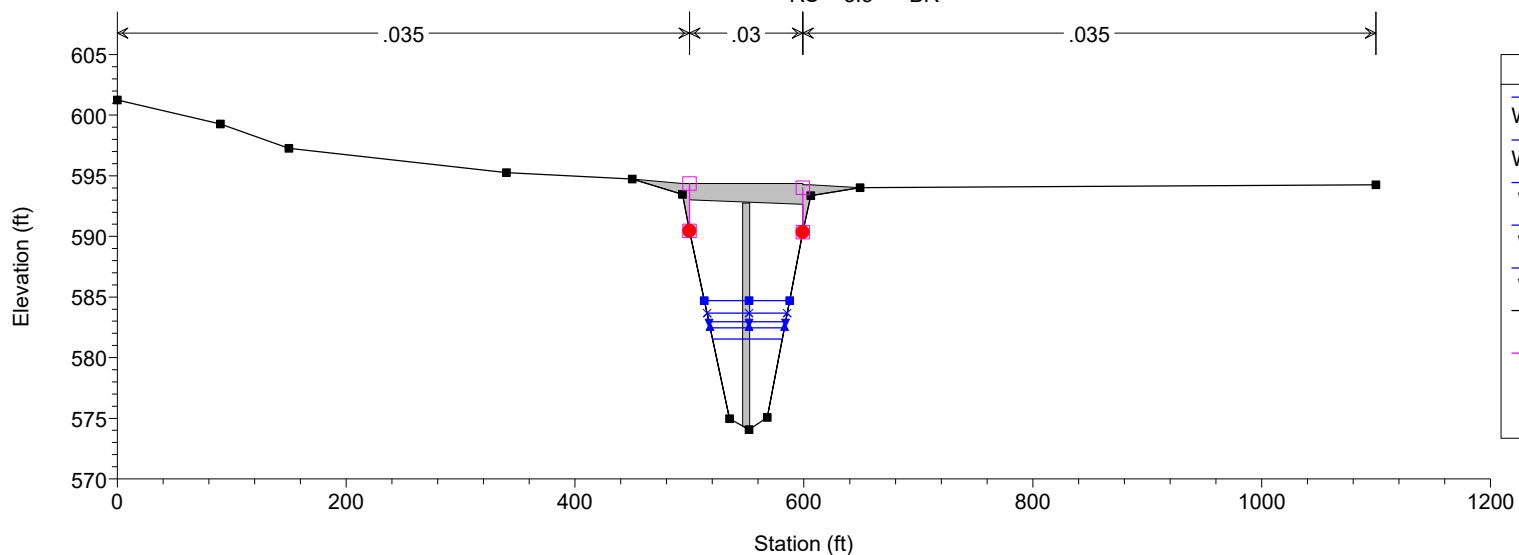
RS = 5.7





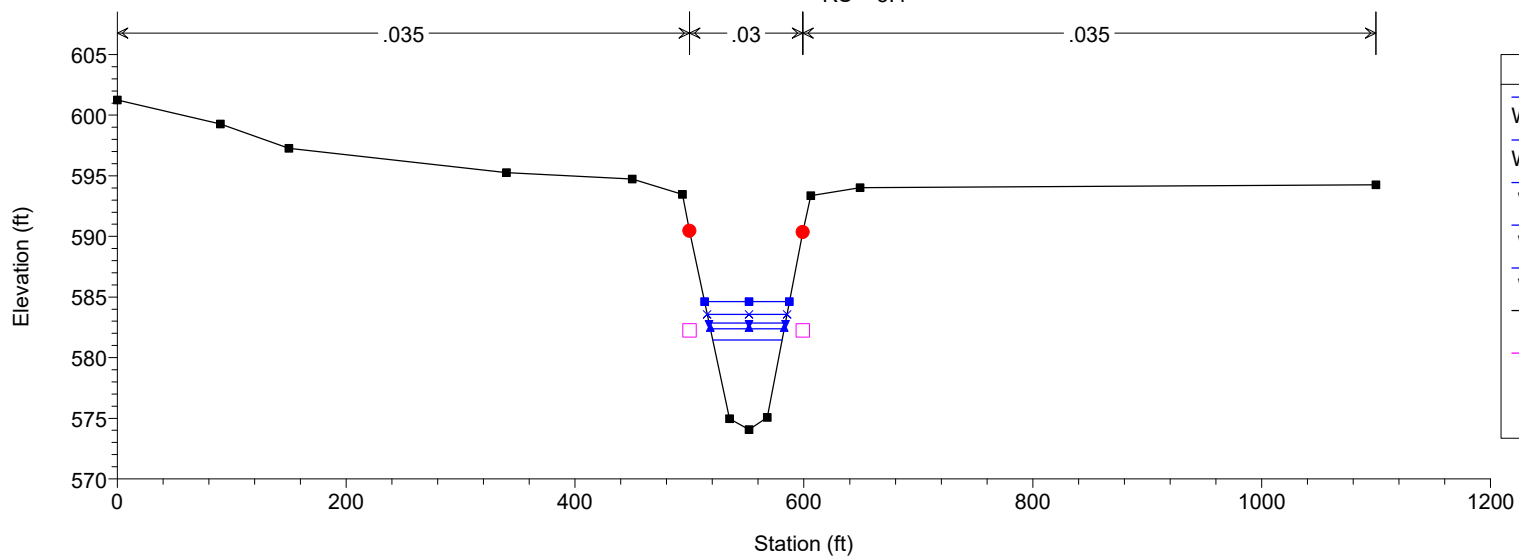
SawmillRun Plan: FEMA_Proposed 2/27/2024

