Floodplain Development Permit

Doddridge County, WV Floodplain Management

This permit gives approval for the development/ project listed that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV, pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance. This permit must be posted at the site of work as to be clearly visible and must remain posted during entirety of development.

Permit: #21-592

Date Approved: April 26, 2021 **Expires: April 26, 2022**

Issued to: Jerry E. Braun **POC: Jerry E. Braun**

Company Address: 9699 WV Route 23N West Union, WV 26456

Project Address: 9699 WV Route 23N West Union, WV 26456

Firm: 54017C0045C **Lat/Long: 39.399242N, -80.646314W**

Purpose of Development: Transfer Bridge Ownership

Issued by: George C. Eidel, CFM, OEM Director/Doddridge County FPM (*or designee*)

George C. Eidel

Date: April 26, 2021

For additional information regarding this permit, please contact
Doddridge County Floodplain Manager at 304.873.2631, or via email at
doddridgecountyfpm@gmail.com
118 East Court Street; West Union, WV 26456

CERTIFIED MAIL®

Doddridge County Office of Emergency Management
George Eidel, Floodplain Manager
101 Church Street, Suite 102
West Union, WV 26456

7019 1640 0001 3258 7024

HASLER
$006.71⁰
03/23/2021 ZIP 26456
012E14643162

US POSTAGE

3-27
4/1
4/11

William W. Asher
1251 Durham Mill Road
Jeffersonville, GA 31044

NIXIE 300 DE 1 0004/15/21

RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD

UNC BC: 26456119427 *0271-02421-24-46

31C48355281A00

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

William W. Asher
125 Durham Mill Road
Jeffersonville, GA 31044

9590 9402 4783 8344 2622 85

2. Article Number *(Transfer from service label)*

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* | C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

Doddridge County Office of
Emergency Management/Floodplain Management
105 Court Street, Suite 3
304-873-1343
doddridgecountyfpm@gmail.com

March 23, 2021

Dear Sir or Ma'am,

You are receiving this letter because you have been identified as a land surface and/or mineral rights owner for property or adjacent property related to the proposed development/project identified by the following page.

No action is required of you. This letter is simply to inform you of the proposed development.

If you would like to comment on this proposed project, or would like additional information, you may contact the Doddridge County Floodplain Manager at the above address.

Respectfully yours,

George Eidel, CFM, OEM Director/Floodplain Manager

USPS TRACKING #

9590 9402 4783 8344 2622 92

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

United States Postal Service

• Sender: Please print your name, address, and ZIP+4® in this box•

Doddridge County Office of Emergency Management
George Eidel, Floodplain Manager
101 Church Street, Suite 102
West Union, WV 26456

21-592

USPS TRACKING #

9590 9402 4783 8344 2622 78

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

United States Postal Service

• Sender: Please print your name, address, and ZIP+4® in this box•

Doddridge County Office of Emergency Management
George Eidel, Floodplain Manager
101 Church Street, Suite 102
West Union, WV 26456

21-592

Doddridge County Floodplain Permits

(Week of March 22, 2021)

Please take notice that on the **(22nd)** of **(March), 2021, (Jerry Braun)** filed an application for a Floodplain Permit **(#21-592)** to develop land located at or about **(9699 WV Route 23 N); Coordinates: 39.399242, -80.646314**. The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance to WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by **(April 26, 2021)** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Floodplain Manager of the County at 105 Court Street, Suite #3, West Union, WV 26456. **This project is for the transfer of ownership of a bridge**

GEORGE C. EIDEL, CFM

Doddridge County Floodplain Manager

USPS TRACKING #

9590 9402 4783 8344 2623 08

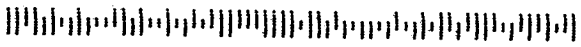
First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

United States
Postal Service

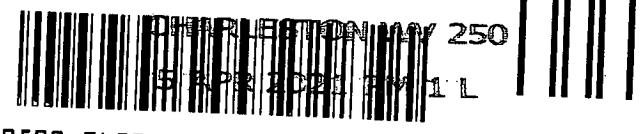
• Sender: Please print your name, address, and ZIP+4® in this box•

Doddridge County Office of Emergency Management
George Eidel, Floodplain Manager
101 Church Street, Suite 102
West Union, WV 26456

21-592



USPS TRACKING #



9590 9402 4783 8344 2622 61

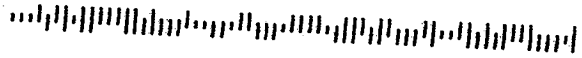
First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

United States
Postal Service

• Sender: Please print your name, address, and ZIP+4® in this box•

Doddridge County Office of Emergency Management
George Eidel, Floodplain Manager
101 Church Street, Suite 102
West Union, WV 26456

21-592



7019 1640 0001 3258 6997

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

OFFICIAL USE

Certified Mail Fee $ 3.45
Extra Services & Fees (check box, add fee as appropriate)
- [x] Return Receipt (hardcopy) $ 2.75
- [ ] Return Receipt (electronic) $
- [ ] Certified Mail Restricted Delivery $
- [ ] Adult Signature Required $
- [ ] Adult Signature Restricted Delivery $

Postage $ .51
Total Postage and Fees $ 6.71

Postmark Here: MAR 24 2021 — USPS 26456-9998

Sent To: Harold K. Fennett
Street and Apt. No., or PO Box No.: 2419 Maple Ave.
City, State, ZIP+4®: Fayetteville, WV 25840

21-592

PS Form 3800, April 2015 PSN 7530-02-000-9047 — See Reverse for Instructions

7019 1640 0001 3258 7000

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Extra Services & Fees (check box, add fee as appropriate)
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- [ ] Return Receipt (electronic) $
- [ ] Certified Mail Restricted Delivery $
- [ ] Adult Signature Required $
- [ ] Adult Signature Restricted Delivery $

Postage $ .51
Total Postage and Fees $ 6.71

WEST UNION, WV — Postmark Here: MAR 24 2021 — USPS 26456-9998

Sent To: Jerry E. Braun
Street and Apt. No., or PO Box No.: 4699 WV Rt. 23N
City, State, ZIP+4®: West Union, WV 26456

21-592

PS Form 3800, April 2015 PSN 7530-02-000-9047 — See Reverse for Instructions

7019 1640 0001 3258 7017

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- [x] Return Receipt (hardcopy) $ 2.75
- [ ] Return Receipt (electronic) $
- [ ] Certified Mail Restricted Delivery $
- [ ] Adult Signature Required $
- [ ] Adult Signature Restricted Delivery $

Postage $ .51
Total Postage and Fees $ 6.71

WEST UNION, WV — Postmark Here: MAR 24 2021 — USPS 26456-9998

Sent To: Kent L. Price
Street and Apt. No., or PO Box No.: 4299 WV Rt. 23N
City, State, ZIP+4®: Salem, WV 26426

21-592

PS Form 3800, April 2015 PSN 7530-02-000-9047 — See Reverse for Instructions

7019 1640 0001 3258 7024

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OFFICIAL USE

Certified Mail Fee $ 3.45
Extra Services & Fees (check box, add fee as appropriate)
- [x] Return Receipt (hardcopy) $ 2.75
- [ ] Return Receipt (electronic) $
- [ ] Certified Mail Restricted Delivery $
- [ ] Adult Signature Required $
- [ ] Adult Signature Restricted Delivery $

Postage $ .51
Total Postage and Fees $ 6.71

WEST UNION, WV — Postmark Here: MAR 24 2021 — USPS 26456-9998

Sent To: William W. Asher
Street and Apt. No., or PO Box No.: 251 Durham Mill Rd.
City, State, ZIP+4®: Jeffersonville, GA 31044

21-592

PS Form 3800, April 2015 PSN 7530-02-000-9047 — See Reverse for Instructions

7019 1640 0001 3258 7031

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

OFFICIAL USE

Certified Mail Fee $ 3.45
Extra Services & Fees (check box, add fee as appropriate)
- [x] Return Receipt (hardcopy) $ 2.75
- [ ] Return Receipt (electronic) $
- [ ] Certified Mail Restricted Delivery $
- [ ] Adult Signature Required $
- [ ] Adult Signature Restricted Delivery $

Postage $ .51
Total Postage and Fees $ 6.71

WEST UNION, WV — Postmark Here: MAR 24 2021 — USPS 26456-9998

Sent To: Mary Lou Bates
Street and Apt. No., or PO Box No.: 10225 WV Rt. 23N
City, State, ZIP+4®: West Union, WV 26456

21-592

PS Form 3800, April 2015 PSN 7530-02-000-9047 — See Reverse for Instructions

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
333 BALDWIN ROAD
PITTSBURGH, PA 15205
(412) 429-2324

PNC BANK, N.A.
Pittsburgh, PA

8-9/430

169494

CHECK DATE 3/12/2021

PAY Two Hundred Fifty and 00/100 Dollars

AMOUNT 250.00

TO Doddridge County Commission

AUTHORIZED SIGNATURE

Security features. Details on back.

⑈169494⑈ ⑆043000096⑆ 0002272405⑈

FP # 21-592

FLOODPLAIN PERMIT #21-592

Jerry Braun, 9699 WV RT 23N 39.399242, -80.646314 Transfer Bridge Ownership

TASK	COMPLETE (DATE)	NOTES
CHECK RECEIVED	3/22/2021	
US ARMY CORP. ENGINEERS (USACE)		
US FISH & WILDLIFE SERVICES (USFWS)		
WV DEPT. NATURAL RESOURCES (WVDNR)		
WV DEPT. ENVIROMENTAL PROTECTION (WVDEP)		
STATE HISTORIC & PRESERVATION OFFICE (SHPO)		
OFFICE of LAND & STREAM (OLS)		
WVDOH		
Elevation Certificate		
DATE OF COMMISSION READING	4/6/2021	
DATE AVAILABLE TO BE GRANTED	4/26/2021	
PERMIT GRANTED		
COMPLETE		

7019 1640 0001 3258 6997

7019 1640 0001 3258 7024

7019 1640 0001 3258 7000

7019 1640 0001 3258 7031

7019 1640 0001 3258 7017

Doddridge County Floodplain Permits

(Week of March 22, 2021)

Please take notice that on the **(22nd)** of **(March), 2021, (Jerry Braun)** filed an application for a Floodplain Permit **(#21-592)** to develop land located at or about **(9699 WV Route 23 N); Coordinates: 39.399242, -80.646314**. The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance to WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by **(April 26, 2021)** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Floodplain Manager of the County at 105 Court Street, Suite #3, West Union, WV 26456. **This project is for the transfer of ownership of a bridge**

GEORGE C. EIDEL, CFM

Doddridge County Floodplain Manager

Permit# 21-592
Project Name: Bridge Transfer of Ownership
Permittees Name: Jerry Braun

Doddridge County, WV

Floodplain Development Permit Application

This document is to be used for projects that impact/potentially impact the FEMA---designated floodplain and/or floodway of Doddridge County, WV pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance.

SECTION 1: GENERAL PROVISIONS (APPLICANT TO READ AND SIGN)

1. No work may start until a permit is issued.
2. The permit may be revoked if any false statements are made herein.
3. If revoked, all work must cease until permit is re-issued.
4. The permit will expire if no work is commenced within six months of issuance.
5. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
6. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
7. I THE APPLICANT CERTIFY THAT ALL STATEMENTS HEREIN AND IN ATTACHMENTS TO THIS APPLICATION ARE, TO THE BEST OF MY KNOWLEDGE, TRUE AND ACCURATE.

APPLICANT'S SIGNATURE _____

DATE 02-08-2021

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Applicant Information:

Please provide all pertinent data.

Applicant Information		
Responsible Company Name: Braun, Jerry E		
Corporate Mailing Address:		
City:	**State:**	**Zip:**
Corporate Point of Contact (POC):		
Corporate POC Title:		
Corporate POC Primary Phone:		
Corporate POC Primary Email:		
Corporate FEIN:	**Corporate DUNS:**	
Corporate Website:		
Local Mailing Address: 9699 WV Route 23 N		
City: West Union	**State: WV**	**Zip: 26456**
Local Project Manager (PM):		
Local PM Primary Phone:		
Local PM Secondary Phone:		
Local PM Primary Email:		
Person Filing Application: Braun, Jerry E		
Applicant Title:		
Applicant Primary Phone:		
Applicant Secondary Phone:		
Applicant Primary Email:		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Project Narrative:

Describe in detail the proposed development including project name/title, type of development, estimated start and completion timeline, and its potential impact on the floodplain. Use additional copies of this page as needed.

Project Narrative:
The current bridge is located adjacent to WV Route 23 approximately 1 mile northwest of Center Point in Doddridge County, West Virginia. The bridge is located within a Zone AE Flood Zone without Floodway Area of McElroy Creek as designated on FEMA's Flood Map 54017C0045C with an effective date of October 4, 2011. The bridge is a single span steel bridge. The length and width of the bridge is 76 ft and 14 ft respectively. The bridge deck and girder depth is 3 ft. The bridge has a guard rail on both sides. Since the bridge is constructed in the floodplain of McElroy Creek, there is a net loss of floodplain storage and the water surface elevation in the proposed condition analysis is 0.07 ft higher than in the existing condition analysis. However, the rise is within the allowable rise of 1 foot. Therefore, the current bridge is in compliance with FEMA criteria as well as the Doddridge County Floodplain Ordinance.

Proposed Development:

Please check all elements of the proposed project thatapply.

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

	ACTIVITY		STRUCTURAL TYPE
[]	New Structure	[]	Residential (1 – 4 Family)
[]	Addition	[]	Residential (more than 4 Family)
[]	Alteration	[]	Non-residential (floodproofing)
[]	Relocation	[]	Combined Use (res. & com.)
[]	Demolition	[]	Replacement
[]	Manufactured/Mobil Home		

B. OTHER DEVELOPLMENT ACTIVITIES:

[] Fill [] Mining [] Drilling [] Pipelining
[] Grading
[] Excavation (except for STRUCTURAL DEVELOPMENT checked above)
[] Watercourse Alteration (including dredging and channel modification)
[] Drainage Improvements (including culvert work)
[x] Road, Street, or Bridge Construction
[] Subdivision (including new expansion)
[] Individual Water or Sewer System
[] Other (please specify)

_____

_____

_____

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: _1__ of __1_

Site/Property Information:		
Legal Description: McElroy 53 AC		
Physical Address/911 Address: 9699 WV Route 23 N, West Union, WV 26456		
Decimal Latitude/Longitude: 39.399242, -80.646314		
DMS Latitude/Longitude: 39°23'57.27" N, 80°38'46.73" W		
District: 5	**Map: 12**	**Parcel: 41**
Land Book Description:		
Deed Book Reference: Deed Book WB97, Page 348		
Tax Map Reference: 09 05 12 0041 0000 0000		
Existing Buildings/Use of Property: Housing, Outbuilding, Wooded and Pastured		

Floodplain Location Data: ***(to be completed by Floodplain Manager or designee)***			
Community:	**Number:**	**Panel:**	**Suffix:**
Location (Lat/Long): See Attached Map		**Approximate Elevation:** **Estimated BFE:**	
Is the development in the floodway? ☐ **Yes** ☐ **No**		**Is the development in the floodplain?** ☒ **Yes** ☐ **No** **Zone:** _____	
Notes:			

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: _1__ of __1_

Property Owner Data:		
Name of Primary Owner (PO): Braun, Jerry E		
PO Address: 9699 WV Route 23 N		
City: West Union	**State: WV**	**Zip: 26456**
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Surface Rights Owner Data:		
Name of Primary Owner (PO):		
PO Address:		
City:	**State:**	**Zip:**
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Mineral Rights Owner Data: ***(As Applicable)***		
Name of Primary Owner (PO):		
PO Address:		
City:	**State:**	**Zip:**
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Contractor Data:

Please provide all pertinent data for contractors and sub---contractors that may be participating in this project. Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: ____ of ____

Contractor/Sub-Contractor (C/SC) Information:		
C/SC Company Name:		
C/SC WV License Number:		
C/SC FEIN:	**C/SC DUNS:**	
Local C/SC Point of Contact (POC):		
Local C/SC POC Title:		
C/SC Mailing Address:		
City:	**State:**	**Zip-Code:**
Local C/SC Office Phone:		
Local C/SC POC Phone:		
Local C/SC POC E-Mail:		

Engineer Firm Information:		
Engineer Firm Name:		
Engineer WV License Number:		
Engineer Firm FEIN:	**Engineer Firm DUNS:**	
Engineer Firm Primary Point of Contact (POC):		
Engineer Firm Primary POC Title:		
Engineer Firm Mailing Address:		
City:	**State:**	**Zip-Code:**
Engineer Firm Office Phone:		
Engineer Firm Primary POC Phone:		
Engineer Firm Primary POC E-Mail:		

Adjacent and/or Affected Landowners Data

Please provide data for all adjacent and/or affected surface owners (both up and down stream) whose property may be impacted by proposed development as demonstrated by a floodplain study or survey. Use additional copies of this page as needed.

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): Fernett Harold K ET AL		
Physical Address: 2419 Maple Ave		
City: Fayetteville	**State: WV**	**Zip: 25840**
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): Bates, Mary Lou		
Physical Address: 10225 WV Route 23 N		
City: West Union	**State: WV**	**Zip: 26456**
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): Asher, William W		
Physical Address: 1251 Durham Mill Rd		
City: Jeffersonville	**State: GA**	**Zip: 31044**
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): Braun, Jerry E		
Physical Address: 9699 WV Route 23 N		
City: West Union	**State: WV**	**Zip**: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): Price, Kent L		
Physical Address: 4299 WV Route 23 N		
City: Salem	**State: WV**	**Zip: 26426**
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Site Plan

A Site Plan is an accurate and detailed map of the proposed development for this project. It shows the size, shape, location and special features of the project property, and the size and location of any development planned to the property, especially as that development will impact the floodplain and/or floodway. Site plans show what currently exists on the project property, and any changes or improvements you are proposing to make. **A certified and licensed engineering firm should complete site plans.**

A SITE PLAN MUST CONTAIN THE FOLLOWING INFORMATION:

1. Legal description of the parcel, north arrow and scale
2. All property lines and their dimensions
3. Names of adjacent roads, location of driveways
4. Location of sloughs, tributaries, streams, rivers, wetlands, ponds, and lakes, with setbacks indicated, and including FEMA floodplain data based on most updated FIRM.
5. Location, size, shape of all buildings, existing and proposed, with elevation of lowest floor indicated.
6. Location and dimensions of existing or proposed on-site sewage systems.
7. Location of all propane tanks, fuel tanks or other liquid storage tanks whether above ground or below ground level.
8. Location and dimensions of any proposed pipeline placement(s) into floodplain/floodway.
9. Location and dimensions of any roadway development into floodplain/floodway. *(Includes initial development access roads)*
10. Location and dimensions of any bridge and/or culvert development into floodplain/floodway.
11. Location and dimensions of any storage yard or facility into the floodplain/floodway.
12. Location of any existing utilities and/or proposed utility placement and/or displacement.
13. Location, dimensions and depth of any existing or proposed fill on site.
14. A survey showing the **existing ground elevations** of at least location on the building site. **ELEVATION NOTE**: All vertical datum will reference either NGVD 29 or NAVD 88. Assumed datum will not be acceptable unless the property is located in an area where vertical datum has not been published. For those areas where vertical datum has not been established, a site plan with contours, elevations using assumed datum, high water marks and existing water levels of sloughs, rivers, lakes or streams and proposed lowest floor elevation.

Applicant

Please read print name, sign and date below:

- I certify that I am authorized to submit this application for the primary project developer.
- I certify that the information included in this application is to the best of my knowledge true and complete.
- I certify that all required Federal, State, and local permits required by law and/or ordinance for the above described development of this project have will be properly attained, are current and valid, and must be presented prior to a Doddridge County Floodplain Permit being issued.
- I understand that if in the course of the development project additional permits become required that were not needed during the initial proposal, the primary developer must notify the Doddridge County Floodplain Manager within 48 hours of such need, and that a "Stop Work" order may be issued for all project work directly impacting the floodplain or floodway, until such time the required additional permits are acquired.
- I understand that once the floodplain permit is submitted, the application will be entered into official public record at the next regularly scheduled Doddridge County Commission meeting after the date of submittal.
- I understand that from the date of submittal of the fully completed permit application, the Doddridge County Floodplain Manager has ninety (90) days to make a determination to either grant or deny said permit application. During this approval period, the Doddridge County Floodplain Manager may, at his or her discretion, conduct a review and/or additional study of provided documentation by means of an independent engineering firm. All costs associated with said review and/or study must be reimbursed to the County before issuance of approved permit.
- I understand that during the approval period, the Doddridge County Floodplain Manager of designee may at his or her discretion conduct site visits and document conditions of proposed development pursuant to the permit application.
- I understand that once the Floodplain Permit is granted, the permit will be entered into official public record. Appeals to the permit may be made no later than twenty (20) days after said issuance. If a valid appeal is submitted, as determined by the Doddridge County Floodplain Manager, a "Stop Work" order will be issued for all project development directly involving the floodplain or floodway. A public hearing by the Doddridge County Appeals Board will be scheduled no less than ten (10) days after the next regularly scheduled Doddridge County Commission meeting.
- I understand that all decisions of the Doddridge County Appeals Board shall be final.
- **I understand issuance of a Floodplain Permit authorizes me to proceed with construction as proposed.**
- In signing this application, the primary developer hereby grants the Doddridge County Floodplain Manager or designee the right to enter onto the above---described location to inspect the development work proposed, in progress, and/or completed.
- I understand that if I do not follow exactly the site---plan submitted and approved by this permit that a "Stop Work" order may be issued by the Doddridge County Floodplain Manager and that I must stop all construction immediately until discrepancies of actual work vs. proposed work is resolved.

Applicant Signature: _____ Date: 02-08-2021

Applicant Printed Name: JERRY E. RAUN

December 22, 2020

Doddridge County Commission
Attn: George Eidel, Doddridge County Floodplain Manager
118 East Court Street, Room 102
West Union, WV 26456

Subject: MarkWest Energy Partners, LP
Center Point Bridge
No-Rise Certificate
Doddridge County, West Virginia
CEC Project 303-679

Civil & Environmental Consultants, Inc. (CEC) is pleased to evaluate the potential floodplain impacts for the above referenced project on behalf of MarkWest Energy Partners, LP, 320 South View Drive, Suite 200, Bridgeport, WV 26330. MarkWest Energy Partners, LP has constructed a steel bridge near the intersection of West Virginia Route 23 and Franks Run Road approximately 1 mile northwest of Center Point, Doddridge County, West Virginia. The bridge is located within a Zone AE Flood Zone without Floodway Area as designated on FEMA's Flood Map 54017C0045C with an effective date of October 4, 2011.

A detailed hydraulic study was performed in HEC-RAS to analyze the potential for adverse effects to the water level and floodplain of McElroy Creek. Two analyses were performed in this study: an existing conditions analysis and a proposed conditions analysis. The existing conditions model was created using cross-sections based on existing topography along the centerline of McElroy Creek. The flow rate for the 100-year storm event was obtained from the Flood Insurance Study for Doddridge County. The existing base flood elevation near to the downstream of the project site is taken as the boundary condition in HEC-RAS model. Since the bridge is already installed, the existing condition is re-established by removing the current bridge from the model. There is an additional bridge 325 feet upstream side of the current bridge, which is also accounted for in the existing and proposed conditions model. In the proposed conditions model, the current bridge over McElroy Creek is re-established. By comparing the results from the two analyses, the effects of the bridge on the 100-year water levels of McElroy Creek were determined. The results indicate that the construction will increase the water surface elevation for a 100-year storm by 0.07 feet, which is within the allowable rise of 1 foot in McElroy Creek. Therefore, the current bridge is in compliance with FEMA criteria as well as the Doddridge County Floodplain Ordinance regarding floodplain impact.

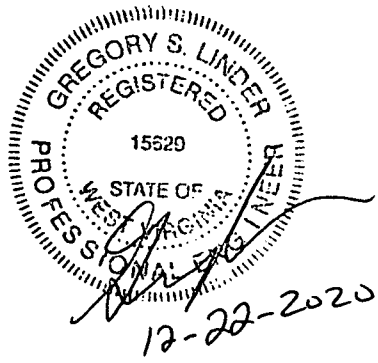
This compliance certificate is provided in support of the floodplain development permit application. Your time and effort in reviewing this floodplain development permit application is appreciated. Please feel free to contact Greg Linder at 304-933-3119 or via e-mail at glinder@cecinc.com if you have questions or need additional information.

Respectfully submitted,

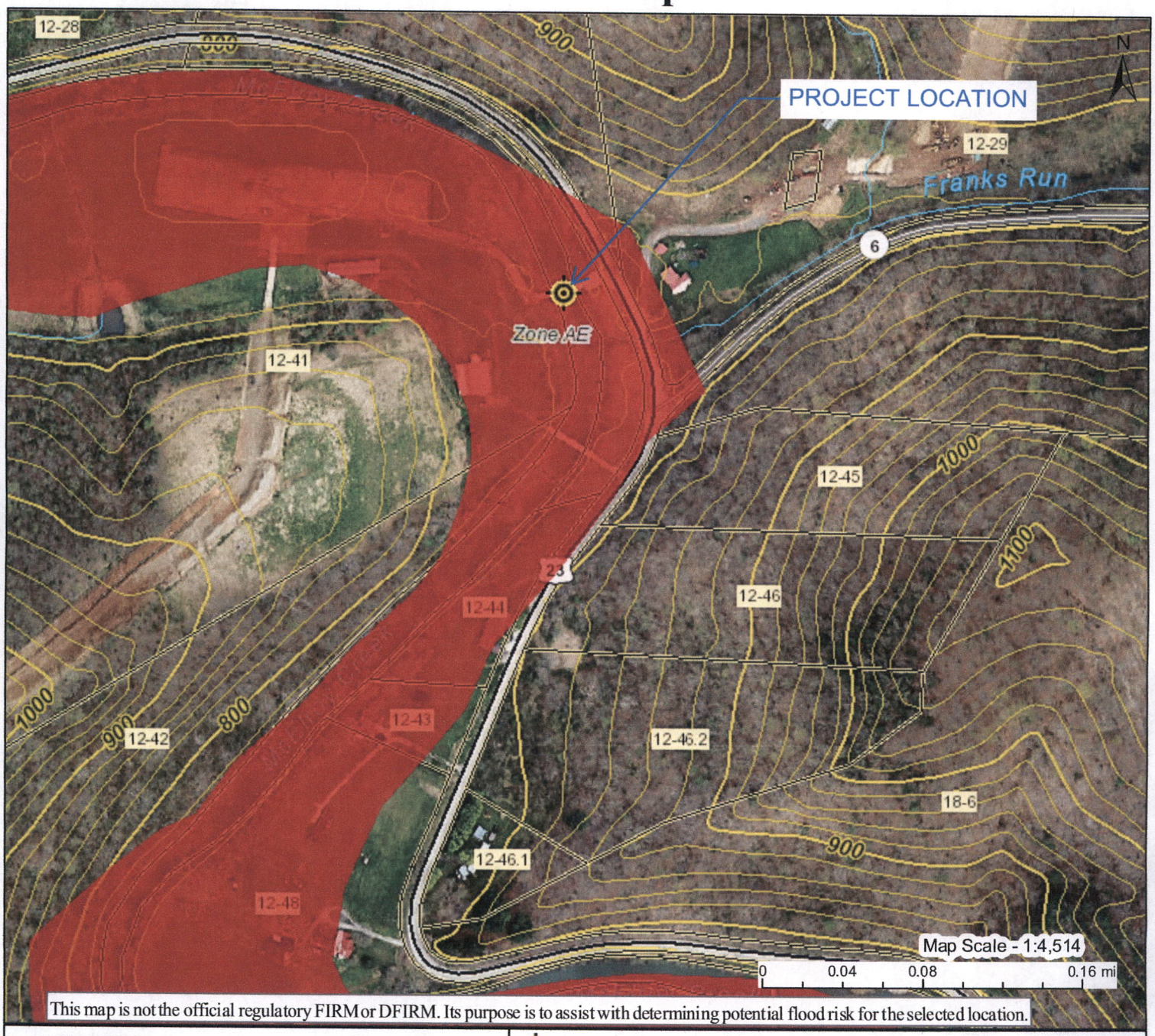
CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Hannah Workman
Staff Consultant

Greg S. Linder, PE
Principal



WV Flood Map



This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.

HIGH RISK

Regulatory Floodway	
Zone AE	1-Percent-Annual-Chance Flood Hazard Area **With Base Flood Elevation** (BFE)
Zone A	1-Percent-Annual-Chance Flood Hazard Area **Without BFE** (may have Advisory Flood Heights)
Advisory	1-Percent-Annual-Chance Future Conditions (High Risk Advisory Flood Zones)

Download the Full Legend for all flood tool symbols
https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf

Disclaimer:
The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. Refer to the official Flood Insurance Study (FIS) for detailed flood elevation data in flood profiles and data tables. WV Flood Tool (*https://www.MapWV.gov/flood*) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

Flood Info Location — *Map created on 12/14/2020*

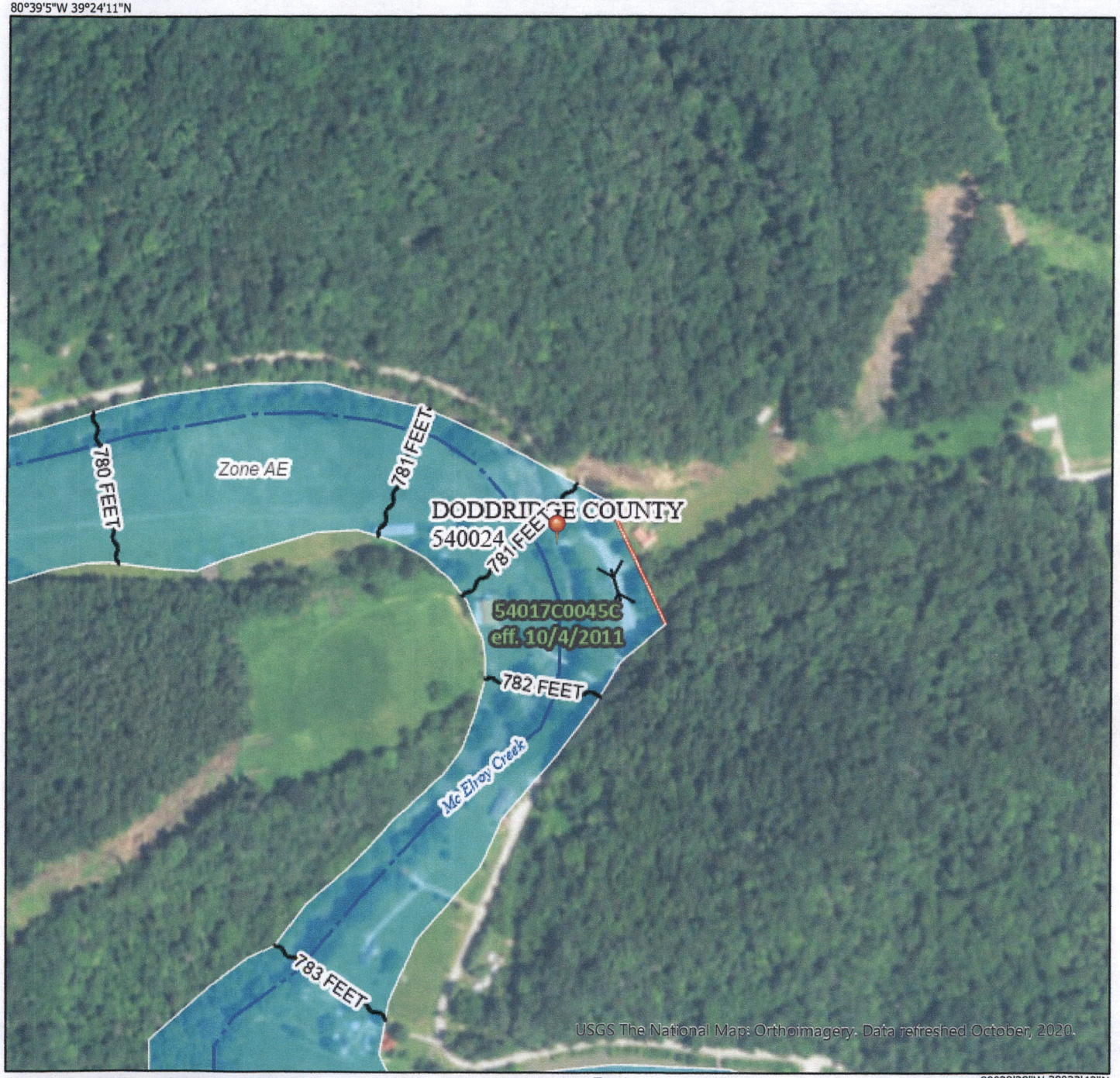
User Notes

Flood Hazard Area	Location is **WITHIN** the FEMA 100-year floodplain.
Flood Zone	AE
Stream	McElroy Creek
Watershed (HUC8)	Little Musringum-Middle Island (5030201)
Flood Height	Flood Height 3 Refer to FIS report for BFE NAVD88
Water Depth	About 12.0 ft (Source: HAZUS)
Elevation	770.4 ft (Source: SAMS 2003) (NAVD88)
Community & ID	Doddridge County (ID: 540024)
FEMA Map & Date	54017C0045C; Effective Date: 10/4/2011
Location (lat, long)	(39.399234, -80.646217) (WGS84)
Parcel ID	No Parcel
E-911 Address	

National Flood Hazard Layer FIRMette

FEMA

80°39'5"W 39°24'11"N



80°38'28"W 39°23'43"N

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

1:6,000

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
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

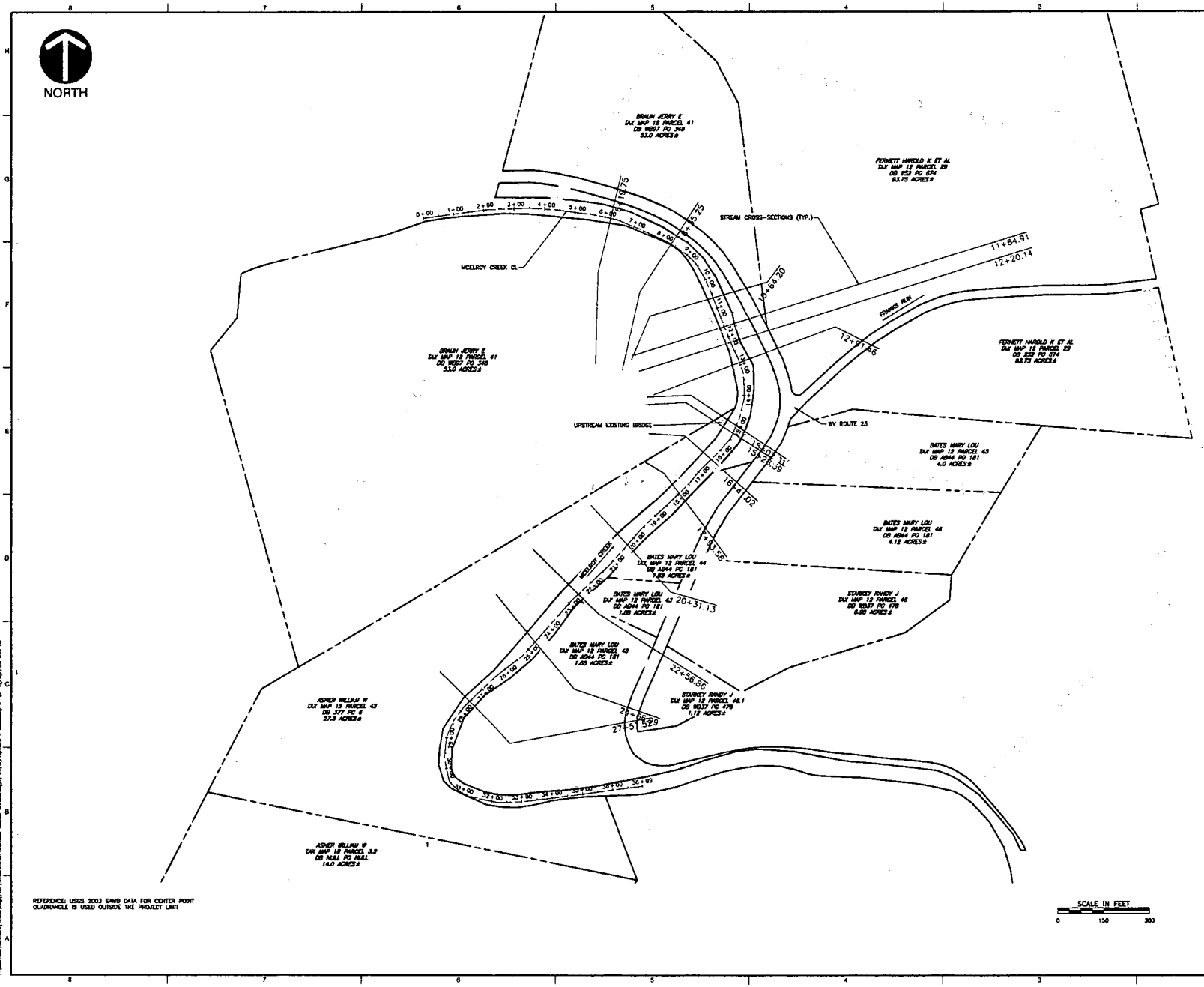
N

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 12/7/2020 at 2:49 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.