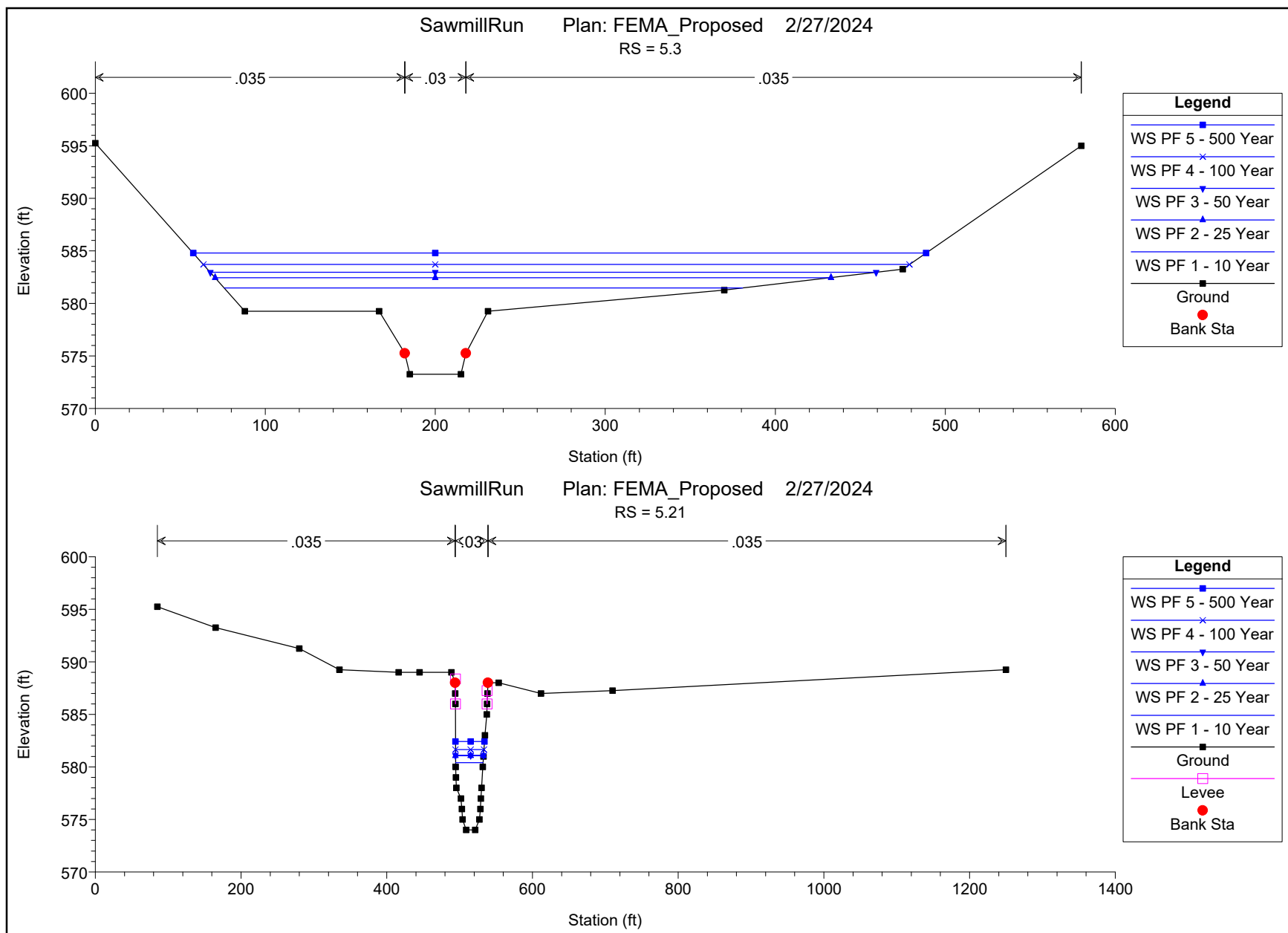
RS = 5.5 BR

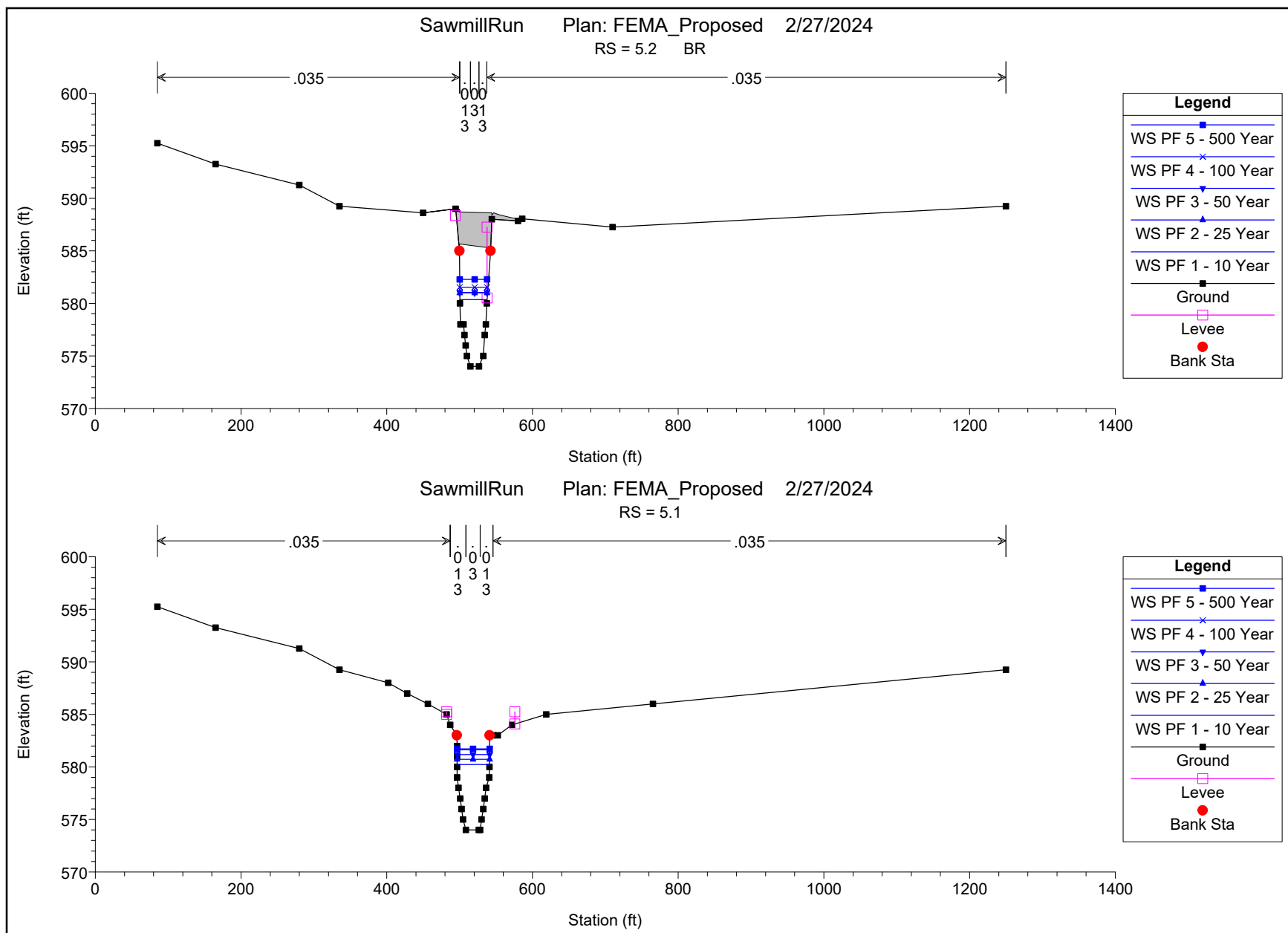


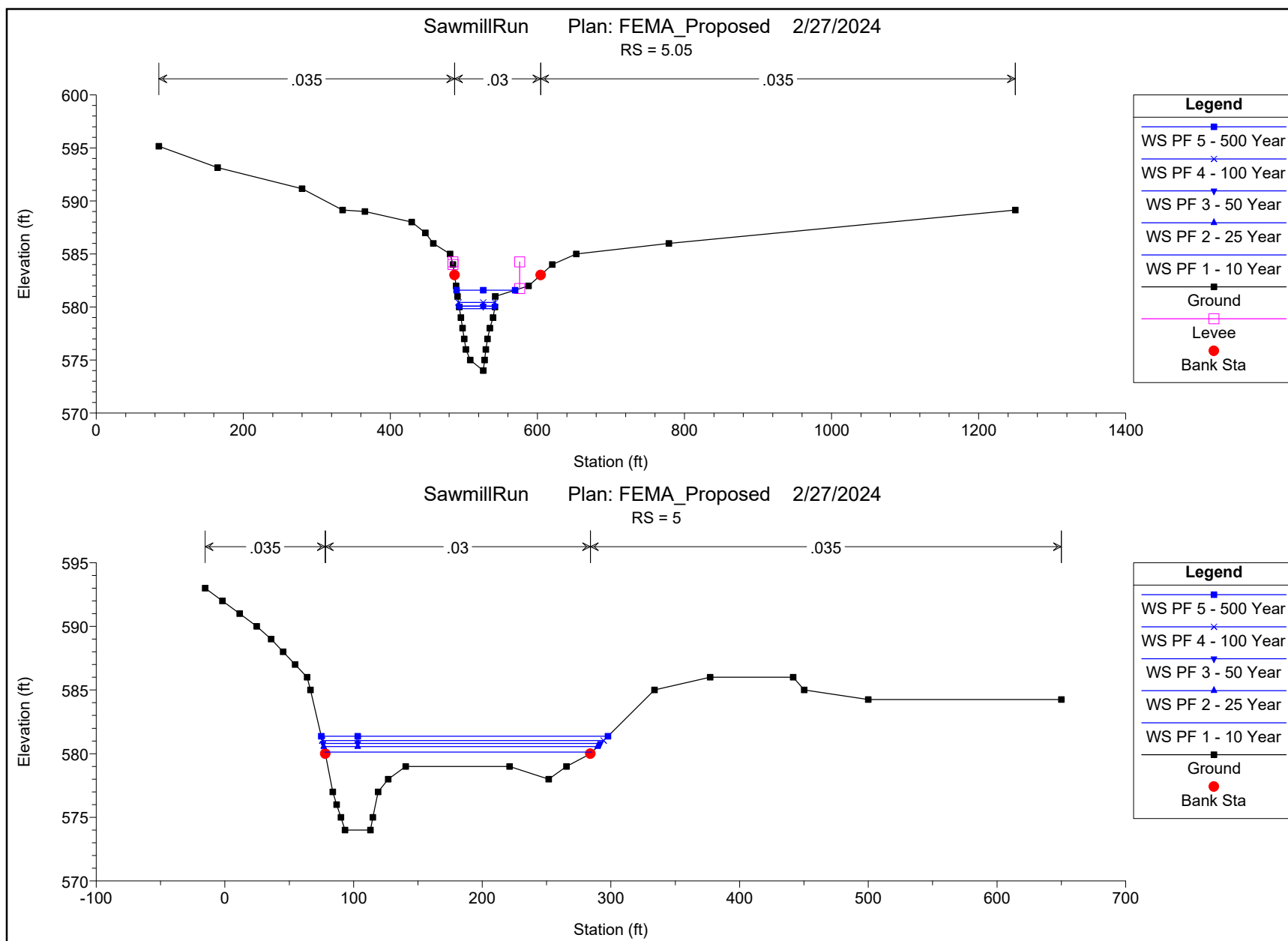
SawmillRun Plan: FEMA_Proposed 2/27/2024