REFERENCE: USGS 2003 SAMB DATA FOR CENTER POINT QUADRANGLE IS USED OUTSIDE THE PROJECT LIMIT

REVISION RECORD

NO	DATE	DESCRIPTION

Civil & Environmental Consultants, Inc.
600 Market Place Ave - Suite 200 - Bridgeport, WV 26330
PH: 304.933.3119 - 855.488.9539 - Fax: 304.933.3327
www.cecinc.com

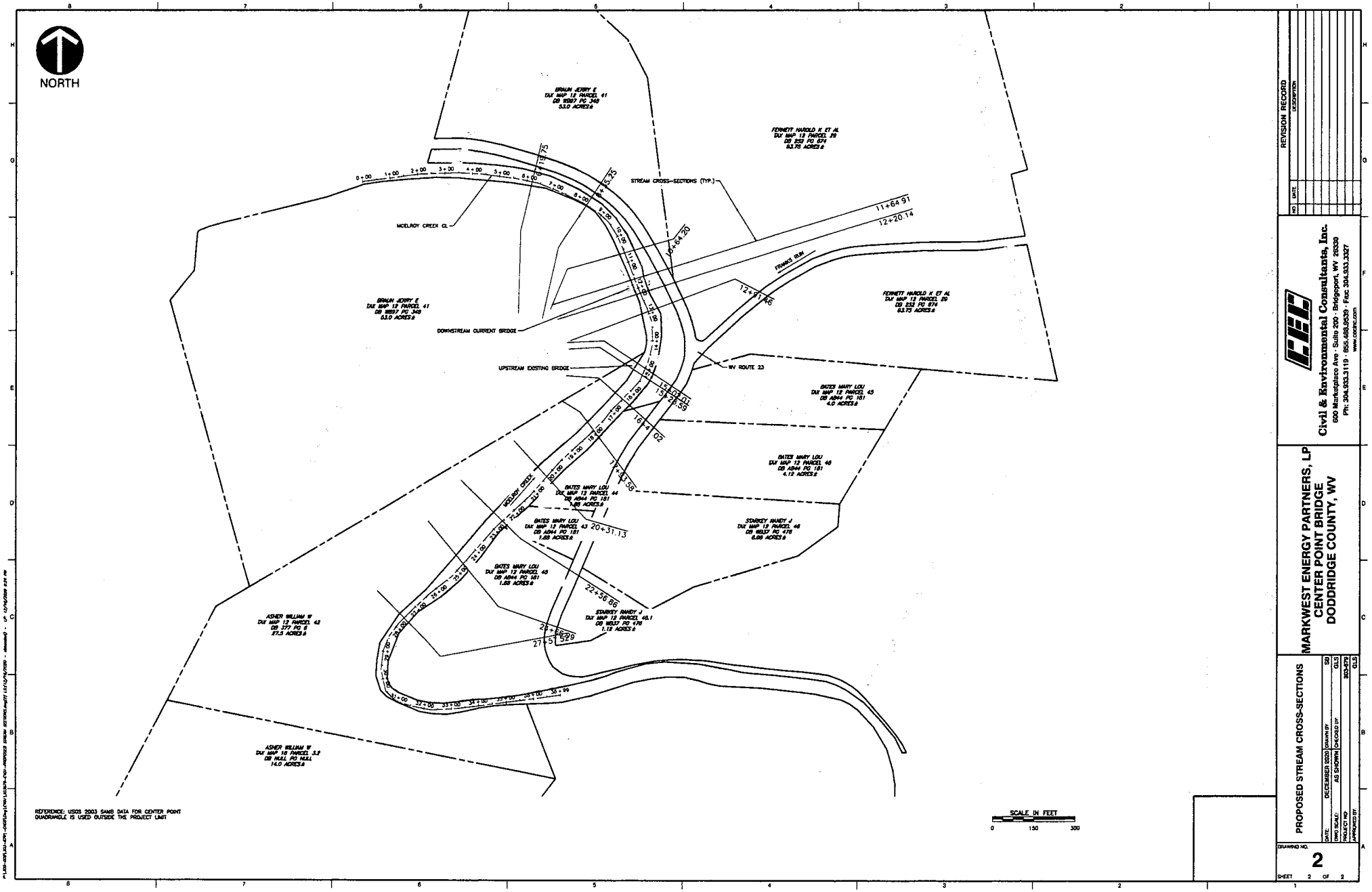
MARKWEST ENERGY PARTNERS, LP
CENTER POINT BRIDGE
DODDRIDGE COUNTY, WV

EXISTING STREAM CROSS-SECTIONS

DATE:	DECEMBER 2020	DRAWN BY: SB
DWG SCALE:	AS SHOWN	CHECKED BY: GLS
PROJECT NO:		203-679
APPROVED BY:		GLS

DRAWING NO. 1

SHEET 1 OF 2



REVISION RECORD

NO	DATE	DESCRIPTION

Civil & Environmental Consultants, Inc.
800 Market Place Ave · Suite 200 · Bridgeport, WV 26330
PH: 304.933.3119 · 855.488.9539 · FAX: 304.933.3327
www.cecinc.com

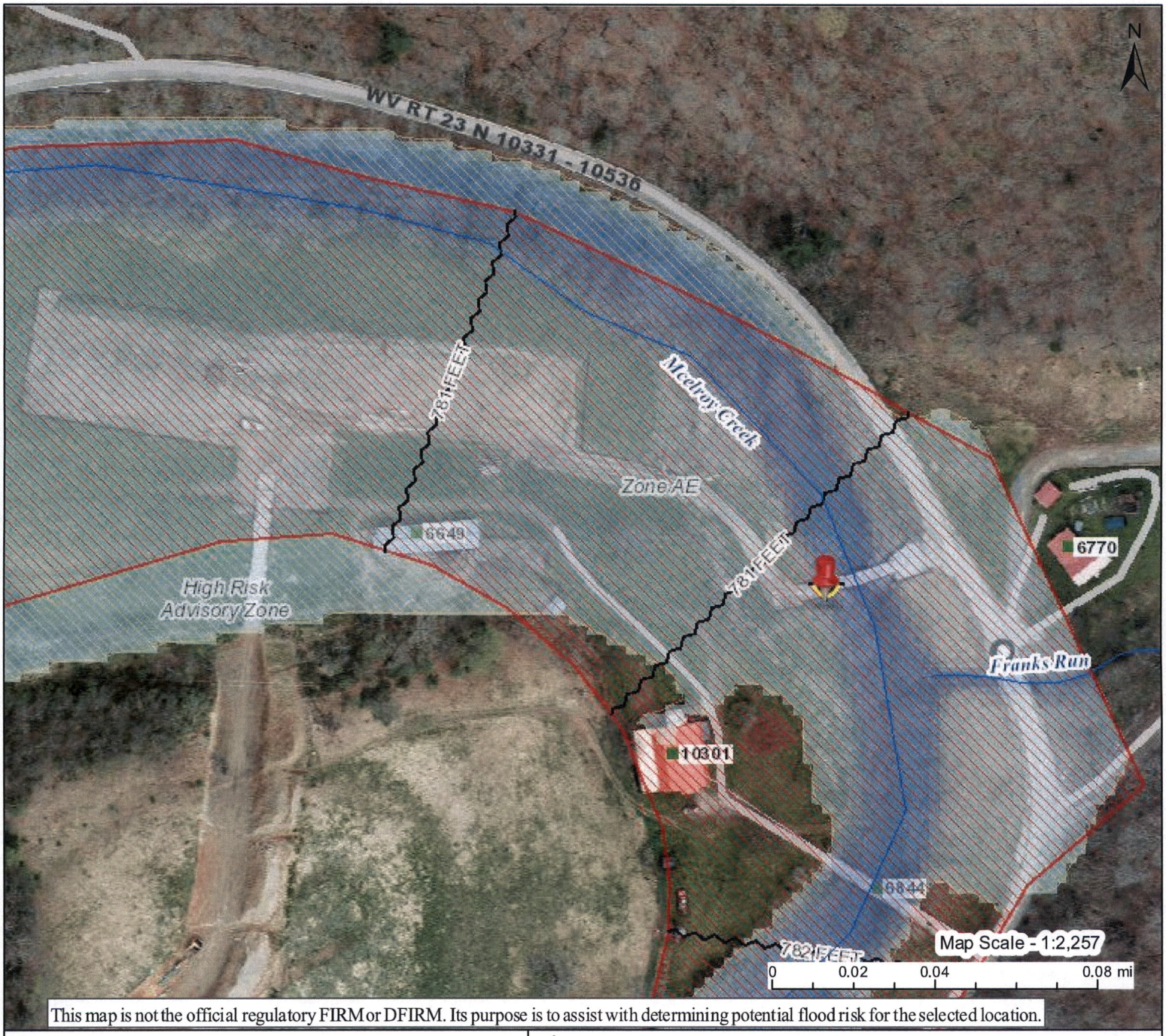
MARKWEST ENERGY PARTNERS, LP
CENTER POINT BRIDGE
DODDRIDGE COUNTY, WV

PROPOSED STREAM CROSS-SECTIONS

DATE:	DECEMBER 2020	DRAWN BY: SB
DWG SCALE:	AS SHOWN	CHECKED BY: GLS
PROJECT NO:		203-679 GLS
APPROVED BY:		

DRAWING NO.
2
SHEET 2 OF 2

WV Flood Map



This map is not the official regulatory FIRM or DFIRM. Its purpose is to assist with determining potential flood risk for the selected location.

HIGH RISK

Zone AE	1-Percent-Annual-Chance Flood Hazard Area **With Base Flood Elevation** (BFE)
Floodway	Regulatory **Floodway in AE Zone**
Zone A	1-Percent-Annual-Chance Flood Hazard Area **Without BFE** (may have Advisory Flood Heights)
Advisory	1-Percent-Annual-Chance **High Risk Advisory**

Download the Full Legend for all flood tool symbols
https://www.mapwv.gov/flood/map/docs/wv_flood_tool_legend.pdf

Disclaimer:
The online map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. Refer to the official Flood Insurance Study (FIS) for detailed flood elevation data in flood profiles and data tables. WV Flood Tool (*https://www.mapwv.gov/flood*) is supported by FEMA, WV NFIP Office, and WV GIS Technical Center.

Flood Info Location

Map created on 3/22/2021

User Notes	
Flood Hazard Area	Location is **WITHIN** the FEMA 100-year floodplain.
Flood Zone	AE
Stream	McElroy Creek
Watershed (HUC8)	Little Musringum-Middle Island (5030201)
Flood Height	Flood Height 2 781.2 ft (Source: BFE - Non-Restudy) NA
Water Depth	About 9.2 ft (Source: HEC-RAS)
Elevation	772.0 ft (Source: SAMS 2003) (NAVD88)
Community & ID	Doddridge County (ID: 540024)
FEMA Map & Date	54017C0045C; Effective Date: 10/4/2011
Location (lat, long)	(39.399242, -80.646314) (WGS84)
Parcel ID	
E-911 Address	

Civil & Environmental Consultants, Inc.
600 Marketplace Ave
Suite 200
Bridgeport, WV 26330
Phone: (304) 933-3119 · **Toll Free:** (855) 488-9539
Fax: (304) 933-3327

Letter of Transmittal

Date: *3/17/2021* | Job No.: *303-420*

Attention: *George Eidel*

To:
Doddridge County Office of Emergency Management
108 Court Street, Suite 1
West Union, WV 26456

RE:
Floodplain Development Permit Application

We are sending you *attached* via *Regular Mail* the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☑ *Floodplain Application*

Copies	Date	No.	Description
1	03/17/2021		Floodplain Development Permit Application and Payment

☑ For approval ☐ Approved as submitted ☐ Resubmit _ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _ prints
☐ For review and comment ☐ _
☐ For bids due ☐ Prints returned after loan to us

Remarks: *Attached is the floodplain development permit application and supporting documents. Please let us know if you need any additional information to complete your review. Thank you.*

Copy to: -

Signed: Andrew P Darnell
Andrew P. Darnell

HYDRAULIC STUDY REPORT

CENTER POINT BRIDGE
DODDRIDGE COUNTY, WV

Prepared For:

MARKWEST ENERGY PARTNERS, LP

320 SOUTH VIEW DRIVE, SUITE 200

BRIDGEPORT, WEST VIRGINIA

Prepared By:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

600 MARKETPLACE AVENUE, SUITE 200

BRIDGEPORT, WV 26330

CEC Project: 303-679

December 2020

Civil & Environmental Consultants, Inc.

600 Marketplace Avenue, Suite 200 | Bridgeport, WV 26330 | p: 304-933-3119 f: 304-933-3327 | www.cecinc.com

TABLE OF CONTENTS

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APPENDIX B : FEMA FIRMette

APPENDIX C : HEC-RAS Profile Summary Tables

APPENDIX D : HEC-RAS Cross-Section Reports

APPENDIX E : HEC-RAS Output Files

I. PROJECT DESCRIPTION

A. Narrative

The project site is located near to WV Route 23 approximately 1 mile northwest of Center Point in Doddridge County, West Virginia. The current bridge was constructed to provide temporary access across McElroy Creek. The landowner desires to leave the bridge in place as a permanent structure. The bridge will be re-constructed on permanent foundations with anchorage. The bridge is located within a Zone AE Flood Zone without Floodway Area as designated on FEMA's Flood Map 54017C0045C with an effective date of October 4, 2011. The purpose of this hydraulic study is not to investigate the existence or severity of flood hazards in the study area. The purpose of this hydraulic study is to determine the potential for adverse effects caused by the bridge and the potential impacts to the water levels and floodplain of McElroy Creek.

B. Location Map

1. County Map

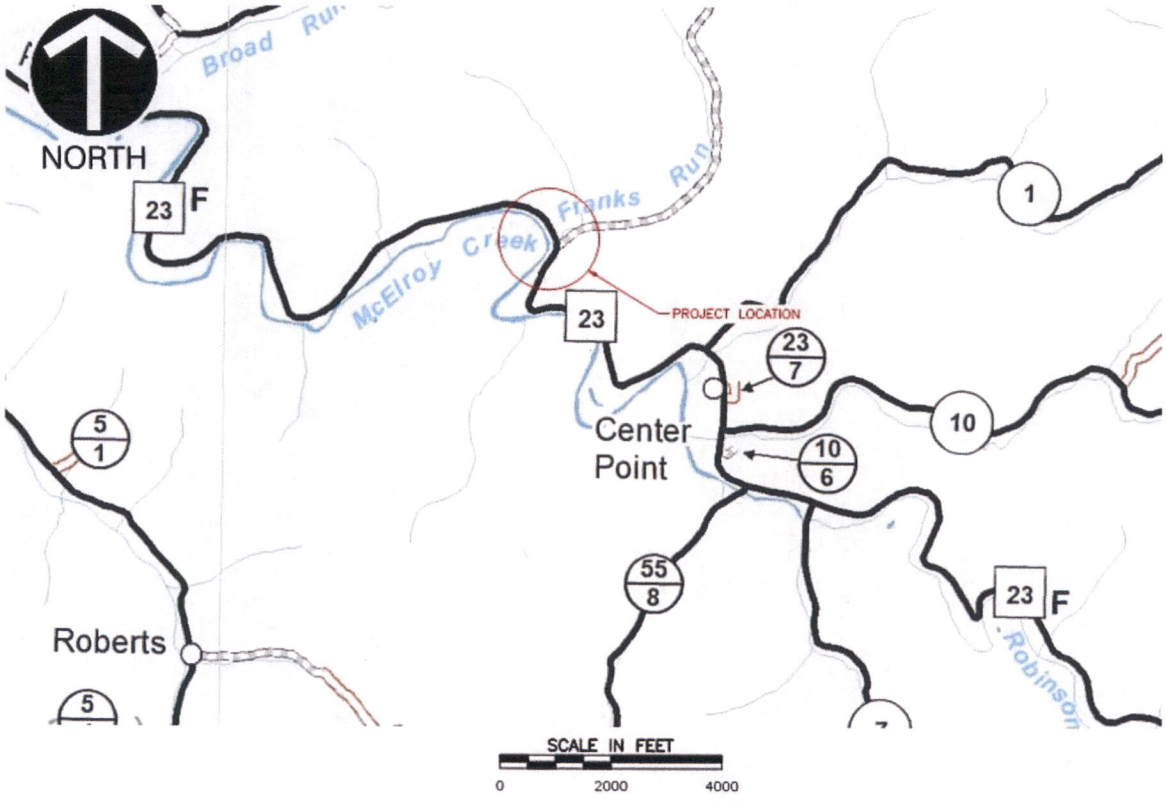


Figure 1: Doddridge County Map Showing the Project Location

2. USGS Topographic Map

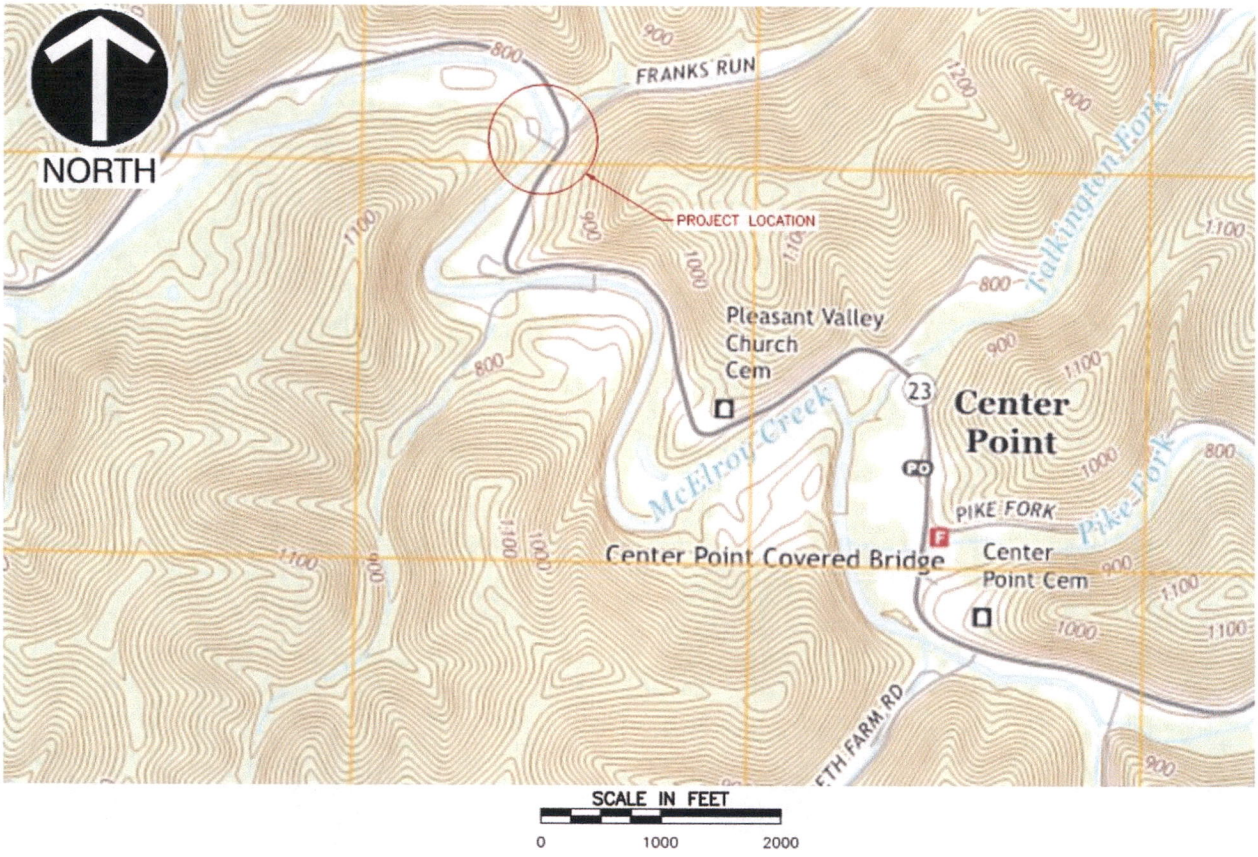


Figure 2: USGS 7.5 Minute Topo Map for Center Point Quadrangle Showing the Project Location

C. Field Observations

1. High Water Marks

There are no established landmarks in the project vicinity to determine a historic high water mark for McElroy Creek.

2. Features Relevant to the Hydraulic Analysis

The bridge across McElroy Creek is a single span steel bridge. The length and width of the steel bridge is 76 feet and 14 feet respectively. The bridge deck and girder depth is 3 feet. The bridge has a guard rail on both sides. McElroy Creek has been studied in detail by FEMA as per Flood Insurance Study for Doddridge County. The outlet boundary condition for the hydraulic analysis is set to the known base flood elevation of McElroy Creek, which is 781 feet in the downstream section of the current bridge.

3. Verification of Manning's "n" Values

Manning's roughness coefficients were estimated from a combination of engineering judgement and available aerial imagery of the site. The "n" values are taken from Table 3.1 of the HEC-RAS Hydraulic Reference Manual:

a) Main Channel

Clean, winding, some pools, and shoals" "n" value 0.04

b) Floodplain

Pasture, no brush, high grass: "n" value 0.05

Brush, light brush, and trees in summer: "n" value 0.06

The Manning's "n" values assigned to the left overbank (LOB), channel, and right overbank (ROB) for each cross-section of McElroy Creek are shown in the following table.

River Station	LOB	Channel	ROB
2757.52	0.06	0.04	0.05
2466.99	0.06	0.04	0.05
2256.86	0.06	0.04	0.05
2031.13	0.06	0.04	0.05
1793.58	0.06	0.04	0.06
1641.02	0.05	0.04	0.06
1528.59	0.05	0.04	0.06
1502.01	0.05	0.04	0.06
1291.46	0.05	0.04	0.06
1220.14	0.05	0.04	0.05
1164.91	0.05	0.04	0.05
1064.2	0.05	0.04	0.06
835.25	0.05	0.04	0.06
619.75	0.05	0.04	0.06
371.61	0.05	0.04	0.06

Table 1: Assigned Manning's "n" values in each cross-section

D. Pictures

Figure 3: Current Bridge across McElroy Creek (Elevation View)

Figure 4: Current Bridge across McElroy Creek (Approach View)

Figure 5: Upstream Existing Bridge across McElroy Creek

II. SUMMARY OF RESULTS

A. Analyses Performed

Two analyses were performed in this study: an existing conditions analysis and a proposed conditions analysis. The existing conditions model was created using cross-sections based on existing topography along the centerline of McElroy Creek. Cross-sections were field surveyed at specified locations within the study area to provide an accurate representation of the stream channel and floodplains. Cross-sections were derived from field survey obtained by Civil & Environmental Consultants, Inc. in November 2020. Since the surveyed cross-section is limited to bank to bank of the stream, additional topography is obtained from UGGS SAMB 2003 3-m DEM for Center Point Quadrangle and supplemented in the cross-section data for the floodplain. The road surface elevation and the geometry of the bridge were also surveyed. Since the bridge is already installed, the existing condition is re-established by removing the current bridge from the model. There is an additional bridge 325 feet upstream side of the current bridge, which is also accounted for in the existing and proposed conditions model.

In the proposed conditions, the current bridge over McElroy Creek is re-established into the model. The bridge has a clear span of 69 feet and width of 14 feet. The thickness of the deck is 3 feet. The upstream bridge is also considered for the proposed conditions model. By comparing the results from the two analyses, the effects of the current bridge on the 100-year water levels of McElroy Creek were determined, as shown in the following table.

B. Water Surface Elevation Table, Including Existing and Proposed Analyses

Comparison of 100-Year Water Surface Elevation (8300 cfs)			
River Station	**Existing Conditions WSE (ft)**	**Proposed Conditions WSE (ft)**	**Difference in WSE (ft)**
2757.52	782.93	782.98	0.05
2466.99	782.80	782.85	0.05
2256.86	782.71	782.76	0.05
2031.13	782.53	782.58	0.05
1793.58	782.31	782.37	0.06
1641.02	782.10	782.15	0.05
1528.59	781.92	781.98	0.06
1516.77 (Upstream Bridge)			
1502.01	781.77	781.83	0.06
1291.46	781.65	781.71	0.06
1220.14	781.76	781.83	0.07
1191.38 (Current Bridge)			
1164.91	781.74	781.77	0.03
1064.2	781.53	781.53	0.00
835.25	781.38	781.38	0.00
619.75	781.00	781.00	0.00

Table 2: Comparison of 100-year Water Surface Elevation between Existing and Proposed Conditions

See Appendix C – HEC-RAS Profile Summary Table

C. Conclusions

The results of the hydraulic study indicate an increase of water surface elevation by 0.07 feet in the upstream section of the bridge for the 100-year storm event. The increase in the water elevation is due to the construction of the current bridge in the floodplain of McElroy Creek. According to the Doddridge County Floodplain Ordinance for flood zone AE without floodway area (F3), "no new construction or development shall be allowed unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the elevation of the 100-year flood more than one foot any point". Since the rise of water surface elevation for 100-year storm event for this analysis is 0.07 feet, which is within the allowable rise of 1 foot in McElroy Creek. Therefore, the current bridge is in compliance with FEMA criteria as well as the Doddridge County Floodplain Ordinance regarding floodplain impact.

D. Recommendation

As the current bridge is in compliance with both FEMA criteria and Doddridge County Floodplain Ordinance, the recommendation from the analysis is to re-construct the bridge on permanent foundations with anchors as proposed.

E. Signature Block, Consultant, or In-House Designers

1. Preparer

   Swastik Bhandari

2. Reviewer

   Gregory S. Linder, P.E. (West Virginia Registered Professional Engineer No. 15629)

3. Date

December 22, 2020

4. Engineer's Seal on the Final Report

Gregory S. Linder, P.E. (West Virginia Registered Professional Engineer No. 15629)

III. AVAILABLE DATA

A. Flood Insurance Study

The initial countywide Flood Insurance Study (FIS) for Doddridge County had an effective date of March 18, 1991. The final Consultation and Coordination Officer's meeting for the countywide revision to the FIS was held on April 29, 2010, and was attended by representatives of the town of West Union and Doddridge County, West Virginia. Middle Island Creek, Buckeye Creek, Meathouse Creek, McElroy Creek, Wilhelm Run, Long Run, Toms Fork, Greenbrier Fork, Big Isaac Creek, and Lauren Run were studied by detailed Methods. The base flood elevations for the McElroy Creek are available in the flood insurance study.

B. Existing Hydrologic Data

1. Design Discharge

Detailed hydrologic study has been performed for McElroy Creek by FEMA within the boundaries of the project site. Therefore, discharge and the base flood elevation obtained from the detail study of McElroy Creek are used in the hydraulic study. Summary of 100-year discharge values for McElroy Creek are taken from the FIS study and presented in table below.

Flooding Source and Location	Drainage Area (sq. miles)	100-year Peak Discharge (cfs)
McElroy Creek		
Upstream of confluence of Flint Run	61.95	9250
Upstream of confluence of Riggins Run	51.23	8300
Downstream of confluence of Talkington Fork	39.18	7100
Downstream of confluence of Robinson Fork and Big Battle Run	20.75	4900

Table 3: 100-year Peak Discharge for McElroy Creek

The location for the study area is approximately 1.8 miles downstream of the confluence of Talkington Fork while it is approximately 5 miles upstream of the confluence of Riggins Run. In this study, as a conservative approach, the peak discharge of McElroy Creek at the confluence of Riggins Run is considered for the analysis. Therefore, the peak flow of 8,300 cfs was used in the hydraulic model.

2. Boundary Conditions

The base flood elevation for 100-year flood event is obtained from the FEMA Flood Zone Map for the area of interest. The furthest downstream river station 619.75 has a base flood elevation of 781 ft, which is taken as the downstream boundary condition as the known water surface elevation in the hydraulic model.

C. Existing Hydraulic Model from FEMA, USACE, NRCS, others

McElroy Creek was studied using detailed methods by FEMA in June 1988. The peak discharge and base flood elevation were obtained from the existing hydraulic model from the Flood Insurance Study for Doddridge County.

IV. HYDRAULIC MODELING

A. Source of Model

HEC-RAS Version 5.0.7 was used to perform a hydraulic analysis to determine if adverse effects will be caused by the bridge relative to existing conditions, as well as the potential impacts to the water levels and floodplain of McElroy Creek. HEC-RAS 5.0.7 is the most current version of the river analysis software available from the Hydraulic Engineering Center of the U.S. Army Corps of Engineers.

B. Site Map with Cross-Sections

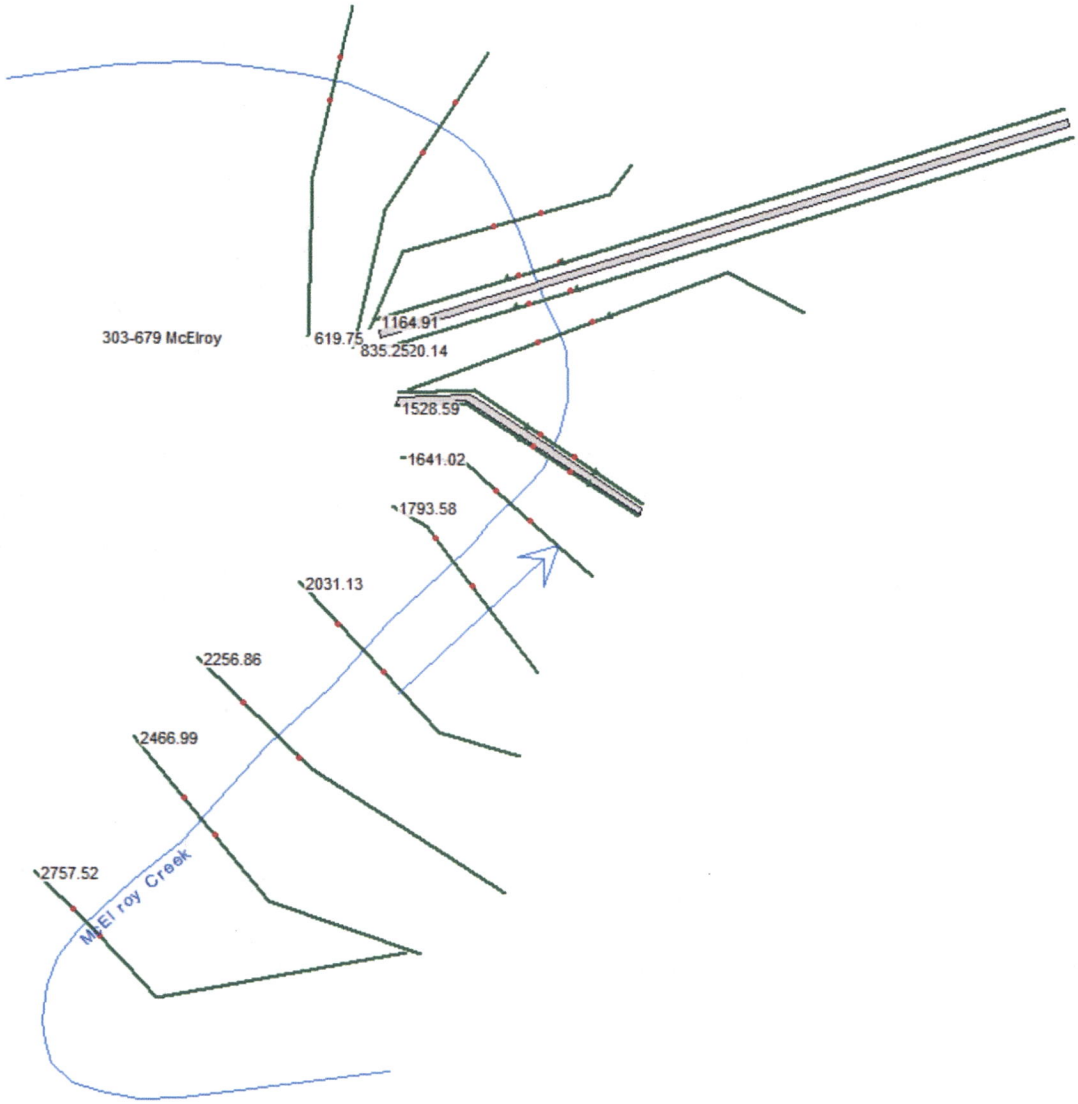


Figure 6: HEC-RAS Schematic Showing River Cross-Sections with Bridges

C. Explanation of Data and Methods

1. Manning's "n" Values

Manning's roughness coefficients were determined based on aerial imagery of the project site. See Section I.C.3 for a detailed description of the Manning's "n" values used.