RS = 5.4

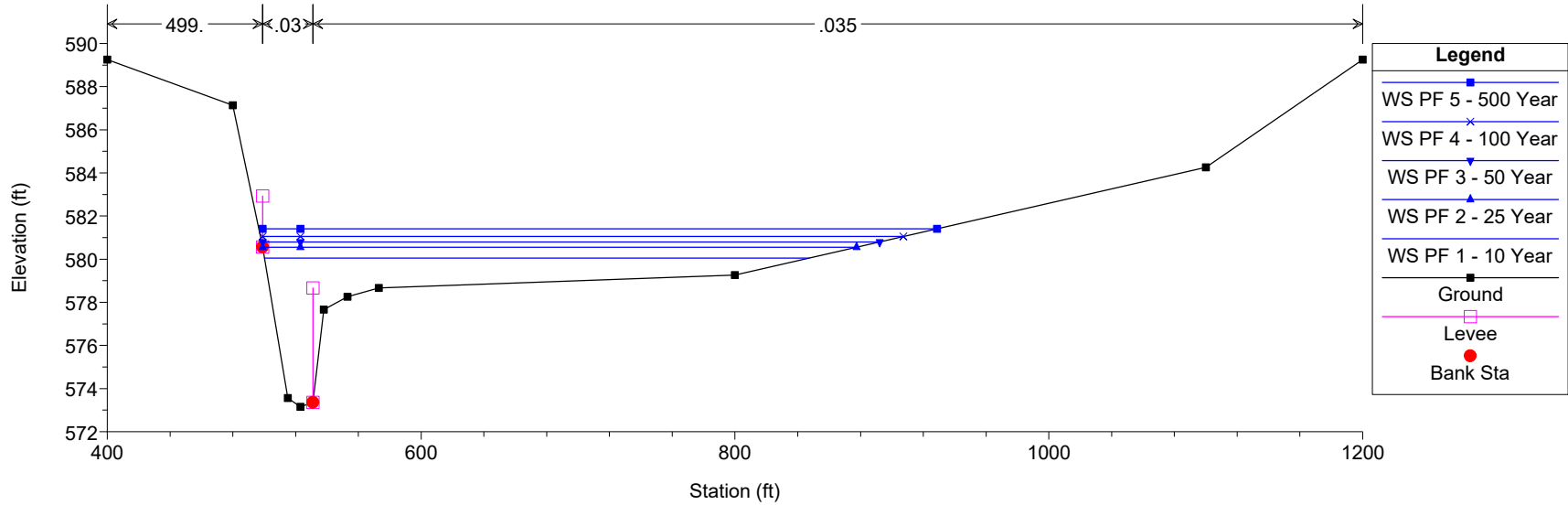




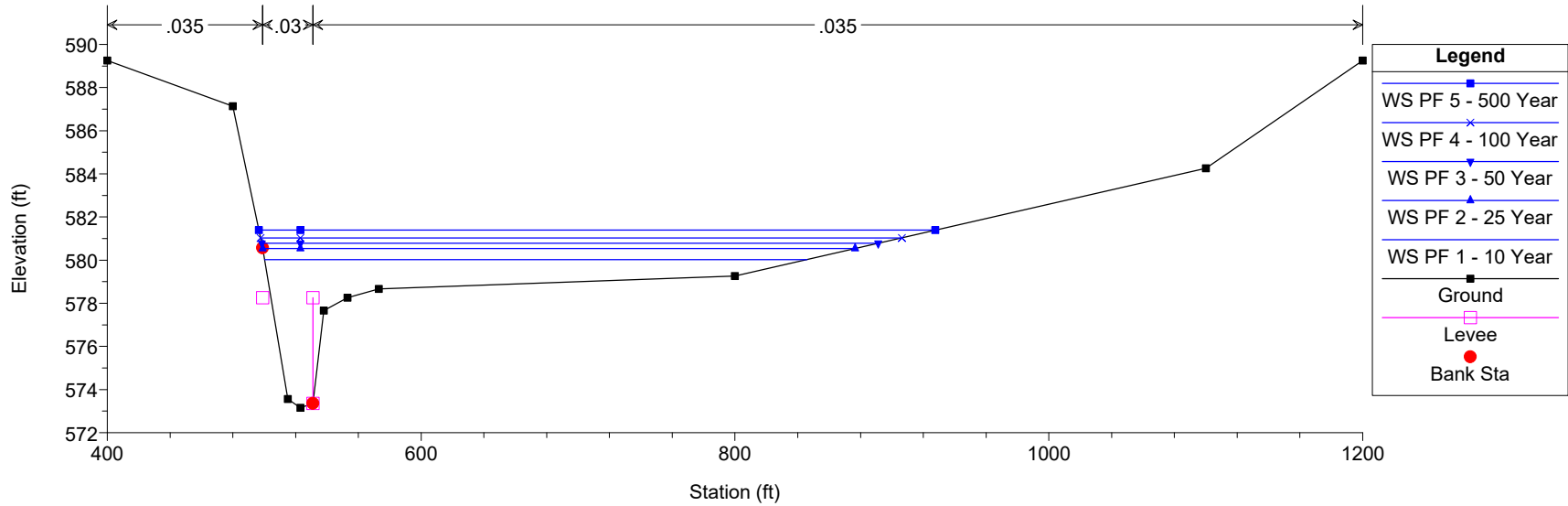




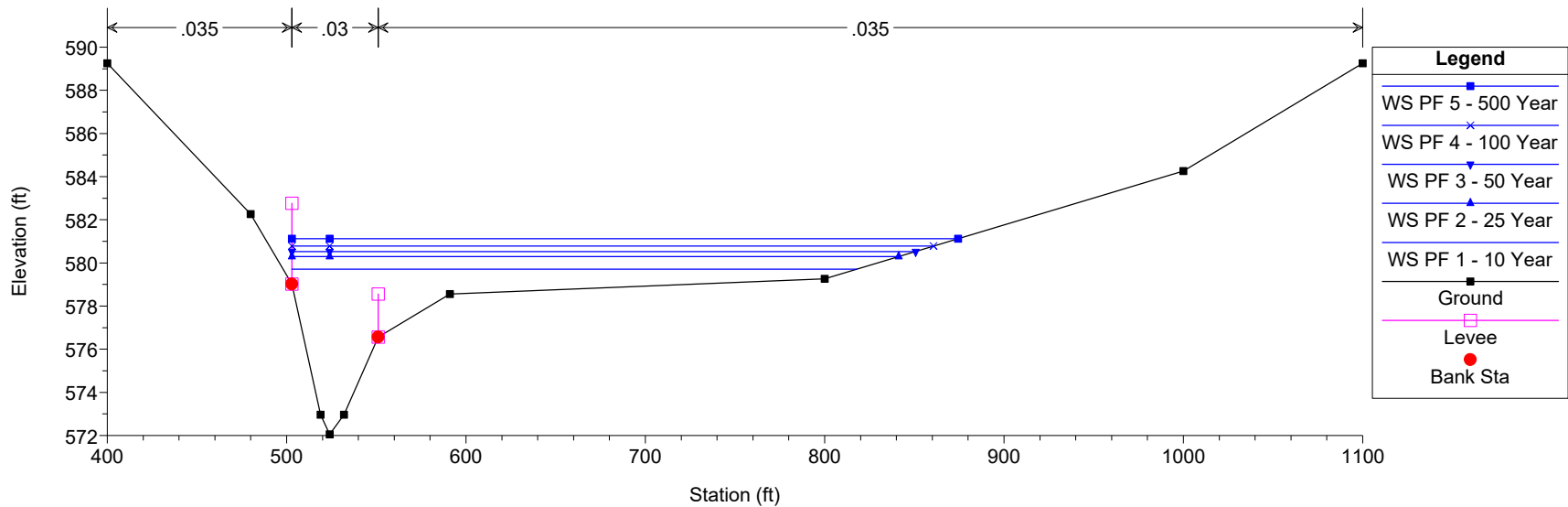
SawmillRun Plan: FEMA_Proposed 2/27/2024
RS = 4.21



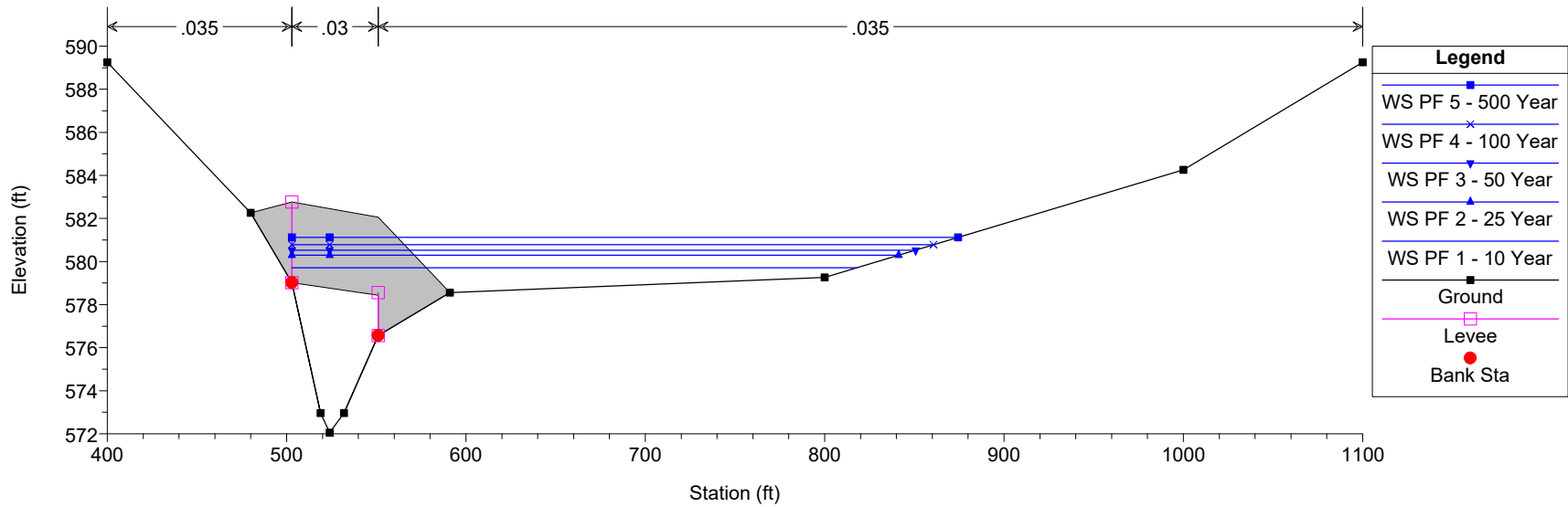
SawmillRun Plan: FEMA_Proposed 2/27/2024
RS = 4.1



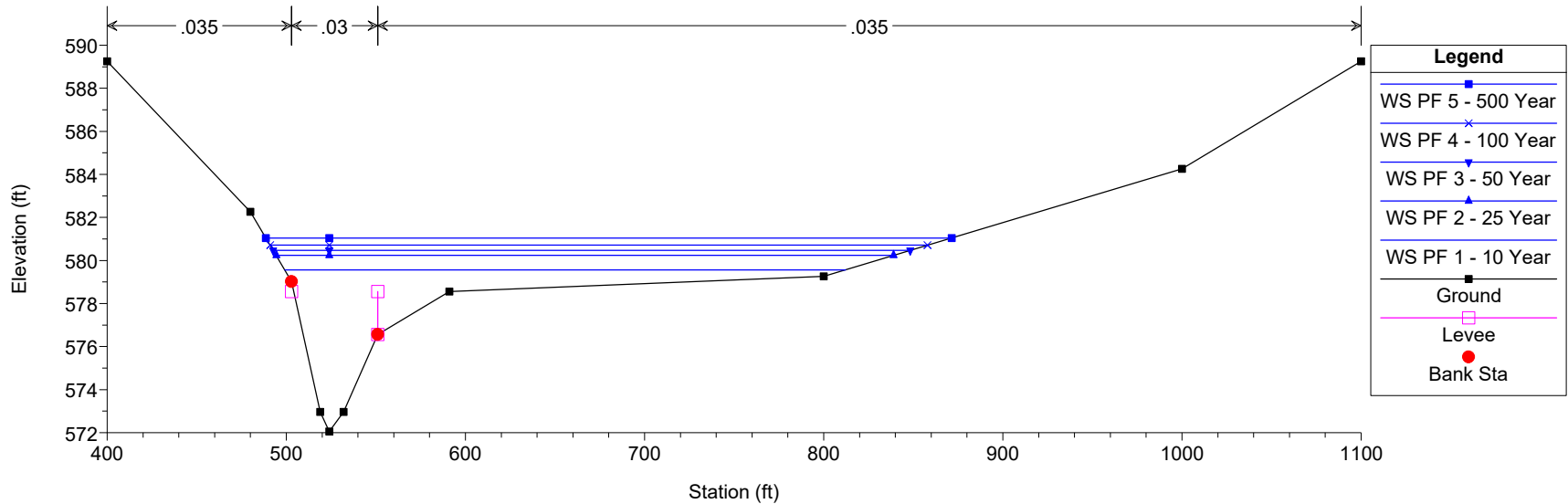
SawmillRun Plan: FEMA_Proposed 2/27/2024
RS = 3.71