2. Bridge Modeling Approach

The Bridge Modeling Approach used was Energy (Standard Step) for low flows, and Pressure and/or Weir for high flows.

3. Ineffective Flow Areas

Ineffective flow areas were incorporated to account for areas in the cross-sectional geometry where ponded water will not be actively conveyed downstream.

4. Any Unusual Circumstances

There are no unusual circumstances specified in correlation with the hydraulic analysis of this project.

5. Table of HEC-RAS Plan Files

Filename	Description
Existing Plan	Existing Conditions Analysis
Proposed Plan	Proposed Conditions Analysis

See Appendix E – HEC-RAS Output Files

D. HEC-RAS Generated Tables

1. Profile Summary of Existing and Proposed Conditions

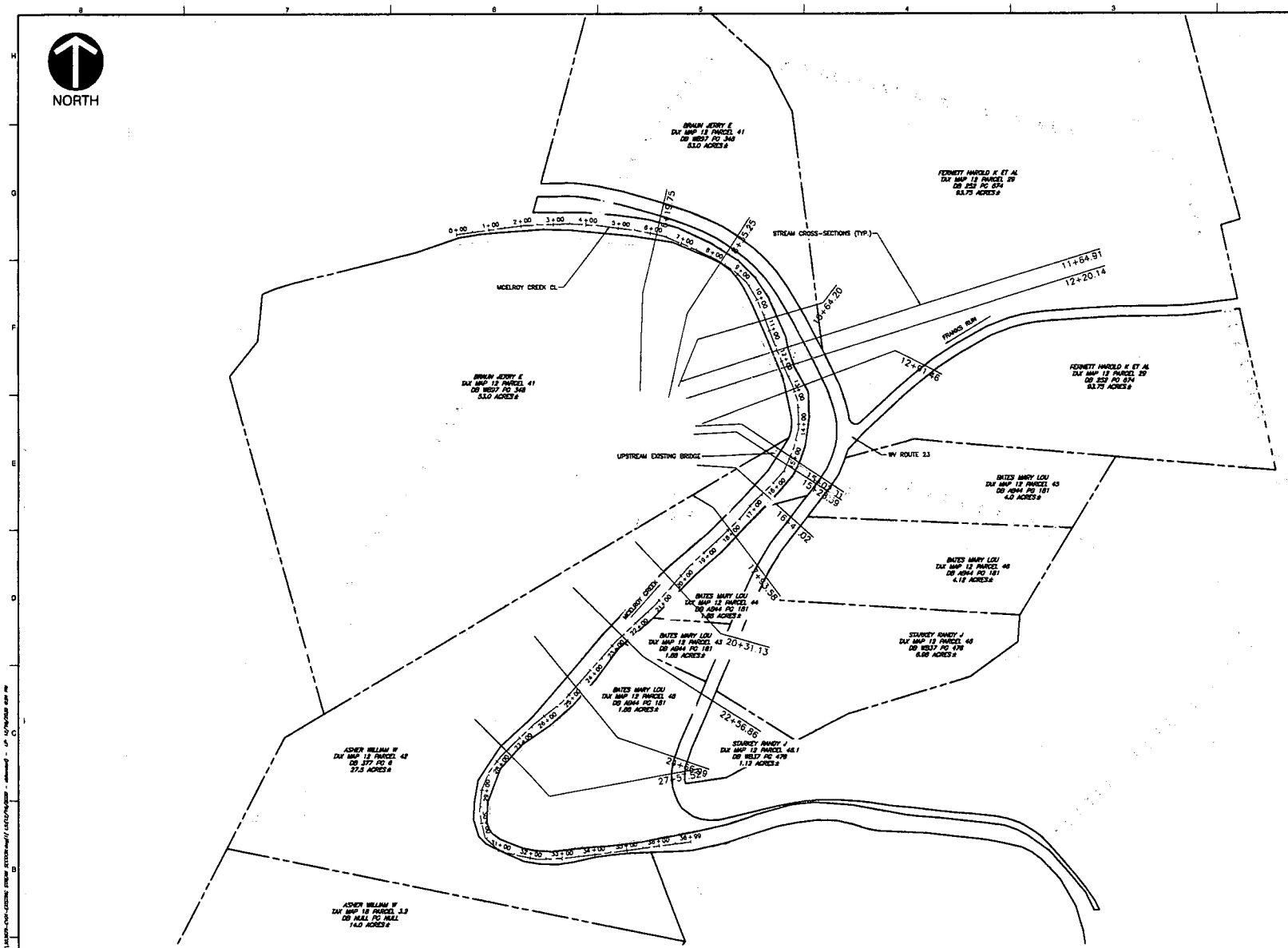
See Appendix C – HEC-RAS Profile Summary Tables

2. Detailed Output Files

See Appendix E – HEC-RAS Output Files

APPENDIX A

Site Plan



REFERENCE: USDS 2003 SAMB DATA FOR CENTER POINT QUADRANGLE IS USED OUTSIDE THE PROJECT LIMIT

REVISION RECORD

NO.	DATE	DESCRIPTION

Civil & Environmental Consultants, Inc.
800 Market place Ave · Suite 200 · Bridgeport, WV 26330
Ph: 304.933.3119 · 855.489.8939 · Fax: 304.933.3327
www.cecinc.com

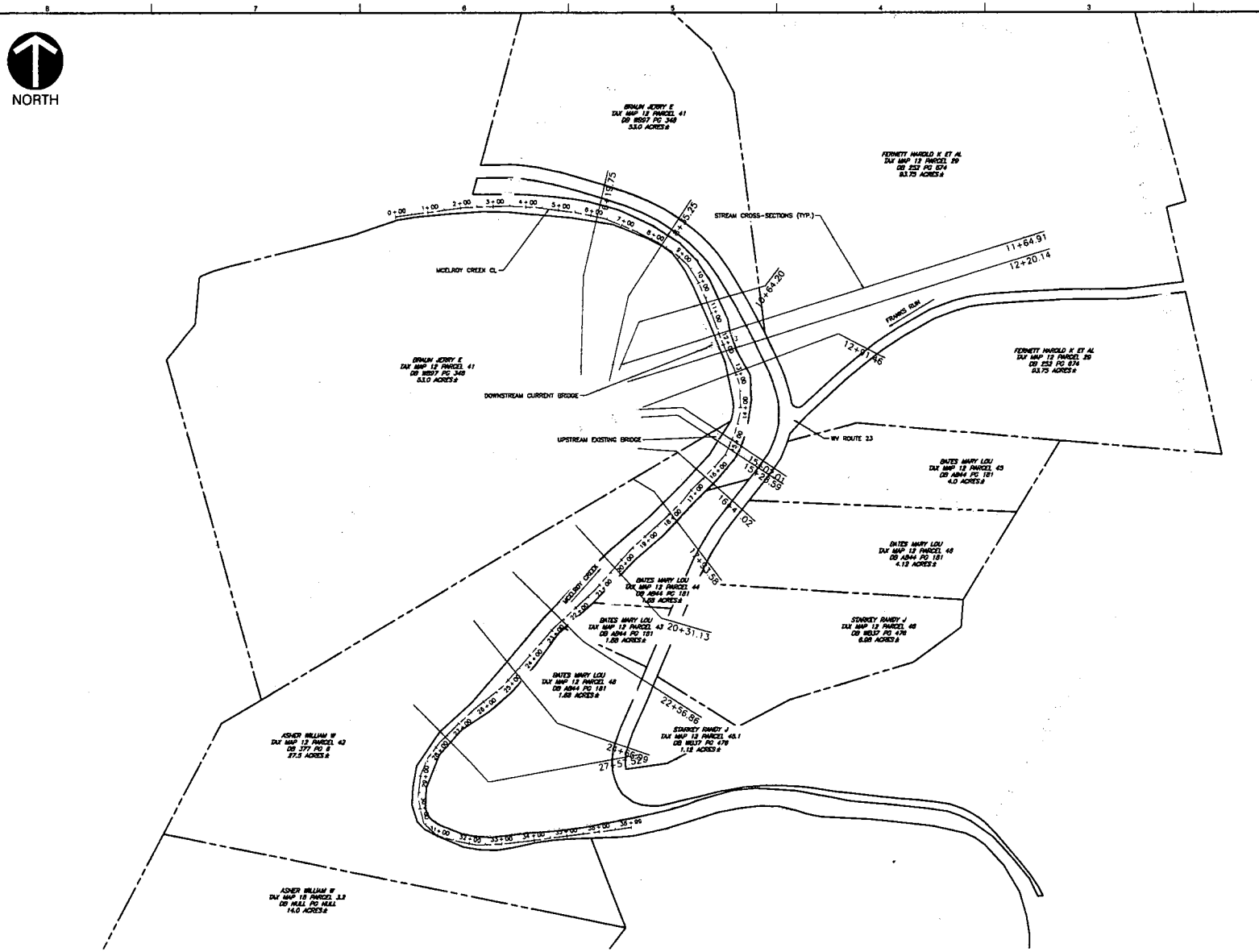
MARKWEST ENERGY PARTNERS, LP
CENTER POINT BRIDGE
DODDRIDGE COUNTY, WV

EXISTING STREAM CROSS-SECTIONS

DATE:	DECEMBER 2020	DRAWN BY: SIB
DWG SCALE:	AS SHOWN	CHECKED BY: GLS
PROJECT NO:		353-479
APPROVED BY:		GLS

DRAWING NO. 1

SHEET 1 OF 2



REFERENCE: USGS 2003 SAMB DATA FOR CENTER POINT QUADRANGLE IS USED OUTSIDE THE PROJECT LIMIT

REVISION RECORD

NO	DATE	DESCRIPTION

Civil & Environmental Consultants, Inc.
800 Metroplex Ave - Suite 200 - Bridgeport, WV 26330
PH: 304.933.3119 - 855.488.2539 - Fax: 304.933.3327
www.ceiwv.com

MARKWEST ENERGY PARTNERS, LP
CENTER POINT BRIDGE
DODDRIDGE COUNTY, WV

PROPOSED STREAM CROSS-SECTIONS

DATE:	DECEMBER 2020	Drawn By: SBJ
DWG SCALE:	AS SHOWN	CHECKED BY: GLS
PROJECT NO:		353-079 GLS
APPROVED BY:		

DRAWING NO.: 2

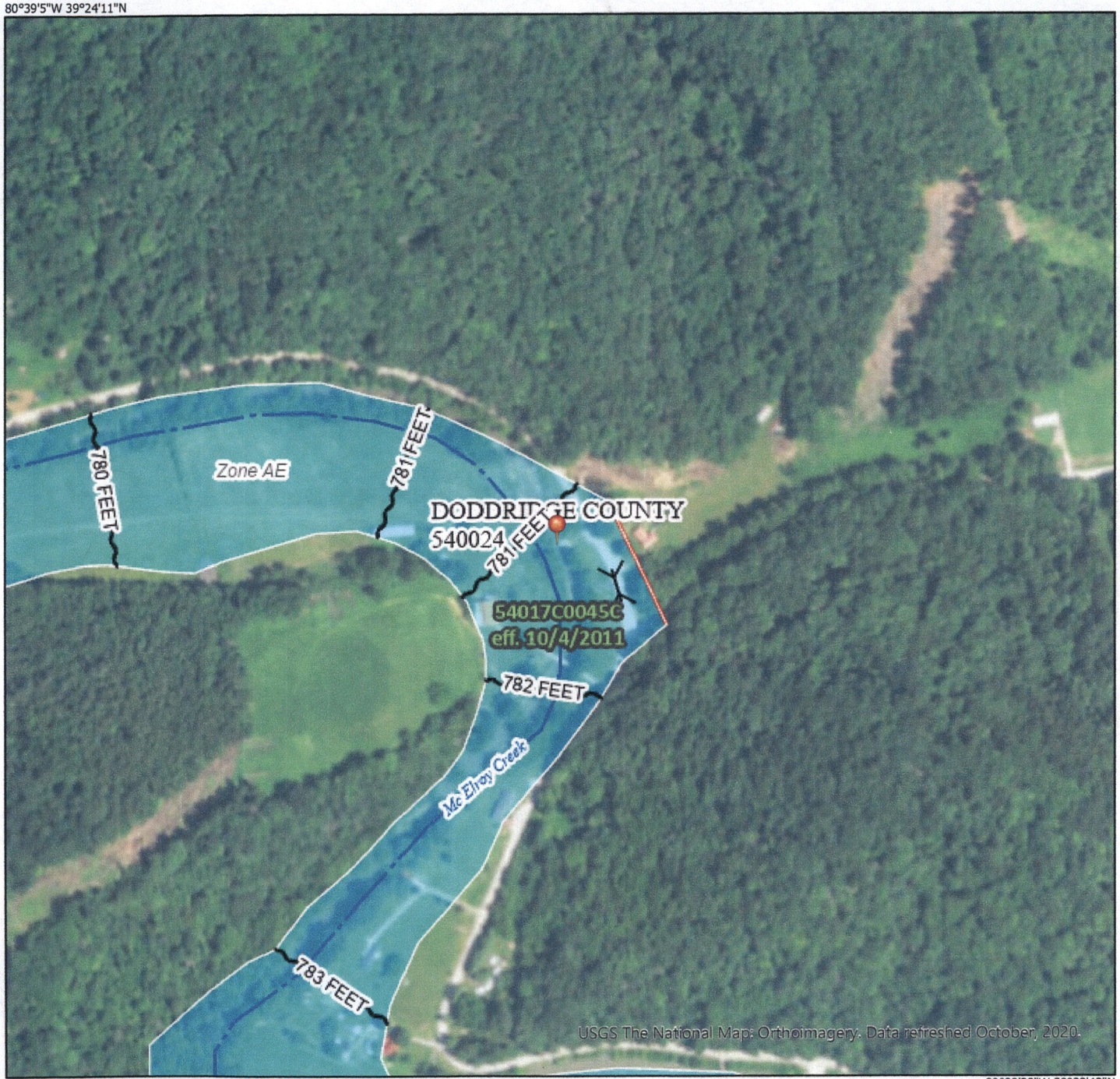
SHEET 2 OF 3

APPENDIX B

FEMA FIRMette

National Flood Hazard Layer FIRMette

FEMA



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
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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 12/7/2020 at 2:49 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.

APPENDIX C

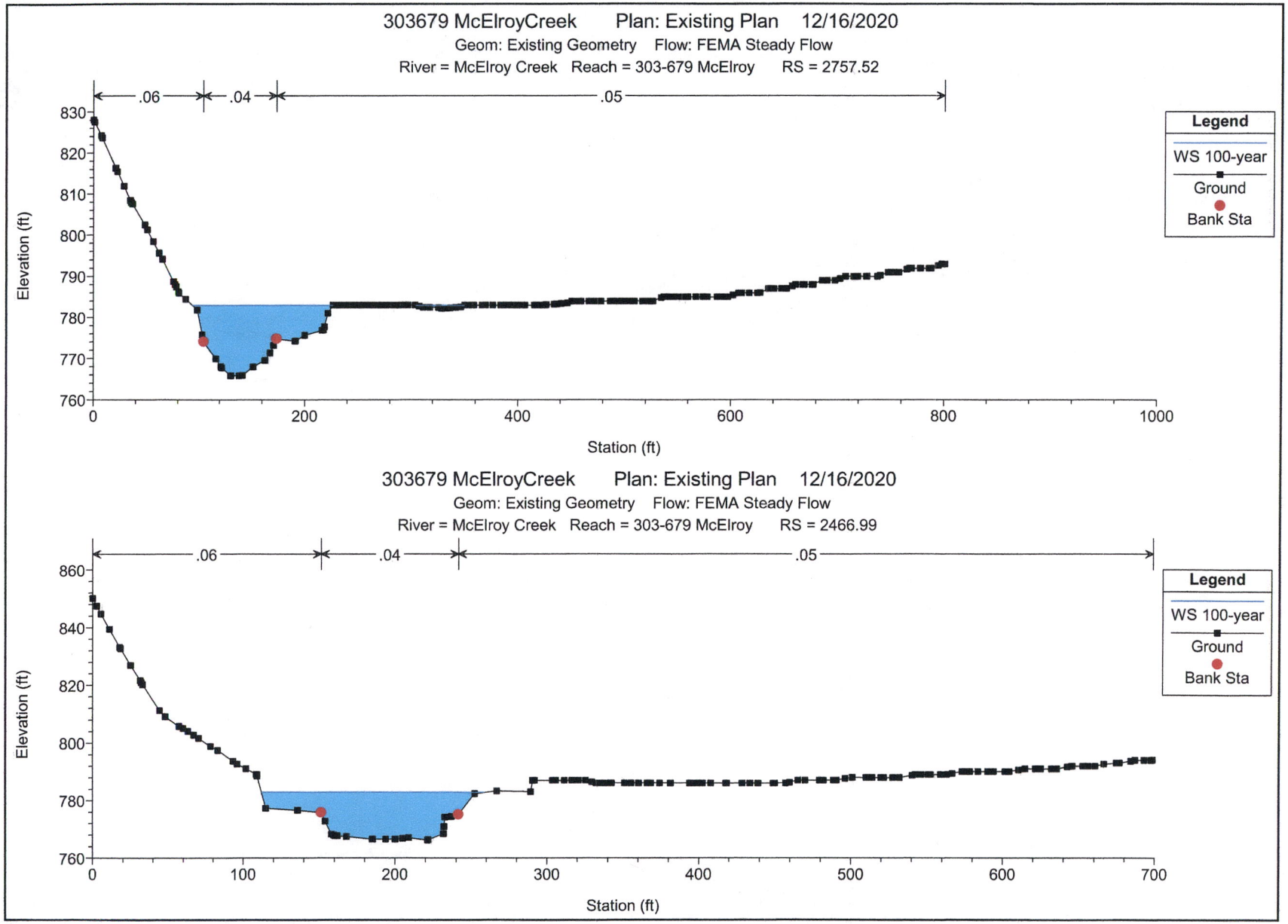
HEC-RAS PROFILE SUMMARY TABLE

HEC-RAS River: McElroy Creek Reach: 303-679 McElroy Profile: 100-year

Reach	River Sta	Profile	Plan	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)	
303-679 McElroy	2757.52	100-year	Pr Plan	8300.00	765.83	782.98		783.67	0.001149	7.16	1389.32	178.62	0.34
303-679 McElroy	2757.52	100-year	Ex Plan	8300.00	765.83	782.93		783.63	0.001163	7.19	1381.50	177.36	0.34
303-679 McElroy	2466.99	100-year	Pr Plan	8300.00	766.23	782.85		783.34	0.000783	5.80	1613.75	147.37	0.27
303-679 McElroy	2466.99	100-year	Ex Plan	8300.00	766.23	782.80		783.30	0.000772	5.83	1607.10	146.83	0.27
303-679 McElroy	2256.86	100-year	Pr Plan	8300.00	765.80	782.76		783.15	0.000770	5.00	1660.65	151.42	0.26
303-679 McElroy	2256.86	100-year	Ex Plan	8300.00	765.80	782.71		783.11	0.000781	5.02	1653.56	150.23	0.26
303-679 McElroy	2031.13	100-year	Pr Plan	8300.00	766.58	782.58		782.99	0.000681	5.13	1656.85	169.92	0.25
303-679 McElroy	2031.13	100-year	Ex Plan	8300.00	766.58	782.53		782.94	0.000690	5.15	1648.47	169.70	0.25
303-679 McElroy	1793.58	100-year	Pr Plan	8300.00	765.64	782.37		782.81	0.000741	5.45	1673.08	170.77	0.26
303-679 McElroy	1793.58	100-year	Ex Plan	8300.00	765.64	782.31		782.76	0.000752	5.48	1664.07	170.68	0.27
303-679 McElroy	1641.02	100-year	Pr Plan	8300.00	764.85	782.15		782.69	0.000816	6.11	1611.45	174.26	0.28
303-679 McElroy	1641.02	100-year	Ex Plan	8300.00	764.85	782.10		782.64	0.000829	6.14	1601.67	173.81	0.28
303-679 McElroy	1528.59	100-year	Pr Plan	8300.00	764.51	781.98	773.56	782.58	0.000920	6.39	1432.58	127.25	0.29
303-679 McElroy	1528.59	100-year	Ex Plan	8300.00	764.51	781.92	773.56	782.53	0.000933	6.42	1425.28	127.09	0.30
303-679 McElroy	1516.77			Bridge									
303-679 McElroy	1502.01	100-year	Pr Plan	8300.00	764.78	781.83	773.86	782.47	0.000948	6.66	1435.76	133.89	0.30
303-679 McElroy	1502.01	100-year	Ex Plan	8300.00	764.78	781.77	773.86	782.41	0.000961	6.69	1427.80	133.33	0.30
303-679 McElroy	1291.46	100-year	Pr Plan	8300.00	767.03	781.71	775.39	782.19	0.000892	5.78	1694.95	548.63	0.29
303-679 McElroy	1291.46	100-year	Ex Plan	8300.00	767.03	781.65	775.39	782.14	0.000910	5.81	1679.76	543.48	0.29
303-679 McElroy	1220.14	100-year	Pr Plan	8300.00	765.88	781.83	775.08	782.08	0.000540	4.81	3246.22	980.37	0.23
303-679 McElroy	1220.14	100-year	Ex Plan	8300.00	765.88	781.76		782.02	0.000560	4.88	3181.09	974.12	0.23
303-679 McElroy	1191.38			Bridge									
303-679 McElroy	1164.91	100-year	Pr Plan	8300.00	765.17	781.77	773.95	782.01	0.000479	4.71	2870.37	538.06	0.22
303-679 McElroy	1164.91	100-year	Ex Plan	8300.00	765.17	781.74		781.99	0.000485	4.73	2854.70	534.34	0.22
303-679 McElroy	1064.2	100-year	Pr Plan	8300.00	765.42	781.53		781.91	0.000719	5.49	2276.32	481.20	0.26
303-679 McElroy	1064.2	100-year	Ex Plan	8300.00	765.42	781.53		781.91	0.000719	5.49	2276.32	481.20	0.26
303-679 McElroy	835.25	100-year	Pr Plan	8300.00	763.80	781.38		781.75	0.000741	5.19	2111.73	416.92	0.26
303-679 McElroy	835.25	100-year	Ex Plan	8300.00	763.80	781.38		781.75	0.000741	5.19	2111.73	416.92	0.26
303-679 McElroy	619.75	100-year	Pr Plan	8300.00	765.05	781.00	773.89	781.56	0.000939	6.34	1796.39	391.45	0.30
303-679 McElroy	619.75	100-year	Ex Plan	8300.00	765.05	781.00	773.89	781.56	0.000939	6.34	1796.39	391.45	0.30