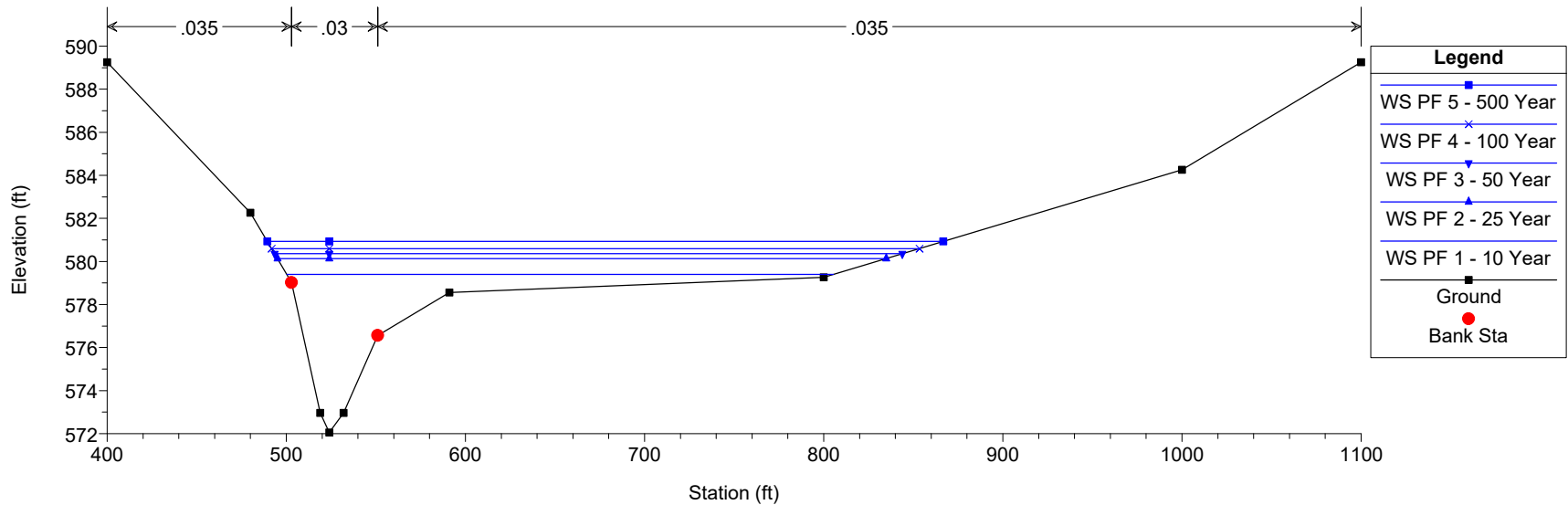
SawmillRun Plan: FEMA_Proposed 2/27/2024
RS = 3.7 BR

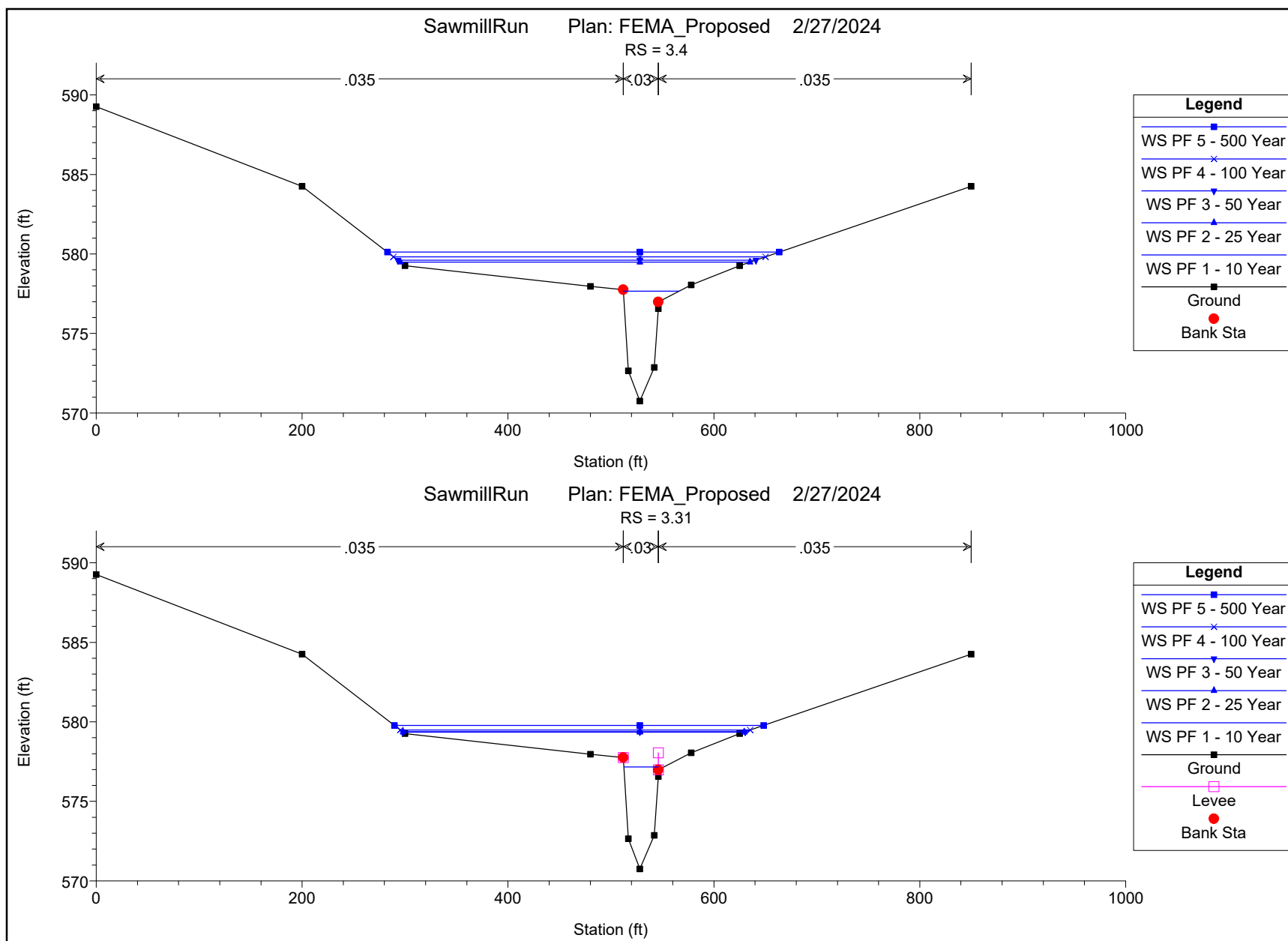


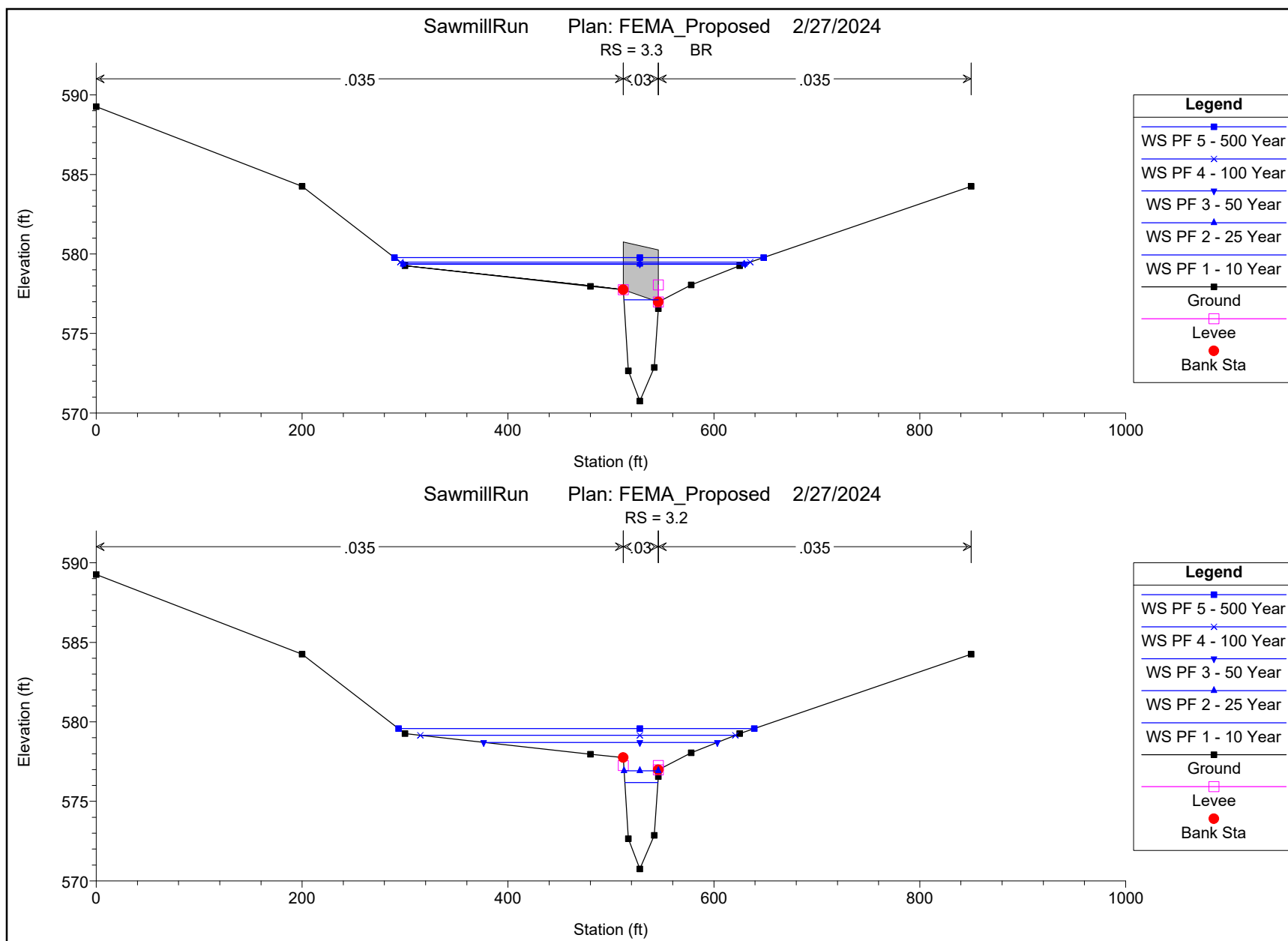
SawmillRun Plan: FEMA_Proposed 2/27/2024
RS = 3.6