APPENDIX D

HEC-RAS Cross-Section Reports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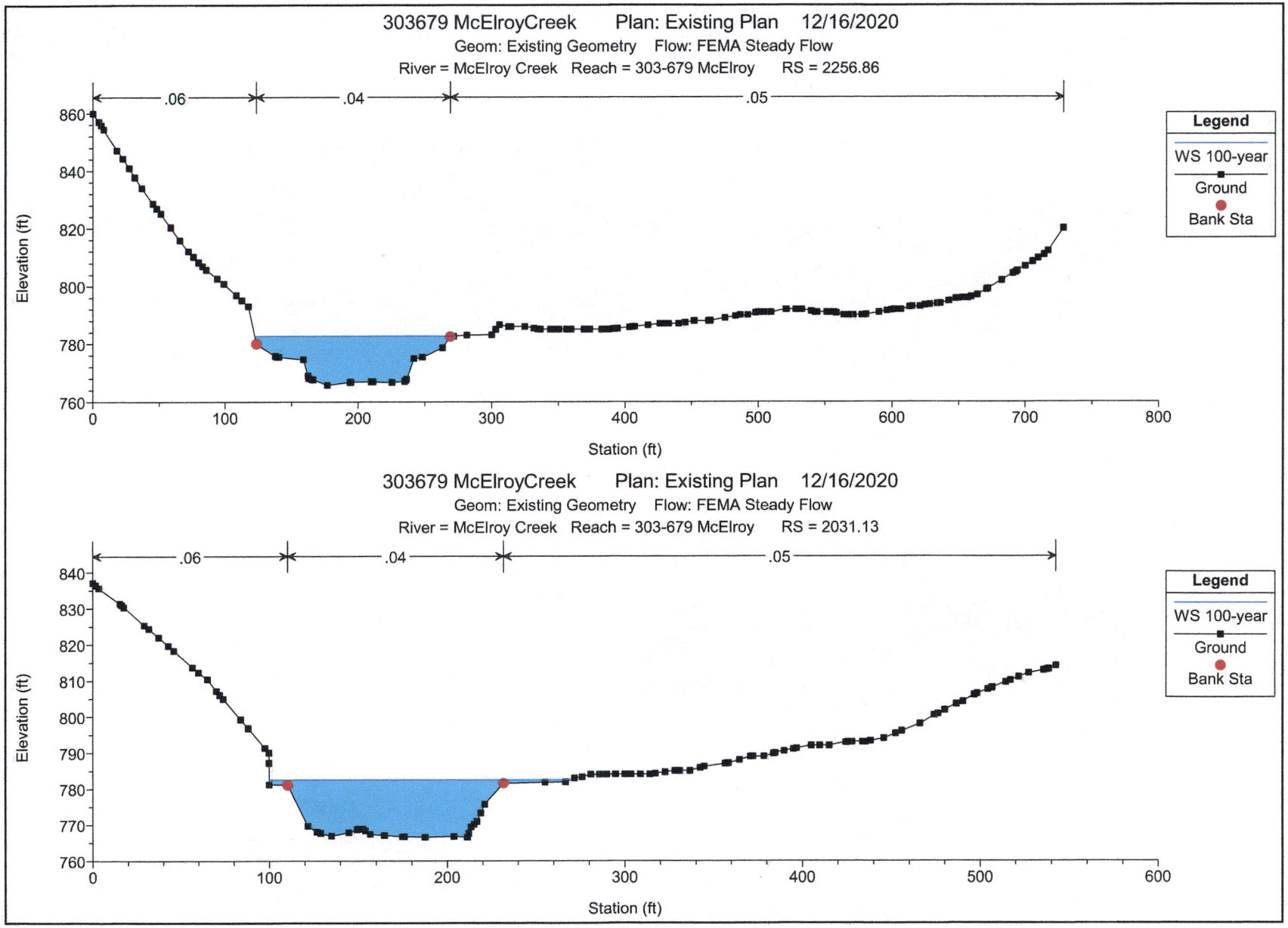
Geom: Existing Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 2757.52
.06
.04
.05
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
303679 McElroyCreek Plan: Existing Plan 12/16/2020
Geom: Existing Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 2466.99
.06
.04
.05
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta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Geom: Existing Geometry Flow: FEMA Steady Flow
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.05
Elevation (ft)
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840
820
800
780
760
0
100
200
300
400
500
600
700
800
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
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Geom: Existing Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 2031.13
.06
.04
.05
Elevation (ft)
840
830
820
810
800
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760
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300
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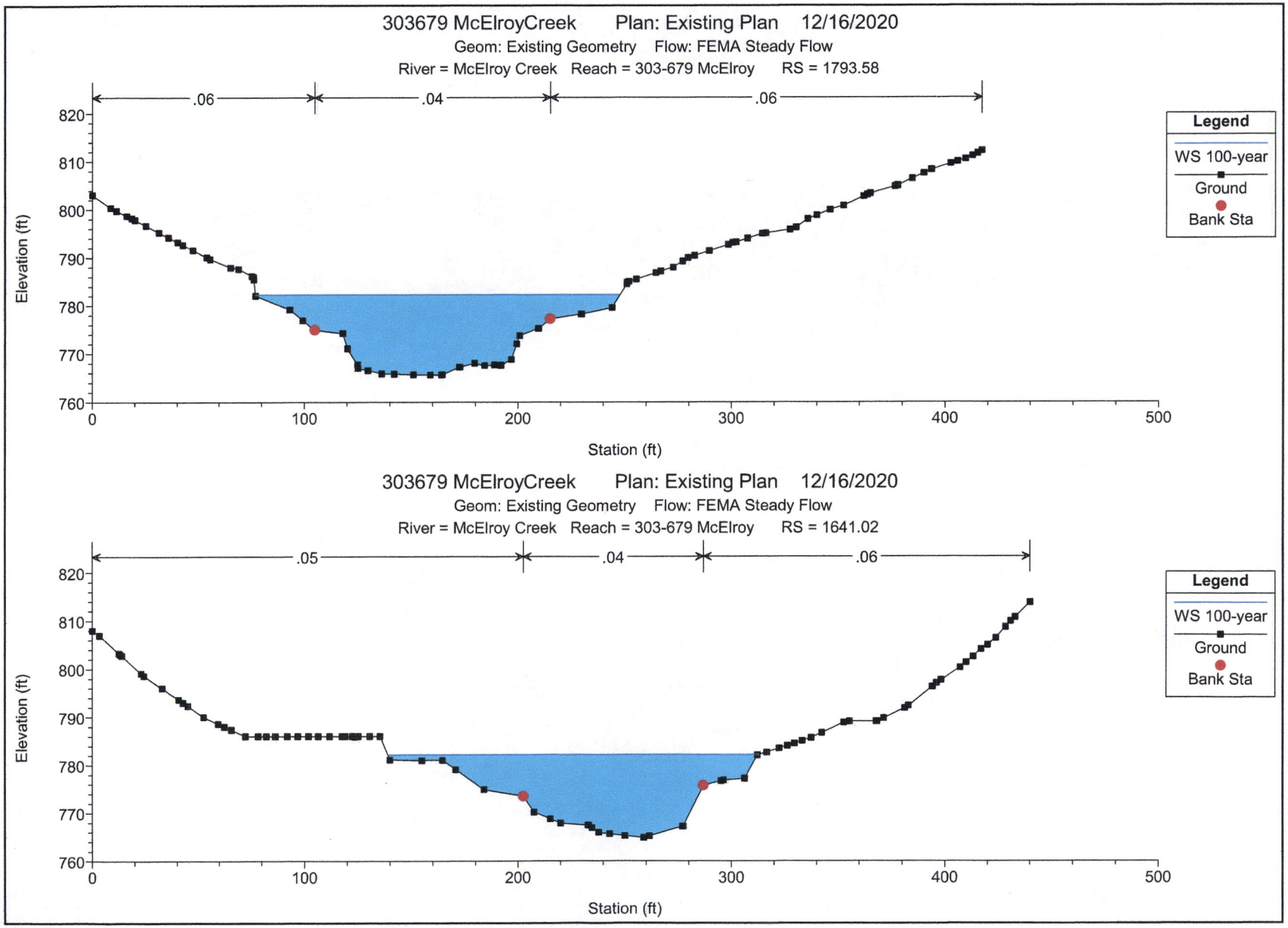
500
600
Station (ft)
Legend
WS 100-year
Ground
Bank Sta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.04
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Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
820
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800
790
780
770
760
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500
Station (ft)
303679 McElroyCreek Plan: Existing Plan 12/16/2020
Geom: Existing Geometry Flow: FEMA Steady Flow
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Legend
WS 100-year
Ground
Bank Sta
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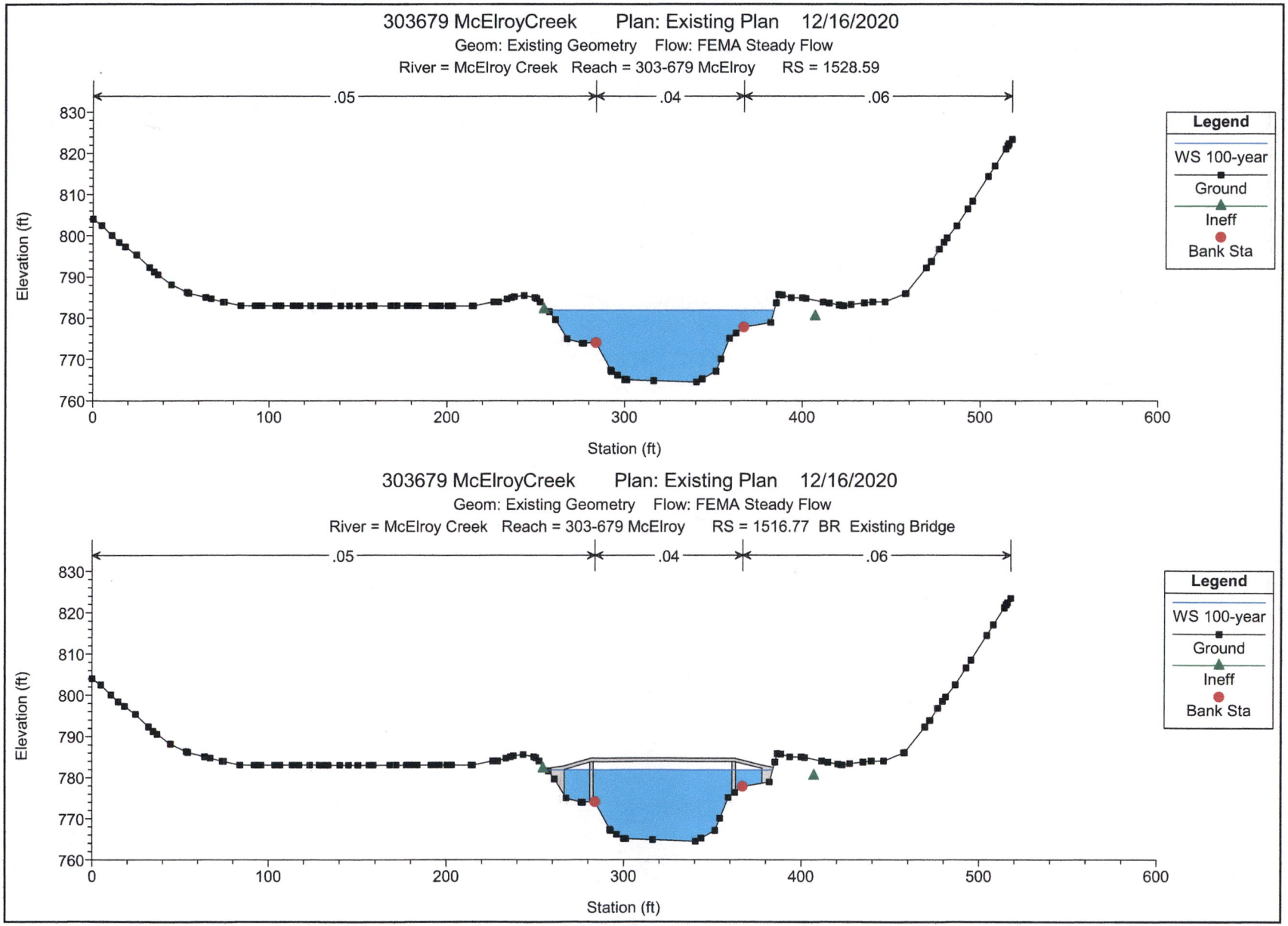
Station (ft)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760
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100
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Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta
303679 McElroyCreek Plan: Existing Plan 12/16/2020
Geom: Existing Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1516.77 BR Existing Bridge
.05
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Elevation (ft)
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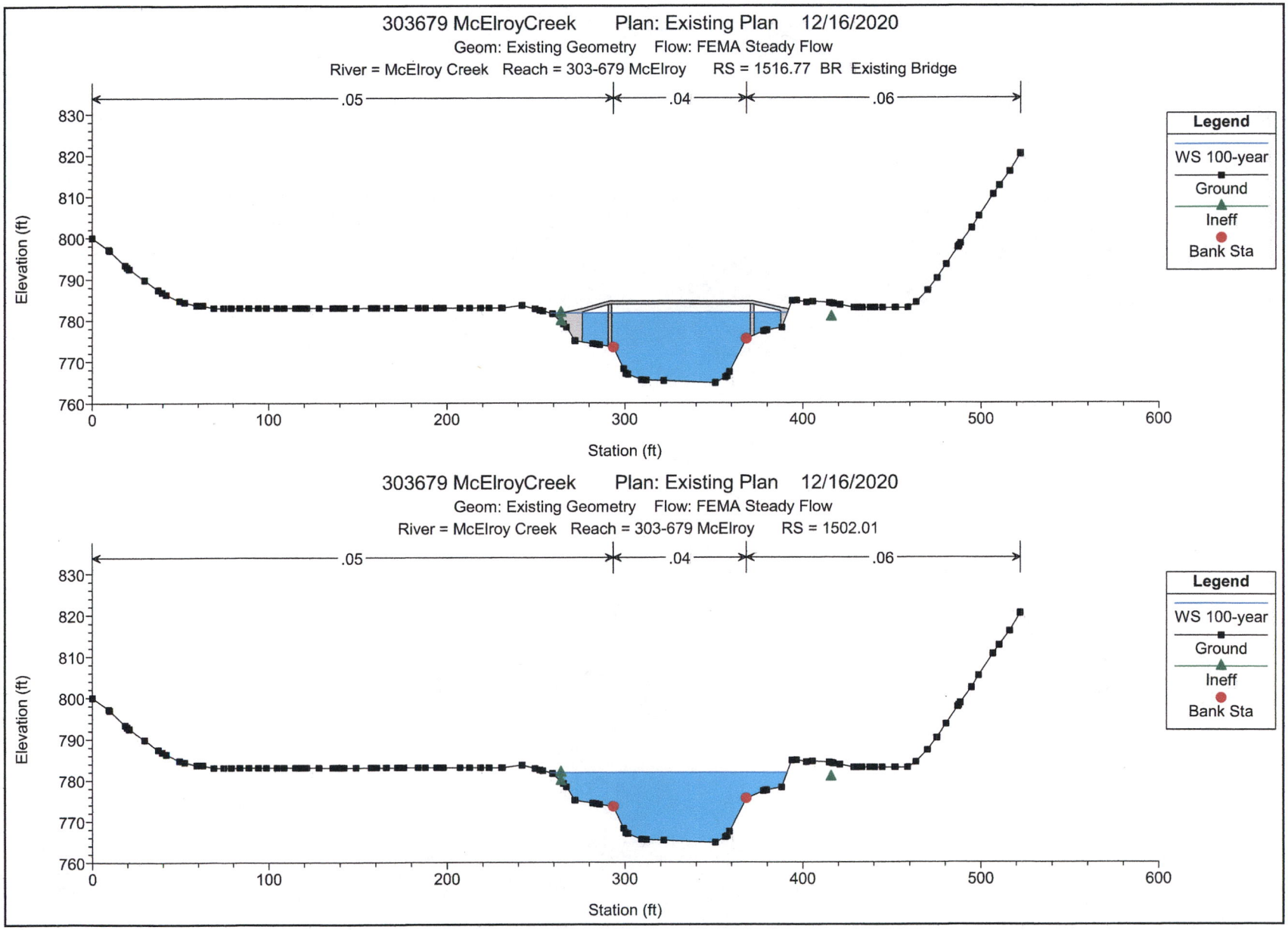
Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta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Legend
WS 100-year
Ground
Ineff
Bank Sta
Elevation (ft)
830
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810
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790
780
770
760
0
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Station (ft)
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Legend
WS 100-year
Ground
Ineff
Bank Sta
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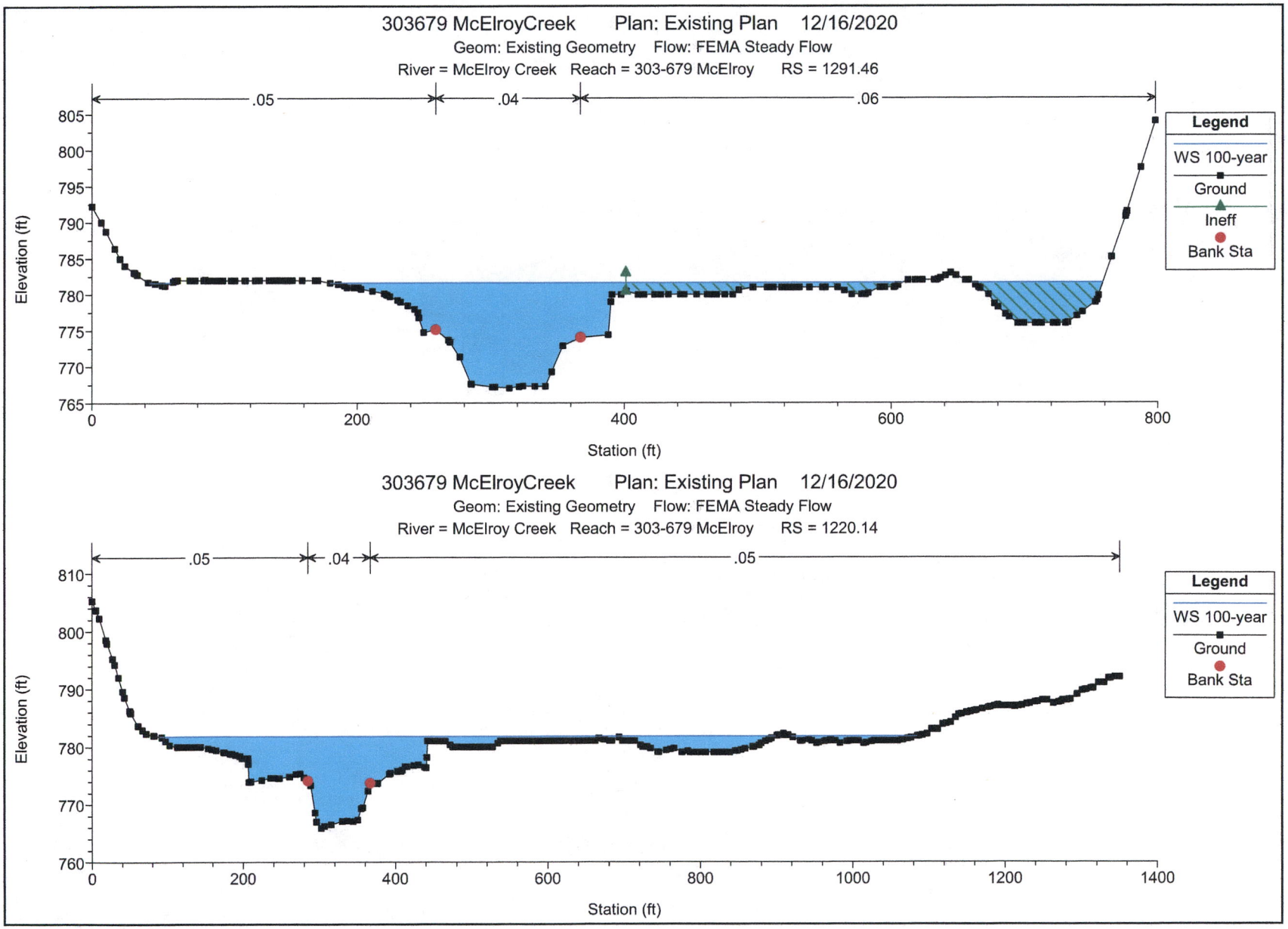
Station (ft)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Legend
WS 100-year
Ground
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Bank Sta
Elevation (ft)
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785
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775
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765
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800
Station (ft)
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Geom: Existing Geometry Flow: FEMA Steady Flow
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Legend
WS 100-year
Ground
Bank Sta
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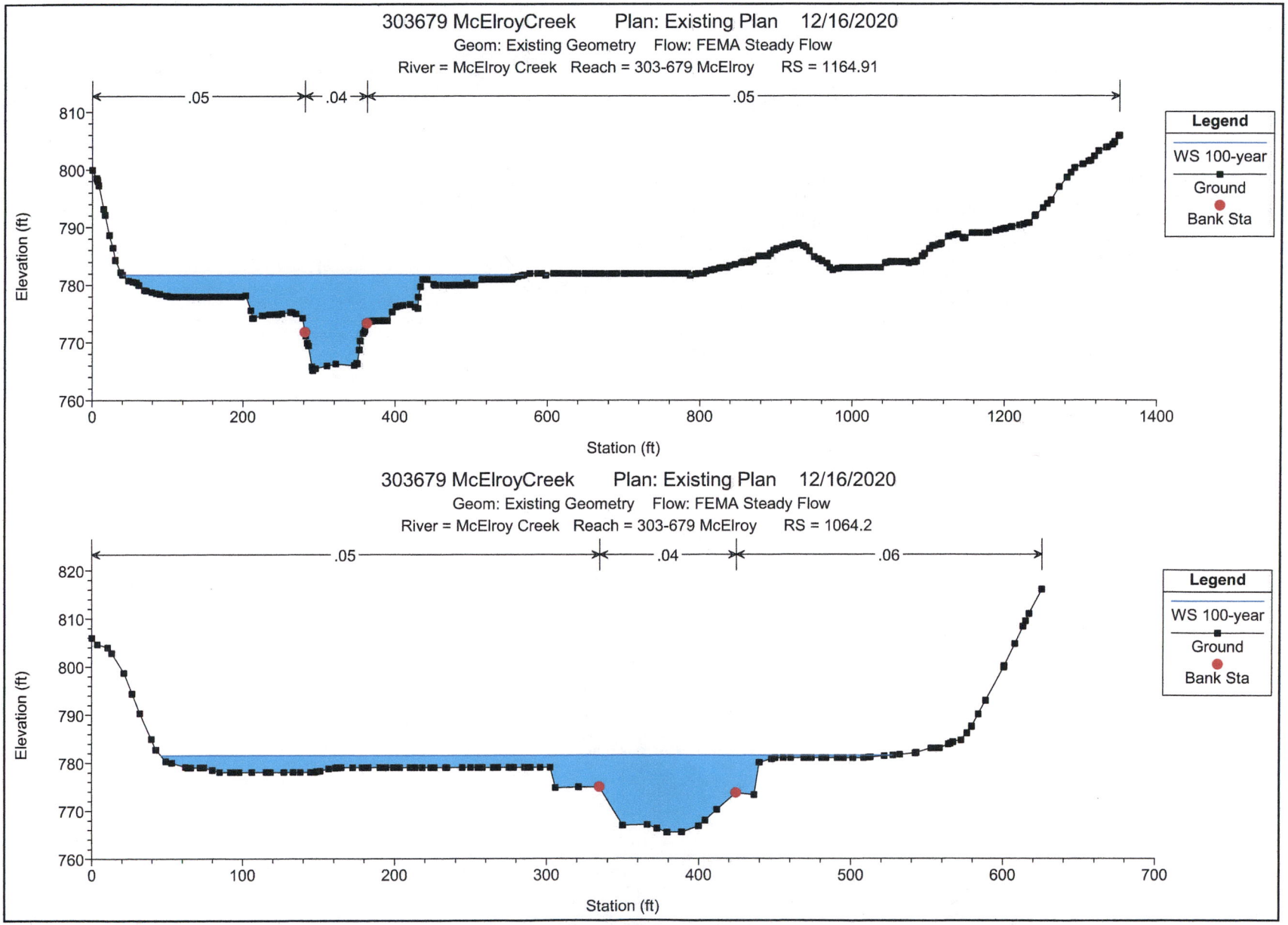
Station (ft)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.04
.05
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
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Elevation (ft)
Station (ft)
Legend
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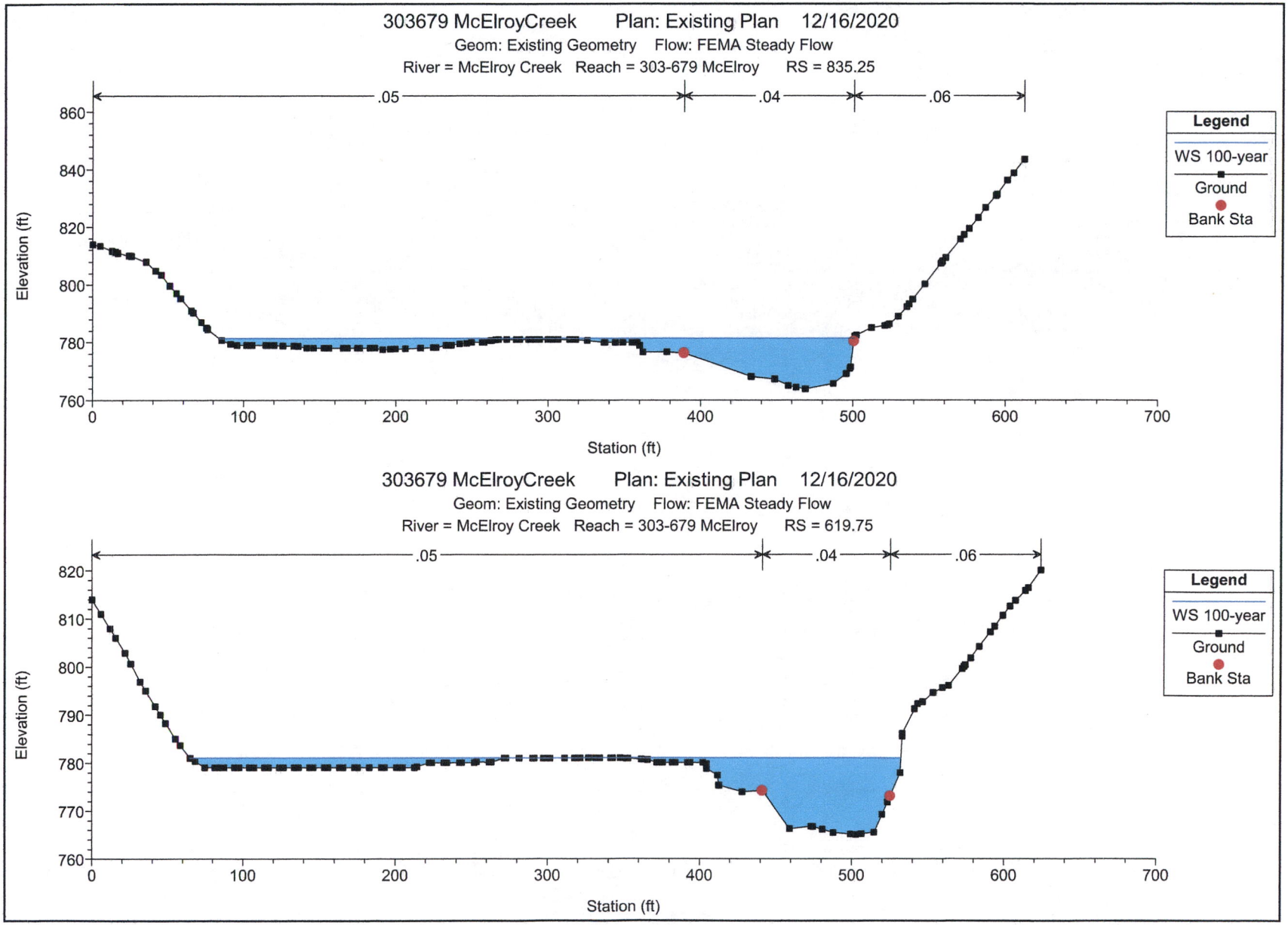
Ground
Bank Sta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Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
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Station (ft)
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Legend
WS 100-year
Ground
Bank Sta
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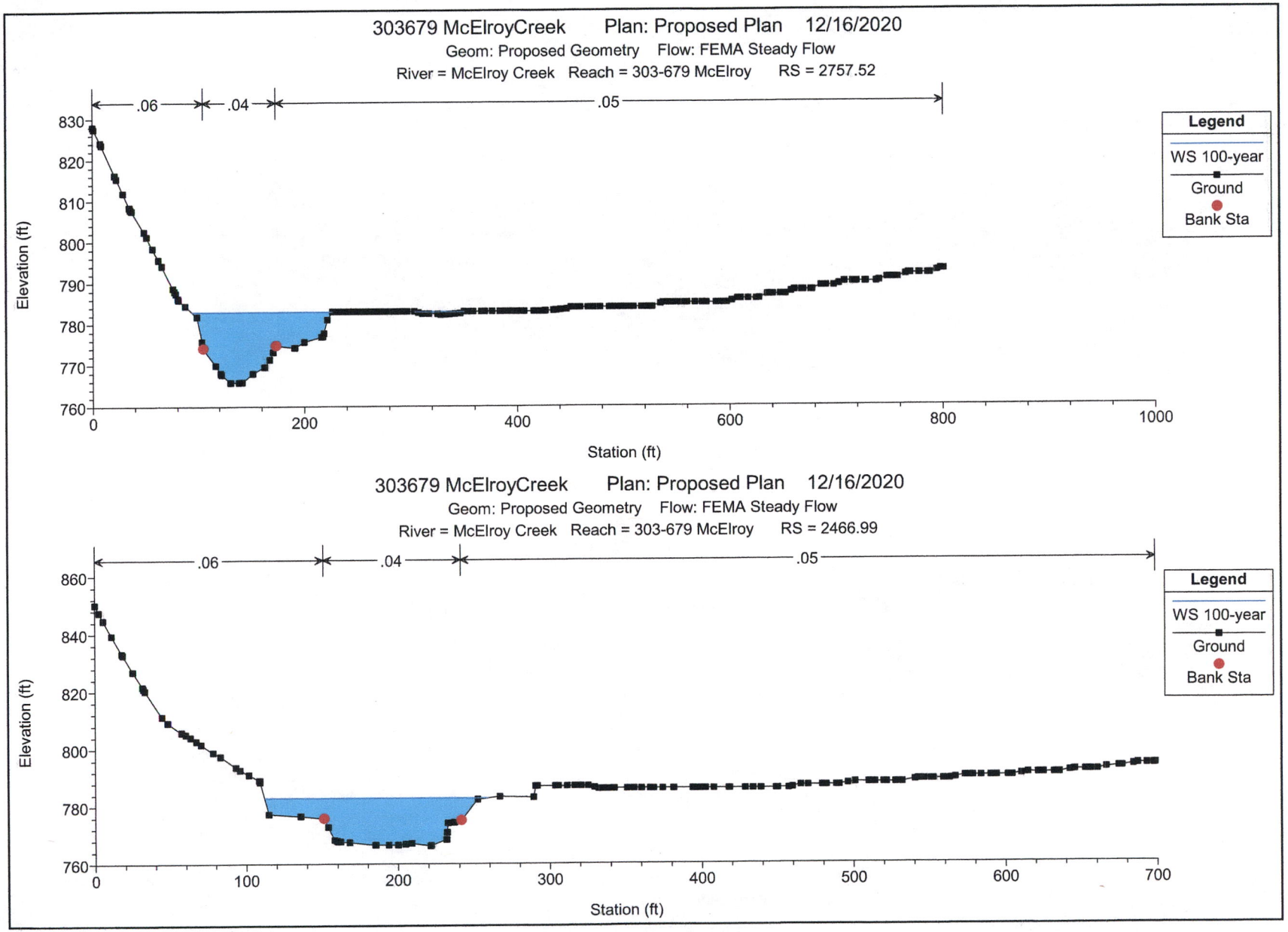
Station (ft)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Elevation (ft)
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Station (ft)
Legend
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Ground
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Geom: Proposed Geometry Flow: FEMA Steady Flow
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Elevation (ft)
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Station (ft)
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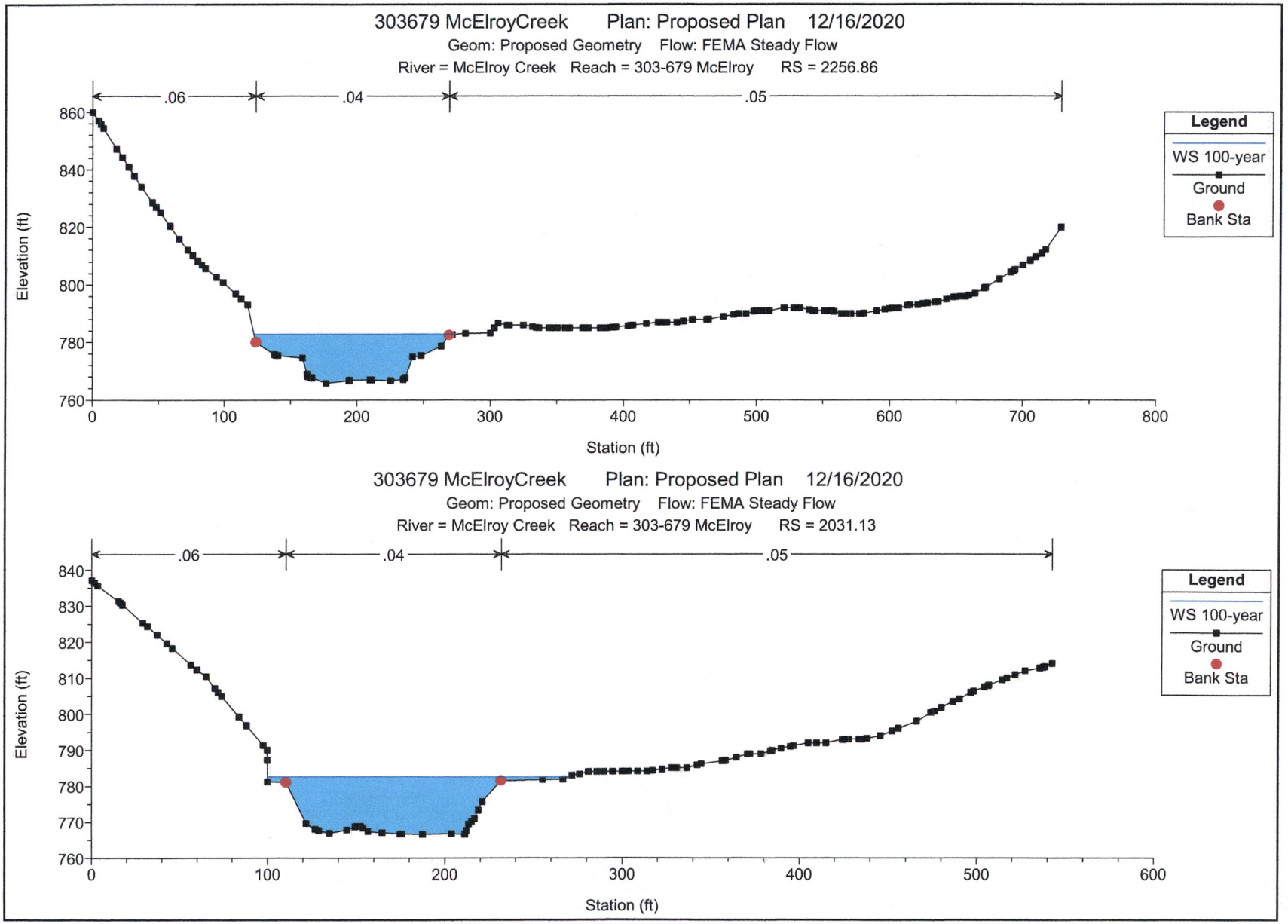
WS 100-year
Ground
Bank Sta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Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 2031.13
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Legend
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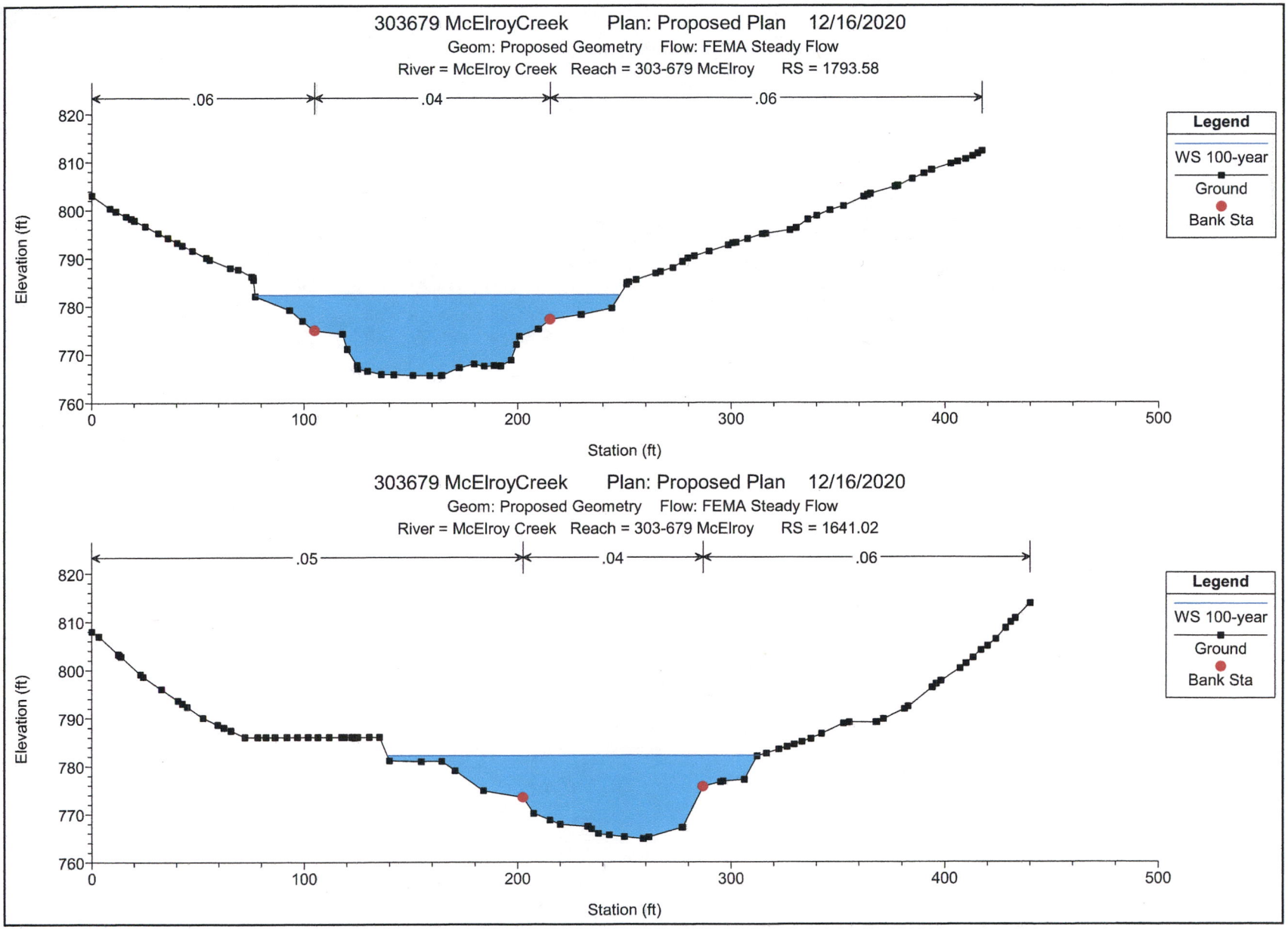
Ground
Bank Sta
Elevation (ft)
Station (ft)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Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
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Station (ft)
303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1641.02
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Legend
WS 100-year
Ground
Bank Sta
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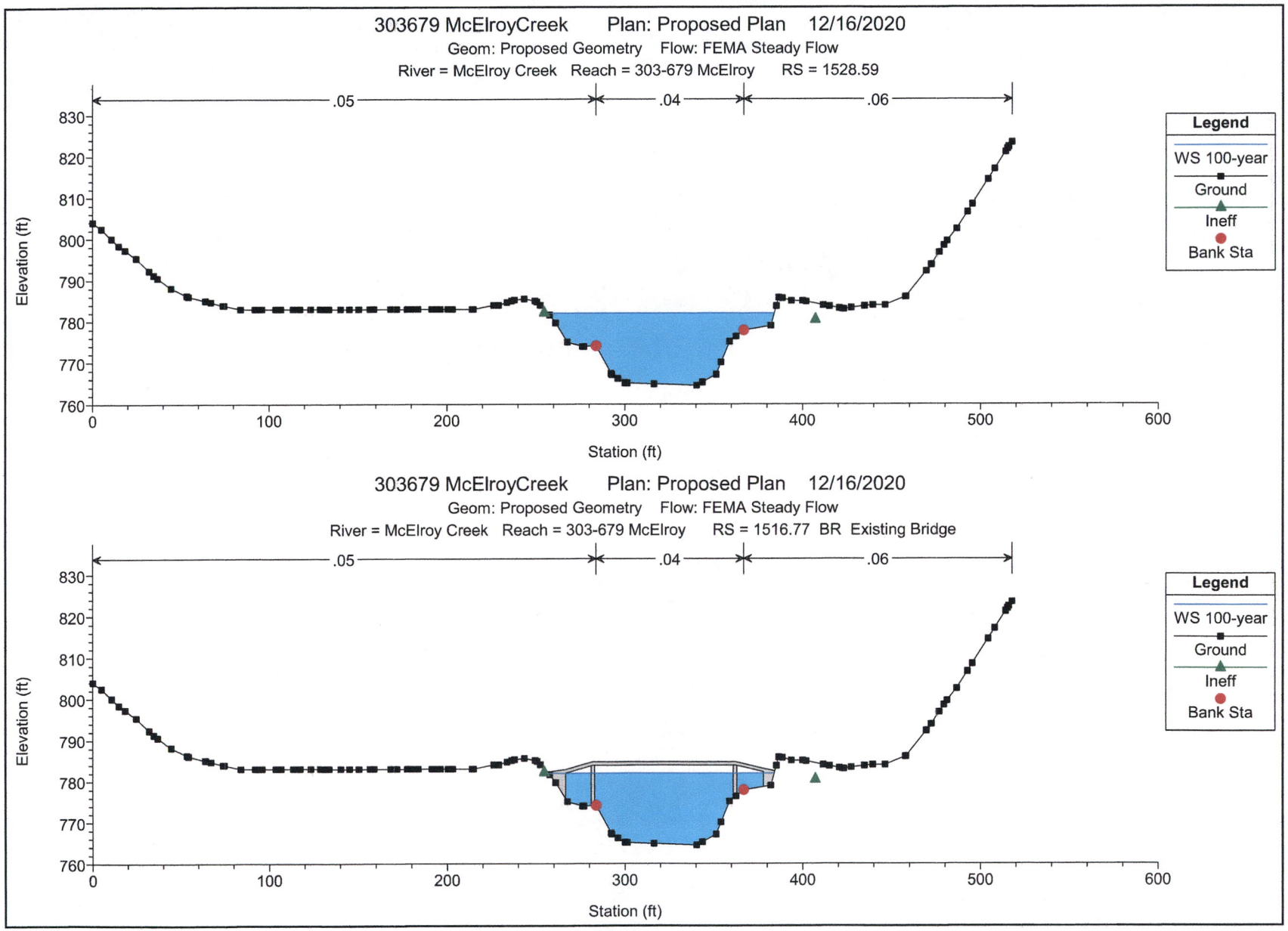
Station (ft)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River = McElroy Creek Reach = 303-679 McElroy RS = 1528.59
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Elevation (ft)
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770
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400
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600
Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta
303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1516.77 BR Existing Bridge
.05
.04
.06
Elevation (ft)
830
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790
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200
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400
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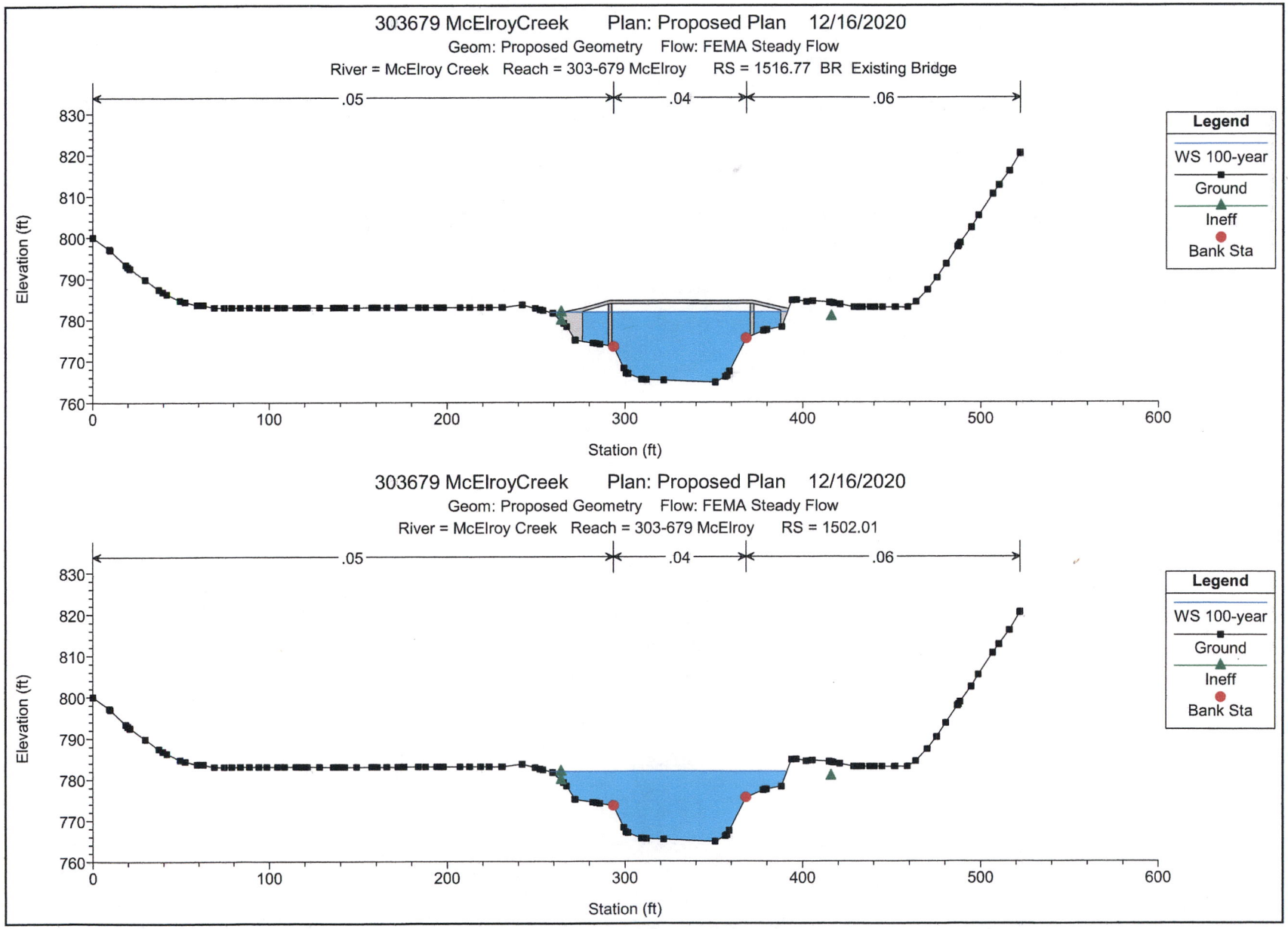
600
Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta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Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1516.77 BR Existing Bridge
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.04
.06
Elevation (ft)
830
820
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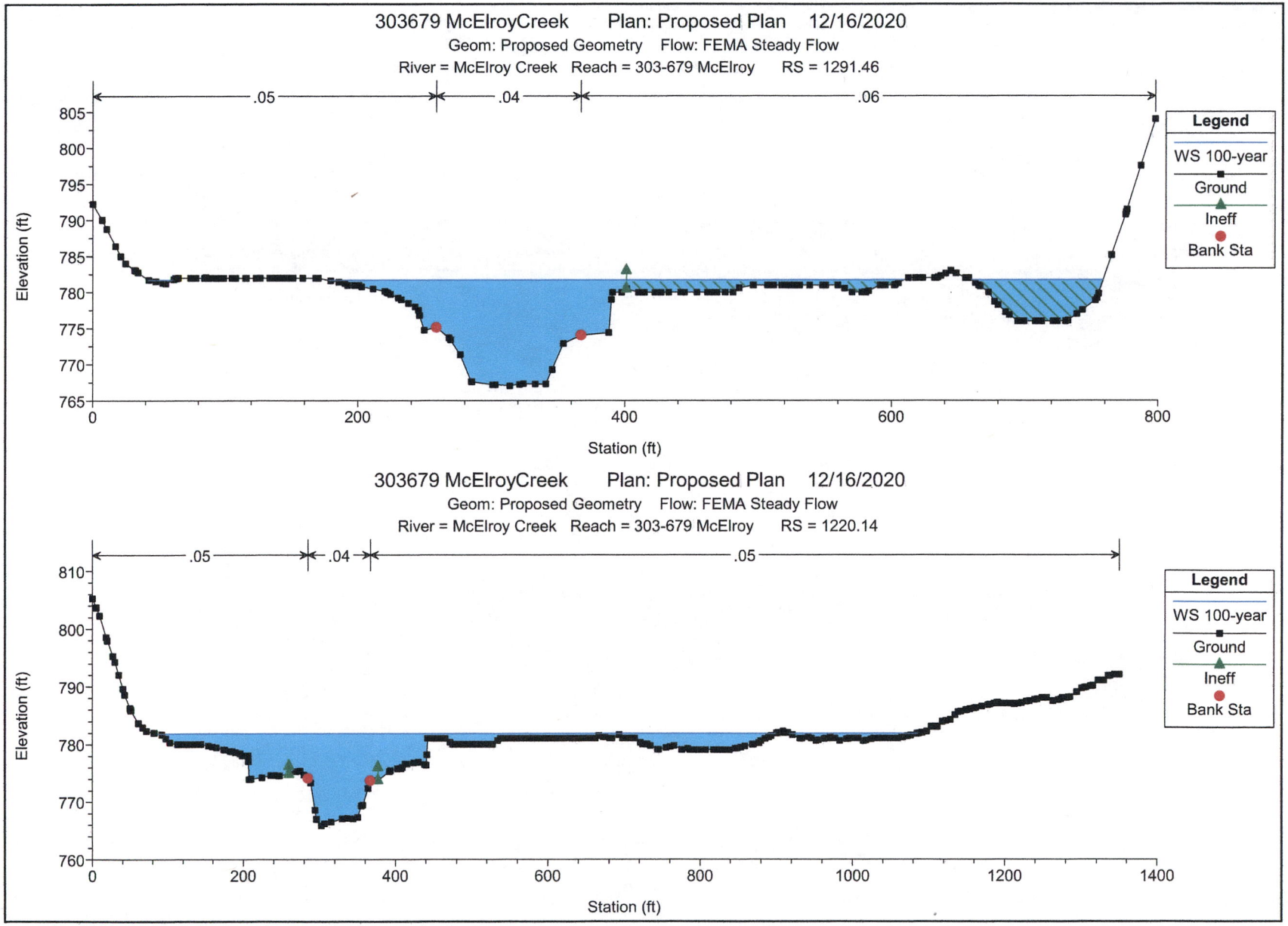
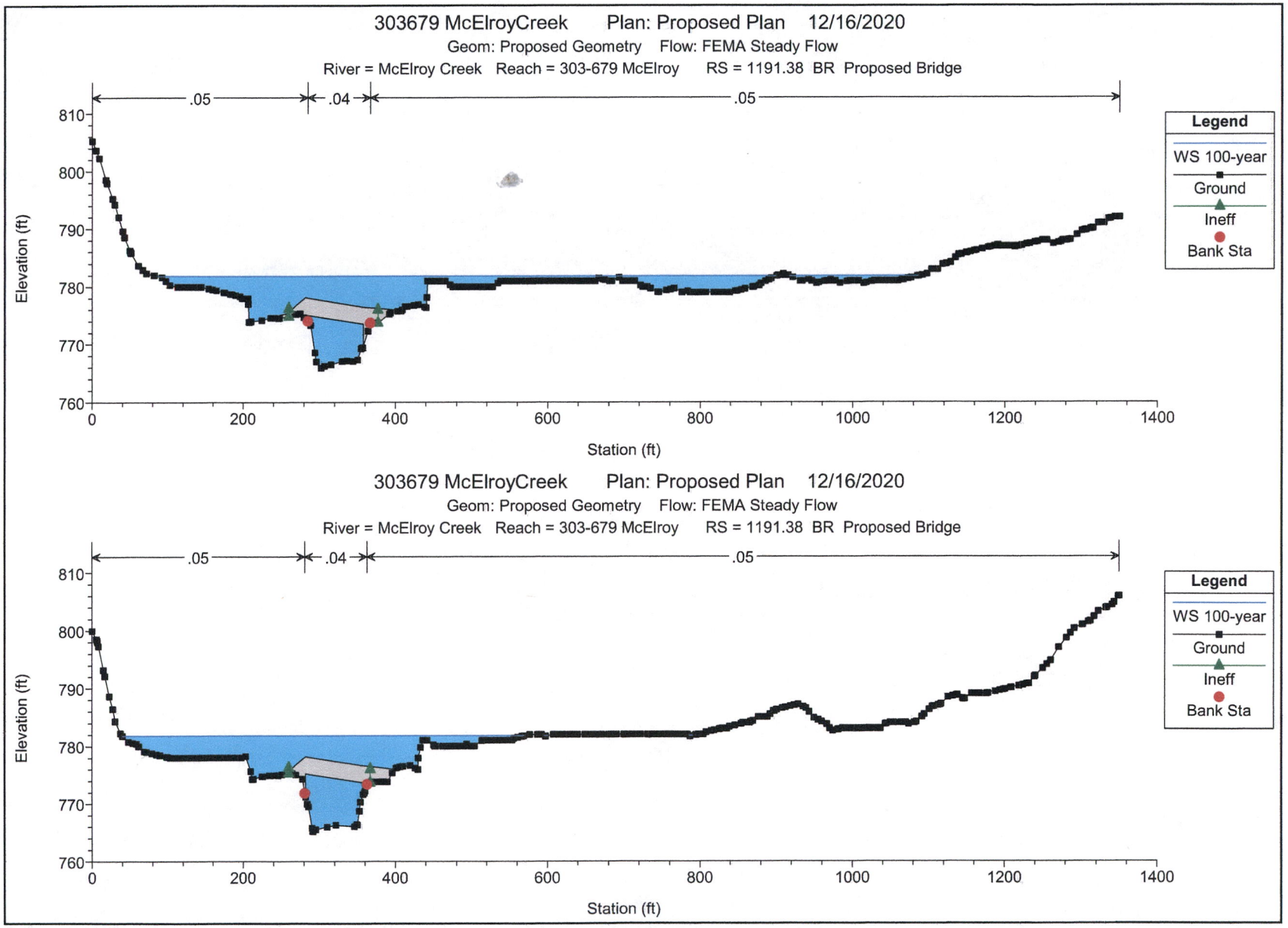
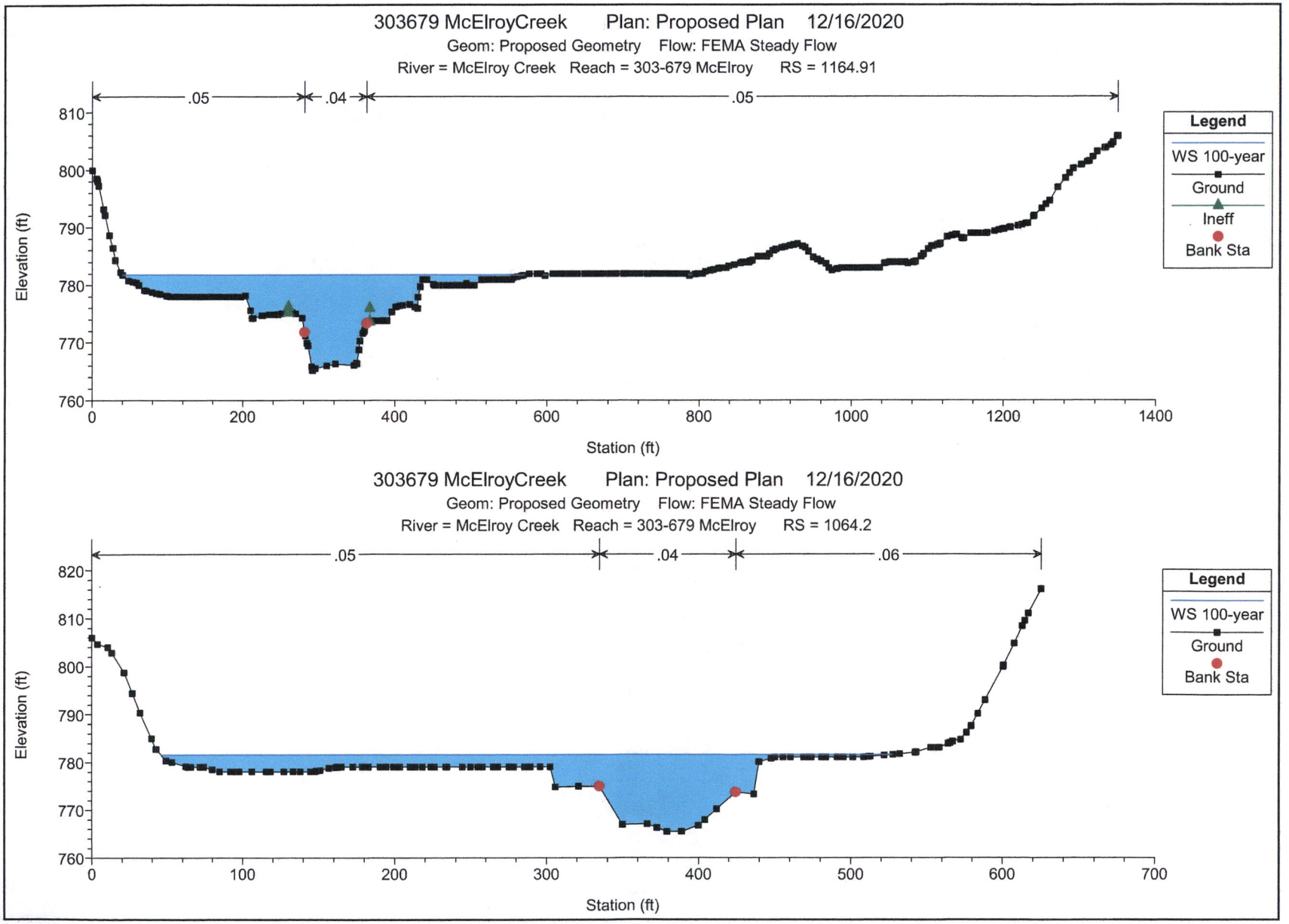
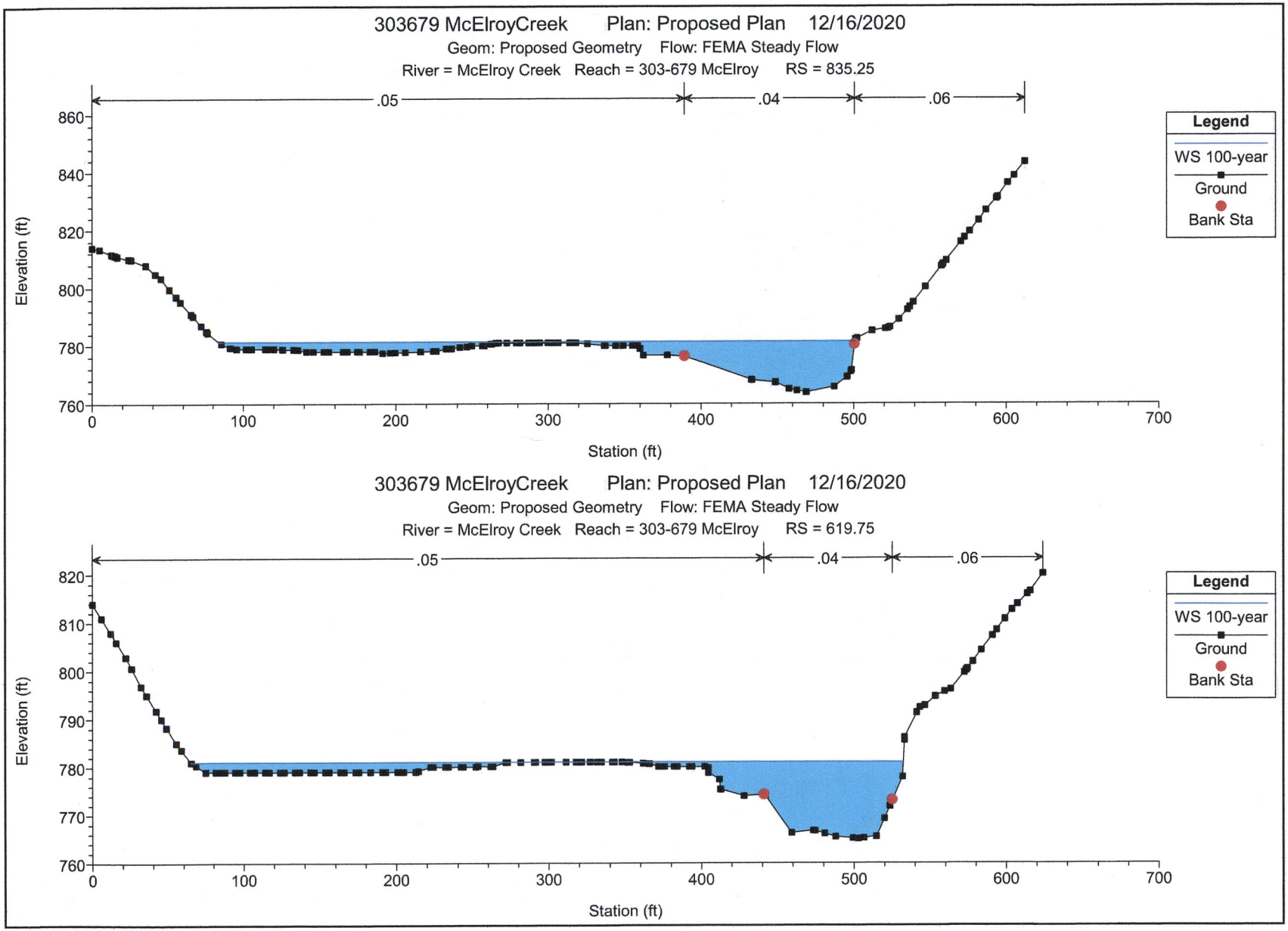
800
790
780
770
760
0
100
200
300
400
500
600
Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta
303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1502.01
.05
.04
.06
Elevation (ft)
830
820
810
800
790
780
770
760
0
100
200
300
400
500
600
Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta


303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1291.46
.05
.04
.06
Elevation (ft)
805
800
795
790
785
780
775
770
765
0
200
400
600
800
Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta
303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1220.14
.05
.04
.05
Elevation (ft)
810
800
790
780
770
760
0
200
400
600
800
1000
1200
1400
Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta


303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1191.38 BR Proposed Bridge
.05
.04
.05
Elevation (ft)
810
800
790
780
770
760
0
200
400
600
800
1000
1200
1400
Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta
303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1191.38 BR Proposed Bridge
.05
.04
.05
Elevation (ft)
810
800
790
780
770
760
0
200
400
600
800
1000
1200
1400
Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta

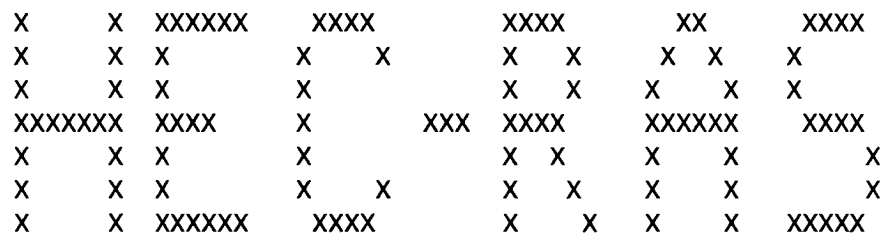

303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1164.91
.05
.04
.05
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Ineff
Bank Sta
303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 1064.2
.05
.04
.06
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta


303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 835.25
.05
.04
.06
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
860
840
820
800
780
760
0
100
200
300
400
500
600
700
Station (ft)
303679 McElroyCreek Plan: Proposed Plan 12/16/2020
Geom: Proposed Geometry Flow: FEMA Steady Flow
River = McElroy Creek Reach = 303-679 McElroy RS = 619.75
.05
.04
.06
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
820
810
800
790
780
770
760
0
100
200
300
400
500
600
700
Station (ft)

APPENDIX E

HEC-RAS Output Files

HEC-RAS HEC-RAS 5.0.7 March 2019
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California



PROJECT DATA
Project Title: 303679 McElroyCreek
Project File : 303679McElroyCreek.prj
Run Date and Time: 12/16/2020 10:16:12 AM

Project in English units

PLAN DATA

Plan Title: Existing Plan
Plan File : p:\300-000\303-679\-Calculations\Hydraulic Study\HEC-RAS\Project Files\303679McElroyCreek.p01

Geometry Title: Existing Geometry
Geometry File : p:\300-000\303-679\-Calculations\Hydraulic Study\HEC-RAS\Project Files\303679McElroyCreek.g01

Flow Title : FEMA Steady Flow
Flow File : p:\300-000\303-679\-Calculations\Hydraulic Study\HEC-RAS\Project Files\303679McElroyCreek.f01

Plan Summary Information:

Number of:	Cross Sections	= 14	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 1	Lateral Structures	=	0

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

```
    Maximum number of iterations         =  20
    Maximum difference tolerance         =  0.3
    Flow tolerance factor                =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow



FLOW DATA

Flow Title: FEMA Steady Flow
Flow File : p:\300-000\303-679\-Calculations\Hydraulic Study\HEC-RAS\Project
Files\303679McElroyCreek.f01

Flow Data (cfs)

  River           Reach           RS              100-year
  McElroy Creek   303-679 McElroy 2757.52             8300


Boundary Conditions


  River           Reach           Profile                       Upstream
    Downstream


  McElroy Creek   303-679 McElroy 100-year
   Known WS = 781




GEOMETRY DATA

Geometry Title: Existing Geometry
Geometry File : p:\300-000\303-679\-Calculations\Hydraulic Study\HEC-RAS\Project
Files\303679McElroyCreek.g01

CROSS SECTION


RIVER: McElroy Creek
REACH: 303-679 McElroy    RS: 2757.52
```

INPUT
Description:
Station Elevation Data num= 177

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	828.8	099976	827.47	7.299988	824.2	8.269958	823.652	0.97998	816.31
22.44995	815.462	8.66998	811.883	4.65997	808.42	35.63	807.93	36.63	807.57
48.33997	802.52	50.81	801.285	6.51996	798.46	2.01996	795.63	65	794.13
75.69995	788.737	7.40997	788	78.29999	787.498	0.33997	786.258	0.85999	785.94
87.27997	784.449	8.48999	781.81	102.99	775.84	104.29	774.13	104.72	773.97
116.33	769.93	120.99	768.05	121.38	767.88	122.02	767.74	130.41	765.83
130.66	765.83	138.11	765.85	141.44	765.86	151.32	767.96	151.38	767.97
162.42	769.54	162.51	769.55	162.55	769.57	167.27	771.37	170.48	773.17
173.33	774.76	190.52	774.23	190.9	774.22	191.09	774.25	199.65	775.64
215.88	776.82	217.19	776.92	218.02	777.7	221.56	781.02	226.19	783
230.6	783	235.17	783	239.87	783	242.38	783	244.53	783
249.07	783	254.03	783	258.45	783	262.68	783	268.29	783
272.38	783	276.29	783	282.55	783	286.31	783	289.9	783
293.27	783	296.81	783	303.51	783	307.2	782.73	311.07	782.44
317.12	782.42	325.33	782.4	328.14	782.19	333.28	782.29	336.2	782.35
341.67	782.46	346.23	782.54	350.05	783	356.27	783	358.44	783
366.3	783	369.49	783	376.33	783	383.6	783	386.37	783
391.98	783	396.4	783	400.37	783	406.44	783	415.47	783
416.47	783	420.57	783	425.53	783	426.5	783.12	433.92	783.26
436.54	783.31	440.44	783.39	446.57	783.51	450.69	784	456.61	784
459.07	784	466.64	784	471.64	784	475.85	784	476.67	784
477.91	784	486.71	784	490.39	784	496.74	784	501.01	784
506.78	784	509.39	784	516.8099	784	517.78	784	522.71	784
526.84	784	534.55	784.77	536.88	785	542.9399	785	546.91	785
552.83	785	556.95	785	559.71	785	566.98	785	573.78	785
576.48	785	577.02	785	577.8	785	587.05	785	593.26	785
597.08	785	601.64	785.45	607.12	786	610.03	786	617.15	786
624.86	786	627.19	786.05	635.19	787	637.22	787	640.24	787
647.25	787	651.96	787	657.29	787.63	660.35	788	667.3199	788
668.74	788	675.93	788	677.12	788	677.36	788.03	685.51	789
687.39	789	690.19	789	697.42	789	702.28	789.48	707.46	790
715.17	790	717.49	790	719.05	790	727	790	727.53	790
727.65	790	737.56	790	740.14	790.26	747.59	791	752.6	791
757.63	791	765.12	791.75	767.66	792	769.37	792	777.7	792
777.76	792	778.08	792	786.14	792	787.73	792	794.53	792.68
797.76	793	800.48	793						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	104.29	.04	173.33	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
104.29	173.33	296.09	290.53	281.67	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 2466.99

INPUT
Description:
Station Elevation Data num= 154

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	850.14	2.630005	847.51	5.420044	844.71	11.11005	839.44	17.77002	833.28
18.10004	833	18.38	832.76	25.08002	827	31.34003	821.63	32.06	821
32.91003	820.27	44.29004	811.24	48.06	809.13	57.25	805.79	59.98999	805
63.20001	804.08	66.98004	802.75	70.21002	801.61	78.34003	798.75	83.17004	797.36
93.48004	793.61	96.13	792.65	101.89	791	108.63	789.07	109.09	788.94
109.16	788.48	114.88	777.26	135.68	776.53	135.89	776.52	151.27	775.73
153.94	772.73	157.94	768.22	159.47	767.88	160.31	767.7	162.08	767.64
168	767.46	184.85	766.56	185.38	766.53	193.96	766.52	199.94	766.52
200.25	766.52	204.86	766.78	208.77	767	209.01	766.99	221.47	766.23
221.89	766.34	231.8	768.44	232.2	770.83	232.77	774.22	236.68	774.36
236.85	774.37	237.14	774.42	241.55	775.08	252.29	782.36	252.35	782.4
252.43	782.41	267.01	783.33	289.14	783.1	290.42	786.93	290.52	787
291.62	787	303.48	787	305.48	787	311.38	787	316.44	787
320.62	787	325.35	787	329.4	786.42	332.33	786	335.76	786
339.32	786	342.36	786	350.9	786	355.32	786	360.27	786
366.05	786	367.25	786	368.28	786	374.23	786	381.19	786
381.24	786	381.51	786	394.19	786	395.18	786	396.33	786
400	786	402.42	786	407.84	786	417.73	786	418.07	786
418.18	786	418.4	786	428.53	786	433.72	786	438.87	786
448.91	786	449.21	786	449.37	786	449.85	786	457.19	786
459.56	786.3	465.02	787	469.9	787	479.43	787	480.25	787
481.96	787	488.49	787	490.59	787	496.31	787.55	500.93	788
509.95	788	511.28	788	514.08	788	519.78	788	521.62	788
527.61	788	531.96	788	540.46	788.82	542.31	789	546.19	789
551.08	789	552.65	789	558.9	789	563	789	566.73	789.36
573.34	790	574.55	790	578.31	790	583.68	790	590.2	790
594.03	790	601.5	790	604.37	790	610.43	790.59	614.72	791
621.5	791	625.06	791	632.01	791	635.4	791	642.54	791.69
644.97	791.92	645.75	792	652.79	792	656.09	792	660.61	792
666.44	792.74	674.66	793	676.26	793	676.78	793	684.09	793.71
687.12	794	693.04	794	697.47	794	698.58	794.11		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	151.27	.04	241.55	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
151.27	241.55	203.04	210.13	222.16	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 2256.86

INPUT
Description:
Station Elevation Data num= 155

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	859.94	.480042	8576	.220032	855.87	8.070007	854.41	8.01001	847.23
22.42999	844.37	27.12	8413	1.54004	837.83	36.78003	834.06	45.06	828.69
48.01001	827	51.14001	825.25	8.59003	820.41	65.5	815.96	72.12	812.16
75.87	810.28	79.86005	808.28	82.84003	807	85.65002	805.79	94.21002	802.73
99.17999	800.96	108.57	796.92	112.7	795.14	117.66	793	123.68	779.98
137.93	775.83	138.99	775.52	140.6	775.45	158.89	774.62	162.33	768.94
162.76	768.16	165.17	767.79	165.36	767.77	166.13	767.64	176.81	765.8
193.85	766.8	194.16	766.81	194.44	766.82	209.71	766.91	211.02	766.91
211.07	766.91	225.23	766.67	225.33	766.67	234.82	767.11	235.78	767.62
236	767.74	236.1	767.86	241.71	774.9	247.85	775.38	247.96	775.38
248.21	775.44	263.26	778.71	269.03	782.52	269.11	782.57	271.3	782.66
281.27	783.06	300	783.14	302.93	785.08	305.88	786.64	312.6	786.06
313.05	786	313.32	786	314.43	786	324.85	786	331.51	785.42
334.54	785.16	336.38	785	344.01	785	347.92	785	348.86	785
350.42	785	356.03	785	359.45	785	369.32	785	370.98	785
373.59	785	382.52	785	384.68	785	388.23	785	391.84	785.19
394.05	785.31	403.17	785.79	405.59	785.92	407.13	786	417.12	786.53
426.04	787	427.66	787	428.65	787	432.74	787	440.19	787
444.94	787.41	451.72	788	462.32	788	463.25	788	463.48	788
463.85	788.05	474.79	789	482.75	789.69	486.32	790	492.13	790
497.85	790.8	499.29	791	501.66	791	506.46	791	509.39	791
520.56	791.97	520.78	791.99	520.92	792	527.95	792	532.45	792
539.47	791.39	542.27	791	543.99	791	551.05	791	555.52	791
556.6	791	558.37	790.75	563.76	790	567.05	790	570.9301	790
577.28	790	578.59	790	580.63	790.18	590.12	791	596.1801	791.53
599.58	791.82	601.65	792	606.74	792	613.19	792.9	615.09	793
621.07	793	624.72	793.51	628.23	793.7	633.99	794	636.25	794.12
642.56	795	647.79	795.73	649.72	795.83	652.9	796	656.89	796
659.32	796.34	664.05	797	670.85	798.9	671.21	799	671.8	799.16
682.39	802.12	690.71	804.44	692.7	804.89	693.92	805.34	699.87	807
705.45	808.56	709.61	809.72	714.19	811	716.99	812.17	728.52	820

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	123.68	.04	269.03	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
123.68	269.03	228	225.73	218.55	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 2031.13

INPUT
Description:
Station Elevation Data num= 131

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	837.13	1.48999	836.38	3.280029	835.61	15.21002	831.31	16.29999	830.92
17.41003	830.36	28.94	825.37	31.54001	824.43	37.19	822	42.67001	819.64
45.67001	818.34	56.39001	813.72	59.81	812.25	65.04001	810.37	70.12003	807.08
72	806	73.94	804.89	83.84003	799.28	8.07001	796.77	97.57001	791.31
99.85001	790	99.88	787.22	100	781.21	110.41	781.01	110.42	781.01
110.44	780.99	121.74	769.66	126.72	768.04	126.95	767.96	128.79	767.67
128.81	767.66	128.88	767.65	134.88	766.94	144.64	767.81	144.72	767.82
144.77	767.82	149.28	768.66	150.07	768.8	150.08	768.8	152.58	768.8
153.9	768.35	156.76	767.38	164.51	767.03	164.65	767.02	164.76	767.02
174.86	766.7	175.86	766.69	187.45	766.58	187.55	766.58	187.62	766.58
203.76	766.77	211.04	766.61	211.32	766.6	212.01	767.61	212.04	767.65
212.08	767.7	213.4	769.47	215.05	770.2	216.77	770.98	218.94	773.34
221.11	775.7	231.61	781.53	231.66	781.56	231.77	781.56	255.06	781.79
266.67	781.85	271.77	783	276.01	783.3	280.88	784	285.9	784
289.74	784	294.81	784	300.03	784	301.77	784	303.46	784
308.73	784	314.16	784	317.19	784.21	322.66	784.6	328.29	785
329.62	785	330.92	785	336.59	785	342.42	785.84	344.64	786.16
356.55	787	357.47	787.07	358.37	787.13	364.44	788	370.68	788.9
371.4	789	372.09	789	378.36	789	383.72	789.77	384.51	789.87
389.57	790.5	394.7	791	396.56	791.18	404.89	792	409.71	792
415.08	792	424.35	792.91	425.27	792.93	425.8	793	427.79	793
433.84	793	435.46	793	438.25	793.27	445.65	794	452.14	795.27
455.84	796	466.01	798	466.03	798	474.07	800.37	476.22	800.73
479.93	801.73	486.41	803.47	490.16	804.1	496.6	806	498.2	806.32
504.23	807.5	506.25	807.84	506.79	808	514.29	809.47	516.98	810
521.61	810.91	527.17	812	535.5	812.82	537.36	813	538.43	813.11
542.45	814								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	110.41	.04	231.77	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
110.41	231.77	242.41	237.55	228.38	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1793.58

INPUT
Description:

Station Elevation Data num= 98

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	803.08	8.580017	800.38	11.34	799.76	16.14999	798.67	18.55002	798.24
19.94	797.81	25.07001	796.64	31.30002	795.23	35.89001	794.19	40.17999	793.22
42.66	792.66	47.39001	791.58	54.02002	790.08	55.63	789.72	65.38	788
69.03	787.68	75.37	786.24	76.24002	786.04	76.27002	785.56	77.10001	782.14
93.20999	779.21	99.16	777	104.62	774.97	104.85	774.96	117.94	774.27
120.17	771.15	120.19	771.13	120.22	771.11	124.8	767.74	125.04	767.03
125.04	767.01	129.73	766.54	136.21	765.89	142.02	765.8	151	765.66
158.88	765.65	164.12	765.64	164.4	765.64	164.56	765.68	172.41	767.19
172.66	767.22	179.62	768.04	184.2	767.54	184.24	767.53	188.78	767.68
188.81	767.68	188.82	767.68	191.87	767.59	192.07	767.64	196.77	768.83
199.38	772.1	200.73	773.8	209.42	775.29	209.74	775.34	215.02	777.25
215.16	777.3	229.57	778.29	229.76	778.3	243.98	779.64	250.9	784.56
250.96	784.93	251.88	785.06	255.38	785.56	264.44	786.85	266.81	787.19
272.5	788	277	789.29	279.51	790	282.67	790.45	289.57	791.44
298.52	792.71	300.53	793.13	302.13	793.23	307.54	794	314.37	794.97
314.69	795	315.93	795.1	327.26	795.81	330.22	796.24	335.58	798.01
339.82	798.82	346.07	800	352.38	800.8	361.92	802.76	363.61	803.11
364.94	803.38	376.48	804.84	377.51	804.97	377.78	805.02	384.64	806.43
390.07	807.55	393.63	808.28	402.63	809.57	405.66	810	409.48	810.54
412.67	811.2	415.2	811.72	417.1	812.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	104.85	.04	215.16	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
104.85	215.16	142.83	152.56	170.96	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1641.02