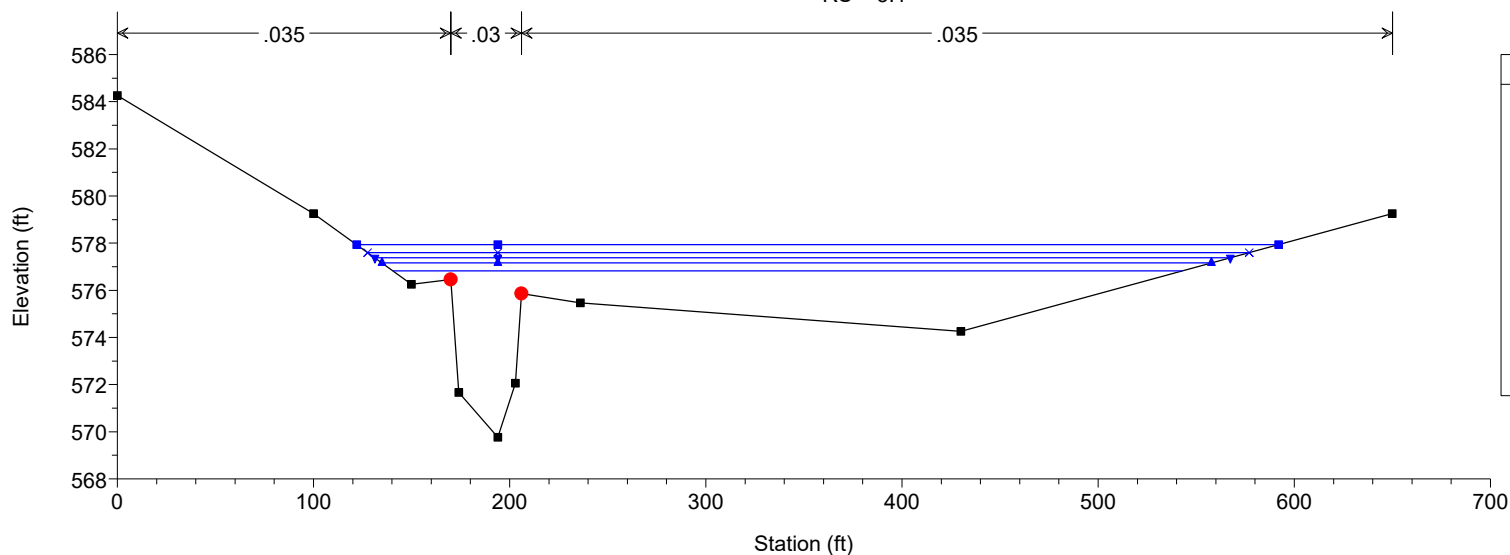
SawmillRun Plan: FEMA_Proposed 2/27/2024
RS = 3.5





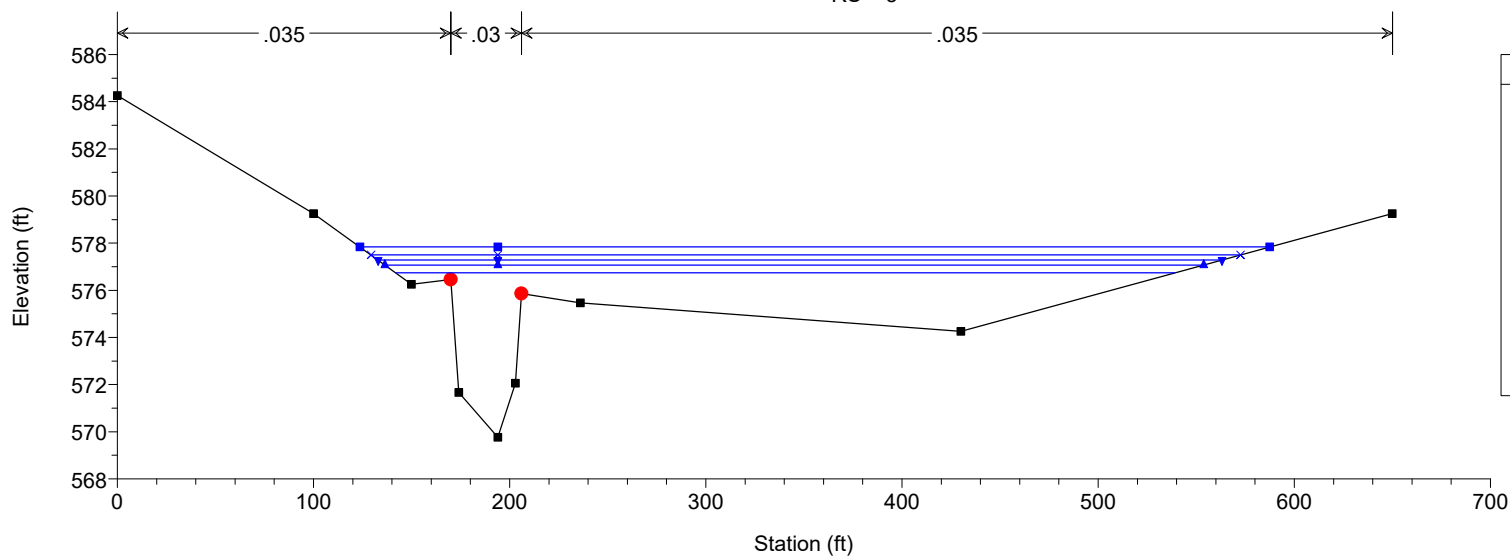


SawmillRun Plan: FEMA_Proposed 2/27/2024
RS = 3.1



Legend	
WS PF 5 - 500 Year	■
WS PF 4 - 100 Year	×
WS PF 3 - 50 Year	▼
WS PF 2 - 25 Year	▲
WS PF 1 - 10 Year	■
Ground	■
Bank Sta	●

SawmillRun Plan: FEMA_Proposed 2/27/2024
RS = 3



Legend	
WS PF 5 - 500 Year	■
WS PF 4 - 100 Year	×
WS PF 3 - 50 Year	▼
WS PF 2 - 25 Year	▲
WS PF 1 - 10 Year	■
Ground	■
Bank Sta	●