INPUT
Description:
Station Elevation Data num= 91

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	808	3.289978	807	12.53	803.25	13.14999	803	13.82999	802.79
23.00998	799.12	24.20999	798.63	32.85999	796	40.69998	793.61	42.72	793
44.94998	792.32	52.57999	790	59.48999	788.6	62.44	788	65.69998	787.34
72.29999	786	78.26999	786	82.14999	786	86.44	786	92.00998	786
96.81	786	101.87	786	106.45	786	111.73	786	117.56	786
119.04	786	122.38	786	123.64	785.9	125.12	786	130.63	786
135.33	786	140.05	781.09	154.95	780.93	154.98	780.93	155	780.93
164.54	780.99	170.84	779.02	184.08	774.88	202.4	773.5	202.53	773.49
202.57	773.46	207.58	770.14	215.23	768.75	220	767.87	232.76	767.45
233.13	767.44	233.26	767.39	234.75	766.91	237.85	765.91	243.01	765.62

```
  249.97  765.23  258.82  764.85  258.86  764.85  258.94  764.86  261.47  765.19
  276.87   767.2  277.35  767.26  286.74  775.58  286.89  775.71  295.05   776.7
  296.27  776.85  306.19   777.2  312.21     782  316.54  782.62  322.29  783.44
  326.17     784  329.49  784.47  333.16     785  337.46  785.62  342.43  786.66
  352.63  788.79  355.37     789  367.79     789  368.08  789.02  368.32  789.03
  371.38  789.71  381.26  791.78  382.96  792.26  394.21  796.22  396.01     797
  398.13  797.61  407.15  800.19  409.98  801.22  413.29  802.42  416.96     804
  420.09   804.9  423.95   806.3  428.46  808.59  430.93  809.84  433.04   810.6
  440.05   813.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .05  202.57     .04  286.89     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        202.57  286.89             103.8  112.43  127.54             .1       .3

CROSS SECTION


RIVER: McElroy Creek
REACH: 303-679 McElroy    RS: 1528.59

INPUT
Description:
Station Elevation Data    num=     113
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
       0     8044.940002  802.4610.65997   800.114.80997  798.3918.38998  797.27
24.67999  795.3231.96997  792.3134.54999  791.2436.77997  790.5544.42999  788.17
53.27997  786.3154.29999   786.163.93997  785.0564.16998  785.0267.10999   784.7
74.03998  783.9574.58997  783.9483.91998     78391.95999     78393.78998     783
95.90997     783  103.66     783  106.56     783  113.53     783  117.22     783
  123.41     783  128.75     783   131.3     783  133.62     783  140.24     783
   145.2     783  150.46     783  156.79     783  158.94     783  168.37     783
  171.91     783  177.63     783  179.06     783  179.95     783  183.73     783
  191.53     783  193.37     783  196.32     783  200.52     783  203.11     783
  214.17     783   214.7     783  215.02  783.03  226.28     784  229.12     784
  233.71  784.64  236.27     785  237.86  785.22  243.43  785.52  249.44     785
  250.58   784.8  252.41  783.98  257.73  781.57  261.03  779.62  267.72     775
  267.73     775  276.19  773.96  276.66   773.9   277.1  773.91  283.86  774.02
  292.31  767.34  292.55  767.14  292.73   767.1  296.19  766.17  300.02  765.14
  300.21  765.09  301.38  765.07  316.41  764.85  340.35  764.51  343.57  765.27
  351.35  767.11  354.07  770.11  358.93  775.13  362.44  776.37  366.86  777.82
  382.12  778.94  385.21  783.75  386.46  785.83  388.43  785.72  393.61     785
  400.02     785  401.96  784.83   411.6     784  415.06   783.7  420.66  783.22
  422.21  783.08  423.18     783  427.29  783.35  434.76  783.75  439.35     784
  446.35     784  457.74  785.97  457.93  785.99  458.04  786.05  469.51  792.23
  472.28  793.72  476.74  796.74  479.43  798.42  481.09  799.47  486.58  802.42
  492.67  806.56  495.43  808.43  504.26  814.42  508.03  816.98  514.13  821.11
  515.18  821.83  515.84  822.27  517.73  823.39
```

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .05  283.86     .04  366.86     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        283.86  366.86            26.91   26.58   25.36             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0  254.74  782.07       F
  407.09  517.73  780.36       F

BRIDGE


RIVER: McElroy Creek
REACH: 303-679 McElroy    RS: 1516.77

INPUT
Description: Existing Bridge
Distance from Upstream XS =    4.13
Deck/Roadway Width        =   13.92
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       7
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  254.74  782.07           266.7  782.76  781.92  282.02  784.66  783.83
  362.06  784.67  783.84  377.97  783.02  782.19  407.09  780.36
  430.18   778.7

Upstream Bridge Cross Section Data
Station Elevation Data    num=     113
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     8044.940002  802.4610.65997   800.114.80997  798.3918.38998  797.27
24.67999  795.3231.96997  792.3134.54999  791.2436.77997  790.5544.42999  788.17
53.27997  786.3154.29999   786.163.93997  785.0564.16998  785.0267.10999   784.7
74.03998  783.9574.58997  783.9483.91998     78391.95999     78393.78998     783
95.90997     783  103.66     783  106.56     783  113.53     783  117.22     783
  123.41     783  128.75     783   131.3     783  133.62     783  140.24     783
   145.2     783  150.46     783  156.79     783  158.94     783  168.37     783
  171.91     783  177.63     783  179.06     783  179.95     783  183.73     783
  191.53     783  193.37     783  196.32     783  200.52     783  203.11     783
  214.17     783   214.7     783  215.02  783.03  226.28     784  229.12     784
  233.71  784.64  236.27     785  237.86  785.22  243.43  785.52  249.44     785
  250.58   784.8  252.41  783.98  257.73  781.57  261.03  779.62  267.72     775
  267.73     775  276.19  773.96  276.66   773.9   277.1  773.91  283.86  774.02
  292.31  767.34  292.55  767.14  292.73   767.1  296.19  766.17  300.02  765.14
  300.21  765.09  301.38  765.07  316.41  764.85  340.35  764.51  343.57  765.27
  351.35  767.11  354.07  770.11  358.93  775.13  362.44  776.37  366.86  777.82
  382.12  778.94  385.21  783.75  386.46  785.83  388.43  785.72  393.61     785
```

400.02	785	401.96	784.83	411.6	784	415.06	783.7	420.66	783.22
422.21	783.08	423.18	783	427.29	783.35	434.76	783.75	439.35	784
446.35	784	457.74	785.97	457.93	785.99	458.04	786.05	469.51	792.23
472.28	793.72	476.74	796.74	479.43	798.42	481.09	799.47	486.58	802.42
492.67	806.56	495.43	808.43	504.26	814.42	508.03	816.98	514.13	821.11
515.18	821.83	515.84	822.27	517.73	823.39				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	283.86	.04	366.86	.06

Bank Sta: Left	Right	Coeff Contr.	Expan.
283.86	366.86	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	254.74	782.07	F
407.09	517.73	780.36	F

Downstream Deck/Roadway Coordinates

num= 7

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
264.12	781.74		276.11	782.84	782.01	291.61	784.75	783.92
371.51	784.67	783.84	387.45	783.04	782.21	415.93	780.6	
441.15	778.55							

Downstream Bridge Cross Section Data

Station Elevation Data num= 113

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	8009.330017		797.169.859985		796.94	18.66	793.32	19.72	792.89
20.92001	792.5129.59003		789.83	37.31	787.4339.45001		786.7741.84003		786.27
49.31	784.7152.30002		784.3959.17001		783.6662.76001		783.64	69.03	783
74.62003	78378.89001		78383.68002		78388.76001		78394.15002		783
98.62003	783	104.61	783	108.48	783	115.07	783	118.34	783
121.26	783	128.2	783	135.99	783	138.07	783	139.92	783
142.31	783	148.95	783	157.5	783	159.4	783	160.61	783
166	783	172.27	783	173.67	783	175.89	783	183.93	783
187.94	783	194.27	783	195.07	783	195.58	783	197.86	783
207.24	783	212.66	783	218.9	783	223.61	783	230.56	783
231.04	783	242.22	783.61	249.43	782.76	252.15	782.44	253.88	782.24
259.29	781.61	265.53	779.12	267.24	778.32	271.84	775.09	271.95	775.02
271.99	775.01	272.2	775	282.01	774.33	283.83	774.21	285.93	774.04
293.6	773.45	299.37	768.22	300.57	767.09	301.72	766.89	309.3	765.53
311.99	765.48	321.73	765.3	350.73	764.78	356.55	766.19	357.4	766.39
358.73	767.5	368.18	775.47	377.89	777.28	378.96	777.48	379.72	777.55
388.16	778.23	393.77	784.7	396.52	784.76	401.97	784.3	405.43	784.48
414.91	784.19	416.24	784.07	417.09	784	420.87	783.68	428.75	783
430.51	783	433.3	783	437.65	783	440.41	783	444.78	783
451.68	783	451.92	783	452.06	783	459.05	783	463.72	784.31
470.07	787.18	475.38	790.16	480.45	793.44	487.04	797.69	487.59	798
488.45	798.61	494.72	802.32	498.7	805.23	506.84	810.49	510.36	812.57

```
  516.13  815.99  522.01   820.3   522.2  820.42

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .05   293.6     .04  368.18     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
         293.6  368.18             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0  264.12  781.74       F
  415.93   522.2   780.6       F

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 =  2

Pier Data
Pier Station     Upstream=  282.02    Downstream=  291.61
Upstream     num=       2
    Width   Elev    Width   Elev
       2  774.02       2  783.83
Downstream     num=       2
    Width   Elev    Width   Elev
       2  774.02       2  783.92

Pier Data
Pier Station     Upstream=  362.06    Downstream=  371.51
Upstream     num=       2
    Width   Elev    Width   Elev
       2  775.13       2  783.84
Downstream     num=       2
    Width   Elev    Width   Elev
       2  775.13       2  783.84

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: McElroy Creek
REACH: 303-679 McElroy RS: 1502.01

INPUT
Description:
Station Elevation Data num= 113

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	8009.330017	797.169.859985	796.94	18.66	793.32	19.72	792.89		
20.92001	792.5129.59003	789.83	37.31	787.4339.45001	786.7741.84003	786.27			
49.31	784.7152.30002	784.3959.17001	783.6662.76001	783.64	69.03	783			
74.62003	78378.89001	78383.68002	78388.76001	78394.15002	783				
98.62003	783	104.61	783	108.48	783	115.07	783	118.34	783
121.26	783	128.2	783	135.99	783	138.07	783	139.92	783
142.31	783	148.95	783	157.5	783	159.4	783	160.61	783
166	783	172.27	783	173.67	783	175.89	783	183.93	783
187.94	783	194.27	783	195.07	783	195.58	783	197.86	783
207.24	783	212.66	783	218.9	783	223.61	783	230.56	783
231.04	783	242.22	783.61	249.43	782.76	252.15	782.44	253.88	782.24
259.29	781.61	265.53	779.12	267.24	778.32	271.84	775.09	271.95	775.02
271.99	775.01	272.2	775	282.01	774.33	283.83	774.21	285.93	774.04
293.6	773.45	299.37	768.22	300.57	767.09	301.72	766.89	309.3	765.53
311.99	765.48	321.73	765.3	350.73	764.78	356.55	766.19	357.4	766.39
358.73	767.5	368.18	775.47	377.89	777.28	378.96	777.48	379.72	777.55
388.16	778.23	393.77	784.7	396.52	784.76	401.97	784.3	405.43	784.48
414.91	784.19	416.24	784.07	417.09	784	420.87	783.68	428.75	783
430.51	783	433.3	783	437.65	783	440.41	783	444.78	783
451.68	783	451.92	783	452.06	783	459.05	783	463.72	784.31
470.07	787.18	475.38	790.16	480.45	793.44	487.04	797.69	487.59	798
488.45	798.61	494.72	802.32	498.7	805.23	506.84	810.49	510.36	812.57
516.13	815.99	522.01	820.3	522.2	820.42				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	293.6	.04	368.18	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
293.6	368.18	158.91	210.55	325.26	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	264.12	781.74	F

415.93 522.2 780.6 F

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1291.46

INPUT
Description:
Station Elevation Data num= 176

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	792.25	6.97998	790.01	10.52997	788.74	17.14996	786.37	21.09998	784.96
24.75	784	31.65997	783.09	32.35999	783	34.16998	782.76	42.21997	781.7
47.58002	781.51	52.78998	781.32	55.17999	781.23	61.34998	781.81	62.78998	781.95
63.34998	781.93	64.62	782	73.90997	782	78	782	84.47998	782
85.60999	782.11	88.52997	782	93.21997	782	95.03998	782	99.16998	782
105.6	782	108.43	782	115.72	782	116.04	782	116.16	782
123.65	782	126.73	782	133.73	782	137.29	782	138.86	782
142.9	782	146.47	782	147.85	782	151	782	158.42	782
168.28	782	168.98	782	170.08	782	179.54	781.65	185.56	781.43
190.11	781.26	192.11	781	197.26	781	199.72	781	200.67	781
202.83	780.8	211.23	780.49	220.11	780.16	221.8	780	222.54	779.93
224.45	779.75	230.14	779.21	232.36	779	237.75	778.49	242.92	778
245.36	777.54	246.11	776.78	249.69	774.72	258.68	775.13	268.31	773.67
268.33	773.67	269.38	773.38	276.69	771.34	285.03	767.62	285.12	767.58
285.31	767.57	301.09	767.2	301.55	767.19	302.95	767.17	313.89	767.03
321.03	767.22	324.09	767.31	332.98	767.29	340.88	767.27	345.57	769.29
353.98	772.9	367.12	774.05	367.14	774.05	367.16	774.05	387.84	774.4
389.92	778.99	390.8	780	397.5	780	401.37	780.51	410.15	780
411.93	780	412.71	780	414.73	780	422.49	780	427.43	780
433.06	780	441.91	780	443.14	780	443.62	780	444.71	780
454.18	780	461.98	780	464.75	780	469.09	780	475.31	780
481.18	780	485.87	780.62	496.28	781	496.39	781	496.44	781
496.54	781	507	781	511.61	781	517.56	781	519.21	781
523.46	781	526.82	781	528.12	781	531.09	781	538.69	781
548.37	781	549.25	781	550.64	781	559.81	781	564.85	780.52
570.38	780	577.83	780	580.07	780.08	580.94	780	582.92	780.19
591.5	781	595.28	781	602.07	781	602.89	781.08	605.01	781.28
612.63	782	618.1	782	623.19	782	632.19	782	633.32	782
633.76	782	634.75	782.09	636.79	782.29	640.59	782.63	644.6	783
648.41	782.65	655.55	782	658.01	782	663.06	781.31	665.37	781
666.5	780.85	672.74	780	677.45	778.72	680.1	778.24	685.54	777.26
688.41	776.87	694.83	776	699.36	776	708.02	776	710.31	776
712.49	776	721.26	776	724.29	776	730.5	776	732.22	776.08
739.02	777	743.17	777.56	752.97	778.9	754.12	779.2	755.21	779.8
765.07	785.15	775.45	790.79	776.03	791.15	776.57	791.45	786.98	797.56
797.93	804								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	258.68	.04	367.12	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
258.68	367.12	74.86	71.32	63.88	.1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
401	797.93	783	F

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1220.14

INPUT
Description:
Station Elevation Data num= 300

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	805.25	4.869995	803.69	9.22998	802.28	18.17004	798.55	19.23999	798.07
19.59998	797.91	27.04004	795.28	29.95996	794.25	34.84998	792.06	40.31995	789.6
42.65002	788.55	49.72998	786.28	50.44995	786.02	50.68994	785.94	51.15002	785.86
61.05005	783.64	66.57996	782.93	71.41003	782.31	81.29004	782	81.77002	781.98
82.01001	781.98	92.14001	781.66	97.26001	781	102.5	780.33	112.84	780
112.86	780	120.66	780	123.23	780	128.3	780	133.59	780
136.26	780	143.95	780	144.0601	780	144.4	780	154.3199	779.69
159.16	779.53	164.6801	779.36	174.59	779.04	175.04	779.03	175.27	779.02
175.96	779	183.0699	778.77	185.41	778.7	190.02	778.55	195.77	778.37
198.67	778	206.13	778	206.48	778	206.89	777	207.83	773.88
209.47	773.96	210.59	773.99	224.65	774.2	235.95	774.59	241.36	774.62
246.26	774.52	247.7	774.57	260.8	774.82	69.1801	775.26	274.62	775.33
279.49	774.7	284.86	774.07	288.15	773.32	288.24	773.29	288.4301	773.29
294.03	768.56	295.95	766.98	302.3199	765.88	306.63	766.18	315.28	766.5
329.83	767.05	336.23	767.12	344.11	767.06	350.14	767.28	350.19	767.31
354.79	769.25	355.48	769.35	357.12	769.44	363.71	772.3	366.85	773.67
375.62	773.64	377.01	773.7	391.73	775.27	393.44	775.4	402.69	775.75
407.39	775.78	409.08	776	412.76	776.54	415.47	776.57	424.1	776.77
430.15	776.88	438.05	776.48	440.23	776.34	441.25	778.13	442.22	781
444.48	781	448.32	781	454.84	781	460	781	465.21	781
471.72	780.37	475.57	780	483.18	780	485.93	780	491.56	780
495.12	780	496.3	780	498.61	780	506.66	780	510.73	780
517.02	780	518.53	780	523.12	780	527.39	780	534.13	780.65
537.75	781	541.93	781	548.11	781	549.73	781	554.67	781
557.54	781	558.47	781	560.33	781	568.84	781	573.14	781
579.2	781	586.23	781	588.74	781	589.56	781	596.54	781
599.93	781	606.62	781	610.29	781	617.79	781	620.65	781
622.05	781	631.02	781	637.48	781	641.38	781	649.35	781
651.15	781	651.74	781	658.95	781	662.11	781	666.75	781.45
672.47	781.27	674.56	781.2	680.91	781	682.83	781	683.77	781
693.19	781.61	697.96	781	703.56	781	705.76	781	712.47	781

713.92	781	721.36	780.28	724.28	780	730.06	780	734.65	779.7
744.03	779.09	745.01	779.03	745.49	779.05	755.37	779.36	760.92	779.54
765.74	779.69	775.59	779.05	775.97	779.01	776.1	779.02	783.77	779.26
786.46	779	791.58	779	796.82	779	799.38	779	807.15	779
807.19	779	807.21	779	817.55	779	822.78	779	827.91	779
830.58	779	838.28	779	838.71	779	846.18	779.24	848.64	779.31
853.5	779.47	859	779.64	868.93	779.96	869.37	779.97	870.27	780
877.39	780.23	879.73	780.6	885.19	780.95	890.09	781.26	892.99	781.44
900.46	781.91	901.83	782	908.6	782.21	910.82	782	915.21	782
921.18	781.61	930.64	781	931.54	781	932	780.96	933.39	781
941.91	781.27	946.07	781	952.27	780.6	955.4	780.7	962.63	780.93
963.21	780.94	964.95	781	971.01	781.19	973	781	976.93	781
983.36	780.58	992.36	780.87	993.72	780.91	994.41	780.93	996.51	781
1002.21	781	1004.09	781	1007.79	781	1014.45	780.57	1017.81	780.68
1024.81	780.9	1028.06	781	1035.17	781	1041.22	781	1045.54	781
1049.02	781	1055.9	781	1059.62	781	1064.62	781.16	1066.26	781.21
1072.42	781.41	1076.63	781.54	1084.94	781.8	1086.99	781.87	1091.18	782
1097.35	782.2	1103.63	783	1107.72	783	1111.43	783	1118.08	783.85
1122.74	784	1128.44	784.18	1134.83	785	1138.81	785.51	1142.64	785.63
1149.17	785.84	1150.44	785.88	1154.3	786	1159.53	786.17	1162.09	786.25
1169.89	786.49	1177.52	786.74	1180.26	786.82	1185.86	787	1189.44	787.11
1190.62	787.15	1192.95	787	1200.98	787	1205.05	787	1211.35	787
1212.85	786.86	1217.42	787	1221.71	787.14	1228.45	787.35	1232.07	787.46
1239.24	787.69	1242.44	787.79	1248.98	788	1252.8	788	1254.67	788
1263.16	787.45	1270.1	787.67	1273.52	787.78	1275.26	788	1280.54	788
1283.06	788.08	1283.89	788.11	1285.52	788.16	1294.25	789	1300.95	789.65
1304.61	789.76	1306.46	789.82	1312.1	790	1314.27	790.07	1314.98	790.09
1322.07	791	1325.34	791	1329.87	791	1335.7	791.75	1337.67	791.81
1343.66	792	1345.47	792	1346.07	792	1347.24	792	1350	792

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	284.86	.04	366.85	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
284.86	366.85	55.26	55.23	56.23	.1 .3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1164.91

INPUT
Description:
Station Elevation Data num= 303

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	799.985.640015	798.546.569946	798.247.040039	7988.469971	797.27				
14.83997	793.1916.93005	792.1222.64001	788.6527.29004	786.4230.43994	784.3				
37.66003	782.2340.03003	781.7748.02002	780.7553.84998	780.56	58.38	780.42			

61.65002	780	68.75	779.09	71.58997	779	79.10999	778.76	85.05005	778.57
89.46997	778.43	98.21997	778.16	99.83997	778.1	103.15	778	108.45	778
110.2	778	116.26	778	120.5601	778	129.08	778	130.92	778
131.86	778	134.71	778	141.29	778	147.46	778	151.65	778
155.26	778	162.01	778	166.26	778	172.38	778	178.67	778
182.74	778	186.47	778	193.1	778	197.8199	778	203.47	778.18
210.11	775.6	212.11	774.23	213.6	774.28	224.9301	774.72	226.14	774.72
234.35	774.9	236.22	774.92	244.5699	774.91	246.34	774.9	251.08	775.03
262.3101	775.28	264.33	775.24	269.33	775.02	278.0601	774.29	281.16	771.79
282.02	771.18	284.27	769.91	285.88	769.48	290.51	765.78	291.12	765.22
291.7	765.17	295.03	765.52	310.33	765.96	321.89	766.29	346.14	766.02
349.07	766.41	350.12	766.33	352.51	768.72	353.93	770.29	357.57	771.63
359.07	771.88	360.17	772.21	362.87	773.35	369.06	773.72	370.54	773.79
374.49	773.78	382.21	773.78	383.86	773.81	389.76	773.79	396.02	775.34
400.94	776.18	402.47	776.29	405.71	776.39	410.03	776.46	419.6	776.62
425.92	776.2	429.83	775.95	430.06	777.92	433.18	779.74	436.11	781
441.82	781	450.3	780.18	451.71	780	452.18	780	453.1	780
462.54	780	467.32	780	472.9	780	475.12	780	481.86	780
482.92	780	483.27	780	490.72	780	493.63	780.37	499.39	780
503.99	780	513.42	780.91	514.12	781	514.36	781	521.93	781
524.72	781	530.25	781	535.08	781	537.53	781	544.98	781
545.33	781	545.45	781	553.13	781	555.81	781.34	560.93	781.51
566.17	781.67	568.73	781.75	576.54	782	586.9	782	591.96	782
597.26	781.66	607.39	781.98	607.62	781.99	608.09	782	615.54	782
617.99	782	622.82	782	628.35	782	631.14	782	638.71	782
639.65	782	649.08	782	653.68	782	659.44	782	662.35	782
669.8	782	671.21	782	680.17	782	685.75	782	690.53	782
699.97	782	700.89	782	701.36	781.96	702.77	782	709.16	782
711.25	782	715.4	782	721.62	782	730.83	782	731.98	782
732.56	781.94	734.33	782	742.34	782	746.26	782	752.71	782
755.97	782	763.07	782	765.89	782	773.43	782	779.37	782
783.8	782	787.17	781.67	794.16	781.9	794.97	781.92	797.45	782
802.77	782	804.52	782	807.98	782.33	814.88	782.55	818.38	782.66
825.25	782.88	826.18	782.91	829.01	783	833.98	783	835.61	783
838.84	783.31	845.97	783.54	854.27	783.8	856.34	784	857.38	784
860.57	784	865.18	784	866.7	784.19	869.7	784.29	877.06	785
885.13	785	887.43	785	888.59	785	892.13	785.45	896.39	786
897.79	786	900.56	786.27	908.15	786.51	911.99	786.63	918.52	786.84
923.69	787	928.88	787.16	935.4	786.74	939.24	786.49	943.2	785.85
949.6	784.82	955.25	784.46	959.97	784.15	966.6	783.72	970.33	783
974.4	782.61	980.69	782.81	982.2	782.85	986.81	783	991.06	783
997.81	783	1001.42	783	1008.56	783	1011.78	783	1013.41	783
1018.37	783	1021.21	783	1022.15	783	1023.99	783	1032.51	783
1036.81	783	1042.87	783.78	1044.62	783.83	1049.92	784	1053.23	784
1054.85	784	1063.6	784	1070.28	784	1073.96	783.76	1081.48	784
1084.32	784.09	1091.42	785	1094.69	785.42	1101.14	786.25	1105.05	786.75
1107.03	786.81	1113.04	787	1115.41	787.08	1116.57	787.22	1125.78	788.4
1132	788.6	1136.14	788.73	1138.23	788.8	1144.6	788.18	1146.03	788.05
1146.5	788.06	1147.43	788.09	1156.87	789	1161.64	789	1167.23	789
1176.16	789	1177.59	789.05	1178.29	789.07	1187.95	789.37	1193.72	789.56

1198.32	789.7	1200.64	789.78	1207.72	790	1208.44	790.02	1208.68	790.03
1209.15	790.05	1219.04	790.36	1224.05	790.52	1229.41	790.69	1231.85	790.76
1239.28	791.95	1239.77	792.06	1240.01	792.09	1250.13	793.38	1255.44	794.05
1260.5	794.69	1270.84	797	1270.85	797	1270.86	797	1270.87	797
1281.22	798.64	1286.46	799.47	1291.58	800.29	1301.73	800.91	1301.95	800.93
1302.4	800.96	1309.86	801.42	1312.31	801.57	1317.16	802.34	1322.67	803.21
1332.59	803.83	1333.04	803.85	1333.26	803.87	1333.96	803.91	1341.07	804.35
1343.4	804.79	1348.87	805.83	1350	805.9				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	281.16	.04	362.87	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
281.16	362.87	104.91	100.71	97.53	.1 .3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1064.2

INPUT
Description:
Station Elevation Data num= 133

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	8063.779968		804.64	10.62	80413.16998		802.821.22998		798.69
26.67999	794.3831.84998		790.29	39.5	784.9642.46002		782.7749.17999		780.37
53.08002	780	62.25	779.14	63.69	77965.83002		779	71.87	779
74.31	77980.03998		778.4684.92999		77892.15997		77895.53998		778
97.83002	778	106.16	778	115.61	778	116.77	778	117.27	778
118.49	778	127.39	778	133.4	778	138.01	778	144.82	778
147.53	778	148.62	778.14	151.19	778.24	156.66	778.76	161.17	778.89
162.32	779	162.94	778.94	165.01	779	172.59	779	178.76	779
182.87	779	190.49	779	193.15	779	194.58	779	199.38	779
203.42	779	210.4	779	213.7	779	218.31	779	223.97	779
226.22	779	233.74	779	234.13	779	234.25	779	234.47	779
244.53	779	249.96	779	254.8	779	257.87	779	265.08	779
268.11	779	275.36	779	278.45	779	285.63	779	289.51	779
295.91	779	302.48	779	305.9	774.8	321.02	774.92	321.07	774.92
321.1	774.92	334.71	774.89	349.79	766.97	349.9	766.92	349.94	766.92
366.2	767.04	372.48	766.26	379.08	765.44	379.23	765.42	379.33	765.42
388.65	765.48	388.89	765.48	388.9	765.48	399.96	766.74	404.12	767.94
411.95	770.2	424.15	773.6	424.53	773.71	424.88	773.7	436.45	773.29
439.78	780	439.94	780.02	447.73	780.77	450.06	781	455.64	781
460.34	781	469.04	781	470.61	781	471.46	781	474.31	781
480.89	781	483.7	781	491.17	781	495.2	781	501.44	781
508.67	781	511.72	781.09	513.02	781.13	522	781.39	527.68	781.55
532.27	781.69	542.34	781.98	542.55	782	543.04	782.05	552.83	783
556.66	783	558.28	783	564.04	783.82	565.33	784	567.07	784.25

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  572.37  784.68  576.27  786.11  579.41  787.51  583.67  790.03   588.5  792.87
  600.28  799.82  600.53  799.95  600.72  800.08  607.58  804.68  612.95  808.29
  614.62  809.41  616.88  810.93  625.18     816

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .05  334.71     .04  424.53     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        334.71  424.53             169.5  228.95  300.27             .1       .3

CROSS SECTION


RIVER: McElroy Creek
REACH: 303-679 McElroy    RS: 835.25

INPUT
Description:
Station Elevation Data    num=     132
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    8145.029968  813.412.71997  811.7115.08997  811.37   16.63    811
24.01996  810.1125.14996  809.9825.45001  809.9435.20996     80841.58997  804.83
45.26996  803.4450.88995  799.6455.32996     79758.21997  795.27   65.38    791
66.53998  790.3172.04999  787.03   75.44     78576.33997  784.55    85.5  780.72
91.48999   779.4   95.56    779  101.79     779  105.62     779  114.52     779
  115.68     779  120.08    779  125.74  778.88  133.08  778.73   135.8  778.67
   141.4     778  145.86    778  152.69     778  155.92     778  165.41     778
  165.98     778  168.12    778  174.67     778  176.04     778  182.98     778
   186.1     778   191.3  777.48  196.16  777.58  199.62  777.66  206.22  777.79
  216.15     778  216.25    778  216.28     778  224.57  778.18  226.34  778.21
  232.89     779  236.39    779  241.76  779.53  246.45  779.63  249.52     780
  256.51     780  257.84    780  262.17  780.52  262.94  780.63  265.59  780.86
  267.27     781  272.73    781  278.92     781  279.86     781  281.35     781
     287     781  290.57    781  294.14     781  299.76     781  301.27     781
  302.23     781  306.48    781  313.88     781  315.54     781  318.17     781
  325.53   780.6  336.58    780  336.95     780  337.18     780  344.09     780
  348.84     780  354.99    780  358.36     780     360  778.89  362.17  776.65
  377.77  776.73  377.79  776.73  389.08  776.32  433.07  768.14   433.3  768.09
  433.37  768.09  448.59  767.26   448.7  767.26  457.43  765.02  457.53  764.99
  457.65  764.98  462.75  764.44  468.63  763.81  468.76   763.8     469  763.82
  487.18  765.67  495.55  769.06  495.71  769.13  498.01     771  498.51  771.42
  500.55  780.41  501.07  782.13  502.26   782.5  511.97     785  520.67  785.75
  522.48   785.9  523.62  786.32  529.61  789.03  535.28  792.38  536.75  793.38
  539.08  794.96  546.93  800.28  557.49  807.44  558.16  807.93  558.58  808.18
  560.46  809.45  570.23  815.77  572.43  817.38   575.9  819.43  581.88   823.3
   586.7  826.83  593.54  830.87  593.84  831.08  594.31   831.4  600.97  836.28
  605.19  838.77  612.17  843.51

Manning's n Values        num=       3
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Sta	n Val	Sta	n Val	Sta	n Val
0	.05	389.08	.04	500.55	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
389.08	500.55	188.25	215.5	238.69	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 619.75

INPUT
Description:
Station Elevation Data num= 129

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	8145.909973		811	11.94	807.94	15.75	806	21.88	802.89
25.59998	800.6331.82996		796.8435.45001		79541.77997		791.7845.28998		790
48.73999	788.2555.13995		78558.47998		783.6464.97998		78168.22998		780.34
74.82996	77981.57001		77984.67999		77987.72998		77994.51996		779
97.46997	779	104.37	779	107.22	779	114.22	779	116.97	779
124.06	779	126.72	779	133.91	779	136.46	779	143.75	779
146.21	779	153.6	779	155.96	779	163.45	779	165.71	779
173.29	779	175.45	779	183.14	779	190.98	779	192.99	779
200.93	779	202.83	779	204.7	779	212.68	779	214.44	779.18
222.53	780	224.19	780	232.37	780	233.94	780	242.22	780
243.69	780	252.06	780	253.43	780.14	261.91	780.13	263.18	780.13
271.76	781	272.93	781	281.6	781	290.46	781	291.45	781
297.44	781	301.29	781	301.39	781	301.75	781	311.47	781
317.99	781	321.55	781	327.1	781	331.62	781	334.53	781
341.7	781	342.79	781	347.77	781	351.78	780.91	352.91	780.89
361.86	780.69	365.81	780.61	371.94	780	375.87	780	382.02	780
384.14	780	392.1	780	392.4	780	393.8	780	402.18	780
404.53	779.77	404.64	778.75	411.9	777.36	412.5	775.3	413	775.26
428.01	773.94	441.19	774.2	441.58	774.21	442.09	773.98	459.22	766.27
473.34	766.75	473.94	766.77	474.51	766.71	480.8	766.1	487.92	765.41
499.33	765.14	502.9	765.05	506.46	765.18	514.62	765.46	519.91	769.21
523.52	771.78	525.28	773.06	531.99	777.91	533.09	785.54	533.21	786.06
541.24	791.19	543.29	792.25	546.49	792.64	553.37	794.53	559.39	795.6
563.45	796	572.3	799.51	573.52	800	574.31	800.31	577.9	801.73
583.6	804.12	590.85	807.16	593.68	808.34	599.11	810.62	603.76	812.56
607.38	813.72	613.84	815.78	615.65	816.36	623.92	820		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	441.19	.04	525.28	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
441.19	525.28	0	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:McElroy Creek

Reach	River Sta.	n1	n2	n3
303-679 McElroy	2757.52	.06	.04	.05
303-679 McElroy	2466.99	.06	.04	.05
303-679 McElroy	2256.86	.06	.04	.05
303-679 McElroy	2031.13	.06	.04	.05
303-679 McElroy	1793.58	.06	.04	.06
303-679 McElroy	1641.02	.05	.04	.06
303-679 McElroy	1528.59	.05	.04	.06
303-679 McElroy	1516.77	Bridge		
303-679 McElroy	1502.01	.05	.04	.06
303-679 McElroy	1291.46	.05	.04	.06
303-679 McElroy	1220.14	.05	.04	.05
303-679 McElroy	1164.91	.05	.04	.05
303-679 McElroy	1064.2	.05	.04	.06
303-679 McElroy	835.25	.05	.04	.06
303-679 McElroy	619.75	.05	.04	.06

SUMMARY OF REACH LENGTHS

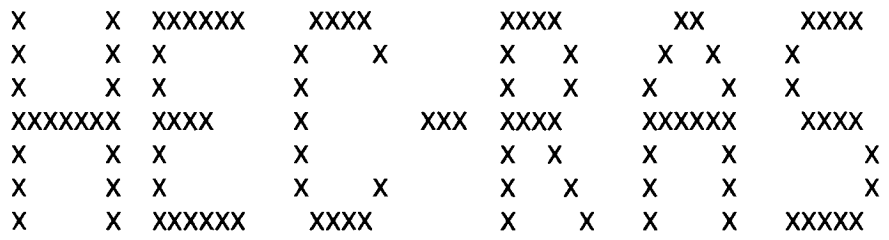
River: McElroy Creek

Reach	River Sta.	Left	Channel	Right
303-679 McElroy	2757.52	296.09	290.53	281.67
303-679 McElroy	2466.99	203.04	210.13	222.16
303-679 McElroy	2256.86	228	225.73	218.55
303-679 McElroy	2031.13	242.41	237.55	228.38
303-679 McElroy	1793.58	142.83	152.56	170.96
303-679 McElroy	1641.02	103.8	112.43	127.54
303-679 McElroy	1528.59	26.91	26.58	25.36
303-679 McElroy	1516.77	Bridge		
303-679 McElroy	1502.01	158.91	210.55	325.26
303-679 McElroy	1291.46	74.86	71.32	63.88
303-679 McElroy	1220.14	55.26	55.23	56.23
303-679 McElroy	1164.91	104.91	100.71	97.53
303-679 McElroy	1064.2	169.5	228.95	300.27
303-679 McElroy	835.25	188.25	215.5	238.69
303-679 McElroy	619.75	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: McElroy Creek

Reach	River Sta.	Contr.	Expan.
303-679 McElroy	2757.52	.1	.3
303-679 McElroy	2466.99	.1	.3
303-679 McElroy	2256.86	.1	.3
303-679 McElroy	2031.13	.1	.3
303-679 McElroy	1793.58	.1	.3
303-679 McElroy	1641.02	.1	.3
303-679 McElroy	1528.59	.3	.5
303-679 McElroy	1516.77	Bridge	
303-679 McElroy	1502.01	.3	.5
303-679 McElroy	1291.46	.1	.3
303-679 McElroy	1220.14	.1	.3
303-679 McElroy	1164.91	.1	.3
303-679 McElroy	1064.2	.1	.3
303-679 McElroy	835.25	.1	.3
303-679 McElroy	619.75	.1	.3

HEC-RAS HEC-RAS 5.0.7 March 2019
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California



PROJECT DATA
Project Title: 303679 McElroyCreek
Project File : 303679McElroyCreek.prj
Run Date and Time: 12/16/2020 10:24:31 AM

Project in English units

PLAN DATA

Plan Title: Proposed Plan
Plan File : p:\300-000\303-679\-Calculations\Hydraulic Study\HEC-RAS\Project Files\303679McElroyCreek.p02

Geometry Title: Proposed Geometry
Geometry File : p:\300-000\303-679\-Calculations\Hydraulic Study\HEC-RAS\Project Files\303679McElroyCreek.g02

Flow Title : FEMA Steady Flow
Flow File : p:\300-000\303-679\-Calculations\Hydraulic Study\HEC-RAS\Project Files\303679McElroyCreek.f01

Plan Summary Information:

Number of:	Cross Sections	= 14	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 2	Lateral Structures	=	0

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

```
    Maximum number of iterations         =  20
    Maximum difference tolerance         =  0.3
    Flow tolerance factor                =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow



FLOW DATA

Flow Title: FEMA Steady Flow
Flow File : p:\300-000\303-679\-Calculations\Hydraulic Study\HEC-RAS\Project
Files\303679McElroyCreek.f01

Flow Data (cfs)

  River           Reach           RS              100-year
  McElroy Creek   303-679 McElroy 2757.52             8300


Boundary Conditions


  River           Reach           Profile                       Upstream
    Downstream


  McElroy Creek   303-679 McElroy 100-year
   Known WS = 781




GEOMETRY DATA

Geometry Title: Proposed Geometry
Geometry File : p:\300-000\303-679\-Calculations\Hydraulic Study\HEC-RAS\Project
Files\303679McElroyCreek.g02

CROSS SECTION


RIVER: McElroy Creek
REACH: 303-679 McElroy    RS: 2757.52
```

INPUT
Description:
Station Elevation Data num= 177

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	828.8	099976	827.47	7.299988	824.28	.269958	823.652	0.97998	816.31
22.44995	815.46	28.66998	811.88	34.65997	808.42	35.63	807.93	36.63	807.57
48.33997	802.52	50.81	801.28	56.51996	798.46	2.01996	795.63	65	794.13
75.69995	788.73	77.40997	78	78.29999	787.49	80.33997	786.25	80.85999	785.94
87.27997	784.44	98.48999	781.81	102.99	775.84	104.29	774.13	104.72	773.97
116.33	769.93	120.99	768.05	121.38	767.88	122.02	767.74	130.41	765.83
130.66	765.83	138.11	765.85	141.44	765.86	151.32	767.96	151.38	767.97
162.42	769.54	162.51	769.55	162.55	769.57	167.27	771.37	170.48	773.17
173.33	774.76	190.52	774.23	190.9	774.22	191.09	774.25	199.65	775.64
215.88	776.82	217.19	776.92	218.02	777.7	221.56	781.02	226.19	783
230.6	783	235.17	783	239.87	783	242.38	783	244.53	783
249.07	783	254.03	783	258.45	783	262.68	783	268.29	783
272.38	783	276.29	783	282.55	783	286.31	783	289.9	783
293.27	783	296.81	783	303.51	783	307.2	782.73	311.07	782.44
317.12	782.42	325.33	782.4	328.14	782.19	333.28	782.29	336.2	782.35
341.67	782.46	346.23	782.54	350.05	783	356.27	783	358.44	783
366.3	783	369.49	783	376.33	783	383.6	783	386.37	783
391.98	783	396.4	783	400.37	783	406.44	783	415.47	783
416.47	783	420.57	783	425.53	783	426.5	783.12	433.92	783.26
436.54	783.31	440.44	783.39	446.57	783.51	450.69	784	456.61	784
459.07	784	466.64	784	471.64	784	475.85	784	476.67	784
477.91	784	486.71	784	490.39	784	496.74	784	501.01	784
506.78	784	509.39	784	516.8099	784	517.78	784	522.71	784
526.84	784	534.55	784.77	536.88	785	542.9399	785	546.91	785
552.83	785	556.95	785	559.71	785	566.98	785	573.78	785
576.48	785	577.02	785	577.8	785	587.05	785	593.26	785
597.08	785	601.64	785.45	607.12	786	610.03	786	617.15	786
624.86	786	627.19	786.05	635.19	787	637.22	787	640.24	787
647.25	787	651.96	787	657.29	787.63	660.35	788	667.3199	788
668.74	788	675.93	788	677.12	788	677.36	788.03	685.51	789
687.39	789	690.19	789	697.42	789	702.28	789.48	707.46	790
715.17	790	717.49	790	719.05	790	727	790	727.53	790
727.65	790	737.56	790	740.14	790.26	747.59	791	752.6	791
757.63	791	765.12	791.75	767.66	792	769.37	792	777.7	792
777.76	792	778.08	792	786.14	792	787.73	792	794.53	792.68
797.76	793	800.48	793						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	104.29	.04	173.33	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
104.29	173.33	296.09	290.53	281.67	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 2466.99

INPUT
Description:
Station Elevation Data num= 154

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	850.14	2.630005	847.51	5.420044	844.71	11.11005	839.44	17.77002	833.28
18.10004	833	18.38	832.76	25.08002	827	31.34003	821.63	32.06	821
32.91003	820.27	44.29004	811.24	48.06	809.13	57.25	805.79	59.98999	805
63.20001	804.08	66.98004	802.75	70.21002	801.61	78.34003	798.75	83.17004	797.36
93.48004	793.61	96.13	792.65	101.89	791	108.63	789.07	109.09	788.94
109.16	788.48	114.88	777.26	135.68	776.53	135.89	776.52	151.27	775.73
153.94	772.73	157.94	768.22	159.47	767.88	160.31	767.7	162.08	767.64
168	767.46	184.85	766.56	185.38	766.53	193.96	766.52	199.94	766.52
200.25	766.52	204.86	766.78	208.77	767	209.01	766.99	221.47	766.23
221.89	766.34	231.8	768.44	232.2	770.83	232.77	774.22	236.68	774.36
236.85	774.37	237.14	774.42	241.55	775.08	252.29	782.36	252.35	782.4
252.43	782.41	267.01	783.33	289.14	783.1	290.42	786.93	290.52	787
291.62	787	303.48	787	305.48	787	311.38	787	316.44	787
320.62	787	325.35	787	329.4	786.42	332.33	786	335.76	786
339.32	786	342.36	786	350.9	786	355.32	786	360.27	786
366.05	786	367.25	786	368.28	786	374.23	786	381.19	786
381.24	786	381.51	786	394.19	786	395.18	786	396.33	786
400	786	402.42	786	407.84	786	417.73	786	418.07	786
418.18	786	418.4	786	428.53	786	433.72	786	438.87	786
448.91	786	449.21	786	449.37	786	449.85	786	457.19	786
459.56	786.3	465.02	787	469.9	787	479.43	787	480.25	787
481.96	787	488.49	787	490.59	787	496.31	787.55	500.93	788
509.95	788	511.28	788	514.08	788	519.78	788	521.62	788
527.61	788	531.96	788	540.46	788.82	542.31	789	546.19	789
551.08	789	552.65	789	558.9	789	563	789	566.73	789.36
573.34	790	574.55	790	578.31	790	583.68	790	590.2	790
594.03	790	601.5	790	604.37	790	610.43	790.59	614.72	791
621.5	791	625.06	791	632.01	791	635.4	791	642.54	791.69
644.97	791.92	645.75	792	652.79	792	656.09	792	660.61	792
666.44	792.74	674.66	793	676.26	793	676.78	793	684.09	793.71
687.12	794	693.04	794	697.47	794	698.58	794.11		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	151.27	.04	241.55	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
151.27	241.55	203.04	210.13	222.16	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 2256.86

INPUT
Description:
Station Elevation Data num= 155

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	859.94	.480042	8576.220032		855.87	8.070007	854.41	8.01001	847.23
22.42999	844.37	27.12	84131.54004		837.83	36.78003	834.06	45.06	828.69
48.01001	827	51.14001	825.25	8.59003	820.41	65.5	815.96	72.12	812.16
75.87	810.28	79.86005	808.28	82.84003	807	85.65002	805.79	94.21002	802.73
99.17999	800.96	108.57	796.92	112.7	795.14	117.66	793	123.68	779.98
137.93	775.83	138.99	775.52	140.6	775.45	158.89	774.62	162.33	768.94
162.76	768.16	165.17	767.79	165.36	767.77	166.13	767.64	176.81	765.8
193.85	766.8	194.16	766.81	194.44	766.82	209.71	766.91	211.02	766.91
211.07	766.91	225.23	766.67	225.33	766.67	234.82	767.11	235.78	767.62
236	767.74	236.1	767.86	241.71	774.9	247.85	775.38	247.96	775.38
248.21	775.44	263.26	778.71	269.03	782.52	269.11	782.57	271.3	782.66
281.27	783.06	300	783.14	302.93	785.08	305.88	786.64	312.6	786.06
313.05	786	313.32	786	314.43	786	324.85	786	331.51	785.42
334.54	785.16	336.38	785	344.01	785	347.92	785	348.86	785
350.42	785	356.03	785	359.45	785	369.32	785	370.98	785
373.59	785	382.52	785	384.68	785	388.23	785	391.84	785.19
394.05	785.31	403.17	785.79	405.59	785.92	407.13	786	417.12	786.53
426.04	787	427.66	787	428.65	787	432.74	787	440.19	787
444.94	787.41	451.72	788	462.32	788	463.25	788	463.48	788
463.85	788.05	474.79	789	482.75	789.69	486.32	790	492.13	790
497.85	790.8	499.29	791	501.66	791	506.46	791	509.39	791
520.56	791.97	520.78	791.99	520.92	792	527.95	792	532.45	792
539.47	791.39	542.27	791	543.99	791	551.05	791	555.52	791
556.6	791	558.37	790.75	563.76	790	567.05	790	570.9301	790
577.28	790	578.59	790	580.63	790.18	590.12	791	596.1801	791.53
599.58	791.82	601.65	792	606.74	792	613.19	792.9	615.09	793
621.07	793	624.72	793.51	628.23	793.7	633.99	794	636.25	794.12
642.56	795	647.79	795.73	649.72	795.83	652.9	796	656.89	796
659.32	796.34	664.05	797	670.85	798.9	671.21	799	671.8	799.16
682.39	802.12	690.71	804.44	692.7	804.89	693.92	805.34	699.87	807
705.45	808.56	709.61	809.72	714.19	811	716.99	812.17	728.52	820

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	123.68	.04	269.03	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
123.68	269.03	228	225.73	218.55	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 2031.13

INPUT
Description:
Station Elevation Data num= 131

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	837.13	1.48999	836.38	3.280029	835.61	15.21002	831.31	16.29999	830.92
17.41003	830.36	28.94	825.37	31.54001	824.43	37.19	822	42.67001	819.64
45.67001	818.34	56.39001	813.72	59.81	812.25	65.04001	810.37	70.12003	807.08
72	806	73.94	804.89	83.84003	799.28	8.07001	796.77	97.57001	791.31
99.85001	790	99.88	787.22	100	781.21	110.41	781.01	110.42	781.01
110.44	780.99	121.74	769.66	126.72	768.04	126.95	767.96	128.79	767.67
128.81	767.66	128.88	767.65	134.88	766.94	144.64	767.81	144.72	767.82
144.77	767.82	149.28	768.66	150.07	768.8	150.08	768.8	152.58	768.8
153.9	768.35	156.76	767.38	164.51	767.03	164.65	767.02	164.76	767.02
174.86	766.7	175.86	766.69	187.45	766.58	187.55	766.58	187.62	766.58
203.76	766.77	211.04	766.61	211.32	766.6	212.01	767.61	212.04	767.65
212.08	767.7	213.4	769.47	215.05	770.2	216.77	770.98	218.94	773.34
221.11	775.7	231.61	781.53	231.66	781.56	231.77	781.56	255.06	781.79
266.67	781.85	271.77	783	276.01	783.3	280.88	784	285.9	784
289.74	784	294.81	784	300.03	784	301.77	784	303.46	784
308.73	784	314.16	784	317.19	784.21	322.66	784.6	328.29	785
329.62	785	330.92	785	336.59	785	342.42	785.84	344.64	786.16
356.55	787	357.47	787.07	358.37	787.13	364.44	788	370.68	788.9
371.4	789	372.09	789	378.36	789	383.72	789.77	384.51	789.87
389.57	790.5	394.7	791	396.56	791.18	404.89	792	409.71	792
415.08	792	424.35	792.91	425.27	792.93	425.8	793	427.79	793
433.84	793	435.46	793	438.25	793.27	445.65	794	452.14	795.27
455.84	796	466.01	798	466.03	798	474.07	800.37	476.22	800.73
479.93	801.73	486.41	803.47	490.16	804.1	496.6	806	498.2	806.32
504.23	807.5	506.25	807.84	506.79	808	514.29	809.47	516.98	810
521.61	810.91	527.17	812	535.5	812.82	537.36	813	538.43	813.11
542.45	814								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	110.41	.04	231.77	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
110.41	231.77	242.41	237.55	228.38	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1793.58

INPUT
Description:

Station Elevation Data num= 98

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	803.08	8.580017	800.38	11.34	799.76	16.14999	798.67	18.55002	798.24
19.94	797.81	25.07001	796.64	31.30002	795.23	35.89001	794.19	40.17999	793.22
42.66	792.66	47.39001	791.58	54.02002	790.08	55.63	789.72	65.38	788
69.03	787.68	75.37	786.24	76.24002	786.04	76.27002	785.56	77.10001	782.14
93.20999	779.21	99.16	777	104.62	774.97	104.85	774.96	117.94	774.27
120.17	771.15	120.19	771.13	120.22	771.11	124.8	767.74	125.04	767.03
125.04	767.01	129.73	766.54	136.21	765.89	142.02	765.8	151	765.66
158.88	765.65	164.12	765.64	164.4	765.64	164.56	765.68	172.41	767.19
172.66	767.22	179.62	768.04	184.2	767.54	184.24	767.53	188.78	767.68
188.81	767.68	188.82	767.68	191.87	767.59	192.07	767.64	196.77	768.83
199.38	772.1	200.73	773.8	209.42	775.29	209.74	775.34	215.02	777.25
215.16	777.3	229.57	778.29	229.76	778.3	243.98	779.64	250.9	784.56
250.96	784.93	251.88	785.06	255.38	785.56	264.44	786.85	266.81	787.19
272.5	788	277	789.29	279.51	790	282.67	790.45	289.57	791.44
298.52	792.71	300.53	793.13	302.13	793.23	307.54	794	314.37	794.97
314.69	795	315.93	795.1	327.26	795.81	330.22	796.24	335.58	798.01
339.82	798.82	346.07	800	352.38	800.8	361.92	802.76	363.61	803.11
364.94	803.38	376.48	804.84	377.51	804.97	377.78	805.02	384.64	806.43
390.07	807.55	393.63	808.28	402.63	809.57	405.66	810	409.48	810.54
412.67	811.2	415.2	811.72	417.1	812.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	104.85	.04	215.16	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
104.85	215.16	142.83	152.56	170.96	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1641.02

INPUT
Description:
Station Elevation Data num= 91

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	808	3.289978	807	12.53	803.25	13.14999	803	13.82999	802.79
23.00998	799.12	24.20999	798.63	32.85999	796	40.69998	793.61	42.72	793
44.94998	792.32	52.57999	790	59.48999	788.6	62.44	788	65.69998	787.34
72.29999	786	78.26999	786	82.14999	786	86.44	786	92.00998	786
96.81	786	101.87	786	106.45	786	111.73	786	117.56	786
119.04	786	122.38	786	123.64	785.9	125.12	786	130.63	786
135.33	786	140.05	781.09	154.95	780.93	154.98	780.93	155	780.93
164.54	780.99	170.84	779.02	184.08	774.88	202.4	773.5	202.53	773.49
202.57	773.46	207.58	770.14	215.23	768.75	220	767.87	232.76	767.45
233.13	767.44	233.26	767.39	234.75	766.91	237.85	765.91	243.01	765.62

249.97	765.23	258.82	764.85	258.86	764.85	258.94	764.86	261.47	765.19
276.87	767.2	277.35	767.26	286.74	775.58	286.89	775.71	295.05	776.7
296.27	776.85	306.19	777.2	312.21	782	316.54	782.62	322.29	783.44
326.17	784	329.49	784.47	333.16	785	337.46	785.62	342.43	786.66
352.63	788.79	355.37	789	367.79	789	368.08	789.02	368.32	789.03
371.38	789.71	381.26	791.78	382.96	792.26	394.21	796.22	396.01	797
398.13	797.61	407.15	800.19	409.98	801.22	413.29	802.42	416.96	804
420.09	804.9	423.95	806.3	428.46	808.59	430.93	809.84	433.04	810.6
440.05	813.7								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	202.57	.04	286.89	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
202.57	286.89	103.8	112.43	127.54	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1528.59

INPUT
Description:
Station Elevation Data num= 113

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	8044.940002	802.4610.65997	800.114.80997	798.3918.38998	797.27				
24.67999	795.3231.96997	792.3134.54999	791.2436.77997	790.5544.42999	788.17				
53.27997	786.3154.29999	786.163.93997	785.0564.16998	785.0267.10999	784.7				
74.03998	783.9574.58997	783.9483.91998	78391.95999	78393.78998	783				
95.90997	783	103.66	783	106.56	783	113.53	783	117.22	783
123.41	783	128.75	783	131.3	783	133.62	783	140.24	783
145.2	783	150.46	783	156.79	783	158.94	783	168.37	783
171.91	783	177.63	783	179.06	783	179.95	783	183.73	783
191.53	783	193.37	783	196.32	783	200.52	783	203.11	783
214.17	783	214.7	783	215.02	783.03	226.28	784	229.12	784
233.71	784.64	236.27	785	237.86	785.22	243.43	785.52	249.44	785
250.58	784.8	252.41	783.98	257.73	781.57	261.03	779.62	267.72	775
267.73	775	276.19	773.96	276.66	773.9	277.1	773.91	283.86	774.02
292.31	767.34	292.55	767.14	292.73	767.1	296.19	766.17	300.02	765.14
300.21	765.09	301.38	765.07	316.41	764.85	340.35	764.51	343.57	765.27
351.35	767.11	354.07	770.11	358.93	775.13	362.44	776.37	366.86	777.82
382.12	778.94	385.21	783.75	386.46	785.83	388.43	785.72	393.61	785
400.02	785	401.96	784.83	411.6	784	415.06	783.7	420.66	783.22
422.21	783.08	423.18	783	427.29	783.35	434.76	783.75	439.35	784
446.35	784	457.74	785.97	457.93	785.99	458.04	786.05	469.51	792.23
472.28	793.72	476.74	796.74	479.43	798.42	481.09	799.47	486.58	802.42
492.67	806.56	495.43	808.43	504.26	814.42	508.03	816.98	514.13	821.11
515.18	821.83	515.84	822.27	517.73	823.39				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	283.86	.04	366.86	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
283.86	366.86	26.91	26.58	25.36	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	254.74	782.07	F
407.09	517.73	780.36	F

BRIDGE

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1516.77

INPUT
Description: Existing Bridge
Distance from Upstream XS = 4.13
Deck/Roadway Width = 13.92
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 7

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
254.74	782.07		266.7	782.76	781.92	282.02	784.66	783.83
362.06	784.67	783.84	377.97	783.02	782.19	407.09	780.36	
430.18	778.7							

Upstream Bridge Cross Section Data
Station Elevation Data num= 113

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	8044.940002	802.4610.65997	800.114.80997	798.3918.38998	797.27				
24.67999	795.3231.96997	792.3134.54999	791.2436.77997	790.5544.42999	788.17				
53.27997	786.3154.29999	786.163.93997	785.0564.16998	785.0267.10999	784.7				
74.03998	783.9574.58997	783.9483.91998	78391.95999	78393.78998	783				
95.90997	783	103.66	783	106.56	783	113.53	783	117.22	783
123.41	783	128.75	783	131.3	783	133.62	783	140.24	783
145.2	783	150.46	783	156.79	783	158.94	783	168.37	783
171.91	783	177.63	783	179.06	783	179.95	783	183.73	783
191.53	783	193.37	783	196.32	783	200.52	783	203.11	783
214.17	783	214.7	783	215.02	783.03	226.28	784	229.12	784
233.71	784.64	236.27	785	237.86	785.22	243.43	785.52	249.44	785
250.58	784.8	252.41	783.98	257.73	781.57	261.03	779.62	267.72	775
267.73	775	276.19	773.96	276.66	773.9	277.1	773.91	283.86	774.02
292.31	767.34	292.55	767.14	292.73	767.1	296.19	766.17	300.02	765.14
300.21	765.09	301.38	765.07	316.41	764.85	340.35	764.51	343.57	765.27
351.35	767.11	354.07	770.11	358.93	775.13	362.44	776.37	366.86	777.82
382.12	778.94	385.21	783.75	386.46	785.83	388.43	785.72	393.61	785

400.02	785	401.96	784.83	411.6	784	415.06	783.7	420.66	783.22
422.21	783.08	423.18	783	427.29	783.35	434.76	783.75	439.35	784
446.35	784	457.74	785.97	457.93	785.99	458.04	786.05	469.51	792.23
472.28	793.72	476.74	796.74	479.43	798.42	481.09	799.47	486.58	802.42
492.67	806.56	495.43	808.43	504.26	814.42	508.03	816.98	514.13	821.11
515.18	821.83	515.84	822.27	517.73	823.39				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	283.86	.04	366.86	.06

Bank Sta: Left	Right	Coeff Contr.	Expan.
283.86	366.86	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	254.74	782.07	F
407.09	517.73	780.36	F

Downstream Deck/Roadway Coordinates num= 7

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
264.12	781.74		276.11	782.84	782.01	291.61	784.75	783.92
371.51	784.67	783.84	387.45	783.04	782.21	415.93	780.6	
441.15	778.55							

Downstream Bridge Cross Section Data

Station Elevation Data num= 113

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	8009.330017	797.169.859985		796.94	18.66	793.32	19.72	792.89	
20.92001	792.5129.59003	789.83	37.31	787.4339.45001		786.7741.84003		786.27	
49.31	784.7152.30002	784.3959.17001		783.6662.76001		783.64	69.03	783	
74.62003	78378.89001	78383.68002		78388.76001		78394.15002		783	
98.62003	783	104.61	783	108.48	783	115.07	783	118.34	783
121.26	783	128.2	783	135.99	783	138.07	783	139.92	783
142.31	783	148.95	783	157.5	783	159.4	783	160.61	783
166	783	172.27	783	173.67	783	175.89	783	183.93	783
187.94	783	194.27	783	195.07	783	195.58	783	197.86	783
207.24	783	212.66	783	218.9	783	223.61	783	230.56	783
231.04	783	242.22	783.61	249.43	782.76	252.15	782.44	253.88	782.24
259.29	781.61	265.53	779.12	267.24	778.32	271.84	775.09	271.95	775.02
271.99	775.01	272.2	775	282.01	774.33	283.83	774.21	285.93	774.04
293.6	773.45	299.37	768.22	300.57	767.09	301.72	766.89	309.3	765.53
311.99	765.48	321.73	765.3	350.73	764.78	356.55	766.19	357.4	766.39
358.73	767.5	368.18	775.47	377.89	777.28	378.96	777.48	379.72	777.55
388.16	778.23	393.77	784.7	396.52	784.76	401.97	784.3	405.43	784.48
414.91	784.19	416.24	784.07	417.09	784	420.87	783.68	428.75	783
430.51	783	433.3	783	437.65	783	440.41	783	444.78	783
451.68	783	451.92	783	452.06	783	459.05	783	463.72	784.31
470.07	787.18	475.38	790.16	480.45	793.44	487.04	797.69	487.59	798
488.45	798.61	494.72	802.32	498.7	805.23	506.84	810.49	510.36	812.57

```
  516.13  815.99  522.01   820.3   522.2  820.42

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .05   293.6     .04  368.18     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
         293.6  368.18            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0  264.12  781.74       F
  415.93   522.2   780.6       F

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 =  2

Pier Data
Pier Station     Upstream=  282.02    Downstream=  291.61
Upstream     num=       2
    Width   Elev    Width   Elev
       2  774.02       2  783.83
Downstream     num=       2
    Width   Elev    Width   Elev
       2  774.02       2  783.92

Pier Data
Pier Station     Upstream=  362.06    Downstream=  371.51
Upstream     num=       2
    Width   Elev    Width   Elev
       2  775.13       2  783.84
Downstream     num=       2
    Width   Elev    Width   Elev
       2  775.13       2  783.84

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: McElroy Creek
REACH: 303-679 McElroy RS: 1502.01

INPUT
Description:
Station Elevation Data num= 113

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	8009.330017	797.169.859985	796.94	18.66	793.32	19.72	792.89		
20.92001	792.5129.59003	789.83	37.31	787.4339.45001	786.7741.84003	786.27			
49.31	784.7152.30002	784.3959.17001	783.6662.76001	783.64	69.03	783			
74.62003	78378.89001	78383.68002	78388.76001	78394.15002	783				
98.62003	783	104.61	783	108.48	783	115.07	783	118.34	783
121.26	783	128.2	783	135.99	783	138.07	783	139.92	783
142.31	783	148.95	783	157.5	783	159.4	783	160.61	783
166	783	172.27	783	173.67	783	175.89	783	183.93	783
187.94	783	194.27	783	195.07	783	195.58	783	197.86	783
207.24	783	212.66	783	218.9	783	223.61	783	230.56	783
231.04	783	242.22	783.61	249.43	782.76	252.15	782.44	253.88	782.24
259.29	781.61	265.53	779.12	267.24	778.32	271.84	775.09	271.95	775.02
271.99	775.01	272.2	775	282.01	774.33	283.83	774.21	285.93	774.04
293.6	773.45	299.37	768.22	300.57	767.09	301.72	766.89	309.3	765.53
311.99	765.48	321.73	765.3	350.73	764.78	356.55	766.19	357.4	766.39
358.73	767.5	368.18	775.47	377.89	777.28	378.96	777.48	379.72	777.55
388.16	778.23	393.77	784.7	396.52	784.76	401.97	784.3	405.43	784.48
414.91	784.19	416.24	784.07	417.09	784	420.87	783.68	428.75	783
430.51	783	433.3	783	437.65	783	440.41	783	444.78	783
451.68	783	451.92	783	452.06	783	459.05	783	463.72	784.31
470.07	787.18	475.38	790.16	480.45	793.44	487.04	797.69	487.59	798
488.45	798.61	494.72	802.32	498.7	805.23	506.84	810.49	510.36	812.57
516.13	815.99	522.01	820.3	522.2	820.42				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	293.6	.04	368.18	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
293.6	368.18	158.91	210.55	325.26	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	264.12	781.74	F

415.93 522.2 780.6 F

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1291.46

INPUT
Description:
Station Elevation Data num= 176

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	792.25	6.97998	790.01	10.52997	788.74	17.14996	786.37	21.09998	784.96
24.75	784	31.65997	783.09	32.35999	783	34.16998	782.76	42.21997	781.7
47.58002	781.51	52.78998	781.32	55.17999	781.23	61.34998	781.81	62.78998	781.95
63.34998	781.93	64.62	782	73.90997	782	78	782	84.47998	782
85.60999	782.11	88.52997	782	93.21997	782	95.03998	782	99.16998	782
105.6	782	108.43	782	115.72	782	116.04	782	116.16	782
123.65	782	126.73	782	133.73	782	137.29	782	138.86	782
142.9	782	146.47	782	147.85	782	151	782	158.42	782
168.28	782	168.98	782	170.08	782	179.54	781.65	185.56	781.43
190.11	781.26	192.11	781	197.26	781	199.72	781	200.67	781
202.83	780.8	211.23	780.49	220.11	780.16	221.8	780	222.54	779.93
224.45	779.75	230.14	779.21	232.36	779	237.75	778.49	242.92	778
245.36	777.54	246.11	776.78	249.69	774.72	258.68	775.13	268.31	773.67
268.33	773.67	269.38	773.38	276.69	771.34	285.03	767.62	285.12	767.58
285.31	767.57	301.09	767.2	301.55	767.19	302.95	767.17	313.89	767.03
321.03	767.22	324.09	767.31	332.98	767.29	340.88	767.27	345.57	769.29
353.98	772.9	367.12	774.05	367.14	774.05	367.16	774.05	387.84	774.4
389.92	778.99	390.8	780	397.5	780	401.37	780.51	410.15	780
411.93	780	412.71	780	414.73	780	422.49	780	427.43	780
433.06	780	441.91	780	443.14	780	443.62	780	444.71	780
454.18	780	461.98	780	464.75	780	469.09	780	475.31	780
481.18	780	485.87	780.62	496.28	781	496.39	781	496.44	781
496.54	781	507	781	511.61	781	517.56	781	519.21	781
523.46	781	526.82	781	528.12	781	531.09	781	538.69	781
548.37	781	549.25	781	550.64	781	559.81	781	564.85	780.52
570.38	780	577.83	780	580.07	780.08	580.94	780	582.92	780.19
591.5	781	595.28	781	602.07	781	602.89	781.08	605.01	781.28
612.63	782	618.1	782	623.19	782	632.19	782	633.32	782
633.76	782	634.75	782.09	636.79	782.29	640.59	782.63	644.6	783
648.41	782.65	655.55	782	658.01	782	663.06	781.31	665.37	781
666.5	780.85	672.74	780	677.45	778.72	680.1	778.24	685.54	777.26
688.41	776.87	694.83	776	699.36	776	708.02	776	710.31	776
712.49	776	721.26	776	724.29	776	730.5	776	732.22	776.08
739.02	777	743.17	777.56	752.97	778.9	754.12	779.2	755.21	779.8
765.07	785.15	775.45	790.79	776.03	791.15	776.57	791.45	786.98	797.56
797.93	804								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	258.68	.04	367.12	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
258.68	367.12	74.86	71.32	63.88	.1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
401	797.93	783	F

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 1220.14

INPUT
Description:
Station Elevation Data num= 300

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	805.25	4.869995	803.69	9.22998	802.28	18.17004	798.55	19.23999	798.07
19.59998	797.91	27.04004	795.28	29.95996	794.25	34.84998	792.06	40.31995	789.6
42.65002	788.55	49.72998	786.28	50.44995	786.02	50.68994	785.94	51.15002	785.86
61.05005	783.64	66.57996	782.93	71.41003	782.31	81.29004	782	81.77002	781.98
82.01001	781.98	92.14001	781.66	97.26001	781	102.5	780.33	112.84	780
112.86	780	120.66	780	123.23	780	128.3	780	133.59	780
136.26	780	143.95	780	144.0601	780	144.4	780	154.3199	779.69
159.16	779.53	164.6801	779.36	174.59	779.04	175.04	779.03	175.27	779.02
175.96	779	183.0699	778.77	185.41	778.7	190.02	778.55	195.77	778.37
198.67	778	206.13	778	206.48	778	206.89	777	207.83	773.88
209.47	773.96	210.59	773.99	224.65	774.2	235.95	774.59	241.36	774.62
246.26	774.52	247.7	774.57	260.8	774.82	69.1801	775.26	274.62	775.33
279.49	774.7	284.86	774.07	288.15	773.32	288.24	773.29	288.4301	773.29
294.03	768.56	295.95	766.98	302.3199	765.88	306.63	766.18	315.28	766.5
329.83	767.05	336.23	767.12	344.11	767.06	350.14	767.28	350.19	767.31
354.79	769.25	355.48	769.35	357.12	769.44	363.71	772.3	366.85	773.67
375.62	773.64	377.01	773.7	391.73	775.27	393.44	775.4	402.69	775.75
407.39	775.78	409.08	776	412.76	776.54	415.47	776.57	424.1	776.77
430.15	776.88	438.05	776.48	440.23	776.34	441.25	778.13	442.22	781
444.48	781	448.32	781	454.84	781	460	781	465.21	781
471.72	780.37	475.57	780	483.18	780	485.93	780	491.56	780
495.12	780	496.3	780	498.61	780	506.66	780	510.73	780
517.02	780	518.53	780	523.12	780	527.39	780	534.13	780.65
537.75	781	541.93	781	548.11	781	549.73	781	554.67	781
557.54	781	558.47	781	560.33	781	568.84	781	573.14	781
579.2	781	586.23	781	588.74	781	589.56	781	596.54	781
599.93	781	606.62	781	610.29	781	617.79	781	620.65	781
622.05	781	631.02	781	637.48	781	641.38	781	649.35	781
651.15	781	651.74	781	658.95	781	662.11	781	666.75	781.45
672.47	781.27	674.56	781.2	680.91	781	682.83	781	683.77	781
693.19	781.61	697.96	781	703.56	781	705.76	781	712.47	781

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  713.92     781  721.36  780.28  724.28     780  730.06     780  734.65   779.7
  744.03  779.09  745.01  779.03  745.49  779.05  755.37  779.36  760.92  779.54
  765.74  779.69  775.59  779.05  775.97  779.01   776.1  779.02  783.77  779.26
  786.46     779  791.58     779  796.82     779  799.38     779  807.15     779
  807.19     779  807.21     779  817.55     779  822.78     779  827.91     779
  830.58     779  838.28     779  838.71     779  846.18  779.24  848.64  779.31
   853.5  779.47     859  779.64  868.93  779.96  869.37  779.97  870.27     780
  877.39  780.23  879.73   780.6  885.19  780.95  890.09  781.26  892.99  781.44
  900.46  781.91  901.83     782   908.6  782.21  910.82     782  915.21     782
  921.18  781.61  930.64     781  931.54     781     932  780.96  933.39     781
  941.91  781.27  946.07     781  952.27   780.6   955.4   780.7  962.63  780.93
  963.21  780.94  964.95     781  971.01  781.19     973     781  976.93     781
  983.36  780.58  992.36  780.87  993.72  780.91  994.41  780.93  996.51     781
 1002.21     781 1004.09     781 1007.79     781 1014.45  780.57 1017.81  780.68
 1024.81   780.9 1028.06     781 1035.17     781 1041.22     781 1045.54     781
 1049.02     781  1055.9     781 1059.62     781 1064.62  781.16 1066.26  781.21
 1072.42  781.41 1076.63  781.54 1084.94   781.8 1086.99  781.87 1091.18     782
 1097.35   782.2 1103.63     783 1107.72     783 1111.43     783 1118.08  783.85
 1122.74     784 1128.44  784.18 1134.83     785 1138.81  785.51 1142.64  785.63
 1149.17  785.84 1150.44  785.88  1154.3     786 1159.53  786.17 1162.09  786.25
 1169.89  786.49 1177.52  786.74 1180.26  786.82 1185.86     787 1189.44  787.11
 1190.62  787.15 1192.95     787 1200.98     787 1205.05     787 1211.35     787
 1212.85  786.86 1217.42     787 1221.71  787.14 1228.45  787.35 1232.07  787.46
 1239.24  787.69 1242.44  787.79 1248.98     788  1252.8     788 1254.67     788
 1263.16  787.45  1270.1  787.67 1273.52  787.78 1275.26     788 1280.54     788
 1283.06  788.08 1283.89  788.11 1285.52  788.16 1294.25     789 1300.95  789.65
 1304.61  789.76 1306.46  789.82  1312.1     790 1314.27  790.07 1314.98  790.09
 1322.07     791 1325.34     791 1329.87     791  1335.7  791.75 1337.67  791.81
 1343.66     792 1345.47     792 1346.07     792 1347.24     792    1350     792

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .05  284.86     .04  366.85     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        284.86  366.85            55.26   55.23   56.23             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     260  776.18       F
     377    1350     776       F

BRIDGE


RIVER: McElroy Creek
REACH: 303-679 McElroy    RS: 1191.38

INPUT
Description: Proposed Bridge
Distance from Upstream XS =   20.85
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Deck/Roadway Width = 14.27
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 7

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
241.85	774.93		257.99	775.39		270.83	776.91	
281.88	778.14	775.15	357.75	776.47	773.55	397.23	775.98	
432.87	776.01							

Upstream Bridge Cross Section Data
Station Elevation Data num= 300

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	805.25	4.869995	803.69	9.22998	802.28	18.17004	798.55	19.23999	798.07
19.59998	797.91	27.04004	795.28	29.95996	794.25	34.84998	792.06	40.31995	789.6
42.65002	788.55	49.72998	786.28	50.44995	786.02	50.68994	785.94	51.15002	785.86
61.05005	783.64	66.57996	782.93	71.41003	782.31	81.29004	782	81.77002	781.98
82.01001	781.98	92.14001	781.66	97.26001	781	102.5	780.33	112.84	780
112.86	780	120.66	780	123.23	780	128.3	780	133.59	780
136.26	780	143.95	780	144.0601	780	144.4	780	154.3199	779.69
159.16	779.53	164.6801	779.36	174.59	779.04	175.04	779.03	175.27	779.02
175.96	779	183.0699	778.77	185.41	778.7	190.02	778.55	195.77	778.37
198.67	778	206.13	778	206.48	778	206.89	777	207.83	773.88
209.47	773.96	210.59	773.99	224.65	774.2	235.95	774.59	241.36	774.62
246.26	774.52	247.7	774.57	260.8	774.82	69.1801	775.26	274.62	775.33
279.49	774.7	284.86	774.07	288.15	773.32	288.24	773.29	288.4301	773.29
294.03	768.56	295.95	766.98	302.3199	765.88	306.63	766.18	315.28	766.5
329.83	767.05	336.23	767.12	344.11	767.06	350.14	767.28	350.19	767.31
354.79	769.25	355.48	769.35	357.12	769.44	363.71	772.3	366.85	773.67
375.62	773.64	377.01	773.7	391.73	775.27	393.44	775.4	402.69	775.75
407.39	775.78	409.08	776	412.76	776.54	415.47	776.57	424.1	776.77
430.15	776.88	438.05	776.48	440.23	776.34	441.25	778.13	442.22	781
444.48	781	448.32	781	454.84	781	460	781	465.21	781
471.72	780.37	475.57	780	483.18	780	485.93	780	491.56	780
495.12	780	496.3	780	498.61	780	506.66	780	510.73	780
517.02	780	518.53	780	523.12	780	527.39	780	534.13	780.65
537.75	781	541.93	781	548.11	781	549.73	781	554.67	781
557.54	781	558.47	781	560.33	781	568.84	781	573.14	781
579.2	781	586.23	781	588.74	781	589.56	781	596.54	781
599.93	781	606.62	781	610.29	781	617.79	781	620.65	781
622.05	781	631.02	781	637.48	781	641.38	781	649.35	781
651.15	781	651.74	781	658.95	781	662.11	781	666.75	781.45
672.47	781.27	674.56	781.2	680.91	781	682.83	781	683.77	781
693.19	781.61	697.96	781	703.56	781	705.76	781	712.47	781
713.92	781	721.36	780.28	724.28	780	730.06	780	734.65	779.7
744.03	779.09	745.01	779.03	745.49	779.05	755.37	779.36	760.92	779.54
765.74	779.69	775.59	779.05	775.97	779.01	776.1	779.02	783.77	779.26
786.46	779	791.58	779	796.82	779	799.38	779	807.15	779
807.19	779	807.21	779	817.55	779	822.78	779	827.91	779
830.58	779	838.28	779	838.71	779	846.18	779.24	848.64	779.31
853.5	779.47	859	779.64	868.93	779.96	869.37	779.97	870.27	780

877.39	780.23	879.73	780.6	885.19	780.95	890.09	781.26	892.99	781.44
900.46	781.91	901.83	782	908.6	782.21	910.82	782	915.21	782
921.18	781.61	930.64	781	931.54	781	932	780.96	933.39	781
941.91	781.27	946.07	781	952.27	780.6	955.4	780.7	962.63	780.93
963.21	780.94	964.95	781	971.01	781.19	973	781	976.93	781
983.36	780.58	992.36	780.87	993.72	780.91	994.41	780.93	996.51	781
1002.21	781	1004.09	781	1007.79	781	1014.45	780.57	1017.81	780.68
1024.81	780.9	1028.06	781	1035.17	781	1041.22	781	1045.54	781
1049.02	781	1055.9	781	1059.62	781	1064.62	781.16	1066.26	781.21
1072.42	781.41	1076.63	781.54	1084.94	781.8	1086.99	781.87	1091.18	782
1097.35	782.2	1103.63	783	1107.72	783	1111.43	783	1118.08	783.85
1122.74	784	1128.44	784.18	1134.83	785	1138.81	785.51	1142.64	785.63
1149.17	785.84	1150.44	785.88	1154.3	786	1159.53	786.17	1162.09	786.25
1169.89	786.49	1177.52	786.74	1180.26	786.82	1185.86	787	1189.44	787.11
1190.62	787.15	1192.95	787	1200.98	787	1205.05	787	1211.35	787
1212.85	786.86	1217.42	787	1221.71	787.14	1228.45	787.35	1232.07	787.46
1239.24	787.69	1242.44	787.79	1248.98	788	1252.8	788	1254.67	788
1263.16	787.45	1270.1	787.67	1273.52	787.78	1275.26	788	1280.54	788
1283.06	788.08	1283.89	788.11	1285.52	788.16	1294.25	789	1300.95	789.65
1304.61	789.76	1306.46	789.82	1312.1	790	1314.27	790.07	1314.98	790.09
1322.07	791	1325.34	791	1329.87	791	1335.7	791.75	1337.67	791.81
1343.66	792	1345.47	792	1346.07	792	1347.24	792	1350	792

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	284.86	.04	366.85	.05

Bank Sta: Left Right Coeff Contr. Expan.

284.86	366.85	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	260	776.18	F
377	1350	776	F

Downstream Deck/Roadway Coordinates

num= 7

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
241.85	774.93		257.99	775.39		270.83	776.91	
282.09	778.13	775.23	357.95	776.6	773.65	397.23	775.98	
432.87	776.01							

Downstream Bridge Cross Section Data

Station Elevation Data num= 303

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	799.98	5.640015	798.54	6.569946	798.24	7.040039	798	8.469971	797.27
14.83997	793.19	16.93005	792.12	22.64001	788.65	27.29004	786.42	30.43994	784.3
37.66003	782.23	40.03003	781.77	48.02002	780.75	53.84998	780.56	58.38	780.42
61.65002	780	68.75	779.09	71.58997	779	79.10999	778.76	85.05005	778.57
89.46997	778.43	98.21997	778.16	99.83997	778.1	103.15	778	108.45	778
110.2	778	116.26	778	120.5601	778	129.08	778	130.92	778

131.86	778	134.71	778	141.29	778	147.46	778	151.65	778
155.26	778	162.01	778	166.26	778	172.38	778	178.67	778
182.74	778	186.47	778	193.1	778	197.8199	778	203.47	778.18
210.11	775.6	212.11	774.23	213.6	774.28	224.9301	774.72	226.14	774.72
234.35	774.9	236.22	774.92	244.5699	774.91	246.34	774.9	251.08	775.03
262.3101	775.28	264.33	775.24	269.33	775.02	278.0601	774.29	281.16	771.79
282.02	771.18	284.27	769.91	285.88	769.48	290.51	765.78	291.12	765.22
291.7	765.17	295.03	765.52	310.33	765.96	321.89	766.29	346.14	766.02
349.07	766.41	350.12	766.33	352.51	768.72	353.93	770.29	357.57	771.63
359.07	771.88	360.17	772.21	362.87	773.35	369.06	773.72	370.54	773.79
374.49	773.78	382.21	773.78	383.86	773.81	389.76	773.79	396.02	775.34
400.94	776.18	402.47	776.29	405.71	776.39	410.03	776.46	419.6	776.62
425.92	776.2	429.83	775.95	430.06	777.92	433.18	779.74	436.11	781
441.82	781	450.3	780.18	451.71	780	452.18	780	453.1	780
462.54	780	467.32	780	472.9	780	475.12	780	481.86	780
482.92	780	483.27	780	490.72	780	493.63	780.37	499.39	780
503.99	780	513.42	780.91	514.12	781	514.36	781	521.93	781
524.72	781	530.25	781	535.08	781	537.53	781	544.98	781
545.33	781	545.45	781	553.13	781	555.81	781.34	560.93	781.51
566.17	781.67	568.73	781.75	576.54	782	586.9	782	591.96	782
597.26	781.66	607.39	781.98	607.62	781.99	608.09	782	615.54	782
617.99	782	622.82	782	628.35	782	631.14	782	638.71	782
639.65	782	649.08	782	653.68	782	659.44	782	662.35	782
669.8	782	671.21	782	680.17	782	685.75	782	690.53	782
699.97	782	700.89	782	701.36	781.96	702.77	782	709.16	782
711.25	782	715.4	782	721.62	782	730.83	782	731.98	782
732.56	781.94	734.33	782	742.34	782	746.26	782	752.71	782
755.97	782	763.07	782	765.89	782	773.43	782	779.37	782
783.8	782	787.17	781.67	794.16	781.9	794.97	781.92	797.45	782
802.77	782	804.52	782	807.98	782.33	814.88	782.55	818.38	782.66
825.25	782.88	826.18	782.91	829.01	783	833.98	783	835.61	783
838.84	783.31	845.97	783.54	854.27	783.8	856.34	784	857.38	784
860.57	784	865.18	784	866.7	784.19	869.7	784.29	877.06	785
885.13	785	887.43	785	888.59	785	892.13	785.45	896.39	786
897.79	786	900.56	786.27	908.15	786.51	911.99	786.63	918.52	786.84
923.69	787	928.88	787.16	935.4	786.74	939.24	786.49	943.2	785.85
949.6	784.82	955.25	784.46	959.97	784.15	966.6	783.72	970.33	783
974.4	782.61	980.69	782.81	982.2	782.85	986.81	783	991.06	783
997.81	783	1001.42	783	1008.56	783	1011.78	783	1013.41	783
1018.37	783	1021.21	783	1022.15	783	1023.99	783	1032.51	783
1036.81	783	1042.87	783.78	1044.62	783.83	1049.92	784	1053.23	784
1054.85	784	1063.6	784	1070.28	784	1073.96	783.76	1081.48	784
1084.32	784.09	1091.42	785	1094.69	785.42	1101.14	786.25	1105.05	786.75
1107.03	786.81	1113.04	787	1115.41	787.08	1116.57	787.22	1125.78	788.4
1132	788.6	1136.14	788.73	1138.23	788.8	1144.6	788.18	1146.03	788.05
1146.5	788.06	1147.43	788.09	1156.87	789	1161.64	789	1167.23	789
1176.16	789	1177.59	789.05	1178.29	789.07	1187.95	789.37	1193.72	789.56
1198.32	789.7	1200.64	789.78	1207.72	790	1208.44	790.02	1208.68	790.03
1209.15	790.05	1219.04	790.36	1224.05	790.52	1229.41	790.69	1231.85	790.76
1239.28	791.95	1239.77	792.06	1240.01	792.09	1250.13	793.38	1255.44	794.05

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  1260.5  794.69 1270.84     797 1270.85     797 1270.86     797 1270.87     797
 1281.22  798.64 1286.46  799.47 1291.58  800.29 1301.73  800.91 1301.95  800.93
  1302.4  800.96 1309.86  801.42 1312.31  801.57 1317.16  802.34 1322.67  803.21
 1332.59  803.83 1333.04  803.85 1333.26  803.87 1333.96  803.91 1341.07  804.35
  1343.4  804.79 1348.87  805.83    1350   805.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .05  281.16     .04  362.87     .05

Bank Sta: Left   Right    Coeff Contr.   Expan.
        281.16  362.87             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     260  776.18       F
     367    1350     776       F

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: McElroy Creek
REACH: 303-679 McElroy    RS: 1164.91
```

INPUT
Description:
Station Elevation Data num= 303

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	799.98	5.640015	798.54	6.569946	798.24	7.040039	798	8.469971	797.27
14.83997	793.19	16.93005	792.12	22.64001	788.65	27.29004	786.42	30.43994	784.3
37.66003	782.23	40.03003	781.77	48.02002	780.75	53.84998	780.56	58.38	780.42
61.65002	780	68.75	779.09	71.58997	779	79.10999	778.76	85.05005	778.57
89.46997	778.43	98.21997	778.16	99.83997	778.1	103.15	778	108.45	778
110.2	778	116.26	778	120.5601	778	129.08	778	130.92	778
131.86	778	134.71	778	141.29	778	147.46	778	151.65	778
155.26	778	162.01	778	166.26	778	172.38	778	178.67	778
182.74	778	186.47	778	193.1	778	197.8199	778	203.47	778.18
210.11	775.6	212.11	774.23	213.6	774.28	224.9301	774.72	226.14	774.72
234.35	774.9	236.22	774.92	244.5699	774.91	246.34	774.9	251.08	775.03
262.3101	775.28	264.33	775.24	269.33	775.02	278.0601	774.29	281.16	771.79
282.02	771.18	284.27	769.91	285.88	769.48	290.51	765.78	291.12	765.22
291.7	765.17	295.03	765.52	310.33	765.96	321.89	766.29	346.14	766.02
349.07	766.41	350.12	766.33	352.51	768.72	353.93	770.29	357.57	771.63
359.07	771.88	360.17	772.21	362.87	773.35	369.06	773.72	370.54	773.79
374.49	773.78	382.21	773.78	383.86	773.81	389.76	773.79	396.02	775.34
400.94	776.18	402.47	776.29	405.71	776.39	410.03	776.46	419.6	776.62
425.92	776.2	429.83	775.95	430.06	777.92	433.18	779.74	436.11	781
441.82	781	450.3	780.18	451.71	780	452.18	780	453.1	780
462.54	780	467.32	780	472.9	780	475.12	780	481.86	780
482.92	780	483.27	780	490.72	780	493.63	780.37	499.39	780
503.99	780	513.42	780.91	514.12	781	514.36	781	521.93	781
524.72	781	530.25	781	535.08	781	537.53	781	544.98	781
545.33	781	545.45	781	553.13	781	555.81	781.34	560.93	781.51
566.17	781.67	568.73	781.75	576.54	782	586.9	782	591.96	782
597.26	781.66	607.39	781.98	607.62	781.99	608.09	782	615.54	782
617.99	782	622.82	782	628.35	782	631.14	782	638.71	782
639.65	782	649.08	782	653.68	782	659.44	782	662.35	782
669.8	782	671.21	782	680.17	782	685.75	782	690.53	782
699.97	782	700.89	782	701.36	781.96	702.77	782	709.16	782
711.25	782	715.4	782	721.62	782	730.83	782	731.98	782
732.56	781.94	734.33	782	742.34	782	746.26	782	752.71	782
755.97	782	763.07	782	765.89	782	773.43	782	779.37	782
783.8	782	787.17	781.67	794.16	781.9	794.97	781.92	797.45	782
802.77	782	804.52	782	807.98	782.33	814.88	782.55	818.38	782.66
825.25	782.88	826.18	782.91	829.01	783	833.98	783	835.61	783
838.84	783.31	845.97	783.54	854.27	783.8	856.34	784	857.38	784
860.57	784	865.18	784	866.7	784.19	869.7	784.29	877.06	785
885.13	785	887.43	785	888.59	785	892.13	785.45	896.39	786
897.79	786	900.56	786.27	908.15	786.51	911.99	786.63	918.52	786.84
923.69	787	928.88	787.16	935.4	786.74	939.24	786.49	943.2	785.85
949.6	784.82	955.25	784.46	959.97	784.15	966.6	783.72	970.33	783
974.4	782.61	980.69	782.81	982.2	782.85	986.81	783	991.06	783
997.81	783	1001.42	783	1008.56	783	1011.78	783	1013.41	783
1018.37	783	1021.21	783	1022.15	783	1023.99	783	1032.51	783

```
 1036.81     783 1042.87  783.78 1044.62  783.83 1049.92     784 1053.23     784
 1054.85     784  1063.6     784 1070.28     784 1073.96  783.76 1081.48     784
 1084.32  784.09 1091.42     785 1094.69  785.42 1101.14  786.25 1105.05  786.75
 1107.03  786.81 1113.04     787 1115.41  787.08 1116.57  787.22 1125.78   788.4
    1132   788.6 1136.14  788.73 1138.23   788.8  1144.6  788.18 1146.03  788.05
  1146.5  788.06 1147.43  788.09 1156.87     789 1161.64     789 1167.23     789
 1176.16     789 1177.59  789.05 1178.29  789.07 1187.95  789.37 1193.72  789.56
 1198.32   789.7 1200.64  789.78 1207.72     790 1208.44  790.02 1208.68  790.03
 1209.15  790.05 1219.04  790.36 1224.05  790.52 1229.41  790.69 1231.85  790.76
 1239.28  791.95 1239.77  792.06 1240.01  792.09 1250.13  793.38 1255.44  794.05
  1260.5  794.69 1270.84     797 1270.85     797 1270.86     797 1270.87     797
 1281.22  798.64 1286.46  799.47 1291.58  800.29 1301.73  800.91 1301.95  800.93
  1302.4  800.96 1309.86  801.42 1312.31  801.57 1317.16  802.34 1322.67  803.21
 1332.59  803.83 1333.04  803.85 1333.26  803.87 1333.96  803.91 1341.07  804.35
  1343.4  804.79 1348.87  805.83    1350   805.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .05  281.16     .04  362.87     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       281.16  362.87           104.91  100.71   97.53            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0     260  776.18       F
     367    1350     776       F

CROSS SECTION


RIVER: McElroy Creek
REACH: 303-679 McElroy    RS: 1064.2

INPUT
Description:
Station Elevation Data    num=     133
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     8063.779968  804.64   10.62     80413.16998   802.821.22998  798.69
26.67999  794.3831.84998  790.29    39.5  784.9642.46002  782.7749.17999  780.37
53.08002     780   62.25  779.14   63.69     77965.83002     779   71.87     779
   74.31     77980.03998  778.4684.92999     77892.15997     77895.53998     778
97.83002     778  106.16     778  115.61     778  116.77     778  117.27     778
  118.49     778  127.39     778   133.4     778  138.01     778  144.82     778
  147.53     778  148.62  778.14  151.19  778.24  156.66  778.76  161.17  778.89
  162.32     779  162.94  778.94  165.01     779  172.59     779  178.76     779
  182.87     779  190.49     779  193.15     779  194.58     779  199.38     779
  203.42     779   210.4     779   213.7     779  218.31     779  223.97     779
  226.22     779  233.74     779  234.13     779  234.25     779  234.47     779
  244.53     779  249.96     779   254.8     779  257.87     779  265.08     779
  268.11     779  275.36     779  278.45     779  285.63     779  289.51     779
```

295.91	779	302.48	779	305.9	774.8	321.02	774.92	321.07	774.92
321.1	774.92	334.71	774.89	349.79	766.97	349.9	766.92	349.94	766.92
366.2	767.04	372.48	766.26	379.08	765.44	379.23	765.42	379.33	765.42
388.65	765.48	388.89	765.48	388.9	765.48	399.96	766.74	404.12	767.94
411.95	770.2	424.15	773.6	424.53	773.71	424.88	773.7	436.45	773.29
439.78	780	439.94	780.02	447.73	780.77	450.06	781	455.64	781
460.34	781	469.04	781	470.61	781	471.46	781	474.31	781
480.89	781	483.7	781	491.17	781	495.2	781	501.44	781
508.67	781	511.72	781.09	513.02	781.13	522	781.39	527.68	781.55
532.27	781.69	542.34	781.98	542.55	782	543.04	782.05	552.83	783
556.66	783	558.28	783	564.04	783.82	565.33	784	567.07	784.25
572.37	784.68	576.27	786.11	579.41	787.51	583.67	790.03	588.5	792.87
600.28	799.82	600.53	799.95	600.72	800.08	607.58	804.68	612.95	808.29
614.62	809.41	616.88	810.93	625.18	816				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	334.71	.04	424.53	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
334.71	424.53	169.5	228.95	300.27	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 835.25

INPUT
Description:
Station Elevation Data num= 132

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	8145.029968	813.412.71997	811.7115.08997	811.37	16.63	811			
24.01996	810.1125.14996	809.9825.45001	809.9435.20996	80841.58997	804.83				
45.26996	803.4450.88995	799.6455.32996	79758.21997	795.27	65.38	791			
66.53998	790.3172.04999	787.03	75.44	78576.33997	784.55	85.5	780.72		
91.48999	779.4	95.56	779	101.79	779	105.62	779	114.52	779
115.68	779	120.08	779	125.74	778.88	133.08	778.73	135.8	778.67
141.4	778	145.86	778	152.69	778	155.92	778	165.41	778
165.98	778	168.12	778	174.67	778	176.04	778	182.98	778
186.1	778	191.3	777.48	196.16	777.58	199.62	777.66	206.22	777.79
216.15	778	216.25	778	216.28	778	224.57	778.18	226.34	778.21
232.89	779	236.39	779	241.76	779.53	246.45	779.63	249.52	780
256.51	780	257.84	780	262.17	780.52	262.94	780.63	265.59	780.86
267.27	781	272.73	781	278.92	781	279.86	781	281.35	781
287	781	290.57	781	294.14	781	299.76	781	301.27	781
302.23	781	306.48	781	313.88	781	315.54	781	318.17	781
325.53	780.6	336.58	780	336.95	780	337.18	780	344.09	780
348.84	780	354.99	780	358.36	780	360	778.89	362.17	776.65
377.77	776.73	377.79	776.73	389.08	776.32	433.07	768.14	433.3	768.09

433.37	768.09	448.59	767.26	448.7	767.26	457.43	765.02	457.53	764.99
457.65	764.98	462.75	764.44	468.63	763.81	468.76	763.8	469	763.82
487.18	765.67	495.55	769.06	495.71	769.13	498.01	771	498.51	771.42
500.55	780.41	501.07	782.13	502.26	782.5	511.97	785	520.67	785.75
522.48	785.9	523.62	786.32	529.61	789.03	535.28	792.38	536.75	793.38
539.08	794.96	546.93	800.28	557.49	807.44	558.16	807.93	558.58	808.18
560.46	809.45	570.23	815.77	572.43	817.38	575.9	819.43	581.88	823.3
586.7	826.83	593.54	830.87	593.84	831.08	594.31	831.4	600.97	836.28
605.19	838.77	612.17	843.51						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	389.08	.04	500.55	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
389.08	500.55	188.25	215.5	238.69	.1	.3

CROSS SECTION

RIVER: McElroy Creek
REACH: 303-679 McElroy RS: 619.75

INPUT
Description:
Station Elevation Data num= 129

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	8145.909973		811	11.94	807.94	15.75	806	21.88	802.89
25.59998	800.6331.82996		796.8435.45001		79541.77997		791.7845.28998		790
48.73999	788.2555.13995		78558.47998		783.6464.97998		78168.22998		780.34
74.82996	77981.57001		77984.67999		77987.72998		77994.51996		779
97.46997	779	104.37	779	107.22	779	114.22	779	116.97	779
124.06	779	126.72	779	133.91	779	136.46	779	143.75	779
146.21	779	153.6	779	155.96	779	163.45	779	165.71	779
173.29	779	175.45	779	183.14	779	190.98	779	192.99	779
200.93	779	202.83	779	204.7	779	212.68	779	214.44	779.18
222.53	780	224.19	780	232.37	780	233.94	780	242.22	780
243.69	780	252.06	780	253.43	780.14	261.91	780.13	263.18	780.13
271.76	781	272.93	781	281.6	781	290.46	781	291.45	781
297.44	781	301.29	781	301.39	781	301.75	781	311.47	781
317.99	781	321.55	781	327.1	781	331.62	781	334.53	781
341.7	781	342.79	781	347.77	781	351.78	780.91	352.91	780.89
361.86	780.69	365.81	780.61	371.94	780	375.87	780	382.02	780
384.14	780	392.1	780	392.4	780	393.8	780	402.18	780
404.53	779.77	404.64	778.75	411.9	777.36	412.5	775.3	413	775.26
428.01	773.94	441.19	774.2	441.58	774.21	442.09	773.98	459.22	766.27
473.34	766.75	473.94	766.77	474.51	766.71	480.8	766.1	487.92	765.41
499.33	765.14	502.9	765.05	506.46	765.18	514.62	765.46	519.91	769.21
523.52	771.78	525.28	773.06	531.99	777.91	533.09	785.54	533.21	786.06
541.24	791.19	543.29	792.25	546.49	792.64	553.37	794.53	559.39	795.6

563.45	796	572.3	799.51	573.52	800	574.31	800.31	577.9	801.73
583.6	804.12	590.85	807.16	593.68	808.34	599.11	810.62	603.76	812.56
607.38	813.72	613.84	815.78	615.65	816.36	623.92	820		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	441.19	.04	525.28	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
441.19	525.28	0	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:McElroy Creek

Reach	River Sta.	n1	n2	n3
303-679 McElroy	2757.52	.06	.04	.05
303-679 McElroy	2466.99	.06	.04	.05
303-679 McElroy	2256.86	.06	.04	.05
303-679 McElroy	2031.13	.06	.04	.05
303-679 McElroy	1793.58	.06	.04	.06
303-679 McElroy	1641.02	.05	.04	.06
303-679 McElroy	1528.59	.05	.04	.06
303-679 McElroy	1516.77	Bridge		
303-679 McElroy	1502.01	.05	.04	.06
303-679 McElroy	1291.46	.05	.04	.06
303-679 McElroy	1220.14	.05	.04	.05
303-679 McElroy	1191.38	Bridge		
303-679 McElroy	1164.91	.05	.04	.05
303-679 McElroy	1064.2	.05	.04	.06
303-679 McElroy	835.25	.05	.04	.06
303-679 McElroy	619.75	.05	.04	.06

SUMMARY OF REACH LENGTHS

River: McElroy Creek

Reach	River Sta.	Left	Channel	Right
303-679 McElroy	2757.52	296.09	290.53	281.67
303-679 McElroy	2466.99	203.04	210.13	222.16
303-679 McElroy	2256.86	228	225.73	218.55
303-679 McElroy	2031.13	242.41	237.55	228.38
303-679 McElroy	1793.58	142.83	152.56	170.96

303-679 McElroy	1641.02	103.8	112.43	127.54
303-679 McElroy	1528.59	26.91	26.58	25.36
303-679 McElroy	1516.77	Bridge		
303-679 McElroy	1502.01	158.91	210.55	325.26
303-679 McElroy	1291.46	74.86	71.32	63.88
303-679 McElroy	1220.14	55.26	55.23	56.23
303-679 McElroy	1191.38	Bridge		
303-679 McElroy	1164.91	104.91	100.71	97.53
303-679 McElroy	1064.2	169.5	228.95	300.27
303-679 McElroy	835.25	188.25	215.5	238.69
303-679 McElroy	619.75	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: McElroy Creek

Reach	River Sta.	Contr.	Expan.
303-679 McElroy	2757.52	.1	.3
303-679 McElroy	2466.99	.1	.3
303-679 McElroy	2256.86	.1	.3
303-679 McElroy	2031.13	.1	.3
303-679 McElroy	1793.58	.1	.3
303-679 McElroy	1641.02	.1	.3
303-679 McElroy	1528.59	.3	.5
303-679 McElroy	1516.77	Bridge	
303-679 McElroy	1502.01	.3	.5
303-679 McElroy	1291.46	.1	.3
303-679 McElroy	1220.14	.3	.5
303-679 McElroy	1191.38	Bridge	
303-679 McElroy	1164.91	.3	.5
303-679 McElroy	1064.2	.1	.3
303-679 McElroy	835.25	.1	.3
303-679 McElroy	619.75	.1	.3

INVOICE

The Herald Record LLC
177 MAIN STREET
WEST UNION,WV 26456
United States

Phone:304-873-1600
Fax: 304-666-1017
Mobile: 304-266-2247
TheHeraldRecord.com

Doddridge County OFFICE OF EMERGENCY MANAGEMENT
101 Church Street
West Union, West Virginia 26456
United States

Invoice Number: 3240
Invoice Date: April 5, 2021
Payment Due: April 5, 2021
Amount Due (USD): **$42.26**

Items	Quantity	Price	Amount
Class II Legal Ad -- Floodplain Permit 592 Run Dates: 3/24/21 -- 3/31/21	1	$42.26	$42.26
		Total:	$42.26
		Amount Due (USD) :	**$42.26**

Doddridge County Floodplain Permits
(Week of March 22, 2021)

Please take notice that on the **(22nd)** of **(March)**, 2021, **(Jerry Braun)** filed an application for a Floodplain Permit **(#21-592)** to develop land located at or about **(9699 WV Route 23N)**; Coordinates : **39.399242, -80.646314.** The Application is on file with the Floodplain Manager of the County and may be inspected or copied during regular business hours in accordance to WV Code Chapter 29B Freedom of Information, Article 1 Public Records and county policy and procedures. Any interested persons who desire to comment shall present the same in writing by **(April 26, 2021)** (20 calendar days after the announcement at the regularly scheduled Doddridge County Commission Meeting) delivered to the Floodplain Manager of the County at 105 Court Street, Suite #3, West Union, WV 26456. **This project is for the transfer of ownership of a bridge**

3/24X2XB

STATE of WEST VIRGINIA;
COUNTY OF DODDRIDGE, TO WIT:

I, Tamela B. Beamer, Editor of THE HERALD RECORD, a certified weekly newspaper published regularly in Doddridge County, West Virginia, DO Hereby Certify Upon Oath that the accompanying Legal Notice entitled:

Doddridge County Floodplain Permit

21-592

Braun

was published in said paper for 2 successive weeks beginning with the issue of 3/24, 2021 and ending with the issue of 3/31, 2021 that contains 210 word space at .115 cents per word and amounts to the sum of $24.15 FOR THE FIRST PUBLICATION.

SECOND PUBLICATION IS 75% OF THE FIRST PUBLICATION and each other publication thereafter $18.11 for the TOTAL OF: $ 42.46 .

Editor,

Tamela B Beamer

SWORN TO AND SUBSCRIBED BEFORE ME THIS THE 5th day of April, 2021.

NOTARY PUBLIC

Alice A. Fultz

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
Alice A. Fultz
826 Crystal Lake Rd.
West Union, WV 26456
My Commission Expires October 11, 2024